



THE NAVAL ARCHITECT

International journal of The Royal Institution of Naval Architects | www.rina.org.uk/tna

— It's clear what lies ahead



Let's keep it that way. MacGREGOR innovation makes cargo access equipment environmentally-friendly as well as economical and competitive. We can offer you the right choices whether you are looking for cranes, hatch covers, winches, RoRo access equipment, or dust-free handling of dry bulk cargoes.

For the clean seas.

Profit from our experience

MacGREGOR is part of Cargotec Corporation

MacGREGOR

www.macgregor-group.com

Germany / China / Fast ferries / CAD/CAM
Polish shipbuilding / Containership / Deck equipment
September 2008

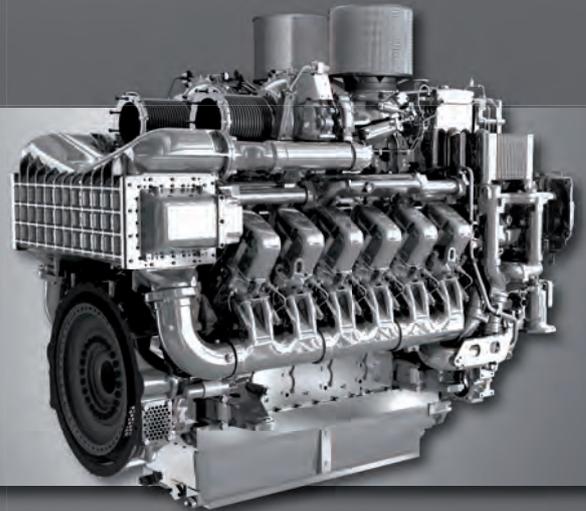


Talat Altun, Captain
Tug "Arpas 7",
Ambarli Ports, Istanbul

I'M ONE OF THE IRONMEN.

"We tow very large ships on a daily basis. That's always a show of strength. My MTU IRONMEN engines have never let me down. They're extremely powerful,

but very quiet, clean, and hardly vibrate. MTU Service checks everything regularly, which provides peace of mind."



IRONMEN: BUILT TOUGH TO TAKE IT.

MTU SERIES 4000 WORKBOAT EDITION



World class?

Yes!



ClassNK
20%
157m gt*

We are a world leader in ship classification

In fact, ClassNK is the first classification society to have over 150 million gross tons under class

Being world class brings with it world-class responsibilities.

Only a true dedication to technical excellence, superior service, cutting-edge research, uncompromising quality, and global leadership makes it possible to meet these challenges.

This forms the cornerstone of ClassNK's mission of ensuring the safety of life and property at sea and preventing pollution of the marine environment.

Our global network of more than 100 offices stands ever ready to help you with solutions that are truly world class.

* As of the end of June 2008.

ClassNK NIPPON KAIJI KYOKAI
www.classnk.or.jp



23rd - 26th
September
2008, Hamburg

Please visit us at Stand 221 in Hall B2.EG

Editor Hugh O'Mahony
Editorial Assistant Samantha Fisk
Design/Production Manager Sandy Defraime
Group Sales Director John Payten
Assistant Advertisement Manager Matthew Clifton
Advertisement Production Manager Stephen Bell
Marketing Manager Adelaide Proctor
Publisher Mark J Staunton-Lambert

Published by:
 The Royal Institution of Naval Architects
 Editorial & Advertisement Office:
 10 Upper Belgrave Street
 London SW1X 8BQ, UK
 Telephone: +44 (0) 20 7235 4622
 Telefax: +44 (0) 20 7245 6959
E-mail editorial editorial@rina.org.uk
E-mail advertising advertising@rina.org.uk
E-mail production production@rina.org.uk
E-mail subscriptions subscriptions@rina.org.uk

Printed in Wales by Stephens & George Magazines.

The Institution is not, as a body, responsible for opinions expressed in *The Naval Architect* unless it is expressly stated that these are the Council's views.

Registered charity No. 211161
 © 2008 The Royal Institution of Naval Architects. This publication is copyright under the Berne Convention and the International Copyright Convention. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted without the prior permission of the copyright owner. Permission is not, however, required to copy abstracts of papers or of articles on condition that a full reference to the source is shown. Multiple copying of the contents without permission is always illegal.

A one-year subscription in 2008 to *The Naval Architect* costs £115 (UK), £120 (Europe), and £130 (Rest of the world).

Audited Circulation 11,440
 JAN-DEC 2007
 ISSN 0306 0209



9 Editorial comment

Still a question of quality

10-18 News

- 10-12 News
- 14-18 Equipment news

20-47 In-depth

- 20-22 **Safety** | The warm glow of safety
- 24 | Damage stability rules beefed up
- 27 | BV focus on access safety
- 29 | Peril in store
- 30 **Environment** | Clean ballast boards ships
- 33 | Congress split on invasive species
- 34-36 | Beyond the mist lies clarity
- 38-44 **New Vessels** | New designs
- 45 | Strong growth predicted for FPSOs
- 46-47 | Ultimate loader from Coeclerici
- 244-245 **Coatings** | KCC covers all its bases
- 246 **Equipment** | Napier set for a new era
- 247-248 **Research and development** | New high speed tow tank
- 249-250 **Shipbuilding** | Aluminium to steel welding
- 251-253 **Communications** | Mobile on the high seas

257 Letters

266 Diary



ABB HZTL216657P1

from 18 000 to **36 000** running hours

ABB TPL...-B
 2-stroke turbochargers run 36,000 hours without a bearing inspection.

Long-distance runners.
www.abb.com/turbocharging



Technical knowledge and practical experience are the pillars that support maritime safety.

Setting the Standard for Service.

www.eagle.org



48-242 **Features**

Feature 1 **Germany**

- 48 German wares 'in demand'
- 50 HSVA extends hull form capacity
- 52-53 Crumple zone for safer tankers
- 55-57 Skysails hails latest data
- 58-62 Cost management in shipping
- 64-65 Wärtsilä ship design
 - 66 SAL and Seitas get heavy
 - 68 Aker turns attention to largest ro-pax
 - 71 Thyssen Kyupp restructured
 - 72 Schottel adds heavy thrust
 - 75 GL clears the air
 - 77 Order explosion for Becker
- 79-80 Ballast system gets early approval
- 81 Hatlapa re-organised

Feature 2 **China**

- 83-87 Cost concerns for Chinese yards
 - 89 Rongsheng goes for MARS
- 90-92 Candid views from CANSI
- 95-97 CSR's get blasted
 - 99 Largest panel line arrives in China
- 100-102 Is China ready for PSPC?
 - 105 Responsibility is the Bestway
 - 107 J Ray McDermott signs joint venture
- 109-110 Wuhan's growing cluster
- 112-117 China rises as new shiprepair centre

Feature 3 **Fast Ferries**

- 119-126 Design solutions to spur US costal trade
- 129 Northern exposure for BC Ferries
- 130 Barreras launches double-ended giant
- 131 DFDS expands capacity
- 133 Outsize ferries for P&O
- 134 Faster from Ulljanik
- 134 Superspeed second sighting
- 136 Gallium floors the competition
- 138 New packet for Isle of Man

Feature 4 **CAD/CAM**

- 141-149 Making a virtue of the numerical towing tank
 - 151 Ensuite updated for collaboration
 - 153 Aveva bags contract pair
 - 155 New solution for semisubmersible thrusters

Feature 5 **Polish shipbuilding**

- 157 Shipbuilders in the dock
- 159 Stability focus for joint initiative
- 160-161 StabPRS deemed a success

- 161 Safety criteria for bulk carriers
- 163-164 Mixing with gas carriers
- 166-168 Genfer Lloyd lifts off
- 171 Baltic Design at the centre

Feature 6 **HVAC**

- 173-175 Grease busting and energy saving

Feature 7 **Containership design**

- 177-187 Creative approach to ship design
- 188-203 Hydro-elastic thinking as vessels stretch
- 204-211 A question of flexibility
- 213-219 Ultra large and under stress
 - 221 Containers in a cold climate
 - 223 More than one way to carry a container
- 225-227 Afterthoughts on Napoli

Feature 8 **Deck Equipment**

- 229 How to handle a booming market
- 231 Industrial drive with versatile winch control
- 233 BW embraces Dyneema
- 234 New lubricant protects deck crane gears
- 237 MacGregor scores with electric drive
- 239 Palfinger knuckles down
- 241 Nice crane if you can get it
- 242 Bulker contract boosts Rolls-Royce
- 242 Large spooler delivered by MEP
- 242 NDM picks up orders

On-line Edition

The Royal Institution of Naval Architects is proud to announce that as of January this year, *The Naval Architect* journal has gone digital. We are very pleased to inform the maritime industry that each issue will be published online, on the RINA website. Visit www.rina.org.uk/tna and click on the issue cover you wish to view. This means that the entire publication, including all editorials and advertisements in the printed edition, can be seen in digital format and viewed by members, subscribers, and (for a limited time) any other interested individuals worldwide.





You're not alone.

We're always there to support our clients in whatever location or situation they find themselves.

The world is where we work. Whether it's the Mid-Atlantic or the South Pacific, our local expertise means we can deliver what you need and what we promise. We recently identified this by expanding our aftersales business, our mission being to develop best practice in providing a consistent, high level of service to customers worldwide.

Hamworthy people create this global presence through a network of local offices and manufacturing facilities. It allows us to be fast, more direct and better informed.

Hamworthy Middle East is the latest edition to our global support network. Hamworthy now has over 1,100 employees supporting ship owners and shipyards throughout Europe, the Middle and Far East and North America.

To find out more visit www.hamworthy.com



Still a question of quality

There is plenty of excellence about among Chinese shipbuilders, but the industry is being challenged to renew its commitment to quality.

Lloyd's Register Asia's China national committee has urged the shipbuilding industry to focus afresh on quality

The comments, made at the 7th annual meeting of Lloyd's Register Asia's China National Committee (CNC), came as global shipbuilding capacity was set to eclipse 50 million cgt next year, raising concerns about the number of inexperienced yards entering the market and the growing pressure to find increasingly scarce skilled workers.

Zhang Guangqin, the president of the China Association of National Shipbuilding Industry, said that, with the appreciation of the RMB, rising interest rates, and surging raw material and labour costs already threatening to curb the global appetite for new ships, any slip in shipbuilding quality could bring an end to the current demand cycle.

'Quality issues are the best excuses for shipowners to stop ordering and, with so many challenges emerging for the yards to manage, strengthening quality management should be the most urgent and important task,' Mr Zhang told delegates in Sanya, Hainan Island. 'This year needs to be the Year of Quality for China's marine industries.'

As is clear from the report in this issue of *The Naval Architect* (pp83-117), there is plenty of quality about among Chinese shipbuilders, and significant efforts are being made to cultivate new and more sophisticated vessel designs. However, the CNC meeting hosted by Lloyd's

Register was attended by more than 40 of the country's top builders, owners and designers, and it was they who collectively challenged the industry to renew its commitment to quality, noting that failure

"Any slip in shipbuilding quality could bring an end to the current demand cycle."

to do so would reach beyond the industry to adversely impact on the overall 'Made in China' brand.

Delegates also heard from George Sarris, president of Enterprises Shipping and Trading, one of the five largest shipping groups in Greece.

Mr Sarris commended the Chinese shipbuilding industry for quickly reaching the ambitious goals the government had set for it, but also urged newcomers to the market to use the world's elite yards as their quality benchmarks, rather than the achievements of a rival new yard.

'You, gentlemen, have set your targets and you have achieved them,' he said. 'But this unprecedented achievement has to be safeguarded by all stakeholders and certain precautions now have to be taken to ensure that it serves as the foundation for a better and more illustrious future. It is

very important to always bear in mind that it takes many years to build up a reputation and only one instant to ruin it.'

He also called for classification societies to play a more proactive role in helping to establish quality safeguards and systems to support the industry in China, where about 30% of the 160 million dwt order book at the end of last year had been reportedly contracted to yards that have yet to build a ship.

But efforts intended to improve the quality of shipbuilding emanating from outside China are by no means universally welcomed. In this issue, a prominent Chinese naval architect expresses more than scepticism over the value of Common Structural Rules, the device developed by IACS for tankers and bulk carriers in order to harmonise construction standards.

Chen Hao, deputy director of the product development department and a senior engineer at Guangzhou Shipyard International Co (GSI) contends that that CSRs are a 'destructive strike to the maritime industry because they cannot solve any of the proposed questions and they kill competition, which is indeed an impetus for the industry to improve' (see pp95-97). In detail, he does not believe that CSRs are the best choice to solve safety problems because they put an end the way individual classification societies work out their own rules and standards. Among other points, he suggests that shipyards and shipowners should not be deprived of their individual right to choose structural rules for lofty purposes such as safety. *NA*

Shipbuilding

Goodbye Aker, hello STX

Aker Yards will be rechristened STX Europe, after STX Corp vehicle STX Norway confirmed that it had finally acquired an 88.39% share in Europe's largest shipbuilding group.

STX Norway was expected to buy out 5000 Treasury shares belonging to Aker Yards, bringing a share of capital of 93%, with the purpose of the right to demand a forced transfer of the remaining shares in accordance with the Public Limited Companies Act. STX Norway AS may therefore after settlement of the mandatory offer decide to force the transfer of the remaining shares in Aker Yards, and the remaining shareholders will be entitled to demand that STX Norway AS takes over their shares.

A spokesman for Aker Yards said that STX had confirmed that the business would continue to operate under one umbrella, but that the different legal entities operating within the group would also need to be renamed at a later date. A shareholders meeting to formalise the new arrangements was scheduled to be held on 3 September.

The Aker spokesman said that STX had given no indication of any changes to be made to the European group's existing management.

In a related move, on 29 July 29, Aker Yards and FLC West completed the previously announced transaction in which FLC West comes in as a 70% shareholder in the Okean shipyard in Ukraine and the shipyards in Wismar and Warnemünde in Germany. All focus on merchant ship construction.

Aker Yards ASA has consisted of 18 shipyards around the world. At 25 March 2008, the group announced that it intended to take the Russian controlled company FLC West in as a majority shareholder in Aker Yards Ukraine Holding AS.

Shipbuilding

Derecktor in Chapter 11

Derecktor Shipyards Connecticut is reported as having filed for Chapter 11 bankruptcy protection, but told *The Connecticut Post* that it did not expect to lay off the 250 workers employed at its Bridgeport yard.

The report said that Derecktor filed a bankruptcy petition in U.S. Superior Court in Bridgeport. It quoted Bridgeport Mayor Bill Finch as saying Derecktor executives have assured him the filing 'is merely a legal proceeding meant to help the boat maker work out a contract dispute with a customer.' Derecktor Shipyards

did not return calls from *The Naval Architect*.

Derecktor, a well-known builder of leisure craft and high-speed commercial craft, has operations in New York and Florida.

'The company has been engaged in lengthy negotiations to resolve issues relating to one of its contracts,' Paul Derecktor, the company president, said in a news release quoted by *the Post*. 'Unfortunately, the resolution of those issues were made impossible to achieve outside of the bankruptcy process.'

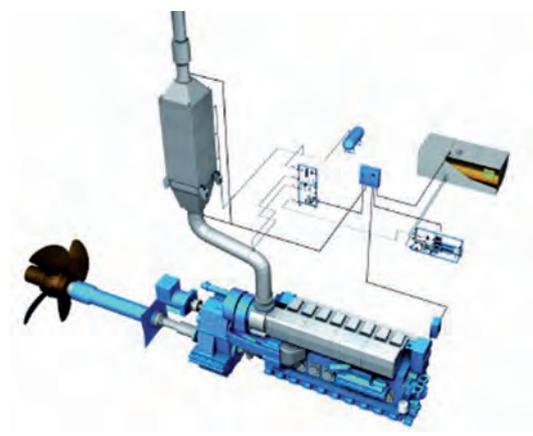
A search of court filings reported elsewhere suggested that that Gemini II Ltd filed a suit on 14 July against Derecktor Shipyards Connecticut in U.S. District Court for the Southern District of New York, alleging breach of contract over a 145ft sailing craft.

Technology

Nitrogen oxide reducer ordered

Wärtsilä has won its first order for new Nitrogen Oxides Reducer technology. The Wärtsilä NOR units are selective catalytic reduction (SCR) converters that will meet the stringent requirements of IMO Tier III emissions control regulations with regard to NOx reduction. They are able to reduce NOx emissions to a level of 1.5 g/kWh. IMO Tier III is expected to come into force in 2016.

The SCR product for Wärtsilä medium-speed engines is named Nitrogen Oxide Reducer (NOR). In the installation shown, the core of the installation is the reactor on the exhaust uptake. It is accompanied by separate pumping and dosing units to deliver the urea solution to the reactor, and a dedicated control cabinet.



Wärtsilä received the order from Edda Accommodation, part of the Østensjø Group in Norway, to supply six Wärtsilä NOR units for an accommodation vessel. They will be installed on six nine-cylinder Wärtsilä 26



Your Dependable Class Partner Anytime, Anywhere

As a member of International Association of Classification Societies (IACS), KOREAN REGISTER (KR) has been providing top quality classification services for ships and offshore installations. With exclusive survey offices at major ports around the world, KR endeavors to safeguard life, property and the environment.



※ Please visit us at SMM 2008 (Stand No.321, Hall B2, Ground fl.)

generating sets, which were ordered in the end of 2006 in addition to other auxiliary equipment and automation.

The vessel, also known as *Edda Accommodation*, is being built in Spain and will be delivered in the first quarter 2010.

The new SCR product range caters for the needs of all four-stroke engines in Wärtsilä's portfolio and can be used for both newbuild and retrofits. The control system is integrated with the Wärtsilä engine control system and the units come with a completed prefabricated ancillary system.

Wärtsilä has built up experience in running SCR on its own engines in both power plants and vessels since the early 1990s. Based of this experience, it developed the branded 'NOR' product.

Edda Accommodation supplies accommodation services to the offshore oil and gas industry. Measuring 130m long by 27m wide, the new vessel will have accommodation for 600 persons when deployed offshore. However if it is moored to a jetty as quarters for onshore workers, the capacity can be increased to 1000 persons.

Shipbuilding

SPS approved in China

The China Classification Society (CCS) has given approval for SPS to be used on CCS classed vessel

Materials Type Approval has been awarded to Intelligent Engineering, confirming acceptance of the patented SPS system as an approved construction material. In addition CCS has written design assessment standards 'CCS Guidelines for the Application of Steel Sandwich Panel Construction to Ship Structure, 2007'. This means that owners and designers can now specify SPS for repair and construction of CCS ships.

SPS is the technology owned and developed by UK-based Intelligent Engineering Ltd in which two metal plates are bonded to a solid elastomer core. The elastomer provides continuous support to the plates which stops local plate buckling and minimises the need for stiffeners. SPS Overlay is proven for deck and tank top reinstatement with over 100 commercial projects completed around the world.

Michael Kennedy, Intelligent Engineering chief executive, said: 'We are experiencing continued growth worldwide in the demand for SPS Overlay, including in China. This recognition paves the way for straightforward approvals of CCS class ships in the future. The guidelines provide a framework for the classification of ship structures built using SPS and the basis for a consistent approach to the approval of such designs. Chinese yards are already at the forefront in the use of SPS technology. We believe that these guidelines

will give the industry in China the confidence to embrace SPS even more fully.'

Classification

RINA gets mega Chinese break

ITALY-based classification society RINA has made a major breakthrough in the Chinese shipbuilding market. It has been appointed to class a 300,000 dwt Very Large Ore Carrier (VLOC) to be built at Dalian Shipbuilding Industry for Italian owner ILVA Servizi Marittimi Spa. It will be the largest ship ever built to RINA class, the largest ship ever built for the Italian flag and marks the recognition of RINA's ability to class very large projects at the major Chinese shipyards.

The VLOC will be 321m long, 300,000dwt, and is due for delivery in 2011. It will be plan approved by RINA's recently expanded Shanghai Plan Approval Centre, and classification during construction will be by surveyors from RINA's Dalian Survey Station.

Italy-based ILVA has a fleet of 15 Italian-flag ships, all classed by RINA, and has a further 13 ships totalling 730,600 dwt on order, all to RINA class and all at Chinese yards.

Shipbuilding

Teekay takes to multi-gas

I.M. Skaugen Group (IMSK) has entered into an agreement to sell two of its specialised 12,000m³ capacity multi-gas carriers. The ships are currently under construction with Skaugen Marine Construction (SMC) in China and are expected to be delivered in the first and second quarter of 2010.

These ships are capable of carrying LNG, LPG and ethylene and will be sold at an expected cost of about US\$90 million. Teekay Corporation has agreed to takeover the existing shipbuilding contracts for these vessels from subsidiaries of IM Skaugen SE (IMS), as well as to provide the funding needed for the construction phase and Teekay LNG has agreed to acquire the vessels upon their delivery.

IMS will subsequently lease back these ships for 15 years from Teekay LNG and at a fixed-rate with three five year extension options without fixed price purchase option. The ships will enter the Norgas pool upon delivery. In total, the pioneering newbuilding programme comprises the construction of up to 16 ships for delivery between now and 2010. Twelve of these ships have so far been confirmed with subcontractors, suppliers and joint venture partners, while two ships have already been delivered and two more will be delivered in 2008.



Check the weather.
Download chart updates.
Talk to shore. While the crew
contact home. Simultaneously.

**It's all in a day's work for you and
FleetBroadband.**

**VOLVO
OCEAN
RACE**
2008-2009
RACE SPONSOR

Communications you take for granted on land - telephone, internet, high-speed data - you can now have at sea, simultaneously. And on any of the world's oceans. Real time updates, remote engine management, ship-to-shore video and better crew welfare communications. All available more cost-effectively, with flexible tariffs. Transform the way you communicate, with the best in broadband, from the best provider. For years, Inmarsat has been setting the standard. Now FleetBroadband has raised it.

inmarsat.com/fleetbroadband

Visit us at SMM, Hamburg, 23-26 September 2008, stand 111, hall B.

The mobile satellite company™

**inmarsat**

Marine equipment

VDMA soaks up boom

German Engineering Federation (VDMA) has reported that the offshore equipment sector grew by 13.8% in 2007, with a 14% growth expected in 2008.

German marine and offshore equipment suppliers with 76,000 employees achieved sales of €11.9 billion in 2007. The export rate was 73%. The sector could maintain and expand its leading role for high tech systems for worldwide shipping and shipbuilding.

Overshadowed by the big three Asian shipbuilding countries, the European shipyard industry is currently performing well. In 2007, 4851 (previous year: 3,329) oceangoing vessels were ordered worldwide, including 606 (603) in Japan, 1231 (692) in South Korea, 1700 (881) in China and 422 (419) in the 27 EU countries, including 61 (65) in Germany.

German suppliers accordingly did 39% of their foreign business in Asia and 34% in other European countries in 2007. China is the largest foreign market, claiming 25.7% of foreign orders, well ahead of Korea with a share of 10.5%.

Contact VDMA Hauptstadtbüro, Unter den Linden 42, D-10117 Berlin, Germany
Phone +49 30 30 69 46-0
Email berlin@vdma.org
www.vdma.org

Gas systems

Hamworthy orders secured

Hamworthy has secured a contract to supply liquefied natural gas reliquefaction systems (LNG-RS) for four Korean-built dual fuel diesel electric (DFDE) powered ships, and a contract for ethylene reliquefaction systems (LEG-RS) for two liquefied ethylene gas carriers (LEGCs) being built in Japan. The combined value of the contracts is in the region of £13m.

The LNG-RS contract represents a landmark, in that Hamworthy will install reliquefaction systems on vessels with DFDE propulsion for the first time, widening the group's product offering, which previously targeted slow speed diesel engine LNG carriers. The vessels are being constructed by Samsung Heavy Industries on behalf of BG. The systems are due for delivery in the last six months of 2009 and will be installed on four 170,000m³ vessels.

The contract to provide LEG-RS is for two LEGCs which are to be built in Japan for Japanese owners. The LEG-RS equipment is due for delivery during the first six months of 2010.

Contact Hamworthy PLC, Fleets Corner, Poole, Dorset, BH17 0JT, England.

Tel: +44 1202 662600

Fax: +44 1202 668793

www.hamworthy.com

Software

SPP Shipbuilding uses Aveva

Korean shipbuilder, SPP Shipbuilding, has signed a multi-million US dollar agreement with AVEVA for the supply of AVEVA Marine design solutions to the company's three shipyards.

SPP, will increase capacity to build 41 ships per year by the end of this year with the opening of its third yard in Sacheon, rising to 100 ships per year by 2010. SPP currently has the capacity to build 12 ships per year with shipyards based in Tongyoung and Gosong, Korea.

Contact Aveva Solutions Ltd, High Cross, Madingley Road, Cambridge, CB3 0HB, UK

Tel +44 1223 556655

Fax +44 1223 556666

www.aveva.com

Ancillary equipment

ABB's new release

ABB Turbocharging has officially released the A140-H version of its A100 generation of single-stage, high-efficiency, high-pressure turbochargers. The market introduction of the A140-H for high-speed diesel and gas engines represents a milestone for the industry, with compressor pressure ratios of up to 5.8 at full load offered for the first time in this hard-fought industry segment.

Contact ABB Limited, Daresbury Park, Daresbury, Warrington, WA4 4BT, UK

Tel +44 1925 741111

Fax +44 1925 741212

www.abb.co.uk

Propulsion

FLEX goes for dual fuel

Wärtsilä-Hyundai Engine Company, the new joint venture between Wärtsilä and Hyundai Heavy Industries in South Korea, has received a major order, covering engine installations aboard the innovative FLEX LNG floating production storage and offloading vessel.

The order calls for a total of 16 Wärtsilä 50DF engines for four ships to be built by Samsung Heavy Industries.



The FLEX LNG ship will be powered by four Wärtsilä 50DF engines, manufactured by Wärtsilä-Hyundai Engine Company.

The contract also includes an option of four more engines for a fifth vessel. The order is recorded in the order book of Wärtsilä-Hyundai Engine Company. The first engine will be delivered in February 2010.

The Wärtsilä 50DF dual-fuel engine represents a change from traditional steam turbine machinery to a dual-fuel-electric concept with the benefits of much better operating economy and lower exhaust emissions. The engine can run on either natural gas, marine diesel oil (MDO) or on heavy fuel oil (HFO). Furthermore, the engine can smoothly switch between fuels during engine operation and is designed to give the same output regardless of the fuel used.

The main markets for the dual fuel engines are in South Korea, which currently has a market share exceeding 80 percent of the LNG shipbuilding market.

Contact Wärtsilä, John Stenbergin rantaa 2, PO Box 196, FI-00531, Helsinki, Finland

Tel +358 10 709 0000

Fax +358 10 709 5700

www.wartsila.com

Ancillary equipment

New joint venture sparked

Kongsberg Maritime has formed a new joint venture with the Chinese company Zhenjiang Marine Electrical Appliances. The new company, Kongsberg Maritime China Zhenjiang, is focused on the delivery of electrical control and distribution units to the marine industry.

Zhenjiang Marine Electrical Appliances has long traditions in the Chinese marine market, specialising in electrical equipment for commercial and naval ships. Zhenjiang Marine Electrical Appliances' product range will constitute a valuable addition to Kongsberg Maritime's existing portfolio, providing an entry into new areas of the Chinese market through the possibility of delivering more complete packages of integrated systems.

This joint venture will double the number of Kongsberg Maritime employees in China and is an important part of Kongsberg Maritime's strategy towards gaining a greater market share in Asia.



NAPA for Design and Operation of Ships



Napa supplies the marine industry with the leading software for ship design and operation. Napa improves safety and performance throughout the ship's lifetime.

Proven economic and technical benefits:

- Comprehensive functionality for all needs
- Promotes optimal yet error-free design
- Cuts costs and the time for designing
- Smooth information flow through design and operation
- Safe and economic shipping
- Brings maritime world together

Contact Kongsberg Maritime Ltd, Campus 1, Aberdeen Science & Technology Park, Balgownie Road, Bridge of Don, Aberdeen, AB22 8GT, Scotland UK

Tel +44 (0)1224 226500

Fax +44 (0)1224 226501

www.kongsbergmaritime.com

Propulsion

Hug for Tognum

The Tognum Group and the Swiss company Hug Engineering AG have agreed on a joint venture for cooperation in the field of exhaust aftertreatment. The new company will be established on 1 October 2008, with its headquarters in Switzerland.

Specialists from both companies will be cooperating to ensure that large MTU diesel engines in the 2000, 4000 and 8000 series can be fitted with exhaust aftertreatment systems as a standard feature in the future.

The joint venture will invest up to €6 million over the next few years. Despite the exclusive strategic arrangement, both companies are free to continue cooperation with other partners.

Contact Tognum AG, Maybachplatz 1, 88045 Friedrichshafen, Germany

Phone +49 75 4190 91

Fax +49 75 4190 97

www.tognum.com

Ancillary equipment

Hatchcovers lift off

In July, MacGregor Group received hatchcover orders worth over €25 million, which will see the company making deliveries of its lift-away weatherdeck hatchcovers to container carriers until 2011. The cargo access equipment contracts are for 39 ships on order at Hyundai Heavy Industries and Daewoo Shipbuilding & Marine Engineering in South Korea.

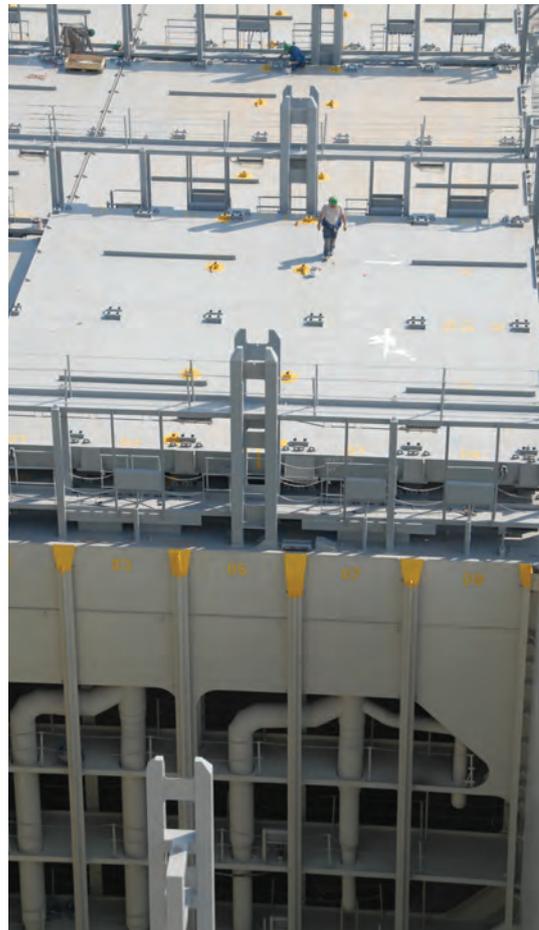
The order from DSME for eight 8400TEU ships is a complete delivery of lift-away weatherdeck hatchcovers to be fabricated at MacGregor's partner plants in China.

All the lift-away weatherdeck hatch covers are either reduced weathertight or non-weathertight, and can be opened and closed non-sequentially.

Contact MacGREGOR Oy, P.O. Box 116,

FIN-20781 Kaarina, Finland

Tel +358-2-412 11



Lift-away weatherdeck hatch covers

Fax +358-2-4121 256

E-mail hcosales@macgregor-group.com

www.macgregor-group.com

Coatings

Second Aframax to get coated

A second Aframax tanker belonging to Mumbai-based Mercator Lines, *Prem Divya* has been coated with International Paint's foul release coating, Intersleek 900. The move comes just nine months after sistership *Prem Pride* had her vertical sides coated with the latest generation patented fluoropolymer at Dubai Drydocks World.

Before investing in Intersleek 900 technology, the company had undertaken a detailed cost benefit analysis, taking references from owners who had already adopted the new hull coating. The process involved calculating the savings generated by easier through-life hull coatings management including a smaller volume of paint required at subsequent dockings, an improvement in environmental footprint, and fuel consumption savings.

Compact and
lightweight design

12-16-20

Offered in a range of cylinder counts

1000 RPM

Class-leading outputs

Modular design



Our flying machine with short take-off and landing

Our high power density 28/33D gives fast craft vivid acceleration and high output in quick bursts or over extended periods. It is the engine of choice for fast ferries operating short routes or naval vessels needing rapid changes of operating mode. Find out more at www.mandiesel.com

MAN Diesel – Powering the World



Contact International Paint Ltd, Stoneygate Lane, Felling, Gateshead, Tyne & Wear, NE10 0JY, UK
Tel +44 (0) 191 401 2417
Fax +44 (0) 191 495 2003
www.international-marine.com

Coatings

Bodycote testing 'goes Dutch'

Bodycote Testing has acquired Dutch coatings consultancy and inspection company, Rotterdam Painting Consultants (RPC), in a move designed to complement Bodycote's existing expertise in coatings testing. The new company will trade under the name Bodycote RPC.

Rotterdam Painting Consultants operates mainly in the infrastructure, offshore, petrochemical and energy markets, offering consultancy and inspection of maintenance painting programmes as well as being involved in failure analysis work, specification writing and training.

Contact Bodycote Testing Ltd, 6 Coronet Way, Centenary Park, Eccles, Manchester, M50 1RE, UK
Tel +44 161 787 3250
Fax +44 161 787 3251
Email sales-mt@bodycote.com
www.bodycote.com

Propulsion

Rolls-Royce follows-up

Rolls-Royce has won a £17 million follow-up order to design and equip a specialist well intervention vessel.

The latest order, from Island Offshore, follows the successful delivery of the first well intervention vessel, *Island Wellserver*, in March this year.

The new 130m long UT 767CDL vessel, which will drill in ultra deep waters, offers single cabins for 97 crew members. As with the UT 767CD *Island Wellserver*, the vessel meets cruiseship standards for noise and vibration.

The vessel, to be delivered in 2011, will be built at Aker Yards, Langsten, Norway.

In addition to design, Rolls-Royce will also deliver four main engines, propulsion, deck machinery and automation systems.

The contract brings the total number of Rolls-Royce UT Design offshore vessels under construction worldwide to 120.

Contact Rolls-Royce International Limited, 65 Buckingham Gate, SW1E 6AT, London
Tel +44 (0) 20 7222 9020
Fax +44 (0) 20 7227 9170
www.rolls-royce.com

Electronic systems

Sperry scores 10

Northrop Grumman Corporation has won orders to supply electronic navigation equipment for 10 new ships to be built in China for Carisbrooke Shipping.

Northrop Grumman's Sperry Marine business unit will supply the systems, which will be installed on the 7600dwt general cargo vessels at Jiangsu Yangzjiang Shipbuilding in South China. The Sperry Marine navigation package will include autopilot, gyro and magnetic compasses, radars, speed and depth sensors and other components.

Contact Sperry Marine UK, Burlington House, 118 Burlington Road, New Malden, Surrey, KT3 4NR, UK
Tel 020 8329 2000
Fax 020 8329 2415
www.sperrymarine.northropgrumman.com

Environment

Hyde breaks through

Hyde Marine has been contracted to supply six Hyde Guardian ballast water treatment systems for the Royal Navy's Future Aircraft Carriers (CVF) programme, on behalf of the Aircraft Carrier Alliance. Delivery will take place in autumn 2008.

Three systems will be supplied for each of the two carriers to serve the three segregated ballast systems on each ship. The Hyde Guardian systems were chosen after an exhaustive study of all available technologies.

The supplier said the Hyde Guardian was chosen 'because of its compact, single skid mounted design and because of its demonstrated effectiveness and reliability'. The system is fully automatic and will be integrated into the ship's ballast control system.

The Hyde Guardian system is the result of experience gained and lessons learned from five full scale systems delivered by Hyde in 2000 and 2001 with capacities ranging from 200m³/hr to 350m³/hr.

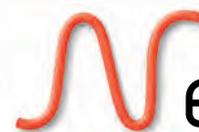
Contact Hyde Marine Inc, 28045 Ranney Parkway, Cleveland, Ohio 44145, USA
Tel 440 871 8000
Fax 440 871 8104
E-mail sales@hydmarine.com
www.hydmarine.com

At the core of performance

BRING SAFETY ON BOARD.

For your integrated onboard environment, Nexans provides a complete range of energy and telecom cables, which conform with the highest international standards. Our easy to install solutions are designed

and customized to meet your complex requirements and we constantly innovate to improve safety and reliability. You can rely on Nexans to get services that only a world-class manufacturer can provide.

 **nexans**

Global expert in cables
and cabling systems

The warm glow of safety

Thermal imaging used as new tool to avoid accidents in cases where visibility is limited.

From its Portland manufacturing plant, near Whangarei, New Zealand, Golden Bay Cement ships a range of cement products to markets around New Zealand and the Pacific. Today, with an annual production capacity of 900,000tonne, the Portland plant is New Zealand's largest cement manufacturing operation..

From Portland, bulk cement is distributed by ship and then trucked to customers. Transporting cement requires specific handling and storage conditions, hence specialised cement carrier ships are the preferred method of transportation.

Traditionally transported in bags, finished cement is today carried largely in bulk, a powder cargo sufficiently fine to be handled pneumatically, moving through large diameter pipes on a column of air. Old cement ships were basically bulk carriers with bags handled

manually in a laborious operation which could take days. Modern cement carriers are specialised ships that will carry no other cargo, and while classified as dry bulk carriers, are fully enclosed vessels which more resemble tankers. They are distinctive craft, with complex cargo handling equipment in the pneumatic plant, an extensive system of conveyors and often a high tower on the foredeck.

The cement carrier used by the Golden Bay Cement Company is Golden Bay, with a capacity of 4500tonnes. Needless to say that it is not always easy to manoeuvre a ship of this size and weight. It takes some time to change direction and slow down.

The crew of the Golden Bay is well aware of the fact that they need to stay alert at all times, especially when entering small coastal harbours around New Zealand. Golden Bay operates a regular schedule which entails unloading

at six different harbours throughout the country. The two masters in charge of the ship on a rotating roster are Tony Murphy and Peter Robinson. They are pilot exempt, so they navigate and dock at each harbour under their own power and guidance without any assistance from harbour authorities or support vessels.

'One of the biggest dangers is that we may not see very small craft when entering harbours,' says Mr Robinson. 'Hitting one of these boats might not damage our ship, but the crew of the other boat could be killed. Avoiding collisions is already hard in daytime but becomes a lot more difficult in total darkness.

'In order to avoid this type of accident we rely heavily on radar. Unfortunately, although radar is an indispensable tool, it cannot pick everything up. Very small boats are sometimes missed by radar. During the night, we need to rely on the navigation lights of other vessels. When they are well lit, we will see them from far enough distance to change course, if necessary. The problem is that sometimes owners of small boats do not realise the importance of navigation lights. Boating with defective or non-working navigation lights can bring their vessel, and even more importantly themselves, in great danger. Not too long ago we had a near-miss in which we almost mowed down a small, unlit vessel.'

A near-miss

Ian Niblock, of the Northland Regional Council, says the two people on board the smaller vessel owe their recent lucky escape to the professionalism of the officers and crew of the cement carrier *Golden Bay*.

Shipboard equipment mounted on the cement carrier *Golden Bay* to sense smaller craft.





Image courtesy of Devco-Mangalia Heavy Industries

Delivering the Future...

AVEVA software supports the world's marine industry with solutions for the entire engineering lifecycle - from initial design through fabrication and construction, to the lifetime support of vessels.

For 40 years, AVEVA has been helping its customers face the challenges of a continually evolving business environment... offering ever more capability, productivity and flexibility, but never at the expense of long-term stability.

AVEVA's unique and proven technology is unrivalled in safeguarding its customers' data and protecting their significant investment in engineering information technology.

Don't get left behind...

Find out how AVEVA can help deliver a better future for your engineering data at: www.aveva.com or contact us via email on: future@aveva.com



See you at SMM 2008!
Hall B6 — Stand 371

‘The duo were anchored in the middle of Whangarei Harbour’s Portland Channel on a small, unlit fibreglass runabout that Golden Bay’s equipment had not registered as a radar target,’ Mr. Niblock explains.

‘The cement carrier’s crew spotted the boat at the last minute and it was only the practice of good navigation procedures onboard the cement carrier that avoided a collision between the two vessels. Too many people are placing themselves - and others - at unnecessary risk of injury, or even death, by travelling the region’s harbours without navigation lights. They are placing themselves and others at risk by ignoring one of the most fundamental rules of navigation – see and be seen.

‘Navigation lights are an essential part of a boat’s safety equipment, yet the Regional Council has been receiving an increasing number of complaints about boats navigating at night without them. Ignorance is probably to blame for the majority of these incidents.’

Seeing clearly at night

Mr Robinson says: ‘Not only are we very concerned about our own safety but also the safety of other vessels and their crew. In order to avoid deadly accidents at night, we looked for a solution that could help us to detect small boats and objects that are not detected by radar.

A solution that seemed very promising to us was thermal imaging, so when we saw it demonstrated at the Auckland Boatshow we immediately got in contact with Steve Kershaw of Absolute Marine.

‘Absolute Marine provided us with a fixed Navigator that we simply used as a hand-held so we could evaluate its effectiveness on our next voyage. When we came into the Whangarei Harbour it was in complete darkness and it became immediately obvious that thermal imaging system was a tremendous asset.’

Thermal imaging is the use of a thermal imaging camera to ‘see’ thermal energy emitted from an object. Thermal, or infrared energy, is light that is not visible to the human eye because its wavelength is too long to be detected. It is the part of the electromagnetic spectrum that is perceived as heat. Infrared allows the user to ‘see’ what the



Infrared imaging can help ships’ masters avoid collisions in areas of limited vision.

human eye cannot. Thermal imaging cameras produce images of invisible infrared or ‘heat’ radiation. Based on temperature differences between objects, thermal imaging produces a clear image.

In contrast with other technologies, such as light amplification, thermal imaging needs no light whatsoever to produce an image on which the smallest of details can be seen. Thermal imaging provides full visibility irrespective of the prevailing light level and weather conditions. It can see in total darkness, in the darkest of nights, through fog, in the far distance, through smoke and is able to detect anyone hiding in the shadows.

‘Our customer opted for a FLIR Systems Navigator Pan/ Tilt thermal imaging camera,’ explains Mr. Kershaw of Absolute Marine, the distributor of FLIR maritime products in New Zealand. ‘On Golden Bay it was easily installed just above the bridge, which gave the camera a terrific uninterrupted perspective. The FLIR camera is approximately 15m above sea level and despite it being at a distance of over 70m to the bow of the ship, its performance is quite remarkable. Its thermal images

are projected on a 20inch overhead LCD screen which is installed on the bridge.’

‘We have three people on the bridge when we enter port,’ explains Mr Robinson. ‘When entering at night the Duty Officer is responsible for the FLIR system and he monitors our progress while operating the joystick control unit which turns the Navigator Pan/Tilt in the desired direction. The Navigator Pan/Tilt is a great tool. It produces a crisp image in total darkness on which the smallest of details can be seen. A small vessel is easily detected at a range of practically 1000m, which gives us enough time to change the course of the ship if necessary. Thanks to its ability to pan 360° horizontally and tilt +/-60° vertically, we can scan either side of the ship and verify our exact position against channel markers. It greatly improves our situational awareness.

‘It definitely complements our existing radar. When we have a blip on our radar screen, we can now see what the blip really means.

‘We cannot run the risk to bring our vessel, its cargo and crew in danger regardless of how others are behaving. Thermal imaging is helping us do this,’ concludes Mr Robinson. **NA**



Advanced solutions in electric power and propulsion systems for LNG carriers

As a world leader in power conversion engineering, we develop and provide flexible state-of-the-art solutions suitable for the most demanding applications.

Converteam has supplied fully integrated electric power & propulsion and automation systems for British Emerald, the first in a series of six 155,000 m³ LNG carriers. Each vessel is fitted with two main propulsion motors rated at 14.8MW – 720 rpm each.

MOL, Knutsen OAS Shipping, TMT and BG Group have also selected Converteam's electric power and propulsion systems.

powering your business into the future

CONVERTEAM
THE POWER CONVERSION COMPANY

www.converteam.com

Damage stability rules beefed up

IMO calls for increased damage stability of cargo and passenger vessels

The International Maritime Organization (IMO) has resolved to step up protection of new cargo and passenger vessels in the case of accident. All new vessels built from 1 January 2009 will be governed by new technical design regulations to ensure a higher level of stability in a damaged state.

In the recently revised SOLAS regulations, the previous concept of risk assessment has been extended. On the basis of current average statistics, IMO administrations saw themselves obliged to devise a better method of assessing the residual stability of damaged vessels. This now applies not only to cargo vessels, but also to passenger vessels.

The new regulations clearly stipulate that these vessels must have a double bottom that extends over their entire breadth. Vessel designs without a double bottom are only permitted if a comparable level of safety in the event of grounding is proven by means of additional calculations.

No exceptions apply to lubricating oil circulation tanks arranged under the main engine. With regard to their arrangement, it is important that a minimum distance of 500mm to the keel line of the vessel is always ensured. The specification in the

new SOLAS 2009 regulations has been agreed in order to prevent lubricating oils from escaping or the engine from sucking up seawater in the event of a vessel striking the ground. The latter inevitably results in the main engine failing. Without engine power, a vessel is rendered disabled in the case of average, thus leaving it abandoned to the wind and waves. If an accident happens near to the coast, total loss can quickly occur along with serious consequences for the marine environment.

The decisive factor in implementing the new stricter SOLAS regulations is the date of laying down the keel. All vessels laid down after 1 January 2009 must comply with these requirements. For cargo and passenger vessels now in planning, an extensive recalculation of the damage stability is now necessary. In addition, special onboard information for damage control is being called for, which will be documented in a damage-control plan for the crew. A new aspect in the IMO requirements is that this onboard documentation is also to be introduced for tankers.

IMO committees have been working since 2005 on improving the technical protective measures with regard to

damage stability. In particular on the recommendation of the flag states, the decision came about to ensure better protection.

The rules of SOLAS 2009 are being augmented with 'Explanatory Notes' containing technical explanations. IMO finalised the content in July; a formal decision on the "Explanatory Notes" will be taken at the meeting of the Maritime Safety Committee in November.

The International Convention for the Safety of Life at Sea (SOLAS) is a UN convention governing ship safety. The convention creates international minimum standards on merchant vessels and stipulates binding rules governing all conceivable preventive measures. SOLAS contains technical regulations that prescribe safety-enhancing structural measures and equipment for assuring damage stability and the general improvement of ship safety.

The stability of a ship corresponds to the residual safety in the case of average. Stability is not only calculated on the basis of the hull construction, but also applies to varying loads. The stability assessment is more difficult in complex vessel designs and variable service conditions. **NA**

FROM LEFT TO RIGHT
DAMEN CONTAINER FEEDER 800
DAMEN COMBI FREIGHTER 11000

DAMEN



DAMEN SHIPYARDS GORINCHEM

Member of the DAMEN SHIPYARDS GROUP



Industrieterrein Avelingen West 20
4202 MS Gorinchem

P.O. Box 1
4200 AA Gorinchem
The Netherlands

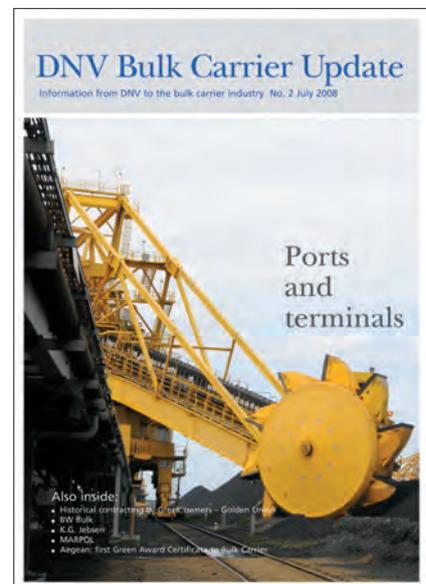
phone +31 (0)183 63 99 11
fax +31 (0)183 63 21 89

info@damen.nl
www.damen.nl

Building the requirements for the future

DNV Updates – information from DNV to the shipping industry

See these publications on www.dnv.com/resources/publications.
Each publication is issued three times a year.

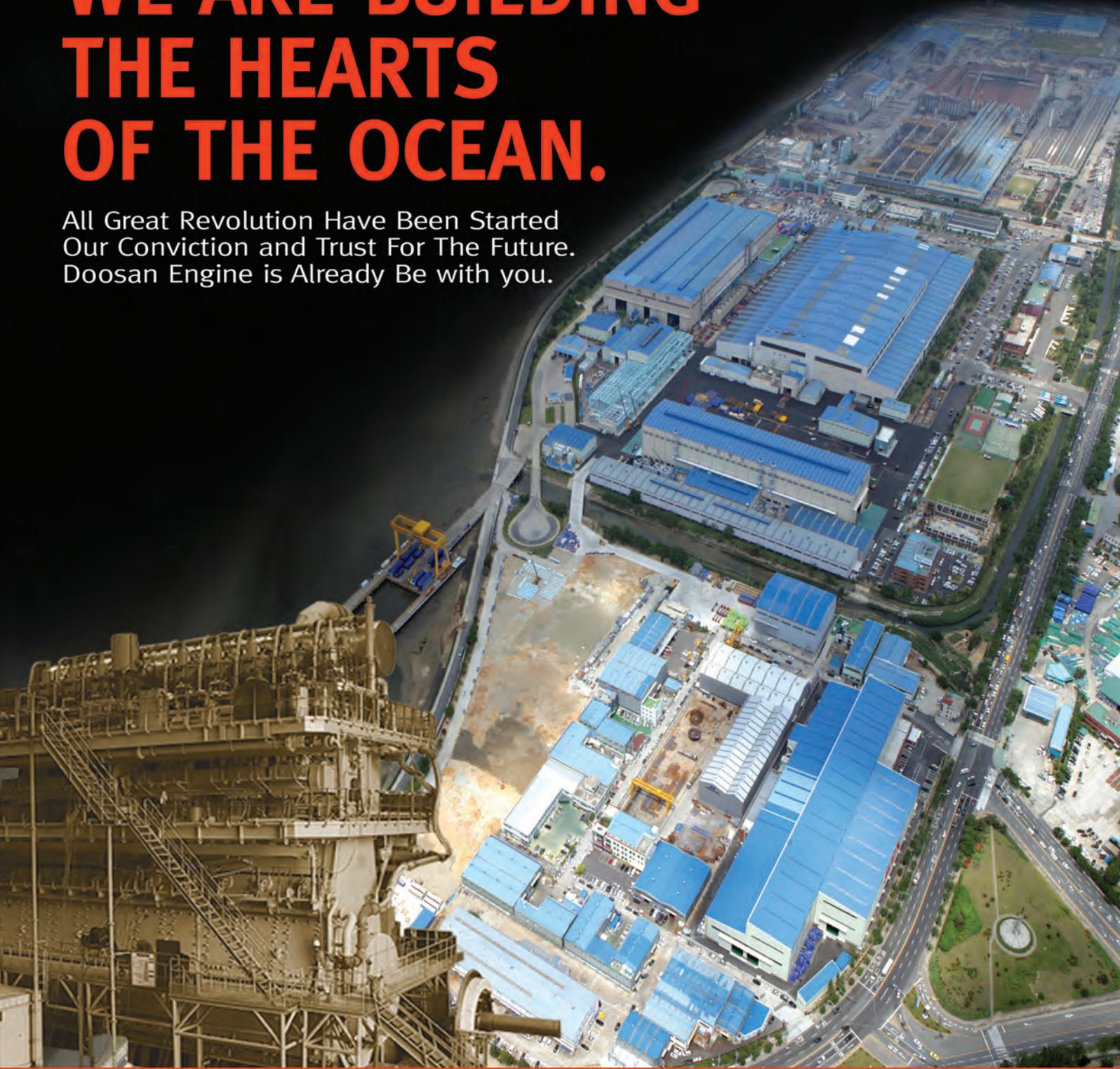


No. 1 Engine in the world

Doosan Engine's core line of business includes the production and supply of low and medium speed marine diesel engines operating between 700 to 100,000 bhp, as well as the construction and maintenance of diesel power plants up to 200MW in capacity. With an annual production capacity of 14million bhp, Doosan Engine has the second largest production capacity and market share in the world.

WE ARE BUILDING THE HEARTS OF THE OCEAN.

All Great Revolution Have Been Started
Our Conviction and Trust For The Future.
Doosan Engine is Already Be with you.



Doosan Engine

HEAD OFFICE

69-3, Sinchon-Dong, Changwon-City, Gyeongnam, Korea 641-370
Phone + 82-55-260-6000 Fax +82-55-283-2233 www.doosanengine.com

BV focus on access safety

Bureau Veritas has developed new guidelines intended to reduce the number of accidents to seafarers and surveyors during the inspection and maintenance of ship structures.

BV's new 'Guidelines for the Design of the Means of Access for Inspection, Maintenance and Operation of Commercial Ships' will help shipyards to design in safety at the most detailed level, the classification society has said.

They provide what BV said were design requirements and best practice advice for safe user-centred design of the means of access onboard ships of any type.

Aimed at shipyards and designers, they had the potential to reduce the incidence of common slips, trips and falls during access from the current level of more than 40% of non-fatal shipboard injuries, to almost nothing.

Bernard Anne, managing director of BV's marine division, said: 'Our experience in the offshore industry has shown that a detailed focus on user-centred design of the details of access means, such as ladders and hatchways, can reduce common accidents to almost zero. We want to spread that benefit to merchant ships. We know we can ensure owners get robust, fit for purpose ships through our rules, now we want to extend those rules to focus on detailed elements which will make the ships safer for crew members and surveyors. These guidelines are the first step in that process.'

BV's new guidelines are based on research that questioned actual users and the application of ergonomic principles to design. The research identified the most risky means of access as ladders, openings (vertical and horizontal) and elevated passageways. The main causes of accidents were found to be lack of handles, location of openings, lack of space for surveying or working safely (on platforms or around ladders for instance), lack of space for using the means of access with comfort and confidence and poor marking of hazards.

'These are all issues which can be addressed through a well thought out design which focuses on what the user needs, rather than what is easiest to build,'

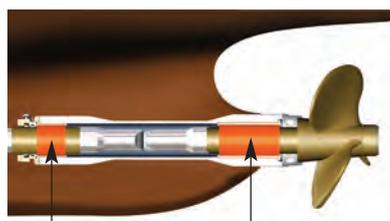
said Mr Anne. 'The MCA estimates that 23% of the insurance payouts for shipping accidents are due to slips, trips and falls. That's a lot of hurt seafarers, a lot of time lost and money wasted. We will move through the ship design and operation and examine each area in detail, applying

the best techniques from every industry we work in to help seafarers to have a safer environment. These guidelines will be incorporated into our Rules, and we shall shortly be producing the next set, focused on safe design for the machinery spaces.' **NA**

Leave These Behind

Visit us at
Hall A4 Stand
A4.157

Eliminate stern tube oil pollution by converting from oil to seawater lubricated Thordon propeller shaft bearings.



- Proven Performance
- Zero Risk of Stern Tube Oil Pollution
- Reduced Operating Costs (No AFT seal)
- COMPAC Seawater Lubricated Propeller Shaft Bearing System

**15 YEAR
BEARING GUARANTEE***

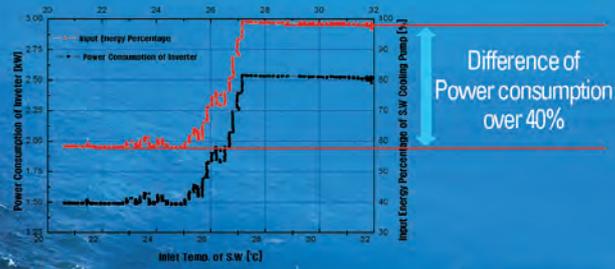
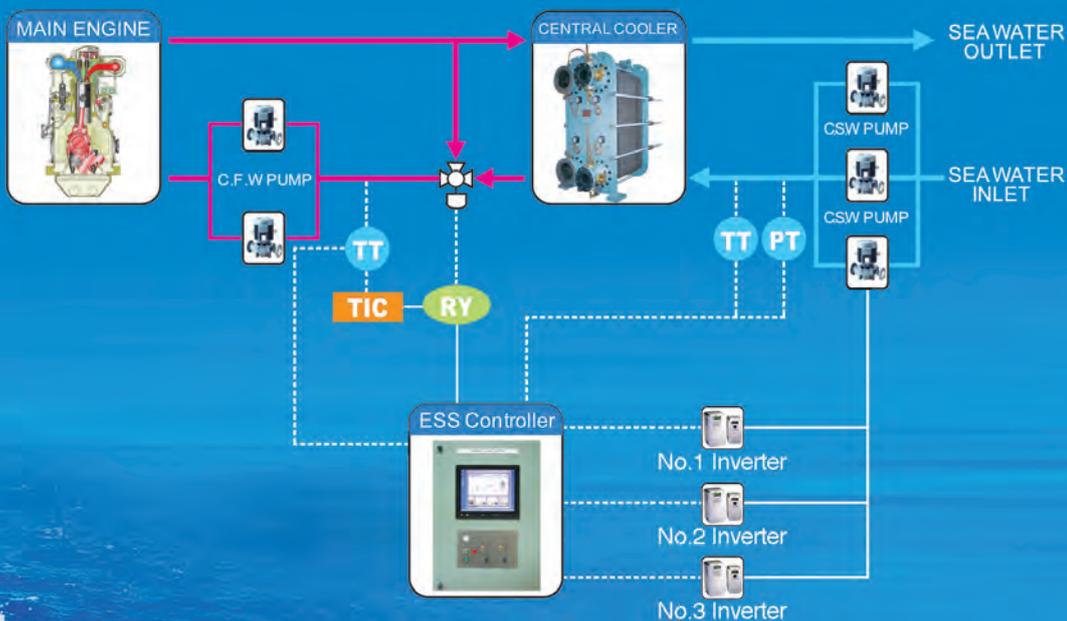
*Certain conditions may apply. Please contact Thordon Bearings Inc. for further information.

THORDON

GOOD FOR THE SEA. GOOD FOR BUSINESS. GOOD FOR LIFE.

www.ThordonBearings.com

E.S.S Energy Saving System for Central Cooling System



You can cut fuel cost off over 40%

E.S.S monitors the temperature of sea water(S.W), low temperature(L.T) fresh water and the position of 3-way valve and controls the speed of central cooling sea water pump to optimize its capacity, so that it saves fuel consumption over 40% for operating central cooling system.

- Features**
- + High energy saving rate (More than 40%)
 - + Continuous operation by variable pump speed control
 - + Reduction in the start current
 - + Automatic flushing operation in energy saving mode to ensure stability of system



Vacuum Condenser



Plate Heat Exchanger



Air Cooler for ME



Fresh Water Generator (Shell & Tube Type)



Fresh Water Generator (Plate Type)



Tank Cleaning Heater



Tubular Type Heat Exchanger

DongHwa Entec
Heat Exchanger Solutions

Peril in store

Long-standing concern regarding the risks to seafarers working in enclosed or confined spaces onboard ships has been heightened following a series of high profile incidents.

In September 2007 three seamen died inside the chain locker onboard the emergency response vessel *Viking Islay*, in the North Sea. Then, in January 2008, two seamen were asphyxiated in a store onboard the cargoship *Sava Lake*, then berthed at Dover's Western Docks. Again, in June 2008 one seaman died at the port of Southampton, after entering an almost empty ballast tank onboard the passenger ship *Saga Rose*.

In July 2008, the UK's Marine Accident Investigation Board (MAIB) issued a Safety Bulletin with recommendations in response to these incidents, all of which are currently under investigation. Taking an international perspective, MAIB reported that 18 administrations have reported 120 fatalities and 123 injuries involving entry into enclosed spaces since 1991.

UK south coast legal specialist Lester Aldridge (LA) has now been in touch to draw attention to the fact that it is imperative to identify the legal obligations of shipowners, manager and industry bodies, to prevent injuries or fatalities from occurring in the first place.

The Merchant Shipping (Entry into Dangerous Spaces) Regulations 1988 define a dangerous space as an enclosed or confined space that may be exposed to vapours or is depleted of oxygen, and would risk the health and safety of crew. This includes cargo holds,



Viking Islay. In September 2007 three seamen died inside the chain locker onboard the emergency response vessel, in the North Sea.

pump rooms, ballast tanks, cofferdams, bunker tanks and fresh water tanks. The Regulations impose the following duties:

- Employers to ensure that procedures for entering and working in dangerous spaces are laid down, and on the Master to ensure those procedures are observed;
 - Dangerous spaces to be identified and the entrance kept closed wherever possible;
 - The Master of tankers or gas carriers of 500tonnes and over or any other ship of 1000tonnes or over should conduct regular drills simulating the rescue of a crew member from a dangerous space;
 - Employers should ensure that an oxygen meter or other testing devices are available and in good working order.
- The penalties for breach of these

Regulations vary depending on the severity. Minor breaches, for example failing to conduct drills, might result in a £500 fine. Failing to ensure safe procedures are in place and enforce those procedures may result in a fine of £2500 on summary conviction and/or imprisonment for a term of two years. It is a defence to show all reasonable precautions were taken and due diligence exercised to avoid the breach occurring.

These provisions were reflected in the IMO Recommendations for Entering Enclosed Spaced Aboard Ships which were adopted in 1997. The recommendations further outline preliminary assessment procedures, ensuring proper authorisation of those entering enclosed spaces and specifying the readings to be obtained prior to entry.

Shipowners, employers and managers should take heed of the relevant regulations and ensure proper procedures are in place. Masters should adopt good practices in terms of identifying dangerous spaces and guaranteeing those crew with authorised access have the proper experience, training and equipment. **NA**



...marine flooring solutions

Specially developed for the marine sector by commercial flooring specialists Polyflor Ltd - Voyager flooring is certified by Bureau Veritas as fully meeting Marine Equipment Directive 96/98 EC, indicating compliance with all required regulations and standards for the marine environment.

Voyager Maritime features 16 realistic contemporary plank and tile designs that have

been specifically developed for front of house marine environments, including retail, leisure and general public areas where design is a prominent requirement.

Widely specified for "back of house" crew quarters, corridors, stairs and storage areas, the Voyager sheet vinyl ranges and Voyager Polysafe Stud Tile collection comprise of over 60 bright, attractive and hardwearing colour and style options.

POLYFLOR
VOYAGER
TRANSPORT FLOORING

POLYFLOR LTD. - TRANSPORT FLOORING DIVISION
PO BOX 3 RADCLIFFE NEW ROAD WHITEFIELD MANCHESTER M45 7NR UK
TEL: +44 (0)161 767 1111 FAX: +44 (0)161 767 2515
EMAIL: TRANSPORT@POLYFLOR.COM WWW.VOYAGER.POLYFLOR.COM

CleanBallast boards ship

Bremen-based shipowner Beluga Shipping awards a large order to RWO for its new ballast water treatment system, CleanBallast.

Ten heavy-lift cargo ships are to be equipped with a new compact water treatment system to protect the environment, from RWO. The German company said it was investing further in research and development of state-of-the-art water treatment systems for ships and offshore rigs.

With world trade increasing, the volume and frequency of international cargo shipping is growing as well. Along with it, marine environment protection problems are also increasing: this means the unintended 'import and export' of alien organisms due to the necessary intake of ballast water by ships in international waters and its discharge into local ecosystems.

These organisms can then multiply in an uncontrolled way and, given suitable living conditions and a lack of natural enemies, the micro-organisms threaten the indigenous biodiversity and can also result in harm to human health and ecological damage.

According to the German Federal Maritime and Hydrographic Agency (BSH), for example, the Chinese mitten crab brought in by discharged ballast water has so far caused damage worth more than € 85



Multi-purpose heavy-lift cargo ship of Beluga Shipping. The CleanBallast system will be installed aboard Beluga ships of a similar class.

million in German waters alone.

Bremen-based Beluga Shipping, which specialises in project and heavy-lift cargo ships, is now using the ballast water know-how and product of RWO. The supplier's CleanBallast product is portrayed a compact and modular system for treating ballast water, which after a research and development, has been brought to the market to cover all ballast water capacities and qualities. The CleanBallast process technology works free of chemical additives

and its very low loss of pressure considerably reduces the energy consumption of the ballast water pumps compared with other systems, according to the supplier.

The prefiltration and special inline disinfection system EctoSys achieves treatment of all water qualities to be found around the world, even including harbour waters with high sediment content.

'Four top arguments back our decision and this investment of millions,' says Niels Stolberg, shareholder and managing director of Beluga Shipping. 'RWO's CleanBallast works without the addition of chemicals, which we support in the sense of sustainability. The system performed excellently in the land-based homologation in summer 2007 – and in fact even better than the International Maritime Organization (IMO) prescribes. Due to the compact and process technology conception we also save important space. And finally, RWO's competence and our many years of good experience with their oily water separators that are installed aboard all Beluga ships convinced us.'

It was not until February 2004 that the International Convention for the Control and Management of Ships' Ballast Water and Sediments was adopted during a diplomatic conference of the International Maritime Organization (IMO). This provides for ballast water, which is essential for the stabilisation of ships when carrying no cargo, being treated onboard in an environmentally sound way before it is discharged. To prevent further transfers of organisms between sea areas as soon as possible, the Convention demands its implementation from 2010, depending on the keel-laying and ballast water requirement, but at the latest by 2016. Ten heavy-lift cargo ships of the total 57 vessels of the Beluga fleet are to be equipped with the CleanBallast system by as early as between 2008 and 2010. To date, RWO, a subsidiary of Veolia Water Solutions & Technologies, has invested several million Euros in R&D for its CleanBallast innovation product. **NA**

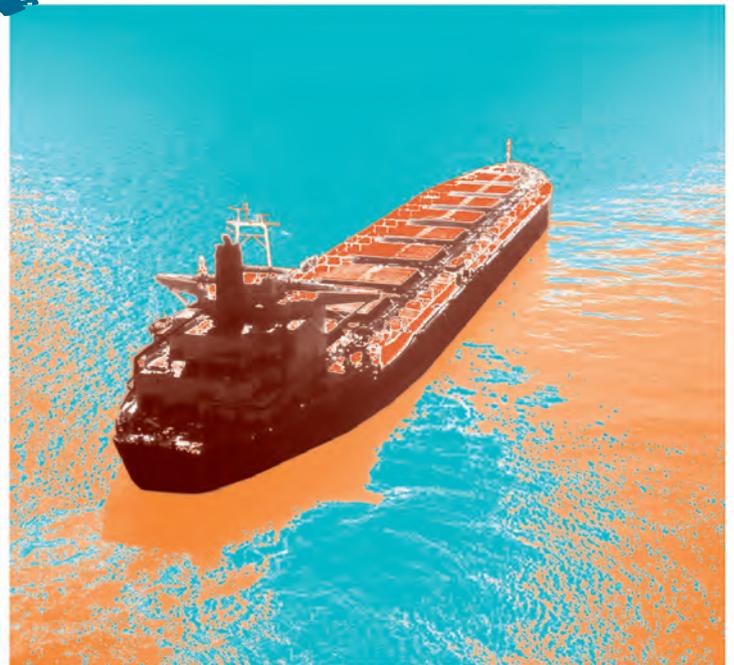
The CleanBallast system for ballast water treatment in the land-based field test.



See you at SMM 2008
Stand No. 150, Hall B4



BULKERS



First Class bulk carriers: a new perspective



At Germanischer Lloyd we focus on detailed structural solutions for bulk carriers. Our smart solutions ensure our customers can operate fit-for-purpose vessels. That's what we call a new perspective on bulk carriers. Why not contact us to find out how you can benefit?

Germanischer Lloyd Aktiengesellschaft
Vorsetzen 35 · 20459 Hamburg, Germany
Phone +49 40 36149-0 · Fax +49 40 36149-200
headoffice@gl-group.com · www.gl-group.com





➔ Shipbuilding Industry

“Realize your Asian business dream!”



➔ Steel Industry



➔ Development Plan Map For Hadong District



▶▶ Hadong District of Gwangyang Bay Area Free Economic Zone[GFEZ]

Come to the Hadong District of **GFEZ**, the optimal place for steel, shipbuilding and manufacturing industries in Northeast Asia.



- Located close to the world largest steel and magnesium plate manufacturer POSCO
⇒ Recently established plate factory with annual production capacity of 2 million tons (to be completed by Jul. 2010)
- Adjacent to Yeosu Petrochemical Complex which is the largest in Korea and Hadong Steam Power Plant
- Various tax benefits and incentives
- Unlimited potential for further developments associated with the 2012 International Exposition in Yeosu

GFEZ Gwangyang Bay Area Free Economic Zone Authority

70 Chilseong-ri, Gwangyang-eup, Gwangyang City, Jeollanam-do, Korea 545-808
Tel. +82-61-760-5540, Fax +82-61-760-5711 www.gfez.go.kr

Congress split on invasive species

Two Democrat Senate committee chairmen are at loggerheads over the first Federal clean-up standards for the large oceangoing ships whose ballast water has been corrupted by invasive species.

Lobby group Circle of Blue reported that Senator Barbara Boxer., who chairs the Environment and Public Works Committee is at odds with Senator Daniel Inouye, chairman of the Commerce, Science and Transportation Committee, with the former blocking a ballast water clean-up bill passed by Mr Inouye's committee, over concerns it would initiate stronger standards in California and a handful of other states.

Mr Inouye is attributed as believing that a single national standard is needed. Ms Boxer also insists the clean-up programme be governed in part by the Clean Water Act — which would give environmental groups the right to sue to enforce it — while Mr Inouye's bill keeps the programme in the hands of the US Coast Guard.

Similar clean-up legislation has already passed the House, but advocates on both sides are pessimistic about breaking the impasse before Congress finishes work for the year.

There is agreement that the current method for dealing with aquatic invasive species is inadequate. Vessels overseen by the US Coast Guard must exchange their ballast water 200 miles from US

shores. However, the programme is not closely enforced, and not all invasive species are eliminated, since some just sink to the bottom of the tank and do not wash out.

Under Senate procedures, opposition from a single senator is enough to stop

a bill. Ms Boxer said in an interview that she still hoped for a deal. But Mr Inouye opposes letting states set standards that are stricter than federal rules.

Companies working on ballast water treatment insist that they need a uniform standard to build towards. **NA**

Maryland initiative

The University of Maryland Centre for Environmental Science, the Maryland Port Administration and several other Maryland agencies have joined forces to launch the Maritime Environmental Resource Centre (MERC), a new research and testing project that aims to help prevent the spread of harmful aquatic invasive species via ship ballast water.

There are more than 150 known invasive species in the Chesapeake, most of which are believed to have been introduced through ballast water. The primary focus of MERC will be to test the effectiveness of systems designed to treat ballast water safely before it is discharged into the Bay and other local waterways. In the future, MERC may also focus on other maritime environmental issues, such as hull fouling, air emissions and gray and oily water treatments.

Testing will be performed aboard a working cargo ship donated by the US Maritime Administration. With this mobile testing platform, MERC will be able to review the effects of temperature and salinity changes on various treatment systems.

TRAFOTEK SHIP TRANSFORMERS – REFERENCES SAILING ON ALL SEAS



- transformers in the power range 1 kVA – 8 MVA
- 6, 12, 18, 24 pulse solutions
- cooling methods AN, AF, AFWF
- according to various standards and rules of classification societies as LRS, DNV, BV, ABS, GL, Russian MRS, CCS and RINA

TRAFOTEK

Trafotek Oy, Kaarinantie 700
FI-20540 TURKU, FINLAND
Tel. +358 2 275 9200, fax +358 2 275 9210
www.trafotek.fi e-mail: info@trafotek.fi

I N D U C T I V E C O M P O N E N T S

Beyond the mist lies clarity

One pollutant often overlooked is the nasty oil mist generated during engine crankcase ventilation. One manufacturer, at least, has come up with a solution, writes Samantha Fisk.

The shipping industry has had no choice but to engage with growing pressure from environmental non-governmental organisations and international regulatory authorities alike to reduce emissions, whether it is the exhaust gases spewing from engines, or the oil in the bilge water being released in to the sea.

Some industry bodies, like Intertanko, can rightly claim to have taken the bull by the horns, in lobbying for the wider use of low sulphur fuels, in the face of wider industry scepticism over their availability.

An often overlooked contributor to pollution is the oil-saturated gas released into the atmosphere coming from the stack. Oil pollution in this form is a hazard not only for the environment in general; it is also not pleasant for those travelling on a ship, as it can end up on skin and personal belongings, as well as causing unsightly marks down the stack itself

and increasing the amount of cleaning required. Such pollution is also a health risk for those working in the engine room, as they are breathing in oil mist.

The gas itself is generated when the crankcase gas encompasses blow-by gases and soot from the engine's combustion chamber - this then mixing with oil mist from the lubrication oil.

In some ways the type of pollution that comes from the stack creates a worrying hazard, as it is not just one cloud that is getting produced - but two. One cloud is visible to the human eye - the exhaust gas producing SOx and NOx; but another, secondary and invisible cloud is also produced, and it is this cloud that contains particles of diesel oil.

Shipstack story

It is estimated that 8000 tonnes of oil per year are produced in this way from the ship stack across the shipping industry;

this is pure oil in the form of oil-saturated gas. It is this type of pollution that has not been picked up by Marine Environment Protection Agency (MEPC) regulations.

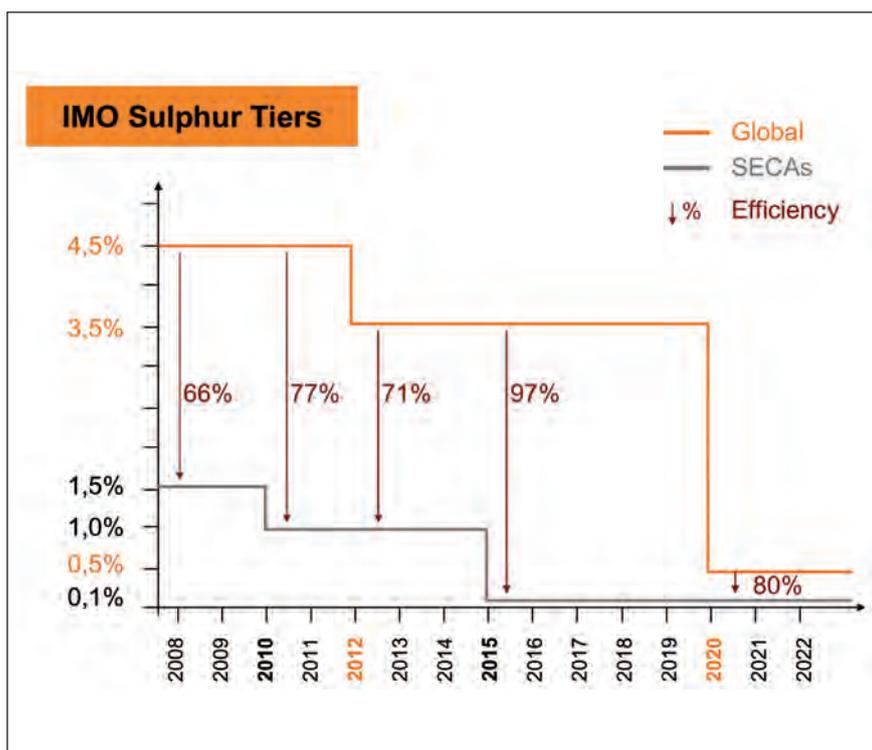
Regulations from the MEPC state that there will need to be a 78% drop in Tier II and 97% drop in Tier III SOx pollution by 2016. These limits will need to be met by either using new fuel, which meets the specified maximum sulphur content levels; or by using high sulphur fuels but scrubbing the exhaust gases to reduce the SOx emission levels. However, regulations for SOx allow for an alternate system to be used in the reduction of these critical emissions.

Wärtsilä says it will use a closed fresh water system dosed with added NaOH. This system is 100% effective in all sea areas irrespective of salinity levels. The system has a lower pumping capacity so save on ships' power. Overboard discharge is also less.

For NOx emissions, IMO states that: 'Tier I represents the 17g/kW standard stipulated in the existing Annex VI., which Wärtsilä is already meeting. At Tier II: 'Tier II, would see NOx emission levels for new engines installed from 1 January 2011 reduced by a figure of between 15.5%-21.8%, based on the engine's operating parameters', Wärtsilä is meeting this tier with some of its engines, but work is being carried out on the rest. Tier III: 'concerned the introduction of a geographically-based approach that calls for significant reductions in designated Emission Control Areas (ECAs).

Global framework

This would aid in the provision of a global framework for reducing NOx emissions in



Present and proposed marine air emission abatement strategies involve steps to reduce harmful ingredients in exhaust gases like NOx, SOx, CO₂, PM and VOC.

INDUSTRIE COMETTO SYT
SHIPYARD TRANSPORTERS



INDUSTRIE COMETTO S.p.A.

Via Cuneo, 20 - 12011 Borgo San Dalmazzo - CUNEO (Italy)
Tel. +39 0171 263300 - Fax +39 0171 266335
e-mail: cometto@comettoind.com - web site: www.comettoind.com



partners-o.it

See the G&O products at SMM Hall B1 stand 110

*Do you have Bad Vibrations?
Find the solution at www.g-o.dk*

G&O

SHIP & OFFSHORE

Gertsen & Olufsen in Denmark is a major developer and supplier of specialised products to the international marine market, e.g. the **G&O Vibration Compensator**, which is eliminating unwanted vibrations and improving the performance and the comfort of ships and power plants. More than 200 G&O Vibration Compensators have been successfully installed.



Gertsen & Olufsen AS

Savsvinget 4 · DK 2970 Hørsholm · Denmark · Tel: +45 45 76 36 00
E-mail: info@g-o.dk · www.g-o.dk



Other products from Gertsen & Olufsen are the **G&O Microbac Bioreactor**, which treats all types of wastewater, the **G&O Survey Water Monitor**, which detects water in all types of oil, and the **G&O SafePage 3000** – a wireless paging, information and Dead Man alarm system.

More information on G&O products is available at www.g-o.dk

coastal areas with the highest intensity of problems, but enable operation at the Tier

II level outside the designated Emission Control Areas.

In addition, it would offer significant environment and health protection as well as avoid the hike in fuel consumption related to less advanced NOx reduction technologies?

To meet this level additional measures would be needed, which would likely see the introduction of the Selective Catalytic Reduction (SCR) technology; a range of which will be able to be used on Wärtsilä engines.

Filters are a common solution to treat oil mist but, where initially they run efficiently, over time these filters get clogged and so need a higher level of maintenance to keep them running and also not affecting any other systems.

PureVent removes oil mist and other particles by high speed centrifugal separation.

The solution

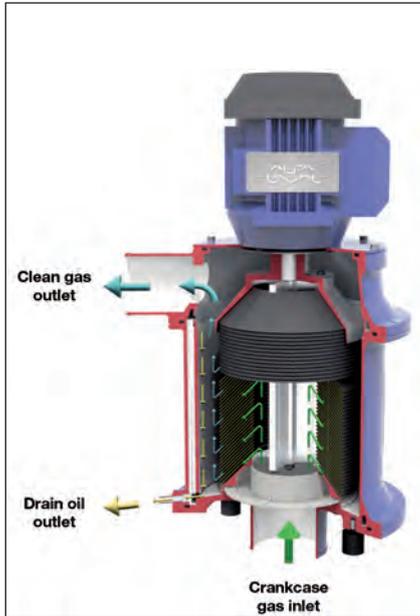
Alfa Laval has developed a new oil mist separator – PureVent; one of which is currently in use on *Freedom of the Seas*. To date Alfa Laval has sold 350 oil mist separators to Wärtsilä.

The new oil mist separator works by removing the oil particles from the engine crankcase ventilation gas on diesel and gas engines.

Inside the oil mist separator cylinder there is a spinning disc stack, with 0.4mm spacing between each disc.

When installed on a medium sized diesel engine this oil mist separator can remove 98%-99.9% of oil from crankcase gases. The recovered oil can then be put back into the sump and re-used; also saving 2% on a ships oil use.

The company says that the system has originated from systems that are already being used in power plants to do the same job, therefore cutting emissions. **NA**



Join with Success

Call +47 64 90 79 12 or visit www.tts-marine.com

- Shipyard production systems • Heavy load handling • Handling systems for industrial fabrication
- Container terminal technology for horizontal transport • RoRo terminal transport and handling systems
- Ship to shore transit systems • Automatic mooring units • Aftersales service and support





Visit us at SMM
Hall B5, Stand 231

Intershield®300

Abrasion resistant aluminium pure epoxy



Need to comply with the IMO PSPC?

“ For almost 20 years, Intershield®300 has successfully enhanced shipyard productivity and delivered long term corrosion protection. ”

Intershield®300 allows you to do exactly that. A light coloured, abrasion resistant aluminium pure epoxy coating with a proven ballast tank track record on over 800 vessels worldwide, Intershield®300 delivers long term asset protection, maximised operating efficiency, control of through life maintenance costs and optimised return on investment.

Intershield®300 meets and exceeds all requirements of the IMO MSC.215(82) Performance Standard for Protective Coatings.

To find out more visit:
www.international-marine.com

* and International® and all product names mentioned in this publication are trademarks of, or licensed to, Akzo Nobel. © Akzo Nobel, 2007

Livestock special for Siba Ships

Italy's Siba Ships has placed a US\$250 million order for two state of the art livestock carriers to be built at Croatia's Uljanik yard.

Siba Ships has ordered two new specialised livestock carriers, to be capable of carrying 18,000 cattle or 75,000 sheep. Aimed at the thriving Australian livestock export trade, the vessels will enter service in 2011.

Mauro Balzarini, chairman of Siba Ships, said: 'Our most modern vessel, *Becrux*, built in Uljanik in 2002, was the world's first new construction large livestock carrier. It has significantly raised standards in livestock carriage and after almost 80 successful voyages we now know that we can deliver livestock to their destinations happier, healthier and heavier than when they boarded. So we have ordered two broadly similar ships, with some improvements based on our experience in service. These vessels, along with the two ultra modern smaller livestock carriers which we hope to take delivery of soon from Labroy, will bring a very significant amount of very high quality new capacity into the livestock trades. In total we have invested over \$320m in new livestock vessels. That benefits the animals, the producers, the shippers and the receivers, and we see significant and increasing demand for this standard of livestock carriage, which exceeds governmental standards and is totally focused on animal welfare. Using these vessels we know that the animals will arrive in better condition than when



Becrux, SIBA Ships modern livestock carrier built in Uljanik.

they boarded, which makes both welfare and commercial good sense.'

The new Uljanik vessels will be 180 metres long overall, and will feature stronger ventilation and better air distribution than previous ships, better fodder distribution, higher redundancy in livestock services.

Built to RINA class they will have Green Star voluntary environment certification and also Green Passport.

The vessels will be propelled by one MAN B&W 7S50MC-C Engine, developing a nominal maximum continuous rating of 11,620kW at 127revs/min, controlled by an electronic governor, to deliver a service speed of 19.8knots.

SIBA currently operates three livestock carriers, one tanker and 14 Panamax, Kamsarmax and handy bulkers and has a further 15 bulk newbuildings for delivery between now and 2011. These



SIBA Ships \$125 million livestock carrier to be built at Croatia's Uljanik yard. It will carry 18,000 cattle or 75,000 sheep in comfort.



Mauro Balzarini, chairman of SIBA Ships.

include post Panamax, Kamsarmax, and handysize tonnage either owned or on long term charter. **NA**

New Jumbo takes to the sea

Jumbo's latest newbuilding, DP2 heavylift vessel, *Fairplayer*, completed her sea trials on the Black Sea in early August 2008.

Jumbo's new heavylift ship, built at the Galati yard, Romania, performed very well during the trials, according to the owner, and was due to be handed over to Jumbo Shipping by the end of August. In early September, *Fairplayer* was expected in

her homeport of Rotterdam.

From the outside, *Fairplayer* does not differ much from her sister ship Jumbo Javelin, at 144.8m long and 26.84m wide, and providing 3,100m² of heavy duty deck space. At a draught of 8.1m, her deadweight

capacity is 12,650tonnes and her service speed is 16.5knots. On the inside, however, minor changes have been made, particularly with respect to improving the vessel's electrical system.

In mid-November this year, the maiden

SMM - Hamburg
Sept. 23rd-26th, 2008
Hall A2/Stand A2.143



ALLMARINE® Pump Series: Recommended by leading chiefs

One source: Fire-fighting, Anti-heeling and all Engine Room pumps.

Designed for lowest Total Cost of Ownership (TCO).

German-quality pump production.

International sales and service network.

ALLMARINE® Pump Series offers the following pumps...and more:

- Lubricating oil
- Hydraulic
- Oil burner
- Fresh and sea water cooling
- Trimming
- Ballast
- Boiler feed
- General service
- Fire-fighting

ALLWEILER AG
P.O. Box 11 40
78301 Radolfzell • Germany
Tel. +49 (77 32) 86-0
Fax +49 (77 32) 86-436
E-mail: service@allweiler.de
www.allweiler.com

ALLWEILER 
A Colfax Business Unit

ELICHE RADICE

*Propellers, nozzles and complete shaft lines
for all professional uses*



 ELICHE RADICE SPA

Exhibitors at next Hamburg SMM
23-26 September 2008 - Hall A4 stand 156

 RINA
www.elicheradice.com

voyage of Jumbo's new giant will comprise the shipment of very large equipment from the Mediterranean to the US Gulf. *Fairplayer* will be deployed in both shipping and offshore installation projects using her DP2 capability.

As the third of a series of four, J-class heavylift vessels, she will be outfitted at the Huisman yard in Schiedam with two 900tonnes mast cranes with a combined lifting capacity of 1800tonnes.

DP2 capability is a necessity for the ship to perform installation of subsea structures



The J-type heavylift vessel *Jumbo Javelin*.

/mooring systems, giving the vessel the flexibility to move quickly between spots in one location and the stability to stay on spot for the installation of a structure. Two of the four J-type vessels are supplied with the DP2 system. All four have two cranes with lifting capacity of 900tonnes, capable of 1800tonnes lift in combination.

Sister vessel *Jumbo Jubilee* is being built at the same yard. She is expected to be launched by early summer 2008 for entering into service by early 2009. **NA**

Subsea 7 in latest launch

Specialised diving support vessel, *Seven Atlantic*, was launched at the IHC Merwede yard in Hardinxveld Giessendam, The Netherlands in mid-July.

S*even Atlantic*, the latest sophisticated dive support vessel for leading offshore engineering and construction company Subsea 7, is heading towards delivery.

Designed by Merwede Shipyard in close liaison with Subsea 7 and the dive spread manufacturer, she is a fully dynamically positioned diving support/offshore construction vessel, suitable for worldwide operations.

The builder said that introduction of this DSV to the market would provide Subsea 7 with one of the most versatile and advanced diving vessels currently available.

At 141.55m long, the 7815dwt vessel has a moulded breadth of 26m and a design draught of 7m. On delivery, she will be able to accommodate 150 persons.

The vessel has been built to Lloyd's Register



Seven Atlantic - built to DP3 standards.

class. She has been designed for saturation and air diving support work. The integrated saturated diving system is accommodated in the midships of the vessel and is suitable for a total capacity of 24 divers - eight diving teams, each consisting of three divers. The dive system is designed for operations in water depths of up to 350m.

Twin air dive stations, plus twin observation class ROV deployment system are integrated in the vessel. In addition the vessel has an extensive scale squeeze system for well treatment and will be capable of carrying a 3000tonne carousel, work class ROVs and a 12m long air diving daughter craft on the aft deck. A clear and useful deck area of 1200m² and a 120tonne crane is provided.

The ship exceeds all current safety standards due to the fact the layout of the 6.6kV integrated electric power generation and propulsion system is for DP3 with triplicate redundancy. The ship has three electro-motor driven fixed pitch propellers in azimuthing nozzles aft. Two retractable azimuthing thrusters are fitted in the forward part of the vessel; one transverse thruster is arranged in a tunnel forward. **NA**

MOL unleashes new monster

MOL launches giant 320,000dwt-plus iron ore carrier *Tubarao Maru*.

Mitsui O.S.K. Lines, Ltd. (MOL, President: Akimitsu Ashida) has launched one of the world's largest iron ore carriers, the 327,127dwt *Tubarao Maru*, built by Mitsui Engineering & Shipbuilding Co.,

Ltd. (MES), at the Chiba Works. The new vessel will sail under a long-term transport contract with Nippon Steel Corporation.

MOL became the first Japanese shipping company to operate a 300,000dwt class very

large iron ore carrier (VLOC) with the launch of *Brasil Maru* in December 2007. Five of these 340m long, 60m wide by 21.13 draught VLOCs will sail under the MOL operating by August 2009. *Tubarao Maru* is the second generation ship to bear the name; the original



Napier Turbochargers
Your comprehensive global
service provider.

**High efficiency industrial
turbochargers for medium speed,
HFO, diesel and gas engines.**

Come and see us at SMM Technology
Trade Fair, Hamburg 2008:
Hall B1 Upper floor, Booth 544

Napier Turbochargers Limited

Sales: +44 [0] 1522 516655
Facsimile: +44 [0] 1522 516669
Email: enquiry@napier-turbochargers.com

Registered in England: 016512358
© Napier Turbochargers Limited 2008

www.napier-turbochargers.com

Creativity & Challenge

Dream & Future

World Best



14,000 TEU Containership



210,000 CBM LNG Carrier



320,000 DWT Crude Oil Tanker

STX leads the world economy

With the spirit of Creativity and Challenge and the philosophy of Speedy, Technology and Customer-oriented Management, our efforts to concentrate on newbuilding of large and high value-added vessels shall satisfy the needs of our clients.

stx Shipbuilding

www.stxship.co.kr

Tubarao Maru was launched in 1966.

After the naming and rope-cutting ceremonies, *Tubarao Maru* will go into service

to transport Brazilian iron ore to Japan. She will load at the main Brazilian iron ore ports of Tubarao and Bonta De Madila, unloading at

Nippon Steel Corp's major mills (Oita, Kimitsu, etc.). She is expected to transport around 1.4 million tonnes of iron ore per year. **NA**

Christening and launch of 'E-Ship 1' in Kiel.

August saw the launch of Aurich-based wind turbine manufacturer Enercon's new *E-Ship 1*, the Lindanau GmbH-built vessel that incorporates innovative rotary sails designed to support propulsion and cut fuel emissions

The Lindanau yard is set to deliver the first-of-type 'E-Ship'. After launching, the ship was hauled to the fitting dock where the final details – fixtures, fittings and equipment – will be installed before the ship is delivered in December this year.

The name 'E-Ship' was originally only meant to identify the project but, after the amount of interest generated by the concept, the name has been adopted for the ship herself, with the ship's proprietor believing that, not only is it suggestive of Enercon itself, but that it could also conjure up visions of a ship with 'electro-technology', the environment and economy in mind, and even 'ecology, energy, earth, encouragement, endurance, experience and experiment'.

Next year, after the ship has been fully equipped and trial runs completed,



Artist's view of *E-Ship 1*.

production with renewable solutions, it is essential not to neglect the transport sector. We now have the opportunity to demonstrate that the use of sailing rotors in maritime transport can save a lot of fuel.'

Enercon will start using her to transport its turbines and components worldwide.

A large portion of the energy required to propel the ship will be supplied by four sailing rotors – large, rotating, vertical metal cylinders, that are 25m tall.

Sailing rotors use a physical phenomenon first demonstrated in an experiment carried out in 1852 by German physicist, Heinrich Gustav Magnus. A spinning cylinder in a moving air stream creates a lateral force perpendicular to the direction of the air stream which, when used on ships, propels the ship forward. The German engineer and inventor, Anton Flettner, first used this principle for ship propulsion at the beginning of the 1920s when he had an experimental vessel equipped with two large cylinder rotors at Germania shipyards in Kiel. At the time, Buckau caused a big stir and, in several trial runs, successfully proved that the rotors were efficient. However, the ship was ahead of its time and, due to the low cost of fuel, shipowners were not interested in sailing rotors so they were abandoned. Times have changed radically, though.

'The ship is an important element in our company's strategy of contributing to reducing CO₂ emission through innovative renewable energy technologies,' said Enercon founder Aloys Wobben. 'When it comes to replacing conventional energy

Rolf Rohden, project manager and chief development engineer in charge of *E-Ship* added: 'The *E-Ship* will not only be a forerunner in matters of energy efficiency but also in environmental protection. It is part of a sustainable overall concept which is not only based on reducing fuel consumption, but also places emphasis on environment-friendly treatment of exhaust gases, waste and ballast water, as well as more efficient methods of disposing of and avoiding waste. The standards we set are far more stringent than those stipulated in the current IMO and ship classification guidelines.'

The owner said that information as to exactly how much fuel can be saved and by how by how much exhaust emission will be reduced would only become apparent once the ship was in regular operation. 'This data will form the basis of optimising individual components and thus promote further technological development,' the company said.

Dirk Lindenau, managing director at Lindanau GmbH shipyards, said: 'Today, most standard ships are being built in foreign countries. On a long-term basis, if Germany wants to remain competitive as a shipbuilding country, we will have to be able to build special ships which offer innovative solutions for pressing issues such as ship operation costs and sustainability.' **NA**

TECHNICAL PARTICULARS	
<i>E-Ship 1</i>	
Length:.....	130m
Width:.....	22.5m
Draught:.....	6.9m
Tonnage:	10.500dwt/ 9.700dwt
Speed:	17.5knots
Engine power:	2 x 3,500kW
Three holds below deck, capacity:	20,580m ³
Ice class	E3
Class index:	GL 100 A5 E3
	with freeboard 2.010m NAV-OC
	IW BWM SOLAS II-2, Reg.19 EP COLL
Multi-Purpose Dry Cargo Ship	
Equipped for the carriage of containers	
Strengthened for heavy cargo	MC E3 AUT RP1-40%
	RCP 46/100

Keppel's offshore clean-up

Keppel to build GSP's eco-friendly multi-purpose vessel for S\$181 million.

Keppel Offshore & Marine Limited's wholly-owned subsidiary, Keppel Singmarine Pte Ltd, has secured a S\$181 million contract to build a multi-purpose heavylift/pipelay vessel for Romanian drilling contractor, Grup Servicii Petroliere SA (GSP).



To be classed by ABS, Keppel said the vessel would be certified with the new Environmental Safety notation, which provides stringent guidelines on preventing pollution, minimising the discharge of harmful substances and emissions, and the treatment of sewage, among other waste materials.

Well-suited for unrestricted service worldwide, GSP's new vessel is scheduled for completion in the third quarter of 2011, and will be deployed to the Black

Keppel Singmarine is experiencing a gradual increase in orders for specialised ships that are environmentally safe such as the latest vessel for GSP.

Sea and Mediterranean regions.

With accommodation for up to 290 persons, the heavylift/pipelay vessel will be equipped with three offshore cranes, the largest of which has a lifting capacity of 1800 tonnes, and it will be fitted with a 10-point mooring anchor system.

The machinery systems onboard will include three units of Voith Schneider propellers for main propulsion, five retractable azimuth thrusters for positioning, and a Class 3 certified dynamic positioning system. Some of the equipment will be supplied by the owner.

Keppel Singmarine is presently constructing two other pipelay vessels for a US customer, Global Industries. **NA**

Mega-yacht alternative from BMT

BMT Nigel Gee has announced a groundbreaking project covering a concept for a high-speed Pentamaran yacht capable of speeds of over 40knots.

Based on a 130m length platform, 'Project Véloce', uses the patented Pentamaran hull form, a derivative of the stabilised monohull concept featuring a long slender central hull, hydrodynamically optimised without the constraints of needing to be stable. Stability is then provided by two pairs of outriggers or sponsons.

Conventional stabilised monohulls typically require relatively deeply immersed and long sponsons to meet damaged stability requirements and these can incur significant resistance penalties. The Pentamaran overcomes this by having two pairs of sponsons; a very short and shallow pair aft and a forward pair clear of the static water surface. These forward sponsons only become immersed as the vessel heels, consequently stability characteristics are maintained with no resistance penalty. The Pentamaran offers a



Project Véloce: concept for a new type of mega-yacht.

wide bodied and stable platform with outstanding seakeeping characteristics whilst retaining minimum speed loss in higher sea states.

Project Véloce envisages a vessel with a beam of 30m but offering significantly more internal area than an equivalently sized monohull, 'leading to exceptional internal spaces with true flexibility in

configuration of the layout', according to BMT Nigel Gee.

The propulsion system will feature a CODOG (Combined Diesel Or Gas) plant producing approximately 44MW of installed propulsive power, delivered via waterjets offering outstanding maneuverability and acceleration. For low and medium speed operation twin 20V8000 diesels are utilised providing efficient long range operation whilst for sprint speeds a single LM2500+ pushes the speed beyond 40knots. The vessel would have a range of 3500 nautical miles at 20knots.

James Roy, yacht design manager, BMT Nigel Gee said: 'We have undertaken some US\$5 million worth of testing on numerous Pentamaran designs and the technology is now fully mature. Further development of the Project Véloce design is currently underway.' **NA**

Strong Growth predicted for FPSOs

Prediction for massive growth in the offshore production and storage sector from Douglas-Westwood.

Over the next five years some \$43 billion is likely to be spent on floating production systems as a total of 123 FPSs are installed worldwide. These are amongst the forecasts in a new report launched in Oslo today by energy analysts Douglas-Westwood.

In a speech to delegates at the Tekna Floating Production Conference in Oslo, Douglas-Westwood managing director Andrew Reid said: 'The potential for strong growth in the floating production sector is clearly apparent. There are many more floater prospects on screen for 2008-2012 than were installed over the preceding five-year period. Significant growth is on the cards for the fleets of Asia, Australasia, Latin America and Western Europe, with more moderate growth likely for Africa. North America shows a marginal decline in growth when compared to the previous five-year period; however, many projects in the Gulf of Mexico have relatively short lead times and levels of activity are therefore expected to exceed the prospects identified currently.

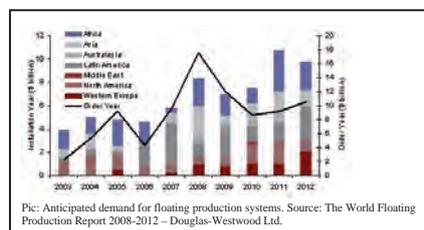
'In terms of market value, the world's three major deepwater regions – Africa, North America and Latin America – account for 63% of forecast global Capex. The relatively benign environments and shallow waters in which most of the Asian FPS prospects are located, enable cheaper FPS solutions to be adopted.

'We forecast that over the 2008-2012 period floating production, storage &

offloading systems (FPSOs) will account for the largest proportion of these installations (95 vessels), along with 11 floating production semi submersibles (FPSSs), 11 tension leg platforms (TLPs) and six spars.

'FPSOs represent by far the largest segment of the market, accounting for nearly 80% of the forecast Capex. FPSSs form the next-largest segment at 10%, TLPs take 7% and Spars 4%. **NA**

Anticipated demand for floating production systems. Source: The World Floating Production Report 2008-2012 – Douglas-Westwood Ltd.



SPURS

PROTECTS YOUR FLEET

From net and line entanglements and resulting oil seal damage

Awesome Cutting Action!



HALL 7B
STAND #362
at hamburg
sept 23-26 2008
(to see Spurs demo)

The Cutting Edge Propeller Entanglement Solution

Spurs Cutter Systems are the world's most efficient and cost effective method of eliminating propeller entanglement and are trusted by U.S. Navy and commercial fleets worldwide. Spurs instantly cut lines and nets and prevent unscheduled dry-docking due to aft seal damage.

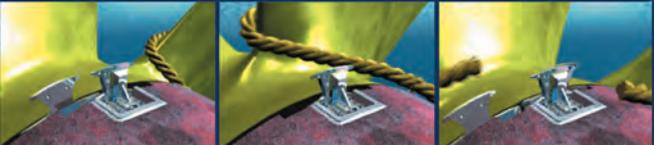
Environmental Challenge

Don't take chance!!
Avoid expensive fines and downtime from resulting oil leakage due to line and net intrusion into aft oil seals (as shown here).



"Oil Leak"

"Damaged Seal"



All size cutters are in stock ready for immediate shipment and installation at your next dry docking.

For more information, or to request a free cd-rom,
Phone (954) 463-2707, Fax (954) 525-0239
Spurs Marine 201 SW 33rd Street FT. Lauderdale, FL 33315
visit us at: www.spursmarine.com, email: spurs@spursmarine.com



ABS
THE APPROVAL PROGRAM
Environmentally Correct
SPURS
LINE & NET CUTTER
Protecting the Shipping Industry

'Ultimate' loader from Coeclerici

Coeclerici Logistics believes the design of its 'ultimate generation,' self-propelled transshipment vessel will establish the company as the clear global leader in offshore logistics. A report by Michael King.

Coeclerici Logistics, which is part of Italian trading group and supply chain behemoth Coeclerici Group, says that the flexible nature of its new offshore transshipment vessel design has raised the bar for offshore logistics providers.

'It's the ultimate generation of offshore transshippers capable of satisfying all the requirements of the market,' said Captain Giordano Scotto d'Aniello, business development manager of Coeclerici Logistics. 'The versatility of the system is such that it is able to eliminate draught restrictions, vessel size restrictions, lack of discharging facilities, environmental restrictions etc,' he said. 'And yet it is simple enough to adapt to the local prevailing conditions and will be operable with the local crew.'

The first of the new breed, *Bulk Prosperity*, designed by Coeclerici and built at an unspecified yard in China, was officially handed over to CGU Logistic, a joint venture between Coeclerici and Indian transport giants United Shipping Company and Great Eastern Shipping Company, earlier this summer and is currently operating off the west coast of India handling a range of bulk cargoes.

Most previous floating transfer station designs have focused on either load or discharge operations and have needed tugs and good weather before they could be redeployed. But Captain d'Aniello, business development manager of Coeclerici Logistics, believes the launch of *Bulk Prosperity* heralds a new wave of offshore 'supply chain management units'.

The 10,500dwt, 94m LOA vessel features a 32.5m beam and a draught of 5.8m. Propulsion is supplied via two azimuthing thrusters, with three gensets offering 1200kW each and enabling speeds up to seven knots.

The unit is equipped with some US\$20m of handling equipment, including two heavy duty TTS cranes with 10m slewing beams, capacity of 30tonnes, outreach of 38m and 18m air draft allowing capesize vessels up to 170,000dwt to be loaded and/or unloaded.



Bulk Prosperity, first in a new breed of transshipment vessels.

'Being self-propelled, the unit will go alongside the ocean-going vessel when the vessel arrives at the designated anchorage and drop anchor,' he said. 'After being safely moored alongside, the cranes will commence discharging the cargo, which will be direction-transferred into a barge moored on the seaside of *Bulk Prosperity*, through a combination of hoppers, conveyors and a discharging boom.'

A shiploader and barge loader, each rated at 2,000tonnes per hour, help deliver estimated daily unloading capacity of 22,000tonnes for bulk cargoes.

Loading capacity is rated at over 30,000tonnes per day, according to Coeclerici, while the design also incorporates buffer storage for up to 10,500tonnes onboard, so loading and unloading of the ocean-going ship are not interrupted by barge changeovers.

Captain d'Aniello said the use of hoppers reduced crane cycle time. 'Normally the cranes have to rotate 180 degrees to transfer cargo from the vessel to the barge,' he said. 'But in this case, thanks to the location of the hoppers, the rotation of the cranes has been

reduced by half, thereby increasing the overall discharge rate.'

The size of the hoppers – 2 x 50m³ – was decided by the requirement to minimise the time required for positioning the grab over the hopper and cut cycle times.

Spill free grabs and spill plates also aided environmental performance, he said.

Captain d'Aniello insisted the vessel was suitable for operations in adverse weather – up to wave heights of two metres and wind speeds of 25knots – although the company was unable to provide any information on safety tests or the involvement of a classification society in the design's development.

However, the company did state: 'Coeclerici carries out operations under adverse conditions for wave conditions up to 2.5m etc and has performed contracts worldwide that make end users satisfied. In this respect not a single claim has ever arisen in the last few years, after having transhipped millions of tonnes worldwide. End users have not asked for class certification as they are pleased with CC guarantees.' **NA**

Transshipment leader

Last year Coeclerici Logistics transhipped a total of over 17 million tonnes of dry bulk cargoes for its portfolio of international clients, but chief executive officer, Andrea Clavarino, said forthcoming new projects would see the company put blue water between itself and its nearest rivals in the coming years.

'Our target is to handle up to 30 million tonnes in the next few years so we are by far the leading transshipment company in the world.'

He said the target could be achieved through in-house growth but a financial strategy including a €150m war-chest set aside for acquisitions was in place to speed progress.

'We are already the leading company by volume, now we want to further improve our position and consolidate that leadership,' he added.

Current operations by Coeclerici Logistics include two major coal transshipment operations: the *Bulkwayuu unit*, which currently handles six million tonnes of coal exports each day for Carbones del Guasare in Venezuela; and *Bulk Pioneer*, which tranships over five million tonnes of coal exports for Kaltim Prima Coal each year off Indonesia. The company also runs transshipment operations in Italy and Bahrain. However, despite previous successes, managers are putting much faith in the expected popularity of the recently launched *Bulk Prosperity* design.

Wherever a unit using a similar design to *Bulk Prosperity* is deployed, argued Captain Giordano Scotto d'Aniello, business development manager of Coeclerici Logistics, importers would see competitiveness gains because of freight savings generated by handling more cost-effective vessel sizes. Port costs would fall as ocean-going vessels would only be subjected to anchorage dues. And ports could also utilise the design as an interim capacity enhancement solution while terminal and access channel upgrades were being completed.

Although the design of *Bulk Prosperity* is geared towards the dry bulk cargo sector, Captain d'Aniello said modifications could also make it suitable for container and general cargo handling, allowing stretched ports to boost their capacity.

'This is something we are talking with customers about,' he said.

'We can load or unload any type of bulk cargo and we have storage, but we can change things to handle containers or steel coils,' he added. 'It's really a multi-purpose terminal.'

Coeclerici's managers believe the rapid increase in demand for port handling services in recent years has created a new market for its transshipment solutions. For example, said Captain d'Aniello, many Indian ports were restricted by draught to handling handymax and panamax tonnage. Indian importers had also struggled to charter geared tonnage - less efficient in terms of the landed cost in any case - to overcome draught difficulties, while load ports preferred gearless tonnage.

'Present port infrastructures are not able to cope with the rapid increase in the volume of imported cargo,' he said. 'Moreover the port development pace is not in line with increases in shipments or the employment of larger vessels in order to reduce freight rates.'

'But port investments are not easy. The development of large ports calls for huge capital investments and is time consuming. The growing importance of environmental factors makes it a hard to get clearance because of the ecological disturbance created by large scale dredging and civil work. So for the time being the only way to circumvent the port infrastructure problem is to handle vessels offshore.'

Potential markets for the operation of offshore supply chain units, said Mr Clavarino, included Australia, South America and Africa, where international trade was growing but port handling capacity had frequently fallen short of demand.

'There are lots of interesting markets,' he said, 'but India and Indonesia probably have the most potential. Both are experiencing high demand for port services and high economic growth, and both also suffer from draught restrictions at many ports so this is where we can help.'

The Coeclerici Group's recent strategic decision to invest in vertical supply chain control for raw materials, which saw with the purchase of coal mines in Siberia earlier this year, could also yield new opportunities for its logistics division. 'We are also looking to provide more services such as logistics management to the rest of the group,' he added.



Coeclerici Logistics chief executive officer, Andrea Clavarino.

German wares 'in demand'

The German Shipbuilding and Ocean Industries Association (VSM) says it remains 'generally satisfied' with the development of the German shipbuilding industry in view of its results for 2007.

Last year, German shipyards building ocean-going vessels delivered 74 units, totalling approximately 1.2 million cgt, worth close on €3.1 billion, and received new orders for 70 ships/1.4 million cgt, worth €4.9 billion.

Thanks to high levels of production at its shipyards, Germany continues to hold fourth place in the world rankings of shipbuilding countries and the leading position in Europe. Although the new orders, worth €4.9 billion, were down on the high levels in the previous two years, they clearly exceeded deliveries and thus ensured for the sixth time in succession a further increase in orderbooks, which are now worth approximately €15 billion, a volume of orders that secures employment for the industry as a whole for the next 42 months (on a cgt-basis).

Orders in hand include a remarkable range of vessel types: containerships, ferries, passenger ships and yachts, ro-ro vessels, general cargo freighters, LPG tankers, product tankers and bulk carriers, as well as non-cargo carrying vessels. A general trend towards highly complex and high-quality units can be identified.

Shipyards building inland waterway vessels also benefited, both in respect of newbuildings and repairs/conversions. In 2007, German yards delivered a total of 63 newbuildings, worth €111 million, which was well up on the previous year. However, the average age of the inland waterway vessel fleet was a record 42.5 years in 2007. Further legislative measures to promote the modernisation of inland waterway vessels are 'essential', said the VSM, in order to improve environmental protection and ship safety, as well as to retain the competitiveness of inland waterways vessels compared with other forms of transport.

German naval shipyards achieved



German yards delivered 74 vessels totalling approximately 1.2m cgt, worth close on €3.1 billion, and received new orders for 70 ships/1.4m cgt, worth €4.9 billion in 2007.

sales of approximately €1.3 billion from newbuilding and repair/conversion projects in 2007, and the VSM is hopeful that the naval shipbuilding industry will soon secure a key surface ship procurement project in the form of the long-awaited contract for four F125 frigates for the German Navy. However, export orders also continue to be necessary for maintaining the high level of German naval technology.

A second record in succession was registered by shipyards engaged in conversions and repair work. The constantly expanding world merchant fleet and the trend among owners to have old tonnage converted rather, than wait for years for new ships ensured full docks at German yard specialising in this kind of work, with sales surging again to reach €955 million. 'High bunker costs and various recent decisions of the IMO, including obligations to retrofit the existing fleet, suggest that this segment's sales will top the billion mark next year,' said VSM chairman Werner Lüken.

German marine equipment and offshore suppliers also registered impressive results and claim to be number

two worldwide in terms of sales and remain 'world champions' for exports. The VSM said various factors including the very rapid increase in demand for ships in the offshore industry enabled suppliers to boost sales to approximately €12 billion, whilst the overall workforce increased to approximately 75,000.

In view of this generally impressive performance, it is not surprising that shipbuilding also contributed to the improved employment situation in Germany in 2007. As of December 2007, German yards had approximately 22,300 employees, more than 1000 more than in the same month in the previous year.

Challenges ahead

'The current high sales and employment figures should not obscure the fact that we confront considerable challenges,' warned Mr Lüken. 'Despite their good capacity utilisation, companies have not improved their earnings situation, as costs for components, materials and energy as well as wages and salaries have risen faster than ship newbuilding prices. The drastic increase in steel prices in particular is a problem for shipyards as well as many suppliers, as is the strength of the Euro.'

Shipbuilding capacity worldwide continues to expand, noted the VSM, particularly in Asian countries, and India and The Philippines joined the top 10 shipbuilding countries in 2007, following Vietnam in 2006. 'It seems to be inevitable that China will become the leading shipbuilding country, an ambition it announced some years ago, and international competition looks set to become even fiercer in the medium term,' said the VSM, noting that in such a market environment, German shipbuilders will only be able to hold their own, only 'if they maintain their technological lead and appropriate political parameters are created.' NA



www.beluga-group.com

BELUGA Germany
Bremen
Phone +49 (0) 421 333 22 396
E-Mail sales@beluga-group.com



Your experts for heavy lift
and project cargo.

HSVA extends hullform capability

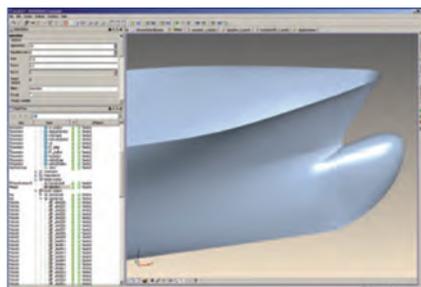
The Hamburg Ship Model Basin (HSVA) has extended its hullform design capability by acquiring the FRIENDSHIP-Framework computer-aided engineering (CAE) environment.

FRRIENDSHIP-Framework is an integration environment for the advanced hydrodynamic design of ships. It facilitates the work flow at the crucial stage of hullform development by closely coupling CAD capability to CFD analysis. The system supports the consistent generation and assessment of variants and offers integrated constraint management, and can be flexibly tailored to the naval architects' individual design environment, increasing productivity and improving competitiveness.

The software provides efficient shape variation via partially parametric modelling on data being imported from offsets, panel meshes or iges-files. It also provides effective type specific and fully parametric shape definitions and sophisticated offset handling (analysis, modification, repair) with integrated hydrostatics, along with NURBS curve and surface technology, high-level design entities, embedded optimization strategies, and a range of other features such as constraint management and screening and direct reporting (tables, diagrams) and easy comparison of variants.

'Having successfully performed several commercial and research projects together with FRIENDSHIP SYSTEMS, we had the opportunity to examine the possibilities of this software in a number of test cases in the past,' HSVA's Henning Grasshorn explained, noting that the main feature of the software is the generation of sophisticated hullforms and their variation via fully or partially parametric modelling and embedded optimisation. 'This allows for the evaluation of a multitude of hullforms by potential flow calculations, gaining the optimum parameter combinations for the form modification through sophisticated algorithms,' Mr Grasshorn explained, noting that HSVA's free surface potential flow code nu-SHALLO is directly linked to the system.

The use of the FRIENDSHIP-Framework is intended as an additional service to the usual hullform design and optimisation process offered by HSVA and will allow for



Optimising hullform in the FRIENDSHIP-Framework computer-aided engineering (CAE) environment.

a wider exploration of possible hullforms for commercial projects and HSVA's own hullform research.

As the tool for use for evaluation is a potential flow code - with all its possibilities and limitations - use of the FRIENDSHIP-Framework will focus on the reduction of the wave-making resistance, and the effect of hullform modifications on the viscous effects and on the propulsion will continue to be addressed by HSVA's staff.

Other recent work at HSVA saw the organisation contracted to refine the design of a high speed twin screw vessel by a well-known European consortium. The task included modification of the bulbous bow and also the optimisation of the shaft brackets and rudders, with respect to powering and cavitation performance. Suitable numerical calculation methods (CFD) were employed for the individual optimisation cases, as a support to the design work.

Although, the overall performance of the vessel was already acceptable, it was decided that the bow wave development at intermediate speeds still needed some attention. This being the case, optimisation of the bulbous bow was proposed, and the emphasis was put on the bow wave and spray development at intermediate speeds up to about $F_n = 0.25$. As HSVA also noted, any reduction in required power that could accompany the actual target of spray reduction, would of course be looked upon

favourably.

As the construction of the vessel in question was already at a very advanced stage, the area of the bow that could be modified was quite limited (that is, the section forward of about station 18.5), which made the task more challenging still.

HSVA said: 'The potential flow code is a good tool for predicting and in particular for comparing wave generation for different hullform variants. However, it is not suited for handling wave breaking or spray phenomena. Nonetheless, with proper interpretation the results can also be useful for this problem. With the help of HSVA's potential flow code nu-SHALLO, the initial lines and further bulb variants were investigated... including consideration of fuller and higher bulbs and also a lengthening of the design waterline by moving the stem forward. All of the calculations were performed at several speeds, in order to make sure from the beginning that a modification providing an improvement at lower speeds would not be detrimental at high speed 2.

Compared with the initial version of the bow form and the version finally selected, both the height of the bow wave and the depth of the first wave trough at station 17 were reduced. It was concluded that this improvement could be taken to indicate that the actual problem of spray development would also be reduced.

Verification and quantification of the vessel's performance following the modification was, as usual, a task for model tests in HSVA's large towing tank, during which a similar improvement was observed over the entire speed range from $F_n = 0.18$ upwards.

As HSV noted, an interesting and advantageous side effect is that, over the same speed range, the reduction of the bow wave and modification to appendages modification provided a power gain of 6-7%, an example, said HSVA of how, in the right hands, modern CFD tools can also be very useful for solving 'off-design' problems. *NA*



www.meyerwerft.com


MEYER WERFT
PAPENBURG 1795

‘Crumple zone’ for safer tankers

The concept of ‘crumple zones’ - pre-determined break points designed to absorb the energy of a collision.

Lindenau is well known as a designer and builder of tankers with a focus on safety and environmentally-friendly operation. Now, classification society Germanischer Lloyd (GL) is collaborating with Lindenau on testing crumple zones on tankers, a project which GL recently described in the latest issue of its magazine Non-Stop.

Double-hulls are, of course, mandatory for all tanker newbuilds, and offer significantly better protection if a collision should occur than single-hull tankers, although, if a collision does occur, an oil spill cannot be ruled out even on a double-hull tanker, if outer and inner hulls are penetrated. This possibility of a rupture in both the inner and outer hulls is what Lindenau would like to prevent. If, the company reasons, the inner shell were designed to disconnect partially from the supporting structure in a

lateral collision, it would deform more easily, bulging inwards to produce a large dent at the point of impact rather than rupturing. As GL highlighted in Non-Stop, this would, of course, require an inner hull made from a highly ductile material.

As GL reported, in order to turn the concept into a fully-fledge research project, Lindenau contacted Hamburg-Harburg Technical University (TUHH) and GL to arrange for some initial, basic research to be conducted. An austenitic steel with high level of ductile yield might be a suitable material for the inner tank shell, it reasoned, because under tensile loading, austenitic steel resists failure much longer than standard steel.

‘Shipbuilding steel has a ductile yield between 16% and 22%,’ GL explained, but ‘austenitic steel can be extended by 30% to 35% before failing,’ however, a tensile shell

by itself will not, however, suffice. To “bulge” inwards across a large enough area, the shell must be allowed to separate from its supporting structure.

To illustrate the problem, Ingo Tautz, who is leading the research project at Lindenau, used the image of a balloon inflated inside a wire cage and glued to the bars. ‘Pushing the balloon inwards will cause it to burst. But if you don’t glue it to the bars, it will be free to move so you can push it inwards to quite an extent before it will burst,’ he told Non-Stop.

An equivalent to the ‘cage’ can be found in any ship, being formed by longitudinal stringers and vertical frames. Stringers and frames make up the ‘skeleton’ that supports the outer and inner hulls of the ship and are spaced about 2m apart. The critical question is how to enable the inner shell to separate from this supporting cage, thereby enlarging



“Hi Marines”,

the 2m space. As far as the longitudinal stringers are concerned, the solution is straight forward enough - the stringers are only welded to the outer hull only and do not come into contact with the inner hull.

However, as the article in Non-Stop also explained, the question of the vertical frames is more complicated. 'Here, a series of holes, known as perforated pre-determined breaking points, are made in the sections closest to the inner shell. In a collision, the frames are intended to rupture at these locations, thus releasing the inner shell. The larger the number of breaking frames, the better,' GL explained.

This design concept was first developed by Lindenau's partner and former managing director, Günter Stehn, who estimates that frames may break over a length of 20m along the ship's body, allowing the austenitic inner shell to bulge inwards by several metres without rupturing. To make this work, the ship's tanks should not be fully loaded and must be fitted with burst plates designed to break on impact. The cargo then flows into a neighbouring tank or ballast tank.

As GL highlighted in Non-Stop, what makes Mr Stehn's approach appealing is its simplicity - the ship's inner shell deforms without causing an oil spill - but how far can this be taken before the ship's structure becomes unstable? As it is, sailing rough seas is a punishing experience for a tanker, exposing it to a constant interplay of compressive and tensile stresses, a process which is especially intense around cut-outs and holes, where cracks may form. 'Pre-determined breaking points are not exempt from this threat,' said GL, noting that the critical question is, how should the perforations be designed so the frames only fail in a collision, whilst safeguarding the structural integrity of the vessel during normal operations?

Non-Stop explained that, in a dissertation that Mr Tautz completed under the supervision of Professor Eike Lehmann at TUHH, the Lindenau man analysed the potential pitfalls in calculation methods that simulate the planned failure of predetermined breaking points. The ductile yield of austenitic steel, while known, does not help in determining the highly important parameter of time of failure when calculating collision

simulations, and knowing when the failure might occur is critical: if tank shell separation from the frames takes place too late, the vessel involved in a collision might penetrate it.

No matter how many calculations are performed, there is no substitute for physical measurements and practical tests, and Lindenau has therefore requested research funding from the German Federal Ministry of Economic Affairs. The aim of the research project is to clarify important aspects of operational and collision safety, and operational safety measurements have already begun on a ship section built according to the new design concept and installed in the vessel Seychelles Patriot. This 189m double hull tanker was designed to carry 45,680 tonnes of cargo, and was delivered by Lindenau to Seychelles Petroleum Co Ltd, in Victoria in the Seychelles last February.

A three-frame side section of the vessel was built according to Mr Stehn's design, with the perforated pre-determined breaking points, and GL is conducting long-term measurements on one of the frames to verify the results of the structural durability calculations performed to date. [NA](#)

Most probably ...the best in the world KME Products for Offshore and Shipbuilding



Do you still use heavy carbon steel pipes for seawater carrying systems, still use chlorination or painting to prevent marine growth?

Why not use CuNi 90/10 tubes, KME trademark OSNA®-10? Save up to 50% weight of the piping system and any costly protection!

Do you still use old fashioned singular tubes for hydraulic and pneumatic remote control systems?

Why not use OSNALINE® tube bundles which are easily and quickly laid like an energy cable, supplied in very long units and tailor-made to customer's specifications?



KME Germany AG & Co. KG _ Osnabrück _ Germany

Business Unit Marine Applications _ Phone +49-541-321-30 11 _ Fax +49-541-321-30 20
info-maritime@kme.com _ www.marine-applications.com

Business Unit OSNALINE® Tube Bundles _ Phone +49-541-321-32 03 _ Fax +49-541-321-34 49
info-osnaline@kme.com _ www.kme-tube-bundles.com

SMM: B7.342

You cannot afford
to miss this!



Guaranteed Leak Tight for Life*, and
one Test Pump for Free**.



Clean and safe, thanks to KRAL pumps with magnetic couplings.

SMM, Hamburg
Hall A2, Booth No. 113

Seatrade Med, Venice
Booth No. 107

The magnetic coupling stays leak tight, for life.

Unlike mechanical seals, magnetic couplings are hermetically sealed. In our pump upgrade project for magnetically coupled pumps, we guarantee leak free operation for life. *Full details are outlined in our warranty certificate.

Pump upgrade.

No matter who manufactured your pumps with mechanical seals – replace them by KRAL pumps with magnetic couplings. With KRAL magnetic coupling pumps, fuel leakage and fuel pump failures are a thing of the past. **As a special incentive, for a limited time period we offer you – without

obligation – the use of a KRAL pump with a magnetic coupling for 12-months FREE to install in your booster module.

After the 12-month test, you can either return the pump to us or purchase it at our special trial offer rate. Conditions do apply.

This offer is not to be missed!

www.kral.at
www.kral-usa.com

KRAL

SkySails hails latest data

The latest measurements made aboard the cargo vessel *Michael A* have provided further evidence of the effectiveness of SkySail's kite type wind propulsion system.

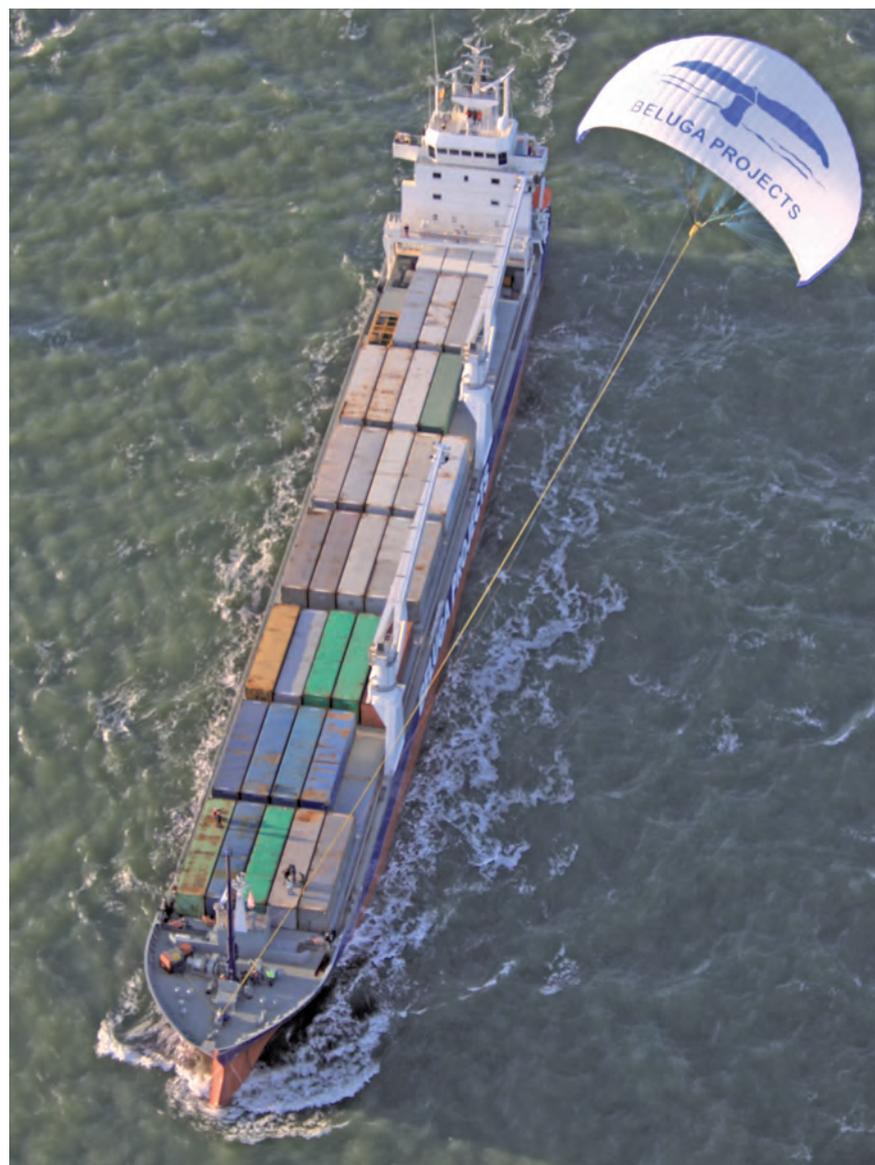
SkySails was established in 2001 to develop and sell fuel-saving and environmentally friendly kite propulsion systems for cargo ships that augment a ship's existing machinery. Earlier this year, the maiden voyage of the kite-assisted vessel *Beluga Skysails* was completed, a two month voyage that took the multi-purpose heavy-lift project carrier from Germany to Venezuela, the US and Norway as part of a demonstration of the system that was co-funded to the tune of €1.2 million under the EU's 'LIFE' programme.

Under the LIFE programme, the EU is funding the 'WINTECC' (WIND propulsion TECHNOlogy for Cargo vessels) project, one of the aims of which is to measure the savings in energy and CO₂ that can be achieved with the help of innovative propulsion technology. 'By co-funding the project we want to set a clear signal for climate relevant technology in future, and are delighted that the SkySails technology offers such an enormous global potential for savings,' said Paul F Nemitz, deputy head of the European Commission's Maritime Policy Task Force. The EU is contributing €1.2 million of the project's total budget of €4 million as part of the LIFE programme.

Said SkySails of *Beluga SkySails'* maiden voyage: 'Even in moderate winds, the first tests of the 160m² towing kite demonstrated how this innovative auxiliary propulsion system can substitute for 20% of the engine's power.'

'We validated the original expectations we had for the system,' said SkySails' managing director Stephan Wrage. 'In the future, depending on the route and weather conditions, we'll be able to post fuel savings of between 10% and 35% using wind power.'

Beluga SkySails set sail to Venezuela from Bremen, Germany on 22 January and reached the Norwegian port of Mo-I-Rana on 13 March after travelling a total of



Beluga Skysails with her SkySail kite aloft.

11,952 nautical miles. '*Beluga SkySails'* maiden voyage is proof of a new kind of hybrid drive that simultaneously reduces both voyage costs and climate-damaging emissions,' said Niels Stolberg, president of Bremen-based Beluga Shipping.

On a number of occasions during the voyage the SkySails system was put into action for periods of time ranging from a

few minutes to up to eight hours. During that time the 'SkySails' kite pulled the ship with a force of up to 5tonnes in Force 5 winds, which when compared to engine output represents a saving of more than 20%. Projected onto an entire day, this level of performance represents savings of about 2.5tonnes of fuel and more than US\$1000 a day,' said SkySails, noting

durable

BECKER PRODUCTS

www.envisia.com



Tailor-made. According to the individual requirements of your ship, our design team chooses the ideal manoeuvring solution amongst our well-proven designs, such as the Becker Flap or Becker Full Spade Rudder, with symmetric or twisted profile (TLKSR® & TLFKSR®). A Becker rudder would be your experienced captain's choice for reliability, safety and superior manoeuvrability.



becker marine systems

SMM 2008, Hamburg, Germany
September 23rd-26th, 2008
Hall A1, booth no. 450



WWW.BECKER-MARINE-SYSTEMS.COM

MANOEUVRING

MATERIAL HANDLING

COMMUNICATION



Aerial view of *Michael A*, which will continue to be used to test the SkySails kite concept

that, following the initial pilot phase the kite will be replaced by one that is twice the size of the first one tested on *Beluga Skysails*, thus delivering twice the amount of energy, which will save twice as much fuel and double the reduction in emissions by the vessel on which it is installed.

'Beluga Shipping expects a drop in bunker costs of approximately US\$2000 per operating day,' said Skysails. 'Kites with a surface area of up to 600m² will be used on two larger *Beluga P Series* carriers that are to be outfitted with SkySails-Systems in the future. Currently under construction, each vessel will have a deadweight of 20,000tonnes.'

In the latest series of measurements, SkySails said it ascertained that its kite type towing system delivers 'more than five times the performance per square metre of sail than traditional wind propulsion systems.'

'With the help of the wind, the 160m² kite generates up to 8tonnes of force. Depending on wind conditions, ships in the future shall be able to post fuel savings of between 10% and 35% using this auxiliary propulsion system. Our own measurements show that we were able to temporarily save far more than half the fuel by deploying SkySails in favourable wind conditions,' reported Gerd Wessels, managing director of the Wessels shipping company based in Haren/Ems, on whose vessel the system was most recently tested, adding that 'alternatively, we were able to increase the ship's cruising speed from 10knots to 11.6knots with the help of the kite,' which was fitted aboard the 90m multi-purpose cargo ship *Michael A* for testing in European waters.

'Wind is always cheaper than oil... and more and more shipping companies are convinced of the performance of the SkySails propulsion system,' said Mr Wrage, noting

that, even before pilot testing on *Michael A* had been completed, the shipping company had ordered additional SkySails for its next three new ships.

Each of the shipping company's new 88m, 3700dwt multi-purpose vessels will be fitted with a 160m² SkySails kite. All of the new vessels that the Wessels shipping company has ordered were financed through the Oltmann Group in Leer, which provided a major portion of SkySails' seed money

through private investors.

During pilot testing, SkySails has also tested the effectiveness of a newly-developed sea state compensation system for the SkySails kite, which allows the kite to be launched in more difficult weather conditions. 'After installing the sea state compensator we can now deploy the SkySails kite more regularly than was the case at the start of the pilot testing phase and thus also extend the flight times,' Mr Wrage explained.

Pilot testing of the SkySails kite will continue aboard *Michael A* and *Beluga SkySails* until early 2009 in order to calibrate the system and undertake technical modifications. The second half of the pilot phase will concentrate on extending flight times and optimizing system performance. SkySails plans to begin series production once pilot testing is completed. **NA**

SHIP DESIGN GROUP
Naval architects, Marine engineers, Consultants

51, Dogariei Street, 800225
Galati, ROMANIA
Phone: +40 236 476 672
+40 336 401 484
Fax: +40 236 460 336
Web: www.shipdesigngroup.eu
E-mail: sdg@shipdesigngroup.eu



We improve shipbuilding



Cost management in shipbuilding

The major part of the ship's cost is fixed by initial design and engineering. At the same time precise cost information is usually unavailable in these early shipbuilding phases. Therefore, the shipbuilding process requires special procedures for the cost management. Report by Dr. Jan O. Fischer, of GKP*, and Professor Dr.-Ing. Gerd Holbach, of TU Berlin**.

Gesellschaft für kostenorientierte Produktentwicklung (GKP), which specialises in cost effective design, and the department of design and operation of maritime systems of the Technische Universität Berlin have created the software application 'CC-S', designed to support the planning, analysing and controlling of the product's cost in all shipbuilding phases. Its reach extends from the beginning from the early phases of design and engineering, to the calculation accompanying the production and finally to the analysis of already concluded projects.

Design and engineering

Up to 90% of the total costs are fixed at the start of production (Figure 1). Thus, it appears that approaches to optimise the cost have to be considered in design and engineering. Consequently, it is necessary to gather information on the estimated cost of the ship and its assemblies or systems at the very earliest stage.

Alongside its importance for controlling costs, meaningful cost information is important for quotation costing, which requires both quick and precise cost estimation. Another considerable reason for cost forecasting is the evaluation of different designs or technical options: in case of several design alternatives, which are equal in reference to the technical demands, it is obvious that the alternative causing the lowest costs should be chosen. Finally, costs have to be estimated to enable a comparison of planned and actual cost. Those comparisons are necessary to

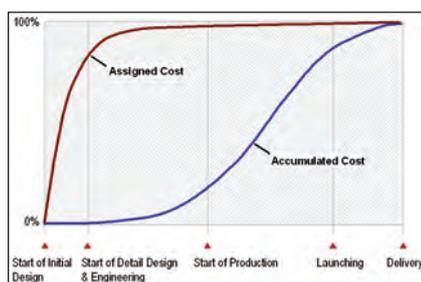


Figure 1. Approximately 85% of the total costs are fixed after the initial design.

identify the need of controlling actions within the running project and to improve the quality of estimations in the future.

Current cost management

Worldwide competition and increasing of materials costs place a massive pressure on shipyards to realise a cost aware design. Simultaneously, the cost calculation in unit production is complicated by the fact that there is only insufficient cost information in the phases of design and engineering and the quality of this information is often quite low in these early phases. Furthermore, the information is usually distributed on different enterprise resource planning and CAM systems which are complicated to handle and lack sufficient interfaces. Sometimes the required cost information exists only in hard copy, or even as the knowledge of single experts only. The cost planning of new projects is usually practiced using tabular calculation programs of office software, which have no direct link to the other tools of the yard.

These circumstances cause different disadvantages:

- Estimating and planning the ship's cost takes a lot of time for manual system queries and following cost aggregations. The pressure of time limits makes the determining of exact and robust cost

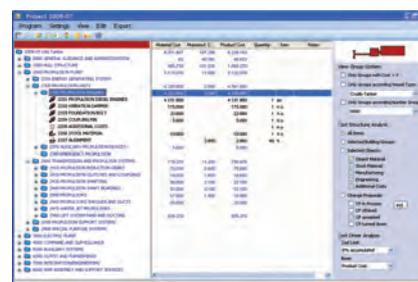


Figure 2. Cost planning and cost recording, referring to the vessel's structure.

information difficult.

- The possibility of cost estimating belongs to single experts. Besides this fact, the quality of estimations, based on the knowledge of experts, differs widely (variation on average $\pm 35\%$).
- The expense of determining and updating dependences of technical and economical parameters, which can be used for cost estimations in new projects, reduces the value of those indexes extremely.
- The existing data base, generated in past projects, is far from being complete, caused by the lack of an integrated system for managing and providing the cost information.

In summary it can be remarked, that there is a big gap between the existing and the used possibilities of cost optimising and controlling the achievement of the allowable cost. These circumstances concern not only the need of reducing cost but, also the aim of gaining time to create and compare different design alternatives.

Software Solution 'cosfact-s'

To solve the above problems, a software solution was designed by GKP, of Cologne, and the university of Berlin (department of

* Gesellschaft für kostenorientierte Produktentwicklung; www.gkp-online.de

** Department 'Entwurf und Betrieb Maritimer Systeme' Technische Universität Berlin; www.naoe.tu-berlin.de

design and service of maritime systems), which supports the cost management in the shipbuilding process. This solution is named costfact-s (CC-S) and is based from the IT point of view on an existing tool that has been effectively applied for several years in the plant engineering.

The main value of CC-S is its ability to enable the user to determine and describe the cost of projects and new ships easily and exactly. In addition CC-S can be used to contain and analyse the cost of complex projects according to the ship's building structure with a high degree of transparency. In this way, the foundations are laid to produce an efficient influence on the cost. The special circumstances of shipbuilding have been accounted by the advancement of the software application. The following description shows, how CC-S can be used for planning, analysing and controlling the cost in the shipbuilding process. Also outlined is the means of parametrical cost estimating by CC-S, using its function for regression analysis.

1. Cost Planning

The aim of using CC-S is to reduce the expense for cost planning, compared to the conventional procedure. Also, quality and transparency should be clearly improved. CC-S provides the following functions to reach these targets:

- Planning of costs: Cost planning, both top down and bottom up, is done within the vessel's parts list, differentiated by cost types and cost objects. CC-S contains complete building structures of ships. These structures can be modified and expanded, according to the demands of the shipyard and the project concerned. The hierarchical structure enables the user to navigate quickly between the different levels and allows, at each of these levels, cost planning, beginning with the whole vessel and working down to single parts (Figure 2).
- Cost estimations for new projects based on existing calculations: Whole calculations from completed projects, or parts of them, can be imported and taken over for the cost planning of new ships. The imported values can be modified subsequently, if necessary.
- Uniform system base for calculation

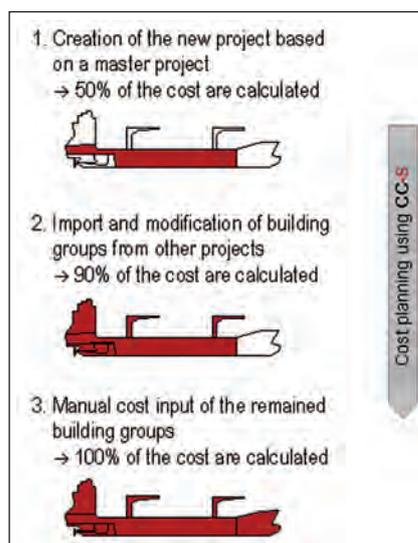


Figure 3. Cost planning process by CC-S.

projects: The organisation of projects and project information is controlled by a project management module that enables an exchange of information between different users and ensures a company wide integration of cost controlling.

Beginning a cost planning by CC-S, the user can start with an 'empty' cost structure, practising a 'zero based budgeting'. However, this process will be clearly usually be accelerated, by deriving the cost of new objects from costs of already existing components and assemblies, and consolidating this information into the calculation of the new vessel. Using this procedure, cost planning is executed in three steps (Figure 3):

1. Choosing a project master: A model calculation or existing project with accordant similarities is used as the starting point of the new ship's cost planning. The new project is created by duplicating the identified reference project. Afterwards the user deletes unnecessary objects (e.g. groups or assemblies) and inserts additional required cost items.
2. Importing the cost of building groups: The cost items, which differ to the model, were taken over from other projects as far as possible. For this purpose single groups and whole main groups can be imported from the calculations of existing vessels, assuming that the

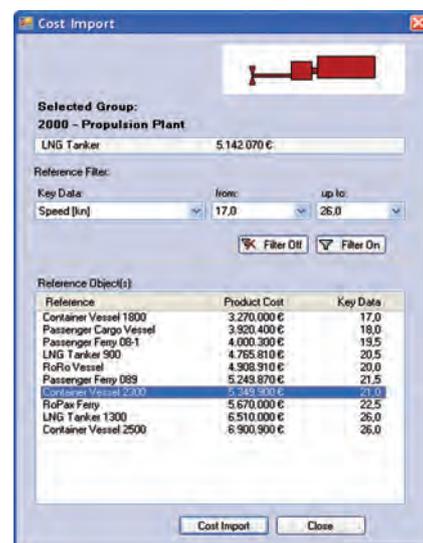


Figure 4. Import cost from calculations of earlier projects.

accordant analogy exists (Figure 4). Afterwards, the costs can be increased or decreased, respectively by surcharge factors or deduction factors to update the cost according to the current situation.

3. Manual input and modification: The residual calculation objects that cannot be determined by similar objects are calculated manually by inserting the cost in a tabular sheet (Figure 5). Modifications of costs that have been imported in the second step and have to be adapted to the actual project, are also included in this sheet.

Every change of each single cost item is recorded automatically to enable the user to get information about the development of each value at a later point in time.

2. Cost Analysing and Controlling

Cost analysis is involved in projects which are already concluded, just as much as it does the calculation of new ships. CC-S supports both alternatives and is able to unite the information from different systems containing cost data (e.g. ERP or CAM systems) and show the cost in a tree view, according to the ship's structure. Manual cost aggregations are no longer necessary.

Within an analysis concerning the cost planning of a new project, CC-S can help both to get a forecast of the vessel's cost

ID	Name	Quantity	Unit	Material Cost/Unit	Manufact. Cos.	Material Cost	Manufact. Cost	Product Cost	Item	User
2331	PROPULSION DIESEL ENGI...	1	pc	4.121.800	0	4.121.800	0	4.121.800	Object Material	
2332	VIBRATION DAMPER	1	n.s.	175.000	0	175.000	0	175.000	Object Material	
2333	FOUNDATION BOLT	1	n.s.	22.000	0	22.000	0	22.000	Object Material	
2334	COUPLING PIN	1	n.s.	5.000	0	5.000	0	5.000	Object Material	
2335	ADDITIONAL COSTS	1	n.s.	0	0	0	0	0	Additional Costs	
2336	STOCK MATERIAL	1	n.s.	10.000	0	10.000	0	10.000	Stock Material	
2337	ALIGNMENT	40	h	0	70	0	2.800	2.800	Manufacturing	

Figure 5. Manual inserting of cost.

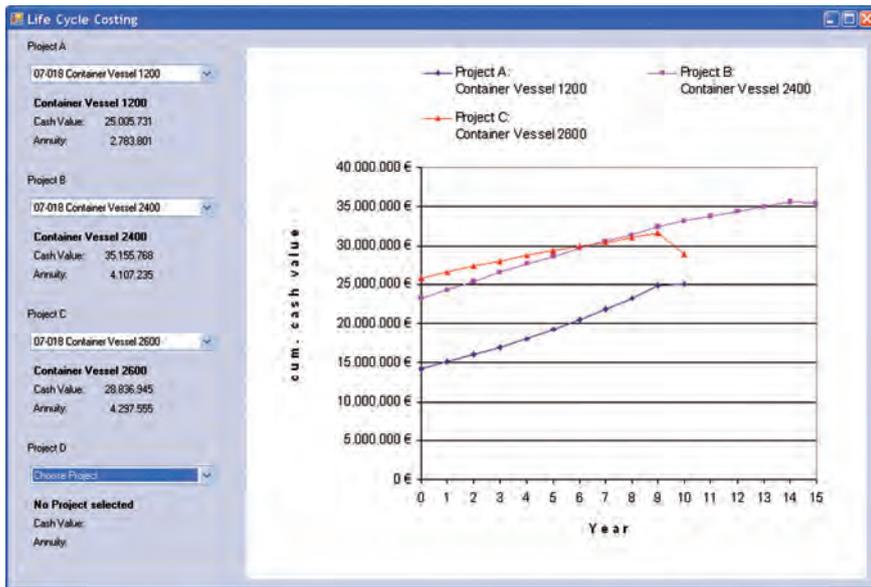


Figure 6. Life cycle cost of different projects.

and to determine the cost drivers that have the biggest influences on these costs. In that way the cost can be controlled even before contracting is finished, or even before the offer is made, by identifying cost optimising possibilities and searching design alternatives. Analyses of concluded projects improve new cost forecasts by comparing the technical and economic characteristics of existing objects and by calculating indices, which can be used in the process of cost estimation. In addition, the knowledge that is obtained by those analyses will improve cost management in the future.

If the accumulated actual costs during the building of the ship are recorded, CC-S can be used for a concurrent calculation. This calculation accompanies the production process and shows the cumulative cost at any time of the project and enables comparisons of planned and actual data with reference to the different levels of the ship's structure. Thereby,

possible cost variances can be identified and analysed. In that way indicators for an inefficient input of materials, or inefficient manufacturing can be received, so that controlling measures can be taken to minimise the cost overrun.

CC-S supports the cost analysis by a number of performance features:

- Several cost filters enable the user to deduce the different cost components separately, so that he can get an overview of the cost structure at different structural levels very quickly and the analysis will have a high relevance to the problem at hand. In addition, this information can also be used to determine key figures.
- The shipbuilding structures included in CC-S lead to a standardisation that enables cost benchmarking even between different types of ships (like container vessels and ferries): After choosing an assembly, CC S shows the cost of the relevant objects of the

other projects stored in CC-S. Thereby, similarities can be sought or in-house benchmarking can be done.

- A cost driver analysis, based on Pareto's law, shows the main cost focus: after determining a cost limit by the user, CCS marks those cost items on every level of the building structure that exceed this limit cumulatively, relating to the next level. For example, if the cost limit is fixed at 80%, the most expensive cost items, which share 80% of the total cost amount of the superior level, were accentuated. Thereby, the objects causing the highest costs can be detected immediately at each structural level and for each building group, and searching for cost reduction opportunities will be very efficient.
- Change proposals, which are made by the customer after the project start, usually cause additional costs. These costs can be marked in CC-S including their status (e.g. 'accepted' or 'denied'). By this means that CC S calculates and shows the change in costs at any time of the project and at every structural level, divided according to the different types. Also a scenario analysis can be done, to show 'which effect on the total project cost has an acceptance of all outstanding change proposals?'

3 Life cycle costing

With life cycle costing, a change of view is made from the producer to the owner, and not only the price of the ship, but also the costs of the whole in-service phase, are included.

Using CC-S, life cycle costs can be calculated up to an examination period of 35 years in-service. The purchase price the owner has to pay is generated by CC-S on the basis of the calculated cost and the shipyard's pricing procedure including the profit margin. Alternatively, the purchase price can be inserted manually. The payments can be divided into several tranches, distributed over a period up to five years before the beginning of the in-service phase.

The in-service costs are classified into costs that depend on the ship's operating level and costs which do not vary. Overall,

SMM 2008 • Hamburg, Sep. 23–26 • Hall A4, Stand 210

Global customer support for global markets.



MaK marine engines deliver on power and reliability – and on proven fuel-efficiency and lower emissions. Count on MaK marine dealers to deliver on industry-leading support solutions that maintain reliability, minimize downtime, and maximize affordability – no matter where you may be.

For more information, contact your nearby MaK marine dealer or visit us at:

www.cat-marine.com or www.mak-global.com



MaK

CATERPILLAR®



Figure 7. Parametrical cost estimating based on regression analysis.

12 different types of costs are differentiated, e.g. fuel, manpower and harbour dues. Sales revenue after the in-service phase can also be considered, e.g. for the resale of the vessel. Several functions of CC-S support the user to feed the required data into CC-S.

After the close of all entries, CC-S calculates the life cycle costs of the project in terms of actual cash values and annuities and enables comparisons of alternatives. At this point, diagrams can be made of different projects for comparison (Figure 6). The optimum service life of a project and the point in time, at which maybe a profitability change of projects will take place, will appear directly.

The producer's advantage of calculating life cycle costs is the possibility to point up that, possibly, a higher price of sale will

reduce in-service costs and hence the total cost of ownership might also be reduced.

4. Regression analysis

Based on a statistical examination and validation of the technical and economical characteristics of existing objects, CC-S is able to determine cost functions that will enable the user to derive the costs of similar objects. For this purpose CC-S offers the opportunity to define technical key data and to attach them to one or more functions, groups or assemblies. Referring to a project the characteristics of these features are inserted. To carry out a regression analysis and following cost estimation, the user selects in the first step the active cost object, e.g. an assembly.

CC-S lists the technical features which have been assigned to this object and the user selects the feature that probably has the strongest cost influence. Also, he determines the type of cost (material cost, manufacturing cost or product cost), that should be estimated. Based on these specifications, CC-S lists the corresponding assemblies of all projects which are already calculated, including their notations, costs and feature characteristics. Moreover, the objects are portrayed in a scatter diagram, that shows the costs of the selected cost type relating to the chosen key data.

On the basis of the costs and the feature characteristics of the identified objects

of comparison (which can be manually narrowed down, if necessary), CC-S determines the regression function and compares the function's quality that can be achieved by three different regression types (linear, logarithmic, and potential). CC-S selects the regression type that leads to the most accurate approximation to the actual costs. The user is free to accept this default or to switch to another type. With the distribution of the objects' positions in the chart he gets an impression of the prospective reliability of the subsequent cost estimation. Furthermore, the quality of the determined cost function is specified by several indexes.

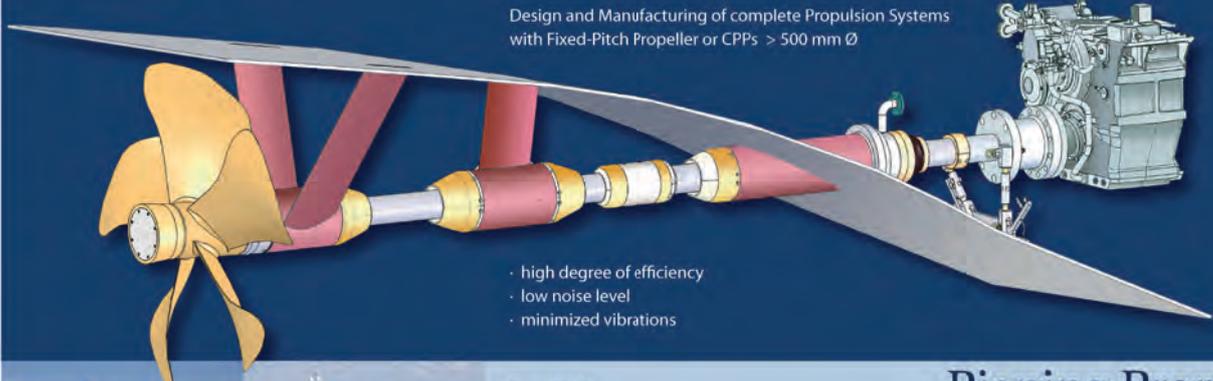
Finally, the cost estimation of the new object is made. For this purpose, the user inserts the character of the technical, cost driving feature and CC-S calculates the expected costs, based on the selected regression function. Figure 7 shows the screen to execute these steps.

Conclusion

A suitable software is clearly able to improve the cost management in shipbuilding. The systematic procedure, provided by the described IT solution CC-S, leads to better results and a reduced expense for planning, analysing and controlling of the vessel's costs. By including the whole life cycle cost, CC-S is appropriate not only for shipyards but also for shipowners. *NA*

POWER PACKAGE PIENING PROPELLER

Design and Manufacturing of complete Propulsion Systems with Fixed-Pitch Propeller or CPPs > 500 mm Ø





Controls for electrical, mechanical or pneumatic drives.



Lead Keels for Sailboats

- high degree of efficiency
- low noise level
- minimized vibrations



Representative of



Member of



DEUTSCHE YACHTEN

Piening Propeller

specialist plant for propellers and stern gears

Otto Piening GmbH · Am Altendeich 83 · D-25348 Glückstadt
Tel. (04124) 9168-0 · Fax (04124) 3716
pein@piening-propeller.de · www.piening-propeller.de





The Norwegian International Ship Register - NIS

High quality option for registration:
Norway has introduced a new, competitive tax regime
with conditions equivalent to those in the EU.

www.nis-nor.no

NIS  NOR

Tlf: + 47 55 54 12 50 Faks: + 47 55 54 12 75 Web: www.nis-nor.no

Offshore dominates at Wärtsilä Ship Design

Wärtsilä Ship Design Germany (Schiffko as was) has a longstanding reputation for designing containerships, but the current focus of much of its work is the offshore sector, as managing director Barend Thijssen explained to *The Naval Architect*.

On the ship design side, our main projects this year include the design of the revolutionary European research icebreaker *Aurora Borealis*, the design of a jack-up crane barge for the installation of wind turbines offshore, design of a new offshore construction vessel for Saipem (which was recently contracted at Samsung Heavy Industries), and the modification of an existing offshore construction vessel,' says Barend Thijssen, managing director of the newly rebranded Wärtsilä Ship Design Germany.

'In addition to this, we are of course keeping our *Schiffko* CV 1100, SCHIFFKO CV 1300, SCHIFFKO CV 1800, and other container vessel designs up-to-date,' he explained, noting that, on the marine consultancy side, the company's main projects this year include newbuilding supervision projects for shipowners from the Middle East at shipyards in South Korea and Indonesia.

As Mr Thijssen highlighted, Wärtsilä's Hamburg-based design and marine consultancy subsidiary was recently awarded a contract by the Alfred Wegener Institute for Polar and Marine Research in Bremerhaven, Germany, to design what it describes as a revolutionary research icebreaker, *Aurora Borealis*.

Aurora Borealis will also have a deepsea drilling capability, the contract to design the vessel having been secured following a public tender.

The contract covers the initial design concept, general arrangement planning, and full tender documentation for the innovative ship, which will carry out a wide range of research in ice and open water conditions including geology, geophysics, oceanography, biology, glaciology, bathymetry, meteorology, and atmospheric physics.

Aurora Borealis will set new standards in polar research as, currently, no other Polar research vessel has the ability to autonomously navigate in pack ice outside the summer



Aurora Borealis will have the highest icebreaking class and a massive 55MW of propulsive power.

season. *Aurora Borealis*, in contrast, will be a multi-purpose icebreaking research vessel suited to Arctic and Antarctic operations, with the ability to autonomously navigate in ice with a thickness of up to 4.5m, making it possible to undertake research year-round on issues such as the effects of global climate change.

As highlighted above, the ship will also have the unique capability to perform scientific deepsea drilling at water depths of up to 5000m, with a penetration of up to 1000metres, even in drifting packice fields. An innovative, high-performance dynamic positioning system will enable the ship to keep position in such a demanding environment.

The new vessel will have a length between perpendiculars of 165m, the highest icebreaker classification, and more than 55MW of propulsive power, thus considerably outperforming all existing research icebreakers.

Mr Thijssen noted that the machinery onboard *Aurora Borealis* will be 'highly energy efficient, environmentally friendly,

fully redundant, and allow for reliable and safe operations in the most remote and hostile polar regions.'

'Our main challenge under this contract is to provide an innovative, technically sound and convincing ship design concept that optimally combines the wide range of tasks specified for *Aurora Borealis* by the international scientific community,' Mr Thijssen explained. 'This tough challenge is one that we can master, as we did some 25 years ago when *Schiffko* designed the then revolutionary and now legendary icebreaking research vessel *Polarstern* for the Alfred Wegener Institute.'

Newbuilds in the breeze

Another focus of activity at the German naval architects is the fast-growing market for vessels and platforms capable of installing offshore wind turbines, and Wärtsilä Ship Design Germany is currently working on the design of a jack-up platform which, although non-self propelled, will have its own means of positioning (whilst in DP mode), for the

offshore installation of wind turbines for customer F+Z Baugesellschaft.

The self-elevating platform will be equipped with what Mr Thijssen described as 'a crane of extraordinary load capacity and outreach,' and is being designed in association with the company's project partner, IMS Ingenieurgesellschaft.

Wärtsilä Ship Design Germany is responsible for conceptual and basic design for the jack-up, which will undertake lifting operations of up to 800tonnes while jacked-up in water depths of up to 45m, installing complete wind turbine systems including foundation structures, tower segments and nacelles.

The unit will also be capable of transportation and storing components with a deck load of 4100tonnes, and of jacking-up with full deck load. With dynamic positioning to DP Class 1 mode - before jacking-up, with thrusters or with mooring winches - as per water depth and environmental conditions, the high specification jack-up will be fitted with retractable thrusters for operation in this mode, and will also be able to undertake inspection, maintenance and repair (IMR) work in offshore wind farms. The design will also offer a high level of safety and convenience for workers living onboard, having accommodation for 80 and a helicopter platform for personnel transfer, and will be transferred to offshore wind farms by tugs (with thrusters retracted).

Mr Thijssen noted that the jack-up barge is being designed with an emphasis on safety, and will be sub-divided by watertight bulkheads to withstand flooding of any single main compartment. The machinery rooms are located aft, far from the accommodation, and subdivided into three independent compartments, for best safety in case of fire or flooding, and the crew compartments are located forward, all accommodation (sleeping areas) being above main deck level.

Marine environmental protection is also an important feature of the design effort, and the jack-up will have fuel oil tanks that are protected by being located away from the side shell, to avoid any risk of pollution in the event of a collision.

The main compartments onboard will comprise an aft section with aft mooring winches; aft jack-house-compartment with engine and control rooms, and aft thrusters; a midship area with moonpool and main

crane; forward jack-house-compartment with workshops, deckhouse, and forward thrusters; and forecastle with forward mooring winches, helicopter platform. The jack-up will have a length overall of approximately 109m, length over pontoon (moulded) of 100m, breadth of 40m, deadweight at design draft of 5,200 tonnes and gross tonnage of 11,800 GT. Basic design of the platform has been completed, and a construction contract is expected to be awarded in the near future.

The Wärtsilä company is also hard at work on the design of a dynamically-positioned multi-purpose offshore construction and pipe-lay vessel for Saipem. Responsible for conceptual and basic design, the German firm is developing a vessel intended for pipe-laying - either by J-lay or by S-lay technique - installation of offshore infrastructure in water depths of up to 3000m; handling of anchors, piles, and chains for FPSOs and other offshore units; handling of subsea structures such as clusters, valves, connectors, templates; and ROV operations to connect subsea components.

The vessel will also transport - on deck - and offload equipment to be installed offshore, and will have a transit speed of 14 knots, enabling it to move between projects more quickly than other, similar vessel types. The vessel will also be equipped with a pipeline production plant and firing line for pipelaying; a J-lay tower; S-lay stinger; a 1000 tonne crane; and will have dynamic positioning to class DP3. Saipem's impressive new vessel will also have a pair of ROVs with launch and retrieval system and winches, and living quarters with a high level of safety for a total of 325 persons onboard.

The redundant machinery and electrical plant will be as per DP requirements and the ship's propulsors will take the form of two azimuthing stern thrusters (for main propulsion and DP operation), complemented by three retractable thrusters, one aft and two forward tunnel thrusters. The ship's fuel tanks will be protected inside the double hull.

The Saipem vessel will be 183m overall with a breadth of 32.20m, deadweight at 8.5m draft of 11,000tonnes, and have a power plant of approximately 35mW. Basic design has been completed, and the vessel has been ordered at a Far East shipyard with delivery in the first half of 2011. **NA**



Vision becomes reality

with transport vehicles from KAMAG

Ship section transporters or modular transporters – KAMAG offers the right special vehicle for every transport job, for loads up to 15,000 tonnes and more.

KAMAG special vehicles offer flexibility for the shipbuilding industry, by taking on handling of components or even complete ships.

**Visit us at the
SMM, Hamburg,
from 23/09 to 26/09/08
in hall B2.E6, stand 020.**

**KAMAG Transporttechnik
GmbH & Co. KG**

Liststr. 3
89079 Ulm
Germany

Tel.: +49 (0) 731-40 98-0

Fax: +49 (0) 731-40 98-109

info@kamag.com

Ti Member of TI Group
Transporter Industry
International GmbH

SAL and Sietas get heavy

Heavylift specialist SAL will be adding four highly capable newbuilds to its fleet from 2010 onwards, in addition to four other ships now entering service. It has ordered all of the vessels from its long term partner for such projects. German yard group J Sietas .

In February, SAL announced the naming ceremony for *Frauke*, the first of its Type 176 series, at the port of Hamburg. After being fitted out, the vessel embarked on her maiden voyage, which will see her load a cargo of massive coal boxes in northern China for transport to Soha in the Persian Gulf.

Frauke is the first of four heavylift ships of this class to be delivered to SAL, all of which are also being built by J J Sietas. The Type 176 has a speed of 20knots – which SAL says is some 4-5knots faster than many comparable heavy lift vessels – with a combined crane capacity of 1400 tonnes SWL.

Frauke is also the first newbuilding to be delivered to a joint venture between SAL and 'K' Line, and will be followed by three sisters, all of which should enter the market by the end of 2008, being updated versions of SAL's Type 161 heavylift vessels – which were fitted with a pair of 350tonne crane and single 250tonne crane – having a pair of 700tonne cranes and one of 350tonnes.

However, the latest tranche of newbuildings announced by the company – dubbed the Type 179 – will be its most sophisticated yet, four examples having been ordered from Sietas for delivery in March, June, September and December 2010. These impressive designs will be equipped with two cranes, each of 1000tonnes SWL, providing an unprecedented lifting capacity of 2000tonnes SWL, combined with an unobstructed working deck of 135m x 27.50m, an on/under deck area of 7,000m², a speed of 20knots and a dynamic positioning to DP Class 2. Unique in the offshore heavylift market in which they will mainly work, the Type 179s differ from earlier generations of SAL heavy lifters in as much as, with the precise accuracy that DP2 provides, they will be able to position equipment for clients, not just deliver it.

Sune Thorleifsson, a director in the project department at SAL, said that the decision to invest in the Type 179s followed an analysis of the market that showed rising demand



SAL's first Type 176 heavy lifter approaches completion at Sietas Shipyard.

for heavy lift work in the offshore oil and gas industries. 'Three years ago, loads of 1400tonnes were exceptional; now 1800 tonnes is not unexpected, and cargoes are becoming heavier all the time,' Mr Thorleifsson said. 'We could see the need for larger cranes; we could see the need for DP; so it made sense to invest in these more capable vessels,' he explained, noting that, at the moment, capable as its existing tonnage is, SAL's vessels require the assistance of tugs when unloading a cargo at sea in order to maintain position, or must do so in sheltered waters. 'Obviously, this adds costs for the customer, so it made sense to move to DP2 and to vessels that can work without assistance,' he said, noting that with DP2, the Type 179s would be able to load, transport and deliver a cargo anywhere, and thus enable SAL to provide a 'one stop,' turnkey heavy lift and offshore construction support service.

Currently, if transporting a cargo intended for deployment on the seabed, SAL's ships cannot lower the cargo direct to the seabed themselves – instead they have to undertake what it calls a 'subsea handshake' with another vessel – literally exchanging control of the load beneath the water – only after which is it lowered. At present, SAL lowers the equipment through the splash zone, to a depth of 200-300m, then it is taken over by the other vessel; in future, with the Type 179 and its DP equipment, we will be able to do the whole job, and there will be no need for an

installation ship to become involved. Put simply, this means that, with the dynamic positioning system, the Type 179 vessels will be able to provide a combination of transportation and construction/positioning services, including subsea operations. The new vessels will also feature additional accommodation and a helideck, which, combined with high capacity cranes, extensive cargo capacity and DP2 positioning, will mean that the company will be in a very strong position to compete for projects in the offshore oil and gas sector. The newbuildings will also further SAL's dedication to safe and environment friendly operations, and will be among the first anywhere to be built with a 'Green Passport,' encompassing a ballast water management plan and biological sewage treatment.

The 1000tonne mast cranes with which the Type 179s will be fitted will be provided by Sietas Shipyard's sister company, Neuenfelder Maschinenfabrik (NMF), and will, claims SAL, be the first 1000 tonne cranes on any heavy lifters anywhere. With an outreach of 36m, the arrangement of the cranes also marks something of a departure for SAL. Traditionally, the company has fitted its heavy lifters with a trio of mast cranes. Such is the size of the cranes on the new Type 179 designs (which are single screw hulls, fitted with only one MAN B&W main engine) that only two need be fitted. **NA**



The i65 tank cleaning platform uses the innovative hysteresis clutch

Three dimensions – with dual advantages

Tank cleaning solutions from Alfa Laval are an optimized affair. Working with **three dimensions**, we create the perfect installation for your tank, your ship and its crew.

The **first dimension** is **understanding**, built on more than 50 years of Gunclean Toftejorg tank cleaning **experience**. Because we understand that tank cleaning regulations are weak, we focus on **real-life demands** when it comes to jet length, jet hit angle and the placement of cleaning machines.

The **second dimension** is our **tools**, such as the 3D G-Pass software that lets us view your tank from **every possible angle**. By accounting for all obstructions, including corrugations and stringer platforms, G-Pass provides a **total assessment of shadows** for any tank cleaning configuration.

The **third dimension** is our **technology**, which is stronger than ever with the new **dual-nozzle Gunclean Toftejorg i65 D** tank cleaning machine. Built on the same platform as our single-nozzle Gunclean Toftejorg i65 S, the Gunclean Toftejorg i65 D offers **built-in speed adjustment** and the patented, non-slip **hysteresis clutch**. What's more, its gearbox contains **fewer parts**, so it's even easier to maintain.

Most important are the dual nozzles of the Gunclean Toftejorg i65 D, which spray in a characteristic **criss-cross pattern** for deep and effective cleaning. In addition to **reducing the cleaning time**, this thorough pattern **improves tank heating** and **minimizes media consumption**.

And that can maximize tank cleaning benefits **for chemical and product tankers**.

To learn more, visit us at www.alfalaval.com/marine

See you at



Stand No
A1: 363

The new
Gunclean Toftejorg i65 D
combines dual-nozzle
efficiency with
easy maintenance



Aker turns attention to largest ro-pax

Aker Yards Germany delivered 15 vessels in 2007 and secured newbuilding contracts for six vessels, and since then has also embarked on construction of a new breed of ro-ro and ro-pax vessel designs.

All of Aker Yards Germany's deliveries in 2007 were containerships, with a total of 359,196gt and a total deadweight of 483,713 tonnes, while the total container stowage capacity of the 15 vessels being was 34,427TEU. During 2007, the yard also built the six sections for the first Genesis cruiseship, which is under construction at Aker Yards Turku in Finland.

Nine out of the 15 vessels delivered in 2007 were built in a split fabrication mode between the company's two sites in Wismar and Warnemünde (seven Aker CS 2700s and two Aker CS 2100s). Whilst the pre-outfitted fore ships and wheel houses were built in Warnemünde, the aft ships were constructed at Wismar, and assembly of the two ship halves and final outfitting, testing and commissioning were carried out in Wismar. Three vessels were completely built in Warnemünde (three Aker CS 1700s) and Wismar (two Aker CS 2100s and a single Aker CS 1700).

2008 has seen more examples of boxships from Aker Yards Germany delivered, including, in March, the fifth container ship of the newly developed Aker CS 2100 type, Conti Daphne, which was built for Conti Reederei in Munich.

The type Aker CS 2100 - which can also be delivered in a shortened version as Aker CS 1900 - is characterized by a high and flexible container loading capacity, environmentally friendly operation, low fuel oil consumption and high reefer container capacity with the class notation RCP.

Aker Yards Germany has also recently cut the first steel plate for what is believed to be the world's largest combined freight and passenger ferry at its Warnemünde yard. The Aker RoPax 55 is the first of two for Stena Rederi, with deliveries scheduled for the first and third quarters of 2010, with production split between the Warnemünde and Wismar yards. The gross tonnage of the vessels (63,600gt)



The first Aker RoPax 55 is one of two being built for Stena Rederi, with deliveries scheduled for the first and third quarters of 2010.

is some 35% higher than similar vessels currently in service.

The Aker RoPax 55 will be 240m in length, with a breadth of 32m, with 5500 lane-metres for trailers and 738 lane-metres for cars, along with capacity for 1200 passengers. The machinery will take the form of four MAN B&W four-stroke engines - two 8S48/60CR engines developing 9,600kW at 500rpm, and two 6L48/60CR engines developing 7200kW at 500rpm - driving two controllable-pitch propellers to give a service speed of 22kt.

Earlier this year, Aker Yards Germany also introduced two other newly developed ro-ro/ro-pax designs at the RoRo 2008 exhibition in Gothenburg, Sweden. Both types, the Aker RoRo 52 and Aker RoPax 40, were developed following what Aker Yards Germany describes as its "green - efficient - smart" design philosophy, which emphasises reducing the ships' environmental footprint through very low fuel consumption and CO₂ emissions, allied to efficient energy management, protected fuel tank arrangements without any contact with the outer shell of the hull, HFO service tanks for low sulphur HFO, and an efficient ballast water management system that contribute to create a vessel with superior environmental performance. The vessels can also be tailored to special trades and needs, thus guaranteeing competitive operation costs to the customers.

The innovative ro-ro and ro-pax vessels are further examples of Aker

Yards Germany's strategy of focusing on building ships with higher added-value, and the company's intention to reposition the yards to further strengthen their competitiveness in the international marketplace in the long-term. Apart from the ro-ro and ro-pax ships highlighted here, Aker yards Germany is also focussing on other examples of high added-value vessel including ice-breaking and ice-going tonnage and specialized tankers.

The type Aker RoRo 52 is a large shortsea ro-ro vessel with 5200 lane metres for trailers. With a deadweight of 14,400 tonnes, the ships are 220m long with a breadth of 30m and will reach a service speed of 23 knots. The design can be tailored to various customer requirements and has a modular machinery concept, a highly optimized hull design for low fuel consumption and an effective ramp configuration for quick turnaround times.

The Aker RoPax 40 is a large and fast shortsea overnight combined freight/passenger ferry with 4000 lane metres for trailers and additional space for cars. With a deadweight of 11,000 tonnes the ships will be 230m long with a breadth of 31.6m and will reach a comparatively high service speed of up to 24knots. They have a quick turnaround ramp configuration, modular machinery, an optimized hull design, and what Aker Yards Germany describes as 'very low fuel consumption' and are prepared for 'safe return to port' regulations. [NA](#)

Simplex-Compact®



Simplex-Compact®

More than 60 years of know-how makes us one of the leaders in stern tube seals' technology. Safe and reliable, the right solution for your vessel. Go for it – contact us!



See us in
Hamburg, September 23-26, 2008
Hall B4, Booth No. 230

Blohm + Voss Industries GmbH
Hermann-Blohm-Str. 5
20457 Hamburg, Germany
Phone: +49 40 3011 - 2639
Fax: +49 40 3011 - 1950
E-mail: sales.bvi@thyssenkrupp.com
www.simplex-turbulo.com

ThyssenKrupp Marine Systems



ThyssenKrupp

www.hatlapa.de

HATLAPA MARINE EQUIPMENT



2008

Visit us on our Stand A1.451
in Hall A1 EG

Deck Machinery
Compressors
Steering Gears
World-wide Service

HATLAPA

Uetersener Maschinenfabrik GmbH & Co. KG

info@hatlapa.de
www.hatlapa.de

HATLAPA

HATLAPA Asia Pacific Pte. Ltd.

Shanghai: hatlapa@online.sh.cn
Singapore: info@hatlapa.com.sg



THE GLOSTEN ASSOCIATES
Consulting Engineers Serving the Marine Community

GLOSTEN
50
YEARS

VESSEL DESIGN ENGINEERING AND ANALYSIS CONSULTING SERVICES

Innovation. Service. Solutions.

We incorporate personal attention and focused expertise in all aspects of our design and consulting services.

Whether your needs require a conventional or one-of-a-kind approach, look to us for the solution.

TEL 1.206.624.7850 FAX 1.206.682.9117 www.glosten.com
Naval Architects | Marine Engineers | Ocean Engineers



**Innovative ideas. Best engineering.
Delivery on schedule. We do it!**



1857-2007
150 years of shipbuilding.



Lloyd Werft Bremerhaven GmbH
www.lloydwerft.com

An eye for detail.
Quality from Sauer & Sohn.



**Visit us at SMM 2008:
Hall A3, Stand 143**

All our employees responsible for the manufacturing process, from engineer to assembly worker, take the utmost care to ensure that your Sauer compressor leaves the factory in the top-class condition you expect.

The original Sauer & Sohn is manufactured step by step, using state of the art processing technology.

We stand for quality.

Sauer Compressors



J.P. SAUER & SOHN
MASCHINENBAU GMBH



info@sauersohn.de www.sauersohn.de

ThyssenKrupp restructured

ThyssenKrupp Marine has been reorganised.

At a meeting of the ThyssenKrupp Marine Systems' supervisory board, earlier this year, it was decided that the naval shipbuilding and merchant shipbuilding sectors of Blohm + Voss would be divided into two legally separate, autonomous companies.

As of April this year, the naval sectors of Blohm + Voss in Hamburg and Nordseewerke GmbH in Emden have been brought together under one roof as TKMS Blohm + Voss Nordseewerke.

The merchant shipbuilding division of Blohm + Voss changed its name to Blohm + Voss Shipyards GmbH, simultaneously taking over the management of HDW-Gaarden GmbH, Kiel. Both companies will concentrate on the merchant shipbuilding business.

As part of these changes, the merchant

shipbuilding and repair activities at the Hamburg site are to be strengthened and expanded. The same holds true for the Emden site for naval surface vessels.

Under the auspices of ThyssenKrupp Marine Systems as holding company, TKMS Blohm + Voss Nordseewerke in Hamburg and Emden will focus on naval surface vessels; Howaldtswerke -Deutsche Werft in Kiel will focus on submarines; and Blohm + Voss Shipyards & Services in Hamburg and Kiel will focus on merchant shipbuilding, repairs, offshore and components.

The business activities of the Groups shipyards outside Germany - Kockums AB in Sweden and Hellenic Shipyards in Greece, both part of the TKMS Group - will be integrated into these new structures, and the companies will continue to specialize

in submarine and naval surface vessel construction.

Among the latest orders secured by the TKMS Group are a pair of 3400TEU boxships to be built at TKMS Blohm + Voss Nordseewerke for an unspecified customer. Both ships will be built at the Emden shipyard and are scheduled for delivery in 2010 and 2011. Following this order, TKMS Blohm+Voss Nordseewerke now has contracts for eight ships of the new 3400TEU series, the first of which having been launched on 9 May. The vessel, CSAV Rungue, was due to be delivered at the end of August, 2008.

The compact 3400TEU containership design was developed by TKMS Blohm+Voss Nordseewerke and is characterised by a high payload capacity and a high speed in combination with low fuel consumption. *NA*

The world's leading shipbuilding fair is coming to Istanbul

21 - 23 jan. 2009



Istanbul

shipbuilding · machinery &
marine technology

trade fair · istanbul

Goca Exhibitions
FUAR KONGRE VE SERGI HİZMETLERİ

Phone: +90 (216) 5180397 · ebru@goca-exhibitions.com

Hamburg Messe

Phone: +49 40 3569-2148 · diana.haagen@hamburg-messe.de

This Fair is organized with the permission of TOBB
(The Union of Chambers and Commodity Exchanges of Turkey)
in accordance with the Law No.5174TOBB

www.smm-istanbul.com

Schottel adds heavy thrust

Frydenbø Power in Norway has secured a significant order for a total of 28 Schottel thrusters for the Twin Marine Lifter (TML) heavylift vessels being developed by SeaMetric in Norway.

SeaMetric intends to use the TML vessels to decommission offshore oil platforms, but may also use the vessels in the heavylift market or as offshore accommodation vessels.

The TML consists of two 25,000dwt vessels, 140m long with a lifting capacity of 10,000tonnes per vessel. Lifting will be performed by four 75m long lifting arms.

For each TML vessel, Frydenbo Power will supply four Schottel SRP 3030 thrusters which will provide a total of 12,400kW. In addition each vessel will also be equipped with three Schottel SRP 4040 thrusters, a SRP 1212 ZSV retractable unit as well as two STT1212 tunnel thrusters with a total installed power of 15,400kW.

‘By having a DP Class 3, a heavylift system and accommodation facilities, we will be independent of anchor handler vessels, tugs, daily helicopter shuttling and accommodation offshore, which will reduce operational costs significantly. We will also be capable of safe operation in congested areas and above subsea pipelines. The TML vessels are also very flexible - for instance the lifting arms can be rapidly skidded off thus allowing use of the base TML vessels in the heavy transport market, which will maximize utilization and therefore improve our potential profitability,’ said Johan F Andresen, managing director of SeaMetric International.

CNPC Liaohe Shipyard in China will deliver the first of the TML vessels to SeaMetric in 2009.

SCHOTTEL propulsors have also been specified for the new heavylift vessels ordered by SAL in Germany which are highlighted elsewhere in this article. The naming ceremony for Frauke, the first Type 176 newbuilding for SAL took place in Hamburg in February 2008. All of the vessels are



SeaMetric's innovative Twin Marine Lifter heavylift vessels will have Schottel thrusters.

being built by the J J Sietas shipyard in Hamburg-Neuenfelde, and will be fitted with Schottel type SCP 154-4XG controllable pitch propellers, each of 12,600kW at a propeller speed of 130rpm, with a propeller diameter of 5.5m.

With a speed of 20knots and a combined crane capacity of 1400tonnes SWL, Frauke is the first newbuilding for SAL since the company established a joint venture with 'K'Line. Three sister vessels are scheduled to enter the market by the end of 2008.

This extensive newbuilding programme will be supplemented by another four Type 179 newbuildings which will be equipped with two cranes, each providing a lifting capacity of 1000tonnes. With a combined crane capacity of 2000tonnes, a deck

area of 135m x 27.50m, a speed of 20knots and DP2 these vessels will be extremely capable additions to the market and will provide a combination of transportation and construction/installation services for the oil and gas sector, including subsea operations.

Another important reference will see Schottel Rudderpropellers fitted to a series of GPA 696 Inspection, Maintenance & Repair (IMR) vessels designed by Seattle-based Guido Perla & Associates for Groupe Bourbon in France.

The 100m, long IMR vessels will be equipped with three Type SRP1215 Rudderpropellers of 1686kW each, a single retractable Type SRP 550 ZSV Rudderpropeller of (843kW, and two STT 4 FP transverse thrusters, each of 843kW. [NA](#)

World-leading integrated marine systems.



Rolls-Royce has brought together the stars of marine technology to provide customers with a single focus for integrated marine systems. Naturally, the marine products in our extensive range are designed to work perfectly together, enabling us to combine them in a variety of systems that deliver optimum performance

together with outstanding reliability. Rolls-Royce is fully committed to customer satisfaction. Through our acclaimed global support network we offer comprehensive, tailored support options ensuring that, year on year, our customers save time and money and our marine solutions run reliably and efficiently.

Trusted to deliver excellence

CENTA POWER TRANSMISSION
LEADING BY INNOVATION



We're justifiably proud of the fact that more and more people in the marine industry are choosing CENTA flexible couplings.

From speed boats to cruise liners, 1/2 million vessels world wide now enjoy the benefits of their precision engineering – noise elimination, vibration reduction and lower maintenance. To find out more, visit www.centa.info.



Please visit
CENTA at
SMM 2008
Hall A3
Stand 321

WWW.CENTA.INFO

Selling 1/2 million flexible couplings
is something to celebrate.



www.voithturbo.com/marine

Keeping your ships worldwide on course. This moves us.

Precise maneuvering is becoming ever more important in shipping. Voith Turbo Schneider Propulsion has been designing systems that are safe for man and environment for over 80 years: with tailor-made drives such as the Voith Schneider Propeller, the Voith Turbo Fin, the Voith Cycloidal Rudder and the worldwide

proven ship's concept of the Voith Water Tractor we are proving our far-reaching competence. Low-maintenance systems for safe operation, high availability and quality for a wide variety of ships. Your ships stay worldwide on course.

**Please visit us at the SMM in Hamburg
23 – 26 Sept. 2008, hall 4, booth 112**

Voith Turbo

VOITH
Engineered reliability.

GL clears the air

Germanischer Lloyd has been taking a leading role in the air emissions from ships debate, as witnessed by a recent forum held in Dubai.

Classification society Germanischer Lloyd's conducted its first 'Exchange Forum,' which took place in Dubai earlier this year dealt with emissions and energy efficiency, and was attended by representatives of the local maritime industry in the UAE including shipping companies, ship management agencies and shipyards.

Organised by the GL office in Dubai, the Forum highlighted the current status of emission controls in respect of SO_x, NO_x, and CO₂. The main speaker was Dr Pierre C Sames, Director Strategic Research and Development at Germanischer Lloyd, who gave a speech entitled 'Ship emissions – status and challenge ahead,' in which he underlined the need for the IMO to obtain an international agreement on further reduction of ship related emissions to air.

While SO_x and NO_x emissions have a strong impact on coastal regions, CO₂ emissions pose a global challenge, noted Dr Sames and, given the expansion of the world fleet, reducing air emissions is a high environmental priority for the shipping industry.

In respect to CO₂ emissions, Germanischer Lloyd has developed an operational CO₂ Index for shipping. It is based on the forthcoming IMO requirements and allows shipowners and ship management companies to get an overview of the amount of CO₂ emissions from each of their ships.



Remote longing? Why not steam through the environment?

Five large containerships owned by Greek shipping company Costamare will be the first to operate in full compliance with MEPC Circ 471 regarding operational CO₂ indexing now that Costamare has registered the vessels - COSCO Guangzhou, COSCO Ningbo, COSCO Yantian, COSCO Beijing and COSCO Hellas - with GL's operational CO₂ indexing programme.

On the basis of consumed fuel, transported cargo and distance sailed, CO₂ emissions will to be determined using carbon emission factors. Computed index values can be compared to sister-ships' indices and eventually be used to minimise emissions.

'With the realisation of an operational CO₂ emission indexing for ships, GL is contributing significantly to the future implementation of such an index,' said Dr

Hermann J Klein, Member of the Executive Board at GL.

Applied on several ships in a fleet, the technology developed by GL allows a comparison of CO indices between vessels, a function that is expected to trigger a learning effect as differences in fuel consumption will be made explicit and transparent.

In his second presentation, Dr Sames focused on a range of topics related to ship efficiency. 'Today, each shipowner is interested in reducing fuel consumption,' said Dr Sames. 'The fuel costs for a series of eight container ships over 25 years are US\$8.8 billion at current prices, so it makes a lot of sense to invest in efficiency,' pointing out that a lot can be done at the newbuilding stage with design measures including optimized hullforms and hull structures, improved inflow to the propeller and enhanced engine efficiency. For existing ships, measures can be taken with regard to coating types, crew performance, management of energy on board, speed reduction, and optimizing the load factor.

'In the long run, alternative fuels have to be analyzed,' said Dr Sames, noting the potential of gas-fuelled ships and, in due course, ships with power provided by fuel cells.

Dr Sames concluded: 'With ever rising fuel prices, ship efficiency is the key to economic shipping.' *NA*



Happy?

At sea, moments of satisfaction are few and far between. Decent food and clean clothes are a good start. Electrolux Marine heavy duty galley and laundry appliances for marine use from Loipart. It's the best way to make your crew smile.

LOIPART

Exclusive distributor of Electrolux Marine food service and laundry appliances.

loipart@loipart.se | www.loipart.com

See you at



Stand No
B5: 225



Modern ships need... innovative equipment

SEC

SHIP'S EQUIPMENT CENTRE BREMEN

www.sec-bremen.de

Your benefits from SEC`s FAT-system:

- Reliable - patented and certified - reduce your initial investment
- Reduce your costs for spare parts - reduce your costs for maintenance
- Reduce your costs for port handling - save time during unloading
- Become even more competitive

More than 1.2 Mio units in service

More than 260 ships equipped with SEC`s FATs



CENTRAL INDUSTRY GROUP N.V.
www.centralindustrygroup.com



REINTJES

Y O U R P A R T N E R F O R T H E F U T U R E



REINTJES GmbH produces marine gearboxes in the output range of 250-30,000 kW for every type of vessel, from fishing-trawler to high performance catamaran, with its staff of 420 at its plant in Hamelin, Germany.

Serving customers as an independent partner, REINTJES has been designing and manufacturing only marine gearboxes for more than 75 years.

It has subsidiaries in Singapore, Madrid, Dubai and Antwerp, as well as sales and service partners all over the world.

REINTJES puts service first, guaranteeing its customers global support around the clock. Its corporate philosophy "Your Partner for the Future" is based on its customer- and growth-oriented strategy.

REINTJES GmbH
Eugen-Reintjes-Straße 7
31785 Hameln
Tel. + 49 5151/104-0
Fax + 49 5151/104-300
www.reintjes-gears.de

Order 'explosion' for Becker

Record-breaking deal for twisted rudders for Becker Marine Systems.

2008 has proved to be a good year for Becker Marine Systems, which has seen what the company recently described as 'an explosion of orders' for its rudders, including a series of orders for rudders for large container vessels under construction at Hyundai Samho Heavy Industries in South Korea.

The order glut means that Becker is now equipping around 60% of all container vessels larger than 10,000TEU that are under construction at HSHI.

The most recent order for the company's twisted leading edge propellers was the largest order ever signed by the company, and is comparable in size to Becker's entire annual turnover in 2005.

The rudders in question will be of the second-generation TLKSR design with Becker Marine Systems' patented VORTEX-S-Deflector, which provides additional

protection of the rudder from the effects of hub vortex cavitation.

In Europe, Dutch dredging specialist Van Oord has recently ordered a 31,200m³ trailing suction hopper dredger at IHC Merwede shipyard which will be fitted with a twin Heracles flap rudder system.

The rudders are specially designed for dredging operations and are sized at 27m³ with an operating angle of 45degrees. In conjunction with the ship's hullform and diesel electric propulsion system, the Heracles rudder system will ensure that the new vessel has excellent manoeuvring performance.

The vessel - to be named *Vox Dubai* - is 200m long with a breadth of 31m, dredging depth of in excess of 70m and hopper capacity of 24,000m³, making the vessel the largest of its type built in The Netherlands to date. The keel laying ceremony took place on 31 May, with delivery scheduled for spring 2009. *NA*

Becker comms signs with Iridium

Becker Marine Systems Communication, operator of Universal Marine Communication Global Network - or 'umc.global network' - has entered a global distribution partner agreement with Iridium Satellite to integrate, optimise and distribute Iridium OpenPortSM bandwidth marine satellite systems.

Under the agreement, Becker Marine Systems is integrating the Iridium OpenPort service with its umc.connect optimisation server and its umc.global network managed services.

Iridium OpenPort+ services are provided with volume-based flat rates, and the unlimited and global flat rate access to the umc.connect portnet wireless broadband infrastructure, with 6mbit/s of bandwidth in 80+ Ports, is directly built into the solution.

**nora®
rubber floorcoverings -**

**IMO approved,
serving the shipbuilding
industry worldwide**

nora

PVC-free

nora systems GmbH
flooring systems
Höhnerweg 2 - 4
69469 Weinheim
Germany
Fon: +49 - 6201 - 805570
Fax: +49 - 6201 - 885570
E-Mail: nora@nora.com
Internet: www.nora.com

nora SYSTEMS GMBH
flooring systems

See us at
SMM
Stand 220
Hall B5

**SUN AND GLARE
PROTECTION
FOR SHIPBRIDGES**

BERGAFLEX

Bergaflex AB • Lastgatan 9
SE-254 64 HELSINGBORG • SWEDEN
Phone: +46 42 165200 • Fax +46 42 165150
info@bergaflex.com • www.bergaflex.com

Solutions for shipbuilding and industry



Neuenhauser Kompressorenbau GmbH
 Hans-Voshaar-Str. 5 · D-49828 Neuenhaus
 Germany
 Phone +49 (0) 59 41/604-252
 Fax +49 (0) 59 41/604-202
 e-mail: nk@neuenhauser.de
 www.neuenhauser.de

• Compressors

- starting air
- control air
- working air

• Compressed-Air Receivers

- TDI-Engine Air Starters
- Gastight Bulkhead Penetrations

wind speed force 12
 9 meter wave height
 10 crew
 Coupling: VULKAN



visit us at the SMM 2008 • hall A3 • booth 340

www.vulkan24.com

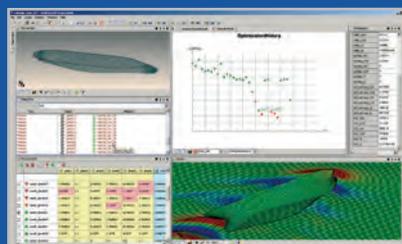


FRIENDSHIP SYSTEMS

FRIENDSHIP SYSTEMS GMBH
 BENZSTRASSE 2
 D-14482 POTSDAM · GERMANY
 TEL. +49(0)331 967 66 0
 FAX +49(0)331 967 66 19
 WWW.FRIENDSHIP-SYSTEMS.COM
 INFO@FRIENDSHIP-SYSTEMS.COM

SOFTWARE

- COMPUTER AIDED ENGINEERING
- CAD-CFD INTEGRATION
- PARAMETRIC MODELING AND VARIATION
- DESIGN AND AUTOMATED OPTIMIZATION



SERVICES

- ADVANCED TRAINING
- PROCESS ANALYSIS AND CUSTOMIZATION
- PARAMETERIZATION OF COMPLEX SHAPES
- RESEARCH AND DEVELOPMENT

VISIT US AT SMM 2008: BOOTH B7.33
 Get your free trial version of
 the FRIENDSHIP-Framework



Ballast system gets early approval

German ballast water treatment specialist suggests that shipping industry intransigency over the installation of ballast water treatment technology may be ill-founded.

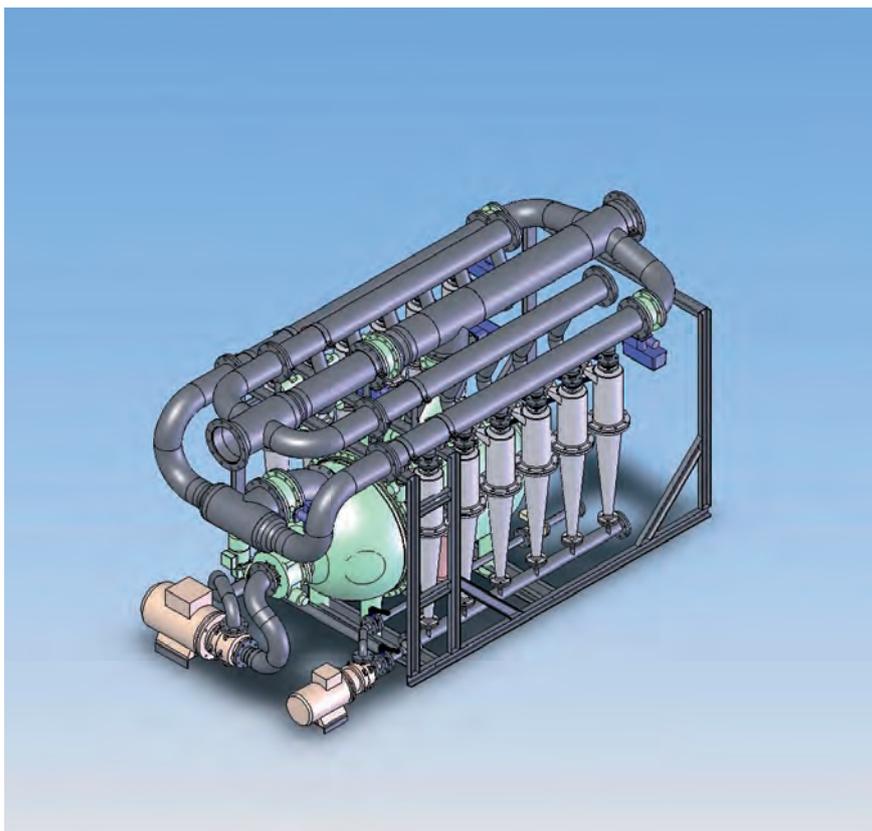
Earlier this year, a new ballast water treatment system jointly developed by Hamann, which is based in Hollenstedt, near Hamburg, and Evonik Industries in Essen, secured final approval from the German authorities, having already been approved by the International Maritime Organization.

In addition to IMO approval, Hamann's SEDNA ballast water treatment system, which works in conjunction with Evonik's PERACLEAN technology, has now also been granted type approval by the Federal Maritime and Hydrographic Agency (BSH) in Hamburg. The system secured final approval from the IMO in April of this year.

Type Approval was preceded by an extensive testing and trials programme undertaken by experts such as Dr Stephan Gollasch from GoConsult in Hamburg. During the tests, the entire system was operated at length in fully automatic mode, on land and on a test ship. The tests focused on the efficiency, reliability, and safety of the technology, and experts from NIOZ, the Royal Netherlands Institute for Sea Research, documented the test results in a detailed report that formed the basis for the approval of the German administration (BSH).

With certification by the IMO and the BSH, the German ballast water treatment became the first system that complies with the IMO Convention on Ballast Water Management of 2004 and has obtained Basic and Final Approval for its active substance as well as for the entire system. In addition, Germanischer Lloyd recently certified the system for engine room and ondeck installation, and a full scale plant is in continuous operation aboard a recently constructed container ship.

The SEDNA (Safe, Effective Deactivation of Non-Indigenous Aliens) system developed by Hamann treats



Schematic for the Sedna ballast water treatment system from Hamann.

ballast water in several steps during the intake process. Initially, hydrocyclones are used to separate out solid material using centrifugal forces. This eliminates larger species and significantly reduces sediment, to which living organisms are often attached. A filter then removes all remaining particles larger than 50 micrometers. The newly-developed hydrocyclones were specially designed for ballast water applications, and significantly reduce the sediment load in ballast water and also removes some of the organisms present. The small size of the individual hydrocyclones allows installation on a single-deck. The number of hydrocyclones required depends on the flow rate of the ballast water pump. Each hydrocyclone has

a flow rate equal to 35m³/hour up to maximum of 42m³/hour.

This fine filtration process has two key functions: it removes nearly all organisms greater than 50µm; and it increases the stress imposed on the organisms and increases sensitivity to disinfection. 'This two-stage physical process ensures that the various types of solids in the water and a wide range of living organisms are effectively separated out,' Dr Matthias Voigt, an executive board member responsible for research and development at Hamann, explained.

The ballast water is then disinfected using PERACLEAN Ocean, a special formulation of peracetic acid and hydrogen peroxide developed by Evonik,

a substance which is easily biodegradable. 'Even at very low concentrations, our product shows excellent biocidal and fungicidal properties and is also effective over a wide range of temperature and pH,' said Bernd Hopf, project manager at Evonik's Global Competence Centre Active Oxygens.

In practice, no more than 150litres of PERACLEAN Ocean are required to treat 1000tonnes of ballast water. Whatever the number and type of organisms, the ballast water satisfies the IMO Convention's strict requirements after only 24 hours retention time in the tank.

The combined process developed by Hamann and Evonik has a number of advantages, not least the fact that the SEDNA system is suitable for a particularly wide range of ships, having a modular concept that can be adapted to meet the demand to treat a range of ballast water

pump capacities, ranging from 50 to 2000m³ per hour.

Mechanical pre-treatment separates out all of the larger components in ballast water, and significantly reduces the sediment load that would otherwise have entered the ballast water tanks. 'Low energy consumption and the low level of wear and tear are further important advantages,' Mathias Schmidt, a sales manager at Hamann explained.

Evonik says PERACLEAN Ocean is highly effective against all the remaining organisms, and is compatible with all commonly used ballast tank coatings and can be used in salt water, freshwater or brackish water. It has a long shelf life, is easily dosed, economical to use, and—most importantly—environmentally friendly.

Hamann says the SEDNA system has been tested extensively at different locations over several thousands of operating hours.

The test sites were selected for their different water quality and challenging water conditions (high sediment load and/or dense phytoplankton bloom). The evaluation of the biological efficiency was based on removal/inactivation of the plankton present at the test sites and on surrogate organisms, respectively. Two different pilot plants were used during the tests, with TRCs of 200m³/hour and 500m³/hour, respectively. All tests were carried out at full scale flow rates.

At each of the locations, SEDNA demonstrated that it reached or exceeded the D2 standard of the IMO Ballast Water Convention for organisms >50µm and organisms between 10µm and 50µm.

Various configurations of the complete ballast water treatment system are available, including three basic designs, a containerised system; skid-mounted system; and a modular system. **NA**

Our system competence for your success!




- CNC tube bending machines
- Semi-automatic and 1-axis-controlled tube bending machines
- Assembly machines for hydraulic tubing
- Tube inspection systems
- System solutions for automated production of template pipes
- Software solutions for efficient piping



See us at:
SMM 2008
 Hamburg, September 23-26
 Hall B2 EG, Booth No. 241

THE ONLY CHOICE FOR PERFECT PIPE INSTALLATIONS



TRACTO-TECHNIK GmbH & Co. KG • D-57368 Lennestadt
 Tel: +49 (0)2725 / 95 40-0 • Email: tubomat@tracto-technik.de • www.tracto-technik.com



SCHWEPPER

Lock & Hardware Concepts for Ship & Yachtbuilders

www.schwepper.com









P.B. 10 06 61 - 42571 Heiligenhaus - Germany • Phone + 49 - 20 56 - 58 55 - 0 • Fax + 49 - 20 56 - 58 55 - 41

Hatlapa shifts focus

New focus for German manufacturer, following deck crane divestment.

As far as deck machinery is concerned, the German company Hatlapa is now primarily focused on the supply of mooring winches, anchor handling winches, towing winches and capstans, having decided to sell off its deck crane business earlier this year, to CSSC Nanjing Luzhou Machine of China.

CSSC Nanjing Luzhou Machine is an experienced supplier for different European crane designers, including MacGregor, and has taken this step to increase its own in-house crane portfolio. The company is constructing additional workshops in Nanjing to ensure it now has sufficient capacity to serve the shipping market with a range of electro-hydraulic, 4-rope grab, hose-handling, and deck handling cranes.

Hatlapa's involvement in the deck crane sector will not be totally ended, however. Its Hatlapa-Service Team will continue to provide world-wide maintenance and repair services for KSW-type crane manufactured by CSSC Nanjing Luzhou in future.

Hatlapa winches are found on all types of vessel, and the company reports particular success in recent years with the frequency inverter controller AC motor driven units. More than 1000 winches of this type, which features technology that Hatlapa has patent-protected, have been sold, and the design is distinguished by the creation of nominal pull even at zero speed. This is a key advantage for

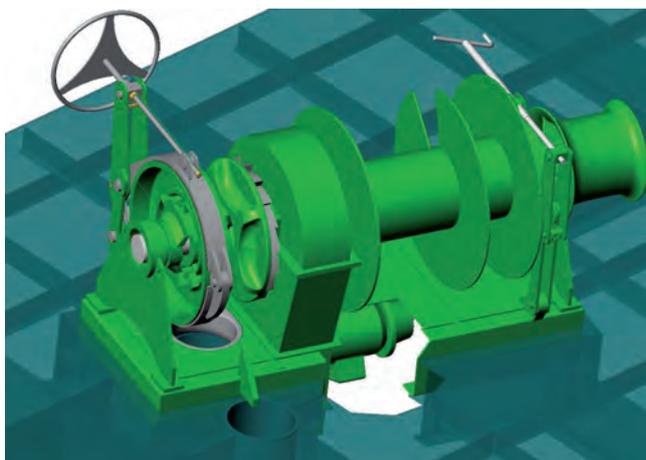
mooring winches in their holding function, Hatlapa points out.

Hatlapa anchor and mooring winches are of a compact, modular design, and are available in different types of foundations, so that the particular preferences of individual shipyards can be taken into account. The aim, says Hatlapa, is to ensure that the alignment and installation of the winches on deck can be carried out at the least cost by the yard.

Anchor-handling and towing winches, with pull capacity up to 600 tons are also part of the Hatlapa product range. Depending on customer requirements, either low-pressure hydraulic, high pressure-hydraulic or electrical drives can be installed.

Hatlapa points out that it is now one of only two manufacturers remaining for large, hydraulic high torque motors in the low pressure range, with system pressures of 65bar. These are generally used for anchor and mooring winches with high capacity requirements.

As well as its range of deck machinery, Hatlapa continues to offer a steering gear product range, which has recently been extended to encompass the needs of containerships with capacities of over 13,000TEU and rudder torques up to 10,000 kNm. Hatlapa is now the only non-Asian manufacturer of large ram-type steering gears, and says its market share has increased in recent years. *NA*



Hatlapa has refocused after disposing of its deck crane business

RWO



Unique technologies for safety and efficiency

- > Oil/Water separation
- > Ballast water treatment
- > Sewage treatment
- > Seawater desalination
- > Water treatment

Please note that this year we are in a new location at the SMM and in new »outfit«

Visit us at the
SMM 2008
>Hall 1
Stand 531

RWO GmbH
MARINE WATER TECHNOLOGY
Thalendorststrasse 15 A
28307 Bremen · Germany
Tel. +49 421 537050
www.rwo.de

VEOLIA
WATER
Solutions & Technologies

Confirm your position in
the Russian market at



NEVA 2009

ST. PETERSBURG, RUSSIA, 22-25 SEPTEMBER 2009



**THE 10th ANNIVERSARY NEVA EXHIBITION & CONFERENCE
20 YEARS DEVELOPMENT OF RUSSIA'S MARITIME INDUSTRIES
FOR SHIPPING, SHIPBUILDING, OFFSHORE ENERGY,
PORTS & OCEANOGRAPHY**

The Exhibition is expected to increase again by over 15% to welcome

- **OVER 800 MULTI-NATIONAL EXHIBITORS**
- **OCCUPYING 11,000 sqm NET EXHIBITION SPACE**
- **WITH 45 EXHIBITING COUNTRIES (incl. 15 National Groups)**
- **24,000 PROFESSIONAL VISITORS**
- **MORE THAN 350 CONFERENCE PARTICIPANTS**

NEVA 2009 - NEW HALLS PLANNED TO MEET THE INCREASING DEMAND

Contact Dolphin Exhibitions:

Tel: +44 1449 741801 Fax: +44 1449 741628

E-mail: info@dolphin-exhibitions.co.uk

www.neva.setcorp.info

Cost concerns for Chinese yards

Assessment of the financial viability of shipbuilders made through comparing variable costs provides a fascinating insight into the relative performance of China's fast expanding shipbuilding sector. Report by Worldyards.com*.

It is widely speculated that shipyards will face financial problems due to steel price increases and other general costs. The question is how to get a quantitative measure on the extent of this problem. The difficulty is further compounded by the fact that shipyards are located in countries with different currencies and accounting systems.

Worldyards uses a micro/bottom up approach to analyse this issue, selecting Medium Range Tankers (MR) for Korean yards and Supramax for Chinese yards. It would be logical to use same type of ships - say supramax - for both countries, but the reason for having to select different types is that shipbuilding contracts are not more than a commitment for future deliveries.

In the current shipbuilding boom the time lag is typically three years if not longer (if we ignore 'squeezed/magic' slots) so the bulk of the costs will be incurred long after the shipbuilding contract is effective. Therefore, to analyse profitability today

*This Market Comment is a product of Worldyards.com Pte Ltd (www.worldyards.com). Reprinting or reproduction of this market comment without explicit consent of Worldyards.com Pte Ltd is prohibited. Other Products and Services of Worldyards:

- Monthly Newsletter
- Subscription to www.worldyards.com
- Subscription to www.shippingstatistics.com
- Customised reports such as supply demand balance, country analysis, cost analysis and repair sector, shipyard vetting.

No.	Assumptions (July 2008)	China	Korea
1	Annual Productivity Improvement	3%	3%
2	Cost per man-hour	100 RMB/hr	32,500 Won/hr
3	Annual Rate of Wage Inflation	15.00%	8%
4	Correlation between Outfitting/equipment Cost and Steel Price	30%	30%

Table 1: assumptions for shipbuilders in Korea and China.

No.	Particulars	Jan, 2006	Jul, 2006	Jan, 2007	Jul, 2007	Jan, 2008	Jul, 2008
1	Total Steel Cost in Won (price per ton x lightweight)	6,562,500,000	6,142,500,000	6,405,000,000	6,982,500,000	7,297,500,000	11,445,000,000
	Steel Plate Price in Won (/Ton)	625,000	585,000	610,000	665,000	695,000	1,090,000
2	Direct Labour cost in Won (man hour x cost per hour)	7,993,330,475	8,203,335,874	8,418,858,655	8,640,043,776	8,867,040,000	9,100,000,000
	Cost in Won Per Man-hour	26,500	27,603	28,754	29,952	31,200	32,500
	Man-hour Per Vessel	30,1640	297,182	292,790	288,463	284,200	280,000
3	Outfitting/equipment Cost in Won	12,916,183,177	12,753,117,213	128,550,33440	13,079,249,140	13,201,548,612	14,811,825,000
(a)	Total Variable Cost in Won (1+2+3)	27,472,013,652	27,098,953,087	27,678,892,096	28,701,792,916	29,366,088,612	35,356,825,000
	Won/USD	1,013	953	929	925	938	1,040
(a)	Total Variable Cost in USD	27,119,460	28,435,418	29,794,286	31,028,965	31,307,130	33,996,947
(b)	Corresponding NB price (USD) 2 Years Ago	34,000,000	36,000,000	40,500,000	43,500,000	44,000,000	45,000,000
	Difference in USD (b - a)	6,880,539	7,564,582	10,705,714	12,471,035	12,692,869	11,003,053
	% Variable Cost over Price (a/b)	80%	79%	74%	71%	71%	76%

Table 2. Variable Costs/Price Comparison for Korean MR (LDT 10,500tonnes, manhour 280,000).

(July 2008) we have to compare costs incurred today with contracts in the past.

Since costs are increasing gradually and exchange rates do not fluctuate overnight, we consider a time lag of two years as a general average, appropriate (this is, of

course, open for debates). To figure out profitability of Korean/Chinese yards today, we must look at contracts placed two years back, i.e. in August 2006. At that time, there were simply no Supramaxes contracted in Korea (most Korean yards

from 18000 to 36000 running hours

ABB TPL...-B
2-stroke turbochargers
run 36,000 hours
without a bearing inspection.

Long-distance runners.
www.abb.com/turbocharging

ABB

Important decisions are made here...

Alewijnse Marine Systems is a global player with more than a century of experience in engineering & contracting, and a long tradition in marine automation, electrical & ICT solutions, integrated bridge systems, system design, switchboard & console solutions, power generation & drive technology, entertainment systems, power & energy management, navigation & communication equipment, service & maintenance (24/7). As a leading company Alewijnse Marine Systems focuses on inland shipping, short sea, yachting, offshore, dredging, tugs and workboats.



*Meet us at SMM in
Hamburg, HALL B6
ground floor, stand
no. B6.112, close to
'Gastronomie'
(food & beverage area).*

...but the biggest is made before she goes to sea

Combining various installations and functions so that the user perceives them as one system is a tricky field. Many things can go wrong. It needs a team player with in-depth knowledge. One who is goal oriented and shares your vision of success. One who is innovative and thinks with you every inch of the way. And one who is proud to take responsibility, especially at critical moments. But not all team players are equal.

So, the next time you need system integration support, call one of the most trusted names in the business. Alewijnse Marine Systems.

www.alewijnse.nl

Alewijnse Marine Systems
P.O. Box 49, 6500 AA, Nijmegen
The Netherlands
Phone: +31 (0) 24 371 6571
Fax: +31 (0) 24 371 6570
ams@alewijnse.nl
www.alewijnse.nl

Alewijnse Empowering your business



regarded drybulk ships as low value added products at that time, so they caught the train very late in the game). We believe our methodology is applicable for other ship types.

We decided to concentrate on variable costs only. Cashflow is always more important than accounting (profit and loss) profit, and many profit and loss items (some of them are at the same time cashflow items) contribute to depreciation, overheads, while financing costs to each vessel are basically discretionary on the part of the account-keepers which makes it impossible to compare. On the other hand, 'hard' dollar and cents, variable costs and real cashflow items are not easily manipulated. At the end of the day, newbuilding (NB) price will at least cover variable costs to allow for other costs. If not, this spells trouble.

Table 1 shows assumptions for typical shipbuilders in Korea and China:

The assumptions were made to the best of our knowledge and are as real as possible. Many yards have a mixed measure of accounting (read overhead) costs and direct costs - leading Korean yards talked about a labour cost per head of US\$60/hour, but it is clear that the direct cost component is only US\$32/hour. Productivity growth will decrease manhours whilst annual wage inflation will boost costs on a per manhour basis.

We then make further assumptions for LDT (steel weight) and manhour figures for a 'generic' MR product tanker to be built in Korean yards and Supramax bulk carrier to be built in China. The LDT figures are averaged over a few designs, whilst manhour figures are best estimates based on data from the field. Many Chinese yards claim that they do not measure manhours at all, and from the yards which do, we got figures ranging from 220,000 to as much as one million.

Worldyards has settled for a figure of 350,000 manhours, which is hopefully representative of the national average - but we would welcome input from all quarters about our assumptions.

When we apply the local steel prices as well as the respective exchange rates to these assumptions as below, we will arrive at the variable costs in US dollars for a 'generic' Korea MR tanker. Compare cost with their corresponding newbuilding prices two

years ago, and we will find out the difference between them as well as the percentage of variable costs over newbuilding prices.

We can see from Table 2 that variable cost actually accounts for 76% of the newbuilding price at present. Applying the same logic to a Supramax in a Chinese yard, we will find that margins steadily deteriorated over time and that the current variable cost has dramatically risen from six months ago to above newbuilding prices (104%), which indicates that shipyards will most definitely lose money when other costs are factored in (apart from the costs mentioned earlier, most private Chinese yards will need to pay a 2%-3% fee to trading houses in return for arrangement of refund guarantees).

As mentioned earlier we welcome input on our individual assumptions, but we are rather confident with our methodology.

If we repeat this exercise for all ships in the orderbook, given their order date, of any particular shipbuilder, we can assess its financial health with reasonable ease. Yards always make money on some ships, and lose on others, but on average, they must cover all their variable costs in order to survive. If a yard has lots of orders which cannot cover variable costs, the issue of solvency is inevitable (we do not really buy into the idea that Government will serve as rescuing white knight).

At the risk of over-simplifying, we can conclude that the combination of low

productivity, high local wage inflation, as well as appreciating currency, make life a lot more difficult for the Chinese shipbuilder. For their Korean counterpart, rising costs are offset to some extent by the favourable development in exchange rates. Do the above calculations tally with reality? It seems that they do, based on our knowledge/conversation with builders in both countries.

The question is, how will things develop from here? Remember we are comparing today's costs with newbuilding prices two years ago, and prices have gone up a lot since July 2007 (as can be seen from Table 3, the price of a Supramax was a mere US\$27 million, while an MR tanker was only US\$45 million, compared to US\$46 million and \$54 million respectively now; prices actually went down from January 2006 to July 2006). So yards have higher margins to play with going forward. But, whether they will turn a profit depends on the future development of steel prices, exchange rates, productivity growth (or the lack of it), and labour cost inflation. Some general comments can be made for these factors.

When the 'shipbuilding super-cycle' fever was raging fast and furious, Worldyards already commented that many in China entered shipbuilding with false assumptions, without a coherent strategy, and many did so without proper approval from authorities on their new dock construction plans. With the benefit of foresight, these overly

Table 3. Variable Costs and Price Comparison: Chinese Supramax.
(LDT 8,050 mt, manhour 350,000)

No.	Particulars	Jan, 2006	Jul, 2006	Jan, 2007	Jul, 2007	Jan, 2008	Jul, 2008
1	Total Steel Cost in RMB (price per ton x lightweight)	33,810,000	37,835,000	41,055,000	44,275,000	58,765,000	66,815,000
	Steel Plate Price in RMB (/Ton)	4,200	4,700	5,100	5,500	7,300	8,300
2	Direct Labour Cost in RMB (man hour x cost per hour)	21,388,542	22,727,778	24,207,458	25,783,473	27,462,094	29,250,000
	Cost in RMB Per Man-hour	68	73	79	86	93	100
	Man-hour Per Vessel	377,049	371,477	365,987	360,579	355,250	350,000
3	Outfitting/equipment Cost in RMB	77,383,160	79,024,953	80,338,387	81,651,821	87,562,275	90,845,860
	Total Variable Cost in RMB (1+2+3)	136,726,459	144,055,584	150,359,577	156,778,840	179,187,900	192,660,860
	RMB/USD	8.06	7.98	7.78	7.57	7.25	6.83
(a)	Total Variable Cost in USD	16,963,580	18,052,078	19,326,424	20,710,547	24,715,572	28,208,032
(b)	Corresponding NB price (USD) 2 Years Ago	25,000,000	27,000,000	31,000,000	34,000,000	31,000,000	27,000,000
	Difference in USD (b - a)	8,036,420	8,947,922	11,673,576	13,289,453	6,284,428	-1,208,032
	% Variable Cost over Price (a/b)	68%	67%	62%	61%	80%	104%

Green Technology A Part of Our Products

SEE US AT SMM
Hall A1
Stand No. 233

DAIHATSU

Daihatsu has developed technologies to meet future NOx reduction requirements. These technologies will be built into engines complying with IMO second-round NOx regulations.

Marine Gensets:

3000kWh~6000kWh (1000~600min⁻¹)



6D0-TFA (500kWh/600min⁻¹)



6D0M-01 (1000kWh/750min⁻¹)

Marine Propulsion:

3000kWh~4400kWh (300~600min⁻¹)
(for single-engine single shaft system)

DAIHATSU

DAIHATSU DIESEL MFG.CO.,LTD.

<http://www.dhmdl.co.jp>

Head Office: 1-58, Dyocho Maki-cho, Kita-ku, Osaka, 531-8575 Japan TEL:81-6-654-2283 FAX:81-6-654-2588 / Tokyo Office: 2-18, 2-chome, Minobashi-Honcho, Chuoh-ku, Tokyo, 100-8083 Japan TEL:81-3-2279-0223 FAX:81-3-2246-0264 / Taiwan Office / Daihatsu Diesel (AMERICA), Inc.: 180 Adams Avenue, Hauppauge, NY 11787, U.S.A. TEL:1-831-424-8707/89 FAX:1-831-424-8714 / Daihatsu Diesel (Europe) Ltd: 6th Floor, Bowen House, 69-69 St. Katharine's Way, London E1W 1LB, U.K. TEL:44-20-7607-0284 FAX:44-20-7602-4325 / Daihatsu Diesel (ASIA PACIFIC) Pte.Ltd.: 12F Pioneer Road Singapore 606881 TEL:65-6274-7225 FAX:65-6274-8288 / Daihatsu Diesel (SHANGHAI) Co.,Ltd.: Room A, Hood, Sunan Empire Plaza, No.728 Yunnan Rd(No. 2), Shanghai, China TEL:86-21-6226-7077 FAX:86-21-6226-9280

optimistic business people were only partly to blame. China is currently experiencing two structural and fundamental changes to its industrial landscape - the long-term appreciation of the RMB and normalisation of costs of production. Factor costs (electricity, fuel, social security, and environmental costs) have been kept artificially low for years in order to encourage export (electricity and fuel costs are still heavily subsidised). Our impression is that the Chinese government does realise that further environmental degradation is no longer acceptable (some of the pollution-fighting measures implemented for the Olympic Games will hopefully be kept intact after the Games), and that they will no longer need to support the export industries when the burgeoning US dollar denominated foreign reserve, which is actually a problem (the vast forex reserves are a result of China's imbalances, but remember that they are also at the risk of losing value overtime). The RMB's long-term rise against the US dollar is, in our humble opinion as repeatedly pointed out elsewhere, a foregone conclusion.

The combination of these forces makes that Chinese yards have to fight a lot harder than their peers to improve their productivity. The main concern is whether productivity increase can actually be realised for a lot of the start-ups.

In the context of our variable cost calculation, can most of the Chinese yards achieve lower than 350,000 manhours for Supramaxes in the years to come? Productivity growth stems from good management and planning, which is sorely lacking in many start-ups (the national champions such as Nacks and CSSC yards are a completely different story).

Some owners link the freight market to newbuilding delays and cancellations – but the reverse is also true. If the freight market is good, owners will look sympathetically to shipyard requests for earlier payment of installments than has been contracted, and extra money. But when the freight market is down, owners will compound shipyards' financial vulnerabilities.

As mentioned elsewhere – we think that

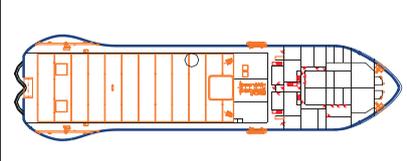
the current method of revenue recognition may have encouraged risk-taking which, in shipbuilding sense, means setting up of greenfield yards without fully understanding the economics.

When revenue is recognised as a percentage of completion, greenfield yards are able to show consistent accounting profits even without having ever delivered a vessel, and they are able to use installments received for future deliveries to fund construction of current projects, hence making the financial picture misleading and murky.

Where does the yard in Japan stand? Yards there face almost no pressure on wage inflation, but on the downside the Yen has strengthened recently against the US Dollar. They have the highest productivity amongst the three major shipbuilding nations, but they also suffer from low prices associated with selling too much forward on their slots, and also rising steel prices. We would place them somewhere between Korean and Chinese yards in terms of profitability. *NA*

Aker Arctic operates now a new ice model testing facility in Helsinki, Finland.






Preferred for innovation

Aker Arctic



the full service ice technology partner

Aker Arctic offers full design and project support to ship-owners, shipyards and other operators. A series of Arctic ships are now under construction, including the world's first Arctic shuttle tankers for export of oil.

Aker Arctic Technology Inc. Tel.: +358 10 6700
Merenkulkijankatu 6 Fax: +358 10 670 2527
FI-00980 HELSINKI, www.akerarctic.fi
Finland info@akerarctic.fi



Rongsheng goes for MARS

MARS enterprise resource planning package wins deal with what will become one of the world's biggest shipbuilding complexes.

Rongsheng Heavy Industries Co. Ltd (RSHI) has signed with Danish project planning and production control specialist Logimatic to implement the MARS enterprise resource planning (ERP) package at its shipyard in Jiangsu province. Implementation will be fully complete in 2009. At that time RSHI will use all functions in MARS, including core processes of materials and logistics.

MARS, a shipbuilding process management system, is designed to optimise project control, logistics, materials management, resource and production planning, and has been developed specifically for the shipbuilding industry to reduce cost and time to build.

As part of the deal, the parties signed a partnership to cooperate on the development of the functionality

of MARS, for particular application in China.

RSHI, a newly established yard operating along the Yangtze River, will be fully operational in 2009. It will be one of the largest shipbuilding bases in the world, with the capacity of processing 800,000tonnes of steel per year, along 5km of outfitting quay, with four docks and crane capacity of up to 900tonnes. RSHI currently has an order log of 80 vessels and will deliver 15 ships in 2008. With full capacity, and 16,000 people employed, future throughput will be close to 40 ships per year.

Chen WenJun, vice president of Rongsheng Heavy Industries, said: 'As a newly established shipbuilder, striving to be the new world leader in shipbuilding, we have [a] strong need for an ERP solution that supports our core businesses. We are confident that MARS is currently the strongest ERP solutions for shipbuilding within material management, planning and production control.'

Logimatic said that it now had more than 65 references for MARS, claiming that the package was 'already the leading ERP system for the global shipbuilding industry'. To provide more focus on its offering in China, Logimatic has opened a new local office in Beijing. [NA](#)

Rongsheng scores \$1.6 billion Vale VLOC order

Brazilian iron ore miner Vale has ordered 12 very large ore carriers from Chinese shipbuilder Rongsheng Heavy Industries. Delivery of the first 400,000dwt ship is expected in early 2011 and the order is due to be completed by 2012.

Vale has said it planned to ship more than 100 million tonnes of iron ore to China in 2008 under term contracts, a rise of 10% from 2007. China's crude steel output this year is forecast to rise about 10%, to 550 million tonnes. The ships ordered are among the largest ore carriers to be built in the world. Vale said that, having shed its sea transport operations in 2001, the large vessels would help it to address logistics shortcomings, and better compete with global rivals such as BHP Billiton and Rio Tinto .

Vale said the new vessels would be part of a new Brazil-Asia shuttle service with 18 very large ore carriers able to haul a combined total of 7.1 million dwt.

The fleet will be able to carry an estimated 30.2 million tonnes of iron ore per year from Brazil to Asia, equivalent to 31% of the company's shipments to China in 2007, Vale said.

Reuters reported Eduardo Bartolomeo, Vale executive director for logistics, as saying: 'Looking at the expansion projects we have and (what) other players are doing, we don't see the level (of ore demand) will be down for the next 2-3 years.'

Australian companies received higher price increases than Vale in annual iron ore supply contracts with Asian steel mills for 2008. 'We're trying to correct it - not the premium, but the freight rates,' Mr Bartolomeo was reported as saying. 'I'm not happy with the freight levels. I don't think they represent the actual cost of transportation.'

The contract with RSHI follows contracts announced by Vale in May 2007 covering four 388,000dwt ships, one 300,000dwt ship and the conversion of one 290,000dwt crude carrier into a VLOC.

Grimur Lund, president of Logimatic (left), and WenJun Chen, vice president of Rongsheng Heavy Industries, sign the agreement through which RSHI will implement the MARS ERP system.



Candid views from CANSI

Exclusive Interview with Yu Shichun, standing vice chairman of China Association of the National Shipbuilding Industry

Yu Shichun, Standing vice chairman of CANSI is highly respected in China's shipbuilding industry. Born in 1943 in North east China's Liaoning Province, Mr Yu has devoted most of his life to China's shipbuilding industry, after his graduation from the Naval Architecture Department of Dalian University of Technology in 1967. He used to work in Dalian

Shipyards, rising from the grassroots to the height of president in 1993.

In 1997, Mr Yu won the top honour of 'National Labour Day Medal', and was elected representative of the Ninth National People's Congress. Mr Yu now shoulders several important posts, such as 'Outside Director of Sinotrans'. However, the CANSI job always tops his agenda.

Q: Could you briefly introduce the history, development course and major functions of CANSI?

A: CANSI was founded in April 1995 as a non-profit industrial organization, approved by the Ministry of Civil Affairs as a national body that assists the development of China's shipbuilding industry. Up to now, CANSI has over 400 members, including shipbuilding and repairing yards, marine equipment manufacturers, related research centres and academies, universities and design houses, etc. China Classification Society is a CANSI member as well.

To facilitate easy management nationwide, CANSI has set up 15 regional liaison offices located in Harbin, Dalian, Tianjin, Ji'nan, Shanghai, Zhenjiang, Hefei, Hangzhou, Wuhan, Xi'an, Chongqing, Nanchang, Fuzhou, Guangzhou and Kunming. CANSI has also 10 branches dedicated respectively to yachts, ship repairing, diesel engines, deck machinery, cabinet machinery, marine automation, anchor chain, casting & forging, welding, and materials.

One of the functions of CANSI is to, as trusted by the government, conduct industrial research, and put forward suggestions on the planning, policy-making and legislation of China's shipbuilding. CANSI also assists administrators in regulating the industry. On the other side, CANSI reflects the will of its members and helps represent their legal benefits.

Other functions of CANSI include the development of rules to self-regulate the industry, coordinating the relationships among members and providing consulting services to its members.

All in all, CANSI is a bridge that connects the government, the industry and enterprises and connects China's shipbuilding industry with the rest of the world so as to facilitate the industry to achieve

sustainable development.

Q: What major problems or major challenges is China's shipbuilding industry is facing now?

A: China's shipbuilding industry has made substantial progress, particularly since the start of this century. The industry has entered a rapid development stage. In 2007, China's shipbuilding output was 18.93 million dwt, accounting for 23% of the world market; the newly received orders amounted to 98.45 million dwt, accounting for 42% of the world market; total orders secured in hand accumulated to 158.89 million dwt, accounting for 33% of the world market.

At the beginning of this century, over 50% of China's orderbook was medium and small-sized bulk carriers. Now the product structure of China's shipbuilding industry has undergone great changes. China is now capable of building more and more kinds of products, with increasingly higher value. The products have also been developed into series batches and famous brands. Bulk carriers, oil tankers and containerships are the three most outstanding ship types that China is good at.

China is receiving more and more hi-tech ships and offshore projects. Large LNG carriers, 300,000-dwt FPSO and 10,000TEU containerships have all been delivered by Chinese yards. China's shipbuilding industry has come to a new level.

However, the truth is that on the road to become a strong shipbuilding nation, China has aggressive rivals ahead and chasers behind, which explains why China needs to always remain highly alert. Japan and South Korea are the powerful competitors while India, Brazil and Vietnam are rapidly catching up.

CANSI has become deeply aware of the four major bottlenecks to China's shipbuilding industry: product

The secret of prosperity. Safe returns.



More payload at higher speed with less power



Azipod® offers great flexibility in overall vessel design, creating the opportunity for larger, faster and more fuel efficient ships.

Improved vessel hydrodynamics, high propulsion efficiency, space and weight savings are all hallmarks of Azipod® propulsion. This has inspired naval architects, yards and ship owners to develop new vessel designs and concepts that transform the unique advantages of Azipod® into more competitive ships and more profitable ship operations. **Visit us at www.abb.com/marine**

development capability is not strong enough; productivity is not high enough; the installation ratio of Chinese-made marine equipment is not good enough; and the overall management level of enterprises is not ideal.

China's shipbuilding industry is also challenged by the following factors: increasing appreciation of the RMB, rising shipbuilding costs caused by price hikes of steel, equipment and labour work, and the continuous upgrading of international shipbuilding standards, rules and regulations.

To become a big and strong shipbuilding nation outstanding in the world arena, China has a long way to go and needs to work much harder. Under the high attention of the country, the industry needs to improve capability of all aspects, build up a positive image and enhance the position in the international market.

Q: What important roles does CANSI need to play to help the Chinese shipbuilding industry meet these challenges?

A: The mission of CANSI is to, with the shipbuilding industry as the core, serve the industry and CANSI members actively. CANSI's work has been focusing on hot issues and key issues, including doing research and making proposals to administrators on development plans and policy making, studying and promoting international technical rules and regulations, organising forums for members to communicate and cooperate, etc.

Q: How does CANSI view the delay issue of Chinese shipyards? Is delay a common phenomenon, or how serious is this issue in China?

A: To improve contract execution ratio and ensure delivery is the key to avoid risks, increase profit and enhance the positive image of China's shipbuilding industry. Delay in delivery, which happens in very few shipyards, has caused significant concern for CANSI and related shipyards, because it is commonly recognised as a serious issue that contaminates the reputation of China's shipbuilding industry.

According to CANSI statistics, in 2007, ships of about 1 million dwt were delayed in delivery, less than five per cent of China's total delivery. Delay reasons included delay in facility construction in new shipyards, insufficient technical preparation, short supply of equipment and financing difficulty of shipyards, etc.

China's shipbuilding industry is facing a much bigger pressure on delivery in 2008. CANSI has urged all shipyards to carefully study their own cases down to each and every ship and take effective measures to ensure timely delivery.

In 2008, the target for China's shipbuilding industry is to deliver 22 million dwt. CANSI believes that the target will be surely reached and exceeded eventually because China has to ensure timely delivery which is the social responsibility that Chinese shipbuilding enterprises must take up.

Q: Are shipyards facing financing difficulties? Why is that and how will the problem be solved?

A: Shipbuilding is a capital-intensive industry, influenced by subprime debt crisis internationally and domestic policies, some medium- and small-sized enterprises have financing difficulties temporarily. Aiming to help these shipyards out, CANSI has been in contact with financial institutions to explore new approaches on the one hand and promoting mutual aid among enterprises on the condition that the practice is allowed by the Chinese laws and rules. CANSI has also organised a dedicated forum in the end of April 2008. About 500 representatives from the government, shipyards, shipowners, classification societies, banks, brokers, insurance companies, fund management companies and consulting companies attended the two-day forum and had an in-depth communication.

Q: How many qualified coating inspectors are needed by China's shipbuilding industry? What is the training plan for 2008?

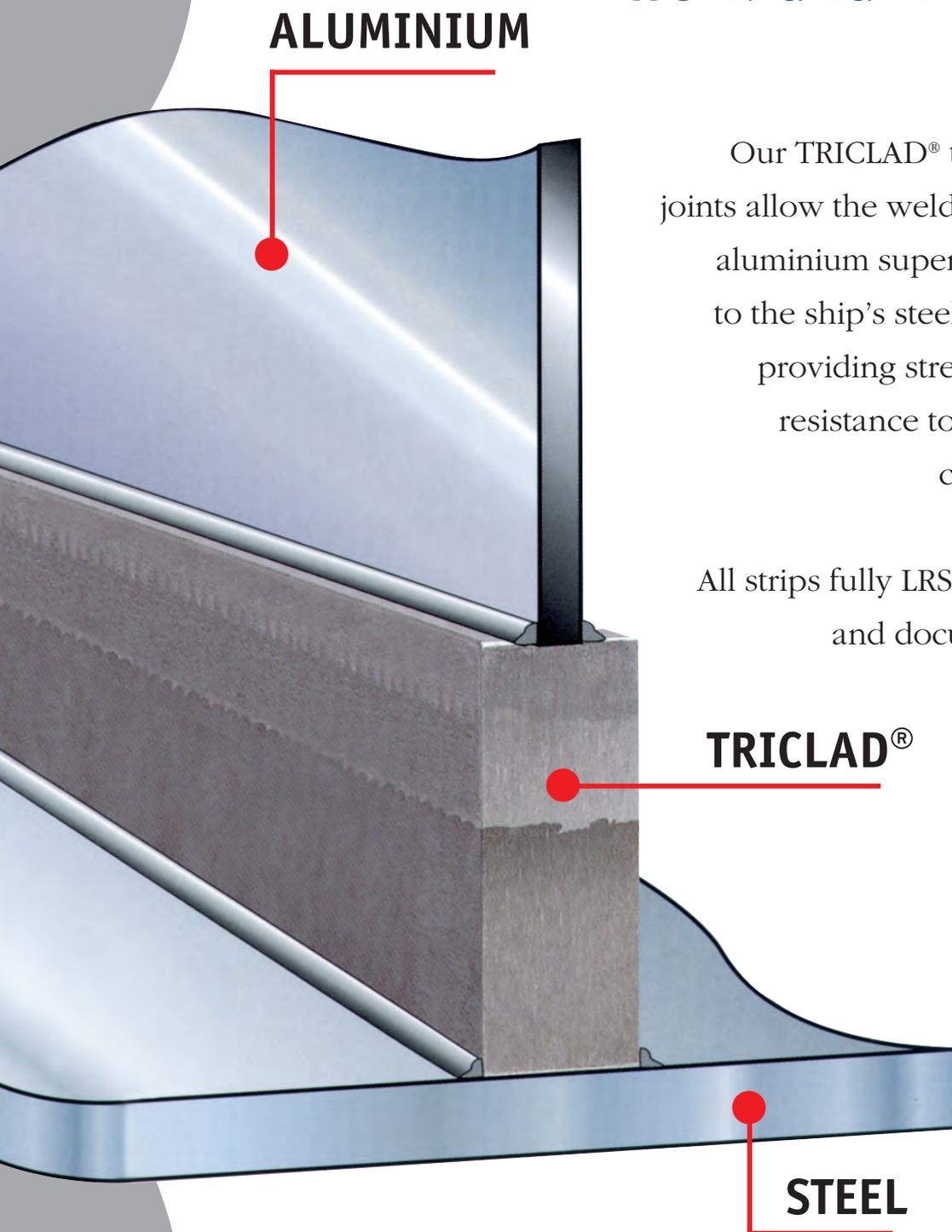
A: PSPC is a challenge and also an opportunity for Chinese shipyards to improve both management level and technical level of their staff. CANSI is attaching great significance to the issue and has organised the compilation of training materials and opened training classes. China now needs about 1000 qualified coating inspectors. In 2008, about 300 inspectors will be trained to be qualified.

Q: What is your view on the ship market?

A: Judged from market situation and orders received in the first half of 2008, the worldly ship market has seen a slight drop but still remains at the high level. Bulkers, tankers and containerships are the dominant orders though the demand of each may fluctuate a little for some time. The overall situation is stable while the overall world economy is growing and the demand for shipping is rising. In near future, even if there are less orders and lower prices, the market won't experience a destructive blow. Chinese shipyards need to keep a cool mind and continuously solve problems and improve so as to make the shipbuilding industry develop in a scientific and sustainable way. **NA**

Joining aluminium to steel?

Then here is the product to save money on both construction work and maintenance!



Our TRICLAD[®] transition joints allow the welding of an aluminium superstructure to the ship's steel sections providing strength and resistance to galvanic corrosion.

All strips fully LRS stamped and documented.

TRICLAD[®]

TRICLAD[®]

For detailed information contact:

**Merrem
& laPorte**

Phone +31 (0)418 578 882
Fax +31 (0)418 540 134
hitech@merrem.nl
www.triclad.com

BAKKER SLIEDRECHT - FULL SPEED AHEAD!

driven by innovation and specialism



VISIT OUR SMM BOOTH FOR A VIRTUAL TOUR ON THE SEVEN SEAS

HALL 6 - 261

Bakker Sliedrecht advises, designs and builds well thought-out electrical drive and control systems for main propulsion/side thrusters incl. DP, further cranes, cutters and pumps. We can deliver these systems as a package delivery or on turn-key base, including generators, switchboards, control desks, transformers, cabling, training, etc.

We are anticipating at full speed on the market developments and expanding accordingly with new premises for engineering and production. This enables our increased number of employees to handle new orders in an efficient way, now and in the future.

maritime and industrial electro techniques

www.bakkersliedrecht.com

Bakker Sliedrecht
Electro Industrie B.V.
Sliedrecht - the Netherlands

Bakker Repair B.V.
Sliedrecht -the Netherlands

Bakker Sliedrecht China
Shanghai, Dalian, Hongkong



These investments in knowledge and capacity enables us to realise very innovative projects, such as:

- heavy lifting vessel for Seaway Heavy Lifting
- pipe laying and diving support vessels for Subsea 7
- multi-purpose vessels for Swedish Coastguard
- heavy cutterdredgers for Jan De Nul
- hopperdredgers for Boskalis
- IHC cutterdredgers for Chinese owners
- mastcranes and drilling units for Huisman

SUNFLAME

Are you satisfied with Waste Oil disposal?

Our clients say

"Yes"



BELT-LESS
Rotary Cup Burner
for Aux' Marine Boiler

- <SDR Series>
 -Capacity: 45-250kg/hr
 -Complete combustion for low quality & high viscosity fuel oil.
 -No choking (as it is tipless) and nor wear through low quality fuel oil.
 -No maintenance work to replace the belt and no trouble due to belt break.
[Beltless-Motor direct driven]



Incinerator

- Capacity for combustion : 240-1500kW
- for waste oil : 26-161kg/hr
- for solid waste: 20-125kg/hr
- Rotary cup burner is installed for all model.

IMO Type Approval



EC Type-Examination

SUNFLAME CO., LTD.

1-30 Nishinohata Okubo-cho Uji Kyoto 611-0033 Japan
 TEL: +81-774-41-3310 FAX: +81-774-41-3311
 E-MAIL: info@sunflame.net

CSRs get blasted

Are common structural rules a backward step? A view from a leading Chinese naval architect.

Common Structural Rules (CSRs) were worked out and put into force for many reasons: to improve ship safety; to remove competition among classification societies; to enhance transparency; and to mobilise the experiences and resources of all members of the International Association of Class Societies.

'These are all noble purposes,' said Chen Hao, deputy director of the product development department and a senior engineer at Guangzhou Shipyard International Co (GSI). 'But can CSR really fulfill these purposes and be viewed as a progress in maritime history?'

Mr Chen has been working in GSI as a naval architect since his graduation from Harbin Engineering University in 1986.

Answering his own question, he said: 'My working experience tells me that CSRs are a destructive strike to the maritime industry because they cannot solve any of the proposed questions and they kill competition, which is indeed an impetus for the industry to improve.'

His stance referred to the following points:

- Are CSRs the best choice to solve safety problems if that puts an end the way individual classification societies work out their own rules and standards?
- Should shipyards and the shipowners be deprived of their individual right to choose structural rules for lofty purposes such as safety?
- If there is only one set of rules, is there any benefit in being transparent?
- If shipyards or shipowners launch a new structural innovation, will classification societies acknowledge it as earnestly as before?

Mr Chen contended that the answers to all of these questions are negative.

IACS claims that it can gather experiences and resources from all members to constitute the rules. The underlying meaning is that the experience and resources of individual classification society is limited. However,



Chen Hao, deputy director of the product development department and a senior engineer of Guangzhou Shipyard International Co.

progress in history, whether it be in terms of art, science, literature, industry or agriculture, has been the products of variety and the viewpoints of few people, or sometimes of an individual talent such as Newton, Einstein, Watt or Edison. It has hardly ever been the result of achievements by a 'common' entity or organisation.

Again, CSRs contain some prescriptive rules that have been abandoned by some classification societies.

The rule shown in Figure 1, regarding side shell primary support structures, has long been abandoned by advanced classification rules, but it has been reintroduced in the CSRs.

Though the definition of safety has not yet been unified and any definition has its limit, IACS has, in fact, monopolised the right to define safety by launching the CSRs, requiring shipyards and shipowners surrender their understanding and definition of safety.

Rights and rules

Shipyards and shipowners, said Chen, should have the right to choose a classification society

according to its services, including technical services for compiling the standards for construction and operation of the ships. They will, under normal circumstances, choose the classification society that can constitute good rules.

Good structural rules are safe, reliable and not redundant. Shipowners hope to use proper rules to ensure the safety and reliability of ships, but hope not to increase the construction and operation cost caused by rules they deem 'too conservative'. Shipyards pay high levels of attention to ship safety because they will be responsible for all liabilities in the first year of operation of the ships. Furthermore, any maritime accidents will damage the reputation of the shipyard concerned. Shipyards do not appreciate the additional construction cost generated by what they too may consider 'overly conservative' rules.

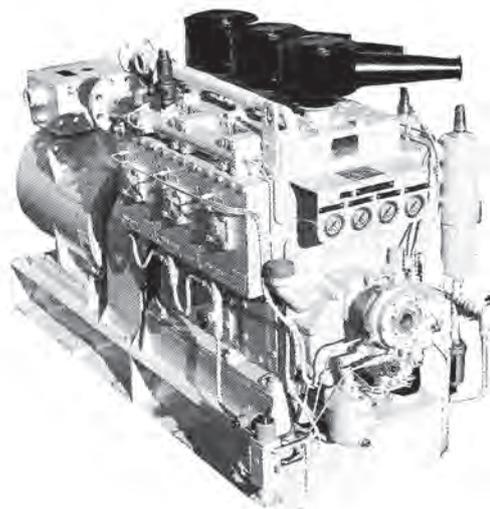
Insurance companies are most concerned with ship safety because they are responsible for compensation of ships in operation. As for maritime damages sustained after actions by ship classification societies, insurance companies can exert pressure upon the classification society by raising the premium of the ships surveyed by this society.

Under such pressure, the only thing the ship classification society will do is to work hard to meet the challenges of shipyards and shipowners by working out reasonable rules that can ensure ships are safe and reliable. That is the driver for rules to make progress.

Today, according to Mr Chen, IACS has completely deprived shipyards and shipowners of their already limited rights to choose their design preferences by the launching of CSR. When IACS gathered the rights to constitute the standards from the classification societies to itself, the direct pressure and responsibility for each classification society to develop rules disappeared.

'Such a practice has destroyed the order of maritime society, which has been established in the past centuries, and damaged the basis for the healthy development of the industry,' said Mr Chen.

TANABE MARINE COMPRESSORS NEW MODEL H-SERIES



Module system:

Consist 2 cylinder bore sizes,
2 stroke sizes,
1—3 cylinder numbers,
builds up 9 model series.

Wide performance range:

from 60 to 600M³/hr capacity,
from 15 to 132kW output,
at close steps.

MODEL: H-374



Quality and Service are our most important concern

TANABE PNEUMATIC MACHINERY CO., LTD.

HEAD OFFICE & OSAKA DIVISION: 14-6, 2-chome, Senrioka, Settsu City, OSAKA 〒566-0001
Tel: 06-6388-1331 Fax: 06-6380-8560

MARIN

Meet us at
SMM in Hamburg
Monaco Yacht Show
SNAME in Houston!

Challenging wind and waves

Linking hydrodynamic research to the maritime industry

We sail great ships...

For more than 70 years MARIN has been serving the maritime industry with high-grade technology. The synergy between scientific research and industrial services has always been a major focus point. It ensures that our research is fine-tuned to the industry's demands. And it enables you to benefit from our ever-growing pool of knowledge.

Our services incorporate a unique combination of simulation, model testing, full-scale measurements and training programmes. For the design, optimisation and operation of ships and offshore structures.

...even before they're built



www.marin.nl

Maritime Research Institute Netherlands
T +31 317 493911
E info@marin.nl

Figure 1: CSRs contain some prescriptive rules that have been abandoned by individual classification societies.

He added that, though the CSRs have become more transparent, transparency is 'meaningless' to shipyards and shipowners when they have no other options.

Waste of time

It was an 'obvious fact' that individual ship classification societies now had no rights to compile or approve new structures. Even if the classification society had sufficient evidence to prove the practicability of a new structure, it was uncertain whether it could persuade IACS to accept it at all or, at least, how long it would take the society to persuade IACS. Attaining CSR classification was already a time-consuming and complicated process.

Once the individual society had invested extensively in the research and successfully

persuaded the IACS to accept its proposition, the achievement would simply be shared by all members of the IACS. The upshot would be that all classification societies lose their passion in innovation.

Last but not least, in the past decade, the maritime industry has become more conservative rather than open. IACS has become increasingly demanding and

unrealistic, according to Mr Chen. Whenever a new rule came up, it had to be followed by an explanation and modifications. To date, over 1200 pieces of explanations for tankers and over 1500 pieces of explanations for bulk carriers had been issued. And Mr Chen said he was not even optimistic that the rules for tankers and bulk carriers would be harmonised. *NA*

3.3.3 Side shell primary support structure

3.3.3.1 In general, the spacing of web frames, *S* as defined in Section 4/2.2.2, is to be taken as:

$$S = 2.6 + 0.005L_2 \quad \text{m, but not to be taken greater than 3.5m}$$
 Where:
 L_2 rule length, *L*, as defined in Section 4/1.1.1.1, but is not to be taken greater than 300m

3.3.3.2 In general, the transverse framing forward of the collision bulkhead stringers are to be spaced approximately 3.5m apart. Stringers are to have an effective span not greater than 10m, and are to be adequately supported by web frame structures. Aft

JANUARY 2006SECTION 8.3/PAGE 4

5% Fuel Saving Experiences on 1,500 ships.

Adoption by more than 200 owners and operators.



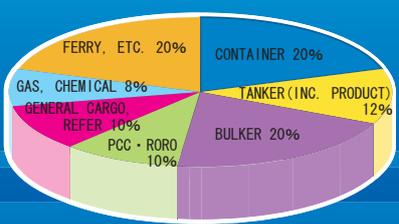
PBCF[®]

PROPELLER BOSS CAP FINS

MOTech PBCF • Ship' s Machinery Dept.
Mitsui O.S.K. Techno-Trade, Ltd.
 2-3-4, Uchikanda, Chiyoda-ku, Tokyo, Japan
 Tel:81-3-3258-7180 Fax:81-3-3258-7356
 E-mail: pbcf@motech.co.jp
 http://pbcf.motech.co.jp

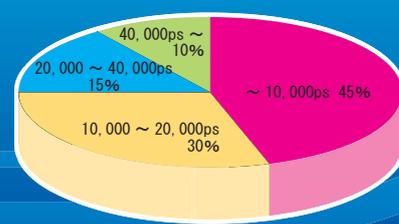
Actual ship measurement results

- Sea trials abt 30 ships Ave. 4.6% improved
- Voyage data abt 60 ships Ave. 5.0% improved



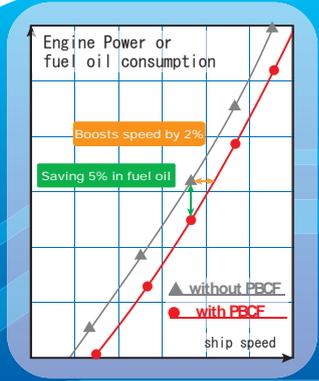
SHIP' S TYPE WISE

FERRY, ETC.	20%
GAS, CHEMICAL	8%
GENERAL CARGO, REFER	10%
PCC - RORO	10%
BULKER	20%
TANKER (INC. PRODUCT)	12%
CONTAINER	20%



HORSE POWER WISE

~ 10,000ps	45%
10,000 ~ 20,000ps	30%
20,000 ~ 40,000ps	15%
40,000ps ~	10%



PBCF EFFECTS

The graph shows two lines for 'ship speed' vs 'Engine Power or fuel oil consumption'. The red line (with PBCF) shows a 2% increase in speed for a 5% decrease in fuel oil consumption compared to the grey line (without PBCF).



PEMA.
**Superior welding
automation for
shipyards.**

Meet Pema in person.
Come to SMM 2008,
Hamburg in September
23 - 26, stand B1.0G.121.

- SHIPBUILDING PRODUCTION AUTOMATION
- HEAVY ROBOTICS AND ENGINEERING
- ENERGY SECTOR PRODUCTION AUTOMATION
- WORK PIECE HANDLING EQUIPMENT
- CUSTOMER SUPPORT



PEMAMEK OY

P.O. Box 50
FI-32201 Loimaa
Finland

Phone +358 2 760 771
Fax +358 2 7628 660
www.pemamek.com

YOUR BEST PARTNER IN MARINE INSTRUMENTATION

- Cargo tank monitoring systems
- Float type level gauges for LNG & LPG
- High level & overfill alarm systems for chemical tankers



HSH
HENRI SYSTEMS HOLLAND B.V.

Scheepmakersstraat 33
P.O. Box 198
3330 AD Zwijndrecht
Netherlands

t: +31 78 6100999
f: +31 78 6103214
e: info@hsh.nl
w: www.hsh.nl

Largest panel line arrives in China

Norway-based TTS Handling Systems AS is completing a contract to deliver the world's largest panel line system to Qingdao Beihai Shipbuilding Heavy Industry Co. Ltd, in China.

In an order worth US\$20 million, TTS Handling Systems AS is delivering a three line panel system to Qingdao Beihai Shipbuilding Heavy Industry Co. Ltd. Each of the lines will be 300m long by 25m wide.

'An average shipyard will have just one line producing plates around 12m x 12m, whereas Beihai will have three lines producing plates 22m x 22m in size,' said Rolf-Atle Tomassen, managing director at TTS Handling Systems AS. 'The system at Beihai will be capable of manufacturing 2000tonnes of ship blocks a day. This is very exciting when you consider that a small shipyard will only produce around 5000tonnes in an entire year.'

Final phase

TTS is currently in the final phase of delivery for this project, with expected completion at the beginning of September. The panel line will supply Beihai Shipyard with components for the production of very large crude carriers, Aframax tankers and other large vessels.

'It is inevitable that China will become the largest shipbuilding industry in the world,' says Mr Tomassen. 'The Chinese invest in the best technology

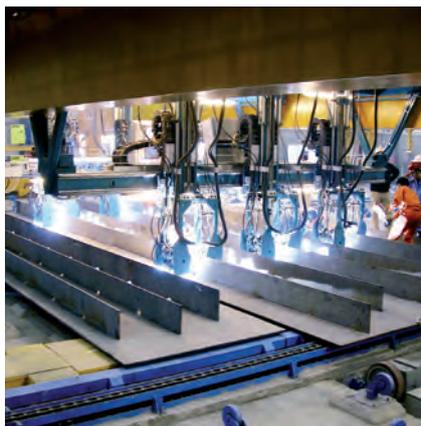
and they have a readily available low cost workforce, so it's tough competition to beat.'

The TTS group said it was providing production systems, heavy load handling systems, ship equipment and deck

machinery to Chinese shipbuilders, to name but a few.

'As a group we have an annual turnover in China of US\$150 million,' said Mr Tomassen. 'And the market shows no signs of slowing down.' *NA*

TTS panel line system for Qingdao Beihai Shipbuilding Heavy Industry Co. Ltd.



THE HAMMAR ELECTRONIC REMOTE RELEASE SYSTEM – A LIFESAVING SYSTEM AT ARM'S REACH

The Hammar Electronic Remote Release System – ERRS – is operated via an electronic control panel that activates one or several ERU units. It's powered by the ship's emergency power supply or by its own battery back-up. It can be controlled from several remote release positions. It's easy to operate and install, saves space and is very flexible, offering effective management for fast evacuation of a large number of passengers. So if you feel strongly about saving lives, insist on having the Hammar ERRS at arm's reach.



Learn more about
Hammar Electronic
Remote Release Systems
at www.cmhammar.com

BETTER SOLUTIONS FOR SAFETY AT SEA

HAMMAR®

Is China Ready for PSPC?

PSPC is a touchstone for the Chinese shipbuilding industry. Only shipyards whose financial, technological and management preparation is strong enough will survive.

The Performance Standard for Protective Coatings (PSPC) was adopted on 8 December 2006. Today, it applies to all bulk carriers, oil tankers and containerhips of and above 500gt for which contracts were signed on and after 1 July, 2008. In the absence of a contract, PSPC applies to ships whose keels are laid or are at a similar stage of construction on or after 1 January, 2009, or whose delivery is on or after 1 July 2012.

On 7 July 2008, Guangzhou Shipyard International received an order for four 52,300dwt chemical/finished oil carriers from a Danish owner. These ships will be the first order received by the China State Shipbuilding Corp yard to be PSPC compliant.

So far so good, but how ready is the shipbuilding industry to adopt these strictures?

Hong Donghuang, professor and senior engineer of CSSC Shipbuilding Technology Research Institute (also known as 611 Institute), was in little doubt. 'The impact of PSPC upon Chinese shipbuilding industry might be fatal,' he said

Founded in 1964, the research institute is the only shipbuilding technology research and development body of China State Shipbuilding Corporation (CSSC.) The research institute has a dedicated office on anti-corrosive coating.

To deal with PSPC, CSSC set up a PSPC working team made up of around 20 experts in June 2006. Professor Hong is one of them.

According to Professor Hong, PSPC requests were initiated by shipowners urged to improve coating quality so as to save maintenance costs during the lifetime of their ships. To defend their own benefits, shipyards in Japan, South Korea

and China insisted the standard should be redrafted and take into consideration the shipbuilding side.

After rounds of negotiation, the launched PSPC is a compromise between shipowners and the shipbuilding industry and has a 'positive significance.'

As Professor Hong explained it, compared with traditional coating, PSPC creates two major challenges. One is that, in the past, only cargo holds of oil tankers and chemical carriers were required to limit salt content on the surface of the steel to a maximum of 50mg per m². Now, even ballast tanks have to meet that requirement. The second challenge is that, after blocks are combined, the coating needs sand-blasting if the damaged area is more than two per cent.

'These challenges are pretty tough and Chinese shipyards have to work very hard to meet the requests. Otherwise, there won't be a possibility for them to survive,' said Professor Hong.

He uses a 70,000dwt bulk carrier as an example, to explain that meeting PSPC will increase the shipbuilding cost by several million dollars directly. There are also indirect costs. If the shipbuilding period is prolonged, fewer ships will be completed in a year, causing a loss about which it is hard to be precise, but one which may also run into millions of dollars.

Efforts are made

In 2007, China built 18.93 million dwt of ships. In 2008 and 2009, the figure will continue to rise by around 30% every year.

'The workload of all shipyards is heavy and the production schedule is very tight. Any delay will cause a vicious circle and that will be destructive. So the top priority for Chinese shipyards is to ensure timely delivery,' said Professor Hong.

There are only two solutions: one is to increase investment in coating equipment and the other is to increase the labour force.

The coating workshop at the Taizhou Kouan Shipyard, based in Jiangsu Province, where a good number of private shipyards cluster.



WE KNOW... MARINE COATINGS

OUR SOLUTIONS



**SIGMA
COATINGS**

PPG Protective and Marine Coatings protects customer assets in some of the world's most demanding conditions and environments. Our proven products and technologies are used to safeguard a wide variety of constructions: from marine new-building and vessel maintenance & repair to offshore and FPSO, from civil infrastructure and power to petrochemical.

PPG Protective and Marine Coatings (PMC) develops marine products and coating systems to protect customer assets worldwide under the SigmaCoatings brand name. PMC's scientists work tirelessly on creating coatings and optimizing coating systems to meet and exceed the needs and specifications of the global marine business.

In partnership with industry experts and customers, our teams work tirelessly to develop new and innovative systems to protect against fouling. The result is a highly innovative biocide free fouling release coating – SigmaGlide.

Visit PMC at SMM booth# B5.341 or,
Contact a PMC specialist or visit PPGPMC.com for more information.



PPG Protective & Marine Coatings

We Know...

www.ppgpmc.com

Actually, to minimise the negative impact upon Chinese shipyards, the Chinese shipbuilding industry including China Classification Society (CCS) has been actively involved in the constitution of PSPC, PSPC Implementation Guidance, Coating Requirements of PMA, etc.

PSPC requires coating inspectors should obtain NACE II certificate (the American standard issued by the National Association of Corrosion Engineers) or FROSIO III certificate (the Norwegian Professional Council for Education and Certification of Inspectors for Surface Treatment). Similar qualifications from China, Japan and South Korea are also acceptable according to a deal that these shipbuilding nations lobbied for.

'This is the consensus between these three shipbuilding nations that - each nation should have its own right to train and certify its own inspectors,' said Professor Hong.

The Maritime Safety Administration of China has entrusted CCS to certify China's coating inspectors. Accordingly, CCS drafted the certification conventions based on which the Certification Committee for Marine Coating Inspector of China (CCMCIC) was set up.

On 1 July 2008, the first training class with 33 trainees was opened in Shanghai. They

will receive 80 hours training before they take examinations and get the certificate. CCMCIC has three degrees: I, II and III. Only those holding II and III certificates are qualified to do PSPC coating inspection.

Private concerns?

By July 2007, the two shipbuilding giants, CSSC and China Shipbuilding Industry Corporation (CSIC) had finished a review of all of their shipyards. Each shipyard had been gone over with a fine tooth comb to find out what problems they had: what was the salt content on steel surfaces they could achieve and what was the coating damage ratio after block combination.

Then, these shipyards started to apply coatings as requested by PSPC in some key parts of the ships to see how poorly or how well they could handle it.

Apart from CSSC and CSIC shipyards, China has a good number of private shipyards, most of which should be categorised to be medium- or small-sized.

'It is indeed a big challenge to us, but it is also a good opportunity for us to improve our management and technique,' said Diao Chunjing, director and assistant general manager of the Taizhou Kouan Shipyard based in Jiangsu Province, where a good

number of private shipyards cluster.

The shipyard has an 800m quayside running along the Yangtse River and a land area of 350,000m², and now has about RMB400 million (US\$58 million) in fixed assets and a shipbuilding capacity of 300,000dwt annually.

The shipyard invested about RMB25 million and completed the construction of a new coating workshop whose area is 3960m² in August 2007. All facilities meet the requirements of PSPC toward the roughness, dust and humidity after the second antirust coating.

The shipbuilder is also constructing a new shipyard - Taizhou CATIC Shipbuilding Heavy Industry - jointly with China National Aero-technology Import & Export Corporation (CATIC) Beijing Branch. The total land area of the new shipyard is 593,463m² and has a dry dock of 350m long and 55m wide.

According to Mr Diao, the coating workshop in the new shipyard, with an area of 6,000m², cost about RMB45 million, and fully complies with PSPC requirements all-day round. The two coating workshops were both designed by 611 Institute, which claims to be able to provide a one-stop coating workshop solution to shipyards. **NA**

Coating supplies surge

Coatings testing facilities ramp up in China.

According to Ying Changchun, standing director of Shanghai Society of Naval Architects & Marine Engineers, the coating supply market is dominated by foreign brands, including International Paint, Hempel Paints, Jortun, Sigma and CMP Chugoku. These brands either have production bases in China or have joint ventures in China.

Mr Ying is a shipbuilding expert and since 1993, he has been receiving special subsidies provided by the government for his contribution to the shipbuilding industry.

On 29 October in 2007, the CCS-DNV Technology Institute - a joint venture set up by the two classification societies - was opened in Shanghai. It is one of the two laboratories recognised by the Chinese maritime industry

for coating tests. The other laboratory is with a branch of CSIC 725 Institute in Xiamen of Guangdong Province.

'DNV has rich experience in coatings based on our COAT notation, in use for over a decade, while we also have been testing coatings at our Norwegian laboratory for some time,' said Kong Ving-Kuen, general manager of the joint venture. He is a senior member of the Norwegian ship classification society.

Mr Kong explained that it takes about eight months to finish a complete set of coating tests before an assessment can be reached. The sample needs to be exposed outdoors to natural conditions for two months and put in the wave tank, where underwater conditions are simulated for 180 days.

To ensure the top quality of the tests and analysis, this Shanghai laboratory relies on CCS and DNV technical staff and also exchanges test results, sometimes with DNV's Bergen laboratory.

It has three wave tanks in place, each with six slots, which means that each tank can test six samples at the same time. So far, the slots have been fully booked by clients, which are all leading coating suppliers.

'Before the setup of our lab in Shanghai, Asian clients have to trust Bergen for the tests. Now they have come to us,' said Mr Kong.

Besides coating tests, the laboratory also offers coating consultation and damage analysis. **NA**



NEVER TAKE RISKS WHEN IT COMES TO QUALITY. AFTER MILLIONS OF SQUARE METRES OF CARGO AND BALLAST TANKS SUCCESSFULLY BLASTED AND COATED, WE ARE SURE TO KNOW HOW TO MEET THE STRICTEST REQUIREMENTS FROM WORLDWIDE OWNERS. EXCELLENCE IS OUR TRADEMARK.



c/Cabrales, 12 - 33201 Gijón - (Spain) Telf.: + (34) 985.35.54.78 - Fax: + (34) 985.35.02.91



"We assure the success of your Tank Coating projects"



INDASA

globally focused on cleaner solutions



Visit us at SMM 2008
Tuesday 23rd Sept – Friday 26th Sept 2008
Hamburg Messe – Hall A1 Stand No. 314



victor marine

Designers, manufacturers and world suppliers of tank washing machines, gas freeing fans and oily water separators



Arisdale Avenue, South Ockendon, Essex, RM15 5DP, United Kingdom. Tel : +44 (0) 1708 856121 Fax : +44 (0) 1708 857366 Website : www.victormarine.com

PROVEN AND TESTED

Marine industry's
no. 1 choice
for demanding
consulting, design and
engineering tasks.



www.deltamarin.com

KAMOME

“5,000 CPP” installations have been provided for worldwide customers
through our 85 years experience.

We guarantee “Superb Performance and Long life Reliability”.
Visit our web-site immediately. (www.kamome-propeller.co.jp)



Products:

Controllable Pitch Propellers
Fixed Pitch Propellers
Side Thrusters
Shafting Instruments
MACS-KM (Joystic Control System)
K-7 Rudder (High-Lift flap Rudder)

Established in 1924

KAMOME PROPELLER CO., LTD.



690, Kamiyabe-cho, Totsuka-ku, Yokohama 245-8542 Japan
Phone : +81-(0)45-811-2461 Fax: +81-(0)45-811-9444
U R L : www.kamome-propeller.co.jp
E-mail: info@kamome-propeller.co.jp



Responsibility is the Bestway

Shanghai Bestway Marine Engineering Design Co, a private design house now has a staff of 320, and aims high even though the shipbuilding market seems to have started cooling down.

‘There are always opportunities out there in the market. The problem is whether you are fully prepared and capable enough to grasp them and make the best of them,’ said Liu Nan, founder and managing director of Shanghai-based design company Bestway.

Before setting up his own business in 2001, Mr Liu worked in SDARI (Shanghai Research and Design Institute), after his graduation from Wuhan University of Science and Technology in 1982. As a designer, he held many important positions, such as office director and assistant to president in SDARI.

‘I was 40 years old and decided to be a real master myself,’ Mr Liu explained, on why he chose to leave SDARI - a State-owned enterprise viewed as an ‘iron rice bowl’ to support a good living.

In the first few years, the business volume of Bestway kept growing at 100% a year, not least because Liu positioned the company in a niche market, even though it had no brand and had no particular fame.

Bestway survived and made itself known by designing engineering vessels, including pile-drilling vessels, and cement carriers for construction projects that included the Donghai Bridge that links Shanghai with Yangshan Deep-water Port and also the Hangzhou Bay Bridge which cuts the distance between Ningbo and Shanghai to one hour’s drive.

Later Bestway started to cooperate with shipyards and foreign shipowners. ‘We did detailed design and production design, the part which was the hardest, the most time-consuming, but the best way to train my staff,’ Mr Liu said.

From 2005, Bestway started to design cargo ships of around 30,000dwt, including 31,800dwt, 32,000dwt, and 35,000dwt vessels. The most successful ship type has been the 32,500dwt version, with over 100 bulk carriers of this type built. Now, Bestway is doing bigger and bigger size ships.

Bestway has, for example, designed a 54,500dwt bulk carrier, which is compliant with common structural rules, for Zhejiang



On 28 May, 2008, *Zhe Hai 521* – said to be the world’s first CSR-compliant 54,500dwt bulk carrier – was delivered by Zhoushan Wuzhou Shipyard to its parent Zhejiang Shipping Group. The ship is 189.9m long, 32.26m wide and 17.6m deep. The design draught is 11m and the speed is 14.6knots. The ship was jointly designed by the owner and Shanghai Bestway Marine Engineering Design Co.

Shipping Group. The ship is being built in Zhoushan Wuzhou Shipyard is expected to be delivered in the end of 2009.

‘We have also started to design 80,000dwt [ships],’ Mr Liu said with a smile.

Mr Liu also revealed that, since 2007, Bestway has entered the conversion market. Now, Bestway holds over 50% of China’s conversion design market share, including conversion from VLCCs to VLOCs and from single-hull tankers to double-hull vessels.

Offshore is another growth area for Bestway. At the end of 2006, the company completed the entire design process of an 800dwt pipe-laying barge for a Dutch owner, from fundamental design to production design. Now, Bestway is designing a 3000dwt pipe-laying barge for a domestic owner.

Always being responsible to employees, clients and society is the motto of Bestway, and this is reckoned to be the secret of its rapid development. Today, Bestway’s total assets amount to RMB100m. Besides the design house, Bestway also has a fully-owned supervision company with 50 staff. The subsidiary does sea accident damage review and other services for ships in operation.

In 2002, Bestway had an office space of 300m². In 2003, the space had to be expanded to 4000m². Before the Spring Festival of 2009, the Offshore Engineering Department and the Production Design Department of Bestway will be moved to a newly built office building with floor space of 10,000m².

To support its growing client base, Mr

Liu has been recruiting new staff, training and giving them more chances to practice and improve. The standard of Bestway’s recruiting is not measured by educational degree but by attitude toward learning.

‘We improve our management flow and stress unity is power,’ Mr Liu said.

To encourage the staff and further push forward the growth of the company, Mr Liu diversified the ownership of Bestway in the end of 2007. Now, he holds a 45.9% stake; Bestway Investment, which is a joint venture of over 60 backbone staff of Bestway holds a 27% stake; and another 19% stake belongs to strategic investors.

Mr Liu said he never wasted his time worrying that the cooling market would cut opportunities for Bestway. On the contrary, he said he believed that opportunities remained substantial.

Most of the bulk carrier ship types could be optimised, because they had not had time to be built to their full potential when owners had rushed towards construction during the hot shipping market.

Additionally, as energy-saving and environmental protection became increasingly bigger concerns to the world and the industry, new rules and regulations would be worked out, leading to a generation of new structures and better designs.

‘However fast China’s shipbuilding industry has been developing, the shipbuilding technology still lags behind that of Japan and South Korea, which means there is still a lot more work for us to do,’ Mr Liu concluded. *NA*



Full Fingertip Control

Fingertip control of vessel maneuverability —

Kawasaki Heavy Industries' century of expertise and R&D combine in perfect harmony, culminating in the state-of-the-art propulsion systems that provide precise maneuverability.



C.P. Propeller



Rexpeller



Integrated Control System



Side Thruster



 **KAWASAKI HEAVY INDUSTRIES, LTD.**

Kawasaki Heavy Industries (Europe) B.V. Amsterdam	Phone: +31-20-644-6869	Fax: +31-20-642-5725
Kawasaki Heavy Industries (UK) Ltd. London	Phone: +44-20-7588-5222	Fax: +44-20-7588-5333
Kawasaki Heavy Industries (U.S.A.), Inc. NY	Phone: +1-212-759-4950	Fax: +1-212-759-6421
Kawasaki Heavy Industries (Singapore) Pte. Ltd.	Phone: +65-62255133 ~ 4	Fax: +65-62249029

Tokyo Head Office

World Trade Center Bldg., 4-1, Hamamatsu-cho, 2-chome, Minato-ku, Tokyo 105-6116, Japan

Marine Machinery Sales Dept. Machinery Division: Phone: +81-3-3435-2374 Fax: +81-3-3435-2022

 **Kawasaki**

<http://www.khi.co.jp>

J. Ray McDermott signs joint venture

McDermott International, Inc. has entered into a new joint venture with a subsidiary of state-owned China Shipbuilding Industry Corporation (CSIC).

J. Ray McDermott, S.A. subsidiary of McDermott International Inc has formed the joint venture company, Qingdao McDermott Wuchuan Offshore Engineering Company Ltd. (McDermott Wuchuan), with plans to establish a new facility on over 111 acres in HaiXiWan, Qingdao, Shandong, China.

This new facility is anticipated to be strategically located adjacent to two new CSIC shipyards: Qingdao Wuchuan Heavy Industry Co. Ltd. (J. Ray's joint venture partner) and Qingdao Beihai Shipbuilding Heavy Industry Co. Ltd. In this developing area, CSIC has one floating dock and five dry docks capable of accommodating vessels up to 500,000dwt. McDermott Wuchuan anticipates focusing its business on floating, production, storage, off-loading (FPSO) vessel construction and integration.

'FPSOs represent one of the fastest growing offshore construction segments

in our industry today,' said Bob Deason, J. Ray president. 'China already commands a significant share of this market and has developed a proven project track record. Establishing this new joint venture focusing on FPSOs will add a critical component to J. Ray's comprehensive business strategy.'

McDermott Wuchuan is planned to complement each partner's respective strengths. J. Ray's integrated engineering, procurement, construction and installation capabilities and more than 60 years of international market experience will bring to the partnership consistency of methods, standards and procedures, and continuity of mature accredited project management systems, and a high level safety culture.

CSIC brings a solid reputation as a leading shipbuilder, with extensive market penetration, an ability to obtain hulls and access to a large, skilled workforce. McDermott said the new company

would offer 'solid, competitive, integrated engineering and construction solutions to the FPSO market worldwide'.

McDermott Wuchuan's new facility is initially expected to permit annual throughput of up to 33,000 tonnes, expending approximately six million man-hours, per year. The facility will include structural and pipe shops, blasting and painting facilities, module assembly buildings, covered warehousing and lay down areas.

McDermott is an engineering and construction company, with specialty manufacturing and service capabilities, focused on energy infrastructure. McDermott's customers are predominantly utilities and other power generators, major and national oil companies, and the United States Government. With its global operations, McDermott operates in over 20 countries with more than 20,000 employees. *NA*

Kongsberg goes big in China

Kongsberg Maritime and Zhenjiang Marine form joint venture.

Kongsberg Maritime has strengthened its market position in the Asian region by forming a new joint venture with the Chinese company Zhenjiang Marine Electrical Appliances. The new company, Kongsberg Maritime China Zhenjiang Ltd., is focused on the delivery of electrical control & distribution units to the marine industry.

Zhenjiang Marine Electrical Appliances has long traditions in the Chinese marine market, specialising in electrical equipment for commercial and naval ships, such as low-voltage switchboards, bridge consoles, multiform control cabinets, dry transformers and battery charger/UPS power devices. In addition, the company supplies navigation-aid

apparatus such as navigation light/signal light controller, whistle controller, emergency telegraph and combined audio/light alarm systems.

Zhenjiang Marine Electrical Appliances' product range will constitute an addition to Kongsberg Maritime's existing portfolio, providing an entry into new areas of the Chinese market through the possibility of delivering more complete packages of integrated systems.

'Due to its knowledge of the local market and the range of products on offer, Zhenjiang Marine Electrical Appliances often obtains contracts for total turn-key packages from local shipyards. These packages include switchboards, control consoles, alarm systems, monitoring

and control systems, power management systems as well as starter cabinets/transformers,' commented vice president of offshore and marine at Kongsberg Maritime, Morten Hasås.

'Kongsberg Maritime delivers many of these products, but until now, we have offered them as a sub-vendor through companies such as Zhenjiang Marine Electrical Appliances. With this new joint venture, the two companies will be able to supply total e-packages for shipyards, representing a major advantage for our customers,' continued Mr. Hasås.

The major shareholder and President of Zhenjiang Marine Electrical Appliances, Mr. Wu expects that joining forces with Kongsberg Maritime will provide increased possibilities worldwide. *NA*

21-23 April 2009, Suntec Singapore

Sea ASIA

THE ASIAN VOICE IN
WORLD SHIPPING:
CLEARER & STRONGER



"The Asian Voice in World Shipping - Container Shipping & Logistics" will be chaired by Mr SS TEO Managing Director of Pacific International Lines

Maritime leaders speaking at the high-profile conference include to-date:

21 April, morning session

"The Asian Voice in World Shipping - Container Shipping & Logistics"

Chairman: SS TEO of Pacific International Lines

Speakers: HIROYUKI MAEKAWA of Kawasaki Kisen Kaisha, Ltd;
JESPER PRAESTENSGAARD of Maersk Line; KUAH BOON WEE of PSA
International; RANDY CHEN of Wan Hai Lines

21 April, afternoon session

"The Asian Voice in World Shipping - Bulk Markets"

Chairman: ANDREAS SOHMEN-PAO of BW Shipping

Speakers: KLAUS NYBORG of Pacific Basin Shipping (HK) Limited;
LEE JEONG-HWA of SK Shipping; KENNETH KOO of Tai Chong
Cheang Steamship Co (HK) Ltd

**More than 350 exhibitors and at least 10 national pavilions expected at the event.
CONTACT US NOW TO FIND OUT HOW YOU CAN PARTICIPATE!**

Principal Sponsors:

DnB NOR

**Lloyd's
Register**

PSA
The World's Port of Call

Sponsors:

ABS

Anglo-Eastern

DNV

**Drydocks
World**

DVB

ESM

GAC

GL
OPERATING 24/7

**INCE
& CO**
INTERNATIONAL
LAW FIRM

Keppel Offshore & Marine

PIL

SHIPSERV
Each Vessel. Each Time.

The Standard

thome

thome

Supported by :

ASMI, BIMCO, The Baltic Exchange, IBIA, IAPH, INTERCARGO, INTERTANKO, MPA, PSA, RINA, SIGTTO, SSA, SNAMES

Organised by:

Seatrade

SMF Singapore
Maritime
Foundation

Tel: +44 1206 545121 Fax: +44 1206 545190
events@seatrade-global.com

Wuhan's growing cluster

The city of Wuhan, in Hubei Province, is rapidly building on its strong foundations in shipping and shipbuilding.

Xie Zhenhua has been desperately busy for several months, working to prepare for the 2008 China Wuhan Shipbuilding Industry Exposition, which is actually a part of the 9th China International Machinery & Electronic Products Exposition.

The shipbuilding industry exposition will be staged on 23 September. After it closes on 26 September, Ms Xie will have the chance to take some rest.

'The shipbuilding forum we held last year was a big success. We will make it an exposition this year and aim to attract more participants,' she said.

Sitting at the industrial heartland of Central China's Hubei Province and benefiting from its strategic location on

the country's shipping artery – the Yangtse River – Wuhan has strong foundations in shipping and shipbuilding. Geographically, Wuhan is divided by the Yangtse and its branches into three towns: Wuchang, Hankou and Hanyang.

China Changjiang National Shipping (Group) Corporation (CSC), a shipping group with the headquarters in Hankou, is a focal point when talking about the shipbuilding cluster, which has gathered a strong momentum in Wuhan.

With over 140 years of history, CSC now owns a fleet of over 2000 ships, equivalent to 5 million dwt, for both domestic trade and international trade. In 2007, the cargo volume of CSC exceeded 128 million tonnes. Besides shipping, CSC also has

shipbuilding branches, including Jinling Shipyard, Jiangdong Shipyard, Qingshan Shipyard, Yichang Shipyard and Damen Yichang Shipyard.

Orders in hand

Qingshan Shipyard, based in Wuhan is now able to accommodate ships of 100,000dwt, after building a 394m long outfitting wharf. By the end of June 2008, the shipyard had secured in hand orders for 63 ships, equivalent to 2.39 million dwt and a value of RMB13.8bn (US\$2.02bn).

Wuchang Shipyard, set up in 1934, is a subsidiary of China Shipbuilding Industry Corporation (CSIC). The shipyard has successfully developed high value-added Vik Sandvik-designed VS483 platform

Wuhan Qingshan Shipyard had orders for 63 ships at the end of June 2008.



supply vessels, and it holds orders for seven offshore vessels altogether. Wuchang Shipyard is also building a manufacturing base of offshore projects in Qingdao at the tip of East China's Shandong Peninsular.

The yard also recently started the construction of China's largest all-aluminium alloy wave-piercing catamaran. The ship, named Dong Yuan 01, is 60m long and 18m wide.

Huaxia Shipyard, located in Hanyang, was founded in 1984. The shipyard has received orders for 10 x 5185dwt bulk carriers, 12 x 6,900dwt bulk carriers, and 10 x 29,200 dwt bulk carriers, from Russian, Turkish and Greek owners respectively. It is expected that the production value of the shipyard in 2008 will reach RMB800 million (US\$116.8 million).

Supporting development

The development of industry always relies on the supply of talent. Wuhan University of Science and Technology and Wuhan

Institute of Shipbuilding Technology are the two most outstanding regional organisations. Meanwhile, Wuhan Nanhua High-speed Ship Engineering Co, based in Wuchang, is a shipbuilder originally developed out of a yard affiliated to Wuhan University of Science and Technology.

Wuhan Ship Design and Research Institute, also known as CSIC 701 Institute, and Changjiang Ship Design Institute - affiliated to CSC - are both the two best known design and research bodies.

As for marine equipment, Wuhan Marine Machinery Plant, another CSIC subsidiary, was set up in 1958, and is a leading supplier of marine equipment, welding materials, offshore equipment, etc. in China. The company also established a joint venture with Kawasaki Heavy Industries - Wuhan Kawasaki Marine Machinery Co - in 1995, engaging in the production of side thrusters. By the end of 2007, the joint venture had delivered 1442 thrusters, 75% to foreign purchasers.

To complete the industrial supply chain and fully tap the potential of shipbuilding, marine equipment supply, education, research and development sectors, Wuhan has initiated the joint meeting mechanism since July 2007 to create a genuine shipbuilding cluster. Related enterprises meet regularly.

To create a broad platform to boost the development of maritime industry, CSC, by joining hands with I.M. Skaugen from Norway and Wuhan Hi-tech Holding Group, is forging a marine equipment industrial park which is, with an area of 1.4 million m², planned to be the largest of its kind in central and west regions of China. The park's construction was started in December 2007, and includes a Production, Research & Development Zone, a Hi-tech Technology Incubation Zone and an Exhibition Zone. It aims to attract international marine equipment manufacturers and maritime service suppliers. After full completion, the park will generate over RMB10bn of production value annually. *NA*

Wuhan CSIC main offices, part of the region's growing shipbuilding and marine equipment cluster.





Leisure

Workboat

Commercial

Offshore

Rig

Ferry

Powerful, Flexible, Dependable.



Littoral Combat Ship
 Length: 127.1 metres
 Speed: In excess of 40 knots
 Mission Bay Volume: 11,000 cubic meters
 Produced with ShipConstructor

ShipConstructor®

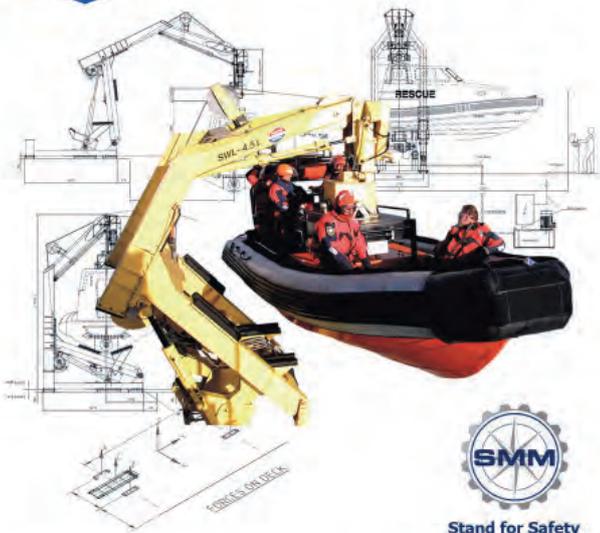
Shipbuilding Software Solutions

www.ShipConstructor.com

Courtesy Marine Technologies Ltd., Russia for Bodewes Shipyards B.V., The Netherlands; J. Ray McDermott Inc., USA & J. Ray McDermott Far East, Inc., Indonesia; General Dynamics Team: Austal Ships Pty Ltd., Australia and Austal Ships, USA; Bender Shipbuilding & Repair Co., Inc., USA and Guido Perla & Associates Inc., USA; Genoa Design International, Canada and Marinette Marine Corp., USA; Vripack Yachting International Naval Architects B.V., The Netherlands.



NED-DECK MARINE
 Life Saving & Deck Equipment



Stand for Safety
B5.351



MARS ERP

The leading ERP solution
 for the Shipyard Industry

- Implemented at more than 70 Shipyards globally
- More than 1,500 ships built today by MARS
- Developed in close cooperation with leading shipyards
- Handles one-off projects as well as large series (sister-ships)
- Fully integrated Scheduling and Planning
- Fully integrated Production Management
- Capability to manage Project Specific Items
- Powerful features for handling SCM – Supply Chain Management
- Powerful functions for controlling Outfitting Process
- Special features for estimation, handling & purchasing of steel materials
- Standard interfaces available to Finance & CAD (ship design systems)
- Short and effective implementation time



VISIT US AT THE SMM 08
 IN HAMBURG, GERMANY
 23-26 SEPT., HALL B7, STAND # 241



LOGIMATIC
 integrating knowledge and technology

www.logimatic.com

Shiprepair's rising star

As China marches towards its goal of becoming the world's largest shipbuilding nation, its star is also rising as a centre for shiprepair.

In 2007, the production value from shiprepairing was €9bn (US\$13.9bn) for the whole of Europe, and US\$4bn in Singapore. For its part, Chinese shiprepair grew to a RMB40bn (US\$5.83bn) business, and there are clear signs that this is set to grow further.

'Ship repairing is withering in Japan and South Korea. China is becoming the largest ship repairer in the world,' said Yang Xinkun, vice chairman and secretary general of the Shiprepairing Chamber of the China Association of National Shipbuilding Industry (CANSI).

He said China now is capable of repairing all ship types, with the exception of liquefied natural gas carriers.

Tripod on the map

With a coastline of 18,000km, China has three major shiprepair bases: Currently, the strongest is the Yangtse Delta, where Zhoushan in Zhejiang Province is the most prominent district, followed by Shanghai and Nantong in Jiangsu Province. The Bohai Rim has a long shiprepairing history and is now growing very rapidly. Comparatively speaking, South China is less well developed, but it is expected to catch up soon.

In the first five months of 2008, Zhoushan harvested RMB2.867bn (US\$419 million)

as shiprepair business, recording a year on year increase of 75.34% in turnover terms. Zhoushan has the world's largest shiprepair base – COSCO Zhoushan Shipyard - which covers a land area of 1.93 million m², has a 500,000dwt dry dock, and is capable of repairing all types of ships, including offshore platforms and ultra large crude carriers.

On 30 June, 2008, the shipyard delivered *Treasure*, which was converted from a Suezmax tanker to a heavylift vessel for Dockwise. This project involved about 14,000tonnes of steel structure, 250,000m² of coating and 100,000m of cable laying.

In Shanghai, the leading shiprepairers include Shanghai Shipyard, which has been relocated from the border of the Huangpu River to Chongming Island, as well as COSCO Shanghai Shipyard and Huarun Dadong Shipyard.

In the first half of 2008, the production value of shiprepair in Shanghai Shipyard totalled RMB278 million, and the shipyard is targeting RMB400m as its production value for the year as a whole.

Huarun Dadong (HRDD) is a joint venture, invested in by China Resources Machinery & Minmetals (Holdings) Co, Hudong-Zhonghua Shipyard, and also the government of Chongming, where the shipyard is located. In 2007, HRDD ranked as

China's second largest shiprepairer following COSCO Shipyard Group with RMB2.18bn of production value. The shipyard is known for VLCC-to-VLOC conversion projects.

CSSC Chengxi Shipyard and COSCO Nantong Shipyard are the two major shiprepair companies in Nantong, Jiangsu Province. In the first five months of 2008, CSSC Chengxi repaired 64 ships and earned over RMB1bn as production value, representing a year on year increase of 34.05%. On 12 July, COSCO Nantong Shipyard delivered the 300,000dwt ship *Sinotrader* to Japanese owner SINOKOR. This is the first VLCC-to-VLOC conversion project that the shipyard has delivered.

Bohai bound

On the Bohai Rim, there is COSCO Dalian Shipyard which completed the conversion of the world's largest trailing suction hopper dredger *HAM318* for Dutch Van Oord on 20 June this year. This shipyard has a 300,000dwt floating dock, one 180,000dwt floating dock and one 80,000dwt floating dock with a total dock capacity of 560,000dwt, and nine dedicated berths for shiprepair.

Daeyang Shipping Co, from South Korea, is building a fully-owned shiprepairing base, also in Dalian. The shipyard, with one 250,000dwt and one 100,000dwt drydocks, will start operations in June 2009.

Meanwhile, Tianjin Xingang Shipyard is expanding, by building a new site which is capable of repairing 200 ships per year after full completion.

Shangaiguan Shipyard is an established shiprepair concern in Hebei Province. In 2007, Shangaiguan repaired and converted 134 ships and harvested RMB1bn as production value, representing a year on year increase of 50%. Single hull-to-double hull VLCC conversions became a new focus for the shipyard. On 9 June, 2008, Shangaiguan Shipyard finished the conversion of a single-hull VLCC to double-hull, double-bottom VLOC named *Pacific Ruby* for a Korean client. By June, the shipyard had secured conversion orders for 14 ships, equivalent to 3.7 million dwt.

HOSCO ship *Hebei Success*, repaired by COSCO.





Serving the nautical world

Central Industry Group (CIG) is a group of companies providing industrial goods and services to the international maritime sector. We offer you premium quality design and engineering, prefabricated steel and aluminium kits, container lashings and deck equipment. CIG thrives on personal relationships with its clients as we partner together to achieve excellence.

SMM Hamburg B7.440 in Hall B7

Numeriek Centrum Groningen
Vuyk Engineering Groningen
Centraalstaal
Ostseestaal
CS India Steel
Shipkits
Shippipe Bremen
Staal Bewerking Noord
Ship's Equipment Centre Bremen
Ship's Equipment Centre Groningen

FKAB – your design partner with strong presence in China!

Our success on the ship market has generated very rapid expansion. Jointly, FKAB in Sweden and China have grown from 30 engineers in 2001 to 120 engineers today. The need of a common trademark has become evident since the number of orders including staff from Sweden as well as China is growing continuously.

NOW UNDER A JOINT TRADEMARK

To improve communication with the market we are now working under a joint modernised FKAB logotype. There will be no other change. FKAB in Sweden and Dalian FKAB Marine Engineering Co. in China, previously known as DF-Marine, will continue to work in the same successful way and our company names will remain unchanged.

FKAB currently has offices in Uddevalla, Gothenburg, Shanghai and Dalian. In May we moved to our new, considerably larger office facilities in Dalian. We are now 75 employees in China with ample room for further expansion.



www.fkab.com

RESPONSIVE POWER FOR PROPULSION AND AUXILIARY POWER



Volvo Penta D9, D12 and D16. Built on the latest technology to deliver what you need at sea: Performance and reliability. Backed by the global response of Volvo Penta marine commercial dealer network.

- Massive low-end torque gives fast response.
- Total electronic control, high-pressure injectors and 4-valve technology for impressive fuel economy and low emissions.
- Compact design for easy installation and service access.



Engine	D9	D12	D16
Propulsion	221–368 kW	216–496 kW	368–551 kW
Marine Genset	112–250 kWe	240–350kWe	324–475 kWe

VOLVO PENTA

www.volvopenta.com

Forwairef, under repair at COSCO.

In Caofeidian, the new port development, Korea's C&Heavy and China's Delong groups are forging a shiprepair and shipbuilding base with a total area of 200hectares. The base is expected to be completed by the end of 2008 and the shiprepair sector is expected to contribute RMB3bn of revenue per year.

Beihai Shipyard in Qingdao of Shandong Province is an important shipbuilding and repairing yard controlled by CSIC. The shipyard has three large shiprepair docks and is able to repair ships under 500,000dwt at the wharf, while also being able to repair and convert ships of 300,000dwt in the dock.

According to Mr Yang of CANSI, the ship repairing yards always grow at large port clusters. As South China has two of China's busiest ports, Guangzhou and Shenzhen, it is natural to see shiprepair grow here. Youlian Dockyards (Shekou), founded in 1989, is fully owned by China Merchants Industry Holdings Co, and is one of China's top ten ship repairers. Its new site, completed in 2007, added two drydocks, one for vessels of over 300,000dwt and one for vessels up to 300,000dwt drydocks to its original facilities (one 80,000dwt and one 400,000dwt capacity floating docks.)

COSCO Guangzhou Shipyard has one 150,000dwt floating dock and one 80,000dwt floating dock and is able to repair about 100 ships every year.

Long view from Longxue

The most eye-catching project is CSSC Longxue whose ship repairing zone includes one 300,000dwt drydock, one 200,000dwt drydock and 1500m long quay. Guangzhou CSSC-Oceanline-GWS marine Engineering Co, a joint venture in which CSSC holds a 54% stake (while Hong Kong-based Ocean Line holds 46%) is the main investor in this development. The annual production value of this joint venture is to exceed RMB2 billion after the facility was expected to be put into operation in August of 2008.

Fujian Province, where Titan Quanzhou Shipyard is located, also deserves attention, as the shipyard has, since April 2008, been building two drydocks, whose dimensions

Dredger extension undertaken by COSCO.



SPANISH
maritime industry



SPANISCHE
schiffahrts industrie

AT SMM'08

23 SEPT. – **26** SEPT. 2008

HALL B1.UF (Upper Floor) • HALLE B1.0G



ICEX

Hamburg



España



EXHIBITORS LIST • AUSTELLER LISTE



AZCUE PUMPS.— Pump Manufacturers.



BALENCIAGA SHIPYARD.— Shipyard.



BASQUE MARITIME INDUSTRIES ASSOCIATION.— Basque Country Maritime Industries Association.



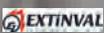
CINTRANAVAL-DEFCAR, S.L.— Ship Design & CAD/CAM Software (DEFCAR).



CF HVAC S.L.— Ventilation Equipment & Air Conditioning.



DETEGASA.— Marine Environmental Technology.



EXTINVAL, S.L.— Lifeboats & Davits, Liferrafts, Fire-fighting Services.



GEFICO ENTERPRISE.— Fresh Water Makers AQUAMAR.



GONDAN SHIPYARD.— Shipyard.



HAWKE TRANSIT SYSTEM.— Sealing System for Cables and Pipes.



HERMANOS TOIMIL GARCÍA, S.L.— Hydraulic Marine Forest and Industrial Cranes.



HIJOS DE J. BARRERAS, S.A.— Shipyard.



HUELVA SHIPYARD.— Shipyard.



ISONELL.— Accommodation System.



KSB ITUR.— Pump Manufacturers.



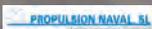
LAMINADOS LOSAL.— Hot Rolled Steel Special Sections (Bulb-flats, Half-Rounds,...)



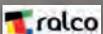
MURUETA SHIPYARD.— Shipyard.



N. TORREIRO.— Design, Manufacture and Repair of Hypochlorite-sodium Generators and Fresh Water Generators.



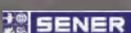
PROPULSION NAVAL.— Design and Manufacturing of Propellers.



RALCO EUROPA.— Spare Parts for Refrigerating Compressors.



SCM SISTEMAS.— Internal Communications.



SENER INGENIERIA Y SISTEMAS, S.A.— CAD/CAM Systems (FORAN) and Engineering.



SEVILLA SHIPYARD.— Shipyard.



SINAVAL 2009.— Spanish Maritime and Fishing Exhibition.



SKANDIAVERKEN GROUP.— Marine Diesel Engine Spare Parts and Service.

are 280m long by 46m wide by 12.8m high for shiprepair. The construction is expected to take 22 months, adding new blood to China's shiprepair capacity.

Market leader represents

However, COSCO Shipyard Group, established in 2001, remains the market leader in shiprepair in China, with six subsidiaries along China's coast. Since 2005, the group has been strategically upgrading its product structure by focusing on offshore marine. In 2007, the group got the first batch of shipbuilding contracts. At present, newly planned shipbuilding and offshore marine engineering systems, and increasingly improved equipment capacity, are being boosted in Dalian, Zhoushan, Nantong and Guangzhou.

'In near future, shipbuilding & offshore marine engineering business will take up half of our total business, and become a stronger force to drive us ahead,' said Li Rong, executive director of the commercial headquarters of COSCO Shipyard Group, based in Shanghai.

The contribution ratio of conversion keeps fast raising year by year. The ship conversion accounted for above 50% of the total production value of the group in 2007.

According to Mr Li, conversion is an efficient way to enhance the shipping capacity of a shipowner in a shorter period compared with shipbuilding. Furthermore, by conversion, the group can effectively improve its management and maintain a steady relationship with subcontractors.

The group has experienced a shortage of skilled workers and overcome this difficulty by raising salaries, improving living conditions and adding welfare benefits. The group won the 2007 National Award for Best Employer for rural migrant workers.

The boom will last

According to Mr Li, the global ship repairing market will continue to grow, with the strong demand from shipping fleets and demanding regulatory rules, which will benefit China. Growing trade with China will be also a key driver. Reasonable price, high quality of work and remarkable services are the strong competitiveness of Chinese ship repairing yards, he said.

The shiprepair price in China is around 30%-40% that of Singapore and, due to the cheap labour costs available, Chinese shipyards are not so eager to raise their prices as they can currently make around a 20% gross profit.

In 2007, the ship plate changing price was US\$6000-US\$7000 per tonne in Singapore while that in China has just been raised from US\$1300-US\$1500 to US\$2000. Now, some shipyards in China have raised the price to US\$2800 and they seem to be very satisfied with this level.

'China will become the largest and strongest shiprepairer in a few years, say four to five years, said Mr Yang, from CANSI. 'As China proves its capability to build LNG carriers, it won't take long for China to receive orders for repairing such high-tech and high value-added vessels.'

In the first half of 2008, the shiprepair sector had harvested RMB20bn yuan as production value and it is not expected to be a problem for the sector to achieve the conservative RMB38 billion-RMB40 billion for the year as a whole. *NA*

SCD SCHOTTEL Combi Drive

A Highly Efficient Azimuth Drive System

Main Characteristics:

- Combination of electric drive system with proven mechanical components
- Utmost manoeuvrability due to 360° steering
- No shaftline required
- Extremely compact design
- Easy to install by the shipyard



PSV BOURBON MISTRAL
2 x SCD 2020 (2700 kW each)

Our product range comprises azimuth propulsion systems, manoeuvring and take-home devices, and also complete conventional propulsion packages rated at up to 30 MW. Through our worldwide sales and service network we offer economical and reliable solutions for vessels of all kinds and sizes. So we can provide the right thrust for your vessel.

See you at SMM 2008 · Hall A4 / Stand 310

SCHOTTEL GmbH
Mainzer Str. 99 · D-56322 Spay/Germany
Tel.: + 49 (0) 26 28 / 6 10 · Fax: + 49 (0) 26 28 / 6 13 00
info@schottel.de · www.schottel.de



If you could have this...

2,4 Kg / m²

10 mm

How much would

gain
~~spend~~

By developing tailor made solutions with engineered mineral matrix lightweight materials, we have achieved optimum performances to provide you with the lightest and thinnest certified fire protection systems ever manufactured.

Whether the structures are made out of steel, aluminium, laminated or sandwich GRP, we can offer you the best solution in terms of efficiency and cost benefits over any other system.

- ✓ **A60 CLASS MED mod. B Deck and Bulkhead for Lightweight Aluminium and Steel Structures**
- ✓ **MCA – LY2 CODE - 30 & 60 minutes Fire Resistance on Laminated GRP and Sandwich Structures**
- ✓ **Non combustible, Flexible, Easy to install**



PROMAGUARD®

The *Ultimate* in Marine Fire Protection

SYNTHESIS®

Engineered Acoustical and Fire Protection Lightweight Systems

Promat

High Temperature Insulation

Promat SpA – HTI Division
Via Idiomi 1/9
20090 ASSAGO (MI) – I -
TEL+39 (0)2 45 71 711 – FAX +39 (0)2 45 70 61 87
Mail: mail@promat.it

www.promat-international.com

Design solutions to spur US coastal trade

Growing interest in fostering the development of coastwise shipping as an efficient alternative to the increasingly congested US highway system has brought a clutch of design solutions from Aker Yards Marine. David Tinsley reports.

North American technical consultancy Aker Marine has drawn up three distinct types of high-speed vessel in recent years, specifically for shortsea and coastal operations under the auspices of the Jones Act, whereby domestic trade is the province of US-flag, US-built ships.

The Aker proposals encompass trimaran ro-pax and combined passenger/cargo carrier types, and a more recently formulated mono-hull trailership intended for dedicated coastal service. Common to each design is a high power concentration and high, sustainable speed.

The monohull ro-ro design project arises from a tentative plan by Roadships America to provide a fast, drop-trailer coastwise connection as part of an integrated logistics chain. Both government and the private sector have shown substantial support for the initiative as a means of obviating and reducing traffic congestion on the US east coast corridor, not least as regards interstate highway 95.

Distinguished by a narrow, wave-piercing form, covered foredeck and inverted bow, culminating in a pronounced bulbous forefoot, the 200m design provides for the transport of 148 semi-trailers of 53ft at

speeds of 30knots-plus. The cargo section has been designed to ensure maximum dispatch capability, as the vital accompaniment to fast sea transits, and the configuration provides for direct load and discharge over the stern, with no turning.

Freight is carried on three decks, accessed across stern ramps fitted at both main and intermediate deck levels, facilitating simultaneous load and discharge operations. Positioned a little abaft the midway point of the hull, the superstructure is raised above the weather deck, affording unimpeded handling for trailer-borne freight, in keeping with the minimisation of obstructions on the

Concept for the Roadships monohull trailership.



Seamless and solid deck covering
with the look of real teak.



Bolideck® Future Teak

durable • flexible • UV-resistant • non-skid • safe • exterior and interior
impermeable to fluids • sound-insulating • salt water resistant

SMM Hamburg, Stand 340.


bolidt
N O L I M I T S

<http://cruiseship.bolidt.com>

two other cargo decks. An internal ramp in the aftship section permits transfers between the weather deck and the intermediate deck.

Powerful and robust medium-speed diesel machinery is favoured for the monohull fast freight carrier, at a total installed output of some 45MW. The envisaged plant comprises two pairs of medium-speed main engines driving twin propellers through reduction gears. The staggered layout of the machinery, whereby one pair of prime movers is located forward of, and offset from, the other pair makes for a longer starboard-side shaftline. The uptakes from all four engines are arranged through a starboard casing and stack.

Aker Yards Marine's commitment to innovative design is also evidenced in research and development activities in the field of very high speed trimaran technology (VHSTT). Development has been funded out of the company's own resources and a cost shared grant from The Center for the Commercial Deployment of Transportation Technologies (CCDoTT). Work has embraced computational fluid dynamics (CFD) methodology, hull configuration optimisation, lines development, powering analysis, hydrodynamic model testing, and concept design development for ships of 40knots, 50knots and 60knots.

VHSTT has potential applications in both commercial express transport and US government sealift requirements. Increased payload and stability are among the key features of the revolutionary trimaran technology platform.

The Short Sea Coastal Express trimaran conceived by Aker Yards Marine offers a high degree of flexibility within main dimensions of 165m overall and 32.2m maximum beam, at a design draught of just 4.5m. The greater width conferred by the trimaran form provides a 10-lane main ro-ro deck for cars, trucks and trailers, semi-trailers and buses, complemented by facilities for 376 passengers. The superstructure, including the bridge, crew accommodation, passenger deck and facilities, is positioned over the foreship section of the trimaran's main hull. The outrigger-like side hulls extend for 65m from aft.

Ro-ro payload options include 34 tractor-trailer combinations of 53ft at a unit weight

of 35t, alternatively 48 semi-trailers of 53ft at 28t apiece or 62 semi-trailers of 40ft and 22t, or up to 124 cars or 62 buses. Container intake could be 62 FEU at 20t unit weight, or 118TEU at 10tonnes. By the linear capacity measure more commonly associated with ro-ro ferries, the Short Sea Coastal Express provides a total 856 lane-metres of vehicular space.

The ro-pax vessel based on a trimaran configuration offers a compact, high-speed solution to the needs of short-haul and coastwise routes. Passenger spaces and seating, including a limited number of cabins, are arranged over two decks, while the main vehicle deck allows for loading permutations of trucks, buses and cars through the usage of platform deck sections.

Depending on traffic needs at any one time, the garage can accommodate some 524 running metres of vehicles using lanes of 4.3m width, or will alternatively afford 710 lane metres at 3.4 metre lane width. The two platform deck sections will take a total of 36 cars, served by individual ramps, while the main vehicle deck access to and from the shore is by way of a long ramp deployed from the vessel's starboard quarter.

The potent propulsion installation nominated for the vessel showed an earlier predilection for a combination of diesel and gas turbine machinery to suit the needs of a varied operating profile or changing traffic requirements, allowing power delivery at an economical setting or in boost or maximum speed mode. The gas turbines would be located in the centre hull, with diesel engines in the side hulls, all driving waterjets, the outermost of which would be steerable units.

Trimaran trailership

Various organisations in the US have worked together with the Center for the Commercial Deployment of Transportation Technology (CCDoTT) on a high-speed trimaran trailership, the HSTT-180, for potential commercial shortsea and also military transport applications. Seen as a means of helping to encourage a modal shift, the powering and design arrangements in the HSTT-180 concept permit a multi-speed capability up to about 37knots maximum service speed.

Attributes of the trimaran form and specific design philosophy, in the context of

stimulating the development of the 'marine highway', include the type's favourable seakeeping properties, high scheduling dependability due to all-weather properties and redundant systems, manoeuvrability, improved efficiency due to speed and power flexibility, and interoperability as regards range of cargo loading possibilities.

The CCDoTT's inclusion in its Fiscal Year 07 project funding programme of a study into the adoption of the fast trailership concept for US east coast trade showed continuity in the bid to stimulate the shortsea and coastwise shipping mode. The investigation is due to be completed in 2008 by Herbert Engineering Corporation, and is focused on the application of the HSTT trimaran to a freight route linking Massachusetts with Port Canaveral.

It was reported that a memorandum of understanding was already in place between the two ports, and that Mass Port had completed a trade study into a three-ship operation using vessels able to carry 140 trailers of 53ft at a service speed of 27 knots. Among the factors to be determined in the current study is the boost speed that the ships would be required to offer so as to ensure schedule reliability.

The large, Panamax-width cargo deck area afforded by the trimaran concept is seen not only as providing scale economies, enhancing the unit cost competitiveness of transit by sea, but also as conducive to efficient turnrounds, abetted by a maximum-width stern ramp. The slender hulls and semi-wave-piercing bow favour an economical service speed and a boost speed to 30 knots. The stable trimaran configuration promises reduced pitching motions, allowing high speeds to be maintained in high seas, making the vessel less prone to weather delays and better ensuring service dependability.

The ultimate driving force behind the moves to spur the use and expansion of coastwise shipping is the threat to US economic prosperity posed by increasing road congestion. It is said that the US highway system has experienced almost a doubling in vehicle miles travelled in the past 20 years, while the total highway mileage has increased by only one per cent. **NA**

Protect Assets. Save Lives. **FyreWrap**[®]



Introducing Our Complete Family of FyreWrap[®] Fire Protection Materials

- Light weight, easy to fabricate
- Provide protection in excess of 1250°C
- Meet international and local fire standards and code requirements

FyreWrap materials are ideal for a variety of passive fire protection applications including:

- Marine bulkhead and deck insulation
- Firestopping and penetration seals
- Building movement joints
- Fire doors and seals
- Cable tray protection systems
- Grease and HVAC ducts
- Window system tapes



0062

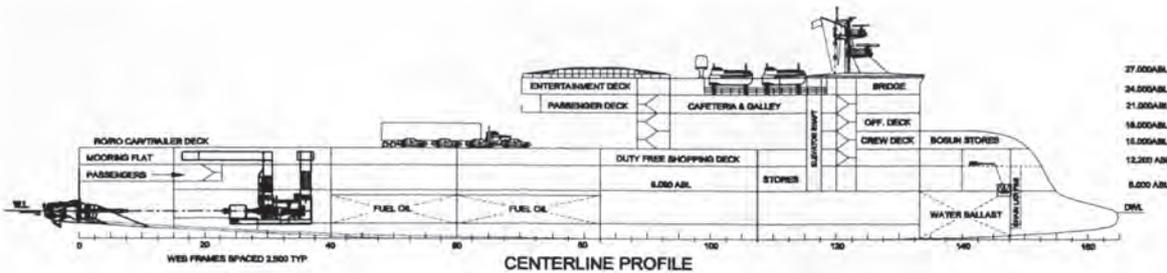
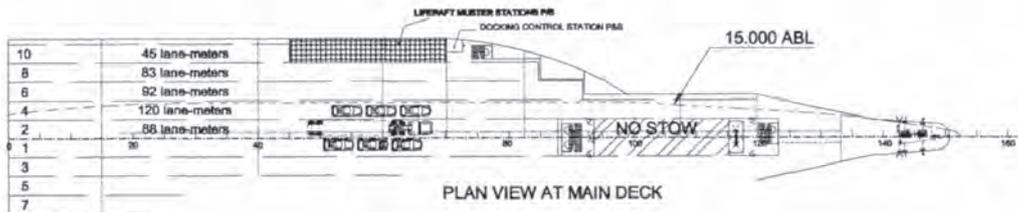
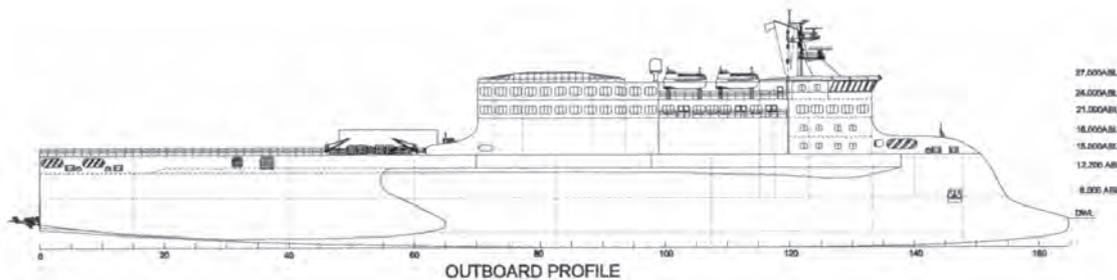
For more information, contact Unifrax Corporation, European Sales & Marketing +44 1744 88 76 00; Corporate Headquarters USA 716-278-3800.

UNIFRAX

www.unifrax.com

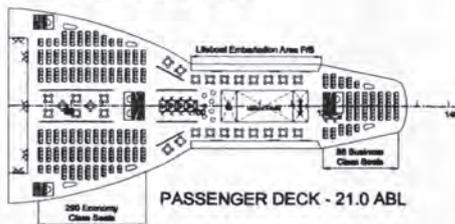


Line drawing for combined passenger/
vehicle/container-carrying trimaran.



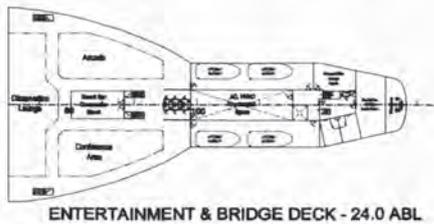
SHORT SEA COASTAL EXPRESS

Short Sea Characteristics	Dimension
Length Overall	185.0 m
Beam Overall	32.3 m
Design Draft	4.8 m
Main Hull LML	185.0 m
Main Hull Beam	11.8 m
Side Hull LML	85.0 m
Side Hull Beam	3.4 m
Side Hull Draft	3.0 m



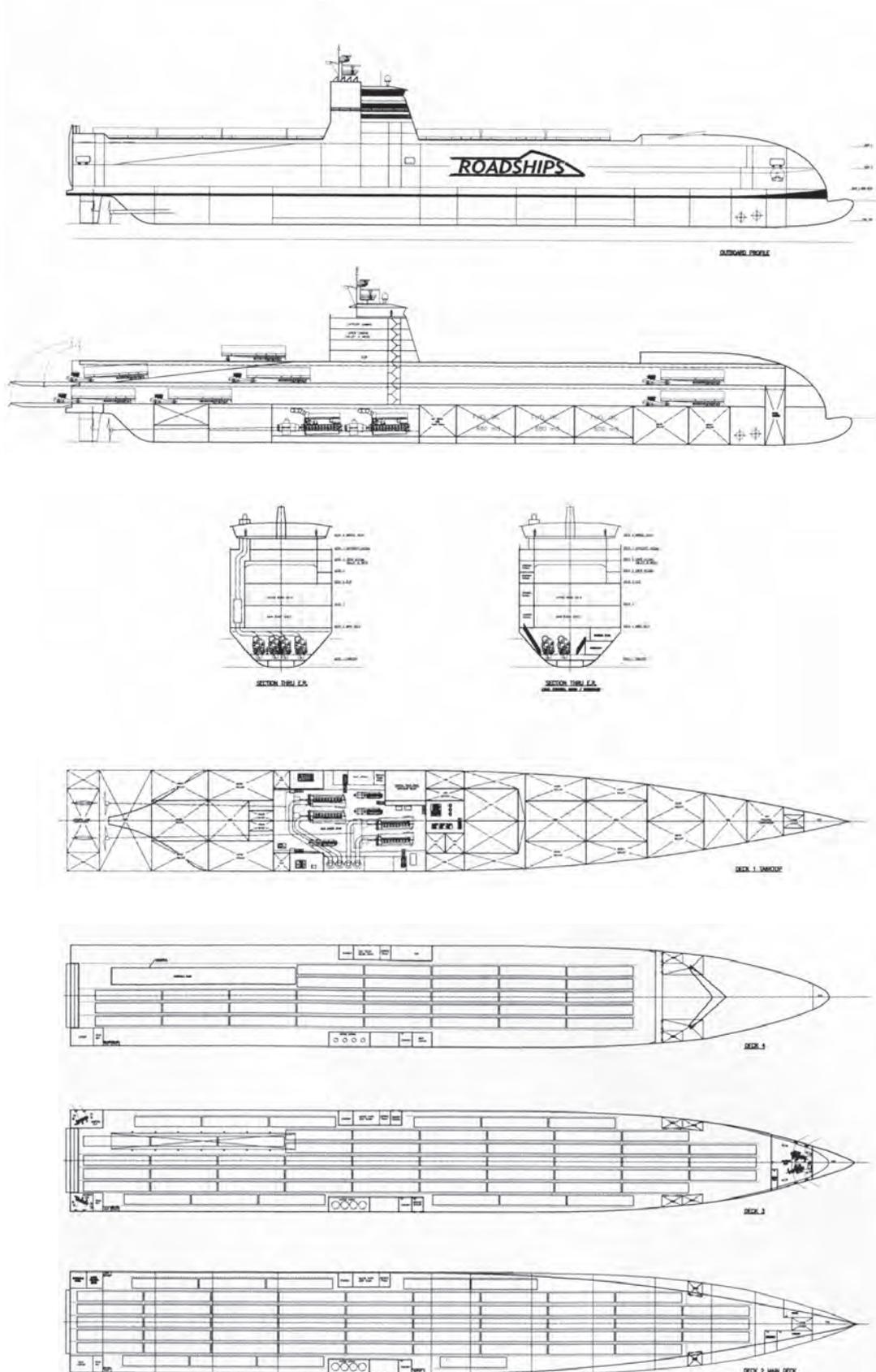
CARGO CARRYING CAPACITIES

Cargo Characteristics	Live Weight (mt)	SBCE (p)
57' Trailer Trailer	35	34
40' Trailer Trailer	30	42
50' Trailer	28	49
40' Trailer	22	52
Coach Bus	30	82
FEU	20	82
TEU	10	118
Cats	2	124
Passengers	275	275
Crew	275	24



Feature 3 | LARGE PASSENGER AND FREIGHT FERRIES

Line drawings of Aker monohull trailership.





altro
transflor



Isn't it time you spoke to the **number one** transit flooring expert?

The safety of your passengers and crew is paramount. But many shipping operators are using slip resistant flooring that can produce noxious fumes and gases in the event of fire. These can be fatal if inhaled.

Gallium from Altro Transflor is a new, highly advanced slip resistant material that is unlike any other safety flooring – because it doesn't contain PVC. It is designed specifically for maritime use and meets 100% of all relevant IMO MED requirements, making it the safest maritime flooring on the market.

After manufacture, every batch is independently tested for fire, smoke and toxicity – a voluntary procedure that exceeds the requirements of the IMO MED. This means total compliance and gives you peace of mind that you are meeting your duty of care.

Contact us now to find out how Gallium can meet all your needs for safety, comfort and hygiene.

All at sea?



safety
at sea
international
Awards

Winner of the 2008
Safety at Sea International
Award - Equipment



Find inspiration. Find your **altroism**

Call: +44 (0) 1462 707600 e-mail: info@altrotransflor.com explore: www.altrotransflor.com

Since 1892 INNOVATING EVERY DAY

In Shipyard Barreras we have been innovating every day for more than one hundred years, using state-of-the-art technology and contributing our experience to develop cutting-edge projects such as offshore vessels, where rigour and precision in the building process make the difference.

Now, building Offshore Vessels



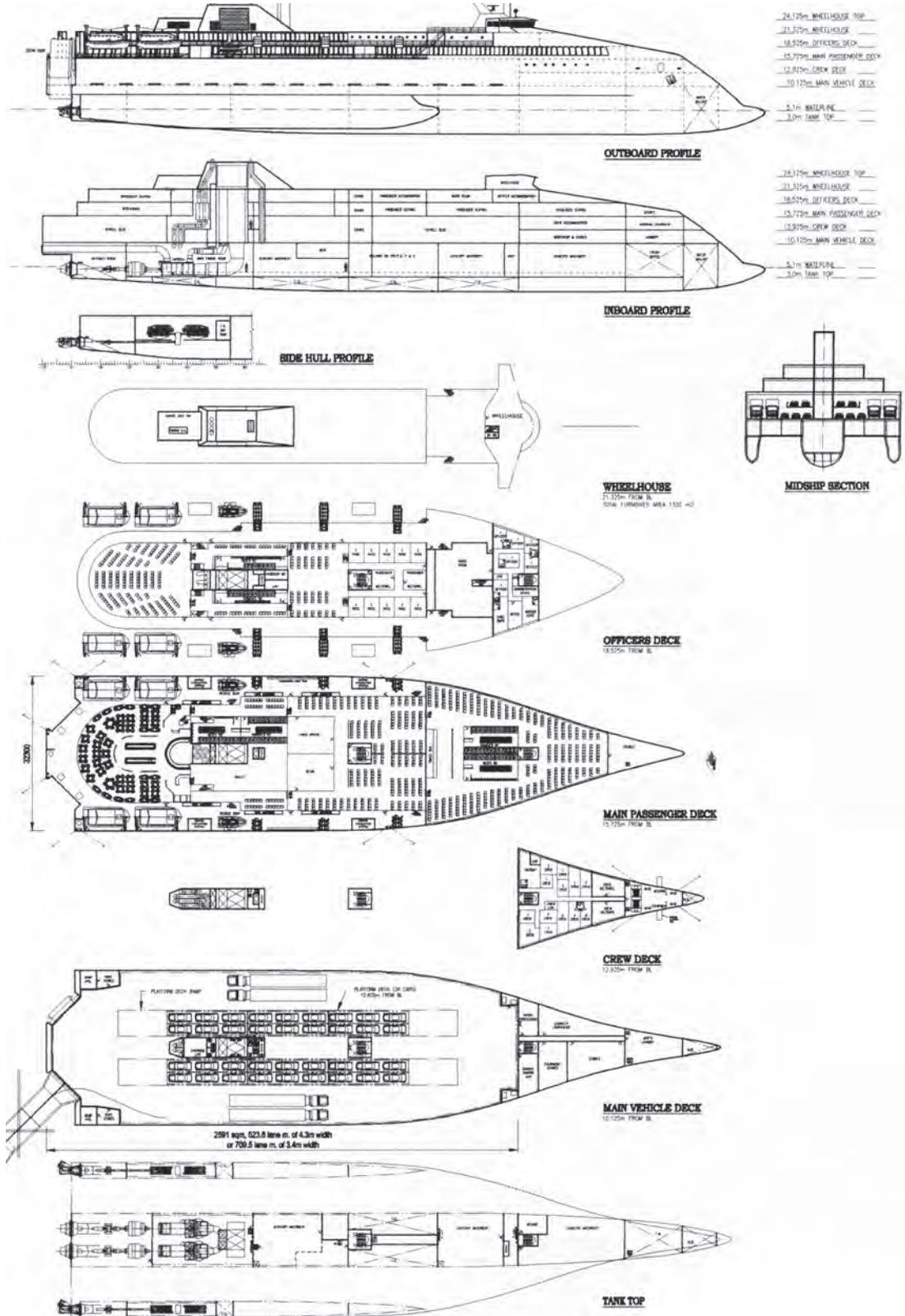
Avda. Beiramar, 2 • 36208 Vigo. Spain
Tel: +34 986 213 297 • Fax: +34 986 204 415
astillero@hjbarreras.es • www.hjbarreras.es

 Shipyard
BARRERAS

VIGO - SPAIN

Feature 3 | LARGE PASSENGER AND FREIGHT FERRIES

Line drawing for a trimaran ro-pax vessel.



SAM Electronics – Power under Control

Reliable Competence in Diesel-Electric Propulsion Systems

Diesel-electric propulsion systems delivered for more than 80 vessels with special requirements such as cruise liners and ferries, tankers, research ships, mega yachts, offshore and naval vessels.



SAM Electronics GmbH
Behringstrasse 120
22763 Hamburg · Germany

Phone: +49 - (0)40 - 88 25 - 27 20
Fax: +49 - (0)40 - 88 25 - 41 02
Energy-Drives-Sales@sam-electronics.de
www.sam-electronics.de

 **SAM
Electronics**
an  communications company

Please visit us at SMM 2008, 23 - 26 September, Hall B6, Stand 340.

NAVALIMPIANTI - TECNIMPIANTI
P
U
O
R
G

ADVANCED MARINE SOLUTIONS:

Access & Handling Systems, Cargo Access Equipment, Life Davits Systems, Swimming-pool Telescopic Covers, Valves Remote Control System, Tender Platforms and a lot more!



You will find us at SMM 2008 from 23rd to 26th September in Hamburg, Germany!

www.navim.com





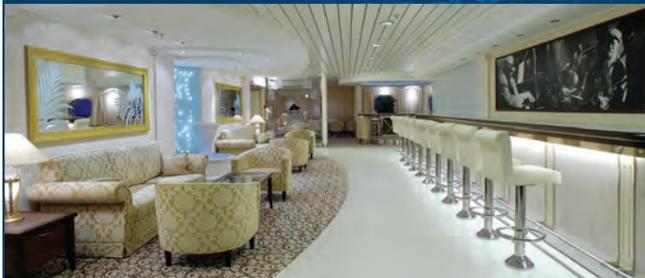
*A prompt supplier of comprehensive
Marine Interior Solutions for the Cruise
and Passenger Ship industry*

THE OVERALL CONCEPT

Merima provides a complete package of turnkey interior projects for new building construction and refurbishment for major shipyards and ship owners.

Through Merima LLC, our Florida based branch, we also offer services to North American and Caribbean waters. This ranges from comprehensive solutions for new buildings and refurbishment projects to International Marine Industry.

SuperStar Aquarius – Liberty of the Seas
Galaxy – Crystal Symphony – Century
Majesty of the Seas – Elation – Tallink Star
Fascination – Freedom of the Seas



Merima LTD
Tatti 10, 00760 Helsinki, Finland
Tel. +358 9 350 9300
Fax. +358 9 388 2133
Email: contact@merima.fi
www.merima.fi

Merima LLC
1975 E.Sunrise Blvd. Suite 750
Ft-Lauderdale, FL 33304, USA
Tel. +1 954 772 8860
Fax. +1 954 318 1058
www.merima.us



Simply a better system.

SIMPLY THE SMARTER CHOICE >>>

Rapid and safe emergency evacuation is synonymous with the Liferaft Systems Australia Marine Evacuation System, delivering passengers and crew, dry-shod, directly into large capacity liferafts via the unique inclined slide system.

Liferaft Systems Australia manufactures a wide range of inflatable marine evacuation systems and large capacity liferafts for all types of passenger vessels, including conventional ferries, high-speed craft, cruise ships, military vessels and large private yachts.

All products can be supplied as standard or customised to suit the customer's needs. Certified to IMO, SOLAS and EU, and approved by USCG, Transport Canada and DNV.

www.liferaftsystems.com.au



CONTACT US AT >>>

AUSTRALIA 5 Sunmont Street, Derwent Park Tasmania 7009 Australia
P: +61 3 6273 9277 F: +61 3 6273 9281 E: info@LSAMES.com

EUROPE
P: +44 7939 468 224 F: +44 2891 240 138 E: p.rea@LSAMES.com

NORTH AMERICA
P: +1 604 780 0016 F: +1 604 434 2911 E: v.prato@LSAMES.com

Northern exposure for BC Ferries

Coastal Celebration, the third of the new 'Super C Class' ferries for British Columbia Ferries has entered service, while the operator awaits a fourth, and completely different ship from German yard FSG.

C*oastal Celebration*, the third and final sister in what are the largest double ended ferries in the world, left the Flensburger Schiffbau Gesellschaft yard, in Germany, on 9 May and, after a special stop in London on 12 May, embarked on the 10,000 nautical mile voyage to Nanaimo, arriving on 18 June.

The first of the BC Ferries' Super C-class, *Coastal Renaissance*, entered service at the beginning of 2008.

These 21,777gt ships have seven decks and are 160m long overall. They are driven by four MaK engines with a combined 16,000hp to achieve service speeds of 21knots.

With capacity for 1600 passengers and crew and 370 cars, amenities onboard include the Coastal Cafe, the Coast Cafe Express, the Seawest Lounge, the Sitka Coffee Place, Passages Gift Shop, a Kidzone play area, and business workstations.

Bridges at both ends of the ferries are located on Deck 5, which also houses two staterooms, a conference room, a large seating area, work stations, washrooms, a children's play area, and a snack bar. The ferry's four evacuation slides are also located on this deck.

The ships have two car decks divided for most of the ship's length by a bulkhead. The lower vehicle deck can accommodate over-height vehicles, offering a clearance of 4.75m.

Also figuring in BC Ferries newbuilding plans is *Northern Expedition*, a replacement ferry for the 40-year old *Queen of Prince Rupert*, operating in northern British Columbia, and also to be built by FSG. The build contract, worth €91.8 million, was signed in 2006, and envisages delivery in the Spring of 2009.

Classed by ABS, the new 17,800gt ferry

will be 150.5m long, 23.9m across the beam, and feature a draught of 4.9m. Also featuring a free height of 4.75m on her main deck, *Northern Expedition* will have 720 lane metres available for stowage.

She will operate between Port Hardy and Prince Rupert on the Inside Passage route. Following BC Ferries' specifications, the 150m vessel will accommodate 130 vehicles and 600 passengers. The vessel will offer 55 modern staterooms for passengers and an expanded range of food services and other amenities.

FSG has assumed all design, construction and delivery risk in this contract, while the owner has secured what are said to be favourable payment terms, with 80% payment due upon vessel completion. Vessel performance guarantees have also been secured related to speed, carrying capacity, manoeuvrability and fuel consumption. **NA**

Coastal Celebration, in a call in London, on her way to entering service.



Barreras launches double-ended giant

The first of four vessels ordered by Baleària from shipyard Barreras, *Martín i Soler*, was launched in June.

Shipyard Hijos de J. Barreras, of Vigo, has launched *Martín i Soler*, the first of four ferries ordered by Balearic shipping company ferryboat built for owner Baleària, for a total €350 million contract price.

State of the art

The shipbuilder said that *Martín i Soler* was 'one of the most state-of-the-art ferry boats built worldwide recently', having been adapted to the characteristics of a variety of ports and traffic types. With capacity for 1200 persons aboard, the double ended ship is the largest ever to have been built for the Baleària fleet.

At 165.30m long and 25.60m beam across the beam, superficially, *Martín*

i Solar may seem like a conventional ferry. However, with a fast service speed for such a ship of 22knots, it is clear that considerable work has been expended by both the yard's technical department and by the ship's owner.

Ministry men

In fact, the concept for the ship was developed by Baleària together with SENER Industrial y Naval, within the R&D and Innovation Profit programme of the Ministry of Industry sponsored by the European Union. The programme allowed shipyard Barreras to develop what it terms 'an innovative and optimised design'.

The ship is propelled by two four-stroke engines burning HFO and

capable of developing a continuous maximum power of 9000kW at 500revs/min. These engines are said to minimise CO₂ emissions.

Good behaviour

The ship is designed to carry 328 cars and 1200 lane metres as. trailers of 2.9m width. Three of the 10 decks are assigned to passengers.

The yard said its initial study into vibrations and noises had 'ensured the good behaviour of the vessel at sea'.

'We must also highlight the low vertical accelerations, which indicate the passengers' degree of comfort. The technicians at Barreras designed the propellers and the vessel has passed the channel tests (at MARIN). **NA**

LAUTEX CEILINGS for Cruisers, Ferries etc.



OY LAUTEX AB

P +358 (0)9 2248810, F +358 (0)9 222 5447, sales@lautex.com, www.lautex.com

DFDS expands capacity

New ro-pax vessel with capacity for 600 passengers and 2500 lane metres for freight will enter into service in May 2009 between Germany and Lithuania.

DFDSD is investing in its route network in the Baltic Sea, where the market for sea transport of freight and passengers is expected to continue to grow in the coming years. Growth is being driven in particular by Russia, the CIS countries and the Baltic countries. Capacity on the route network is therefore being expanded with a new combined passenger/freight ro-pax vessel. The ship is being built at the Nuovi Cantieri Apuania shipyard in Italy.

DFDS has acquired the vessel from Grimaldi Holding S.p.A., Palermo. The vessel is the fifth newbuilding in a series of eight ordered by Grimaldi from the yard. The vessel is 200m in length, 27m wide and will initially be fitted with 2,500 lane metres for freight and cars. There will be capacity for 600 passengers, while service speed will be 23knots.

The agreement envisages that the ship will be delivered in May 2009, when it will enter into service on DFDS' route between Kiel, Germany, and Klaipeda, Lithuania. DFDS executive vice president, Peder Gellert Pedersen says: 'It will mean a significant improvement in the route, both for passengers and freight passengers. After the addition of the vessel, the route will be able to carry more passengers and more lane metres of freight, and I am



Finncarrier – part of the commitment by DFDS to introduce younger tonnage.

sure that the route will be an increasingly popular and comfortable alternative to the land route through Germany and Poland, where rising road tolls and congestion are a hindrance to transport.

'At the same time, the addition of the new vessel will allow the ro-pax ship *Lisco Optima* to be used to expand capacity and improve quality elsewhere in our Baltic route network.'

The investment includes delivery, equipment and special fittings and totals DKK600 million (US\$118.4 million). Of this, DKK100 million will be paid in 2008.

In a separate move, DFDS continued to renew its fleet of ro-ro cargo vessels earlier this year, through the purchase of two new

ro-ro cargo vessels which, from the spring of 2009, will enter services in the North Sea.

DFDS entered an agreement to purchase two ro-ro cargo vessels, *Finnmaster* and *Finnreel*, from British interests. Both vessels, which were built in 2000 at the Chinese JinLing shipyard, have a capacity of 1900 lane metres and a service speed of 20knots. The vessels will be delivered at the turn of 2008/2009 and are expected to be commissioned on the company's North Sea route network, where they will replace vessels that are about 30 years old.

Both of the newly purchased ships are ice-reinforced to Super 1A classification standards. **NA**

...for one toilet

...30 toilets

...or thousands

JETS Sanitary Systems
- made to please

www.jets.no

JETS VACUUM AS. P.O. Box 14, N-6069 Hareid, Norway. Tel. + 47 70 03 91 00. Fax + 47 70 03 91 01. E-mail: post@jets.no

BerCom

“I shall take this occasion to recognise INCAT not just as our ship builder but as our business partner in this project as well, in terms of your support and cooperation.”

“I have no doubt that 064 will become our Treasure Ship.”

S. Koga - President
Higashi Nihon Ferry



18 Bender Drive, Hobart, Tasmania 7009 Australia.
TEL +61 3 6273 0677 FAX: +61 3 6273 0932
Email: incat@incat.com.au
www.incat.com.au

RFD BEAUFORT

*at the forefront of
survival technology*

RFD Beaufort is internationally recognised as the world leader in the design, development and manufacture of high quality safety and survival equipment for the commercial marine industry. Part of the Survitec Group, with more than 80 years experience, flexibility of a global servicing network plus quality assurance, RFD Beaufort has the capability, facilities and technological resources to meet the most stringent market or customer demands.



Survitec Group Limited, Head Office, Kingsway,
Dunmurry, Belfast BT17 9AF, N.Ireland, UK

+44 (0) 28 90301531
+44 (0) 28 90621765

info@survitecgroup.com
www.survitecgroup.com

 **survitecgroup**
Part of the SURVITEC group of companies

Outsize ferries for P&O

Aker Yards has signed a contract that will see delivery of the biggest ferries ever to operate in the English Channel.

Aker Yards and P&O Ferries have signed a contract covering the construction of two large car-passenger ferries for the Dover-Calais service. The total €360 million contract calls for delivery of the first ship in December 2010, and the second in September 2011. P&O Ferries said that the two ships would replace *Pride of Dover* and *Pride of Calais*.

The contract also includes options on a further two vessels of the same design.

These 49,000gt ships will become the largest operational ferries in the English Channel, representing the maximum size of ship that can work the Dover-Calais route. They will also be the first Channel ferries designed to manoeuvre under their own power in 50knot winds.

To be built at Aker's Rauma yard, they will create some 1800 man-years of work.

At 210m long, and having 2700 lane metres of vehicle space, there will be space for more than 180 freight vehicles and additionally for up to 195 tourist vehicles. The vessels will be capable of carrying up to 2000 passengers.

Given that the freight capacity is double that of the ships to be replaced, P&O Ferries said it planned to capture growth in the freight market, currently running in excess of five per cent per annum, whilst also serving the premium tourist market with 'a superior onboard offer'.

The shipowner said the ferries would be 'as environmentally friendly as possible, offering significant advances in fuel efficiency through a hydro-dynamically efficient hull form that will optimise vessel performance with minimum fuel consumption'. Both P&O Ferries and Aker Yards declined to give further details.

Aker Yards, Cruise & Ferries, consisting of three yards in Finland and two in France, now has a total of 15 vessels in its orderbook. **NA**



P&O Ferries has commissioned what will be the largest operational ferries in the English Channel.

Double marine gears type NDSQL 4800 for Ro-Pax Cruise „Roma“

RENK marine gear unit type ASL 2 x 80

RENK marine gear unit in lightweight construction for a mega yacht

RENK INSIDE.

> RENK Power Transmission Engineering for the world's elite ships. The most advanced high-performance ferries, the most luxurious cruise liners, the superfast mega yachts are crossing the oceans with gear units, bearings and couplings from RENK. Extremely reliable, extremely powerful, extremely quiet – and with a wonderful running smoothness which is the hallmark of the maritime luxury class.

Vehicle Transmissions
Industrial Gears
Marine Gears
Slide Bearings
Couplings
Test Systems

RENK Aktiengesellschaft
Gögginger Strasse 73
86159 Augsburg, Germany
Phone +49.821.5700.627
Fax +49.821.5700.559
marine.augsburg@renk.biz
www.renk.biz

RENK Aktiengesellschaft
Rheine plant
Rodder Damm 170
48432 Rheine, Germany
Phone +49.5971.790.317
Fax +49.5971.790.208
info.rheine@renk.biz



RENK, a member of MAN group

Faster from Uljanik

Shipbuilder Uljanik is continuing to work through its backlog of orders for combined ro-ro/container carriers and car carriers through 2008.

At the end of May, Croatian yard Uljanik launched *Grande Angola* from its No. 1 slipway, the first in a new series of ro-ro/container carriers for Italian shipowner Grimaldi Group. Delivery was due at time of writing.

These 24,800dwt ships feature 12 decks, two of which are hoistable, and offer capacity for 3890 cars and 1360 containers.

With an overall length of 210m, breadth of 32m and depth of 21.5m, they will be driven by the most powerful engines built to date by Uljanik Engineering Works, in the shape of a 19,040kW MAN B&W main engine working at 105revs/min, to achieve a noteworthy maximum speed of 21.9knots. Recent



Grande Angola, on her launch from Uljanik's No.1 slipway.

car carriers turned out by the yard have featured main engines with an output of

12,640kW.

After the launch, the keel was laid on the same slipway for 'Hull No. 473, *Grande Ghana*, a – ro-ro/container carriers that will be identical to *Grande Angola*, and also for Grimaldi Group.

In July, Uljanik followed up by launching CSCC *Tianjin*, the eighth and penultimate car carrier under construction for Ray Car Carriers. In this case, delivery is due in September. The 11-deck, 4900 car capacity ship is 176m long, and her breadth is 31.1m. She will be driven by an Uljanik/ MAN-B&W main engine 8S50MC-C, with an output of 12,640kW, to achieve a maximum speed of 20.8knots at a draught of 7.7m. [NA](#)

Superspeed second sighting

Second in series of ships said to be revolutionising daytime cruising between Norway and Denmark.

Aker Yards has delivered *Superspeed2*, a new fast day ferry for Oslo Line AS, part of Color Line. The vessel built at the Rauma yard is the second in the series of two Superspeed ferries.

SuperSpeed2 entered services connecting Larvik in Norway to Hirtshals in Denmark. With a service speed of 27knots, the new ferry is able to travel this distance in three hours 45 minutes, which is two hours faster than with traditional ferries.

The Superspeed ferries are ultra-modern fast ships, which are said to be revolutionising daytime cruising between Norway and Denmark. The sistership *SuperSpeed1* was delivered in February 2008 and takes just three hours and 15 minutes to make the crossing between Kristiansand in Norway and Hirtshals.

The contract for two vessels, worth approximately €250 million meant 1600 manyears of work to Aker Yards in Rauma.



SuperSpeed2 – capable of 27knots.

The approximately 211m long and 26m wide vessel has 2000 lane metres of vehicle space and takes 1900 passengers. There are no passenger cabins in the day ferry.

The Superspeed ferries are also fast and efficient while they are in port. Trailers and cars are simultaneously loaded on two

different decks, enabling unloading and loading to be completed in less than an hour.

In addition to these fast ferries, Aker Yards has previously built two of the world's largest cruise vessels with car decks for Color Line. [NA](#)

- Uses **LESS** water and power
- Weighs **LESS**
- Takes up **LESS** space
- **LESS** visible
- Costs **LESS**



FLEXIFOG® MICRO - SOMETIMES LESS IS MORE

The new water mist nozzle for accommodation areas

Autronica Fire and Security AS has developed the next generation nozzle for the FlexiFOG® water mist system – a number one solution providing a highly efficient water mist fire suppression system with low weight, easy installation and state-of-the-art design.



Division Maritime ■ Tel. +47 31 29 55 00 ■ www.autronicafire.com

Fast Ships prefer



Muraspec MARINE

for Interiors that move

Muraspec Marine offers decorative foils for both new build and refurbishment of interior applications. All products are IMO certified and suitable for both horizontal and vertical surfaces.



NEW STRATAFLEX RANGE WILL BE AVAILABLE FROM NOVEMBER 2008

Our range of products encompasses all design and style requirements. With over 700 different finishes available including wood, paint, plaster and stone effects as well as plain colours and metallic. We also have the more traditional designs including stripes, damasks, motifs and rag rolls. Muraspec Marine offers the broadest choice for interior schemes.



74-78 Wood Lane End, Hemel Hempstead, Hertfordshire HP2 4RF England
Tel No: +44 8705 117118 — Fax No: +44 1622 873254

Muraspec is a division of Omnova Wallcovering [UK] Limited

KOP-FLEX® JAURE®



Waterjet Drives

– Flexible couplings

– Composite shaftlines

– Special solutions

www.jaure.com



SMM 2008
Hall A4 Stand 151

EMERSON
Industrial Automation

EMERSON. CONSIDER IT SOLVED.

Gallium floors the competition

Altro Transflor's maritime safety flooring, Gallium, offers an alternative to potentially toxic PVC.

Gallium has been specially developed for maritime use and is the only PVC-free, IMO MED-approved slip resistant lightweight flooring on the market. The product is used by many leading ferry operators, including P&O Ferries, Stena, New World Fast Ferries, Irish Ferries and Norwegian operator Color Line.

When there is a fire onboard a ship, heat and flames are clearly a serious hazard, but Altro Transflor points out that far more deadly in most situations is the burning of materials that include PVC-based flooring and other surfaces.

The powerful PVC lobby may not like it, but while PVC floor covering products may be inherently quite fire retardant, once burning they produce high levels of potentially fatal Hydrogen Chloride gas. They can also produce heavy black acrid smoke,

which could hinder an evacuation. Despite this, many marine operators are still installing PVC-based products on their vessels.

Gallium does not contain PVC. The product easily surpasses the IMO MED requirements for Part 2 (smoke and toxicity) and Part 5 (fire) of the Fire Test Procedures codes. After manufacture, every batch of Gallium is independently tested for fire, smoke and toxicity. This is a voluntary procedure, but ensures the product meets 100% of all relevant IMO MED compliance and gives the user total peace of mind that they are meeting their duty of care.

Simon Andrews, Altro Transflor maritime sales manager, said: 'PVC-based flooring can be lethal and, historically, we can see the result of using these products. A fire on *Scandinavian Star* in 1990 claimed the lives of 158 people. It is believed that 90% of the victims succumbed

to smoke inhalation from PVC-based floor and wall coverings. The rules on how interior fittings on ships were tested for fire and smoke performance changed as a result of this tragedy.'

Much of the maritime flooring currently in use is not only PVC-based but is not a 'true' slip resistant surface. These smooth coverings provide little or no grip when water or other surface contaminants are present. A large proportion of accidents onboard both passenger and commercial vessels are caused by slips and trips, and by installing a specialist safety flooring like Gallium, Altro Transflor said operators could significantly improve onboard safety.

The supplier said that Gallium was also much lighter than traditional marine flooring.

Altro Transflor added that all of its safety flooring was 100% recyclable and contained 'post consumer recycle' as an integral raw material. **NA**

Gallium is fitted on board *P&O Express*.



UNIQUE IONOMER TECHNOLOGY

SEA GRANDPRIX

CF-10

SERIES

**Copper Free and Tri Butyl Tin (TBT) Free
Self Polishing Anti-Fouling Paint.
For 5 years' performance.**

**More than
1,000 vessels
coated!**

www.chugokupaints.com

CMP
CHUGOKU MARINE PAINTS, LTD.

New packet for Isle of Man

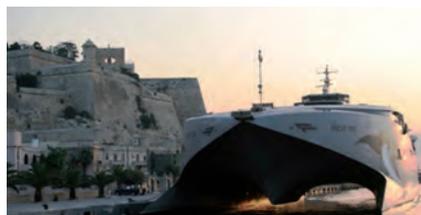
With more than 10,000 miles already under her belt, the Isle of Man Steam Packet Company's latest recruit arrived in Portsmouth in mid-July for refit.

The ten-year old *Incat 050*, which sailed from Tasmania, is the wave-piercing catamaran that is set to replace *Viking*, primarily serving the Liverpool-Isle of Man route in 2009 for the Isle of Man Steam Packet Company, after a substantial refit at the FSL Naval Dock Yard.

Incat 050 was built in Tasmania in 1998 and served three years as a passenger and vehicle carrier in Australia and New Zealand, before being chartered to the US Military.

The 96m long wave-piercing catamaran will be the largest diesel-powered high speed craft in the Irish Sea. The ship, which will be renamed, will replace the monohull *Viking* and serve primarily the Liverpool – Douglas route.

Isle of Man Steam Packet chief executive, Mark Woodward said: 'The purchase is a real step forward for the company and represents a significant investment, with a total project cost approaching £20 million. Over the past few years, we have looked at a number of possible vessels and we believe



Incat 050 – due back in service in the summer of 2009.

we have found the craft that most ideally meets our requirements for a versatile, high capacity vessel which is capable of serving our passengers expectations for increased comfort and reliability.'

A higher operational wave limit than the vessel she replaces will provide improved sea-keeping capability and capacity to carry larger vehicles such as lorries and coaches will give the vessel far greater flexibility to meet the needs of the Isle of Man, as well as providing additional cover for the company's core ro-pax vessel.

The craft will have more space dedicated to passengers, and a wider range of facilities than her predecessor. An extensive structural refit to increase capacity from approximately 400 persons to more than 800 persons will be carried out by Burgess Marine, with support from FSL in Portsmouth, UK.

Incat said the refit project had four key phases: a new aft accommodation module; a new sky lounge; a stern loading ramp; and a complete new interior including the overhaul of the existing passenger accommodation.

The new look craft, complete with a new Manx name, will be incorporated into the Steam Packet's existing fleet for the beginning of the summer 2009 season.

Incat 050 undertook a period of commercial service in Australia & New Zealand, but was chartered to the US Military for evaluation purposes in 2001. Because of her most recent use, she has significantly less hours of service than a vessel of comparable age. *NA*

Naval Architects
Mechanical Engineers
Basic Design
Detailed Engineering
Survey of Construction

MarineEngineeringServices

Design of **Chemical Tankers, Bitumen Tankers, Gas Carriers** is our task

OWNER : D'Alesio Group

VISIT US ON THE WEB

SHIPYARD : Tuzla Gemi Ind.

CUSTOMIZED DESIGNS WITH **HIGH PERFORMANCE**

www.mes.it - info@mes.it
Via San Maurizio 2/D 34129 - Trieste (Italy)
Ph. +39-040-3728668 - Fax +39-040-3728669

THE NEXT WAVE

IN HOW YOU DO BUSINESS WITH THE CRUISE INDUSTRY



cruise shipping

virtualtradeshow

THE FIRST **100% ONLINE TRADESHOW** SERVING THE CRUISE INDUSTRY

November 12 & 13, 2008

www.CruiseShippingMiami.com

The Cruise Shipping Virtual Tradeshow brings together quality cruise industry professionals, decision-makers and leading suppliers for two days...**online and in real time.**

This virtual extension to our face-to-face event, offers through cutting edge technology, an additional opportunity for participants to:

- + Create virtual booths to promote your products viewed by show attendees
- + Network and chat with industry professionals in our virtual lounge
- + Conduct private, real time conversations via instant messenger
- + Generate qualified leads
- + Attend educational presentations

ALL FROM THE CONVENIENCE OF YOUR PERSONAL COMPUTER.

Catch the Wave.

Exhibit at the Cruise Shipping Virtual Tradeshow.
Visit **www.CruiseShippingMiami.com/virtualTradeshow.html**
or email **sales@cruiseshippingmiami.com** for more information.

From the organizers of



HOME PORT OF THE CRUISE INDUSTRY
Celebrating 25 Years
March 16-19, 2009
Miami Beach Convention Center



NUPAS

CAD M A T I C

Ship Design Software



Nupas-Cadmatic V5.3 is the ultimate 3D ship design software solution for ship designers and shipbuilders. Nupas-Cadmatic is a concurrent engineering software tool for ship hull-, machinery-, piping-, HVAC-and outfitting engineering. It genuinely saves time and money. It is easy to use and adopt. The open software is database-driven and utilizes advanced 3D modelling technology, providing the necessary information for accurate pre-outfitting and production.

The informative and easy-to-use 3D modelling capabilities can be used for early and basic design, detailed engineering, and the production of workshop drawings and generation of ready-to-use production data for production machinery.

With Nupas-Cadmatic you can successfully carry out the entire ship design project, right from the early start, up to the deck outfitting and final production phase. It improves engineering quality and shortens construction times. Nupas-Cadmatic seamlessly distributes engineering projects globally between different sites while ensuring effective communication between project partners. With the Nupas-cadmatic eBrowser all parties involved can view and check the 3D ship model and other design information via the Internet. The eBrowser adds value to the entire ship project, easing communication and providing everybody with continuous access to updated and relevant information.

www.nupas-cadmatic.com

sales@nupas-cadmatic.com

Numeriek Centrum Groningen B.V.
Osloweg 110, 9723 BX Groningen, The Netherlands
Tel +31-50-57 53 980, fax +31-50-57 53 981

Cadmatic Oy
Itäinen Rantakatu 72, 20810 Turku, Finland
Tel +358-2-412 411, fax +358-2-412 4444

Design and engineering of:

- GA and MA
- Classification drawings
- Hull structures
- Piping and other diagrams
- Machinery & piping, HVAC
- Accommodation & interior
- Outfitting
- Virtual 3D models
- On-line Walk Around
- Windows AVI Video files

Comprehensive information for:

- Plate and profile cutting
- Plate and profile bending
- Pipe spools and isometrics
- Pipe cutting and bending
- Other material lists
- Weights
- Centers of gravity
- Logistic data
- Data for production robots
- Interfacing other systems

NEW

VERSION
V5.3

INTRODUCTION
AT SMM 2008

HAMBURG
23-26 September



Hall B7
Stand 441

OPTIMIZING RESOURCES

Making a VIRTUE of the numerical towing tank

Development of the VIRTUE Integration Platform has largely benefited the use of CFD methods in standard maritime applications. An update of the project, courtesy of Jochen Marzi, Hamburgische Schiffbau Versuchsanstalt head of CFD department*.

Launched in 2005, the VIRTUE project concentrates on the development of new, and the improvement of existing, Computational Fluid Dynamics tools to form the basis for an integrated and complete numerical analysis of marine hydrodynamic behaviour in a virtual environment – the Virtual Tank Utility.

Now, work is focusing on the development of the integration platform itself, assembling the improved and validated CFD tools into a working environment.

The VIRTUE project has brought together 22 European partners, including the leading model basins, academia, software providers and marine consultants. Its remit is not only to improve the quality and accuracy of general purpose and specific CFD methods, but also to integrate a wide range of today's disparate numerical analysis methods in a virtual environment. The VIRTUE Integration Platform (VIP) simulates complete ship behaviour at sea, and thus lays claim to enhancing the range of marine hydrodynamic services traditionally based on physical model testing.

Analysis and optimisation of the hydrodynamic performance or behaviour of ships at sea is often a lengthy, time consuming process, sparsely supported by efficient and reliable computational techniques. This can be seen as one limiting factor for the overall performance of the Maritime Industry.

Due to the special environmental

conditions associated with the operation of ships and floating structures, i.e. the need to consider sailing at a 'free surface', the requirements for analysis of fluid flow are significantly more complex than those of other vehicles. This holds for the experimental testing, which has evolved since the second half of the 19th century, as well as for any kind of numerical treatment. Surprisingly, the roots of the numerical analysis of ship hydrodynamics date back almost as far as those of the experimental approach.

However, only the computer developments of the past decades have allowed numerical methods to become a viable alternative to towing tank testing. Since then, a variety of CFD methods, often using simpler approaches, has been developed, mostly with a dedicated field of application in mind. Exemplary have been strip methods, and wave resistance or propeller codes. Concentration on particular applications has caused a large variety of methods, based on different methods and technologies to be developed in the past. These tools are valuable to

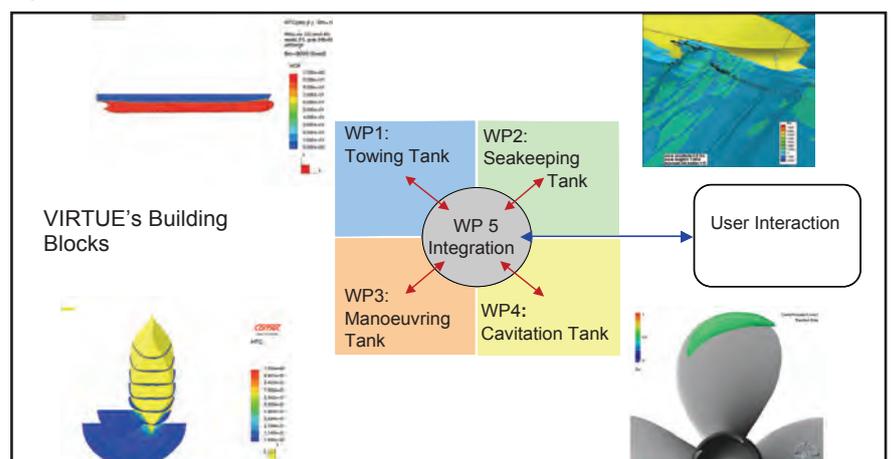
analyse hydrodynamic behaviour, but it must be clearly noted that they hardly allow for an integrated analysis of a variety of different objectives.

Later RANSE based methods are characterised by greater flexibility – various models allow for the analysis of different problems such as free surface flows, cavitation or vessel motions. They lend themselves more easily an integrated analysis of several important hydrodynamic aspects in a single code. This however comes at the cost of significantly increased computer time, an important aspect which needs to be taken into account.

Accuracy of the numerical predictions is another prime element in the constant rivalry between numerical and experimental analysis.

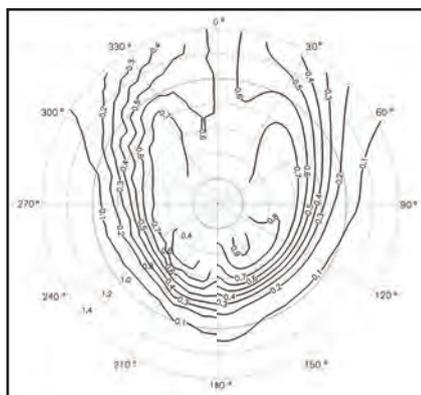
Starting in 2005, a team of 22 European maritime CFD experts set out to develop the 'Virtual tank utility in Europe' – VIRTUE. The EU-funded project concentrates on the development of new, and the improvement of existing, Computational Fluid Dynamics

Fig.1: VIRTUE Project Structure.



*This article offers a summary of a paper given by J Marzi at the Marine CFD event, Southampton, UK, 26-27 March, 2008.

Fig.2: Predicted wake (right) for the KVLCC2 test case and measurements. (left).



tools, which allow an integrated and complete numerical analysis of marine hydrodynamic behaviour in a virtual environment.

The aim of the VIRTUE project is to deliver important advantages to the shipbuilding industry, including reduced manufacturing costs through shorter lead times and improved, more focused designs and better product quality.

Approaching VIRTUE

The work in VIRTUE is organised into four different work packages, each addressing one of the prime analysis areas and developing tools for accurate CFD prediction for resistance and propulsion, seakeeping and manoeuvring behaviour and propeller performance and cavitation prediction. Results from the CFD developments are assembled in a fifth element of the study - the Integration Platform (VIP), which is developed in parallel. The VIP allows setting up analysis processes in a flexible way so that different tasks can be performed.

The overall structure of the project is depicted in Fig. 1.

The integration platform is a core element of the project. It not only allows to define individual analyses through the combination of different tools, but it also provides the basis for actual design optimisation. Once defined, the analysis chains can be introduced into a formal optimisation tool, e.g. 'modeFrontier', which will then allow the performance of true multi-objective/multi-criteria optimisations of a given vessel.

Resistance and propulsion

The resistance problem forms one of the central elements of marine CFD applications. Although this might be regarded as a comparatively simple flow problem, a steady state analysis of the ship sailing at a free surface already poses the most problematical requirement on the accuracy of all numerical predictions. In the past international workshops such as Gothenburg 2000 [6] or Tokyo 2004

[7] have shown that the accuracy of CFD predictions is largely insufficient to attain the same level of quality as a model test. And finally, model scale predictions are not the ultimate aim of using CFD methods.

VIRTUE continued the approach set out in the previous workshops by defining a number of standard test cases for both, double body flow as well as for free surface flows at model scale and full scale Reynolds numbers.

One of the ship models selected was the 'Hamburg Test Case', a widely investigated smaller container vessel (1600TEU). During these workshops, the achievements of the developments on eight different methods and codes were compared. Results obtained encompassed wake predictions as well as wave pattern and plain integral values such as the resistance and the dynamic motion (trim and sinkage) of a vessel sailing at the free surface [see 5].

An example for a wake prediction (double body flow) is shown in Figure 2. This indicates that the general level of accuracy of modern CFD codes has been improved considerably over the past decade. Wake predictions are generally felt to be sufficiently accurate, at least at model scale.

Figure 3 indicates a comparison of four different CFD predictions for the wave pattern along a ship's hull, with experimental data obtained in the large towing tank at HSVA. The different CFD codes applied in this exercise comprise multi-block structured programs and fully unstructured codes. The free surface was computed with volume of fluid (VoF), level set and surface tracking

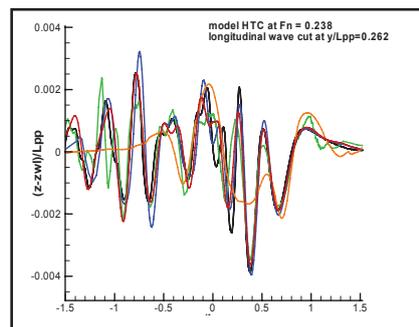


Fig.3: Comparison of wave cuts for the Hamburg Test Case model.

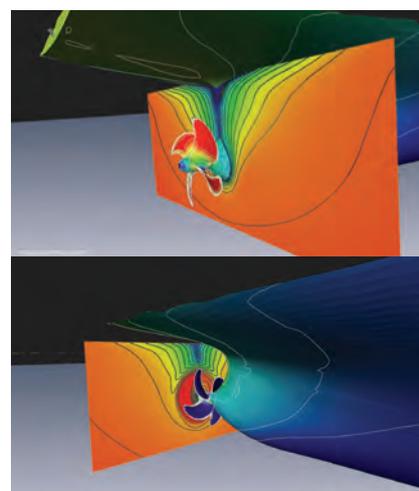


Fig.4: The numerical propulsion test: Pressure distribution on the propeller and velocity in planes in front of and behind the propeller.

algorithms.

Although there is some variance visible in the numerical result, it is obvious that the majority of the codes already produce reasonably accurate wave patterns, which compare well with experimental data. The best predicted resistance is within 0.4 % of the measured value.

The numerical propulsion prediction constitutes the next analysis step. Where the inclusion of an additional source model (body forces) to mimic the effects of a propeller has been a commonplace approach in the past, the geometrical modelling of a complete propeller working behind a ship's hull is the main VIRTUE target. Although started only recently, first results already indicate that, here too, major progress has been achieved. Figure 4 shows the first results obtained for a self propelled model of the 'Hamburg Test Case' vessel sailing at

SPEED POWER NAVCAD™

The leading software for the prediction and analysis of vessel speed and power performance.

www.navcad2008.com

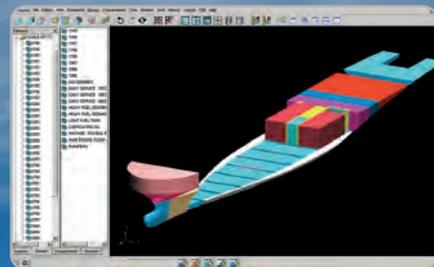
Visit us during METS 2008, stand #04.408

HYDROCOMP Inc.

©2008 HydroComp, Inc.

45 YEARS AS A WORLD REFERENCE

FORAN



Integrated Shipbuilding CAD/CAM/CAE System.

www.foran.es



Maximising technology for a safer world.



GRC Ltd is a Software and Naval Architecture consultancy specialising in bespoke software solutions and IT services, as an independent business within the QinetiQ Group. We have supported the UK MoD over the last 15 years both onshore and at sea, whilst working with commercial organisations.

Accessing QinetiQ's vast research and knowledge base broadens the GRC range of advanced marine technology software products, which allows us to deliver innovative solutions worldwide.

To find out how we can make a difference for you, call us on +44 (0) 2392 334 003 or visit www.grc-ltd.co.uk



DNV Software's offering to the yard and ship design industries



DNV Software launches four new product releases and two upgraded services packed in one complete yard package.

Nauticus Yard Package contains:

- Brix Foundation
- Nauticus Hull
- Nauticus Early Design
- Nauticus Machinery
- TenderSuite
- Environmental Performance System

Visit DNV at SMM Hamburg 23–26 September 2008
Stand No B2.EG.210

DNV Software Tel: +47 67 57 76 50 mail: dnv.software@dnv.com web: www.dnvsoftware.com

MANAGING RISK



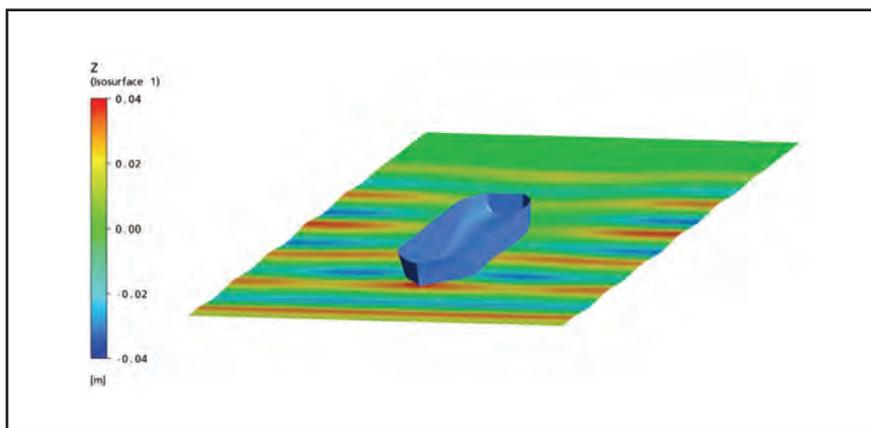


Fig.5: CFD prediction of a moored LNG carrier in incoming waves.

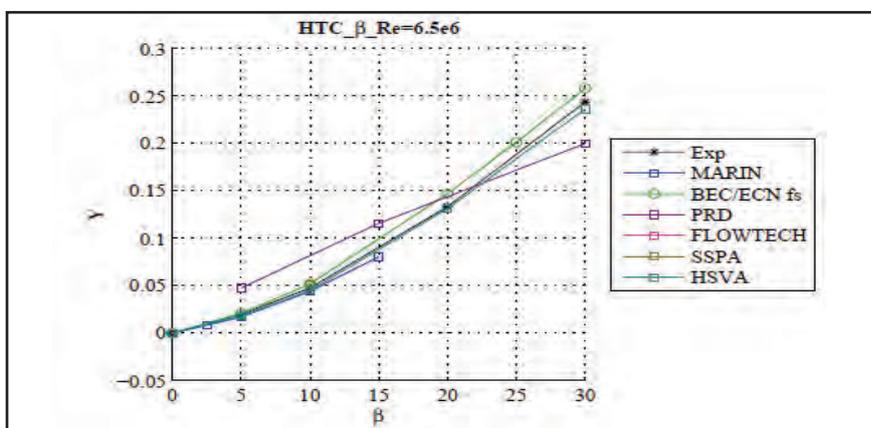


Fig.6: Comparison of predicted side forces during constant yaw.

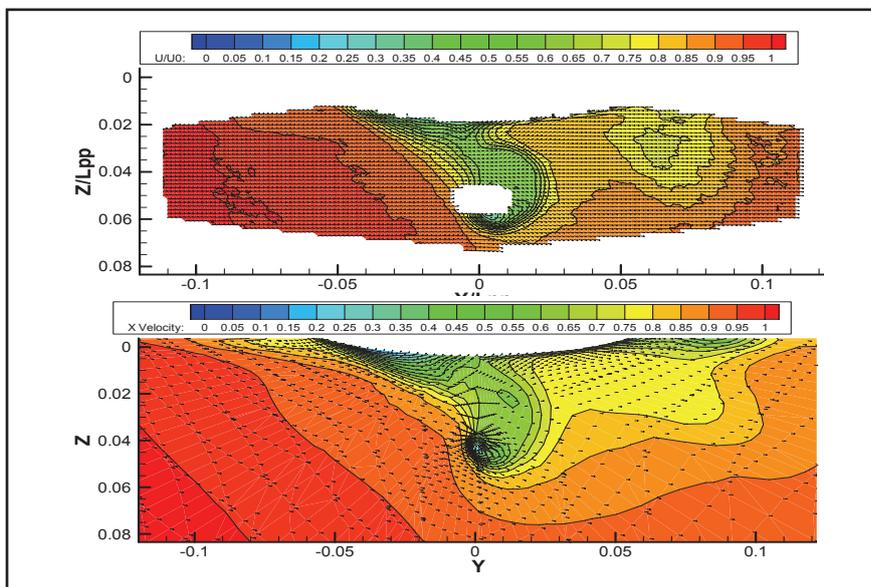


Fig.7: Comparison of measured (PIV, top) and computed axial velocity component in front of the propeller of the HTC during a turning circle.

the free surface with a Froude Number of 0.238.

VIRTUE of Seakeeping

The work in the Virtual Seakeeping Tank has focused on wave loads and induced

ship motions in 3D CFD codes. While wave generation and propagation are wholly achieved, algorithms to simulate wave loads and ship motions in waves in CFD codes are also now available and are tested with a first set of benchmarks

comprising a calm buoy and moored LNG tanker in waves.

Developments comprise the use of panel methods, VoF methods and smooth particle hydrodynamics codes for slamming loads predictions.

In the third work package, the Virtual Manoeuvring Tank, six different teams are working on RANSE computations for the prediction of manoeuvring coefficients to be used in simulations. These cover steady state and transient manoeuvring conditions.

A large cooperative benchmarking study has been carried out by all partners for the Hamburg Test Case hull form, a thorough cross-comparison of computational results on steady oblique motion, steady turning, oscillatory sway and oscillatory yaw has been made. An example for a the side force during a constant yaw angle motion is shown in Figure 6.

The investigations cover simpler bare hull predictions as well as fully appended computations. In addition, model tests including particle image velocimetry measurements of the flow field (close to the propeller) during a turning circle have been performed. This unique set of data has been used to compare with CFD predictions. Fig.7 shows the comparison of experiments and a RANSE prediction.

Besides the prediction of coefficients, a separate task also deals with direct manoeuvring simulations, performing a complete numerical simulation of a turning circle, including prescribed rudder angles and propeller effects.

Propellers and cavitation

As far as propellers and cavitation predictions are concerned, the objective has been defined as developing and validating a limited number of promising codes, able to predict the flow of both non-cavitating and cavitating propulsors. The first case is imperative for the prediction of cavitation inception. Particular emphasis is laid on the capability of the codes to compute the adverse effect cavitation has on

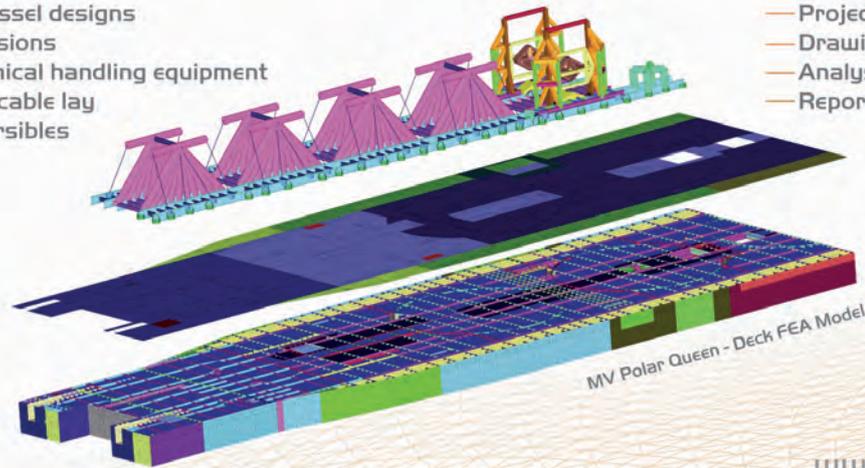
With over 10 years' experience both in Finite Element Analysis and Marine Engineering, FEA Online has provided guidance & support to most of the major oil & gas companies on an extensive range of offshore & subsea projects.

Using NX NASTRAN and ABAQUS FEA software packages, we can undertake any analytical project to ensure that the appropriate CLASS approval is obtained. Our comprehensive service includes your own secure & dedicated client results website, available online 24/7, which typically includes but is not necessarily limited to the following information/data:

Project categories include:-

- New vessel designs
- Conversions
- Mechanical handling equipment
- Pipe & cable lay
- Submersibles

- Project schedules & timelines
- Drawing libraries
- Analysis results
- Reports & recommendations



www.fea-online.com

Maritime technology

FORCE Technology offers maritime service within design studies, towing tank tests, wind tunnel tests and port studies.

We offer our value-creating solutions to leading international consultants, ship-owners, and shipping companies. Our expertise covers all kinds of ships and offshore platforms.

FORCE Technology's solutions include onboard systems and simulators. Further, we provide training for ship-owners, operators, and maritime training organizations.

FORCE Technology is an international technological consultancy and service provider.

Our customer base consists of e.g. the energy and process industry, the oil and gas industry, the pharmaceutical and food industry, the maritime industry and the public sector.

We have companies in Denmark, Sweden, Norway, Russia and USA.

FORCE Technology
Hjortekærvej 99
2800 Kgs. Lyngby
Tel. 72 15 77 00
force@force.dk
forcetechnology.com



the propulsion characteristics (such as radiated pressure fluctuations and cavitation erosion).

Modern propeller designs and advanced cavitation studies clearly indicate the limits of 'classical' propeller prediction methods, such as panel codes or vortex lattice methods. Increased ship sizes and speeds lead to ever more prominent cavitation phenomena on propellers and appendages. This calls for more refined analysis methods, hence present research has concentrated mainly on the application of RANSE methods to propeller flows.

Initial studies covered reviews of computational models for cavitation and validation cases. The evaluation of the applicability of commercial RANSE codes to specific hull-propeller interaction problems confirmed the problems identified at the start of the project, namely capturing the tip vortex and a proper prediction of thrust breakdown due to the cavitation.

In the next step dedicated RANSE codes for the prediction of local non-cavitating flow over a propeller have been developed. The FreSCo code developed by HSVA and MARIN, ISIS from ECN and FINFLO from VTT have been successfully applied to a number of test cases.

Further work has been done on the application of large eddy simulation codes, as developed by Chalmers University, which showed very good results in the comparative study of test cases, however at the cost of rather prohibitive computational time requirements. Here,

Fig.9: Comparison of computed pressure distribution for the INSEAN Propeller test case, non-cavitating condition.

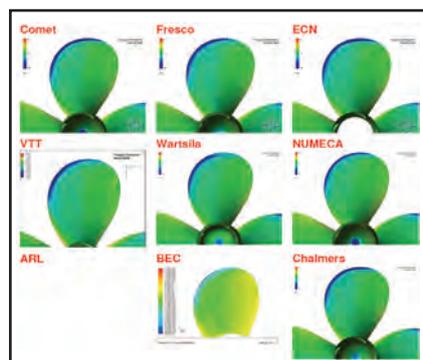
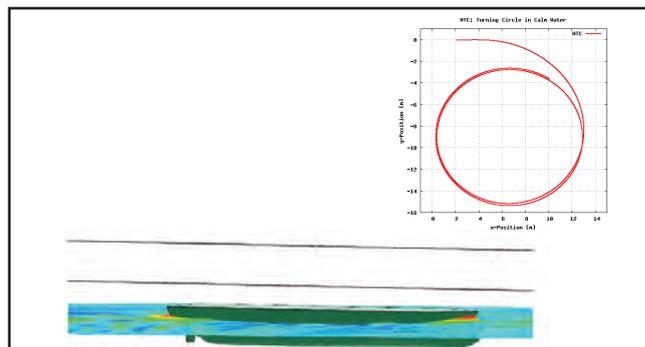


Fig.8: HTC model during turning circle - direct simulation.



there is a very limited set of real data, evaluation and validation work available for propellers and cavitation cases.

As validation of codes is one of the primary issues in VIRTUE, the propeller work package has defined a set of standard test cases as benchmarks for all participating groups. Experimental data was provided from different sources.

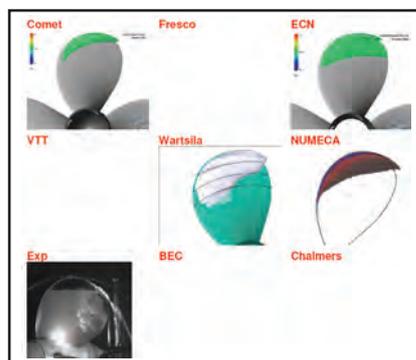
The test cases which form the subject of the first workshop include:

- 3-dimensional wing with cavitation (Experiment: TU Delft).
- free running propeller (no cavitation) (Experiment: INSEAN).
- free running propeller (with cavitation, no wake) - (Experiment: INSEAN).

In a joint workshop together with external partners, all codes have been benchmarked against the experimental data. Key findings for the propeller test case are:

- Almost all codes deliver proper results for the non cavitating condition of the propeller case.

Fig.10: Comparison of computed pressure distribution for the INSEAN Propeller test case, cavitating condition.



• A variety of different cavitation models has been used for the cavitating condition, variance of the results is rather large and there is no unique solution.

• All cavitation models used need improvements. More work on development and validation is required.

• Grid resolution is - expectedly - of prime importance for proper results.

Figures 9 and 10 indicate the results - pressure distribution (suction side) for the non cavitating condition and extension of the cavity volume for the cavitating condition.

The benchmarking work will be continued through the remaining period of VIRTUE and results will be included into the Best Practice Guidelines at the end of the project.

Platform alterations

With all CFD building blocks for the 'Numerical Tank' in place, the VIRTUE Integrated Platform provides the backbone for the integrated and holistic hydrodynamic analysis. Even advanced RANSE solvers do not lead to the solution of a complex hydrodynamic design problems in a single run, or with a single computational model. Different grids or computational set-ups will be necessary to analyse, e.g. the propulsive performance and the seakeeping or manoeuvring behaviour of a novel design. This holds even more if different computational models, e.g. a RANSE code for the resistance prediction and a panel code for the seakeeping behaviour, are employed. The different methods will have different requirements for input data, set-up and the presentation of results. Combining these in a single

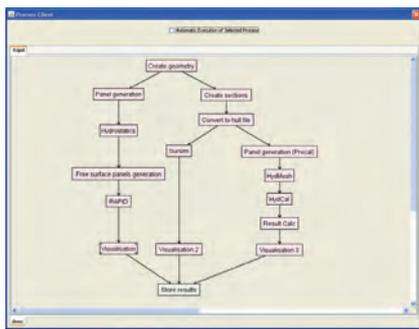


Fig.11: Multi criteria analysis in the VIP.

analysis, which may aim at design optimisation during the next step, is often laborious and error prone. The VIP development focuses on the integration of largely uncoupled computational methods plus their corresponding pre- and post-processing programs. These include the geometry-generating CAD systems, as well as grid generation and visualisation codes.

The coupling of the different methods is based on ‘wrappers’, which link the necessary data input and output for each dedicated analysis tool with a common data model inside the VIP. Although at the cost of generating new wrappers for each new component, this approach offers the highest flexibility for the development of new analysis processes. The need for high flexibility is evident from the fact that the VIP must be operable in different partner environments comprising a large variety of analysis tools.

Having prepared a wrapper for a CFD (or other) tool, the VIP offers a graphical editor to define a complete analysis process including all constraints which need to be taken into account. This allows speedy definition and generation of an analysis process, and quick specification of the components which need to be included.

Figure 11, shows an analysis process for several criteria: resistance, seakeeping behaviour, and manoeuvring performance, made up from three different numerical tools, all of which are based on potential flow assumptions.

The different origins and programming styles require several data translations to be performed during the analysis to provide consistent input data for these methods.

As the platform is further developed to

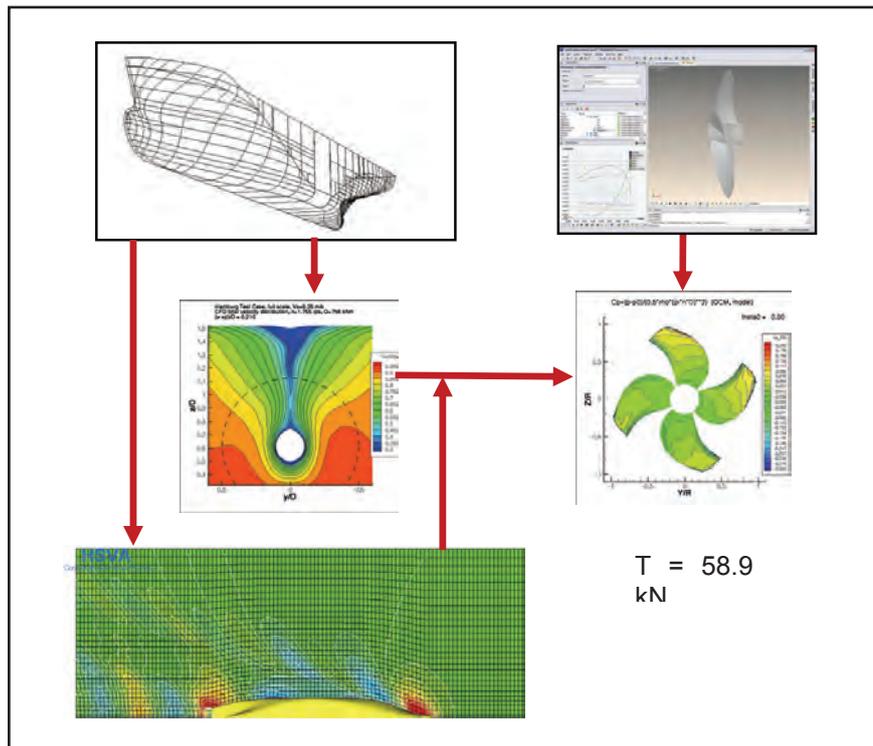
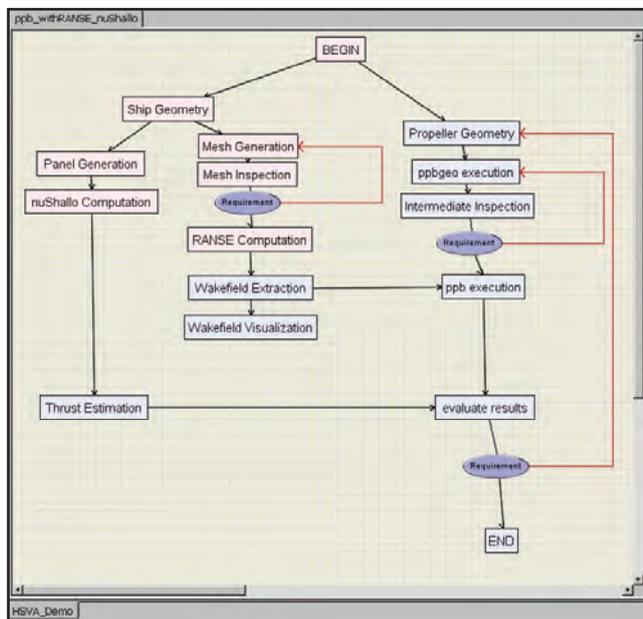


Fig.12: Propulsion analysis using different tools in the VIP.

Fig.13: Propulsion prediction process in the VIP editor.



incorporate also design optimisation processes, it is vital to use efficient analysis methods. These are very often, at least for the time being, potential flow methods. Therefore it is expected that the short term application of the VIP will focus on the use of simpler CFD tools, at least for optimisation purposes.

The VIP does, however, also demonstrate its benefits when RANSE

methods are included in an analysis chain. Setting up a process from templates reduces the number of errors made during the preparation of the computational model. Checking with proven approaches, e.g. from the Best Practice Guidelines, will further improve the quality of each newly performed computation. The linking of different tools, RANSE and panel codes, which

is often difficult when done manually, is largely facilitated in the VIP.

Figure 12 denotes the steps performed for a propeller propulsion analysis for a containership.

For a given resistance and wake distribution, the process allows an optimal P/D distribution to be quickly found an optimal propeller P/D distribution.

A slightly more complicated variation of the process will use an optimisation cycle to adapt a range of free parameters to find an optimal propeller for the given problem.

Figure 13 indicates schematically the overall process and the components involved. The red links specify possible iterations which will occur during a complete optimisation loop.

Future VIRTUE

In the first half of the project, VIRTUE has achieved significant progress in

accuracy and validation of maritime CFD predictions. The state-of-the-art, as displayed in previous international CFD workshops, has been advanced. On the application side the development of the VIRTUE Integration Platform has largely benefited the use of CFD methods in standard maritime applications. The ability to combine several analysis tools and to model complex processes from building blocks is a substantial achievement which, offers large potential for future exploitation.

NA

References

1. Qiuxin Gao, Dracos Vassalos: 'Computational Hydrodynamic Derivatives by Numerical PMM', RINA CFD 2008.
2. Daniel Schmode and Jörg Brunswig: 'Grid Adaptation for VoF-based Free Surface Flow Computations', RINA CFD 2008.
3. Heinrich Streckwall, Francesco Salvatore: 'Results of the Wageningen 2007 Workshop on Propeller Open Water Calculations including Cavitation', RINA CFD 2008
4. S. Gatchell, RI Whitfield, AHB Duffy, C. Abt: 'Coupling CAD and CFD codes within a Virtual Integration platform', RINA CFD 2008.
5. Hoyte Raven, Auke van der Ploeg, Bram Starke: 'Towards CFD-based prediction of ship performance - progress in predicting resistance and scale effects', RINA CFD 2008.
6. Larsson, L., et. al. (eds.): Proceedings of the Gothenburg 2000 Workshop on Numerical Ship Hydrodynamics, Gothenburg, Sweden, 2000.
7. Takanori Hino: CFD Workshop Tokyo 2005, NMRI, 2005.
8. VIRTUE project web site: www.virtual-basin.org

Flow, Thermal & Stress Solutions that Span the Marine Industry

- Productivity.
- Accuracy.
- Flexibility.
- Experience.



What do you expect from your Engineering Simulation Software?

For more information on Flow, Thermal & Stress Simulation
please visit: www.cd-adapco.com
Or contact: info@uk.cd-adapco.com





INTERFERRY

33rd ANNUAL INTERNATIONAL CONFERENCE

5-7 OCTOBER, 2008 • SHERATON HONG KONG HOTEL AND TOWERS • HONG KONG, CHINA

THE BEST OF EAST AND WEST

INSPIRATION TO MEET CHALLENGES AND MAXIMIZE GROWTH



SESSIONS

The Future of the Ferry Industry in Hong Kong
Dealing with Labour Shortages
Asian Ferry Operations
Terminal Operation and Design
Interferry Report
Breaking Into New Markets
The Finance Sector and Ferries
Student Program
Opportunities from Regulations

SPEAKERS & MODERATORS

John Aitkenhead – IBS, Australia
Dr. Khalid Al Zahed – Roads & Transport Authority, Dubai
Professor Alfred Baird – Napier University, Scotland
Stuart Ballantyne – Sea Transport Solutions, Australia
Ted Bell – Moffatt & Nichol, USA
Stephen Bond – Videotel Marine International, UK
Arthur Bowring – Shipowners Association, Hong Kong
Klas Brogren – ShipPax Information, Sweden
Eric Chu – Discovery Bay Transportation Services, Hong Kong
Robert Clifford – Incat, Australia
Stephanie Dawson – Sea SA, Australia
Tom Docherty – Red Funnel, UK
Håkan Enlund – Aker Yards, Finland
K.M. Fung – Marine Department, Hong Kong
Paul Gannaway – Batam Fast Ferry, Singapore
John Garibaldi – Hawaii Superferry, USA
Richard Goodwin – Lloyd's Register, UK
Pansy Ho – TurboJet, Hong Kong
Len Holder – Videotel Marine International, UK
Shinji Koga – Higashi Nihon Ferry, Japan

Li Huawen – Guangdong Maritime Administration, China
Liang Jian Wei – Guangdong Maritime Safety Administration, China
Torbjørn Lie – DNV, Singapore
Stefan Mueller – MTU, Germany
Seichi Nishimura – Kawasaki Heavy Industries, Japan
Daniel Povel – Germanischer Lloyd, Germany
Ole Stene – Aboitiz Jebsen, Philippines
Dr. Alan Tang – RINA and IMarEST, Hong Kong
Steffen Thomsen – 3i Nordic, Denmark
Dr. Tsui Shung Yiu – TurboJet, Hong Kong
Roger Tupper – Marine Department, Hong Kong
Andreas Ullrich – Germanischer Lloyd, Germany
Wilco van der Linden – Wärtsilä Power, The Netherlands
John Waggoner – Hornblower Marine Services, USA
Roberta Weisbrod – Partnership for Sustainable Ports, USA
Martin Westphal – TEAM, Spain
Karl Morten Wiklund – DNV, Norway
Susana Wong Soi Man – Maritime Administration, Macau
Nelson Yu – RINA and IMarEST, Hong Kong
...and more to come

SPONSORS

CONFERENCE PARTNER



www.interferry.com

Visit our website for more information and registration details.

Contact: Len Roueche, CEO - Interferry
 1-250-592-9612 • len.roueche@interferry.com

EnSuite updated for collaboration

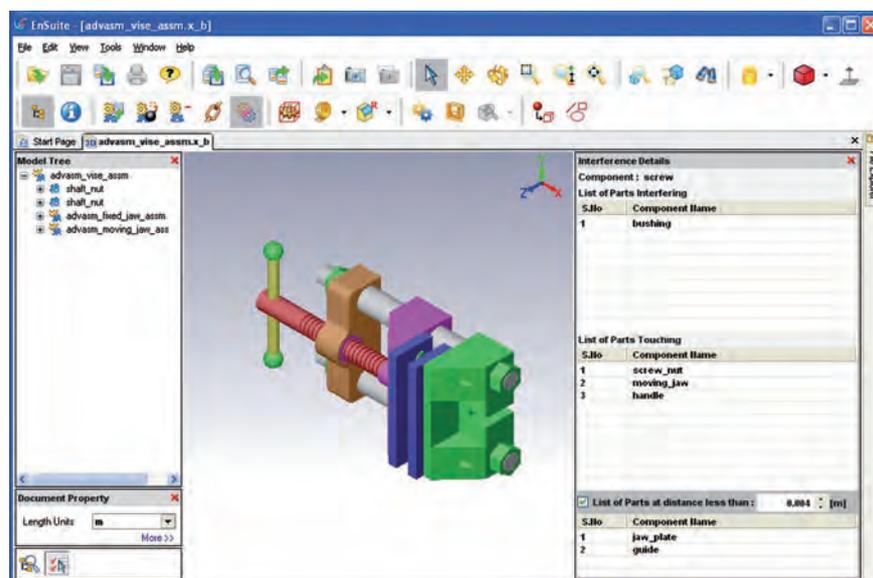
CAD/CAM data translation specialist CCE has upgraded EnSuite Version 2 – its multi-CAD viewing, translation and productivity software.

The EnSuite Version 2 CAD program has been upgraded to offer mark-ups and redlining, interference/clearance checking and provide parent and child information for each component in an assembly.

‘This new upgrade to EnSuite substantially improves the ability of non-CAD users to analyse a design and quickly obtain the information they need to better perform their jobs,’ says Vinay Wagle, CCE vice president, sales and marketing. ‘For example, a manufacturing engineer can quickly identify all of the parts in an assembly that fall within a specified clearance in order to verify that a certain manufacturing process can hold the needed tolerances.’

EnSuite version 2 now offers the ability to add redlining, mark-up callouts, and standard shapes and text to any model. This feature enables users who do not have access to the originating CAD system to participate in the design review process. In many cases, an inefficient paper-based review process can be converted to an electronic process.

The interference/clearance checking feature enables the user to select any component or assembly and immediately call out any volume interferences and contact surfaces that are highlighted in colour. The software can also be used to identify parts with clearances below any value selected by the user. The user can change the clearance value and EnSuite will dynamically update



EnSuite Version 2 has been upgraded to allow non-CAD users to analyse a design quickly and effectively.

the list by showing parts that fall within the new clearance value. The output separately identifies parts with interferences, contact surfaces and clearances below the value specified by the user.

The upgraded version of EnSuite also lists the parent/child information for each part in an assembly. This information can, for example, help purchasing identify all of the parts in an assembly in preparation for make or buy decisions.

The latest EnSuite update will be available

to all active subscription license customers as well as to new customers.

EnSuite is designed for companies that work in a multi-CAD environment, such as those used by customers, vendors and partners. EnSuite offers interoperability with CATIA V4, CATIA V5, Pro/ENGINEER, Unigraphics, and SolidWorks CAD systems as well as Parasolid, IGES and STEP files. Files can be translated to and from any of these formats without the native CAD software. *NA*

CCEE FOR STANGBYE



THE INTERIOR SUPPLIER OF CHOICE

- Walls
- Ceilings
- Doors
- Glazed Partition
- Windows
- Wet Units
- Furniture
- Sound reduction up to 54dB
- Fireclass B-0 to H-120

MARINE INTERIOR SYSTEMS - www.norac.no



YANTAR- RUSSIA'S BALTICA GEM



- SHIPBUILDING & SHIPS' HULLS CONSTRUCTION
- SHIP REPAIR & CONVERSION
- MECHANICAL ENGINEERING
- METAL STRUCTURES MANUFACTURING

The Yantar (Amber) shipyard is a unique enterprise. Its workshops, docks and laboratories sit comfortably on the shore of the Baltic Sea's only unfreezing port of Kaliningrad.

Shipyard has survived the hard nineties without state's support and today the Enterprise channels state-supplied funds into renovation of infrastructure, modernization of services and build-up of expertise that enable coping with pending orders. Workers, designers, engineers and many other specialists of the shipyard know about the hardships of ocean and sea cruises. They apply all their skills and knowledge to the manufacture of ships.

One hundred fifty-three warships have left the building berth of the shipyard since 1949. All of them are a highly complex match of arms, electronics, engineering and navigation system, communications equipment and radars. Quality, reliability and superior operational effectiveness are undeniable assets of the shipyard's defense products, which are well known to several generations of sailors of the former Soviet and today's Russia's navies as well as to foreign customers. Among the shipyard's major projects are the Yaroslav Mudry patrol ship, Ivan Gren large landing ship and Borodino training ship.

More than 100 large and around 400 small civilian ships have come off the shipyard's shipbuilding ways and more than 430 military and civilian ships have been repaired. In recent years Yantar shipyard has built a large number of partially outfitted ship bodies for Western customers. Among such ships were river and sea class dry cargo ships, river tankers and cargo craft, environment control and fishing boats, and other craft.

Today shipyard Yantar is a competitive dockyard on the Western market offering services in ship manufacture and repair. Equipped with all required facilities and skilled personnel, the Enterprise has a wealth of experience in repairing of all types of ships. The demand for quality products enables the Enterprise to acquire high-tech manufacturing equipment and to improve its production standards.

The current customers for defense products are the Russian and the Indian navies. A long-term cooperation has been established with the partners in Germany, Norway and the Netherlands. Thanks to cooperation between private business and the state the Yantar shipyard will soon become a worthy rival to shipbuilders of St Petersburg.



AVEVA bags contract pair

IT systems provider AVEVA signs two important contracts that extend its interests in the shipbuilding and design markets.

Thysen Krupp Marine Systems has extended its 25-year association with engineering IT systems provider AVEVA by signing a new agreement that includes migration from the former Tribon system to the AVEVA Marine shipbuilding solution, to cover shipyards in Kiel, Emden and Hamburg, Germany.

Howaldtswerke-Deutsche Werft (HDW) has been using Tribon (and its predecessor Steerbear) since 1983. The other German shipyards of the group first started using the software system in 1994.

In the past HDW, has contributed to the development of the AVEVA software systems, with many of the advanced production functions found in AVEVA Marine today being a direct result of this cooperation.

Convincing scope

Jens Peters, Director of IT at TKMS said: 'A key factor in the decision by us to use the AVEVA marine solution was once again the convincing scope and quality of the shipbuilding-specific functionality such as hull design. Other factors include the great emphasis on the flexible handling of software licenses within the group of shipyards, as well as guaranteeing the possibility to upgrade to the latest version in the AVEVA Marine (Series 12).

In a separate deal, UK-based Avrotech Design said that it, too, had decided to use AVEVA marine solutions, in a move the designer said would help develop its global ship design business.

Involved in the marine, offshore and petrochemical industries, using a wide range of 2D and 3D CAD systems, Avrotech serves both civilian and naval customers in the government and private sectors. It has operations across Europe, which now include a recently opened office in the North West of England.

Avrotech said it had selected AVEVA marine solutions because the tools AVEVA provided would not only help to fulfill

current contracts, but would also enable the company to develop further its relationships with shipyards around the world. **NA**

BRONSWERK® MARINE INC.

MARINE HVAC & REFRIGERATION SYSTEMS (Naval, Merchant Marine and Offshore)

Special Feature:

High Speed Centrifugal Chiller (The "Quiet Chiller")

- * Compact Design
- * Light Weight
- * dBA 70 at full capacity



Our Services:

- System Designers
- Equipment Manufacturers
- Full Service Providers
- Project Managers
- System Integrators

Please visit us at www.bronswerk.ca

Canada

Head Office
3755-C Blvd. Matte
Brossard, Quebec
Canada
J4Y 2P4
Tel: (450) 659-6571
Fax: (450) 659-1035

USA

Bronswerk Corp.
2468 Dauphine St
Suite A
New Orleans, LA
70117
Tel : (504) 943-6284
Fax: (504) 943-0268

China

Shanghai Liaison Office
Factory 7
Lane 1365 East Kang Qiao Road
Kang Qiao Industrial Zone
Pu Dong, Shanghai PC201315
Tel : 86-21-6818-3098
Fax: 86-21-6818-3115



NEW BUILD, CONVERSION AND UPGRADE PROJECTS

 **Offshore**
 **Multipurpose cargo ships**
 **Ferries**

— **Versatility, reliability and flexibility to the Customers**

— **Quality service enhanced by technology and engineering expertise**

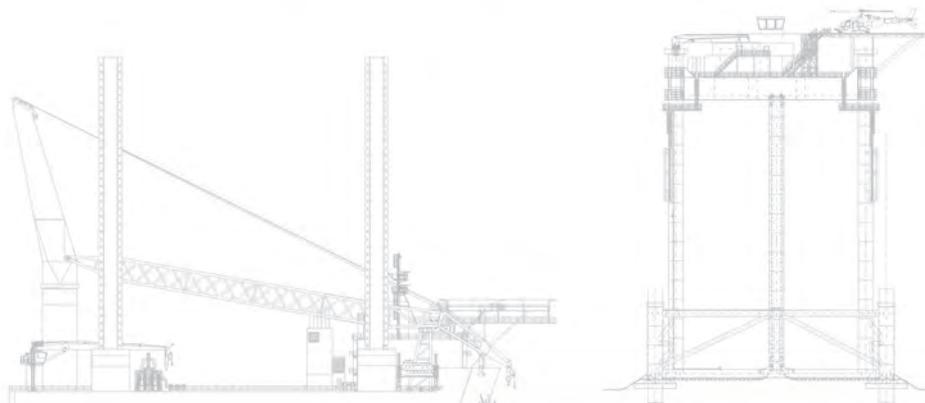
— **Timely delivery**

— **Strong project management and procurement**



**WESTERN
SHIPBUILDING YARD**
BLRT GRUPP

Minijos str. 180, LT-93269 Klaipėda, LITHUANIA
 Tel.: + 37046 483 727, 483 866.
 Fax: + 37046 469 881
 E-mail: newbuilding@wsy.lt www.wsy.lt



New solution for submersible thruster design

HydroComp, Inc., of Durham, NH USA, may be best known for its resistance and propulsion software, such as NavCad and PropCad, but in the world of small deep submergence ROV and AUV vehicles, it considers itself to be a new solution provider for thruster design.

‘We have found our submersible thruster design projects to be quite rewarding,’ said Donald MacPherson, HydroComp technical director. ‘Many of these companies ask for confidentiality in what has become a very competitive market, but I can tell you that, at last count, we have done some 40 projects for more than a dozen global companies.’

Propeller design has always been a core service provided by HydroComp, but small-scale ducted thruster design was not especially common. ‘When approached some years ago to develop a series of thrusters, we first reviewed what the ROV and AUV community was currently using for thrusters – particularly ducted thrusters,’ said Mr MacPherson. ‘I was not all that impressed with the performance of these propulsors, so we undertook an internal R&D project to develop our own low-drag high-efficiency ducted thruster. To say that I am happy with the results of that work would be an understatement. It really became the cornerstone of all of our ducted thruster designs.’

One early project in thruster design was for a company that makes a product called

JetBoots – a personal propulsion system for divers. As part of a product upgrade, the client contracted HydroComp to develop of a high-efficiency ducted propulsor that would increase thrust

and battery life. Replacing an inefficient propulsor is a common design objective for HydroComp’s submersible thruster clients, and has led to a consistent and reliable product development process.

Mr MacPherson said: ‘Our tasks for this project were to identify the characteristics and parameters of a replacement propulsor, and to prepare a 3D CAD model. Once we felt that our design would fulfill our goal of significantly improving propulsor efficiency, we crunched the numbers with NavCad and developed the propeller blade geometry in PropCad. We followed with full 3D CAD models for the duct and propeller, which the client took directly to manufacture and testing.’

The scope of submersible thruster designs delivered by HydroComp has been quite varied, including ROVs, AUVs, small boats, even pool toys. To date, HydroComp’s thrusters had consistently exceeded the initial design targets, the company said. **NA**



Small is beautiful? New thruster design for underwater work from HydroComp.

SMM
HAMBURG
B5.GF.410

**THE
BRIGHT
NEW
VISION**

Twelve renowned specialists have combined their experience, knowledge and expertise in security, fire resistance, insulation, climate control, piping & duct systems. Want to know more about the attractive return on investment it offers?

SAINT-GOBAIN

MARINE APPLICATIONS

Jülicher Straße 495, D-52070 Aachen
Tel. +49 (0) 241 9667400
Fax +49 (0) 241 9667320
E-mail: marine@saint-gobain.com
Web: www.saint-gobain-marine.com



Contact: Mr Piotr Zelazek
Design Office Manager
e-mail: piotr.zelazek@genferlloyd.com
Mobile: +48 600 208 912

Mr Marek Nowak
Senior Chief Designer
e-mail: marek.nowak@genferlloyd.com
Mobile: +48 600 208 913



OFFERED SERVICES

- + preparation of documentation of all design stages
- + assistance in model tests
- + theoretical calculations, hydrostatics, stability, damaged stability
- + hull structure design, including strength calculations with FEM
- + deck equipment, interior outfitting, electric systems and auto controls, machinery and piping design, including coordination and material lists
- + 3D modeling & design visualization
- + technical assistance in maker selection process
- + technical assistance in documentation approval process
- + ship repair and conversion design and assistance
- + technical assistance during construction, dock trials and sea trials of designed object



USED SOFTWARE

NUPAS/CADMATIC, AutoCAD, TRIBON, NAPA, NISA/DISPLAY III, NAUTICUS, POSEIDON, RULESCALC, ANSYS, RHINOCEROS, EXPANDER.



REFERENCES



+ Workshop documentation for research vessels, PSV, Trawler; hull and machinery part - for Skipteknisk AS, Norway

+ Classification documentation for machinery and piping, cooperation - with Skipteknisk AS, Norway



+ Workshop documentation of flying cats/catamarans, cooperation - with Fjellstrand, Norway



+ Workshop documentation, hull and machinery part - for Bergen Mekaniske Verksted, Norway



+ Workshop documentation, including outfitting 3D coordination for Y160 project (seismic vessel) for BMV AS, Norway



+ Workshop documentation of hull and Engine Room 3D coordination for Y161 project (ROV/Construction vessel) - for BMV AS, Norway

+ Supervision of hull construction and piping of Y160 vessel - in Gdansk Shipyard, Poland



+ Workshop documentation of hull structure for Y 164 project (Diving Support Vessel) for BMV AS, Norway



+ 3D model and workshop documentation of AC - Rooms for passenger vessel, cooperation with Europlan Engineering Ltd., Finland

+ Classification documentation for diesel generators replacement on existing vessels for Saertrade Groningen B.V., Netherlands



+ Long term cooperation with Lloyd's Register EMEA



+ FE calculations and hull classification documentation of 13.500 dwt multi purpose vessel for Groot Ship Design, Netherlands



+ Contractual and classification documentation for 7300 dwt Multipurpose Carrier for B.V. Kustvaartbedrijf Moerman, Netherlands

www.genferlloyd.com

Genfer Lloyd Sp. z o.o., pl. Holdu Pruskiego 9, 70-550 Szczecin, Poland

Polski Rejestr Statków



recognized by European Union, as compliant with criteria set out by the Council Directive 94/57/EC of 22 November 1994 (as amended) on common rules and standards for ship inspections and survey organizations

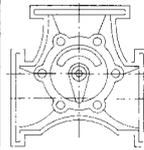


- classification surveys
- statutory surveys
- industrial surveys
- management systems
- certification
- products certification
- for conformity with European Union Directives
- software development

Polski Rejestr Statków S.A.
Al. Gen. Józefa Hallera 126
80-416 Gdańsk, Poland
tel.: (+48 58) 346 17 00
fax: (+48 58) 346 03 92
e-mail: mailbox@prs.pl

SEE US AT SMM, HALL B2.EG, STAND 146

walton
VALVES



TEMPERATURE CONTROL SYSTEMS

Complete range of DIRECT, PNEUMATIC, ELECTRIC and GAS operated systems

GAS OPERATED



- BORE SIZES 10mm - 200mm
- COMPACT DESIGN
- LOW COST MAINTENANCE
- PIPING FLEXIBILITY
- MANUAL CONTROL
- ROBUST CONSTRUCTION
- MINIMAL PRESSURE LOSS

Quality assurance standard
BS EN ISO 9001 : 2000

Designed for control of Refrigerant Gas Pressures in Marine Air-Conditioning and Refrigeration Plant

YOUR PARTNER WITH 60 YEARS EXPERIENCE IN TEMPERATURE CONTROL

walton ENGINEERING CO. LTD.

61 London Road
St. Albans, Herts. AL1 1LJ

+44 (0)1727 855616 (2 lines)
+44 (0)1727 841145
E-Mail: sales@waltonengineering.co.uk
www.waltonengineering.co.uk

Shipbuilders in the dock

The European Commission has rejected proposed restructuring plans for the Gdynia and Szczecin shipyards and set a new deadline for final resolution, explicitly warning it will not tolerate further delay.

Poland's shipbuilders remain in limbo, after the European Commission concluded that restructuring plans submitted by Polish authorities for the Gdynia and Szczecin shipyards did not comply with the guidelines on rescue and restructuring aid. On this basis, aid already paid to the shipyards would be deemed incompatible with EC Treaty state aid rules and give rise to serious distortions of competition. However, the Commission said it could exclude recent expressions of interest from private investors from its considerations, which 'could lead to an acceptable solution within a short space of time'.

In July, the Polish Government was given an extension of its original deadline, to 12 September, to submit alternative, viable restructuring plans that would comply with the applicable state aid rules. 'In the Commission's view, unless the new plans comply fully with EC Treaty state aid rules, and in particular remedy the shortcomings which the Commission has identified in the current plans, it will have no option but to adopt a negative decision and require repayment of the aid', the Competition Commission said.

Competition Commissioner Neelie Kroes said: 'In the last four years, we've made a tremendous effort to work with the Polish authorities to find a positive solution, to ensure sustainable jobs and the long-term profitability of the yards. Unfortunately, the restructuring plans on the table today are not acceptable for the Commission because they would not achieve that objective. Nevertheless, in view of ongoing negotiations with potential buyers of the two yards, and of the commitment of Prime Minister Tusk that new restructuring plans will be submitted by 12 September, the formal adoption

of the negative decision is postponed. We have now entered the second half of extra time and it is essential that the Polish authorities use this final opportunity to come up with solutions that will guarantee the viability of the shipyards without undue subsidies.'

The state aid measures in question were granted after Poland's EU accession in 2004. Gdynia shipyard

"The restructuring plans on the table today are not acceptable for the Commission"

benefited from various aid measures (in particular capital injections and loans) worth €497 million and from production guarantees of €915 million (nominal value). Szczecin shipyard received aid worth €165 million, as well as production guarantees of €570 million (again, nominal value).

Constant difficulty

The two yards have been in constant difficulties since the 1990s, caused by internal deficiencies and cyclical demand for ships. In 2002, Szczecin shipyard went bankrupt, which undermined financial market trust and caused liquidity problems for the yards. Increasing steel prices, the falling dollar and rising zloty have exacerbated the situation. Since at least 2004, neither of the yards has made a profit on any of the ships produced and neither would have survived in the absence of the subsidies, according to the EC.

An attempt of the Polish authorities to partially privatise Gdynia shipyard

in 2006 failed.

In 2008, negotiations with the only investor for both yards lasted for nearly five months also failed in May 2008, after which Poland attempted to find new potential investors. Reportedly, Ukraine's Donbass Union has bought into the Gdansk yard, but it has not met EC demands to present a restructuring plan. Meanwhile, initial interest expressed by Rami Ungar's Ray Shipping to buy a slice of the Gdynia yard appears to have cooled.

Unviable plans

The EC sees matters as follows: 'It became apparent that all the potential offers were conditional upon receiving significant additional state aid. According to the EC: 'None of the investors was able to demonstrate that the yards would restore viability in the long run and create stable jobs or that they had sufficient resources to make a significant contribution to the financing of the restructuring costs.'

Under EC aid rules, the restructuring plans for the shipyards must:

- (i) ensure the long-term profitability of the shipyards
- (ii) include adequate compensatory measures to limit the distortion of competition caused by the aid and
- (iii) be financed to a large extent from the companies' own resources.

EU ultimatum

The Competition Commission concluded:

'Unless the new restructuring plans to be submitted in September remedy the shortcomings which the Commission has identified in the current plans, the Commission will have no option but to declare the state aid unlawfully provided to the yards since May 2004 to be incompatible and to order its recovery with interest.' **NA**



Marine Newbuilding
Marine & Offshore Refits
Marine & Offshore Services
Special projects

At top level internationally

The Netherlands have a rich shipping tradition. Our shipbuilding knowledge and technology is at top level internationally. Not surprisingly.

Croon has extensive experience in the design, realisation and upkeep of electrical equipment and networks on board ships at each stage of their lifespan.

We are known to complete newbuilding and refit projects at record breaking speed. Our skillful professionals install reliable high-end technology, both safely and efficiently. Our Marine & Offshore Services guarantee a perfect solution to any problem. All this with one single goal in mind: the best possible safety and reliability onboard, resulting in your improved return on investment.

Numerous clients around the world rely on our maritime expertise. For example, the Royal Navies of both The Netherlands and New Zealand, Subsea 7 and countless other companies in both marine and offshore. Our employees are able to work everywhere. Worldwide, 24 hours a day and seven days a week. Would you like to know more about the added value Croon can offer you? Don't hesitate to call us. We'll be there for you: full speed ahead.



Croon Elektrotechniek

Röntgenweg 6
3208 KG Spijkenisse
The Netherlands
+31 181 - 60 17 00
www.croon.nl

Professionals for professionals

Stability focus for joint class initiative

Dynamic stability and bulk carrier safety have become the focus of joint efforts of Polish Register of Shipping and ABS.

Following the announcement earlier this year covering a wide-ranging cooperative agreement between Polish Register of Shipping (Polski Rejestr Statkow - PRS) and ABS, first details of the direction that the new relationship is taking have emerged.

The dual class agreement between the two societies was first expressed in the dual classing of two 38,000dwt double-hull bulk carriers ordered from Tianjin Xingang Shipbuilding in China by the Polish Steamship Company, announced in March. Other dual class arrangements are to follow.

Now, following intensive discussions at the highest levels, ABS and PRS have announced a multi-year, joint research and development program that will focus on ship dynamic stability in extreme wave conditions and the time variant reliability of ageing bulk carriers.

‘These two major research projects neatly dovetail the strengths of both societies and are expected to result in criteria that will further improve marine safety,’ said ABS president Christopher J. Wiernicki. ‘PRS brings a very strong technical competence and a long standing interest in ship stability. ABS has existing dynamic stability assessment programs that are state of the art but need to be validated for their application to extreme wave conditions. This joint development project will advance both societies’ knowledge and capabilities in this area.’

PRS president, Dr Jan Jankowski, noted the increased interest in ship behaviour in extreme wave conditions in light of a growing concern that the prevalence of extreme waves may be greater than previously thought.

‘Class has developed very sophisticated theoretical models for evaluating dynamic stability but increased computer capabilities now allow us to validate these models against in-service experience,’ he said. ‘One of the principal issues we will be focusing on in this joint study is the



Dr Jan Jankowski (PRS board president - left) and Chris Wiernicki (president ABS).

green water-deck interaction, gaining a much more detailed understanding of the influence that hydrodynamic forces in extreme wave conditions have not only on ship strength but also on ship motion.’

The investigation will evaluate the component parts of each society’s existing methodology and simulation software that address issues such as pressures, forces, loads and ship motions, and validate the results against extensive model tests and experiments. ‘The expectation is that the first-phase result will be a fuller understanding of the hydrodynamic forces that will be applicable to all vessels, regardless of size or type,’ said Dr Jankowski.

Subsequent research will then consider specific issues such as the dynamic stability of smaller vessels, and also the impact on specific components of larger vessels, such as the foredeck structure, hatch coamings and hatch covers. The study is also expected to further advance the class societies’ understanding of the issue of parametric roll and broaching phenomena.

With respect to bulk carriers, ABS said it was enlisting PRS assistance in its on-going

study into the cumulative, long term effect on the structure of bulk carriers of the increasingly high loading rates at iron ore terminals. The first two phases of the ABS project, carried out with the assistance of INTERCARGO, have been completed.

‘We welcome this opportunity to tap into PRS’ experience with investigating age related failures of bulk carrier structures to progress this project to the next level,’ Mr Wiernicki commented. ‘Even though there have been remarkable improvements in reducing the number and severity of bulk carrier casualties over the last 15 years, we feel this is a subject that offers opportunities for extending our understanding of the potential failure sequences.’

Both Mr Wiernicki and Dr Jankowski emphasised that these two projects were just the first steps in what is intended to be a closer technical cooperation between the two societies. ‘There are several other promising areas of joint research that have been identified,’ Mr Wiernicki said. ‘Discussions will continue on how we can craft an effective joint approach to research these. Our focus is on improving our understanding of the reliability of the entire ship structure over its service life.’ **NA**

StabPRS deemed a success

User trials demonstrate StabPRS bringing new focus to allowable parameters of safe ship operation.

First feedback on the pilot implementation of StabPRS, the new software package officially launched by Polish Register of Shipping at last year's NorShipping, have proved very encouraging, according to the class body.

Trialled onboard a series of Polish vessels, StabPRS has been designed to enable quick and accurate assessments of a ship's loading condition and consequent stability and strength.

Trial was conducted onboard a bulk carrier operated by Polsteam Co and Riamar Shipping, and ro-ro ships operated by Euroafrica.

'Evaluations emphasised the user friendly nature of the software package and acceleration of various operations and duties in the capacity of ship officers and crew. Information on StabPRS', PRS said.

The class body said that StabPRS represented a major advance in processing data to provide day to day onboard assistance in operating vessels safely. The programme calculates the effects of changes in the ship's loading condition, updates the stability parameters, presents risk levels and predicts likely outcomes. This enables master and crew to take the necessary remedial action.

StabPRS calculates traditional stability, shear forces and bending moments, and verifies cargo weight, using draft marks data. The package's options include verifying wave generated forces affecting heavy cargo lashings; simulating cargo handling by deck cranes and predicting the heel angle of every cargo handling process; planning optimal routes in given wave conditions; and warning crew about exceeding allowable strength and stability parameters.

The programme operates whether the ship is intact or damaged. For example, it calculates damage stability and hull strength when up to several compartments are flooded.

Data can be entered quickly and assessment time can be only a few minutes. The results, displayed in 2D and 3D form, can be complemented by print-outs for the



STABPRS is proving beneficial to vessel operations.

log book.

StabPRS comes in several versions for general cargo ships, bulk and container carriers, passenger ferries and other vessels. The programme is tailored for individual vessel parameters. For passenger ferries, the option for damage stability control in accordance with the Stockholm Agreement is available.

The rationale behind StabPRS stems from the random character of the sea and ship operations in generating a multitude of exceptional or extraordinary cases. By contrast, today's ships are designed and operated with loads which follow rules and guidelines based on a limited number of cases. PRS contends that the selected wave loads assumed in the rules are, in some cases, too optimistic. This, in turn, can produce decisions whereby the ship risks exceeding safety limits.

PRS believes the focus should be on allowable parameters of safe ship operation in both intact and damage conditions. Ship operators and masters can then rely on onboard computer systems to analyse and confirm or reject any loading condition against these allowable parameters.

Given crews' present workloads, especially in port, there has been considerable interest in the time saving tool, PRS said. It had already received many orders for developing and implementing the programme on its own classified vessels and was offering it to ships classed by other societies.

The open characteristic of the programme

triggered constructive feedback from the initial batch of shipowners, which has directly led to further development of the package. Additional features now included:

1) Reports being customised for entering, displaying and printing results,

2) Options being added, including:

- bridge visibility-size of dead visibility field forward of ship's bow,
- propeller immersion - immersion of propeller given in '%' (if less than 100 it indicates that the propeller is partly emerged)

3) Crane on deck operations: planning of ballast operations in the process of loading heavy cargo with use of deck cranes being added, as well as a simulation display of the process to assist crew in handling heavy cargo without risking the ship capsizing due to inadequate ballast balance.

4) 'Friendly container stowage': container stowage arrangement programs are a common tool, but PRS clients wished their program to cope with the problem of stowage arrangement of different sized containers in particular bays without loss of space or conflicts due to different dimensions. The PRS option now provides a display of three cross sections of each bay and changing container sizes as entered. The entry of two 20ft containers naturally blocks the option of a 40ft container. Furthermore, in the case of placing one 20ft container, the program automatically shows in the other cross sections limitations in placing a 40ft container in all three dimensions of the bay's loading space.

5) Check by draft: this option (applicable to ro-ro ships and ferries, twin deck loading of rail carriages and lorries and trailers) has been developed in response

to crew's problems in evaluating actual cargo load satisfying safety criteria. The programme provides information on the positioning of the vertical centre of gravity during loading operations indicating when the maximum VCG is exceeded and indicating which deck should be further loaded to stay within safety limits. Data on cargo weight, often inaccurate, can be verified quickly without the necessity of weighing every piece of loaded cargo. The solution is based on draught marks. Prior to loading, the draft mark must be read and checked against that given by the

system to verify that earlier entered load data of fuel, ballast, provisions, etc have been given correctly. In the process of loading, the draft mark is read and entered into the system, which in seconds provides information on the remaining load capacity of the ship that remains within the stability limits of the vessel. Thanks to applying the draft mark as the point of reference, all loads including provisions are accounted for. The decision on whether the ship is capable of taking more cargo onboard or not finds credible verification and assures a safe loading level.

6) Operation guidance This is designed to help Masters to avoid distress, especially in bad weather conditions where following or quartering seas can be met. Then a vessel can be subject to so-called surf-riding or broaching. The program verifies whether a vessel can continue her journey maintaining speed and course or shall alter one or both.

StabPRS is now being developed for Chipolbrok and Gdansk Shipping Lines for multi-purpose vessels equipped with heavy deck cranes. *NA*

Safety criteria for bulk carriers

PRS builds new risk models to develop scenarios covering bulk carriers.

During the last 25 years, 419 bulk carriers have been lost, along with the lives of nearly 2000 seafarers. This loss ratio was, among others, the reason why the International Maritime Organization decided to develop Goal-Based Standards (GBS).

It is known today that the weakest elements of a bulk carrier's structure are the ship's side frames installed between rigid tanks, and that the most probable ship-sinking scenario is the loss of side integrity followed by the collapse of the bulkhead due to sloshing, and progressive ship flooding.

The analysis of different rule requirements referring to wave pressure on ship side

and section modules of side frames shows how these criteria have changed over time. Significantly increased wave pressure requirements were introduced following criticism expressed by Professor Söding from Hamburg University during International Ships and Offshore Structure Congress in 1991.

Although still developing, the GBS approach brings with it the 'safety level approach', which assumes that goals are defined by safety objectives. Further, it is assumed that the objectives will be achieved when each ship function satisfies the risk level set for the function. GBS assume reasoning moving from the general to the specific.

PRS has followed this approach, building risk models for bulk carriers, comprising different scenarios for a ship's sinking due to structural failure. Each scenario is a sequence of events leading to the sinking. Appropriate mathematical, deterministic and probabilistic models have been developed and used to make a quantitative assessment of particular events of a ship's structural failure.

The safety criteria have been derived from theoretical models and calibrated using the results of computations. The mathematical formulae include parameters representing the ship life-time, wave loads, loading condition, ultimate strength and of failure. *NA*



CTO S.A.

CENTRUM TECHNIKI OKRĘTOWEJ S.A.

Ship Design and Research Centre

Wały Piastowskie 1, 80-958 Gdańsk, Poland

www.cto.gda.pl
cto@cto.gda.pl

DESIGN

MEASUREMENTS

MATERIAL SCIENCE

TESTS



DESIGN OF RESEARCH OBJECTS • DESIGN AND PRODUCTION OF MEASURING DEVICES

ADVANCED CONTROL

New valve series, DN 200 to DN 600

For the engineering officer at sea,
the long proven performance of
Clorius valves means added security.

Clorius Controls is your best
choice and ensures your ship
running all years.



Clorius
Controls A/S

- ensures reliable control
of heating, cooling and
ventilation systems

Clorius Controls A/S
Tempovej 27
DK-2750 Ballerup
Denmark
Tel.: +45 77 32 31 30
Fax: +45 77 32 31 31
www.cloriuscontrols.com
mail@cloriuscontrols.com

Mixing with gas carriers

December 2008 will see a significant delivery from Polish yard group Remontowa, when the Anthony Veder-owned combined liquefied natural gas, liquefied petroleum gas and ethylene carrier *Coral Methane* leaves Gdansk-based Stocznia Polnocna SA.

The hull of what is the first Polish-built LNG carrier was launched on 7 May, 2008.

The diesel/gas-electric driven, multipurpose gas carrier, of the 1889 type (design), is said to be 'unique' - one of the first such units worldwide, and the first to be built at any European shipyard.

The vessel, which is being built under the supervision and according to the rules of Bureau Veritas, is unusual in being designed to carry a variety of gas cargoes, at different temperatures, including not only LNG, but butane, butadiene, ethane, ethylene, propane, and propylene. On completion, it will go on long term (15 years) charter to Gasnor, and carry gas along the coast of Norway. The ship will play an important part in plans for environmentally-friendly distribution of LNG along the Norwegian coast, by virtue of the fact that, when possible, it will use LNG as fuel, significantly decreasing the emission of exhaust fumes, including

greenhouse gasses like CO₂.

Owing to the installed two-stage re-liquefaction compressor room, the ship will be able to carry ethylene, LPG and most of other kinds of petroleum gasses. According to Anthony Verder managing director, Jan Valkier, the cargo plant installed in this vessel is, in fact, the first operational shipboard gas plant suitable for LPG, Ethylene and LNG. The combination of the first two products is common, but, according to Mr Valkier: 'The combination with LNG is unique. Due to requirements of the different cargoes, the piping system, cargo tanks and deepwell pumps are unique.'

The containment system itself has come from German company TGE Gas Engineering.

The ship will be equipped with two, thermally insulated, cryogenic self-supporting tanks of 3750m³ capacity each and is designed mainly for the carriage of LNG at 163°C.

Mr Valkier pointed out that the cargo

tanks' design criteria were based on the temperature and pressure requirements of all relevant cargoes. 'The very low temperature requirement for LNG cargo was only one of the criteria.'

Meanwhile, the components of the gas/diesel electric propulsion system are considered 'standard' and have proven their reliability. However, according to Mr Valkier: 'The complete lay-out of our gas/diesel propulsion system with this capacity and purpose is [also] unique.'

The diesel electric system was selected in order to confer 'manoeuvrability, reliability and flexibility,' he said.

At any given time, electrical energy itself will be produced by two of four Bergen generating sets. In the case of diesel operation, the ship would rely on two 4600kVA output units, while two 2700kVA units would operate on boil-off gas as fuel. If fuel gas from LNG cargo is available, the vessel will operate under all circumstances on gas generator sets. If boil-off is not sufficient, the shipboard gasification plant can be used to produce

TECHNICAL PARTICULARS

Coral Methane

length over all	117.80m
Breadth	18.60m
Draught	7.15m
cargo capacity	7500m ³
Deadweight	6150tonnes
gross tonnage	7904
net tonnage	2371
compensated gross tonnage (CGT)	14,312
total installed power	12,440kW
.....	(16 914KM)
main propulsion power	5000kW
service speed	15.50knots
ice class	1B
classification society	BV

Coral Methane makes a splash at her launching, in May 2008.

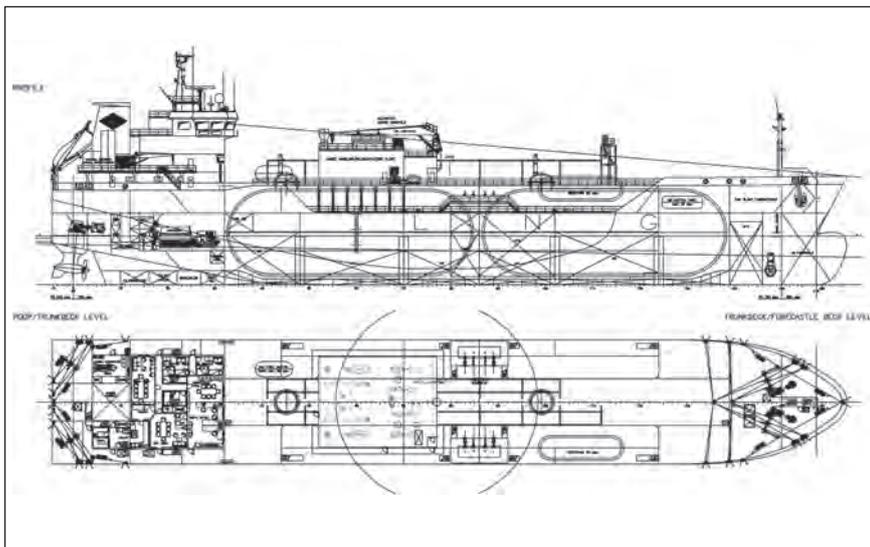




Coral Methane - the first multi-purpose gas carrier of its type to be built in Europe.



The containment system aboard *Coral Methane* is said to be 'unique'.



GA of *Coral Methane*.

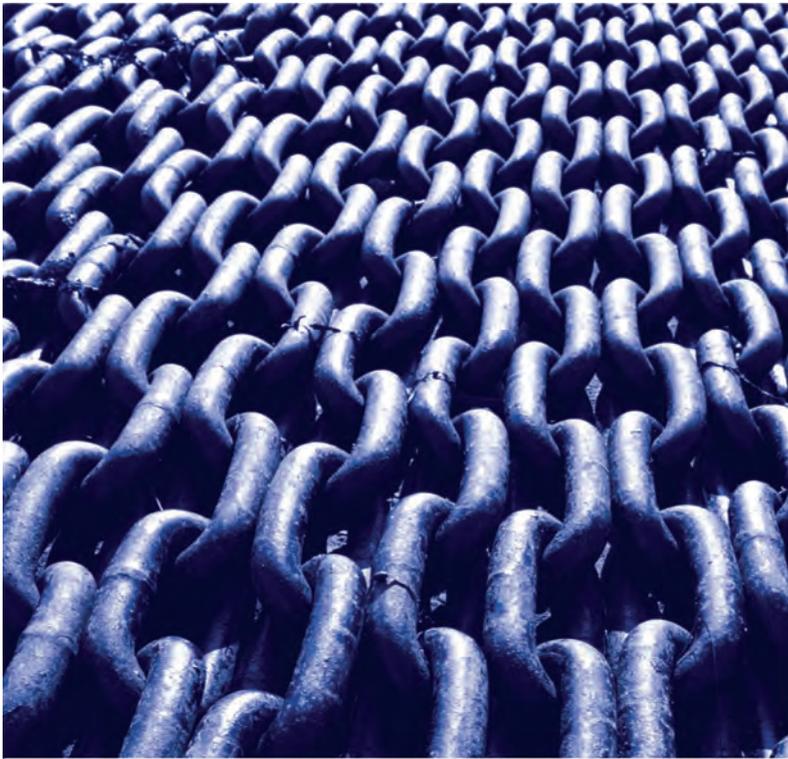
fuel gas for the gas engines. If, for any reason, fuel gas is not available the vessel will operate on the HFO generator sets.

The ship will also be equipped with two Rolls-Royce Azipull, AZP 120 type, fixed pitch, azimuthing propellers, driven

by frequency controlled electric motors. Manoeuvring will be enhanced through the inclusion of bow tunnel thrusters.

'High manoeuvrability and reliability is required to sail [through] the fjords and rivers in Norway,' said Mr Valkier. 'The flexibility is required due to the different types of cargo and class requirements. The complete propulsion system is redundant and there will be two engine rooms (an HFO and a gas engine room). This design gives a high flexibility and reliability. Under all circumstances, at least one Azipull thruster will be available.' During sailing, the azipull thrusters will have the same steering limits as conventional steering gear but, during manoeuvring, the azipull thrusters will be fully rotating. The bow thruster will also be available to improve manoeuvring.

'This lay out secures the high manoeuvring and reliability of our selected propulsion system, even during bad weather,' said Mr Valkier. **NA**



First Class chains and accessories

Manufacture of chains from 38 to 122 mm. Ø, accessories and anchors for shipping and offshore industry.

Highest quality standards.

Factories in three continents with worldwide delivery network.

Particular de Sagarduy, 5
48015 Bilbao • Spain
Tel.: +34 944 891 130 • Fax: +34 944 891 140
email: comercial@vicinaycadenas.com
www.vicinaycadenas.com

VICINAY
M A R I N E®

EXCELLENCE IS NOT A MATTER OF LUCK
FOR EXPERTISE AND EXPERIENCE CHOOSE



NAVAL ARCHITECTURE

STABILITY CALCULATIONS

HULL CONSTRUCTION

STRENGTH CALCULATIONS

MACHINERY AND PIPING

DECK OUTFITTING

HVAC

SEE YOU AT
THE SMM
HALL B5 EG
STAND 122

www.balticdesign.pl

BALTIC DESIGN CENTRE, 15/8 SWER KOSCIUSZKI ST., 81-340 GDYNIA, POLAND,
MARKETING@BALTICDESIGN.PL

CIBA
DESIGN

Workshop Drawings

Lofting & Nesting

Engineering Supervision

Quality & Attitude

www.cibadesign.com



Our services:

- Class designs
- Workshop drawings
- Equipment drawings
- Lofting & nesting
- Lines Fairing
- Shell Expansion
- Templates
- Material Order
- Material take off
- As-built

Design Office:

Dorota Ciborowska
Owner & Naval Architect
phone +48 605 557 118
tel./fax +48 58 668 01 84
tel. +48 58 699 22 08

kontakt@cibadesign.com

CIBA
always on TIME

Genfer Lloyd lifts off

Polish design house extends its range of vessels and gets involved in increasingly sophisticated detailed design work.

Polish company Genfer Lloyd Design says it is in rapid expansion mode, targeting an expansion of its 70-strong designer team to around 100 in the coming period.

The company, which offers a full range of design services for the offshore and shipbuilding industry is a part of Genfer Lloyd, and started its design activities in 2005, with small team of designers, cooperating closely with Skipteknisk AS, of Norway.

GLD said it was fully equipped with the most modern hardware and used the most sophisticated 'worldwide recognised software and solutions in designing'. It cooperates with partners in Scandinavia and Western Europe, including Norway, Finland and The Netherlands. It also has a long term cooperation with Lloyd's Register.

With Skipteknisk, GLD has been designing classification and workshop documentation for a wide range of vessels, including seismic, inspection, research, and survey ships, as well as remotely operated vehicles. 'To enable a great partnership, GLD has a team of five specialists in both hull structure and machinery positions, designing only for that client,' the company said.

Equally fruitful has been GLD's cooperation with company Europlan

Engineering Ltd, of Finland. In this case, GLD said it had been preparing a 3D model and workshop documentation for the air conditioning of cabins onboard the world's largest and most expensive cruiseship - *Genesis 1*.

Elsewhere, GLD said it was working on 'Project Y164', a subsea vessel for Bergen Mekaniske Verksted AS, which is going to be finished soon. Scope of work has contained workshop documentation for the hull part of the project. 'GLD won this project thanks to best offer with a shortest deadline', the company said. 'In a short time, nearly 30 designers worked on this project successfully.' Further vessels are planned to follow.

Again, in close cooperation with Dutch company Kustvaartbedrijf Moerman BV, GLD is developing a new 7300dwt multi-purpose ship design. At about 123m long overall, the vessel features two fully box shaped holds, prepared for dangerous cargoes and grab discharge. It is classed to Ice class is 1A as per Swedish/Finnish Rules, and will be driven by a controllable pitch propeller in nozzle, to achieve a speed of 13knots. Model tests were conducted by CTO-OHO in Gdansk.

GLD said that a contract for construction would be signed with a Chinese yard, possibly with the cooperation of GLD and a design office

in Shanghai, to prepare for workshop documentation to follow.

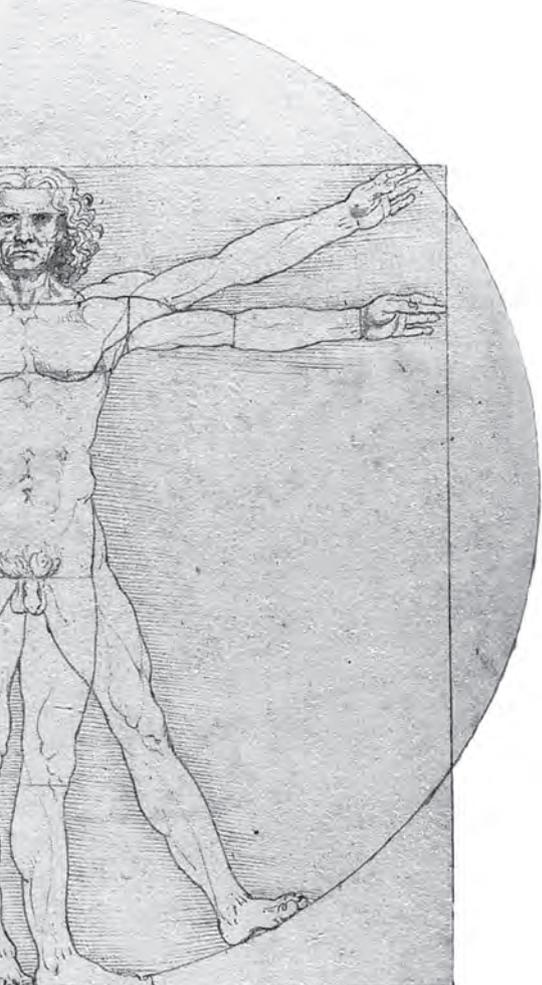
Looking for new markets, GLD said it was prepared to develop a new 1700TEU capacity container vessel design 'in possible cooperation with [a] Vietnamese design office in Hanoi'.

The vessel, of about 22.000dwt, and envisaged as operating at a speed of 22knots, would be a 'fuel efficient, green ship and is thought to be a beginning of a family of standardised containerships of different capacities, in a range of 1000TEU up to 3000TEU,' the company said.

GLD is not only engaged in projects of newbuildings, but is also involved in an interesting series of conversions. Acting as subcontractor of Segmar, Argentina, GLD is preparing a project to convert a single skin Suezmax tanker into an iron ore loading/unloading transfer station. 'The transfer station, fitted with [a] self-unloading conveyor system and loading cranes will enable transfer of iron ore from Panamax bulkers into, e.g. cape size bulkers,' said the company. GLD's scope of work will include inspecting vessels considered for conversion, participation in vessel selection and complete classification documentation preparation, including FEM calculations. **NA**

Proposed development of a new range of containerships from Genfer Lloyd Design.





Human Factors in Ship Design and Operation

25-26th February 2009, RINA HQ, London, UK



Call for papers and First Notice

The work of naval architects and marine engineers directly influences the operability and safety of the vessel and the wellbeing of the seafarer. Design decisions can influence human behaviour. An improved understanding of ergonomics by engineers can 'design out' hazards and prevent pollution incidents. The shortage of seafarers can be mitigated by design for improved habitability and better operation with lean manning

With ever more complex systems and technology greater improvements in safety can be achieved through a better understanding of human/system dynamics. A greater awareness of the role played by management structures, culture, procedures and regulation in safe and effective operation.

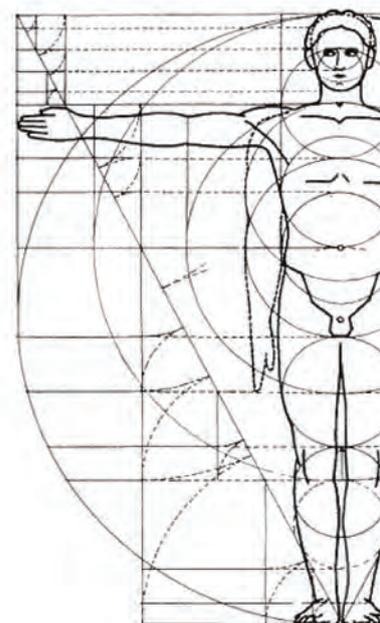
This conference aims to bring together international specialists and professionals including designers, ship operators, seafarers, equipment manufacturers and regulators to highlight how an improved understanding of human factors can reduced costs and improve safety. RINA invites papers in all related topics including:



- Integration of human factors into the design process
- Examples of practical applications of human factors engineering
- Feedback from the users into the design loop
- Survivability, escape and evacuation systems
- Design of navigation & control systems
- Maritime operating organisations and teamwork
- Safety performance and management
- Design for occupational health and safety
- Habitability

www.rina.org.uk/humanfactors09

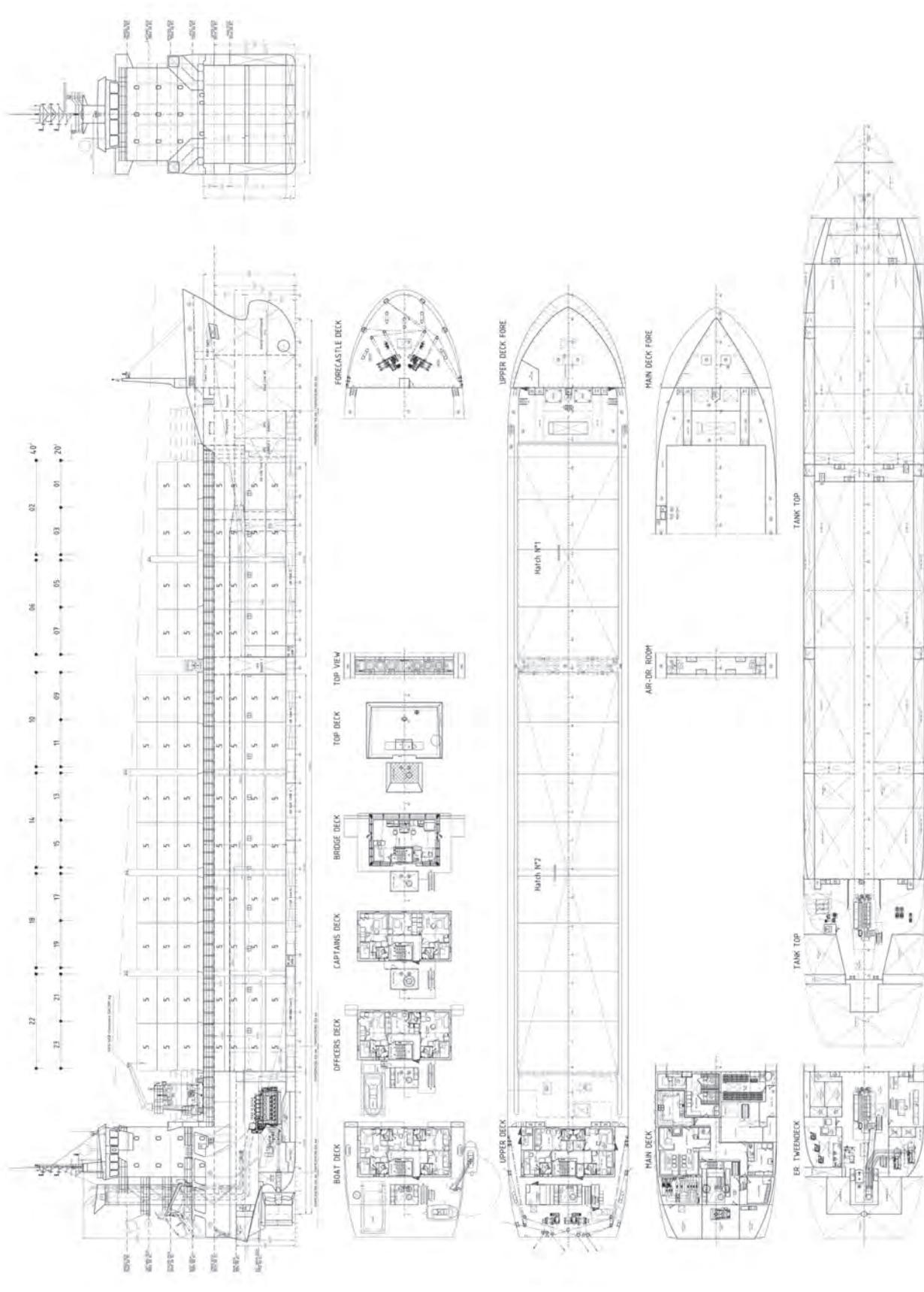
- I would like to receive a full programme brochure and registration form
- I wish to receive details on exhibition space and sponsorship opportunities
- I wish to offer a paper and attach a synopsis of no more than 250 words by 12th September 2008



Name:	Position:
Company:	
Address:	
Postcode:	
Telephone:	Fax:
E-Mail:	

Please return to: Conference Department, RINA, 10 Upper Belgrave Street, London, SW1X 8B
by Fax on +44 (0)20 7259 5912 or by e-mail: conference@rina.org.uk

GA for the 7300dwt multi-purpose ship, under development by Genfer Lloyd Design in close cooperation with Dutch company Kustvaartbedrijf Moerman BV.



Efficiency



For cargo level management, the HMS intelligent radar, thanks to its integrated software, improves our customers' business performances through an efficient level measurement. The radar always gives the right information and detects any potential false measurement, even with chemical products.

Honeywell Marine Solutions

Visit us at



Stand No
A1- 60

For a demonstration
visit our website www.enrafmarine.fr
or call +33(0)160 198 186

©2008 Honeywell International Inc. - All rights reserved



Engineering Ltd

High Pressure Fuel Lines

Common Rail & Pump and Line Formats

Jacketed and Standard Types

Pressure Ratings to 2500 Bar

Class Approved



VISIT OUR STAND



Talisman Business Centre, Duncan Rd,
Park Gate, Southampton, SO31 7GA, UK
Tel: +44 (0)1489 885288 • Fax: +44 (0)1489 885199
Email: giro@giroeng.com • www.giroeng.com

HOERBIGER has the answer to the new IACS UR M66 rules

HOERBIGER provides safety and reliability for both two stroke and four stroke engines according to the new rules.

Additionally HOERBIGER has developed a new range of explosion relief valves especially for four stroke engines.

For more information contact

sales.ev@hoerbiger.com

or visit us at the **SMM 2008 in Hamburg,**

Hall A3, Stand 230 from

23. 9. – 26. 9. 2008.


HOERBIGER
because performance counts

The Royal Institution of Naval Architects

SUBSCRIBE TO ANY OF OUR JOURNALS

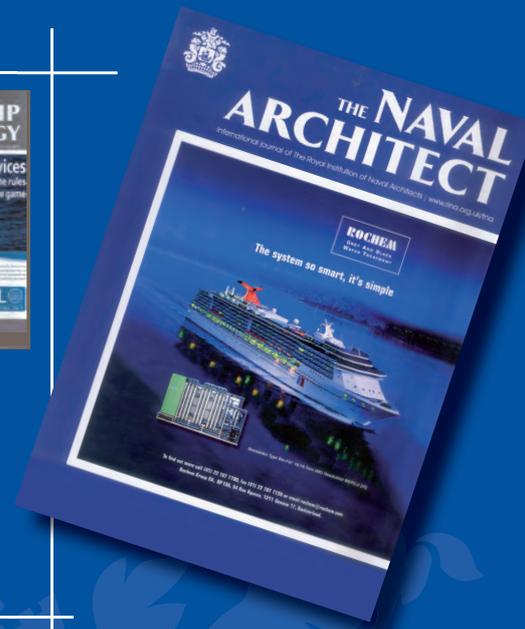
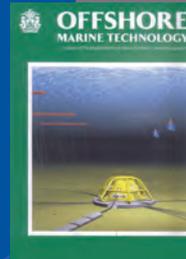
THE NAVAL ARCHITECT

Published 10 times a year

- Providing up-to-date technical information on commercial ship design, construction and equipment
- Regular reports on centres of shipbuilding activity worldwide
- Comprehensive, technical descriptions of the latest newbuildings
- News, views, rules & regulations, technology, offshore, CAD/CAM, innovations
- bi-monthly publication, *WARSHIP TECHNOLOGY*
- quarterly publication, *OFFSHORE MARINE TECHNOLOGY*

2009 Subscription

UK £120 Eur £125 OVS £135 Ref:J6



SHIP & BOAT INTERNATIONAL

Published 6 times a year

- Provides up-to-date technical information on commercial small craft/small ship design, construction and operation
- Covers a comprehensive range of vessel types from 5m up to 100m in length, including fast ferries, workboats, fishing vessels, patrol boats, pilot boats, tugs and offshore vessels
- Regular features on propulsion technology, new marine equipment, construction materials and CAD/CAM
- Special regular regional reports and electronic features by well-known industry figures

2009 Subscription

UK £92 Eur £97 OVS £110 Ref:J7



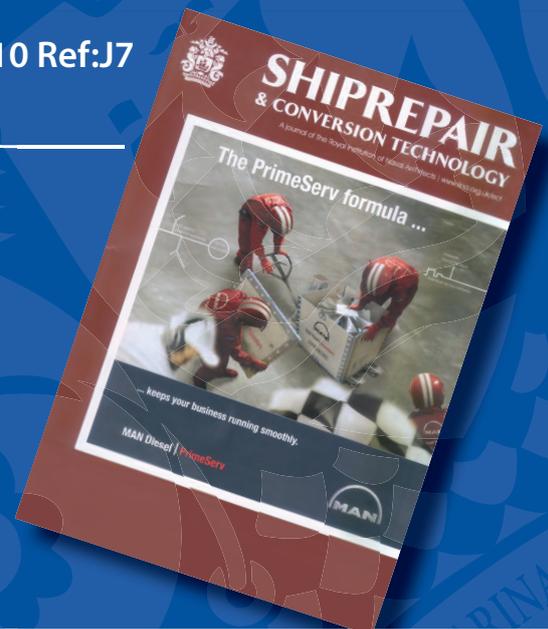
SHIPREPAIR & CONVERSION TECHNOLOGY

Published quarterly

- In depth coverage of all aspects of shiprepair and conversion work Includes technical descriptions of major conversion projects worldwide
- Regular regional surveys on the major shiprepair centres
- Developments in shipboard and shipyard equipment technology
- Contract news, appointments, industry views, new regulations

2009 Subscription

UK £41 Eur £46 OVS £51 Ref:J8



The Marketing Dept, RINA, 10 Upper Belgrave Street, London SW1X 8BQ

Tel: +44 (0) 207 235 4622 Fax: +44 (0) 207 259 5912

Email: subscriptions@rina.org.uk

www.rina.org.uk/journals

Baltic Design at the centre

New strength in depth, as naval architect company Baltic Design Centre becomes involved in a fresh array of projects.

In passing its second anniversary (27 July), Baltic Design Centre has been able to reflect on a successful start-up and its emergence as one of the mainstays of Polish ship design.

During the last 12 months, the company has been involved in a variety of work, including the class and detailed design of power plant for a 46,000dwt dynamically-positioned shuttle tanker built at Remontowa Shipyard, and the design of piping installations and ship's systems for an 84m long fisheries protection vessel also for the Remontowa.

The company's largest commitment over that period has been the class and detailed design for a conversion of a fishing vessel into the seismic ship *Bos Atlantic*, carried out at the Nauta Shiprepair Yard in Gdynia. More details of this project can be found in the 3rd quarter 2008 edition of sister publication *Shiprepair & Conversion Technology* pp20-21.

As noted elsewhere in this issue, perhaps the most significant project to emerge from the Polish shipbuilding industry in 2008, has been the 7500m³ capacity combined LNG/LPG/LEG carrier, *Coral Methane*, due delivery to Dutch owner Anthony Veder in December 2008. BDC was responsible for developing class documentation for the engineroom for this ship, in conjunction with Bureau Veritas, adapting owner and Class Society requirements, while still receiving Class approval. 'We have also prepared detailed documentation in order to prepare grounds for future 3D model of the installations,' said a BDC spokesman. 'Furthermore, we have executed the FMEA (Failure Modes and Effect Analysis) analysis required for the vessel.'

BDC said it had recently completed naval calculations, in order to determine the feasibility of specific conversion project for a foreign owner, without going



Bos Atlantic - the conversion represented the project involving the heaviest commitment from Baltic Design Centre designers over the last 12 months.

into further details. The company said it was 'preparing class documentation for modification of the project to the new requirements of the Owner'.

Another significant project for the designer, and indeed the one representing its baptism on star-up, has been that involving the construction of a dive support vessel for DOF Offshore.

BDC's involvement followed an approach from Norwegian yard, Fitjar Mechaniske Verksted from Fitjar, near Bergen, in December 2006 but the build part has proved problematic. The project was meant to be a relatively simple job, adapting the design of a boat being built in Romania to the requirements of shipyard in the Ukraine that would construct the hull of the newbuilding. However, according to BDC, the design turned out to be quite different from the original conception.

'The design work is now completed,' said BDC. However, the owner encountered serious problems with building the vessel in the Ukrainian Yard, and will probably build it somewhere else.'

Added power

In September 2007, BDC stepped up its technical capabilities, taking out a license to run NAPA software which,

the company says, 'combined with the experienced of our designers, has enabled us to complete many orders for model and stability calculations'.

Following an offer from a longstanding partner in Norway, BDC has now implemented Bentley AutoPlant, in order to prepare 3D models and isometric drawings of piping installations, according to client standards and requirements. The company said that it considered NUPAS and other 3D systems as optional, subject to customer choice.

BDC currently employs 15 staff, including 13 designers. 'In case of larger orders, we cooperate with some additional designers on the contractual basis,' said the BDC spokesman. 'For instance, at the peak of demand during seismic conversions, we have cooperated with up to 12 designers, having altogether a well-tuned team of 25 designers of all specialisations (except electrical).'

Employing more staff had forced the company to enlarge its office space from an initial 100m² in 2007 to the current 250m².

In order to maintain continuous growth of the company, BDC said it planned to employ additional designers in the next couple of months. **NA**

Performing steel.

Bulbflats, Shipbuilding plates and Merchant Bars tested and certified by any Classification Society

Stock availability, quick delivery and a complete package of services: blasting, painting, nesting, cutting, profiles bending and plates forming.



G.BAGLIETTO
NAVAL STEEL

via Castelgazzo, 11 - 15067 Novi Ligure - Italy
tel. +39 0143 419260 - info@bagliettosas.it

www.bagliettosas.it



HVAC from A to Z

CONVERSIONS, SPARES & TRAINING

Callenberg Fläkt Marine, a member of the world's largest maritime services network, provides HVAC system solutions to yards and installers as well as spares, life cycle services and training to owners and operators of all types of vessels.

We carry out turnkey ventilation & air conditioning conversion projects, including automation and electric power for car carriers, cruise ships, ferries, RoPax and other ship types.

We are the leading HVAC energy conservation specialist with tons of tricks in our tool box from more than 70 years of successful HVAC controls upgrading and new-build projects.

In short, we do HVAC from A to Z. Give us half a chance and we'll prove it to you.

www.callenberg.se

hvacservice@callenberg.se

hvacspares@callenberg.se

Callenberg

Part of Wilhelmsen Maritime Services,
a Wilh. Wilhelmsen Group company.

Grease busting and energy saving

Halton Marine is working to reduce HVAC energy consumption. One of its latest galley innovations conserves energy while also achieving a more hygienic environment.

Improving energy efficiency remains the name of the game for Halton Marine, even though the Finnish company suggests that its ventilation technology can already achieve 35% savings in terms of per cabin energy consumption when compared to widely available equipment.

‘From our point of view, I would say that more and more owners and operators are focusing on finding energy efficient HVAC solutions,’ said a Halton spokeswoman. ‘All this must be done naturally without sacrificing any customer comfort.’

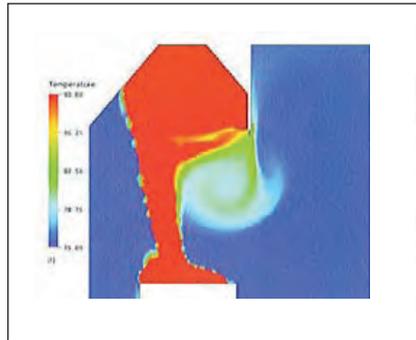
Today 95% of all commodities are transported by ship

Cruiseships today carry ever increasing numbers of passengers and crew. They also reach locations where outside conditions may be extreme, but at the same time require interior conditions to stay the same. Typically, passengers and crew expect comfortable air-conditioning, good air quality, and a safe indoor environment.

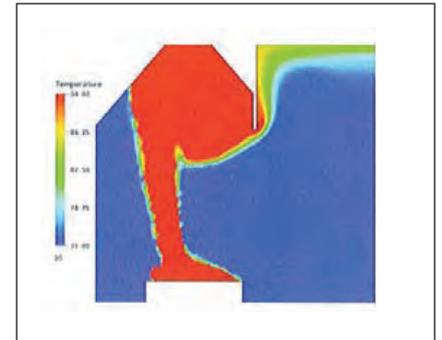
For HVAC systems, the upshot should be an increase in energy consumption, but Halton Marine said it had developed ‘intelligent and energy efficient cabin ventilation systems,’ designed to reduce the energy consumption that had a direct link to CO₂ emissions.

‘Within the local energy efficiency solution, Halton’s control systems are connected to switches that can detect the presence of a passenger being in cabin (or in similar areas) so that the ventilation can be set to serve in an energy-efficient mode while the cabin is not occupied. In the centralised, more advanced solution, Halton Marine offers a state-of-the-art energy efficiency technology, which operates throughout the system in a network, providing up to 35% of energy saving potential in cabin HVAC without sacrificing any customer comfort.

‘When the passenger removes the keycard from its holder, the



Results of the CFD models for the Capture Jet hood with Capture Jet on.



Result of the CFD model for the Capture Jet hood with Capture Jet off.



Halton Capture Jet operation principle.



Hood fire damper in galley hood. Damper is clearly covered with grease. The fusible link is completely greasy.

air-conditioning is forced into standby mode. Even though the unnecessary cooling and heating is limited while the cabin is not occupied, the indoor climate conditions are simply maintained at a

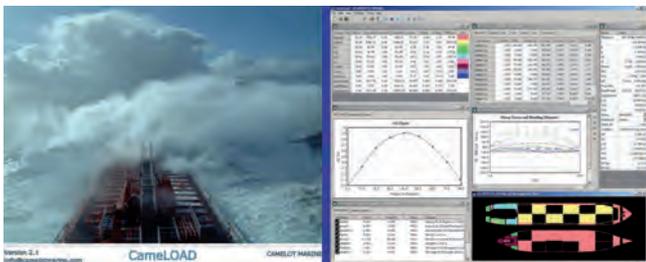
comfortable level. The standby indoor climate conditions are easily preset for each cabin.

‘The individual comfort level is quickly re-established when the passenger returns to the cabin. In case the passenger opens the balcony door, the terminal unit damper closes to minimum, preventing any unnecessary cooling. With the local technology, it is possible to achieve up to 8% savings in cabin HVAC energy consumption.’

An air handling control calculator monitored and collected data from the terminal units, as well as functional details. Collected data enabled the calculator to determine the pressure in front of each unit. Pressure data was used to optimise fan operation, which cut down unnecessary energy consumption.

The AHU control calculator collected the re-heater information from each terminal unit. Based on the re-heater’s utilisation rates, the AHU’s chiller and heater valves were controlled to cut down unnecessary cooling and prevent unnecessary electrical heating inside the terminal unit. The supply air was kept actively on optimum temperature level together with humidity control.

‘As far as what will come in the future, it is surely not a surprise that we will continue to develop and bring to the



CamelLOAD v2.1 LOADING INSTRUMENT

- capable of;
- INTACT STABILITY
- LONGITUDINAL STRENGTH
- INTERFACE WITH TANK ALARM MONITORING SYSTEM
- CARGO ULLAGE REPORT
- DAMAGE STABILITY
- DRAFT SURVEYS

Camelot Marine also supplies;

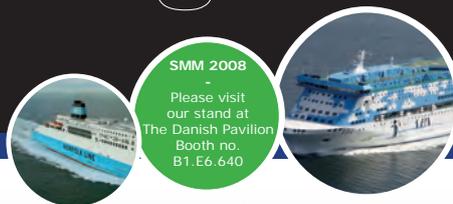
- Consultancy Services
- Production Drawings
- Engineering Calculations
- Ship Manuals



CAMELOT MARINE

Postane mah. Bahar sok. No:27 34940
 Tuzla / Istanbul TURKEY
 Tel : 00 90 216 582 05 38 / 110
 Fax : 00 90 216 446 46 07
 E-mail : info@camelotmarine.com
 Web : www.camelotmarine.com

DESMI pumps integrate knowledge & technology



Looking for a pump that meets future requirements?

DESMI rises to the environmental challenge of the future.

- We are a teamplayer in the global fairplay
- Our pumps make a difference, saving energy and CO₂
- One supplier - We offer complete pump packages

"DESMI 48 - Fast Track"
 - Introducing DESMI 's new concept:

- A selection of in-line pumps available from stock, delivery time max. 5 working days
- Delivery from European and Asian distribution centres
- Reduces maintenance and down-time
- Upgrading for higher efficiency



DESMI

Tagholm 1 - 9400 Nørresundby - Denmark - Phone: +45 9632 8111 - Fax: +45 9817 5499
 E-mail: marine@desmi.com - web: www.desmi.com

Photo courtesy of Statoil



When Safety and Comfort Matter

Choose Halton Marine high-quality ventilation solutions specifically designed for demanding applications.

Excellent service and reliability recognized by the leading classification societies and owners worldwide.



HALL B5, STAND 410

Featuring FDB2 Fire and Gas Damper

A0(A60)-class fire and gas damper, the successor to the most widely sold marine fire and gas damper in the world.

Due to fire expansive seals, the air-tightness of the damper improves during fire. Tightness in cold conditions is substantially better than NORSOK requirements.

A wide range of explosion-proof accessories and special steels combined with structural flexibility.



ATEX CERTIFIED

H0(H120) FIRE DAMPERS

A0(A60) FIRE AND GAS DAMPERS

BLAST DAMPERS

AIRFLOW DAMPERS

GALLEY VENTILATION SYSTEMS

CABIN VENTILATION SYSTEMS

Halton MARINE

Get in touch at www.haltonmarine.com
 for our worldwide service

market new technology that helps to improve the energy efficiency onboard.'

Halton said it was currently working on the deployment of UV-light technology for galley ventilation. 'Combining our Capture Jet and UV-light technologies, we can add value e.g. in energy efficiency, reduced maintenance costs and safety.' Halton said it had focused on developing 'unique systems that provide energy-efficient solutions for capture of airborne impurities and heat loads in professional kitchens and galleys. The results of these systems allow for a more comfortable, safer and productive thermal environment at reduced operational costs.'

UV and the Jet

The Halton Capture Jet technology is a system that can reduce the galley ventilation energy bill by up to 30% and at the same time improve the air quality, the company said. 'By improving the total efficiency of the ventilation system, it is possible to gain savings in both initial investment and running costs, while also increasing worker productivity by improving indoor climate conditions.'

Capture efficiency is the ability of the galley ventilation system to provide sufficient capture and containment at a minimal exhaust flow rate. Halton Capture Jet technology creates negative pressure along the front edge and side of the hood and assists in capture and containment of heat and effluents in the critical work area.

The Capture Jet technology reduced effective net exhaust volumes while improving extraction efficiency, with fan and ductwork size minimised. Capture Jet hoods prevented heat and impurities produced by cooking appliances from spreading to the work area. The hoods deliver a small air jet to push the upward-flowing thermal current toward the filters.

'Compared to conventional exhaust-only canopies, Capture Jet technology has a 30%-40% lower required exhaust volume for extracting an equivalent heat load. Capture Jet hoods include the Halton-patented KSA filter, which remove 95% of grease particles sized eight microns and above. The remaining grease particles are filtered with UV-light technology.'

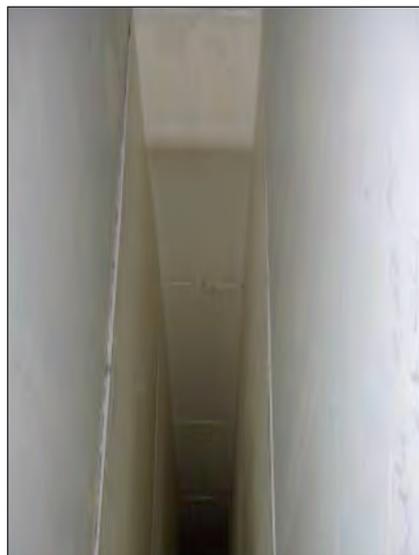
Capture Jet works in tandem with Halton's UV-light technology, designed to offer safer and more hygienic galleys for cruiseships,



Hood fire damper in galley hood. The damper and the fusible link are as clean as new ones without any sign of grease.



Horizontal (grease) exhaust duct of the galley. The duct is clearly affected by grease.



Vertical, white painted, galley (grease) exhaust duct. The duct is clean without any evidence of grease.

vessels and offshore installations. The UV-light technology has been well received among owners. Some of the most luxurious cruiseships are already utilising the UV-light

technology in galley ventilation.

In ships' galleys most of the grease exhausted from the hood can be classified as fatty acids; an example being oleic acid, which is the primary fat in ground beef. These substances consist of long chains of molecules connected by double bonds, which are chemically reactive. One chemical reaction that occurs is called Photolysis and takes place when UV-light hits the long molecular chains and breaks the double bonds resulting in smaller molecular chains of grease.

The second chemical reaction is called Ozonolysis, in which the ozone generated by the lamps continues to react with the smaller chains of grease and grease vapors to chemically alter them. The resulting substance will not stick to the ductwork or fans (as grease does), which helps eliminate a serious fire risk.

Halton Marine said it had conducted an independent survey on the galley ducts on board ship after ten months of operation. 'The results are undisputable and show that the UV-light technology decreases grease accumulation in hoods and ductwork', the company said. 'The UVC-radiation and ozone generated not only affected the inside surfaces of the hoods, but also several metres along the ductwork providing enough reaction time for the ozone.'

The UV-lamps, located inside the hoods, were found to be clean after several thousands of hours operation time. The water wash system cleaned the lamp surfaces daily according to the automatic washing programme. 'This is necessary in order to keep lamp radiation efficiency high and the chemical reaction, Ozonolysis, running optimally. In case there is no water wash system integrated in the hood, the UV-lamps can be wiped clean manually.'

Halton said its 'unique' Ultraviolet Light combined with Capture Jet technology was 'the best solution for hoods with high utilization rate. In UV-light concept most of the medium to large grease particles must be first filtered with high efficiency mechanical filtration (Halton type KSA) and remaining grease with UV-light technology resulting in clean exhaust ducts. The cleanliness provides improved hygienic conditions, reduces fire risk and reduces need for cleaning of the ductwork. In addition to improved fire safety and hygienic conditions this means direct savings in costs.' **NA**

SAVE FUEL!



We have a passion - we make AC drives, and AC drives only. They serve your needs from 0.25 kW to 5000 kW, all voltage ranges from 220 V to 690 V, from air-cooled to liquid-cooled.

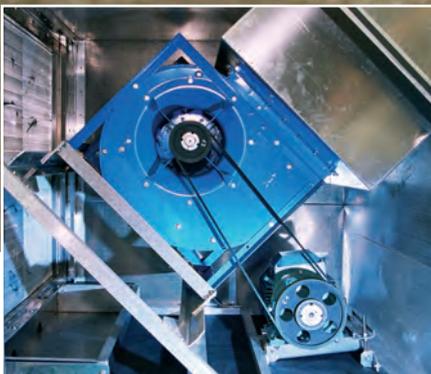
Our Vacon drives optimize your main propulsion to save more fuel, make your winch system more compact and silent, and make your seawater pumps follow the real cooling need. Moreover, not forgetting the comfort in ventilation, which is achieved with our drives.

See www.vacon.com for more information.

WWW.VACON.COM



Cool down. Get the Technology!



- Air Conditioning Technology
- Ventilation Technology
- Refrigeration Technology
- Fire Fighting Technology
- Pipe Installations
- Service

Noske-Kaeser GmbH
Schnackenburgallee 47-51
D-22525 Hamburg
Phone +49-40-85 44-0
Fax +49-40-85 44-26 39
www.noske-kaeser.com



Creative approach to ship design

The CREATE3S Project has involved a fundamental reconsideration of the principles governing ship designs for unitised transport. This article has been extracted from a paper first given at *Design and Operation of Container Ships*, 3-4 July 2008, by Peter N H Wright, Darren R Broderick, Melanie J Landamore, of Newcastle University, and J.J. Hopman, of Delft University of Technology.

The 'CREATE3S Project' (Innovative Concepts REalised by Advanced design and production to improve Total Efficiency of new generation Short Sea Shipping) is funded by the EC 6th Framework. The objective of the project is to develop a ship concept that will allow European short sea shipping to compete with other transport methods, e.g. road.

Logistics solutions established using CREATE3S vessels should be able to outpace current concepts in terms of logistic and economic performance, and possess improved environmental performance.

It is also intended that by the use of novel structural design methods, the competitiveness of European shipbuilding can be increased through the production of such vessels. The expected number of vessels needed to replace older tonnage and to meet the increased demand for transport should exceed 350 ships per year for European short sea shipping alone. However, the current production output for the short sea shipping freight sector is approximately only 70 ships.

The authors would like to recognise the partners who contributed to this work and are part of the CREATE3S project consortium: Samskip Multimodal Container Logistics BV; PD Ports; Damen Shipyards Group; Estaleiros Navais de Viana de Castelo; Imtech Marine & Offshore; TTS Ships Equipment AB; LogIT AS; Center of Maritime Technologies; Norwegian Maritime Technology Research Institute; Maritime Research Institute Netherlands; Delft University of Technology; Bureau Veritas; Centrum Techniki Okretowej SA; Newcastle University.



Geeststroom - the Damen-built '800' benchmark vessel against which CREATE3S concepts were measured.

The application of an intelligent and rationalised production approach would allow for the potential mass production

of such vessels, and hence reduction in first cost. This has been one of the key objectives for the CREATE3S project, in that more than one type of ship may be produced using the approach developed in the design of a fundamental CREATE3S ship platform.

TECHNICAL PARTICULARS	
<i>Geeststroom</i>	
Length between particulars (m).....	130
Breadth (m).....	21.8
Draught (m).....	7.3
Depth (m).....	9.5
Displacement (t).....	14,000
Light ship (t).....	4850
Max./Design speed (knots).....	19/16
Main engine (kW).....	8400
Payload dwt (tonnes).....	7330
TEU capacity @ 14 tonne.....	517
Max TEU capacity.....	812
45ft container capacity @ 22.28 tonne.....	329

Table 2: Evaluation matrix.

Evaluation	Criteria	Concept 1	Concept 2	Concept 3	Concept 4
Economic performance	Unit cost (Euro per tonne km)	0.72	0.76	0.92	1.24
	Unit lead time (hours)	0.97	0.97	1.02	1.02
Logistic considerations	Infrastructure	Equal first	Equal first	Third	Fourth
	Cargo flexibility	Equal first	Equal third	Equal first	Equal third
	Scalability	Equal second	Equal second	First	Fourth
Technical viability	Critical technologies	Equal first	Equal first	Fourth	Equal first
	Production	Equal second	First	Fourth	Equal second
	Research need	Second	Equal third	First	Equal third
Suitability for CREATE3S		Fourth	Equal first	Equal first	Third

THE FULL PICTURE

See us at SMM

23rd - 26th September, Hamburg

Hall B7, Booth 231

LOGBOOK: 0600 HRS: THE NORTH SEA
POS: 65°25.2' NORTH,
001°02.13' EAST

AN HOUR EARLIER THIS RIG
HAD A MIND OF ITS OWN.
NOW IT'S GOING NOWHERE.



> NAVIGATION > POSITIONING > MANOEUVRING > AUTOMATION > DETECTION > COMMUNICATION > HYDROACOUSTICS

We are determined to provide our customers with innovative and dependable solutions that maximize performance.
www.km.kongsberg.com



KONGSBERG

Industry



Wheelmark
and
U.S. Coast Guard
approved



SikaFloor® Marine

Your global supplier of

- Customized high performance acoustic flooring solutions
- Easy to install primary deck coverings
- A comprehensive range of structural sealants and adhesives



www.sika.dk



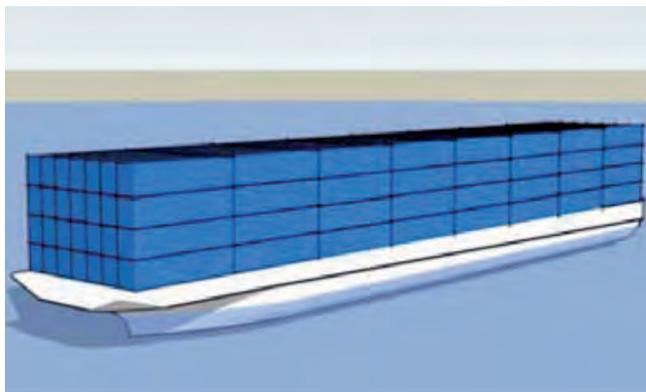


Figure 1: The cargo envelope of Concept 1.

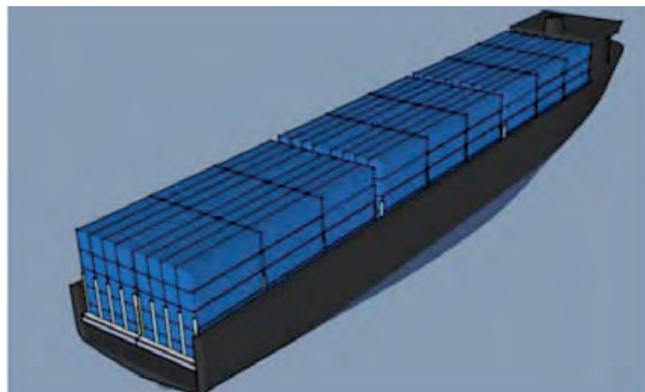


Figure 2: Vessel loaded with the cargo envelope for Concept 2.

The scenario for door-to-door logistics needs to be considered as a complete system. The development of the ship alone, without consideration of the whole logistic chain, may simply lead to a shifting of the current bottleneck from the terminal-vessel interface to the terminal itself. The expected savings made from improved vessel operations and cargo handling must not be nullified by an increase in the complexity of terminal operations.

Concepts developed are intended to address the following sections of the logistic chain:

- Seaport to seaport, including terminal operations;
- Seaport to inland port, including terminal operations.

The basic operating principle of all the proposed concepts within the project is that the loading and unloading time for vessels will be reduced, in turn resulting in less port congestion and shorter waiting times. Additionally, the concept also aims to make considerable reductions in both terminal handling time and cost. The approach proposed by the CREATE3S project to achieve this is, in essence, the simultaneous transfer of multiple cargo units comprising the complete cargo inventory. This, it is hoped, will facilitate the benefits sought and offer significant improvements over current systems, and this could also be relevant to the inland waterways sectors, where such improvements could also provide significant benefits.

Standardised ship

To increase the operational flexibility of the CREATE3S vessel and to allow for a

standardised ship concept across different trades, the handling of cargoes in multiple units can be applied to existing unitised cargoes, such as ISO/ non-ISO containers and can be extended to other cargoes, if they are unitised in an appropriate way.

Innovative approaches to ship structural design are required if reduction in first cost is to be achieved, by facilitating more cost effective production of weight efficient families of ship designs with reduced lead time that also provide through life maintenance benefits. Such production benefits need to be achieved through structural configurations that allow for modularisation and standardisation of structural components (including piece-parts, sub-assemblies and blocks), a reduction in the inherent work content and facilitate ease of sub-system outfitting.

Potential configurations could include advanced framing systems and steel and/ or composite sandwich structures. Weight benefits achieved from such new structural configurations would allow for reduction in fixed weight and therefore more optimal 'payload weight/ cost performance' required for different vessel types as a function of cargo value and the required service speed.

Novel structural concepts could achieve this by the rationalisation of structural configurations and the elimination of complexity associated with such features as notch details and stiffener intersections to allow for greater use of automated fabrication processes. Facilitating smooth interior surfaces also greatly enhances the installation of piping and electrical systems, painting, inspection and repair. This may result in lower cost 'equivalent'

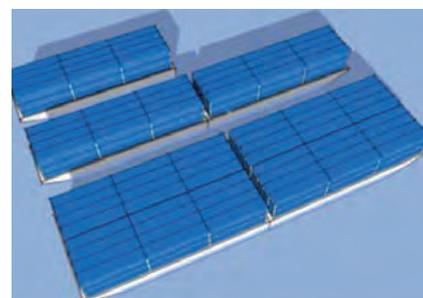


Figure 3: Cargo packages for Concept 2 making up the different envelope sizes across the family of vessels.

structures or allow for weight optimised structures (where advantageous). A rational approach would allow the optimal weight-production cost balance to be achieved for different ship types. Such new configurations would also seek to achieve better crashworthiness due to collision or grounding by allowing deformation over a large area to dissipate load and ensuring effective load transfer.

There are well established cargo handling operations that can be summarised under three main categories: roll-on/roll-off; float-on/float-off (ballast-on/ballast-off); load-on/load-off.

The ro-ro method can provide significant improvements in handling rate for container operation with container units on cassettes, perhaps in combination with Advanced Guided Vehicles (AGVs). Handling rates of up to 300 units per hour become possible, which is an order of magnitude higher than conventional lo-lo operations. This can facilitate a fast turnaround time and is therefore a

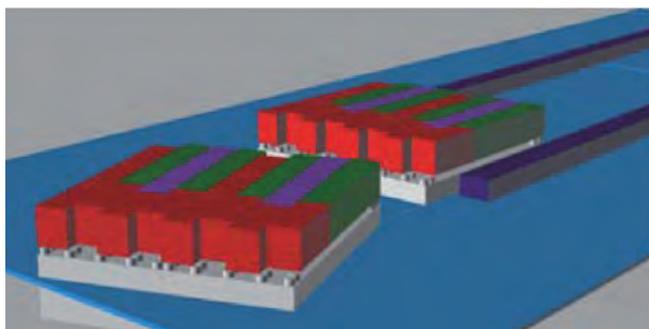


Figure 4: Barges being floated into the dock for Concept 3.

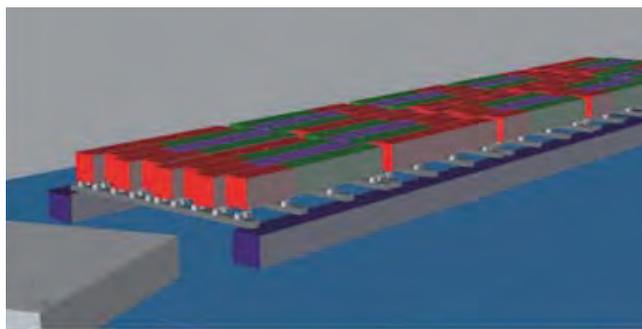


Figure 5: The pallets supporting the packages for Concept 3.

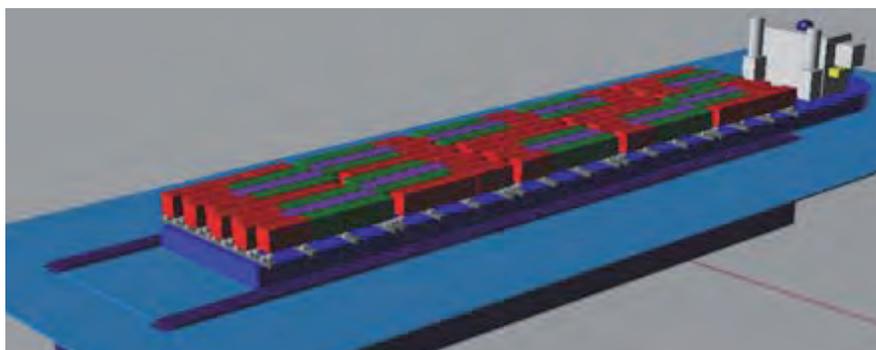


Figure 6: The vessel leaving with the cargo envelope for Concept 3.

concept that could meet the objectives of the CREATE3S project. However, the disadvantage of this system is the large investment in port infrastructure needed to allow efficient loading of the vessel, and the relative cost and cargo carrying efficiency of the vessels.

The float-on /float-off (flo-flo) principle utilises the ability to alter the draft of the vessel using internal ballast tanks, to allow the free-floating cargo or tailored cargo barges to be floated on and off of the vessel. The solution does not need any investment in additional port infrastructure, but it does need sufficient water depth for ballast operation, and sheltered condition for handling of the individual barges or for forming barge trains. Flo-flo systems are most prevalent in the heavylift sector. There is a subset of flo-flo that uses ballast systems to lift a platform supported cargo load, referred to as ballast-on/ballast-off. This is a more relevant approach to meeting the objectives of the CREATE3S project.

The load-on /load-off, or lift-on/lift-off (lo-lo) concept is the industry standard for (un)loading containerised, bulk and breakbulk cargoes. The cargo is lifted in or off the vessel by a quay or ship

mounted crane. Constant development in lo-lo equipment has led to increased unit handling speeds in the container sector where ‘super-post Panamax ship/shore gantry cranes’ provide the reach and capacity necessary for the latest ultra-large container carriers. Handling rates of around 30 units per hour per gantry crane are possible; this represents the current state of the art for container handling but has required significant investment in the cranes themselves, and an increasing amount of quay storage space for the associated stacking and movement of units (by straddle carriers etc.). To improve handling rates further the concept of a ‘mega-container’, combining several units, has been proposed, but exceeds current lo-lo capacity.

Concept Generation

The CREATE3S project undertook an in-depth review of various concepts to develop an understanding of their relative strengths and weaknesses before proposing new concepts to take forward. Four potential solutions were conjectured and initial design studies for each concept were progressed by separate working groups within the project consortium.

These candidate solutions were: the ship ‘truck-trailer’ concept; the ‘modular ship’ concept; the ‘flo-bo’ concept; and the ‘mega-pallet’ concept.

The idea of the truck-trailer concept is a sea-going push barge, in essence the equivalent of a road truck-trailer combination. It consists of two individual parts, the propulsion unit (push or pull) and the cargo carrying platform (barge or ship). The cargo carrying platform, loaded with the required number of cargo units comprising the complete cargo envelope, would be loaded before the arrival of the propulsion unit so that it can proceed directly to sea. The loading of the cargo envelope could be by conventional lo-lo or ro-ro. As the cargo envelope is buoyant, it could also provide extra floating quay storage thereby improving current terminal handling operations, and is compatible with existing cargo handling infrastructure. One of the critical components is ensuring sufficient integrity of the link mechanism between the propulsion unit and the cargo carrying platform to resist the substantial forces and moments that would be experienced during short-sea operations.

The ‘modular ship’ is very similar to the ‘truck-trailer’ concept but it involves multiple cargo packages on dedicated barges, comprising the complete cargo envelope, that are carried onboard the ship and loaded by a bo-bo operation. Minimising ballast draft is a key feature of this solution. The ballast draft is reduced, as the packages are buoyant and also contribute to the ship’s buoyancy when loaded. It was concluded that the ship must also be able to operate in a solely ballast condition to account for cargo flow imbalance between the head haul and the back haul. A potential advantage

- FIRE WATER MODULES
- GENSETS
- PUMPING PACKAGES
- HYDRAULIC POWER PACKS
- COMPRESSOR PACKAGES



WWW.FISCHCON.COM

FISCHCON



**Harland and Wolff
Heavy Industries Ltd**

FORGING THE FUTURE SINCE 1861

**SHIP & OFFSHORE UNIT
REPAIR AND CONVERSION**

Docking Facilities

- 556m x 93m 2 x 840T Gantry
- 2 x 60T
- 2 x 9T
- 335m x 50.29m 2 x 40T
- 1 x 80T

Quayside Facilities

- 400m x 8.6m DRAFT 2 x 40T
- 300m x 8.5m DRAFT 1 x 5T

Licensed TBT Paint Removal System

Licensed Open Grit Blasting

1500m3 Slops Facility

Full Design Engineering Facility

Harland and Wolff Heavy Industries Ltd
Queen's Island, Belfast, BT3 9DU, Nireland, UK

TEL: 00 44 2890 458 456
FAX: 00 44 2890 458 515
Email: billymc@harland-wolff.com

www.Harland-Wolff.com



AIR PRODUCTS



D.I.G.G.

Air Products Dry Inert Gas Generator

- Novel drying, refrigeration and cooling techn. combined with Air Products combustion
- Fully automatic, energy efficient and compact
- 10 systems sold in 18 months

Advantages

- 50% size and weight reduction
- 75% annular power reduction
- Fully automatic mode selection, operation and O2 control

Air Products AS

Tel: +47-38 03 99 00 • Fax: +47-38 01 11 13
norway@airproducts.com • www.airproducts.no
Contact: Otto Johnsen, Business Director
Steinar Andersen, Sales Manager

of this concept is that the floating package could also be used to increase the inland waterway penetration with river compatible package sizes (namely 11.4m or 22.8m) for level one or level two compatibility respectively.

Concept 3 is the float-on/ ballast-off (flo-bo) concept, which seeks to maximise the use of inland waterways and provide additional floating quay storage. Cargo units would be loaded conventionally through a lo-lo operation onto dedicated cargo package barges (level one or level two inland waterway compatible), which are then floated into an intermediary loading dock. The dock is de-ballasted to allow the cargo packages to be transferred from the barges to the dock and then subsequently ballasted back down to transfer the complete cargo envelope to the ship platform. The use of a floating dock means that the ship can be simplified and does not require a large ballast system onboard. However, in addition to the package barges, each port requires the dedicated dock infrastructure as well as sufficient depth of water to allow the transfer to take place. The cost and complexity associated with this facility has to be considered. Another possibility is to use other land-based height altering mechanisms, such as hydraulic elevator platforms, rather than a floating dock.

The rationale behind the fourth 'mega-pallet' concept is to reduce the number of lo-lo operations needed to load a vessel by increasing the number cargo units transferred during one operation, namely handling cargo packages rather than individual units. By introducing a so-called 'mega-pallet', ship loading and unloading time should be reduced proportionally. Such 'mega-pallets' could be made compatible with existing short sea lo-lo feeder designs. Cargo transfer could also be ro-ro based; additionally this concept could be used to transfer cargo packages from the quay to the associated floating platform for the previous three concepts. It again would require large investment in dedicated port facilities.

Evaluation Methodology

Geeststroom (a Damen 800 design) was selected to provide a benchmark to compare the performance of these

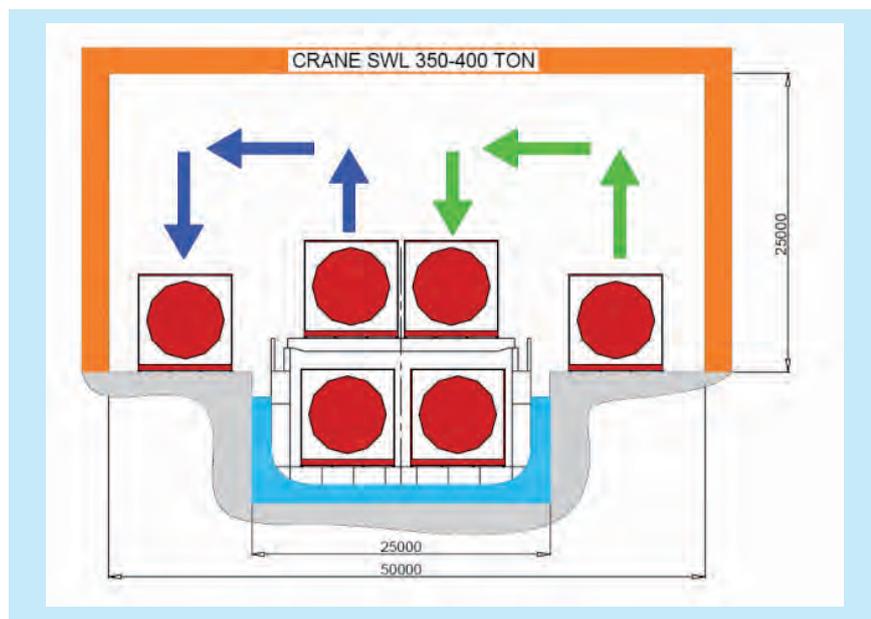


Figure 7: Concept 4 in the loading berth.

candidate designs. This container feeder vessel design of 517TEU (based on 14 tonnes/TEU) operates around European routes.

To obtain comparable results, it was necessary to apply techno-economic and operational evaluation criteria. The cargo size for each concept has been defined as: 515TEU at 14tonnes/TEU, to allow direct comparison with Geeststroom.

Based on this weight per unit and the required capacity, a design deadweight of 7500tonnes results. This was taken as the largest member of the family of vessels proposed by the project for two arbitrary A-B routes, such as Rotterdam-Tilbury and Rotterdam- Bilbao.

Although the initial focus and detailed evaluation has been on the container trade, all concepts were developed to allow for the possibility of carrying bulk or liquid bulk in appropriate units/ packages. The flexibility of each concept to be adapted to these cargoes was considered fundamental to the concept.

There are four main issues to consider when comparing the alternative concepts:

- The economic investment, and impact in terms of estimated operating and maintenance costs;
- The total logistic concept with respect to flexibility and growth potential;
- The technical feasibility of the

concept;

- The environmental impact of the ship concept and any necessary related infrastructure to be developed or implemented.

The first of these means of comparison, namely an economic evaluation, can be done on a quantitative basis if appropriate estimation of associated costs can be made. There are a number of cost elements that can be attributed:

- Cargo unit costs per tonne km;
- Cargo unit lead-time on a door-to-door transit;
- Building costs of hydrodynamicship platform;
- Building costs of Cargo Package(s);
- Building costs of Cargo Envelope;
- Time for loading/discharging units into Cargo Packages;
- Transit and loading/discharging time of the Cargo Package into the Cargo Envelope;
- Loading/discharging time of the Cargo Envelope and extra cargo to the hydrodynamic platform;
- Additional investment in infrastructure needed to load/discharge;
- Operational cost of equipment needed to handle cargo in terminals;
- Operational cost, including maintenance and port fees etc., of the hydrodynamic platform, holding



**The Best "à la carte" Marine Services from Newbuilding
to Vessels in Operation by World Leader
in Classification, Conformity Assessment and Certification**

● www.bureauveritas.com ● www.veristar.com



**BUREAU
VERITAS**

Move forward with confidence

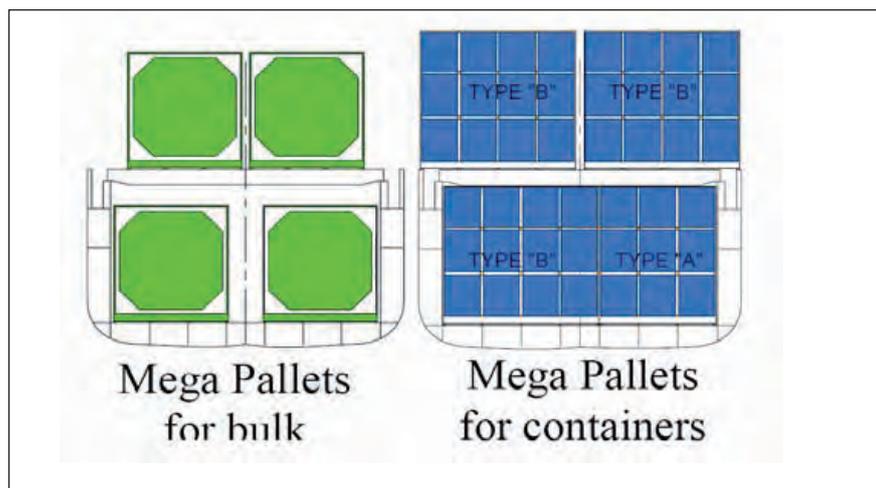


Figure 8: The cargo packages of Concept 4.

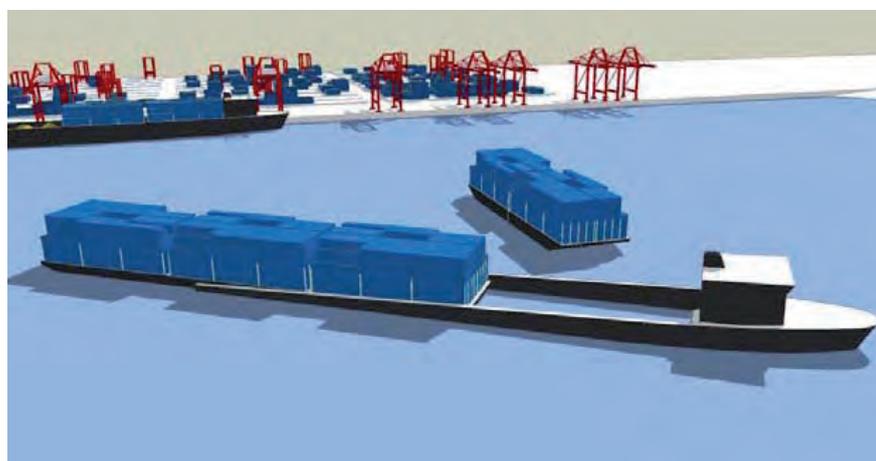


Figure 9: The selected dock ship concept.

envelope, cargo packages and cargo units.

The remaining logistic and technical issues selected for comparing the different concepts are more qualitative in nature, namely assessment of their relative:

- Flexibility in terms of suitability for liquid and dry bulk;
- Growth potential including geographic scope and increasing throughput;
- Scalability across the family of proposed designs (2500 and 5000 tonnes deadweight variants);
- Availability for service;
- Technical viability;
- Research implications to develop enabling technologies;
- Environmental sustainability.

Concept 1 - a variation of the push barge system, which is a relatively mature technology - will provide a very

fast turnaround time for the propulsion section of the vessel. However, as the cargo envelope is similar in length to Geeststroom, it will not allow for greater utilisation of port facilities as the envelope is loaded using the conventional lo-lo method. Due to the size of the complete cargo envelope, this solution will not facilitate inland waterway penetration. Also, to allow for the greatest usage of the propulsion unit at least three cargo envelopes would be needed for each route, one for each port and one in transit. As the envelope will be a significant proportion of the overall build cost this has obvious cost implications.

Concept 2 could provide a significant reduction in turnaround, providing the ballasting operations needed for the (un)loading of the vessel are fast enough. However, this concept raises issues of concurrent rather than sequential ballast

exchange and so ensuring adequate trim and stability is an important operational consideration. As the vessel may need to be able to sail in the empty ballast condition, and relies on the cargo package barges for their buoyancy, there are concerns about technical viability. Two additional major concerns with this concept are compromise of the deadweight displacement ratio due to the weight of the package barges, and that the overall dimensions of the vessel will be greater than the basis vessel in order to accommodate the cargo envelope; this will have significant first cost implications. However, the inland penetration will be far greater as the envelope is broken down into (up to) six packages compatible with both level 1 and level 2 inland waterways.

In Concept 3, the ability to offload the cargo packages from the barges to avoid carrying them with the cargo envelope requires a 'pallet' like structure to support the packages as the barges are floated out from the dock and to allow the transfer of the cargo envelope from the barges to the vessel via the dock. As a result of this the complexity of the system will be greater than that of Concept 2; it will, however, have a better deadweight/displacement ratio and will allow a reduction in the overall dimensions of the vessel as the envelope is carried on a flat weather deck. As the cargo envelope does not have implications for internal hull volume or linear dimension requirements, the hull form can be optimised with respect to hydrodynamic performance. However, the concept will require additional investment in the sizeable floating dock, at least one floating dock per port or two if parallel loading and unloading operations are required to minimise the turnaround time.

Concept 4 will require large investment in port infrastructure to optimise the (un)loading procedure as quay space is required on both sides of the vessel. This would result in the need for new berths orthogonal to existing quay length. Additionally, the quay and capacity of the lifting gear (gantry crane, straddle carriers etc.) will need to be increased to handle the increased weight of the cargo packages being moved. The vessel itself could

Making Waves



Photograph courtesy of Heesen Yachts, Netherlands, 2008



Photograph courtesy of Austal, Australia, 2008



Image Supplied by Austal Ships, Australia, 2008

Performance is as important in the yard as it is on the water. You want high performance, user-friendly materials that give you the freedom to express your design vision. That's why so many of today's best performing vessels, large and small, are constructed from Nautic-Al brand aluminium.

With a specific weight about one third that of steel, an aluminium hull and superstructure typically weighs less than half as much as a steel one of equivalent strength. This lightness translates into greater capacity, speed or fuel economy and range, as well as conferring inherently superior manoeuvrability.

Ever since we developed strain-hardened alloys to provide the exceptional strength, workability and corrosion resistance that marine applications require, aluminium has been the material of choice for forward-looking designers wherever durability, economy of operation and construction, responsiveness or sheer speed are priorities.

For unrivalled structural efficiency, unimpeachable quality and genuine versatility, specify Nautic-Al from Alcoa.



Photograph courtesy of Mondo Marine, Italy, 2008

NAUTIC-AL

Designed for maritime use



T: +44 22 919 60 00
W: www.alcoa.com/emp/nautical

Lloyd's List events presents

The 6th Annual BOXSHIP2008

New to 2008
2 practical 1/2 day
pre-conference workshops

ADDRESSING THE FUTURE DIRECTION OF CONTAINERSHIP BUILDING, DESIGN AND OPERATION

Tuesday 7th & Wednesday 8th October 2008

Steigenberger Hotel, Hamburg, Germany

Featuring an outstanding speaker line-up including:

Gunther Bonz, *State Secretary of the Ministry for Economic and Labor Affairs, Hamburg*
Rodolfo Sabonge, *Vice President, Market Research & Analysis of the Panama Canal*
Michael vom Baur, *Senior Vice President, Aker Yards ASA, Oslo*
Wolfgang Hurtienne, *Head of Port Planning Division, Port of Hamburg Authority*
Martijn Van de Linde, *Vice President, APM Terminals*
Juergen Friesch, *Managing Director, Hamburg Ship Model Basin (HSVA)*
Geir Dugstad, *Head of Department for Class Services & Newbuilding, DNV Maritime*



PLUS

Separately bookable 1/2 day workshops:
Monday 6th October, 2008

Workshop A:

Optimisation for off-design conditions

Workshop B:

GL FuelSaver: A holistic service to reduce fuel consumption

KEY ACTIVITY

Port of Hamburg Tour – 7th October, 2008

Network with your colleagues during this evening river tour hosted by Port of Hamburg Marketing Association

Lead Sponsor:  

Additional Sponsors:



Supporting Association:

Official

Publications:

Lloyd's List



Registration Hotline: +44 (0)20 7017 5511

Email: niamh.smith@informa.com

Book online at: www.lloydslistevents.com/boxship

Sponsorship enquiries call: +44 (0)20 7017 4402

Quote: VIP Boxship NAV

Official Charity:



Lloyd's and the Lloyd's Crest are the registered trademarks of the Society incorporated by the Lloyd's Act 1871 by the name of "Lloyd's"

Kahlenberg
SINCE 1895

Because stopping quickly is not always an option.

Since 1895, Kahlenberg Horns have been known for extreme reliability, durability of construction and a distinctive sound.

Now with the addition of Airchime Marine to our production, we are pleased to offer the most extensive selection of sound signaling systems for vessels of any size or purpose.



KPH-130
Piston Horn



KB-30 Electronic
Horn/Hailer

Kahlenberg Brothers Company
1700 12th St. Two Rivers, WI U.S.A.
www.kahlenberg.com

Visit us at SMM Hamburg Sept. 23-26

remain largely the same with only minor alterations to the holds and container bays, as well as local structure, to support the 'mega pallet' cargo packages. The trim and stability during the (un)loading process also needs to be considered carefully due to the transfer of heavy cargo packages. To facilitate inland waterway penetration, the mega pallets will have to be loaded onto barges, thus increasing the number of handling operations.

Concept Selection

As there are uncertainties in the estimation of first and operational cost, and the resultant ranking, it was judged prudent to combine these findings with the need to meet the following fundamental requirements:

- Minimal investment or changes to terminal/shore infrastructure;
- Inland waterway penetration capability;
- One type of (simple) cargo handling operation with maximum time saving.

From this a final summary of the relative merits of these concepts was considered:

Concept 1 requires no additional terminal infrastructure, as it relies on conventional Lo-Lo cargo handling but is not inland waterway compatible. Once the propulsion unit has been disconnected from the cargo envelope it offers no logistic advantage over the conventional ship;

Concept 2 provides good inland waterway penetration and handling rates but requires investment in cargo package barges.

Concept 3 also requires significant investment in terminal infrastructure, especially the floating dock and the associated cargo pallets and barges. This concept, however, has the advantages of not having to carry the barges on the sea leg and providing both inland waterway potential and the opportunity to improve terminal utilisation.

Concept 4 requires considerable investments in terminal infrastructure, dedicated berths and handling gear, and is not directly inland waterway compatible.

The final conclusion from this stage of the study was that rather than there being one clear 'best solution' there was the opportunity to combine elements of Concept 3, 'flo-bo', with the dock ship capability of Concept 2, 'modular ship'. Thus the need for the dedicated dock infrastructure required for Concept 3 can be removed, if the extra complexity of an onboard ballasting system is accepted. As a result of this Concept 2, in the form of a dock ship loaded with cargo package barges, was chosen as the candidate solution for further development. However two variations of this concept were also considered further before making the final selection:

- Variant A: A dock ship carrying the conventional cargo package barges onboard the vessel.
- Variant B: A dock ship using cargo package bases (pallets) to allow the pontoon cargo barges to be left in port.

The conventional cargo package barges of Variant A have a higher capacity compared to the simple flat top pontoon type barges used by Variant B, as they allow use of internal volume and provide better stack height before stability is compromised.

A conventional barge with a beam constrained to 11.4m for Level 1 waterway penetration is limited by stability considerations to a stack height of four, whereas a pontoon barge with the same beam is limited to a stack height of only two. Therefore a Variant B design will not allow the design requirement for the number of cargo units in the cargo envelope to be met.

Additionally, the combined pontoon barge and package base approach of Variant B has penalties associated with cost and complexity that are only justified if the weight saving benefits the payload displacement ratio when the maximum filling rate is reached. As this is a capacity limited design problem, this does not provide any advantage except that the weight saving could still facilitate a lower displacement and therefore reduced fuel consumption on the sea leg.

However this is, on balance, offset by the flexibility offered by carrying the barges associated with cargo packages onboard the dock ship. This maximises transfer rate and facilitates a reduced turnaround time, providing that the ballasting operation can be carried out quickly and efficiently while maintaining adequate trim and stability.

Therefore the final outcome of this study was to take forward Variant A; a dock ship concept carrying barged cargo packages compatible with both level 1 and 2 inland waterway penetration – the selected 'dock ship' concept..

It is interesting that from a very broad consideration of cargo handling techniques, and an innovative approach to candidate design solution generation and selection for the CREATE3S project, that the final outcome, based on a methodical selection process, was a dock ship concept.

Further development of the design in the next phase of the project will hopefully confirm the concept's viability, and realisation of its objectives. It is of note that the recent 'Combi Dock' heavy lift ship, Combi Dock I, [4], although of larger deadweight is also intended to be flexible in operation, handling bulk, ro-ro and container cargoes. The augmentation of such a dock ship concept with cargo package barges should provide the further logistic benefits sought. **NA**

References

1. Hopman, J., J., 'Generation and Basic Definition of Most Promising New Generation 3S Concept Based on Separation of Ship Hull and Cargo Containing Modules', Report D2.1/2.2, CREATE3S, Project Number 031488, February 2008, 35pp.
2. Wright, P. N. H., 'Clarification of Requirements and Definitions', Internal Communication, CREATE3S, Project Number 031488, 3pp.
3. Wright, P. N. H., and Broderick, D., R., 'The Flo-Bo Design Concept', Presentation to CREATE3S consortium, General Technical Meeting, Vianna, Portugal, 8th November 2007, 35pp.
4. The Naval Architect, 'Vuyk gets heavy', May 2008, p18-19.

Hydro-elastic thinking as vessels stretch

What are the structural consequences of ever larger containerships? This article has been extracted from a paper first given at Design and Operation of Container Ships, 3-4 July, 2008, by Gijsbert de Jong and Michel Huther, of Bureau Veritas.

Over the past five years the maximum size of post-Panamax containerships has increased dramatically to achieve economy of scale effects. Together with the rapid growth in trade volume and mileage between the emerging production economies in Asia and the established economies (mainly Europe), as well as a firm belief that market share is the key for future success, an unprecedented surge in new orders for ultra large container ships (ULCS, 10,000+ TEU) has been created. According to data published by Clarkson, the world orderbook for this segment stood at 187 vessels at the end of the first quarter of 2008. The majority of these giant boxships are expected to be delivered in 2009 (17%), 2010 (29%) and 2011 (43%).

Although the turmoil in the financial markets and uncertainty regarding economic growth (possible slowdown in China, fear for recession in the US, high oil price) have drastically reduced the amount of new orders in the first quarter of 2008, there is no reason to believe that the drive for increasing the vessel size will come to a halt at the present maximum of 13,300TEU for a ship overall length of about 370m. It is now expected that future demand will call for designs of well over 400m in length, and it is of key importance to reflect on the technical challenges associated with scale enlargement of ultra large boxships.

In fact, if the increase in size is achieved through extrapolation of existing ship dimensions and application of environmental loads estimated from dimensional analysis, it may be expected that phenomena which are of second order for average size vessels will become of primary importance in the case of larger vessels. This is particularly the case for vibratory structural response and associated fatigue.



Figure 1: Container ship experiencing slamming.

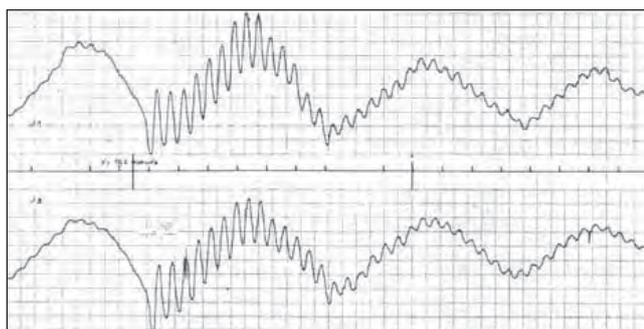


Figure 2: Full scale measurements of stresses in the deck of the vessel *Marcel Bayard*.

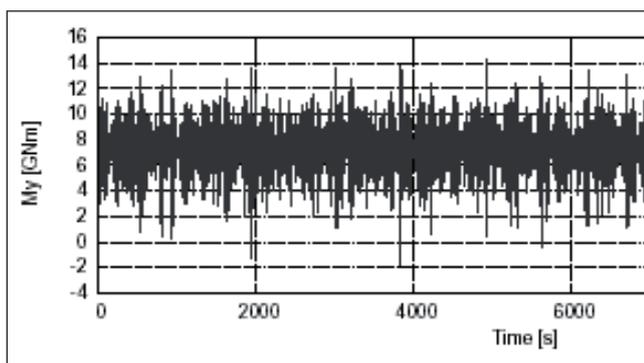


Figure 3: Example of time history of non linear bending moment time including whipping.

Empirical feedback shows that two dynamic phenomena affecting the hull girder require specific attention when considering large container ships: whipping (transitory hull girder vibrations caused by hydrodynamic impact at the bow); and springing (excitation of the first natural modes of vibration of the hull girder). Indeed, increasing the

size of ships with large deck openings will decrease the natural frequencies of hull girder vibrations, while an increase in service speed will result in a higher wave encounter frequency. Consequently the wave encounter frequency may be in the same range as the lowest hull girder natural frequencies, causing important dynamic amplification effects.

Don't let the enemy in!

Please
visit us at
SMM2008,
stand no. 164
in Hall B5



These aren't the ordinary pirates, they are far more deadly.

Seawater, rain, snow, ice, salt and even sand are boarding your ship via the air intakes and are at risk of spreading through the whole ship via the ventilation ducts. The engine rooms, the crew spaces, the passenger spaces and staterooms are no longer pristine but potential breeding grounds for moulds and bacteria.

Not only the soft furnishings are at risk; slowly but surely, every piece of sensitive equipment is degraded by this invasion. It even affects the crew and passenger health.

Munters have the answer; top class air intake systems developed over years of research and development, now available for the harshest marine environment.

Munters' droplet separators and mist elimination systems are tailor-made and ready to install, where and when you want them.

Get the antidote to this form of seasickness from our website: www.munters.com. Don't wait for the pirates to turn your ship into a wreck; get the antidote today.

Beware of the invisible piracy!

DFH snow and droplet separator for air intakes.



Munters offer the full spectrum of mist eliminators and droplet separators – from moderate, to high and very high protection levels – via single-stage, two-stage, or three-stage systems.



Munters Euroform GmbH, Aachen, Germany,
Phone +49 241 89 00 0, Fax +49 241 89 00 5199, mist-elimination@munters.com
Munters Corporation, Fort Myers, USA,
Phone +1 239 936 1555, Fax +1 239 936 8858, usfmycs_me@americas.munters.com

SCANA

Efficient economic propulsion

: your success is our success



: reliable products



: whenever you need us



SCANA VOLDA
– your partner for propulsion systems and after sales support.

 **Scana**
Scana Volda as

SCANA VOLDA AS
P.O.Box 205 N-6101 Volda
Tel: (+47) 70 05 90 00 Fax: (+47) 70 05 90 01
E-mail: volda@scana.no

www.scana.no

As it is not fully clear to what extent these phenomena are covered by the implicit and explicit safety margins of classical rules and regulations, the effect of the dynamic behaviour of large container ships in a seaway is to be studied by direct calculations.

Whipping can be characterised as transitory response of the hull girder in the first natural mode caused by hydrodynamic impact at the bow due to re-entry of the foreship into the water (slamming) or violent wave impact at the stem (slapping), see Figure 1.

The first natural mode of the hull girder could be simulated by a system with one degree of freedom damped at the corresponding frequency. The associated forces are extremely high but of short time duration, similar to an impulse [1] and consequently imply transitory damped vibration.

Slamming and slapping are known to occur in head seas when the vertical (relative) motions are highest. The deformations associated with the hull girder vibration caused by hydrodynamic impact are superimposed on the wave induced hull girder deformations, see Figure 2.

It has been known for several years that ships with large deck openings are prone to sustaining damages as a result of whipping. First of all, the design value of the vertical bending moment can be exceeded, causing permanent deformation of the hull girder. Secondly, high frequent stress cycles can be generated, causing premature fatigue cracks in structural details [2, 3].

The understanding and analysis of the phenomenon of exceeding the acceptable bending moment is relatively straightforward, while the prediction of the occurrence of fatigue cracks is much more difficult. However, the risk for fatigue damages has been clearly demonstrated on the vessel *Marcel Bayard*. In fact, the full scale measurement campaign [2] was initiated after the appearance of fatigue cracks when the vessel was only three years in service. The study showed that, although the vessel length is only 110m, the cracks could be explained by frequent occurrence of whipping as a result of particular operating conditions for this

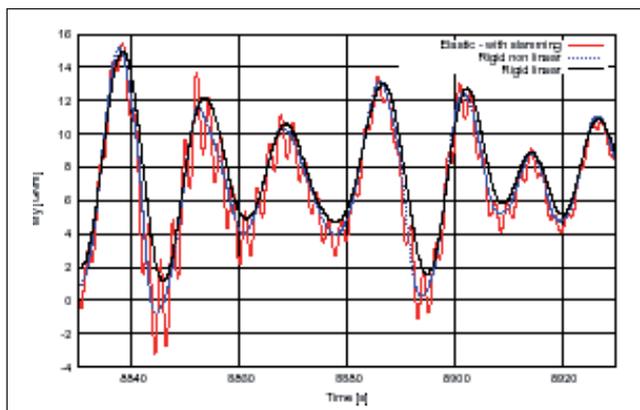


Figure 4: Zoom of figure 3 at the instant of hydrodynamic impact (response types: elastic non-linear, rigid non-linear and rigid linear).

1	Selection of the sea states and their probability of occurrence for the relevant operational profile of the vessel (standard: North Atlantic)
2	Calculation of the linear response and determination of the possible extreme navigation conditions for the incident waves (ship speed, wave height)
3	Determination of navigation conditions for which slamming could occur (wave incidence, ship speed, wave height)
4	Calculation of the non linear behaviour for navigation conditions with high risk of slamming

Table 1: Step-by-step procedure for estimating the extreme hull girder loads.

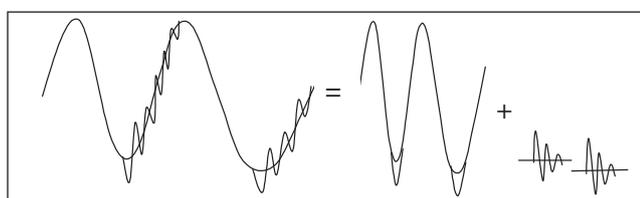


Figure 5: Separation of whipping effects for fatigue calculation.

type of vessel and large deck openings causing high stress concentrations in the deck.

Therefore, it is important to be able to estimate effects of whipping on the stresses in the deck during the design stage. This requires the combined simulation of the behaviour of the vessel under wave loading and hydrodynamic impact caused by slamming and slapping.

Direct calculations on a ship in a seaway in order to determine the extreme hull girder loads and the fatigue life of structural details have been common practice for some decades. The methods used are based on the fast spectral approach and are, after calibration, sufficiently accurate for the classical checks. As whipping is a non linear

impulsive phenomenon, the (linear) spectral approach does not longer hold. Instead, time domain methods have been developed which can solve the coupling problem between the 3D hydrodynamic diffraction-radiation calculations and the dynamic deformation of the hull girder modelled as a Timoshenko beam or a 3D finite element model. For this modal approach the motions and deformations of the vessel are represented by a series of six rigid modes and five to ten dry structural modes [4]. It is to be noted that the linear hydrodynamic coefficients in the time step equations are obtained from the classical frequency domain calculations [5, 6].

There are two methods available for the determination of the slamming and slapping loads (dynamically exciting the

NIGATA POWER SYSTEMS CO. LTD. was founded on the basis of NIGATA's own technology that developed the first Japanese industrial diesel engine and has become stronger under the extensive basic technology of Ishikawajima-Harima Heavy Industries Co. Ltd. (IHI)



NIGATA



Niigata Power Systems Co.,Ltd.

Marketing & Sales Center
International Operations / Marine

9-7, Yaesu 2-Chome,
Chuo-ku, Tokyo, 104-0028, JAPAN
TEL: +81-3-6214-2826
FAX: +81-3-6214-2839
E-mail: info1@niigata-power.com

Local Office & Subsidiary

-Shanghai Office

TEL: +86-21-6278-7680 FAX: +86-21-6278-7682

-Niigata Power Systems (Singapore) Pte.Ltd.

TEL: +65-6899-1500 FAX: +65-6899-1600

-Niigata Power Systems (Europe) B.V.

TEL: +31-10-405-3085 FAX: +31-10-405-5067



The high art of dynamic positioning

Dynamic Positioning Systems • Joystick pilots • Autopilots • Steering gear control systems

Navis Engineering Oy
Tuupakantie 3 A
FI-01740 Vantaa
Finland
tel.: +358 9 250 9011
fax: +358 9 250 9012
e-mail: headoffice@navisincontrol.com
<http://www.navisincontrol.com>

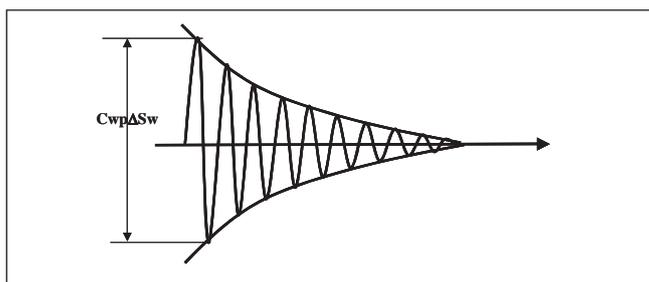


Figure 6: Distribution of high frequent, whipping induced, stress cycles.

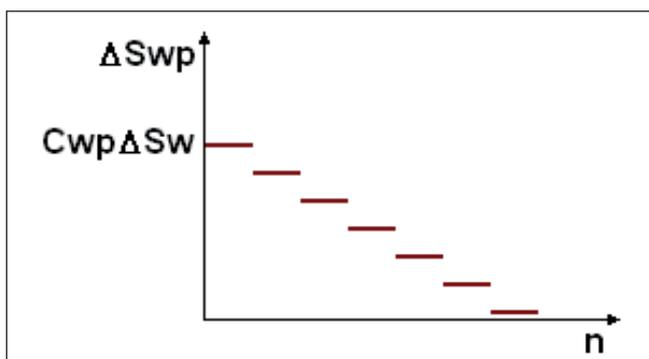


Figure 7: Short term distribution of whipping stresses for a given wave amplitude.

1	Determination of the maximum speed of the vessel as function of the wave height for the considered wave frequencies and incidence angles (maximum bearable navigation condition on the bridge)
2	Calculation of the transfer functions and associated short term response spectra without whipping
3	Determination of the whipping response in head seas as function of the significant wave height according to the wave frequencies of the considered sea states and taking into account the whipping threshold
4	Approximation of a linear rule giving the amplitude of the first whipping cycle as a function of the amplitude of the rigid body response
5	Approximation of the variation on the linear rule as a function of the wave incidence angle
6	Identification of the short term sea states for which whipping is likely to occur
7	Correction of the low frequent (wave) stress range distributions for the whipping effect
8	Calculation of the Miner sum for all short term low frequent distributions
9	Determination of the high frequent whipping responses and associated Miner sums for every short term distribution for which whipping occurs
10	Calculation of total Miner sum taking into account low frequency contributions corrected for whipping and high frequency contributions

hull girder), which are essentially 2-dimensional: the ‘Generalized Wagner Model’ and ‘Modified Logvinovich Model’.

The determination of the structural response to whipping is possible by combined application of calculation tools for the rigid ship in the frequency domain and for the elastic ship in the time domain (non linear). This set of tools was successfully verified on vessels of 260 m and 360 m of length [7], see Figures 3 and 4.

Observation of the elastic response shows that whipping increases the extreme values of the vertical bending moment. Therefore, it is necessary to take this effect into account for checking the ultimate strength of the hull girder. The performed calculations [7] and full scale measurements [2] show that whipping occurs when the ship is in sagging condition. Therefore, for the most severe navigation conditions the extreme slamming loads and consequently the increase of the sagging wave bending moment are calculated. Full scale measurements show that that the damping of the vibratory response is small, which means that whipping is still important half a wave period later when the vessel is in hogging condition and that the ultimate strength check is also to be carried out for this condition. This check can be done in analogy with the class rules for the bending moment corrected for the whipping effect as described [8].

Application on a 250m containership shows that the increase of the total bending moment can reach 20 to 30% for severe navigation conditions, which is in agreement with full scale measurements [2]. The calculations performed for ultra large container ships show that a similar percentage of increase may be expected for these ships.

Observation of the whipping response (Figures 3 and 4) reveals two effects regarding fatigue:

- Increase of amplitude of the wave frequent hull girder stresses

Table 2: Step-by-step procedure for estimating the whipping induced fatigue damage.



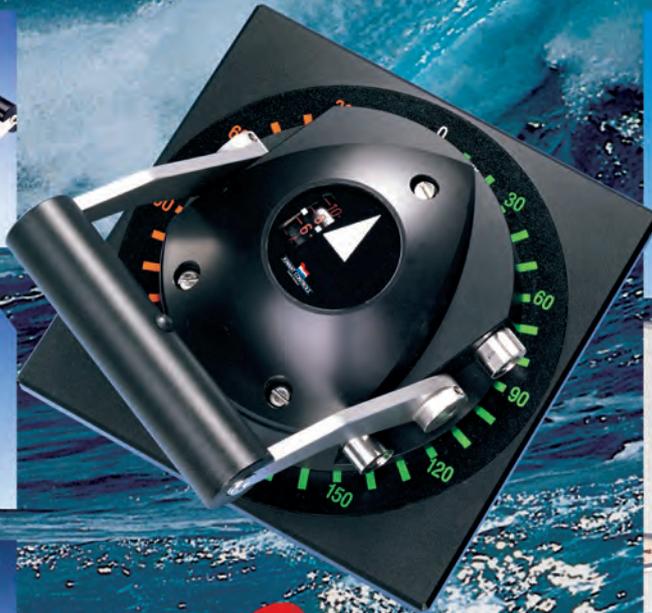
WE'LL TAKE YOU TO PARADISE, AND HELP YOU KEEP IT THAT WAY.

Someone wanted their fleet of cruise ships to be environmentally sound. And they didn't want a lot of talk. With 174 years of real-world experience and over 17,000 people across the globe dedicated to the entire lifecycle of your business, we are the engine of industry. See what we can do for you at wartsila.com

WARTSILA.COM



TOUCHING TECHNOLOGY



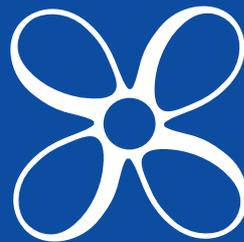
KWANT CONTROLS

Sneek-Holland

T +31 (0)515 413745
F +31 (0)515 422478
www.kwantcontrols.com
kwant@kwantcontrols.nl

**QUALITY IN
COMMAND**

STONE MARINE



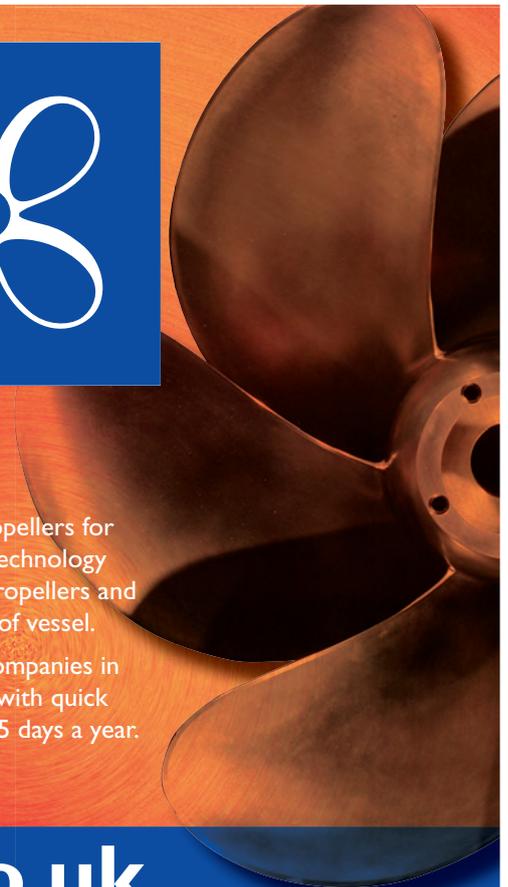
Total Propulsion Solutions

Stone Marine Group companies have been designing and manufacturing propellers for over 170 years. Today, our wealth of experience, allied to the latest design technology and manufacturing processes, ensures our customers receive high quality propellers and stern gear that deliver outstanding performance whatever the type or size of vessel.

Manufacturing is only part of the Stone Marine story however, and other companies in the group service and repair propulsion equipment of all types worldwide, with quick response teams available for that unforeseen emergency, 24 hours a day, 365 days a year.

To find out more about our companies and their contact details go to:

www.stonemarine.co.uk



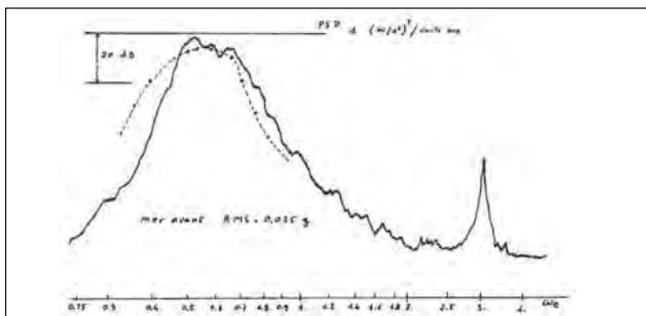


Figure 8: Response spectrum deck longitudinal stresses on a tanker in head seas for rigid mode and including springing (9).

Tz (s)	3.5	4.5	5.5	6.5	7.5	8.5
Hs (m)	1.5	4.5	9.5	13.5	14.5	14.5

Table 3: Maximum significant wave heights for North Atlantic wave environment according to IACS.

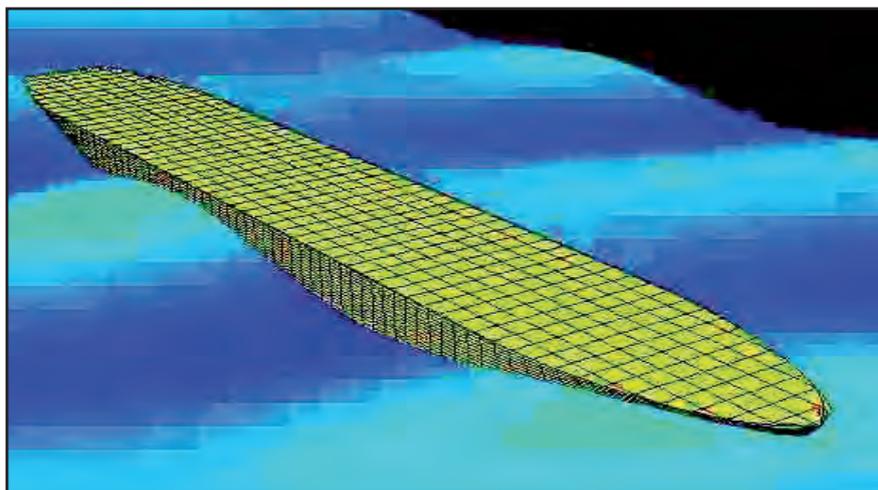


Figure 9: Calculation of rigid body transfer functions.

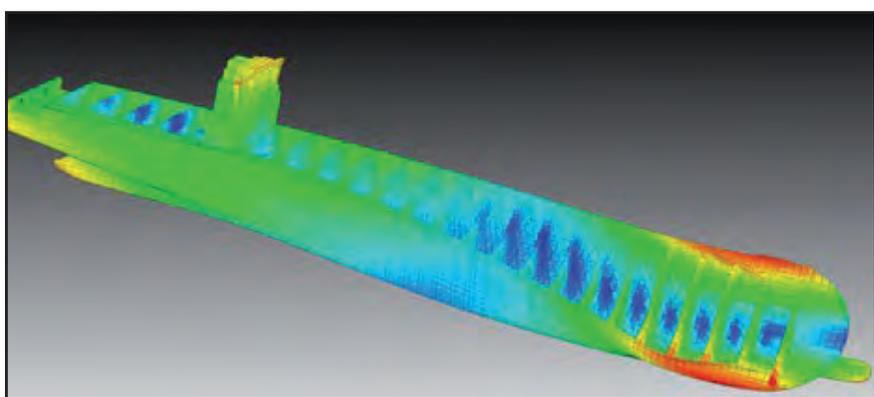


Figure 10: Calculation of transfer function for springing in torsional mode (elastic hull).

- Creation of high frequent damped stress cycles at the first natural frequency of hull girder bending

For welded details it is considered that the residual stresses due to the heat input create a high level of tension in

zones where cracks may be expected. For details without welding there are no residual stresses and analysis becomes somewhat more delicate. In order to simplify matters, in first instance the same approach as for welded structures is applied. As this means that a high level

of residual stress is presupposed, this is a conservative simplification.

Application of Miner's law, which is linear by nature, allows for separating the low frequency (wave) and high frequency (whipping) contributions and add both individual effects to obtain the total result, see Figure 5.

Knowing the stress range of the first whipping cycle and the damping it is possible to determine the distribution of cycles and their associated stress ranges as depicted in Figure 6.

The short term distribution is obtained by noticing that for every single whipping response there is only one cycle at every level and that there will be a whipping response associated to every wave cycle, i.e., at each level the number of cycles is equal to the total number of waves, see Figure 7.

A study performed for an ultra large container ship shows that whipping effectively causes amplification of the hull girder bending stresses, as well as a measurable contribution to the accumulation of fatigue damage. In short term head sea condition the correction of the low frequency stress range can yield a very significant increase of up to 100% for some navigation conditions. Considering that whipping disappears for non-severe sea states, which are far more numerous than severe sea states, and that there is no whipping for transverse and following seas, the total long term increase of the Miner sum due to whipping is estimated to be of the order of 3% to 5%.

Springing step

Springing can be described as enforced wave induced hull girder vibrations. The calculation of the natural frequency of the two node hull girder bending mode for vessels with a length up to 350m shows values above the frequency of the shortest observed waves. Springing was identified in 1972 during a full scale study on board a 340m tanker [9], see Figure 8. The response of the first natural mode of hull girder vibration, in spite of the high frequency, can be explained by the fact that for a given wave period the energy is distributed over a broad bandwidth.

On vessels ranging from 300 to 350 m in length, if springing is at all visible from

the spectral analysis, the level will be very weak and without effect on the structural resistance. When the length of the vessel increases or when the deck contains large openings the structural rigidity and therefore the first natural frequency mode decrease. When the ship speed increases, the encounter frequency increases as well. In both cases the frequency band associated with springing moves towards the region where the spectral density of wave energy is higher, thus amplifying the springing response (the springing associated peak in Figure 8 moves to the left). This effect was noticed when performing design analysis for tankers of 550,000dwt (414m in length) and later confirmed during a four year full scale measurement campaign [10, 11].

When considering the characteristics of a typical ultra large container ship, with a length of over 360m, speed of about 25knots and large open deck structure, it becomes clear that springing is a phenomenon to be considered during the design of the ship structure.

Studies and measurements performed on 550,000 dwt tankers show that springing is sensitive for sea states with short wave periods. For these periods the maximum wave height is generally low, see table 3.

Due to the weak damping, the available energy for the whipping response is limited and the amplitude remains small compared to the wave frequent response. Therefore, the influence of springing on the extreme hull girder loads, corresponding to severe sea states (higher natural period and very high significant wave height), is not significant.

On the other hand, the high frequency and character of the enforced vibration (a quasi permanent phenomenon in sea states with relatively small waves, which are the most frequent during the life of the vessel) yield a non negligible springing induced contribution to the accumulated fatigue damage. This is confirmed by experience feedback of the 550,000dwt tankers [11].

Taking into consideration that the springing induced deformations are much smaller than the rigid body motions of the hull girder, it can be assumed that the problem can be treated in a linear sense and that the total response can be

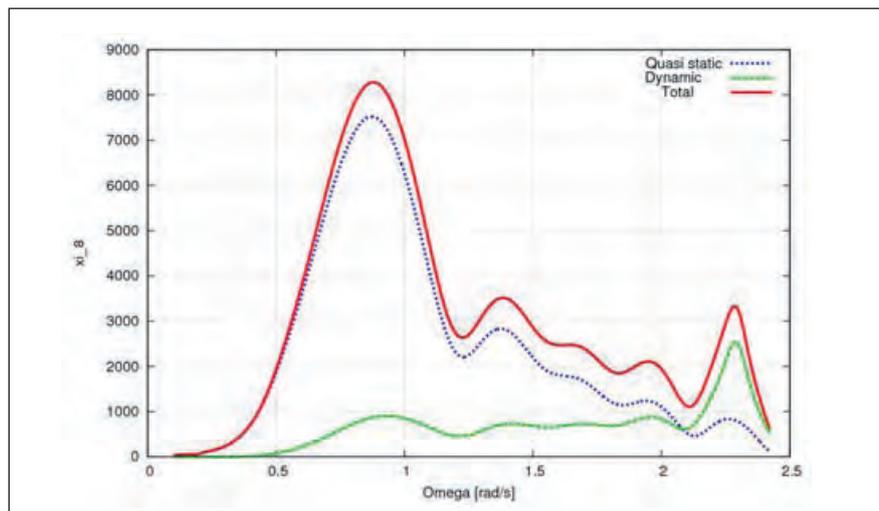


Figure 11: Transfer function of peak stress in hot spot (welded detail) in a container ship (springing, wave and total).

1	Selection of the sea states and their probability of occurrence for the relevant operational profile of the vessel (standard: North Atlantic)
2	Calculation of the linear response and determination of the possible extreme navigation conditions for the incident waves (ship speed, wave height)
3	Determination of navigation conditions for which springing could occur (wave incidence, ship speed, wave height)
4	Calculation of the linear elastic behaviour for wave incidences where springing occurs

Table 4: Step-by-step procedure for springing analysis.

obtained by summation of the separately calculated rigid and elastic contributions [10]. Therefore it is possible to apply the linear tools developed for hydrodynamic and structural response calculations [13].

First of all, a classical calculation can be performed to determine the linear hydrodynamic coefficients, in particular the added mass and the transfer functions of the rigid body responses. Secondly, the natural frequencies for the elastic hull and the associated transfer functions for springing are calculated.

The calculations are performed according to the scheme shown in table 4.

Observation of the springing response for a given sea state shows that, on top of the wave frequent response, a time series of stress cycles with nearly constant amplitude at the first natural frequency of the hull girder is generated.

The calculation of the short term fatigue damage accumulation requires the determination of the distribution of

1	Determination of the maximum speed of the vessel as function of the wave height for the considered wave frequencies and incidence angles (maximum bearable navigation condition on the bridge)
2	Calculation of the transfer functions and associated short term response spectra without springing
3	Determination of the frequency bands with high energy density within the wave spectra for the considered navigation conditions
4	Calculation of the natural frequencies of the hull girder, taking into account the added mass
5	Identification of the short term sea states for which springing is likely to occur
6	Calculation of the transfer functions for springing and associated short term response spectra for the considered sea states
7	Calculation of total Miner sum taking into account low frequency contributions corrected for springing and high frequency contributions

Table 5: Step-by-step procedure for estimating the springing induced fatigue damage.

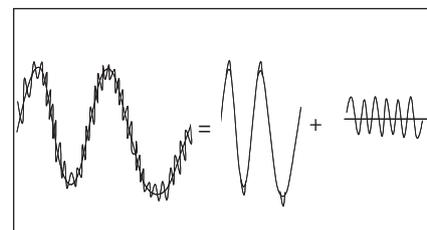
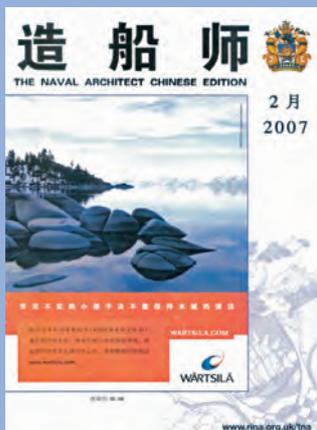


Figure 12: Separation of springing effects for fatigue calculation.

the high frequent stress cycles. The exact method for achieving this would be Rainflow counting. In order to do that a time history needs to be available, which is impractical for the spectral approach. By considering the same hypothesis as for the whipping and the using the linearity of Miner's rule, it is possible to separate both the high frequent and low frequent

THE NAVAL ARCHITECT

SELLING TO THE CHINESE SHIPBUILDING INDUSTRY...?



REASONS WHY YOU SHOULD CHOOSE THE NAVAL ARCHITECT

- we offer the largest circulation of any maritime title in China, now well established in our 9th year of publication
- 7600 copies in total, to members of Shanghai SNAME and other regional SNAME organisations, and to the Shanghai Association of Shipbuilding Industries
- we offer all advertisers in our regular English-language editions in February and September FREE ADVERTISEMENTS, including translation

Can you afford NOT to place your company's sales message in front of the key decision-makers in China?

To receive a copy or have one dispatched to your Chinese office, or to reserve your advertisement space, contact:

Debbi Bonner
Group Sales Director
RINA
dbonner@rina-org.nl
+44 7767 791181

EXCELLENCE IN ELECTRIC



Electrical systems that make great vessels even greater

Scandinavian Electric Systems (SES) is a system house and supplier of low voltage electrical systems, services and components, such as:

- Diesel-Electric propulsion systems
- Multi-Purpose propulsion solutions
- Electric Motors
- Starters
- Generators
- Frequency converters
- Electric winch and crane solutions
- Clean Power Systems
- Switchboards
- Power Management Systems

SES delivers complete services, from initial concept design to equipment selection and supply, as well as field support. We develop both tailored and general systems of highest quality.



Scandinavian Electric Systems AS | Janaflaten 28 | P.O. Box 80 Godvik | N-5882 Bergen | Norway

Tel.: +47 55 50 60 70 | Fax: +47 55 50 60 52 | Email: ses.mail@scel.no | www.scel.no

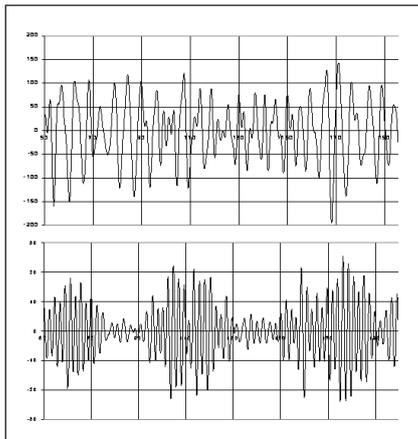


Figure 13: Stress time histories for $T_z = 6.5$ s (above) and $T_z = 3.5$ s (below) (First modal period $T_1 = 2.15$ s)

Hull girder vibration mode	f (Hz)
1-node torsional	0.37
2-node vertical bending	0.47
2-node torsional	0.50
3-node vertical bending	0.90

Table 6: Wet natural hull girder modes and frequencies ultra large container carrier

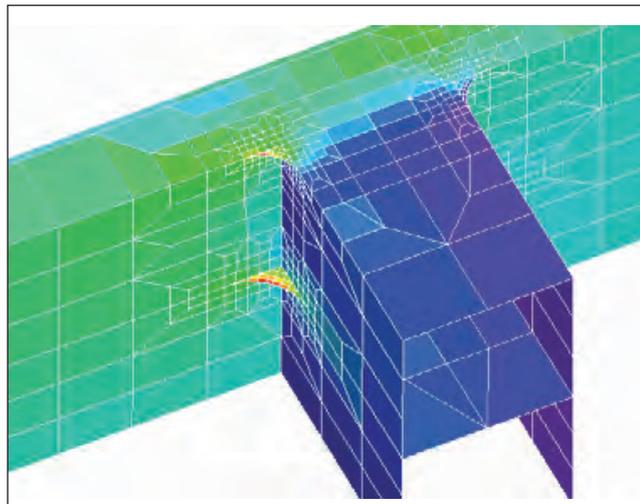


Figure 14: Fatigue analysis of hatch corner detail of an ultra large containership.

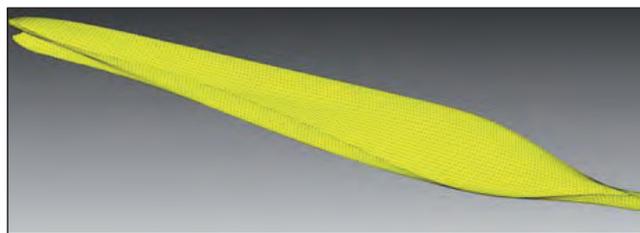


Figure 15: Hydrodynamic mesh following the structural deformation of the hull (first modal period).

contributions, and superimpose them to obtain the total result.

As shown for whipping, the range of the wave frequent stress cycles needs to be corrected for the springing effect as well. As only the navigation conditions with a risk for the occurrence of springing need to be considered, it is important to take into account speed reduction in case the wave height increases, because this can cancel the springing effect altogether.

For each of the contributions corresponding to a signal with narrow banded spectrum, the fatigue accumulation can be computed according the methodology for wave frequent fatigue assessment [12].

The method has been checked at short term level against the considered exact method, i.e. the Rainflow counting of the stress time history. To do so, a time history has been generated from the short term 2-peak response (see figure 12) using specific software. Then a Rainflow counting according to the AFNOR standard procedure has been performed and the Miner sum calculated.

Two typical cases have been identified. For sea states with T_z above 5s the low

frequent wave stress is dominant over the high frequent springing, while for smaller T_z the situation is reversed, see Figure 13.

The comparison between the methods confirms that the proposed procedure provides acceptable short term Miner sum values. However, the correction factor for the low frequent wave stress range has to be adjusted to the typical cases to prevent underestimations.

A study performed for an ultra large container ship shows that, due to the large deck openings, the first natural mode of the hull girder is a torsional mode, which is followed by a number of vertical bending and torsional modes, see Table 6.

An investigation of the navigation conditions with a risk for springing occurrence showed that the torsional modes are to be considered for wave incidence angles of 120 degrees and 90 degrees, while the flexural modes are to be considered for wave incidence angles of 180 degrees and 120 degrees (180 degrees corresponding to head seas).

The fatigue lifetime of a structural detail in the deck experiencing high dynamic loading has been calculated

according applying North Atlantic scatter diagram, see Figure 14.

The springing response has been calculated for all wave heights and periods of the wave data table until a significant wave height of 5m. For greater wave heights it is assumed that the vessel speed will be reduced and, consequently, that the shifted encounter frequency will yield only irrelevant springing response.

The calculation of the short term Miner sum including springing shows that, compared to the situation excluding high frequent springing part, an increase in fatigue damage of up to a factor 3 can be reached for small period sea states. However, as small period sea states represent only a limited part of the long term total Miner sum, and taking into account that springing does not occur for transverse and following seas, the total long term increase of the Miner sum due to springing is estimated to be of the order of 4% to 10%.

A sensitivity study shows that if the maximum significant wave height is increased from 5 to 6 m, the springing related Miner sum increases by 20%. However, the effect on the total Miner sum is of second order.

closed gauging



Meet us SMM 2008

International trade fair Hamburg
23-26 Sept. 2008
Hall A1 Stand 60



The HERMetic UTImeter Gtex is a portable electronic level gauge for closed gas tight operation resulting in increased safety and efficiency.

The unit is used for custody transfer, inventory control measurement and free water detection on marine vessels. Connected to a HERMetic vapour control valve, the UTImeter Gtex avoids any gas release during operation and enables 3, optionally 4 measurements in one single operation, Ullage, Temperature, Oil-water interface level and Innage. By increasing safety and efficiency, Honeywell Enraf Tankssystem helps customers improve business performance.

Honeywell

For more information visit our website
www.tankssystem.com or call +41 26 919 15 00

© 2008 Honeywell International, Inc. All rights reserved



STADT ELECTRIC PROPULSION



Based on 20 years of experience, the Stadt STASCHO system is our 3rd generation of innovative electric propulsion systems for ships.

STADT STASCHO®
Available in models from 500 kW to 25 MW
in low and medium voltages up to 11 KV

ENERGY SAVINGS
The system will reduce your fuel consumption to a minimum,
and leads to a major reduction of pollution from NO_x, SO_x and CO₂

QUIETNESS
The STASCHO system performs silent operations without any electric disturbances.

TOTAL SYSTEM INTEGRATION OF ELECTRIC SHIP PROPULSION

STADT AS, Moloveien 2, NO-6083 Gjerdsvika, Norway.
Tel.: +47 70 02 88 84, E-mail: info@stadt.no www.stadt.no

VETH-JET
BOW THRUSTERS

VETH MOTOREN
SPEEDS YOUR
PERFORMANCE

VETH-Z-DRIVE
RUDDER PROPELLERS

VETH
MOTOREN BV

P.O. BOX 53 - 3350 AB PAPENDRECHT - HOLLAND
PHONE (+31) 78 615 22 66 - FAX (+31) 78 641 11 69
www.veth-motoren.com

1910
2008

98 years to your service

Building the future in pumping technology



pumps

bombas

pumpen

azcue

pompes

FACTORY AND HEAD OFFICE

P. O. BOX

E-MAIL

Tel.: +34 943 14 70 47*
Fax: +34 943 14 74 40
ARRONA - (Guipúzcoa) Spain

Apartado de Correos, 34
20750 ZUMAIA
(Guipúzcoa) Spain

comercial@azcuepumps.es

PUMP MANUFACTURERS
Since 1910

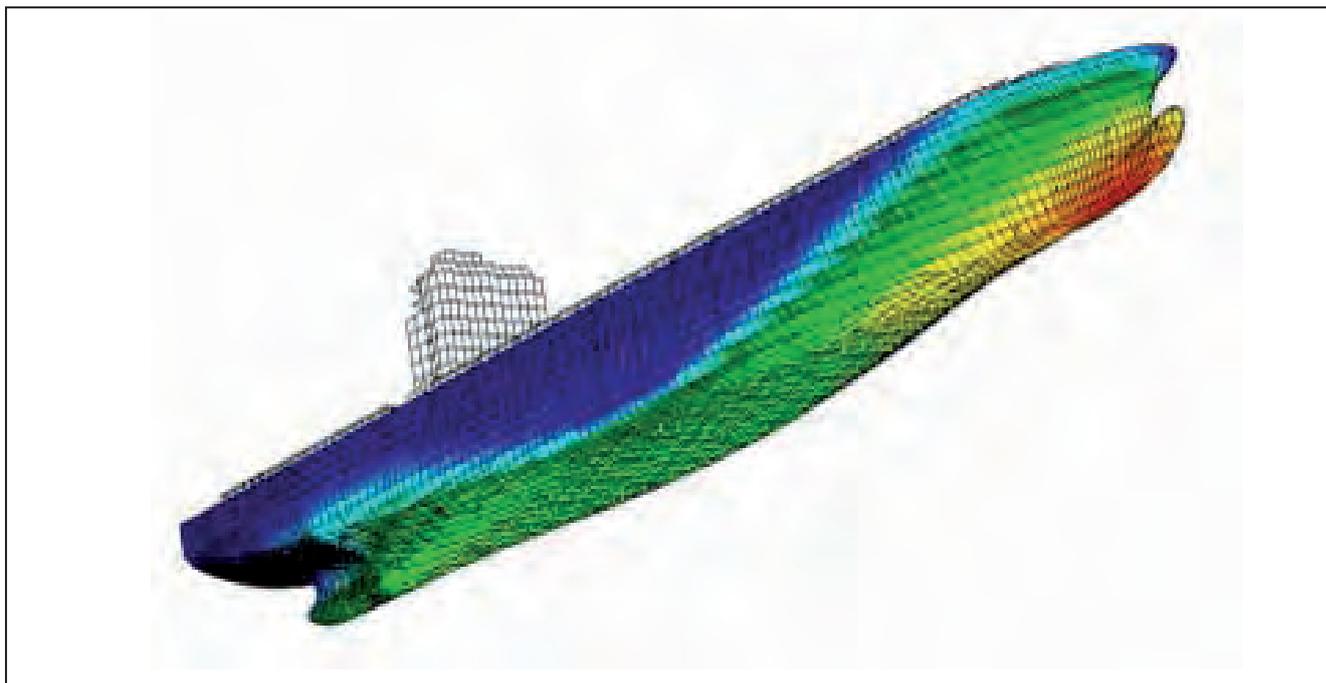


Figure 16: Non linear time domain simulation using Froude-Krylov approach (loads on finite element model).

Simulation suite

The described methodology to assess the effects of whipping and springing during the design stage of ultra large container ships has been made practically applicable within the Bureau Veritas in-house hydrodynamic simulation suite HydroSTAR, which has been developed and validated for more than 20 years to support new technological

challenges. Originally started as a linear 3D diffraction-radiation scheme for floating offshore units, today HydroSTAR is a multi disciplinary hydrodynamic package widely used in the marine and offshore industry. Typical issues like irregular frequencies, forward speed effect, roll damping, automatic mesh transfer, second order wave loads and multi body interactions are

accounted for. The hydro-elastic coupling is visualised in figure 16.

As an example, for the calculation of the extreme hull girder bending moment including whipping effect a (weakly) non linear Froude-Krylov model is applied, see Figure 16.

The resulting overall computation scheme of the software called HydroSTAR++ is depicted in Figure 17.

In order to validate and calibrate the methodology for the hydro-elastic and time domain simulations, several model tests have been carried out and compared to the calculation results.

Within the scope of the Joint Industry Project Lashing@Sea full scale measurements are carried out on board the BV class 9400TEU containership *CMA-CGM Rigoletto*. Motion and acceleration sensors have been distributed over the hull and two cross sections have been equipped with strain sensors to record the dynamic response in terms of accelerations and internal hull girder loads.

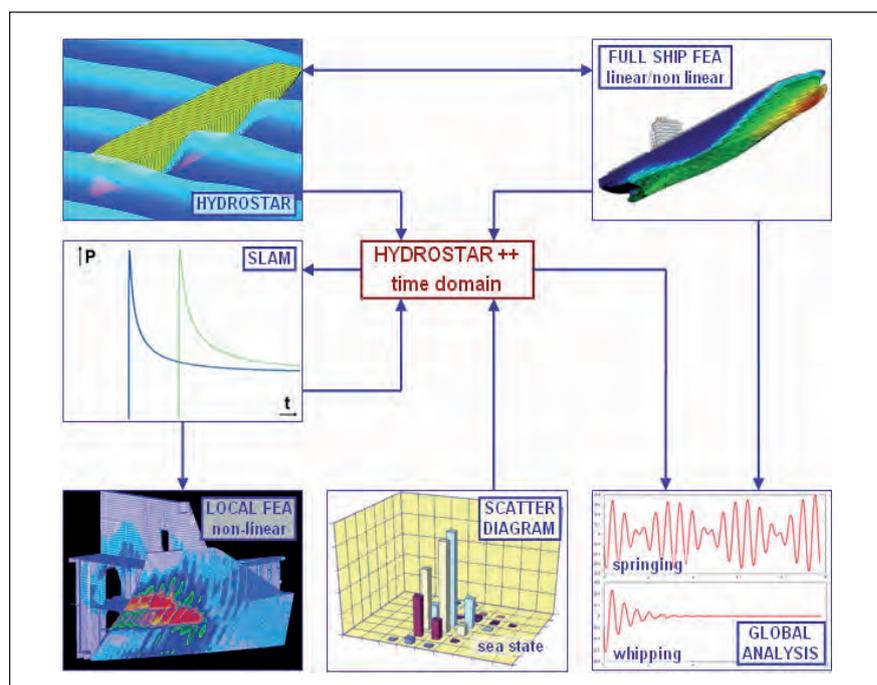


Figure 17: Computation scheme of HydroSTAR++ for hydro-structural simulation of containerships.

Version 14
Arbitrary curves for
trimming and modelling



Picture supplied by IHIMU

Integrated Naval Architecture & Ship Construction Software

Maxsurf is a completely integrated suite of design, analysis and construction software suitable for all types of vessels. All modules feature a consistent, graphical interface, work from a common database, and provide data exchange with AutoCAD, Microsoft Office and ShipConstructor. Contact us for a demo CD or download from -

www.formsys.com

International: info@formsys.com

Tel : +61 8 93351522 Fax : +61 8 93351526

UK: Island Computer Systems

peter@islandcomputers.co.uk

Tel : +44 1983 827100 Fax +44 1983 521608



MAXSURF

Integrated Naval Architecture & Ship Construction Software

HULL MODELLING

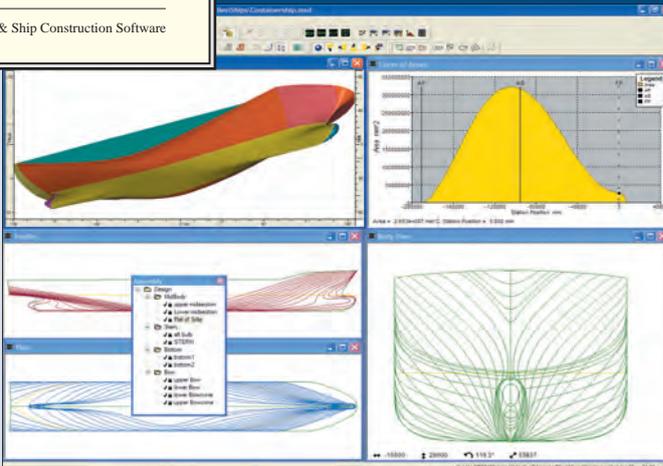
Trimmed NURB curves & surfaces, fairness indicators, developable surfaces, parametric variation & high accuracy

STABILITY, STRENGTH & PERFORMANCE

Hydrostatics, longitudinal strength, intact & damaged stability, custom stability criteria, resistance prediction & seakeeping

PRELIMINARY STRUCTURE

Stiffener paths, frame generation, deck generation, plate forming, plate development, parts database & export to ShipConstructor



SHIP DESIGN GROUP

Naval architects, Marine engineers, Consultants

51, Dogariei Street, 800225
Galati, ROMANIA
Phone: +40 236 476 672
+40 336 401 484
Fax: +40 236 460 336
Web: www.shipdesigngroup.eu
E-mail: sdg@shipdesigngroup.eu



We improve shipbuilding



Danfoss
SEMCO
FIRE PROTECTION



**Check out our
fully seaworthy range
of solutions**

Meet us at the **SMM Fair** in Hamburg,
23 - 26 September 2008,
hall B1 stand No. EG310.

High-technology fire fighting solutions for any maritime application
www.danfoss-semco.com

The results of the measurement campaign can be used to study the 'real life' behaviour of large containerships and to further validate and calibrate the developed numerical tools.

An increase in the size and speed of containerships significantly changes the behaviour in a seaway. Phenomena already known for smaller size vessels can be amplified to reach levels high enough to have an impact on the design of the hull. This is particularly true for the cases of whipping and springing.

The springing phenomenon was first studied during the construction of the 550,000dwt tankers in 1975, for which time domain calculations have been performed. At that time the whipping phenomenon was also known, specifically in relation to ships with large deck openings, but computer simulation was not yet feasible. Recent developments in computer computation power and efficient algorithms allow performing non linear hydro-structural calculations in the time domain.

A methodology has been proposed to estimate the effects of whipping and springing on the extreme hull girder loads and fatigue lifetime of structural details. In order to be able to study the fatigue related effects during the design stage of a vessel, it is assumed that the low frequent and high frequent contributions can be dealt with separately. This simplification importantly reduces the required amount of non linear time domain simulations.

The application of the methodology has been made possible by further development of the Bureau Veritas in-house hydrodynamic simulation suite HydroSTAR to solve hydro-elastic and non linear time domain problems. Extensive validation has been done by model testing, while the ongoing full scale measurement campaign will provide additional valuable feedback.

Application of the methodology to ultra large container ships confirms that the stress levels are indeed increasing. As a consequence, a significant increase both hull girder loads and fatigue damage accumulation is found, which can no longer be ignored when analysing the ship structure.

Whipping effects can cause an increase of about 20% in total vertical bending moment, for which the hull girder ultimate strength is to be checked.

For current containership designs of about 350m with extremely large open deck structure, whipping can cause an increase in short term fatigue damage accumulation by a factor of up to 100% for some head sea navigation conditions. The increasing effect on the long term whipping induced fatigue damage accumulation is estimated to be in the range of 3% to 5%.

With regard to springing, as a consequence of the flexibility of the hull girder and high vessel speed, current designs of about 350m in length show an increase in short term fatigue damage accumulation by a factor of up to three for small period sea states, which is superior to the referenced tankers of 414m. The increasing effect on the long term springing induced fatigue damage accumulation is estimated to be in the range of 4% to 10%.

It is expected that full scale measurements results will provide valuable insight into the real dynamic behaviour of large container ships, as well as the accuracy of the calculations. In addition, further development of the methodology and hydro-structural computation schemes are ongoing and are expected to further enhance prediction capabilities.

When considering future designs for even larger container ships of 400m in length and beyond, it is certain that with similar hull structural design the increase of fatigue damage accumulation due to whipping and springing will become even more important. By realizing that springing is a forced vibration phenomenon with little damping and that the response is of non linear character, the dynamic phenomena and associated consequences will have to be analysed with greater attention. **NA**

References

1. Huther M, Ket N, 'Water impact risk estimation during ship design', Ship Behaviour at Sea, International Symposium on Ship Hydrodynamics

and Energy Saving, ISSHES, Madrid, September 1983

2. Osouf J, 'Etude expérimentale du comportement dynamique dur houle du navire câblier Marcel Bayard', Revue NTM, 1973 (in French)
3. Drummen I, Moan T, Storhaug G, Moe E, 'Experimental and full scale investigation of the importance of fatigue damage due to wave-induced vibration stress in a container vessel', Design & Operation of Container Ships, RINA, London, November 2006
4. Malenica Š, Molin B, Remy F, Senjanovic I, 'Hydroelastic response of a barge to impulsive wave loads', 3rd International Conference on Hydroelasticity, Oxford, 2003
5. Cummins WE, 'The impulsive response function and ship motions', Schiffstechnik, 1962
6. Ogilvie TF, 'Recent progress toward the understanding and prediction of ship motions', 9th International Conference on Numerical Ship Hydrodynamics, Ann Arbor (USA), 2007
7. Tuitman J, Malenica Š, 'Some aspects of whipping response of container ships', 23rd IWWWV, Jegu (Korea), 2008
8. Bureau Veritas, 'Rules for the Classification of Steel Ships', November 2007
9. Planeix JM, 'Wave loads, A correlation between calculations and measurements', Revue International Shipbuilding Progress, August 1972
10. d'Hautefeuille B, Huther M, Baudin M, Osouf J, Calcul de springing par équations intégrales', Revue NTM, 1977
11. Huther M, Osouf J, 'SEFACO, Four years of experience in ship hull girder stress monitoring', MARINTEC, Shanghai, October 1983
12. Huther M, Beghin D, Mahéroul S, 'A fatigue strength guidance note for welded ship structure assessments', IIW/IIS doc XIII-111742-98/XV-992-98, 1998
13. Malenica Š, 'Hydro structure interaction in seakeeping, International Workshop on Coupled methods in numerical dynamics IUC, Dubrovnik, September 2007

A question of flexibility

A large container ship, to which higher tensile steel plates of yield point 47 kgf/mm² (460 N/mm²) (YP47 steel plates) was applied for the first time in the world, was delivered in June 2007. Here, Y. Yamaguchi, T. Shigemi, T. Matsumoto and A. Miura, all of Nippon Kaiji Kyokai (ClassNK), present the guidelines for application of the material to strengthen deck construction of ultra large containerships*.

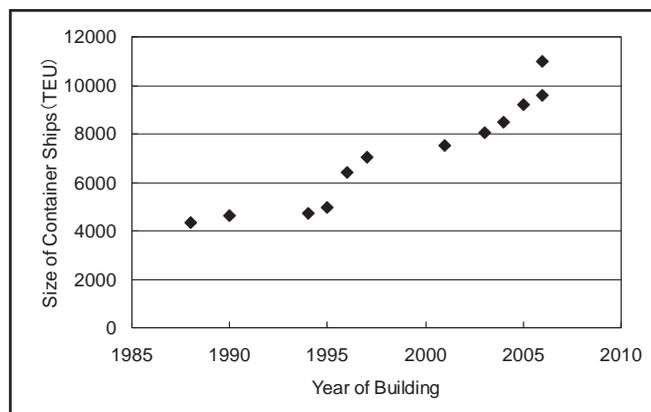
Amid internationalisation of markets and the continued increase in the volume of goods transported by sea globally, there is a growing demand for larger, higher performance ships.

Figure 1 shows the trend in the increase in the size of containerships. The size of container ships has increased rapidly in the last few years, and the first ultra large container ship in the world with a capacity exceeding 10,000TEU was built in 2006.

A containership is provided with a large hatch opening in the strength deck to enable cargo handling operations to be carried out efficiently. To ensure adequate hull girder longitudinal strength, comparatively thick steel plates have been used in the strength deck structures (hatch side coaming, upper deck plating, sheer strake, longitudinal bulkhead) of large containerships in the past but, as containership sizes have increased, much thicker steel plates are now being used.

Figure 2 shows the trend of plate thickness of hatch side coamings as containership carrying capacities have increased. Higher strength and thicker steel plates have now been used with the increase in size of the ships. There are

Figure 1: Trend of size of containerships.



cases among 8000TEU class ultra large container ships where steel plates of thickness exceeding 70mm have been used.

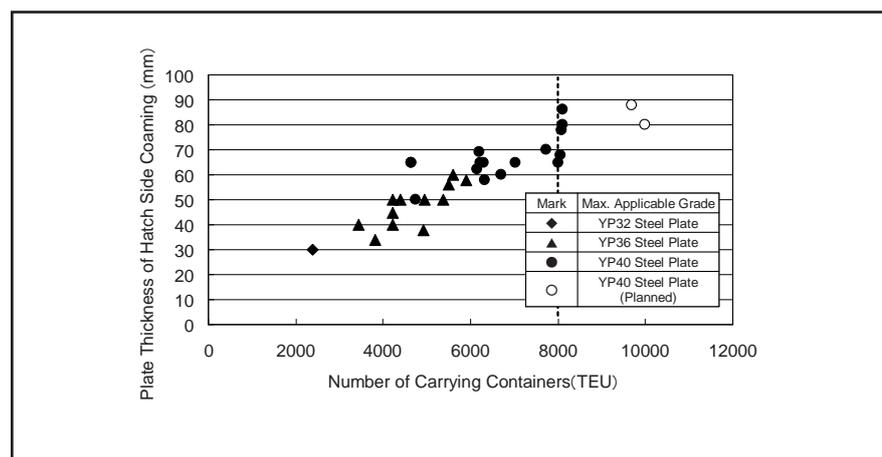
Application of such extremely thick steel plates in the hull structure have raised concerns, and measures to alleviate issues arising are being researched.

- Strength to resist brittle fracture in base metal and welded joints (preventing

brittle fracture occurrences and arresting the propagation of brittle cracks).

- Issues in assembling, fitting and welding works of hull structures due to increase in weight.
- Issues in quality control (welding work, non-destructive inspection, etc.) of welded joints on extremely thick plates.

Figure 2: Variation of hatch side coaming plate thickness with increase in size of containerships.



*This article has been extracted from a presentation given by ClassNK at the RINA Design and Operation of Containerships event, held in London, 3-4 July, 2008.

Yoshiya Yamaguchi, is ClassNK manager of the materials and welding section of the material and equipment department. **Toshiyuki Shigemi, Ph.D.** is ClassNK general manager, development department. **Toshiyuki Matsumoto** is a research manager, ClassNK Research Institute. **Akizumi Miura**, is ClassNK manager of the general cargo ships section, hull department.



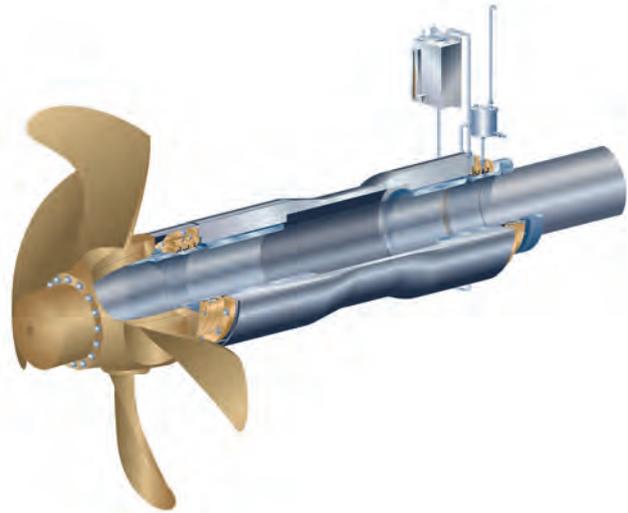
SUPREME[®]

Sterne tube, seals and bearings

Several thousands of ships, sailing the world's oceans are fitted with SUPREME stern tube seals and white metal bearings produced by IHC Lagersmit. SUPREME seals are suitable for all types of ships and propeller shaft diameters and offer many advantages.

Please visit our stand (no. 153) at the **SMM Exhibition** in Hamburg

www.ihclagersmit.com



IHC Lagersmit BV

Telephone: +31 (0)78 6910472
info.lagersmit@ihcmerwede.com

Part of IHC Merwede

PSM Marine Tank Level Gauging

introducing:

iCT DIGITAL SOLUTIONS

An advanced new intelligent solution for:

- Cargo level with Tank Radar technology
- Ballast, draught and F.O. with iCT Intelligent sensors
- Display and control
- All vessels - All sizes
- New builds or retrofits

Accurate
Reliable
Cost effective
Low installation cost

PSM Instrumentation Ltd
Our Level Best for over 30 years!
www.psm-sensors.co.uk



Email us at sales@psm-sensors.co.uk
Call us on +44 (0) 1444 410040

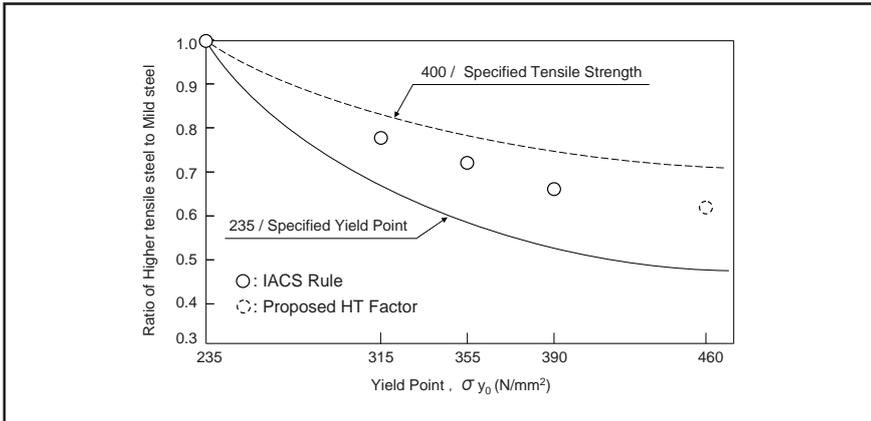


Figure 3: Relation between HT factor and yield point.

ClassNK started practical research on new higher tensile steel plates for the hull having a specified yield point of 47kgf/mm² (460 N/mm²) (YP47 steel plates) from 2001 jointly with a shipyard and a steel mill in response to the trend of using extremely thick plates in the hull structure of ultra large containerships [1].

A large containership with YP47 steel plates in her hull structures was delivered in June 2006 for the first time in the world under the classification of ClassNK based

on the results of the above research.

YP47 steel plate has excellent strength, toughness, workability and weldability as steel plates for hull structures, which makes it possible to inhibit the increase in thickness of hull structural members of ultra large containerships.

ClassNK has now established practical technical guidelines related to the use of YP47 steel plates for the hull in large containerships, called the Guidelines for Application of YP47 Steel Plates to

Strength Deck Construction of Ultra Large Container Ships (hereafter referred to as 'Guidelines') so as to ensure further safety of the ships in response to the noticeable increase in the size of containerships, based on the findings of recent research and the experience accumulated in the application of these plates to the actual ship.

Various issues exist to be resolved for practical application of higher strength steel materials to hull structures:

- Setting appropriate higher tensile steel factor.
- Ensuring the necessary strength, fracture toughness, workability and weldability.
- Ensuring quality of welded joints including fracture toughness, and establishing welding work procedures to satisfy the quality.
- Ensuring adequate fatigue strength.

The Guidelines offer the necessary technical guidance for such issues, and contain mainly the following:

Hull structure

- Hull girder strength and Higher tensile steel factor
- Fatigue strength
- Application of steel grades to hull structural members
- Brittle crack arrest design

Welding

- Welding work
- Welding procedures (welding joint requirements)
- Welding materials

Inspections (non-destructive inspections)

Girder strength

Thick steel plates are used in the strength deck structures of large containerships to achieve adequate hull girder strength

Figure 4: Example of Strength deck structure of ultra large containerships (application of YP47 steel plates).

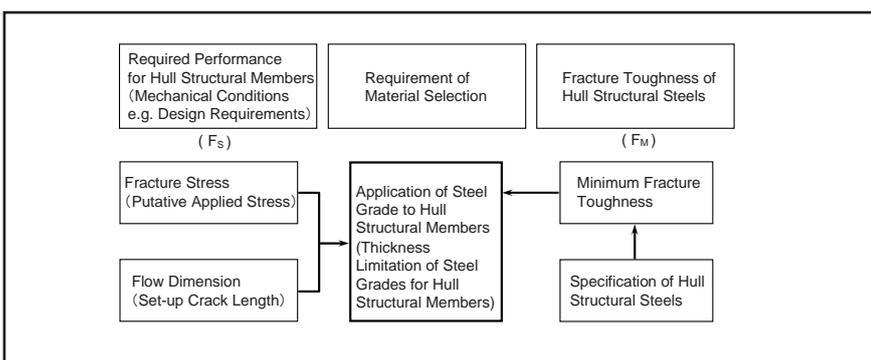
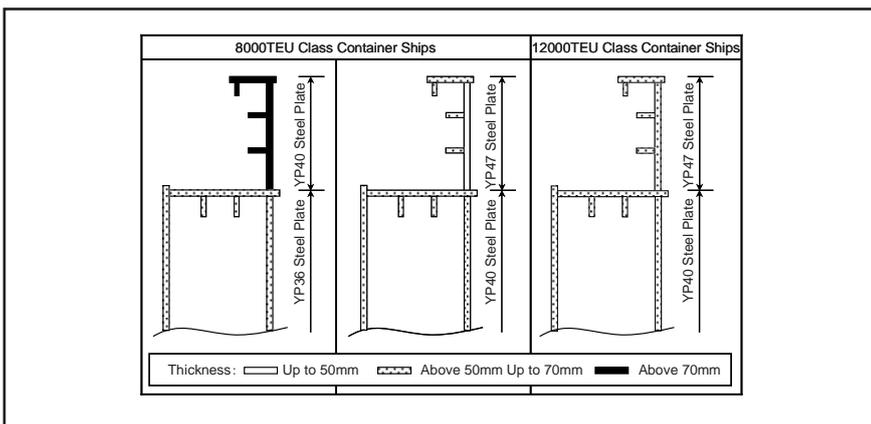


Figure 5: Assessment concept of fracture toughness based on fracture mechanics method (K concept).

Engineered Solutions for the Marine Industry



- Designed for dependable performance, with rugged construction and extended service life
- Ideal solutions for:
 - Anchor handling
 - Mooring winches
 - Dredge pumps
 - Hoists and cranes
 - Marine propulsion drives

www.wichita.co.uk

SCHOLARSHIP OSAKA UNIVERSITY, JAPAN



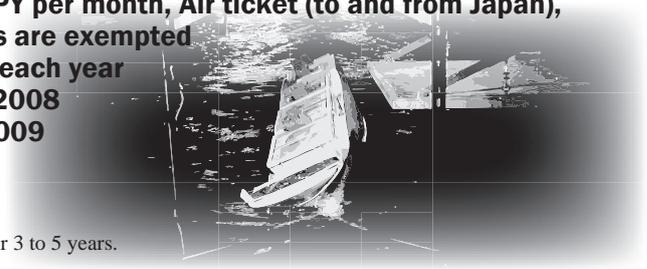
International Graduate Course of NAVAL ARCHITECTURE and OCEAN ENGINEERING
Master and Doctor Degrees¹⁾ for October 2009 Sponsored by Japanese Government
All lectures and research supervision are provided in English

- **SCHOLARSHIP BENEFITS:** 170000²⁾ JPY per month, Air ticket (to and from Japan), Tuition fees are exempted
- **NUMBER TO BE ADMITTED:** Three for each year
- **APPLICATION DEADLINE:** December, 2008
- **PROGRAM START DATE:** October 1, 2009

More information and contact
<http://www.naoe.eng.osaka-u.ac.jp/eng/>
e-mail: int-admin@naoe.eng.osaka-u.ac.jp

¹⁾ Students are requested to obtain both master degree and PhD for 3 to 5 years.

²⁾ 1545 USD per month in exchange rate of 1 USD = 110 JPY



Forward Features

NOVEMBER 2008

- Russian Marine Industries
- Chemical & products tankers
- Middle East shipbuilding
- Inland passenger ships

Bonus distribution:

Seatrade Dubai



THE **NAVAL
ARCHITECT**

For further information contact:

John Payten

Group Sales Director

Tel: +44 20 7201 2407

Fax: +44 20 7245 6959

Email: jpayten@rina.org.uk



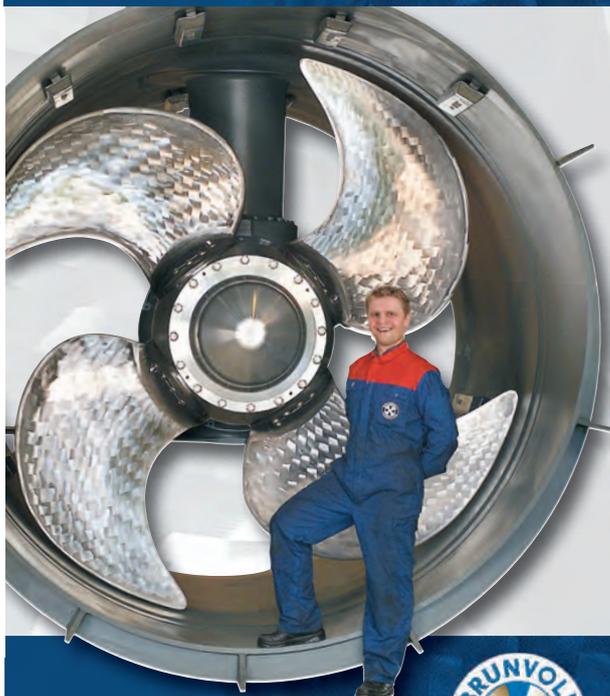
HRP develops cutting-edge technology for reliable steerable thruster systems up to 2400 kW while working in close co-operation with you as a client to best serve your individual needs.

Thrustful solutions

HRP Thruster Systems b.v.
P.O. Box 2020
2930 AA Krimpen aan de Lek
The Netherlands

Telephone +31 (0)180 33 10 00
Fax +31 (0)180 33 10 99
E-mail info@HRP.nl
Internet www.HRP.nl

TRUSTED WORLD WIDE



BRUNVOLL – the single source supplier of thruster systems

Refined and proven concepts teamed up with supreme technical solutions ensures low life cycle costs

BRUNVOLL – manufacturer of

- Tunnel Thrusters
- Azimuth Thrusters
- Low-Noise Thrusters
- Thruster Control Systems



Another successful story...

The Offshore Supply Vessel «Bourbon Mistral» – equipped with Brunvoll bow tunnel- and bow retractable thruster units. Built by Ulstein Verft AS for Bourbon Offshore Norway AS.



BRUNVOLL

telephone + 47 71 21 96 00
fax + 47 71 21 96 90
e-mail: office@brunvoll.no
www.brunvoll.no

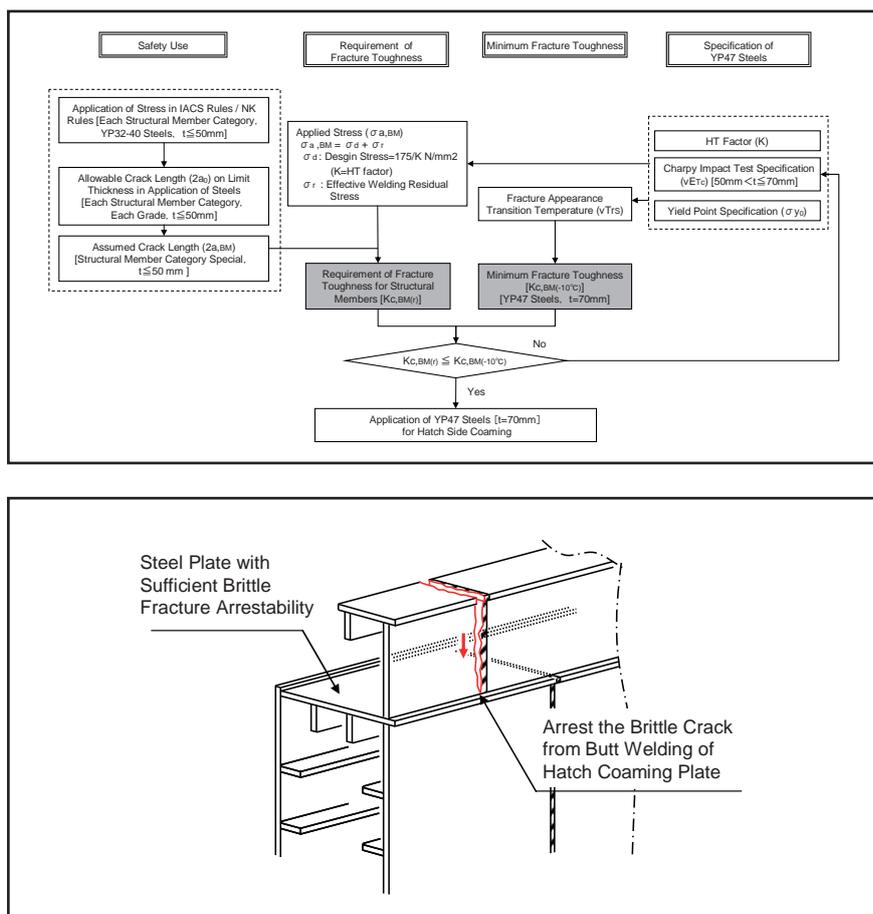


Figure 6: Flow for evaluation of application of YP47 steel plates.

YP32/YP36/YP40 steel plates on mother plates and welded joints. Assessment of fatigue strength (cumulative fatigue damage) on the stress concentration parts such as hatch corners of hatch coaming top and upper deck etc. is to be carried out according to the Guidelines for Fatigue Strength Assessment mentioned above taking account of increasing hull girder stresses due to application of YP47 steel plates, which secures sufficient fatigue strength on the hull structures of YP47 steel plates.

Containerships have various kinds of outfitting such as hatch cover pads etc. on the strength deck structures especially on the hatch coaming top. The guidelines also require the fatigue strength assessment on parts connecting the outfittings to the hull structure. Furthermore, the guidelines specify details of precautions to be taken related to ways of fitting the outfittings to the hull structures.

The steel grades applied to hull structural members need to be decided from the point of view of preventing brittle fractures. More specifically, it is important to set the application of steel grades to hull structural members for appropriate distribution of YP47 steel plate grades complying with steel material requirements.

Figure 5 shows the conceptual sketch of assessment of fracture toughness based on the K concept, which aims to specify the steel grades applied to hull structural members. This assessment method uses the relationship between three fracture mechanics parameters, namely fracture stress, defect dimension and fracture toughness value. It assesses how best to select steel grade quality to be used (required fracture toughness value) to satisfy the required performance (fracture stress, defect dimension) of the structural member.

Figure 6 shows the flow of the fracture toughness assessment method used to establish application of steel grades to hull structural members specified in the Guidelines. In the assessment, the safety of the steel grade of YP47 steel plates applied to hatch side coaming can be verified from

Figure 7: Brittle fracture arrest design.

(longitudinal bending strength and torsional strength). Consequently, the Guidelines are defined to be applicable to containerships in which YP47 steel plates contribute to the hull girder strength.

The higher tensile steel factor (reduction factor for strength corresponding to mild steel requirements; hereafter referred to as 'HT factor') for the hull girder strength is defined as 0.62 in the Guidelines.

When setting the HT factor, the safety margin for tensile strength of steel plates needs to be considered together with the effect of the increase of yield strength. As observed in Figure 3, the set HT factor of 0.62 has a safety margin for tensile strength equivalent to that of the HT factor of high tensile steels presently being used (YP32, YP36, YP40).

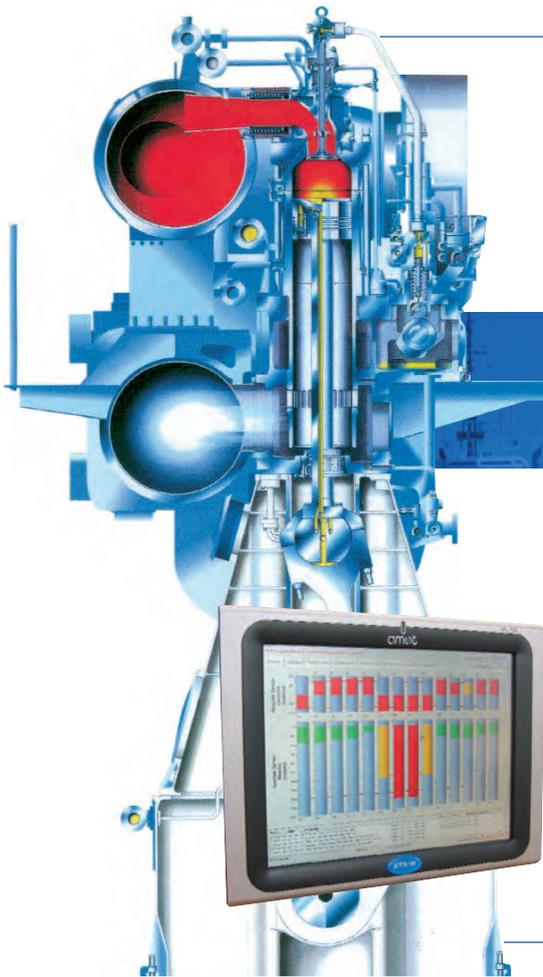
Figure 4 shows an example of the application of YP47 steel plates to the hull girder strength in the 8000TEU class and the 12,000TEU class ultra large container ships. The effect of YP47 steel plates in inhibiting the increase in thickness of the hull structural members is evident from

the Figure. It is also verified that the set HT factor is reasonable in connection with the application to the fatigue strength, bottom side buckling strength, fracture toughness, and so on.

Fatigue strength

Fatigue strength is one of the most important issues to be resolved when higher tensile steel plates are applied to hull structures. ClassNK has already established adequately proven technical guidelines for fatigue strength assessment of hull structures (Guidelines for Fatigue Strength Assessment of Container Carrier Structures) when high tensile steel is used, based on the past experiences on fatigue damages and results of various related studies.

In the application of YP47 steel plates, appropriate fatigue tests are firstly required through the approval of the manufacturing process (i.e. the approval of the steel material) so as to confirm that the fatigue strength of the intended YP47 steel plates is equivalent to or more than that of



"Due to the higher safety against major failure, MAN Diesel considers it feasible to completely omit regular open-up inspections of any of the three crank-train bearings featuring an approved BWM system connected to the alarm and slow-down system" Source: MAN Diesel



Protection at the heart of your engine with the new generation XTS-W

The XTS-W Bearing Condition Monitor from AMOT provides advanced warning of wear in crank train bearings of 2-stroke slow speed diesel engines.

The new, enhanced XTS-W provides:

- Protection within 30 minutes of engine start-up
- Integrated water in oil (WIO) monitoring
- Removes need for open-up inspection

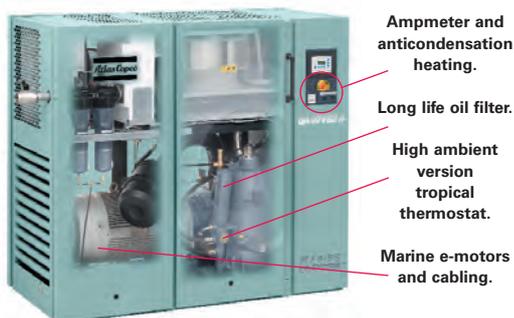
Protect your large investment with a small investment

amot
www.bearingwear.com
 Tel +44 1284 762222
 info@amot.com www.amot.com

Atlas Copco Setting the Standard in Marine Compressed Air



Our New Range Marine Air System (MAS)



Ampmeter and anticondensation heating.

Long life oil filter.

High ambient version tropical thermostat.

Marine e-motors and cabling.

Engineered to perform in the toughest onboard, Atlas Copco marine air systems provide the reliable starting, working and instrument air your ship demands. Fully certified to marine standards, the complete range of marine air systems minimizes installation, maintenance and energy costs. With global service coverage and dedicated local marine knowledge, we give you the power to deliver. Your partner for starting air compressors, working air compressors, oil-free air compressors, instrument air compressors and air treatment products.

Atlas Copco Marine
www.atlascopco.com/marine
www.atlascopco.com

Atlas Copco

the view point that brittle fracture does not occur when the equation given below is satisfied.

Arresting brittle fracture

The prevention of brittle fracture occurrences is of fundamental importance in ensuring safety of the ship. Steel material requirements, application of steel grades to hull structural members, and welded joints requirements are established in the Guidelines so that YP47 steel plates (base metal and welding joints) also possess the fracture toughness required to prevent brittle fracture occurrences comparable to the higher tensile steel plates presently being used (such as YP32, YP36, YP40).

In addition to preventing brittle fracture occurrences, the Guidelines require the provision of hull girder with brittle crack arrestability as a backup measure against brittle cracks that might unlikely occur considering that the acting stresses (hull girder stresses) will increase more when YP47 steel plates are used than when conventional higher tensile steel plates such as YP36, YP40 are used.

In recent years, various tests and studies are being carried out related to brittle crack propagation and its arrest on welded joints in thick steel plates. ClassNK has also been carrying out a research project related to brittle crack propagation and arresting the development of a brittle crack jointly with shipbuilders and steel mills.

The Guidelines give the following as concepts of the brittle crack arrest design, and details on the design will be specified based on the results of the above project:

- Arrest brittle crack by arrestability (brittle crack arrest toughness) of the steel material (base metal)
- Arrest brittle crack by using structural discontinuities
- Arrest brittle crack by a combination of the two approaches mentioned above.

Figure 7 shows an example of arrest design (concept of arresting brittle crack by arrestability of base metal) in which a brittle crack that has occurred in the hatch side coaming is arrested in the upper deck plates (mother plates).

The safety of large containerhips to which YP47 steel plates are applied can be further enhanced by performing brittle crack arrest design.

Material requirements

Weldability and workability that offer fracture toughness for high heat input welding and the ability to resist cold cracking for small heat input welding are necessary, in addition to the higher yield strength required to successfully use YP47 steel plates in hull structures. To simultaneously satisfy both these requirements (strength requirement and weldability/workability requirements), the heat treatment of YP47 steel plates is restricted only to the Thermo Mechanical Controlled Process (TMCP) in the Guidelines, so as to enable low carbon (C) and low carbon equivalent (Ceq) compositions to be attained.

The tensile strength and elongation are taken as identical to those of the Quenched and Tempered high tensile steel plates with 47kgf/mm² yield point, which already has a proven track record in offshore structures.

By using YP47 steel plates in strength deck structures, hull girder stresses rise much more and therefore more stringent quality assurance of welded joints becomes necessary.

The Guidelines also require an appropriate brittle fracture test to be performed in addition to the V-notch Charpy impact test to verify that the fracture toughness of the welded joint is adequately ensured in the welding methods applied in the shipyard. **NA**



In 1932 Paolo Garbarino founded the Company and won his first motorbike race...
...WINNING ATTITUDE



Centrifugal and positive displacement pumps for the marine, naval and industrial fields

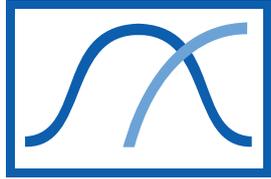


GARBARINO
PUMPS SINCE 1932



www.pompegarbarino.com
info@pompegarbarino.com

Pompe Garbarino Spa
 Headquarters via Marengo, 44 | 15011 Acqui Terme, (AL) ITALY | ph +39 0144 388671 | fax +39 0144 55260
 Milan Branch viale Andrea Doria, 31 | 20124 Milan ITALY | ph +39 02 67070037 | fax +39 02 67070097



ShipWeight

- THE MOST POWERFUL SOFTWARE FOR WEIGHT CONTROL

ShipWeight provides an environment to allow the user to implement a structured weight estimation, management, tracking and control method.

ShipWeight is based on an extensively tested, widely adopted and customizable methodology ready for weight engineering.

www.ShipWeight.com



www.ShipWeight.com

Orkot® Rudder Bearings the Fit & Forget Solution

www.orkotmarine.com

SEE US AT SMM Stand No. A4 - 130

Benefits:

- Low Coefficient of Friction • Long Wear Life
- High Edge Loading Capability • Tolerant to Misalignment
- Dry Running • No Lubrication Required

www.orkotmarine.com

enquiries@orkotmarine.com
tel: +44 1709 789828

TRELLEBORG
SEALING SOLUTIONS

Orkot® Marine Bearings is a leading brand of composite bearings for both Merchant and Naval vessels world-wide. Holding more than 30 Classification Society Approvals for use in rudders, stabilisers and water lubricated propeller shaft bearings; Orkot® is also fitted in a wide variety of ships equipment including cranes, hatches, life boat launchers, docking and mooring systems.

Our TLMM and TXMM materials are available for dry running or for grease, water or oil lubrication.

Ultra large and under stress

Full scale measurements have been gathered covering the stresses acting on larger containerships. An extract from a paper first given at the *Design and Operation of Container Ships*, 3-4 July, 2008, by Masanobu Toyoda, and Tetsuo Okada, of IHI Marine United Inc, Tomoki Maeda, of IHI Corp, and Toshiyuki Matsumoto, of Nippon Kaiji Kyokai.

Large containerships have made it necessary for designers to take account of constraints such as hull girder strength due to torsional, vertical and horizontal bending moments, fatigue strength of hatch corners and hatch opening deflections.

On the other hand, rapid enlargement of the rows and tiers of containerships raises large hatch opening deflection, and accurate estimation of deflection is increasingly more important. Interference between fittings such as hatch covers, lashing bridges and

other container securing instruments need to be addressed when a new size of ship is explored.

The deflection has three components: torsional deflection; cross deck fore-aft deflection due to container inertia force; and hatch longitudinal deflection due to hull girder vertical bending. However, there was no clear method as to how to combine the deflection from these three components.

Full scale measurements were carried out as a part of the joint research project between Nippon Kaiji Kyokai and IHI Marine United Inc. The authors measured the stresses and deflections of Ship B between 2002 and 2004 as well as Ship A between 1998 and 2001, which revealed more accurate correlation among the three components.

Furthermore, whipping due to wave impact load was observed in measurements, generating a concern about fatigue strength in the hull girder. Therefore, the authors evaluated the effects on fatigue strength of hull girder.

The measurements were performed on two post-Panamax containerships. Those ships made a round trip between Japan to

Europe through the Suez Canal. Principal dimensions are shown in Table 1. The ship A and B were delivered in 1998 and 2002, respectively.

The measuring system on the ship A is presented in detail in [1]. The following items were measured on the ship B [2].

1. 6 degrees of freedom of ship motion measured by the gyroscope at engine room.
2. Wave height measured by the microwave sensor at the front end of forecastle deck.
3. 3 accelerations at bow.
4. Longitudinal stresses of upper deck and hold bottom measured by seven optical strain gauges (OSMOS).
5. Wave impact pressure at fore peak tank and bow thrusters room.
6. Relative displacement between the lateral deformation of the cross deck and the steel wire, presenting lateral deformation of the transverse bulkhead measured by two laser gap sensors.
7. Relative displacement in longitudinal direction between the cross deck and the hatch cover measured by three laser gap sensors.
8. Vessel speed, wind speed, wind direction and ship position were obtained from ship's equipments.

Measurements were made for 20 minutes every two hours, automatically. Data sampling rate was 10Hz, except bow flare impact pressure, considering that the frequency of the stresses and deformation due to wave load was low. The ship arrived at a Japanese port once in two months, where data stored was measured. Sea and operating conditions in the log book and the stability report were

TECHNICAL PARTICULARS	
Panamax containerships	
	Ship A Ship B
Length, between perpendiculars	283.8m...281.4m
Breadth	42.8m.....40.0m
Depth	24.4m.....24.2m
Design draught	13.5m.....12.5m
Scantling draught	14.0m.....14.0m
Service speed	24.5kt.....25.6kt



Figure 1: Route map of post-Panamax containership Japan-Europe.



Marine



Cargo



Military



Passenger



Yacht



RINA

info@rina.org

Cargo ships, military vessels, passenger ships, mega yachts. Safety and protection of the environment also depend on RINA's ability to team up with clients who share the values which characterize its Marine Division: professionalism, competency and an aptitude for innovation.

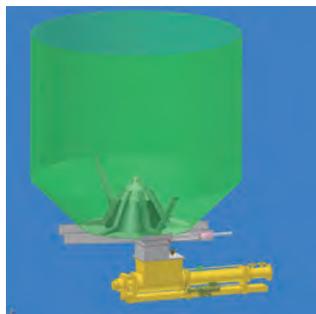
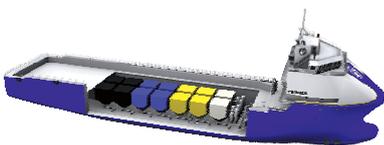
Together for Excellence

www.rina.org

REVOLUTIONARY MULTI APPLICATION CARGO SOLUTION

PG-MACS®

When flexibility, efficiency, environment compliance and high capacities below- and on deck counts ...



Features;

- **No** dedicated dry-bulk pressure vessels!
- **Drill Cuttings** transported below deck: safe, and relieve deck-space for other cargo!
- Extremely **flexible** tank-configuration!
- **Block coefficient** dramatically improved: loss of cargo space due to Clean Class eliminated!
- Discharge of dry bulk down to batches of **4m3** enabled!
- **100% continuous** dry-bulk discharge!
- ORO NOFO 2005+ conform!
- Integrated MACS-tanks = **yard supply** – special tanks avoided!
- All Dry- & Liquid Cargo handling over **one LCC**, fully IAS-integrated!

3000m3 NOFO 2005 Oil Recovery capacity, 1000m3 **Drill Cuttings** capacity below deck, full flex between liquid- and dry- cargo, and the best load / unload ratios against any benchmark – are all facilitated by implementation of the revolutionary **PG-MACS®**

call for details at : www.pg-marinegroup.com



PG Marine Group – Ing Per Gjerdrum AS
www.pg-marinegroup.com pg-pumps@pergjerdrum.no Tlf.: +47 66 77 56 00

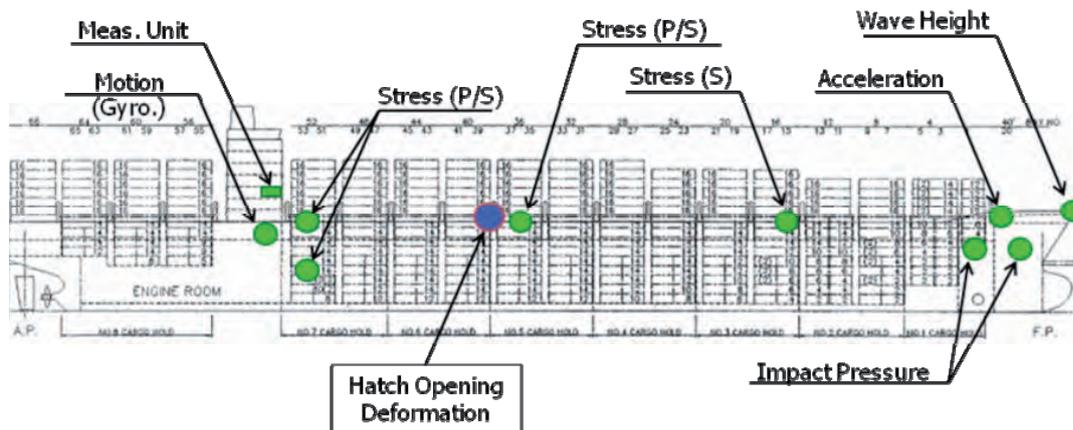


Figure 2: Arrangement of sensors of the ship B.

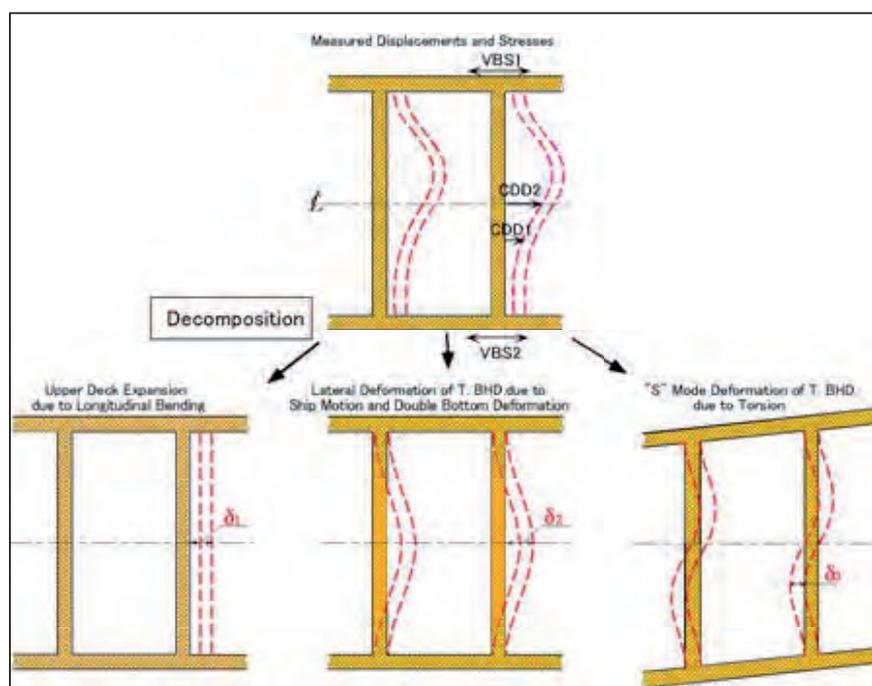


Figure 3: Components of hatch opening deflection.

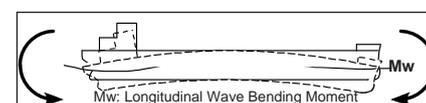


Figure 4: Upper deck expansion due to longitudinal wave bending moment.

submitted to the authors by the ship master. This measurement continued for two and a half years.

Although the hatch opening of a containership deforms in various shapes due to wave loads, total deformation can be presented as a summation of the following three components of deformation [1, 3] as illustrated in Figure 3.

The upper deck causes extension and shrinkage due to the longitudinal bending induced by wave or static load as shown in Figure 4. This expansion results in the relative displacement between the two transverse bulkheads.

Lateral deformation of the transverse bulkhead is caused by the longitudinal inertia force of in-hold containers and of on-deck containers, due to ship motion, such as surging or pitching. An example of this deformation due to ship motion is demonstrated in Figure 5, which is calculated by a half of finite element model of fore cargo hatches of a post-Panamax containership.

In addition to this deformation, another lateral deformation of the transverse bulkhead is superimposed; vertical deformation of the double bottom due to hydrodynamic pressure causes lateral deformation of transverse bulkhead as illustrated in Figure 6.

This deformation is considered to be caused by unsymmetrical structural arrangements in fore-aft direction, but finite element analysis revealed that this effect is relatively small compared to deformation due to longitudinal accelerations.

In an oblique wave, the vessel is twisted due to the torsional moment of the wave as illustrated in Figure 7. Figure 8 presents the shape of deformation in way of hatch coaming obtained by finite element analysis of the whole containership under torsion.

These deformation components are difficult to measure directly, but they can be obtained by deconstructing the lateral deformation and the longitudinal deck stresses. Figure 9 shows the arrangement of sensors for measuring hatch opening deformation. The concept of this deconstruction is explained in Figure 3.

In Figure 9, lateral deformation can be obtained by measuring the relative displacement between the bulkhead and the target on a steel wire by using laser displacement sensors installed on the bulkhead, since steel wire stretching from one side of the vessel to the opposite side provides an immovable point.

Although hatch opening deformation can be measured by the steel wire stretched from side to side as explained in 3.2. (a), this deformation can be also obtained by an alternative procedure; i.e., by measuring

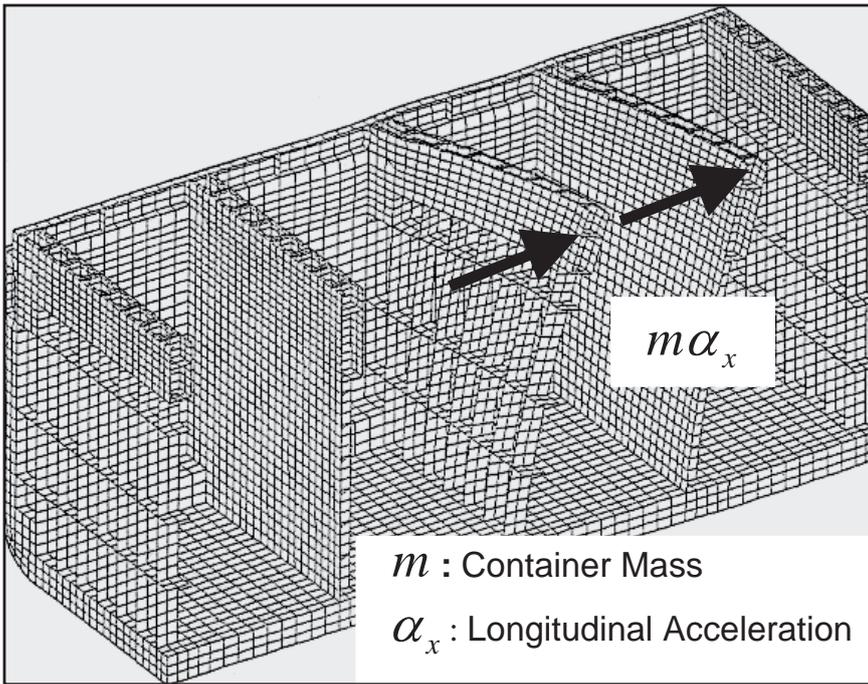


Figure 5: Lateral deformation of transverse bulkhead due to ship motion.

between the centre hatchcover (HCD2) and the side hatch cover (HCD1). Hence, the diagonal displacement of hatch opening can be estimated by measuring the relative motion between HCD1 and HCD2.

In this case, the deviation between HCD1 and HCD2 is also affected by the fore-aft deflection of the cross deck strip. To obtain accurate deformation due to pure torsion, it is necessary to subtract the component due to the fore-aft deflection obtained from the procedure stated in 3.2. (a).

10,596 data have been measured during two and half years of measuring period. 73 measured data, which has more than 10⁻⁴ of cumulative damage factors by the fatigue sacrificial specimen [4] of 20 minutes, have been chosen from all data. The component of whipping vibration is extracted from the data by a filtering process.

From the resulting time history, several occasions of whipping were measured. Whipping vibrations were heavily-dampened over a 30 second period, at the longest.

The number of occurrences of whipping vibration was divided into three ranges by stress range. The first range is more than 100MPa. The second range is between 40MPa and 100MPa. The third range is smaller than 40MPa. The number of occurrences of whipping vibration of first range and the second range are 11 times and 64 times, respectively. Those numbers are counted during the measurement period of two and a half years, while the number of occurrences is extrapolated to take account of a ship's life of 20 years. In order to calculate the cumulative damage factors, D curve of HSE for butt joint are used. From Miner rule and Heibach correction for low stress range, the cumulative damage factor of two ranges is 0.04, considering 30 seconds dumping. This result shows that there is not a large effect on the fatigue strength of the hull girder. This damage factor is calculated from a high cycle stress range, and the cumulative damage factor shall be added to cumulative damage factor induced by lower cycle.

The cumulative damage factor is increased by 0.04 according to the measurement results from ship B, which experienced more severe whipping than ship A. Therefore, some safety space for fatigue strength is required.

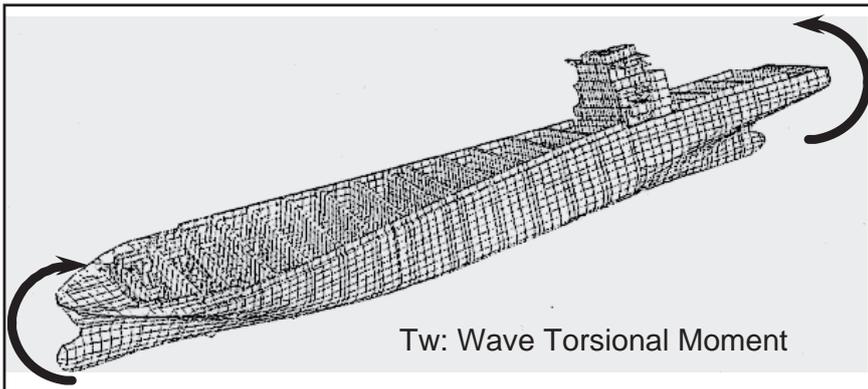


Figure 7: Containership subjected to torsional moment.

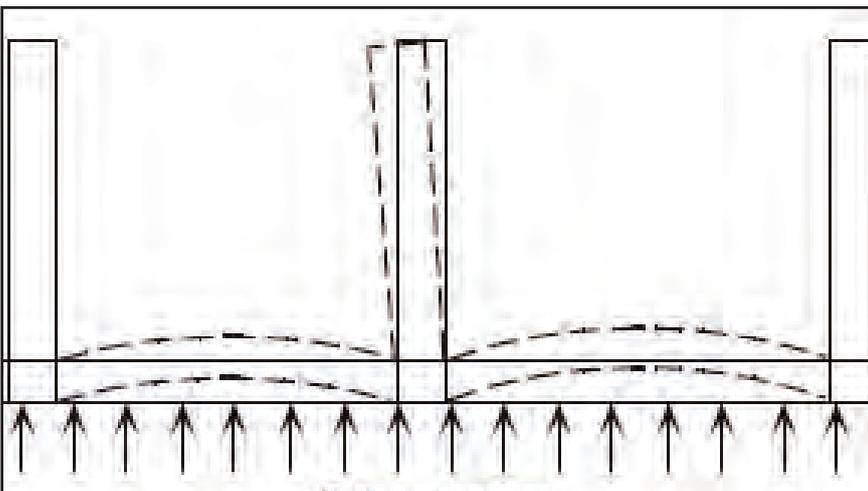


Figure 6: Lateral deformation of transverse bulkhead due to double bottom deformation.

the relative movement of hatch covers. As illustrated in Figure 11, the hatch covers of this vessel are fixed in the cross-deck

structure by the pin stopper at their aft end, therefore, relative longitudinal displacement is caused by torsional deformation of opening

metaldyne

METALDYNE INTERNATIONAL (UK) LTD

Is your damper providing engine protection?

Torsional Vibration Dampers

Maintenance and Repair of Holset Vibration Dampers



- Systematic Fluid Sampling provides early warning of damper failure
- Service minimises long-term running costs
- Maintenance saves cost of replacement and down time

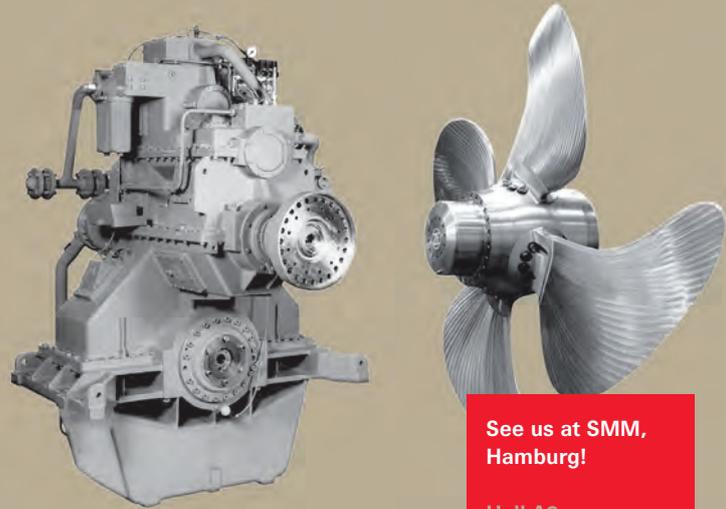
Tel : +44 (0) 1422 395106
 Fax : +44 (0) 1422 354432
 davidwhitaker@metaldyne.com
 www.metaldyne.co.uk

FORMERLY **SIMPSON INDUSTRIES** **HOLSET**
 (SIMPSON INT UK LTD / HOLSET ENGINEERING VISCOUS DAMPERS)



ZF Technology – the intelligent choice.

Because you can rely on quality gearboxes, propellers and controls.



See us at SMM, Hamburg!

Hall A3
 Stand A3.300

www.zf.com

Fleet operators as well as ship owners want efficient vessels with high availability and reliability. This means installed equipment must be easy to maintain, have low through-life costs and perform around the clock in the most demanding conditions and meet Classification Society rules.

ZF Marine provides complete systems comprising gearboxes, shafts, bearings, propellers and control systems to satisfy these requirements and has a worldwide after-sales and service network on call at all times. We help you run a profitable business!

Please see our comprehensive product portfolio, dealers' addresses and much more, at www.zf-marine.com

Driveline and Chassis Technology



Rivertrace Engineering Ltd

RTE

Rivertrace Engineering is a market leader with over 30 years experience of Oil in Water Monitoring. RTE manufacture oil content monitors for the marine, offshore and industrial markets with up to date engineering solutions encompassing PFM technology. Our client list includes most of the worlds' separator OEMs, shipyards and vessel operators. We have IMO type approvals for both Bilge and Ballast monitors. Our global network of agents ensures local service at most ports.



Smart Cell
 15ppm Bilge Alarm
MEPC 107(49)

Smart ODME
 Oil Discharge
 Monitoring Equipment
MEPC 108(49)

SMM Tuesday 23rd Sept – Friday 26th Sept 2008
 Hamburg Messe – Hall A1 Stand No. 322



INCREASED ASSURANCE
DISCHARGE MONITORING SYSTEM
 Demonstrate Marpol Compliance
 Cost Effective prevention of illegal discharge
 Capable of recording miscellaneous ship's data
 Compatible with all IMO resolutions
 Communications Package powered by **purplefinder**



SPECIALIST IN WATER QUALITY MONITORING

Rivertrace Engineering Ltd
 Unit P, Kingsfield Business Centre
 Philanthropic Road Redhill
 Surrey RH1 4DP England

Tel: +44 (0)870 770 2721
 Fax: +44 (0)870 770 2722
 email: sales@rivertrace.com
www.rivertrace.com



To enjoy early
bird stand rates
book by
31 March 2009

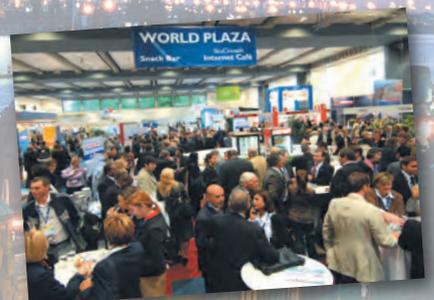
Visit the website for details

Cruise • Ferry • Rivercruise Convention

In co-operation with:



Europe's leading
**Cruise, Ferry
and Rivercruise
Convention**
returns in 2009!



www.seatrade-europe.com

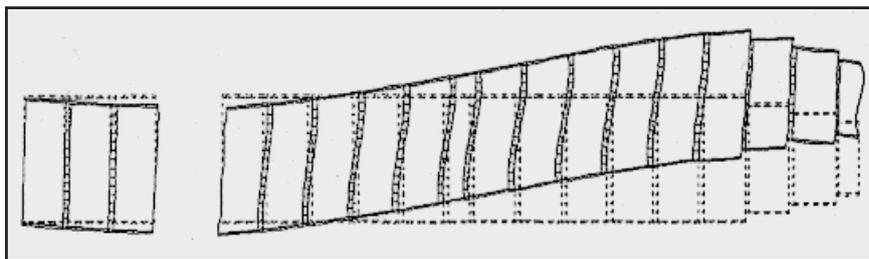


Figure 8: Hatch opening deformation caused by torsion.

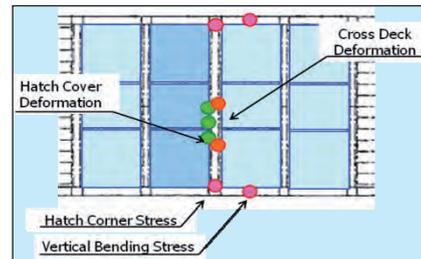


Figure 9: Arrangement of sensors for hatch opening deformation.

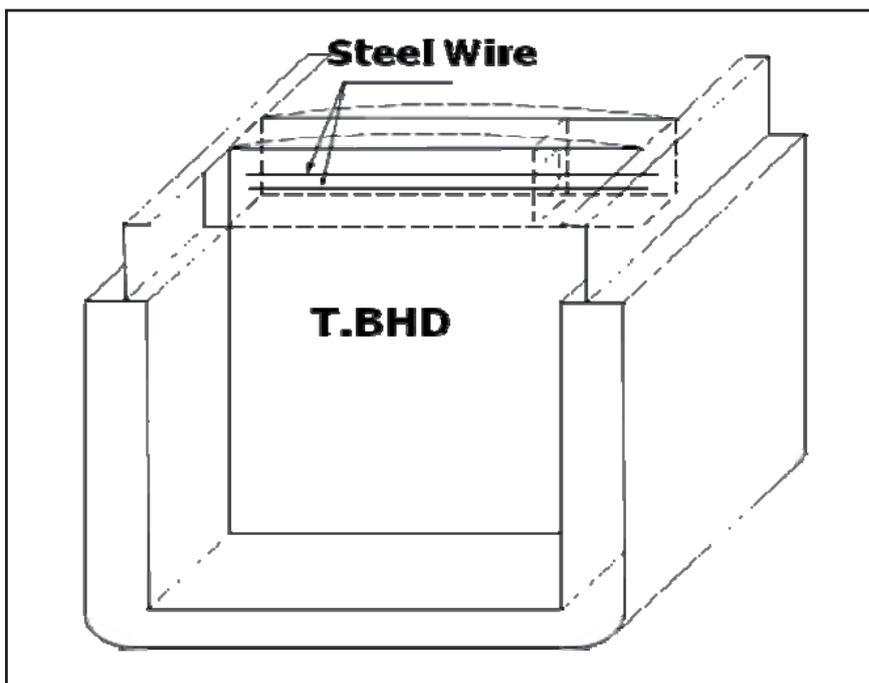


Figure 9: Measurement system of lateral deformation of transverse bulkhead by steel wire.

Figure 10: Steel wires and laser sensor for measuring the lateral deformation of transverse bulkhead.

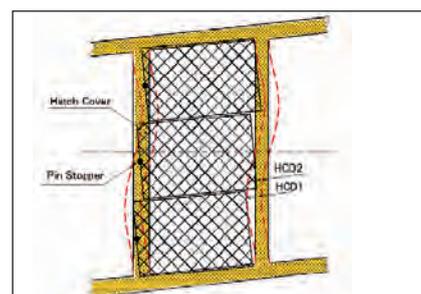
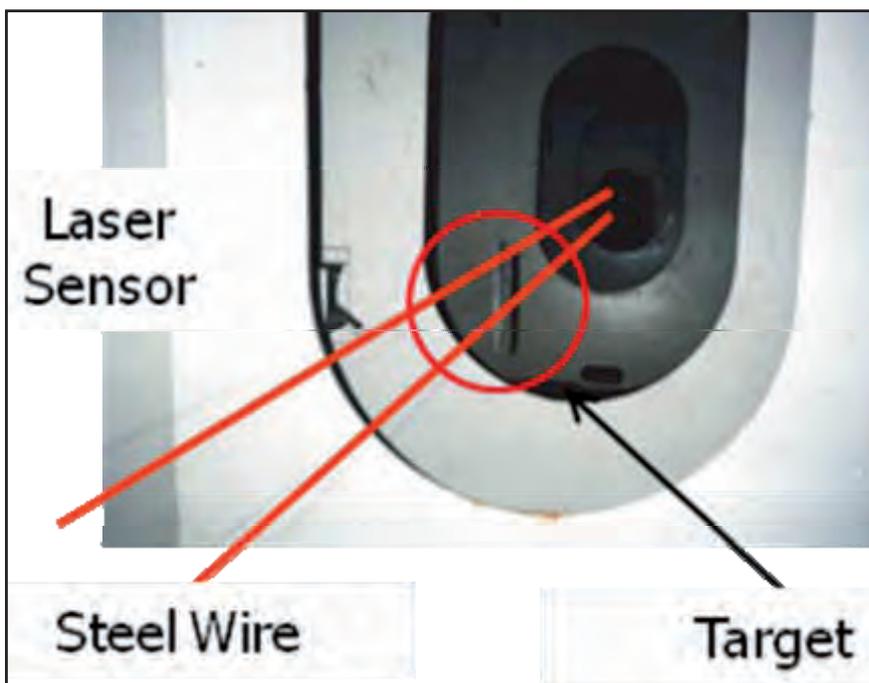


Figure 11: Measurement of hatchcover displacement.

As to conventional ships, the whipping effect has been covered by the implicit safety margin. It must be noted that the enlargement of container ships may turn this effect into a more important factor. Therefore, investigation into the difference of this effect among various designs remains essential. [NA](#)

REFERENCES

1. T.Okada, Y.Takeda, T.Maeda, 'On board measurement of stresses and deflections of a Post-Panamax containership and its feedback to rational design', Marine Structures 19, 2006
2. K.Miyahara, R.Miyake, N.Abe, A.Kumano, M.Toyoda, Y.Nakajima, 'Full-scale measurement on hull response of a large-container ship in service', OMAE 2006, 2006
3. M.Toyoda, H.Kusumoto, T.Okada, E.Kobayashi, 'Advanced structural design of containership to achieve overall safety and economy', Design & Operation of Container Ships RINA, 22-23 November 2006
4. N.Yamamoto, K.Okamoto, A.Kumano, 'Full-Scale Stress Measurements and Observation of Fatigue Sacrificial Specimen', Conference Proceedings the Japan Society of Naval Architects and Ocean Engineers Volume 2E, 2006



INTERNATIONAL MARITIME DEFENCE SHOW

IMDS 2009

24-28 June



RUSSIA St. Petersburg

THE 4th INTERNATIONAL MARITIME DEFENCE SHOW

MARITIME & DEFENCE EXHIBITION

CONFERENCES AND SEMINARS

SHIPS, AIRCRAFT AND
WEAPONS DEMONSTRATIONS

VIP-NEGOTIATIONS

VISITS TO SHIPYARDS AND PLANTS

Organizer:



The Ministry of Industry
and Energy of the
Russian Federation

at the support of:



Russian Defence
Ministry



Federal Service
for Military-Technical
Cooperation



Ministry of Foreign
Affairs of Russia



St. Petersburg
Government



ROSOBORONEXPORT



EXHIBITION OPERATOR

Morsky Salon JSC

“Morsky Salon” JSC

191119, Russia, St.Petersburg, Box 202, Tel/fax: +7(812) 764-66-33, 764-99-25, 764-68-10,
764-95-12, 764-78-66. E-mail: info@navalshow.ru



www.navalshow.ru

Containers in a cold climate

First in series of ships is delivered which will be able to operate year-round in Arctic conditions without ice-breaker support.

German shipyards Aker MTW Werft in Wismar and Aker Warnemünde Operations in Rostock-Warnemünde have delivered the first out of four icebreaking container/cargo ships of the type Aker Arctic CS 650 for year-round Arctic operations to Russian mining company OJSC MMC Norilsk Nickel.

Hull number 156 was named *Monchegorsk* and left the shipyard in Wismar on Saturday, 2 August, bound for Murmansk for loading, in order to be integrated into a regular service connecting to Dudinka, on the Yenisey River.

Norilsk Nickel ordered four vessels of the Aker ACS 650 type for €320 million in 2006. Two further vessels of the series are due to delivery in the fourth quarter 2008, while delivery of the fourth is scheduled in the first quarter 2009.

Aker said that the order had represented 'an important step in repositioning of both German shipyards to deliver more specialised ships.'

Aker ACS 650-type ships are designed to navigate ice-covered seas without icebreaker assistance, using the Double Acting Ship (DAS) concept, developed and patented by Aker Yards. When crossing waters with heavy ice conditions, the vessel moves stern-first to break its way through level ice of up to 1.5m thick or ridges up to 15m. When returning to lighter ice conditions or open waters, the vessel turns 180 degrees and sails traditionally, bow-first. The vessels are powered by a podded, fully azimuthing propulsion system. The vessels can navigate Arctic Ocean routes unassisted year-round, where the shipowner's current fleet requires the deployment of icebreakers during the long Arctic winter.

At 169m long and 23.1m wide, *Monchegorsk* has a draught on 9m for winter deployment under heavy ice conditions, when the deadweight is given as is 14,781tonnes. During the summer, the ship will operate at a draught of 10m, while the deadweight is given as 18,339tonnes.

The ship can transport dry and bulk cargo as well as containers. Container stowage capacity is 646TEU with 42 reefer sockets; containers with non-standard dimensions can also be transported.

Hull number 156 was built in a production split between the sites in Warnemünde and Wismar, as will be the case for the other three vessels in the series.

Aker Yards delivered the prototype vessel *Norilskiy Nickel* to Norilsk Nickel in April 2006, as a result of a cooperation between Aker Yard's shipyards in Warnemünde and Helsinki. Helsinki-based Aker Arctic established optimal design, performance, cost, and technological solutions for the vessel through several feasibility studies and ice model tests.

Aker said *Norilskiy Nickel* had successfully demonstrated its performance and logistics efficiency on the Dudinka – Murmansk route since going into service. The decision to order four additional double-acting vessel newbuildings followed successful ice trials of *Norilskiy Nickel* in the Kara Sea area in March 2006.

'The vessel exceeded all contractual performance requirements,' the shipbuilder said. 'It showed excellent sea-handling and moved efficiently through ice ridges with depth of more than [the] ship's own draught. The speed at 1.5 metre thick level ice, specified in the vessel's newbuilding contract was exceeded by more than one knot.' **NA**

TECHNICAL PARTICULARS

Monchegorsk

Vessel Type:	Aker Arctic CS 650, ice-breaking container/cargo ship
Yard:	Aker Yards Germany
Length	169.0m
Beam	23.1m wide
Deadweight:	14,781tonnes / 18,339tonnes
Cargo holds:	18,500 m ³
Container capacity:	646TEU
Reefer slots:	42
Engines and performance:	diesel-electric 3 x 8,314kVA
Propulsion:	Azipod, shaft performance 13,000kW
Ice-breaking capability:	1.5m thick equivalent ice
Speed:	15.5knots
Design:	Aker ACS 650 by Aker Arctic

Monchegorsk left the shipyard in Wismar on Saturday, 2 August, bound for Murmansk.





**Seatrade
med**

CRUISE & SUPERYACHT
CONVENTION

**Secure
your exhibition
space today**

9 – 11 December 2008

Venezia Terminal Passeggeri, Venice, Italy

The Med's **leading cruise and superyacht** event

Sponsored by

ABS
Aeroporto Marco Polo SpA (SAVE)
Alilaguna Lines
Associazione Italiana Porti Turistici
Bassani SpA
Fincantieri
Helloveneziana*
Ligabue Group
Lloyd's Register
MSC Crociere
TravelClear
The World's Leading Ground
Operators
Venezia Terminal Passeggeri SpA

Principal supporter

MedCruise

Supported by

European Cruise Council

Under the Patronage of

Regione del Veneto
Provincia di Venezia
Città di Venezia -
Assessorato
al Turismo

*Helloveneziana is a
trademark of Vela SpA

- International exhibition featuring a cross section of products and services from leading maritime suppliers
- Conference programme examining the opportunities, outlook and challenges for both markets
- Travel agent training programme, combining motivational training sessions with the opportunity to meet cruise lines and destinations
- An extensive social programme providing the ideal platform for business networking

Organised in association with  VENEZIA TERMINAL PASSEGGERI s.p.a.

www.seatrade-med.com

Tel: +44 (0)1206 545121



Seatrade Mediterranean Cruise &
Superyacht Convention is owned by CMP
Maritime Ltd and organised by Seatrade

More than one way to carry a container

Deltamarin has developed a new passenger/vehicle/container vessel design for the Canadian shipowner and cargo and tanker operator Transport Desgagnés to operate on the Gulf of St. Lawrence.

The demanding task of developing a combined passenger, vehicle and container carrier for Transport Desgagnés involved a design capable of operating year-round in the harsh Gulf of St. Lawrence environment with high capacity and good ice-going capabilities, as well as one that could ensure excellent manoeuvrability in limited harbours.

Limited main dimensions due to harbour restrictions led to the election of a short and full hull, offering good performance and adequate course stability. The hullform incorporated a special type of bulbous



Transport Desgagnés multi-functional passenger and freight ship, developed by Deltamarin in cooperation with Navtech.

TECHNICAL PARTICULARS	
Transport Desgagnés multipurpose passenger, vehicle and container carrier:	
Length overall	95.0m
Breadth	19.35m
Draught, design	4.42m
Speed, service	15knots.
Passengers	381
Passenger cabins	63
Containers	125TEU
Ice class	1A

bow for open water and ice operations, a streamlined bow to reduce wave making, smooth transition areas, and a long centre skeg in the aft ship to improve course stability.

Two azimuthing propulsion units (Z-drives) and two bow thrusters were included to achieve excellent handling capabilities for the vessel against heavy winds in narrow and congested routes and harbours.

Deltamarin was selected by the owner to develop the tender package for international yard tendering. After detailed yard evaluations, Kraljevica Shipyard in Croatia was selected as the builder. The final contract design was developed together with model

testing of the hull form and propulsion arrangement.

Extensive use of Computer Fluid Dynamics (CFD) optimisation with model tests resulted in better results than expected.

The design is tailor-made for the route and local demands offering high capacity with limited length and draught. The northern conditions were taken into account by optimising the hull form for speed, manoeuvrability and course stability in shallow water and ice.

Deltamarin Group said it would continue the newbuilding project with Basic and Detail Design packages for the Kraljevica Shipyard, 'thus ensuring seamless design continuation and faster delivery time.' **NA**



Metritape Radar

JOWA Consilium introduces Radar

Get the **Best** of Both Worlds

Radar in Cargo Tanks

Resistance-tape in Ballast, Service & Draft

See us at **SMM Hall A1, Stand 335**

Website: www.jowa-consilium.com

+1-978-486-9800





RINA



The Royal Institution of Naval Architects

2008 PRESIDENT'S INVITATION LECTURE

“The Changing Face of the LNG Industry”

Presented by

Andy Richardson

Shipping Project Manager, Qatargas Operating Company Ltd.

5 November 2008 at One Whitehall Place, London, UK

The annual President's Invitation Lecture is major event in the Institution's calendar, which aims to present important and topical maritime themes and issues by leading individuals in their sector of the maritime industry. The 2008 President's Invitation lecture will maintain that tradition with Andy Richardson's presentation on the vital issue of the LNG industry, today and in the future.

The Institution looks forward to welcoming you to the 2008 President's Invitation Lecture and the dinner which follows the Lecture.

Tickets cost £52+VAT (£61.10 including VAT) per head. Corporate tables of either 8 or 10 may also be reserved subject to availability.

The President will welcome guests for a drinks reception from 6:30pm in the Reading and Writing room. Andy Richardson's presentation will start at 7pm in the Gladstone Library which will then be followed by dinner.

If you would like to attend, please contact Amber Williams:

Amber Williams
10 Upper Belgrave street
London
SW1X 8BQ
Tel: +44 (0) 20 7235 4622
Fax +44 (0) 20 7259 5912
Email awilliams@rina.org.uk



The 2008 President's Invitation Lecture is sponsored by ABS

Afterthoughts on *Napoli*

Although unusually steep and powerful, the waves that caused the catastrophic hull failure on the containership, *MSC Napoli*, were well below the heights used to determine the hull strength needed for safe operation in North Atlantic Ocean conditions.

DNV, class society for *MSC Napoli* at the time of the incident, has concluded a 15 month investigation into the causes of the hull girder collapse that caused the failure and has taken the lead in assessing other at-risk vessels. The conclusion: this is not a general problem for the container industry and very few vessels need modification.

The 275m long *Napoli* suffered a major hull crack that flooded the engine room while travelling through a wind storm 50 miles off the coast of Cornwall, UK, in January 2007. The vessel was en route from Antwerp, Belgium to Portugal. All 26 crew members were rescued and, in danger of sinking, the listing vessel was taken under tow and beached closed to Branscombe, Lyme Bay, UK.

Many possible causes were touted as news of the disaster hit. Speculation ranged from fatigue failure or main engine vibrations to overall hull girder collapse due to severe wave loads, possibly amplified by a global hull vibration (whipping). However, the salvage operation revealed the whole ship hull girder had collapsed and broken just aft of the engine room area in a hogging state (when a vessel drops at the extremities).

‘The major structural failure of a containership is a very rare event which has only happened a few times in the 50-year history of this ship type,’ said Tor Svensen, head of DNV Maritime. ‘Containerships are designed with a double hull and bottom and every alternate bulkhead is water tight. When a ship of that size breaks in half at sea, something is fundamentally wrong. We therefore made all our best resources available to discover the cause.’

The first step taken by DNV’s assembled team of experts was to go through the vessel’s in-service records. This indicated that the hull was well maintained but it also



Napoli was the biggest containership to be sailed when it was built under Bureau Veritas class in 1992.

uncovered a previous grounding accident in Singapore Strait in 2001. However, grounding simulations and theoretical strength assessments did not indicate any likely links to the present incident.

“The *MSC Napoli* incident has shown us that rare events do happen and it is important that responsible stakeholders use this new knowledge and experience”

Computerised load and strength assessments of the vessel were then undertaken. Both the change in still-water hull girder loads due to flooding and the wave loads experienced at the time were assessed using DNV WASIM hydro software. All available environmental data were used and Nauticus Hull software and the PULS buckling code were used to see if the global hull loads actually could have exceeded the corresponding hull girder

ultimate capacity.

DNV confirmed that the engine room flooding was purely a consequence of the rupture, not a contributing factor. Other damage hypotheses were also tested including whether propeller out of water combined with engine-induced vibrations led to fatigue and cracking of the double bottom of the main engine support structure. The study subsequently showed that the ultimate hull girder strength limit just aft of the engine room area could have been exceeded as the wave loads, possibly amplified due to whipping, were close to ultimate capacity.

Olav Nortun, DNV technical director, had overall technical responsibility for the analysis work performed. ‘This sort of modelling is what designers and class normally do when new designs are to be built,’ he said. ‘Global finite element analyses and hydrodynamic models of the sea loading are made, but with *Napoli*, the challenge went way beyond that point.’

‘Our ambition was to simulate a structural breakdown, involving the collapse of plating and stiffeners and the consequent deformation of major structures. A traditional linear analysis does not suffice for this purpose because the structure is deformed beyond the steel’s yield point. Non-linear tools had to be put to work.’

An extensive finite element model of the whole vessel was prepared, including structural details such as sea chest, stiffeners, plating and flanges, and the computer hungry non-linear analyses were performed using ABAQUS. The result was a model simulation involving the vessel heading up to a severe irregular

The Royal Institution of Naval Architects



SAFEDOR

Design, Construction & Regulation for Safety

Final Conference

27-28 April 2009, International Maritime Organisation, London

SAFEDOR (Design, Operation and Regulation for Safety) is about to complete its four years R&D programme. To mark this event, partners of SAFEDOR will present the latest and overall results of their work at a public conference at the premises of IMO on 27 and 28 April 2009. The event will provide an excellent opportunity to familiarise engineers with the principles underlying risk-based ship design, regulation, operation and approval, and to discuss a variety of applications.

Risk-based approaches in the maritime industry started in the sixties with the concept of probabilistic damage stability, were later on widely applied within the offshore sector and have been now adapted and refined to meet the requirements of the maritime and shipping sector. The SAFEDOR approach focuses on risk-based design and approval to provide a transparent and consistent methodology that accounts for the safety performance of a ship design along with other performance variables like speed, cargo capacity, endurance, etc. Thus, the aim of SAFEDOR is not only to provide the technical elements of a new design and approval methodology but also to establish a new safety philosophy.

SAFEDOR tackled this new philosophy in theory and practice. The modernisation of the regulatory framework is one central objective of SAFEDOR and results comprise the submission of Formal Safety Assessments for several types of ships and proposals for a risk-based ship and system approval processes along with acceptance criteria at ship and function level. The second main objective is to establish the process for risk-based design along with a novel decision-making concept and advanced simulation tools to predict the safety performance of a ship in extreme or accidental conditions. To ensure practicability of the new approaches, a variety of applications were performed which have resulted in a series of innovative ship and ship systems concepts and designs.

Standing for "Design, Operation and Regulation for Safety", SAFEDOR is an Integrated Project (IP) funded by the European Commission under the 6th RTD Framework Programme, in which a total of 53 project partners - coordinated by Germanischer Lloyd - from all sectors of the maritime industry in Europe are participating. More information is available at www.safedor.org.

If you have any questions regarding this event, please contact Amber Williams on:

Tel: +44 (0)20 7201 2401

Fax: +44 (0)20 7259 5912

Email: safedor@rina.org.uk

Websites: www.safedor.org & www.rina.org.uk/events

wave train, and the resulting damage closely matched the failure observed on *Napoli*.

The hull girder wave loads assessed were of the same order of magnitude as the International Association of Classification Societies (IACS) North Atlantic design loads, which correspond to wave heights of around 14metres-15metres but the wave heights experienced by *Napoli* in the English Channel on the day of the disaster ranged between 7metres and 9metres. One explanation for this is that the relatively shallow water in the channel (70metres), combined with the specific wind and current conditions at the time, led to unusually steep, high energy waves. Hogging is common in containerships and these waves could have generated a whipping response that amplified the already severe hull loads.

The non-linear analysis showed that the local buckling strength in the bilge, bottom and tank top area just forward of the engine room bulkhead was low due to the transverse stiffening arrangement

present. Transversely compressed plates have significantly lower buckling strength than the axially compressed stiffened plates of the longitudinal stiffening forward of the engine room.

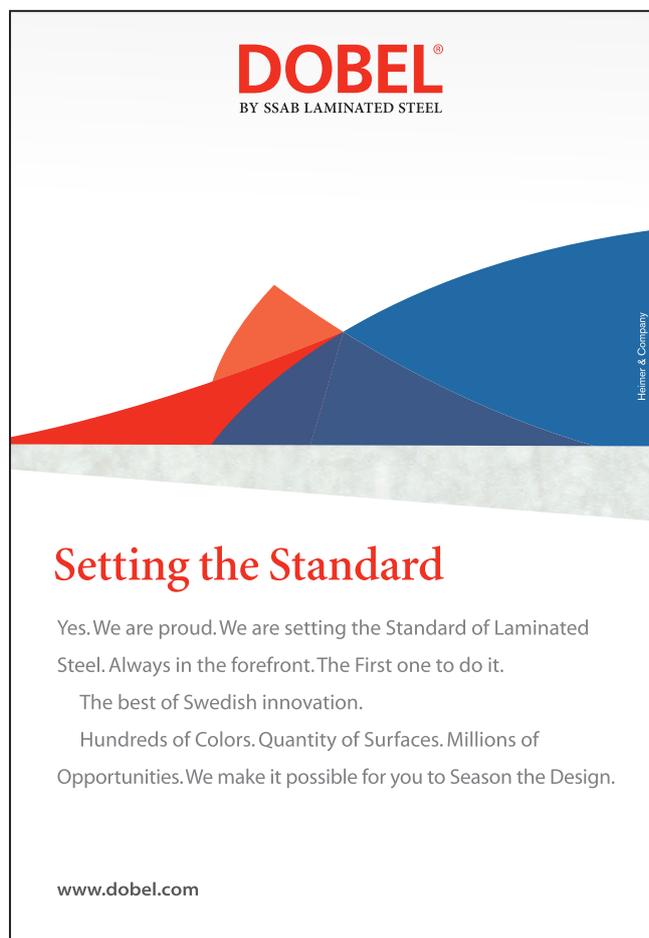
Other vessels may be at risk and DNV has prepared a procedure for screening existing containerships and newbuilds and has checked all those currently under DNV class. Smaller containerships with the superstructure right at the aft of the ship are not vulnerable but as the superstructure is moved increasingly forward on larger ships, the hull girder bending moment increases towards the midship area and hull girder strength needs to be evaluated. Critical buckling stress of girder, plate and stiffener should be determined and an ultimate limit state buckling check performed. Corrective action should be considered when critical usage factors or ultimate moment capacities exceed defined limits.

Only two other DNV classed vessels were shown to be at risk. 'The probability of a similar event happening again is very

low but the *MSC Napoli* incident has shown us that rare events do happen and it is important that responsible stakeholders use this new knowledge and experience,' said Mr Nortun.

Not all ships use their full potential with regard to container loading on the hull girder and, in this case, the most cost-effective solution is to reduce the allowable still water bending moment. Alternatively, steel work is required to install intercostal buckling stiffeners in the critical area. In most cases this will be a minor job that can be carried out while the vessel is afloat.

DNV is sharing the results of their analysis with all IACS members to help prevent another catastrophe. 'I believe all containerships classed by IACS societies are now being looked at. The screening procedure and results have also been shared with the UK Marine Accident Investigation Branch,' said Mr Nortun. 'Have we done all we can? As far as we can see now, yes, we have.' *NA*



DOBEL®
BY SSAB LAMINATED STEEL

Setting the Standard

Yes. We are proud. We are setting the Standard of Laminated Steel. Always in the forefront. The First one to do it.

The best of Swedish innovation.

Hundreds of Colors. Quantity of Surfaces. Millions of Opportunities. We make it possible for you to Season the Design.

www.dobel.com

Heimer & Company



SSPA

**YOUR
MARITIME
SOLUTION
PARTNER**

For more info please visit www.sspa.se

Experience the progress.

**VISIT US
AT THE SMM IN HAMBURG
HALL A1, BOOTH NO. 535**



Liebherr-Werk Nenzing GmbH
P.O. Box 10, A-6710 Nenzing/Austria
Tel.: +43 50809 41-280
Fax: +43 50809 41-448
ship.port.crane@liebherr.com
www.liebherr.com

LIEBHERR

The Group

How to handle a booming market

The market for ship equipment will remain strong until at least 2010, according to Johannes Neteland, president of leading supplier TTS.

TTTS president Johannes Neteland told *The Naval Architect* that his group was well placed to take advantage of the healthy number of newbuilding orders still being placed by owners. 'The ships equipment market is still very strong with 40-60 ships contracted every week,' he said. 'Hence we expect this market to continue to be strong through 2008, 2009 and 2010. After that we expect a decline.'

Speaking before the announcement of the company's second quarter results, Mr Neteland said a favourable market across the company's marine product areas would help TTS meet its forecast of achieving turnover growth of more than 45% year-on-year over the course of 2008.

'We have had a tremendously good market,' he said. 'Since the last half of 2003, the shipbuilding market has been extremely good with record levels of contracting.'

'TTS took some strategic positions early in the boom by acquiring several ships' equipment companies which increased our scope and made growth possible.'

A strong position in China, where TTS has two joint venture companies with shipbuilding groups CSSC and CSIC, has been critical to growth. 'They market and supply our ships equipment portfolio in the Chinese market. That has given us a large share of the growing Chinese ships equipment market,' he explained.

The booming offshore sector would constitute a growing part of the group's earnings in the coming years. 'The offshore business is in 2008 approximately 30% of TTS' business. I expect it to be more than 50% within the next few years,' he added.

TTS has also had success in the car carrier market 'where we have increased our market share significantly, and have become the major player' and in cargo crane supply where the purchase of Germany-based LMG four years ago has allowed TTS to manage such rapid demand growth.

'In 2004, the company was relatively small with very low level of new sales. Today the company has more than a billion NOKs in



Johannes Neteland, president, TTS, dismissed suggestions that order backlogs should be a cause for concern among customers.

order reserves and there are four times as many employees.'

Indeed, TTS' first quarter results revealed record order backlogs, rising NOK 746 million (US\$138.7 million) in the first three months of the year alone to total some NOK7695 million. Although Mr Neteland said backlogs had risen across the company's equipment ranges, and had become particularly tight for offshore cranes and bulk carrier cargo cranes and hatchcovers. He dismissed the suggestion that backlogs should be cause for customer concern.

'The order backlog is linked to the delivery schedule in the yards and is of no concern. We expect it to continue to grow,' he said.

For marine cranes, however, he did admit that lead times had ballooned, mainly because sourcing components had got more difficult in the face of the global upsurge in demand. 'Slewing bearings and hydraulic components are critical items for a crane,' he said. 'We used to have delivery times for these items of 6-8 months. Now the delivery times are from 20 - 30 months.'

'Because of the delivery times for long lead items, growth demands tight planning

and a lot of focus on logistics. But these hot market conditions create of course a lot of problems for an equipment supplier such as TTS.'

Turnaround on deck

TTS' deck machinery division, which has seen relatively slow turnover growth compared to the rest of the group, was not underperforming but there was room for improvement. 'We acquired Kocks in 2005 after the company had gone bankrupt,' he said. 'We took over an order backlog with a lot of losses.'

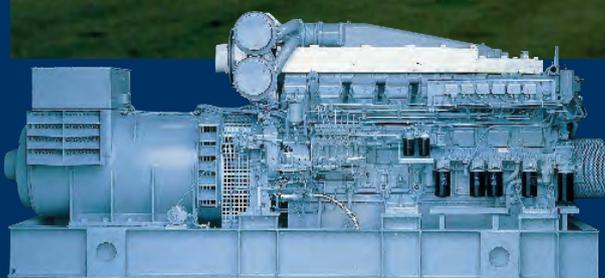
'During the last two years we have turned the company around, improved the quality and built an organisation. You will see much better development in this area in the future.'

TTS expects demand from owners for electrical deck equipment to grow in future because of environmental pressures, according to Mr Neteland.

He also said the company was - when asked for suggestions - now proposing that clients use low pressure hydraulic systems instead of high pressure options 'due to costs for the yard.' **NA**

See us at
SMM HALL A4
Booth A4 320

MITSUBISHI PLAIN SAILING



Clean Power energy

SAFE AND RELIABLE ENERGY SYSTEMS

Cruise ships, ferries and jumbo transport ships have become sailing cities. These vessels require a lot of energy to keep on sailing. Lighting, climate control systems, conditioned cargo, computer- and navigation systems, all need electric power supply.

Mitsubishi auxiliary generating sets are in use in all kind of vessels to give constant and reliable performance, day and night. Naturally, because the environment is of concern to us all, the Mitsubishi sets supply their energy within the European emission standards.

MITSUBISHI KEEPS THE WORLD TURNING



MHI Equipment Europe B.V.

P.O. Box 30101, 1303 AC Almere, The Netherlands
Tel. +31-(0)36-53 88 311, Fax +31-(0)36-53 88 342
www.mhimee.nl

T H E P O W E R C O M P A N Y



Certified acc. to
ISO 9001



C 039
Accredited by the
Dutch Accreditation
Council RVA



IMO
Certified

Versatile winch control

ABB has launched a dedicated variable speed drive for winch control applications in the marine and offshore industries.

ABB's new variable speed drive winch control is the result of an extensive research and development programme involving the participation of winch manufacturers all over the world. As a result of this extensive collaboration, the drive offers features that include:

- Anchor and mooring control from three control stands
- Complete and preprogrammed range of winch protection functions
- Inbuilt programmable logic controller (PLC) features
- Unique full torque performance at zero speed without encoder
- Approved and certified by the world's leading marine and offshore classification societies

A key claimed benefit of the ABB industrial drive with winch control is the ability to operate the winch directly from three control stands. These are typically located on the port, starboard and upper deck of the vessel for convenient operation.

This enables the operator to control the speed of the winch in harbor from the most appropriate point in the vessel. The operator can start and stop or raise and lower the winch from any of the three stands. A complete set of inbuilt protection functions safeguards operators and crew from injury.

Anchor and mooring control

The anchor or mooring mode can be selected from any of the three control stands and operated either automatically or manually with a joystick to ensure precise speed control. Winch performance and operator safety are enhanced by simple yet highly effective features.

Anchor control is equipped with slip detection and anchor-in protection. Slip protection is automatically activated if the anchor becomes snagged on the seabed. The drive detects the increase in load on the chain and activates a load switch which immediately reduces the speed and torque of the winch motor to a level set by the winch manufacturer.



ABB's new variable drive winch control package.

This unique feature prevents damage to critical components like the motor shaft, winch drum and chain.

A second anchor control feature is anchor-in protection. As the anchor is raised and approaches its end limit, the drive computes the correct moment to slow the winch down so that the operator can complete the anchor-in task manually with the joystick. This ensures precision and safety and prevents damage to the vessel from occurring.

Mooring control is similarly equipped with effective protection features. The tension of the mooring ropes can be controlled either automatically or manually from any of the control stands. The drive detects increasing tension in the rope and immediately reduces the speed and torque of the motor to prevent the rope from snapping and the winch system from overloading.

Completing these operational and protection features is the integration of the mechanical brake with the drive. This function uses torque memory and pre-magnetizing to open and close the mechanical brake safely and reliably without load drop at each new start. It also monitors the brake status to ensure that it and the drive's run/stop status

are synchronized.

Part of the attraction of the ABB drive with winch control is said to be that it eliminates the drawbacks and disadvantages of traditional hydraulic systems and alternative drive solutions.

Hydraulic systems, said ABB, can be costly and complex, 'consisting of components that need regular maintenance and constant supplies of hydraulic oil'.

'Another unique and differentiating feature of the ABB drive with winch control is its adaptive programming,' the company said. 'This enables winch manufacturers and end users to modify the comprehensive winch control functionality provided by ABB and develop their own functionality according to need – much as if there were a small PLC inside.'

The ABB industrial drive with winch control is available in single drive or multi-drive modules across the full power range and for all voltage classes, from 0.55kW to 5600kW. ABB supports its drives customers with its own dedicated service units and an extensive ABB Drives Alliance global network, including onsite representation in most major ports of the world. [NA](#)

Kawasaki

is the top brand of steering gears and deck machinery — manufactured in the world's major shipbuilding countries.

For manufacturing Kawasaki-brand steering gears and deck machinery, we have production centers in Japan, Korea and China, three countries that together account for more than 80% of the new ships built in the world today. Local production in countries where new ships are regularly manufactured is, we believe, the key to both reliability and economy.

● **UK / Kawasaki Precision Machinery (UK) Ltd.**

Korea / Flutek, Ltd.

Japan / Kawasaki Precision Machinery Ltd.

China / CSIC/Wuhan Marine Machinery Plant Co., Ltd.

**90 years of experience in hydraulic technology
— guarantee safe, economical operation.**

High-pressure, compact, easy to install and maintain, Kawasaki steering gears are proud of long history and rank No. 1 in the world in terms of quantity delivered: over 16,000 ships have been equipped with them. As quiet, high-pressure systems, our deck machinery has also earned a superior reputation, and in this field, too, we have achieved world-class results, equipping over 5,500 ships.

KPM
Kawasaki Precision Machinery

<http://www.khi.co.jp/kpm/>

Head Office / Main Plant

234, Matsumoto, Hasetani-cho, Nishi-ku, Kobe 651-2239, Japan
Phone: 81-78-991-1133 Fax: 81-78-991-3186

Kawasaki Precision Machinery (UK) Ltd.

Ernesettle Lane, Ernesettle, Plymouth, Devon PL5 2SA, United Kingdom
Phone: 44-1752-364394 Fax: 44-1752-364816

BW embraces Dyneema mooring solution

New mooring line technology, using polyethylene fibre developed by the Dutch company DSM Dyneema, is reported to have increased handling speed, improved safety and cut costs for a fleet of 11 x 76,600dwt tankers operated by BW Shipping Managers.

Singapore-based BW Shipping Managers has decided to introduce a new type of mooring line on a fleet wide basis. The mooring line, manufactured by Samson Rope Technologies, uses DSM Dyneema's super strong, high-modulus polyethylene (HMPE) fibre, which is beginning to offer a mainstream alternative to the wire rope that has traditionally been used for mooring lines.

Wire rope has presented the shipping industry with some significant safety challenges for many years. For example, wire rope can snap back if it breaks under a load, with the potential for causing injuries to crew and stevedores. To address the issue, Dyneema and Samson joined forces to produce Samson AmSteel Blue Mooring Lines, which have now been adopted by BW Shipping for its tanker fleet.

Manufactured with SK75 fibre, Samson AmSteel is a 12 strand braided rope which, size for size, is designed to have comparable strength to wire rope. However it is only 1/7th of the equivalent weight.

According to DSM Dyneema: 'BW Shipping's order is a clear sign that mooring made with our fibre has crossed the divide from being a product that appeals to early adopters to one that is gaining large scale acceptance.'

This order is also significant, the company claims, as safety is only one of the factors behind the decision taken by BW Shipping, suggesting that shipping companies are recognising the total system value of the product. BW Shipping points out that it has selected the line because it also leads to more efficient mooring operations. According



The AmSteel Blue mooring line is not only safer than wire rope alternatives, but offers a reduced requirement for lubrication and other onboard maintenance.

to Captain Paul Jones, general manager, marine department: 'One of the reasons for choosing this type of mooring line is that it reduces the time handling lines. Wires lines are handled individually, whereas with AmSteel Blue multiple lines can be handled at the same time.' He adds: 'There should also be reduced costs based on an anticipated ten year lifespan and significant maintenance savings as almost no work has to be done in-service compared to that required for wires.'

The company says it plans to compare actual costs with anticipated costs once the vessels have completed 12 months in service with the new mooring rope.

While there were other factors, the safety issue ranked highest in the decision making process. 'We felt that we had to look at how we could make life easier and safer for them when mooring. All the feedback from crew onboard to date has been very positive,' says Captain Jones.

Dyneema and Samson are optimistic about the future of this technology in the shipping business. To support the product's advantages, Samson has introduced some new back-up services for owners and operators. These

include a detailed analysis of deck hardware during a ship's construction phase to help identify any potential equipment issues. The company also offers training, and a full annual inspection and review of the mooring system onboard.

Dyneema's Edwin Grootendorst, global market segment manager, heavy marine, says he believes new regulations for HMPE lines on both oil tankers and LNG carriers will trigger higher demand for AmSteel Blue in these markets. 'The use of lines with Dyneema on bulk carriers and containerships is just in the beginning phase, but we expect strong growth in these markets over the next few years,' he says.

Another recent success for Samson and Dyneema was the fitting of AmSteel Blue mooring lines onboard *Stena Performance*, a P-Max class tanker operated by Northern Marine Management of Glasgow. To date ten Northern Marine vessels have been outfitted, or retrofitted, with Amsteel Blue HMPE mooring lines, and this includes Stena P-Max and Ice Class tankers, as well as one VLCC, *Stena Victory*. **NA**

New lubricant protects deck crane gears

A new type of lubricant is said to offer better protection to deck crane gears.

Open gears driving winches and revolving deck cranes onboard vessels can be subject to high strain levels. Furthermore, they need to be protected from harsh environmental conditions, including aggressive salty

air, spray, and extreme temperatures, which can produce wear and corrosion issues.

The lubricant used is a key factor in this context. In particular, it has to have good adhesion properties, and it should

not drip down from the surface of the gears nor be washed off by sea water.

Lubricants dripping from the teeth of the gears are not able to offer a reliable lubricating film on the sides of the teeth and this leads to increased wear and possible gear failure. There are also cost issues as more lubricant is required.

Loose teeth

Germany's Kluber Lubrication has developed an adhesive lubricant called Kluberplex AG 11-462, which is suitable for use in high load environments. The company says the new product has been developed specifically for the lubrication of open gears and rolling bearings in deck, and offshore cranes.

Munich-based Kluber claims that Kluberplex AG 11-462 does not drop off the gear teeth even when exposed to high temperatures and can be used in central lubrication systems at low temperatures as well.

Lubricating properties

The lubricant is said to provide good protection against corrosion induced by seawater and maintains its anti-corrosive and lubricating properties even during gear downtime.

According to Kluber, this results in an increase in the reliability of gears and bearings in deck cranes, as well as longer life time. Kluberplex AG 11-462 is further said to extend re-lubrication intervals compared with conventional lubricants, reducing costs significantly. *NA*



The new Kluberplex lubricant is designed to improve the reliability of deck crane gears.

Demanding applications? We've seen them all.

With proven performance on waters around the world, Hägglunds drive systems can make all the difference. You are up and running smoothly with a simple, flexible design that's easy to install and saves on valuable space. Along with excellent service, we will ensure you get outstanding power capacity and durability with systems made for tough marine environments. **Let us know your demands.**

Hägglunds Drives AB, SE-890 42 Mellansel, Sweden.
Tel: +46 (0)660-870 00. E-mail Business Area Manager:
lars-goran.soderlund@se.hagglunds.com
www.hagglunds.com

Our drive is your performance.

HÄGGLUNDS



ESAB's high-speed plasma cutting, up to 30 % faster and super smooth. That's high productivity and increased efficiency. That's ESAB's new cutting system – with new controller and new Columbus™ nesting software for up to 7 % higher material usage.

Shouldn't we be talking to you?

Visit us at www.esab.com



Fast **finish**

GLOBAL SOLUTIONS FOR LOCAL CUSTOMERS – EVERYWHERE

MacGregor scores with electric drive

MacGregor reports growing success with its GLE series of cranes in which all movements – luffing, slewing and hoisting – are electrically driven.

Electric drives for deck machinery and cargo handling systems offer many advantages compared with hydraulic alternatives, claims the MacGregor group. Oil leakages are eliminated and there is no need for hydraulic pipework. Furthermore, electric drives are not only easier to monitor and maintain, but also offer shipowners and operators important energy savings.

Over the past two years, MacGregor has developed a range of electrically-driven deck equipment that is proving to offer a competitive alternative to hydraulic based systems.

MacGregor highlights several operational advantages, including more precise movements, with smoother acceleration and deceleration, faster line speeds under part loads and faster cycle times. Furthermore, by avoiding the energy transfer between electric drives and hydraulics, the all-electric system reduces power consumption, resulting in lower running costs and a reduced overall environmental impact.

MacGregor also points out that the electric drive cranes are quieter than the hydraulic alternatives. The company states: ‘This latter characteristic is highly significant today when strict noise pollution regulations are being enforced in many parts of the world.’

Onboard trials since March 2007 with



MacGregor's electrically-driven cranes eliminate oil leakages.

for a series of three 13,500dwt cement carriers which are being built for Intership Navigation at the Shandong Huanghai yard in China. Delivery is set for the summer of 2009.

The systems will include horizontal and vertical cement screw conveyors, pneumatic blow pump systems for pneumatic discharge to shore, transport air compressors rated at 670kW each, a

computerised control system, including starter motors. The systems on the new cement carriers will have a loading capacity rated at 1000tonnes/hour and an unloading capacity rated at 2 x 300tonnes/hour. *NA*

an electric-drive crane which replaced an electro-hydraulic unit have been judged a success, MacGregor reports.

Meanwhile, MacGregor's bulk handling division is to supply self-loading and unloading cement handling systems

Palfingersystems

NEED A LIFT?

Palfinger systems GmbH • Vogelweiderstrasse 40a • 5020 Salzburg/Austria • Europe • Tel: +43 (0)662 / 88 00 33 0 • Fax: +43 (0)662 / 88 00 33 2770 • e-mail: sales@palfingersystems.com • www.palfingersystems.com

The Royal Institution of Naval Architects

WATERJET PROPULSION 5



11 - 12 December 2008, London, UK.

Second Announcement & Call for Papers



This international conference continues the very successful series of RINA events looking at developments in waterjet propulsion.

Waterjets are now accepted as a proven technology, particularly for high speed craft and they are increasing their penetration into small craft, leisure, workboat, patrol and military markets. Today, waterjets are becoming the preferred propulsion choice where high efficiency, enhanced manoeuvrability, shallow draft capability and low maintenance are key requirements. Continuing developments now include very large units of 30MW capacity and the use of waterjets for high speed boost propulsion.



As the technology matures, designers need better tools to help predict the performance and efficiency of these systems across a wide range of operating conditions. Computational fluid dynamics is an increasingly powerful tool which has become almost universal, but traditional model testing and trials measurements are still required to confirm critical results.

Designers and manufacturers also continue to seek to reduce noise, wake and wash as well as optimise the strength and weight of the various mechanical components and to improve reliability, reduce installation time and maintenance.



RINA invites papers on all aspects of waterjet design, production and operation, from designers, researchers, manufacturers and operators. Topics may include the following:

- Simulation for research and design
- Performance prediction modelling
- New designs and applications
- Control and gearing systems
- Build and operational considerations

- I would like to offer a paper and attach a synopsis of no more than 250 words
- I wish to receive details on exhibition space and sponsorship opportunities
- I would like to receive a full programme brochure and registration form

Name:	Position:
Company:	
Address:	
	Postcode:
Telephone:	Fax:
Email:	(WJ2008)

Please return to: Conference Department, RINA, 10 Upper Belgrave Street, London SW1X 8BQ
by fax on +44 (0)20 7259 5912 or by email: conference@rina.org.uk

Palfinger knuckles down

Palfinger Systems is developing a new range of foldable knuckle boom cranes for heavy-lift operations on vessels, and offshore platforms.

Palfinger's new cranes will have a similar design to the existing Palfinger foldable knuckle boom cranes, but will have higher maximum lifting capacities of 250tonnes, 350tonnes and 450tonnes, with maximum outreaches of up to 15m.

Palfinger Systems says that endless slewing will come as standard, and users will have the option of either an external

or self-contained power pack. Up to six different standard winches, as well as constant tension and man-riding winches are also available, the company states.

The cranes will be fully hydraulically operated and overload protected, while an electronically operated PSLMS (Palfinger Systems Load Monitoring System) can be applied on request. For installation in hazardous areas, of Zone 1 type, ATEX

certification is also possible, Palfinger points out

Headquartered in Salzburg, Austria Palfinger Systems is a privately-owned company, created from the amalgamation of Crane Power and HTC Systems earlier this year. Crane Power has its origins in the former Marine Department of Palfinger AG, which was founded in 1992 and had been independent since the year 2000. HTC Systems was previously a department within the research and development division of Palfinger and became an independent company in 2004.

The newly rebranded company markets Palfinger Marine Cranes using knuckle boom technology as well as conventional stiff boom and telescopic boom type cranes. For offshore applications, Palfinger offers various heavy duty knuckle boom marine crane designs. Furthermore, to facilitate the maintenance of tanks and cargo holds on tankers, bulk carriers and container vessels, Palfinger has also developed the Internal Tank Platform (ITP).

Palfinger has two locations where it manufactures marine cranes and ITPs. One is in Maribor, Slovenia and the other in Rijeka, Croatia. **NA**



One of Palfinger's existing knuckle boom crane types.

The Principles of Naval Architecture Series: Ship Strength

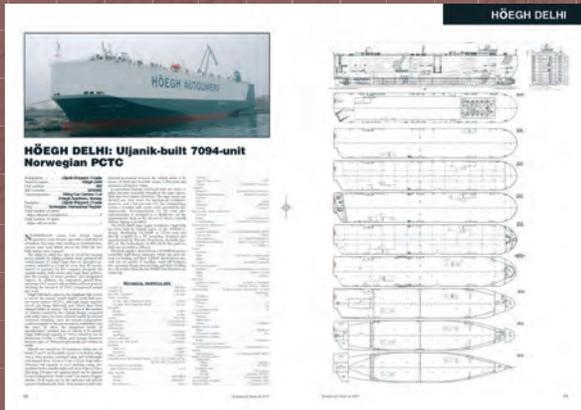
by Don Liu and Alaa Mansour

edited by Randolph Paulling



This fall the Society of Naval Architecture and Marine Engineers will release the first in the long awaited revisions of its premier reference work Principles of Naval Architecture. The new volume brings up to date the treatment of many ship strength topics including the latest developments in dynamic sea load predictions, structural safety using reliability concepts, fatigue assessment, ultimate strength, mechanics of collisions and grounding, high speed craft, and much more. A must-have reference for anyone involved in naval architecture.

To purchase log on to www.sname.org or contact *Tommie-Anne Faix* at tfaix@sname.org or 1-201-499-5068



The Royal Institution of Naval Architects published the 18th edition of its annual Significant Ships series in February 2008. Produced in our usual technically-orientated style, *Significant Ships of 2007* presents approximately 50 of the most innovative and important commercial designs delivered during the year by shipyards worldwide. Emphasis is placed on newbuildings over 100m in length, although some significant smaller cargo ships, fast ferries and offshore vessels have been considered, including a cross-section of ship types, with each vessel being either representative of its type or singularly significant. Each ship presentation comprises of a concise technical description, extensive tabular principal particulars including major equipment suppliers, detailed general arrangement plans and a colour ship photograph.

available in printed or cd-rom format

SIGNIFICANT SHIPS OF 2007

Newbuildings include:

Tembek, Fram, Orange Trident, Star, Deo Volente, Yacht Express, Natchan Rera, Histria Giada, Dubai Star, Hoegh Delhi, British Emerald, plus many more

Non-member £46 (RINA member £40)
Or Order a set:
One copy of Significant Ships 2007
& one copy of Significant Small Ships 2007
price £61 (RINA member £52)

When ordering please advise if printed or CD ROM format is required,
contact: The Marketing Department,
RINA, 10 Upper Belgrave Street, London, SW1X 8BQ, UK.
Tel: +44 (0)20 7235 4622 Fax: +44 (0)20 7259 5912
E-mail: publications@rina.org.uk Website: www.rina.org.uk

RINA Journals on CD ROM

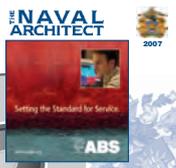
In January every year since 1999, RINA has produced the following journals on CD ROM:

The Naval Architect and *Ship & Boat International*, plus *Shiprepair & Conversion Technology* and *Warship Technology* since 2001 and from 2005, *Offshore Marine Technology*.

The institutions journals are a source of valuable reference and provide a wealth of information. A title and key word search facility is available to help you find a specific article or issue.

The Naval Architect 2008 and *Ship & Boat International 2008*, on CD ROM price each: £42 (RINA Member £37 each).

Shiprepair & Conversion Technology 2008, *Warship Technology 2008*, and *Offshore Marine Technology 2008* on CD ROM. Price each: £32 (RINA Member £27 each)



The ideal reference to have
in the library or when **travelling!**

Please send your order, or contact:
The Marketing Department, RINA,
10 Upper Belgrave Street, London SW1X 8BQ, UK
Tel: +44 (0)20 7235 4622 Fax: +44 (0)20 7259 5912
E-Mail: publications@rina.org.uk
Website: www.rina.org.uk

Nice crane if you can get it

Record demand for ship's equipment from Chinese yards has been a major factor in the ever-longer delivery times quoted by maritime crane suppliers, according to Soon-Huat Yong, general manager of Liebherr Singapore.

In 2007, Chinese shipbuilders placed orders for more than 1800 shipboard cranes, according to Soon-Huat Yong, general manager of Liebherr Singapore.

This, along with bullish demand from the port, construction and energy sectors for both cranes and components, had pushed average maritime crane delivery times from 6-7 months three years ago, to 16-20 months in early 2007.

And the situation is getting worse. 'Today, the average delivery time is 26-34 months,' said Mr Yong. 'It looks unreal, but it is the actual situation, and I don't see a quick recovery within the next two years.'

Mr Yong's assessment of a ship crane market that is struggling to keep up with demand was supported by competitor TTS' latest financial figures. These revealed the company's order backlog for marine cranes rose from NOK 870m (£85m) on 31 March 2007, to NOK 2606m (£255m) at the same time this year. Substantial backlogs were also apparent in its dry cargo handling and deck machinery divisions.

'TTS had a record order backlog at the end of 2007, which has continued to grow in the first quarter of 2008,' said the company. 'The record high level of contracting of vessels over the past two years, moreover, indicates that there is a growing market for ships' equipment in both 2009 and 2010.'

Grab suppliers also confirm that demand for equipment from yards and ports has never been stronger. One told *The Naval Architect* that some customers were now so desperate for deliveries they were requesting that crane attachments be air freighted to shipyards in Asia, rather than wait for cheaper delivery by sea. 'We've never done this before, but this has now happened twice in the last year,' said Sigvard Orts (junior), head of German-based supplier Orts. 'They just can't wait for them to be delivered by sea, even if we have them in stock.'

Rising consumption of crane resources by the rig and offshore sectors, which



Ship required but, sorry, crane delayed.

compounded delays while labour shortages, a common problem in the shipping sector, were also now plaguing the crane business.

'On average it takes about six to eight years for a new apprentice to master his skills for building cranes,' Mr Yong said. 'For the past two years, many crane manufacturers expanded their output by more than 40% per year, whereas the workforce injection averaged at 10%. From this you can see it is not easy to ramp up production of cranes.'

With the supply-demand balance so tight, Mr Yong said choosing a marine crane that offered reliable

performance was critical. 'New designs can be accepted, but the components used must have proven track records,' he explained. 'For example, don't accept a new winch design; instead, go for one that is already widely used and with high acceptance in the market – getting spares will be easier and cheaper.'

'Service and parts availability separates the good and poor supplier. Therefore it is necessary to know their staffing level, typical response time, direct or third party support etc.'

'There is no reason not to ask for the supplier's equipment to give assurance that parts and services will be available for a certain number of years. You are going to operate the cranes for 'x' number of years, why not ask for a support commitment and have peace of mind?' **NA**

require specialist gear, plus strong demand for mobile and crawler cranes from the construction sector, were also factors in a tightening market for some ship equipment, added Mr Yong.

'The worldwide sales figure for construction cranes alone was estimated to be as high as 6000-7000 units in 2007,' he said.

Mr Yong said that crane manufacturers had been struggling to boost output as quickly as they would like because orders for the specialist machines required for manufacturing crane parts and components were also subject to delays. Delivery times for some units had now risen to 'about three years,' making it difficult for crane producers to expand production.

High global demand for specialist steels, slew bearings and gear boxes had

Bulker contract boosts Rolls-Royce

Rolls-Royce Marine's Brattvag, Norway, division, has secured a significant order to supply deck machinery to a series of ten 55,000dwt bulk carriers building for German owner ER Schiffahrt at Hyundai Mipo Dockyard. The contract further strengthens the company's position within the European shipowner market, to which sales have doubled since 2005.

For the ten ship series, which will be delivered between February 2009 and March 2011, Rolls-Royce Marine will provide a package of equipment including 76mm diameter anchor chain cable, with a load capacity of 27.5tonnes, and a brake holding load rating of 197tonnes. The company will further supply 12tonne mooring winches, with a brake holding load of 42tonnes.

Also included in the equipment ordered are two hydraulic power packs per vessel, each with three pump units, and a working pressure of 250bar. Rolls-Royce will deliver spare parts for its equipment as part of the order, the company adds.

According to Rolls-Royce, this is in many ways a typical high pressure system, but one that has been tailored to the needs of these particular vessels. The deck machinery package supplied will utilise standard parts in modules which have been incorporated into a customised winch system.

Large spooler delivered by MEP

Singapore-based MEP Systems has recently completed the manufacture of a 35tonnes line pull capacity hose reel spooler, weighing 80tonnes, and measuring 12m x 7m x 6.5m. This is the largest spooler yet built by the company and has been installed on a seismic survey vessel, destined for deployment offshore South Africa that is being converted at a local shipyard. The equipment, designed to provide a high load capacity with constant tension, was delivered by MEP in July this year.



NDM picks up offshore orders

Winch manufacturer Norwegian Deck Machinery (NDM) is now working on several new contracts with different yards, both in Norway and abroad.

In Norway, Ulstein Verft has placed an order for Newbuilding 287, its second SX121 vessel for Marine Subsea. NDM winches are to be delivered for this vessel at the beginning of 2009, and the contract also includes an option for a third vessel.

Fjellstrand has also put in two new orders at Norwegian Deck Machinery, both for electric and hydraulic equipment, while NDM is also supplying deck machinery to Hellesøy Verft's VS 485 PSV vessel, Newbuilding 147, which is scheduled for delivery in May 2009.

Overseas, more deck machinery orders have been placed by Otto Marine in Singapore, for two MT6009L MKIII vessels under construction at the PT Batamec yard in Indonesia. The deck machinery is, in this case, scheduled for delivery in the first quarter of 2009.

Other notable international contracts confirmed this year have included orders from Davie Shipyard. The Canadian builder has contracted NDM to deliver winches and mooring equipment for a number of newbuildings currently under construction for various clients.

The Royal Institution of Naval Architects

FUNDAMENTALS OF CONTRACT AND CHANGE MANAGEMENT FOR SHIP CONSTRUCTION, REPAIR & DESIGN

29th-31st October 2008

Dr Kenneth W FISHER, FRINA

RINA is pleased to announce another opportunity to attend Kenneth Fisher's highly successful three day training programme. The course is primarily designed for project managers who handle day-to-day relations with other parties, people who form contracts and senior managers who monitor contract-related cash flow for marine related projects. Those attending the course will be better able to identify the pitfalls and traps experienced within the industry, and be more prepared to identify all the costs, schedule changes and to properly assign responsibility for those changes and effects. This will save companies considerable sums in each major contract.

Topics to be covered:

- Contract management & mis-management
- Engineering/drawings
- Change orders
- Critical path
- Owner-furnished materials
- Contract performance documentation
- Hourly rates and overtime
- Post-delivery negotiations
- Claim avoidance
- Delay, disruption and acceleration

"Excellent course which will pay for itself over and over again" - B A Menzies - Babcock Rosyth Defence Ltd

"After this training course you feel obliged to review all your procedures" - F Fernall - Account Services Maritimes SA

"This was a very thought provoking course providing valuable lessons, learned through experience" - G Primrose - BAeSEMA

"Excellent course for all who are involved in ship construction or repair and design" - A Cresswell - The China Navigation Co. Ltd

To register, simply complete all sections of this form and return it with your payment to:
THE CONFERENCE DEPT, RINA, 10 UPPER BELGRAVE STREET, LONDON SW1X 8BQ.
Tel: +44 (0)20 7201 2401 Fax: +44 (0)20 7259 5912 email: conference@rina.org.uk

Name: _____ Position: _____
Company: _____
Address: _____

Postcode: _____
Telephone: _____ Fax: _____
Email: _____ RINA Membership No (if applicable): _____

Please indicate your preferred method of payment:

I enclose a cheque/Eurocheque for: £ _____
Please send me an invoice for: £ _____
Bank Transfer details enclosed for: £ _____
Please debit my credit card: £ _____

Card Number: _____

Expiry date: _____

Signature: _____

Payment must be made in pounds sterling by Eurocheques, cheque drawn on a bank with a UK branch address, credit card (VISA/AMEX/Mastercard) or bank transfer. Please note RINA requires payment *before* the conference date.

Account Name: The Royal Institution of Naval Architects

Account Number: 10042127 Account code: 160016

Bank address: Royal Bank of Scotland PLC, Belgravia Branch, 24 Grosvenor Place, London SW1 7HP, UK.

The following charges will be made in the event of a cancellation: £100 if received by 30th September 2008 and £300 after that date but before 23rd October 2008. Cancellations made anytime after that date will not be refunded.

Registration fee: RINA Members: £1050+VAT (Total £1233.75) Non Members: £1167+VAT (£1371.33) Group Fee (3 delegates or more): £1030+VAT (£1210.25)

KCC covers all its bases

Korean coatings supplier KCC comes up with a raft of new product developments, as its international ambitions continue to grow.

Acknowledging that proprietary products can provide the lead in innovation may not be everyone's cup of tea, but safety and environmental regulations are driving manufacturers as never before towards forward-looking development.

Typical is the new KOREPOX EH2030 from Korean supplier KCC Corp, which the company launched earlier this year in direct response to IMO requirements demanding a 15-year lifespan for ballast and other tank coatings.

EH2030 is a two-component, pure epoxy, resin-based self-priming, anti-abrasion aluminum coating reinforced with nano-composition techniques designed to improve anti-cracking and anti-corrosion properties. Its developer says that it 'possesses excellent anti-corrosive and advanced barrier properties and, as a surface tolerant coating, that it is applicable over new or old steel, requiring only the removal of loose rust, being curable at low temperature even -18°C.

As an aluminum coating for long-life protection of steel structures in severely corrosive environments, EH2030 is available in flat aluminum grey, aluminum yellow, and aluminum red

By volume, the coating contains 70% solids, as determined by ISO Standard 3233. It exhibits a theoretical spreading rate of 5.6m³/L in 125µm dry film thickness on a smooth surface. Its specific gravity is given as approximately 1.35 for the mixture of base and curing agent.

In terms of steel preparation, surfaces need to be blasted clean to Sa2½ (this covers the requirement of near white blast cleaning of metal surfaces by the use of abrasives), or through the equivalent power tool cleaning standard St3. Removal of oil and grease, salt and any other contaminants on previous coating film properly by adequate cleaning method such as solvent cleaning and/or fresh water washing is also recommended.

KCC said that the new coating was particularly applicable to practices related to the new Performance Standard on Protective Coating, and that it was offering a 10-year guarantee, with a target life for EH2030 of 15 years.

Thus far, the new coating had been applied to large floating docks at and Hyundai Samho Heavy Industries, but KCC was now recommending its application to all types of vessel.

The product costs twice as much as a conventional epoxy-based coating but, KCC pointed out, conventional coatings tended to last for only around five years.

Applied in two coats for 320microns thickness, in line with demands laid out in the PSPC, KCC said that the product had already received certification from Det Norske Veritas as being up to the task.

Coatings to come

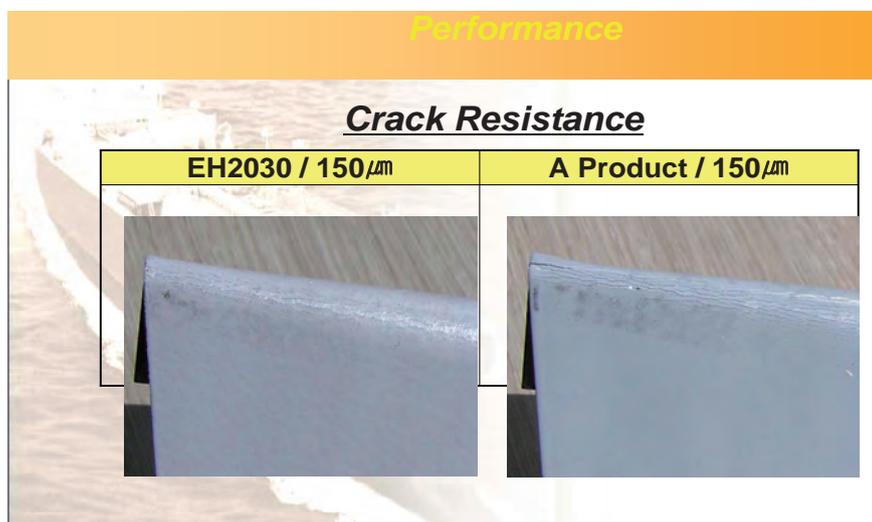
EH2030 is just one new product from a company that is fast developing its range of new coatings and its global presence. In the former case, KCC recently launched its silicone-release AF100 anti-fouling coating. Initially tested on fast-moving containerships, the company said that its trial results had been encouraging enough for AF100 to be applied to very large crude carriers, with the first application being made to a SAMCO ship.

As others have acknowledged, KCC said that one problematic area with silicone-based anti-fouling was that they were vulnerable to fender damage. However, the supplier claimed that its AF100 material was 'stronger than the competition'. The company also said it benefited from the fact that it operated its own silicone polymer factory, suggesting that it was in a position to produce such materials at a reasonable price. It expected to bring a new 'tough coat' silicone product to market before the end of 2008.

KCC added that, in line with expected further restrictions in the anti-fouling market, it was developing a copper-free anti-fouling paint.

Developments in silicone technology were also a feature of KCC's new Silicone polysiloxane ST1020 finishing coat, already applied to the topside and deckhouses of up to 25 vessels. As well as exhibiting superior colour retention to urethane and no chalking, ST1020 was demonstrably three times better in

New EH2030 anti-corrosive, anti-cracking coating from KCC Corp.



terms of weathering. Where a urethane product was likely to be finished in five years, the silicone-base ST1020 would last 10 years.

KCC said it would produce 45 million litres as marine coatings in 2008, representing a 20% rise over 2007. Much of this has been built on South Korea's

shipbuilding boom, a market which takes 35%-37% of the world's shipbuilding deliveries, and where KCC can now claim the number one slot. In global terms, the company said it was 'number four or five'. However, witnessing the fact that this is not the end of its ambitions, KCC recently opened new representative

offices in Iran, and plans other sites in the Middle East, while a new coatings plant is under construction in Vietnam's Ho Chi Minh City, for completion in 2009. Since last year, two of its three factories in China, at Beijing and Guangzhou, have been producing paints specifically for the marine sector. **NA**

Hyundai Samho Heavy Industries floating dock benefited from the first application of EH2030.



Palmsized Teak Miniwheel
Diameter=120 mm

**Steering Control Systems
Speed Adaptive Autopilots
First in AZIPOD Control**

EMRI A/S 37A Marielundvej DK-2730 HERLEV Denmark phone +45 44 91 82 04 fax +45 44 91 55 07

Napier set for a new era

Napier emerges as new independent turbocharging force, after its acquisition by Primary Capital.

UK-based Napier Turbochargers has been bought by independent investment firm Primary Capital. The deal was led by Primary investment director Neil Wallace, who has joined the Napier board as a non-executive director. The management team in place under Siemens, comprising Andy Thacker (managing director), Gary Rodgers (commercial director) and Jason Moore (operations director), will head up the new concern. All 160 staff at the plant have been retained.

As an independent business, Napier said it would benefit from increased flexibility which would 'allow it to work more closely with customers as well as continue developing products and technology which improve engine efficiency and lower environmental emissions.'

To this end the new management team plans to review its existing arrangements for servicing customer requirements thoroughly. Napier operates a global service agent network, comprised of independent companies which are authorised by Napier, trained to the required standard and are supplied with original Napier parts, appropriate tooling and documentation. In addition, Napier has empowerment agreements in place with its OEM customers.

The current NAPIER '7' Series product spans engine outputs from 2MW to 6.5MW per single turbcharger and is based around the original NAPIER cartridge design. The NAPIER '7' Series turbochargers represent the company's core range of products for the latest generation of medium speed diesel, heavy fuel and gas engines in the 500kW – 20MW power range. Spares and aftermarket services complement the manufacturing activity.

The new company said it was pressing ahead with development of its 8-series turbocharger. The series would follow the same basic design as the 7-series, with each model consisting of a single aluminium compressor wheel, single



From left to right: Napier's management team, Gary Rodgers (commercial director), Andy Thacker (managing director) and Jason Moore (operations director).

turbine wheel made of nickel alloy and with the air-cooled main casings in cast iron. All 8-series models would feature a lip seal design.

The expectation is that by the end of the year the 8-series will be in test with a number of customers.

The company also intends to expand its operations, to complement capital investments that have taken place in recent years. These have included acquisition of the latest generation high-precision direct-drive Okuma 5-axis milling machines and Mazak mill-turn machines to standardise compressor wheel manufacture.

For its part former parent company Siemens – whose workforce has reduced to about 1,700 following the sale – is forging ahead with plans for a £40 million relocation move to Teal Park in North Hykeham between now and 2012. In future Siemens' Lincoln area sites will concentrate on designing, making and

servicing industrial gas turbines. The company said that, over the past three years, its business unit's orders and sales had risen and the outlook was for continued success.

As Siemens completes its move to new premises, Napier will expand its footprint at the Lincoln plant. When the transition is complete, the Napier footprint (production and office space combined) will have grown by more than 50%.

The new Napier will be attending the upcoming SMM exhibition due to take place 23-26 September in Hamburg, Germany. The company has a stand (Hall B1 Upper floor Booth 544) and senior figures will be on hand to discuss the latest company plans and future developments. A new corporate insignia will also be unveiled which marries elements of the previous design with a fresh modern feel to reflect the company's new direction. **NA**

New high speed towing tank

It is not often that a model test tank is established, but an entirely new high speed towing tank is due to open later this year in Norway, writes Richard White.

Stadt Towing Tank is currently fitting out its new facility at a site on the outskirts of Måløy in west Norway. Attached to the tank itself are the premises of three businesses that are already established. Each of these is set up to offer services direct to customers, but they will also provide design, visualisation and model making services to the tank. The businesses are Nord West 3D, Easy Form, and Best Mould.

But first to the tank itself. When *The Naval Architect* visited in June the structural concrete for the tank building was virtually complete and the towing carriage and wavemaker were being installed. Work at Nord West and Easy Form was in full swing while a large hall was being fitted out to give Best Mould more space and full facilities. The towing tank is a building 180m long constructed from concrete panels to the walls and flat roof. It is divided by a longitudinal wall. Once the tank is filled the water will occupy one side of the building with a final level about 1m below the top of the mid wall. A plastic membrane ensures watertightness. Strong tubular beams brace the mid wall to the other side of the building and will form the basis for an upper floor in that half, with a gangway running the length of the tank and a series of four or five flatlets where people using the tank can live. Below these, on the ground floor, will be a series of five closed workshops where models can be prepared for testing in private.

The new tank will not have a conventional

carriage of any kind. There is also no need for the traditional accurately levelled rails on the tank sides because all work will be done from an unmanned carriage suspended from the tank roof. This was being installed when *NA* visited the site. Two tubes are hung from brackets in the roof and run parallel to each other and to the water surface for the whole length of the building. A lightweight carriage made of stainless steel runs on these rails, supported by a group of angled rollers at each corner which allow it to slide freely but locate it precisely. The carriage will be moved by a Dyneema rope hauled by a capstan at one end of the hall. This will provide the force needed to accelerate the carriage rapidly, to hold speed constant over the measured section and then to bring it to a standstill in a short distance. The rope system is pre-tensioned to give a high level of stability. The carriage itself houses a battery pack, cameras which can be directed at every area of interest on the model and are linked together and feed a computer which records all the data in real time. The towing dynamometer will feed information to the same computer system synchronised with the cameras and this dynamometer will be hung from a parallelogram linkage attached to the carriage so that the height of the towing point can be varied to the value required for the model being tested and can conform to sinkage and trim.

A design maximum speed of 15m/sec has been chosen for the carriage system, but

this can be exceeded. At the design speed conditions can be kept constant over 150m of the tank length. The result is that high speed vessels can be tested at a usefully large scale. The effective tank dimensions are therefore 150m measuring length, a breadth of 8m and a depth of 4m. A moveable bottom will be incorporated in the tank so that the water depth can be reduced to simulate shallow water effects. An attraction of the low weight and inertia of the overhead carriage is that it will have a servo system enabling it to conform to the movement of a self-powered model. The model can run at its own speed along the tank and the carriage system will track a reference point on the model and adjust its speed accordingly.

Stadt Towing Tank will have a powerful wave making system. It will use a rolling seal and will be held against water pressure by pneumatic cylinders. The wave making segments will be actuated by an electric ball screw system to generate any wave spectrum and a maximum wave height corresponding to 5m to 10m full scale depending on the scale of the model.

Vegard Larssen, manager of the Stadt Towing Tank, points out that the four linked companies at the site can offer an efficient service for making test tank models as well as their production mould and one-off form origination function. To begin with tank models, will be milled out on the large machine at Easy Form. This is one of the largest in the world and can tackle any millable object in a volume 26m long by 6.5m wide and 4m high. In the course of next year it is likely that a smaller machine will be installed, optimised for tank models and compact mouldings, which would allow the large machine to do contract work for mould plugs. The small machine will have a jiggging system so that a test model can be produced, tested in the towing tank, put back accurately in its original position in the mill, and modified to explore the effects of design changes. By starting with the 'fattest' model first then selectively milling away material in

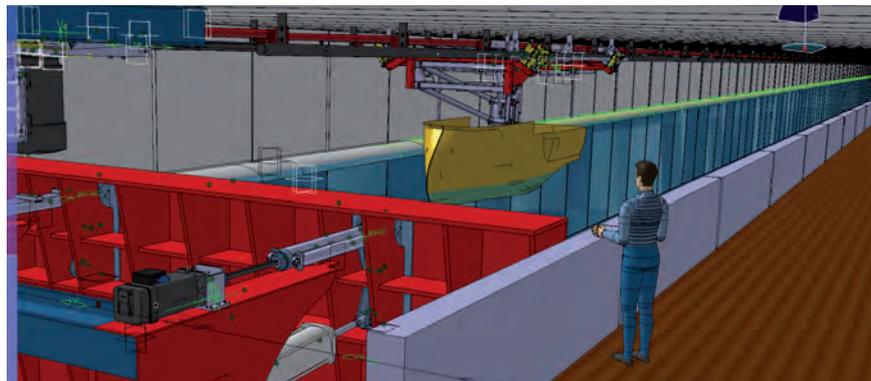
New towing tanks are a rarity, which is why the new fast craft facility in western Norway is so significant.



selected areas, systematic trials of variations in hull form could be carried out efficiently, with probably an overnight or one day alteration service between successive models.

Plug and mould making

Easy Form was established three years ago and is in full production machining large plugs on its giant multi-axis machine. The technique used is interesting and effective. If, for example, a hull mould is to be made the first step is to set up a wooden box framework on the milling machine base which occupies unwanted volume. On this is built a structure of expanded polystyrene blocks a bit larger than the finished plug will be. The milling machine itself comprises longitudinal rails carrying a frame which can thus move the length of the machine. This in turn carries a carriage, which moves transversely and the carriage has a vertically moving system carrying the milling head which can itself be moved in multiple directions. The result is that any shape accessible to the milling cutter can be milled with a known degree of accuracy without manual intervention. With the polystyrene block structure in place a coarse milling programme is set up which will machine the form down to an accurate shape a centimetre or two smaller than the finished object. Once this milling operation is complete the form is treated to some layers of glass reinforced resin to stabilise the surface. The number and type of layers depends on the size and form of the plug. On top of this comes a thick layer of a resin based plaster which is easy to machine and takes a fine smooth finish. A second finish milling operation is then undertaken over the whole hull where part of the plaster layer is milled away. Depending on the curvature of the hull either a flat end mill is used or a ball-ended milling cutter and Easy Form is currently favouring various types of diamond tooling to maximise cutter life. As well as accurately producing three dimensional curves or long flat runs, the machine can also produce complex features such as spray rails on hard chine hulls as an integral part of the work, as opposed to adding details later. When *Naval Architect* visited the facility the finish milling operation was in progress on a large hard chine motor boat hull, and it was clear that the machined surface of the plug would require only a very light rub down to remove tool marks before proceeding to the



Virtually finished - the new towing tank on the outskirts of Måløy.

finishing process. From here the plug can either go for finishing as a test tank model or to the Best Mould part of the complex where it would receive finishing layers and mould release systems before being laminated with mould gel coat and layers of resin and glass reinforcement to create the production mould.

Although a hull has been used as the example, in fact pretty well any surface can be produced, whether it be sub mouldings for boat interiors, complex deck mouldings, industrial objects or indeed pure works of art. Forms can be produced as finished one-offs or as tooling for production moulding. Currently Easy Form and Best Mould are looking at ways of automating the finishing and mould making processes using robotics to reduce the amount of hand labour. Overall the aim is to offer model making and mould production with a turn round time of days rather than months.

Three dimensions

Nord West 3D is oldest established of the group of companies and it specialises in computer aided design, 3D work and visualisations. Eivind Flister began the operation in 1997 on a hobby basis since he had for many years been fascinated by 3D design using Autocad. By 2002 the firm had acquired employees and was based in the centre of Måløy. Currently four people work for the company using CATIA as the main design tool but also interfacing with Autocad, which is much used by customers. The work includes 3D modelling and visualisations but the focus has moved progressively towards design for production. Nord West 3D can work with customers at any level from preparing existing designs



A hull mould - the first step.

for the plug making and moulding process, advising on the practicalities of a design in terms of mouldability. This is important because costs rise if plugs and moulds have to be made in several parts because features with undercuts mean that the finished object cannot be drawn out of a single part mould. At the other extreme the customer can come with sketches of a boat or craft and Nord West 3D will cooperate as necessary to make the design a practical reality. One recent boat project involved two large mouldings for the hull and deck/superstructure plus another thirty-five subsidiary mouldings.

Combining the knowledge, skills and equipment of the three companies allows components to be made which will meet with accuracies of a millimetre or so over large distances.

Stadt Towing Tank is expected to open for business towards the end of 2008 and looks as though it will be a valuable addition to the world's towing tanks, particularly in view of its high speed towing capability. In the longer term the plan is to establish a mini-campus on a vacant part of the same site at the end of the tank for research students. **NA**

Aluminium to Steel welding

Today's vessel or offshore structure designer faces complex materials selection problems. John Banker, of Dynamic Materials Corporation, and Job Visser, of Merrem & la Porte BV, explore one solution.

Today, structural designers are required simultaneously to provide a sound structure, minimise topside weight and protect against marine corrosion within a reasonable budget. Rarely does one single structural material adequately satisfy all of these requirements.

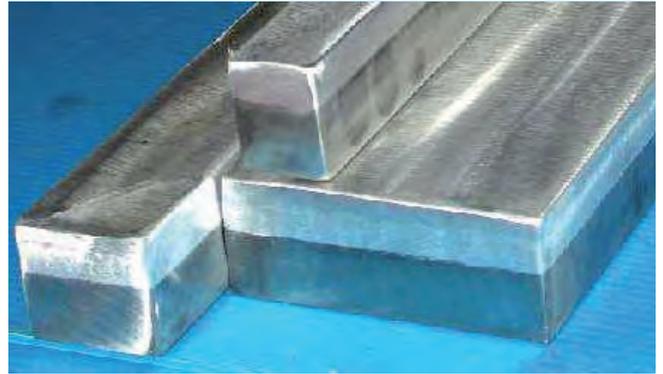
The usual solution to this problem is to employ a variety of metals throughout the structure, each selected for appropriate properties for the specific component. This creates a need for reliable structural joints between dissimilar metals. Most dissimilar metal combinations cannot be welded by traditional methods and are commonly joined mechanically by bolting or riveting. The combination of a crevice at the mechanical joint and galvanic potential differences between metals, results in accelerated corrosion in shipboard environments.

Aluminium and steel are commonly used in ship construction and present an excellent example of this problem. Aluminium offers light weight, good strength, marine corrosion resistance and reasonable cost. It is often the metal of choice for superstructures, deck houses and upper deck structures.

Steel is lower cost, higher density, and its higher strength makes it the preferred choice for hulls and working decks. The interface between the aluminium and steel presents the classical example of a connection between non-weldable, galvanically dissimilar metals.

Triclad explosion welded transition joints provide one solution for shipyard fabrication of reliable aluminum-steel structures, according to Dynamic Materials Corporation. The aluminium and steel components can be welded to the respective surfaces of the transition joints in the shipyard using conventional fusion welding processes. Triclad transition joints have been deployed in shipboard environments for over 35 years.

Figure 1: Triclad aluminum-steel transition joint bars.



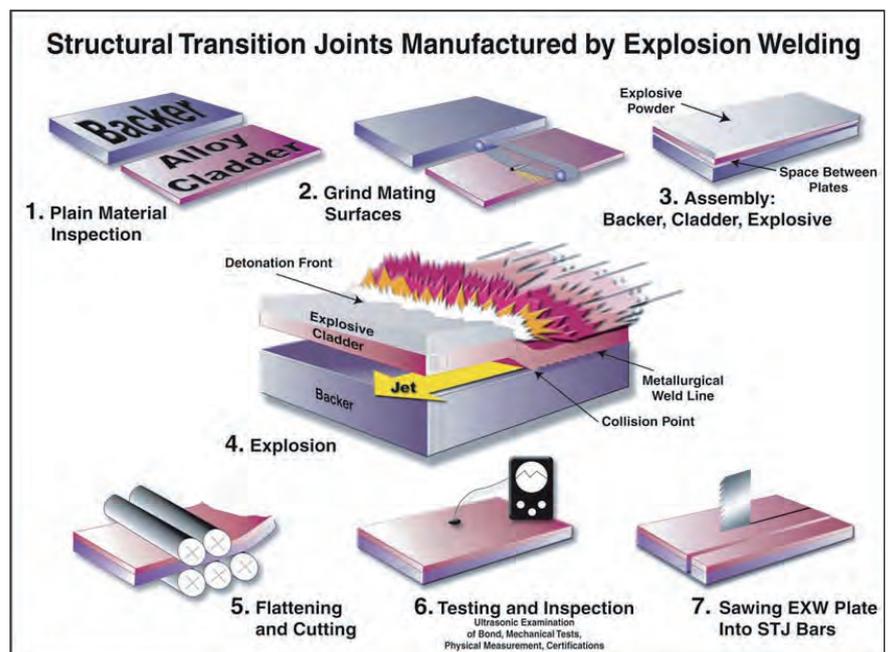
Solving corrosion problems

The combination of a galvanically dissimilar 'couple', combined with a crevice, results in accelerated corrosion at bolted or riveted joints between aluminium and steel. The galvanic corrosion aspect can only be totally eliminated by complete electrical insulation of the metal components, a solution that is extremely difficult or impossible to achieve in most practical design situations. The Triclad transition

joint eliminates the crevice, DMC says. In the absence of the crevice, traditional corrosion control painting systems, combined with the effect that corrosion products make themselves passive, provide reliable control of galvanic corrosion.

It was back in 1962 that DuPont Detaclad patented the explosion welding process (EXW), and in the subsequent years codified and mastered the robust industrial technology. In the late 1960s,

Figure 2: Manufacturing process for Triclad joint bars.



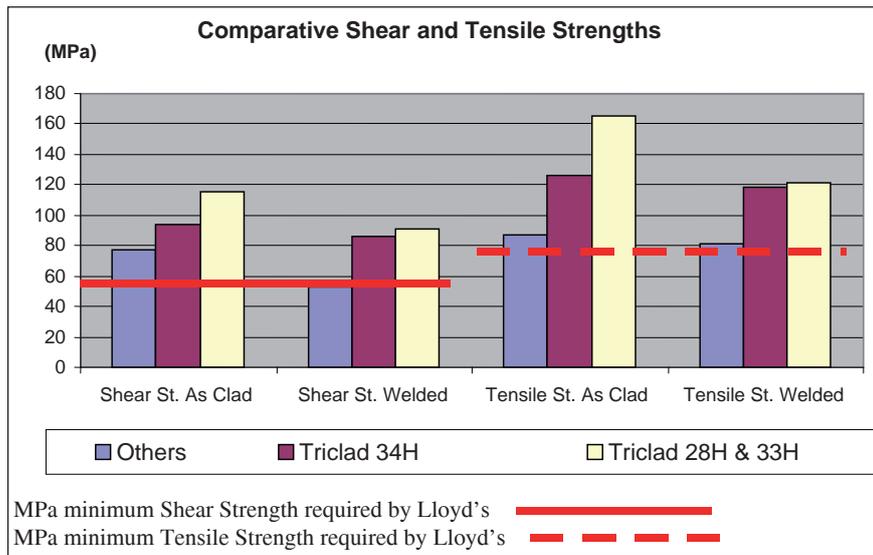


Figure 3.

	Triclad 34H	Triclad 28H & 33H	Stainless or Steel Triclad
Top Layer	6.4mm Alloy 5086	10mm Alloy 5083	10mm Alloy 3003
Interlayer	9.5mm unalloyed Aluminium	3mm unalloyed Aluminium	1.5mm Titanium
Bottom Layer	19 mm carbon steel	20 and 15mm carbon steel	20mm Stainless or Carbon steel

Table 1: Triclad aluminium-steel transition joints.

working with the US Navy, DuPont patented the Detacouple Transition joint concept for making aluminium-steel welds in shipyard environments. During the development and qualification of the explosion welding transition joints, DuPont and the US Navy conducted an extensive battery of tests. These included:

- Multi-year corrosion testing in both the painted and unpainted conditions
- Cyclic fatigue testing of superstructure panels
- Laboratory fatigue testing exceeding 1,000,000 cycles
- Shock testing and explosive bulge testing of welded assemblies
- Traditional tensile, shear, and impact testing

The product was determined to be suitable for use in military combatant construction and has been used on virtually all aluminium-steel US Navy ships built since 1970. During the subsequent 35 years it has gained acceptance as a solution for providing reliable, corrosion free aluminium-

steel construction. Today, Triclad is used extensively on ferries, cruiseships, and offshore structures, as well as naval vessels.

During the same period, DuPont licensed the Detaclad technology to companies in Europe. Nobelclad in France and Nitro Metall in Sweden were two of the technology licensees. Nobelclad adopted the DuPont transition joint technology and distributed via Merrem & la Porte Triclad shipbuilding transition joints worldwide. Today, the original DuPont Detaclad division and both Nobelclad and Nitro Metall are divisions of DMC, the leading manufacturer of explosion welded materials worldwide.

Cladding technology

The explosion cladding process uses the energy of an explosive detonation to create a metallurgical weld between metals. The EXW process creates a high-strength, ductile, metallurgical weld over the entire surface. Although the explosion generates intense heat, there is insufficient time for the heat to conduct into the metals, thus no bulk heating or melting occurs. Consequently, reliable welds between highly dissimilar

metals, such as aluminium-to-steel can be achieved. Triclad joints are typically produced from flat aluminum-steel clad plates by sawing or water jet cutting as show in Figure 2.

The wavy bondzone, Figure 3, is typical of explosion welded products produced in the highly reliable 'sweet spot' of the explosion welding parameter range.

Merrem & la Porte offers a broad range of Triclad products for bi-metal junctions in shipboard applications. Triclad Aluminium-Steel transition joints are the workhorse of the shipboard product line. Today Merrem offers three 'standard' products, including the original Triclad. All three products are produced using a three layer explosion weld system:

- A top layer of Aluminum Alloy
- A bottom layer of steel or stainless steel
- An interlayer to enhance strength and ductility

In addition to the three standard products, a considerable range of non-standard product thicknesses such as 19mm can be manufactured. Needless to say, the standard products offer significant cost and delivery time advantages over 'specials'.

Specifications and properties

Triclad products are manufactured for dual certification to a number of transition joint product specifications. These include Lloyd's Register and ABS specifications, as well as DMC proprietary specifications. If required, additional certification to US MIL-J-24445A can be provided.

These specifications all require a battery of mechanical tests to confirm reliable strength and toughness of the product. These include tensile testing of the product in the through-thickness dimension, as well as either a bond shear strength test or a side bend test. Testing is performed on specimens of the metal in the 'as supplied' condition and with a heat treatment of 15 minutes at 315 °C to simulate the effects of welding.

Figure 4 presents typical properties of the Triclad products, and offers a comparison to other shipboard transition joints commonly available in the European marketplace **NA**

Mobile on the high seas

With more than three billion mobile subscribers worldwide, Bo Pinel, Navitas Telecom director of business development, discusses the future opportunities for mobile communications at sea and outlines the hurdles that the maritime industry has had to overcome.

For years mobile phones could only be used in close proximity to land. Most people understood that if they were in a remote location, such as at sea, then communication with the 'outside world' would be limited. According to MarketResearch.com, in 2008 there are approximately 3.3 billion mobile subscribers worldwide and mobile penetration in Europe has now passed the 100% mark, increasing consumer demand for being connected anywhere at any time. This demand has now created a new market opportunity for mobile operators in the maritime market.

The story so far...

Traditionally the only means of communication for crew or passengers onboard ships was via the master's phone or satellite phone. The master's phone was only really used in emergencies by crew and as it was located on the bridge, there was no privacy to make personal calls to friends or loved ones. Passengers could use satellite phones, but these were usually located in communal areas, rather like public telephones in an airport or a hotel lobby, with limited privacy. Satellite phones are also expensive to use and cannot receive incoming calls. Either way these methods of communication for crew and passengers alike, were not straightforward or a realistic option to use to keep in touch while at sea.

Two main barriers were holding up mobile operators from expanding their services to the maritime market: lack of technology needed to provide these networks and to some extent cost. Up until the last five years or so, the bandwidth available on ships did not have the capacity to support GSM services (Global System for Mobile) as it was being used up by vital services crucial for running a ship. High network



Bo Pinel, Navitas Telecom director of business development.

installation costs meant early adopters would have had to make an outlay of around £50,000 per ship to set up a mobile network. This is a huge amount of money to spend if unsure of what type of return to expect, and as a result mobile operators became very cautious about providing an upfront investment. Fortunately, with the introduction of a specialised C-type satellite antenna to support the growing demand for bandwidth hungry services such as Internet cafes, fixed line telephones in cabins and mobile communication, the technology was developing sufficiently to make it possible to provide mobile networks at sea.

Currently, the rate of mobile penetration at sea is growing at a fast pace, thanks to the latest technological advancements within the mobile industry. The decreasing capital expenditure needed to deploy mobile networks at sea is making it more

economically viable to offer GSM services to ships in both the commercial passenger and merchant markets. Some equipment manufacturers are even looking to develop a simple network system specifically designed for the maritime market. Such developments could see the cost of installing mobile networks at sea drop well below £10,000 per ship. As costs continue to fall the deployment of a mobile network at sea is now becoming a feasible option for ship owners, no matter how large or small or how many people are accessing the network.

Another factor for operators to consider before embarking on a programme of ocean bound networks is the impact of mobile roaming. To offer a fully featured mobile service for passengers using their own mobile phones, it is necessary for the maritime GSM operator to establish specific roaming agreements so that they can provide the same services to their customers when they are travelling abroad, which can be a very time intensive process. Interventions such as the GSMA's Open Connectivity programme are being used to smooth the process of interworking and roaming between GSM operators. GSM is the most popular standard for mobile phone networks across the world. Using a hub-based structure, operators only need one agreement to connect with all the other GSM operators on the system. This rapidly reduces the time and cost needed to establish roaming agreements. A set of compliance guidelines have been set-up by the GSMA specifically for the maritime industry to help ease the process further. The BA46 guidelines relate to maritime mobile phone traffic and details that maritime GSM providers need a different network code to the operator's local territory code. These guidelines are now enabling operators to bill appropriately and independently which, gives greater



Just a mobile call away.

transparency to roaming charges.

One operator that has benefited from recent technological advancements and is currently deploying mobile networks at sea, is Navitas Telecom. Using miniaturised radio base stations and IP based softswitch technology, Navitas adapts the GSM network to suit the particular vessel with relatively no downtime and minimum impact on existing communications infrastructure. Several nanoBTS units (manufactured by ip.access) are installed onto vessels in various strategic locations and connect to the ship's existing Ethernet cabling. A miniature GSM controller is used to switch calls locally, enabling users on the same vessel to communicate with each other without the need for backhauling voice traffic over the satellite link, which conserves satellite bandwidth in the process. Conserving satellite bandwidth is vital for running an efficient network to avoid overload, which can lead to dropped calls for those using the mobile service. Using the ship's existing VSAT communications infrastructure the ship-borne network is connected to the shore. VSAT itself enables two-way IP communications from the vessel to the land-based earth station

which must be located in the same satellite footprint as the vessel itself. This network is now enabling users to use their mobile phones onboard to make and receive calls and messages as they do on land.

Commercial benefits

On ships of all sizes, mobile communications allow passengers and crew members to keep in touch in both their work and their social lives. Crew and passengers want to keep in touch with friends and family especially in light of the booming demand for mobile connectivity everywhere. Operators are able to benefit from this consumer demand and are even able to make the most of additional services enabled via mobile connectivity. Mobile messaging for example could be used as a convenient tool for organising crew members, for example supervisors can use SMS to communicate with individuals or groups of crew. SMS is also a useful marketing tool for people on commercial ships as it could be used for targeting passengers onboard, providing them with details on certain on board promotions and general information.

Keeping and maintaining a happy workforce is a challenge for employers

everywhere and the maritime industry is no different. Being away from friends and family for long periods of time can take its toll on crew members and the maritime industry is looking at new ways to boost employee morale and retain staff. Not only does providing an onboard mobile network help to retain existing staff, it also acts as a good incentive for prospective employees. Recent research commissioned by Navitas Telecom found that 40% of those looking for work on cruise ships considered the provision of advanced communication services to be an important factor when choosing which company to work for. Offering the ability for an employee to use their mobile phone onboard means employers can maintain a competitive position within the market. In the cruise and ferry industry in particular, the ability to use mobile phones onboard also completes the passenger experience and could be the difference between consumers choosing one cruiseship company over another.

Making waves

The mobile communications market at sea has huge potential and we could see it

grow rapidly over the coming years. It can build on the experiences operators have had on land, there is no need to test the actual technology as it has already been in use in existing markets on land with 'killer' applications such as SMS being adopted by consumers on a massive scale. With today's connected society people really want to be in constant contact with the rest of the world regardless of where they are. People still want their devices with them 24 hours a day keeping them in constant contact with their nearest and dearest, or just to have the peace of mind that they themselves can be contacted at any time and anywhere.

With the provision of a GSM network there is scope for extending functionality of mobile phones taking it beyond just being a tool for talk and text. The services available to customers will depend on the network standard offered by the ship, but as networks continue to develop we can expect to have more services available including mobile internet access, mobile TV and location based services – the possibilities are endless! GSM is on the road to becoming the backbone to Internet access and there is no reason why such networks cannot eventually be implemented at sea.

Demand for digital services on mobile phones is growing rapidly and with the

development of 3G technologies mobile operators are able to offer more advanced wireless services, achieving greater network capacity through improved spectral efficiency. However achieving fast data rates on 3G networks is expensive and requires considerable bandwidth and could compromise a mobile phone network based in a remote location such as a ship, leading to overload, dropped calls and unsatisfied customers.

There are new technologies which aim to overcome the limitations of 3G technologies. High Speed Packet Access (HSPA), for example provides increased performance of existing 3G technologies through the refining of protocols by which handsets and base-stations communicate with one another. HSPA deployments are already underway on land in the UK allowing users to upload documents, photos and videos at speeds of up to 1.4mbps – five times quicker than the current standard. The take-off of these services will open up the door for operators to provide similar connectivity at sea.

In relation to cost, if operators can guarantee fast data rates using HSPA then they will be able to adopt a reasonable pricing structure with rates that will be more attractive to customers, providing the incentive for passengers and crew to

sign up to a mobile network on the high seas.

The face of onboard communications is continuing to change at a fast rate with GSM currently providing the core backbone for a range of different services. Over the next few years we should see crew and passengers of cruise ships and other vessels being able to enjoy the types of services on their mobile phones that most of us on land take for granted. It won't be unusual to see passengers on cruise ships sending 'picture postcards' of their trip to friends or relatives back home from their mobile phones, or for crew members to be able to make a video call back home on their mum's birthday. Mobile communications will allow people at sea to keep in touch regardless of their geographical location. In the future mobile phone usage is likely to level out from the vast growth it has seen to date, and operators will need to consider additional revenue streams to stay one step ahead in a competitive and saturated mobile market. The provision of mobile networks at sea presents the mobile industry with a massive opportunity to grow and expand into new markets. For the shipping companies this is an opportunity to become a more attractive prospect for customers and future employees. **NA**

Remote, but not out of reach.

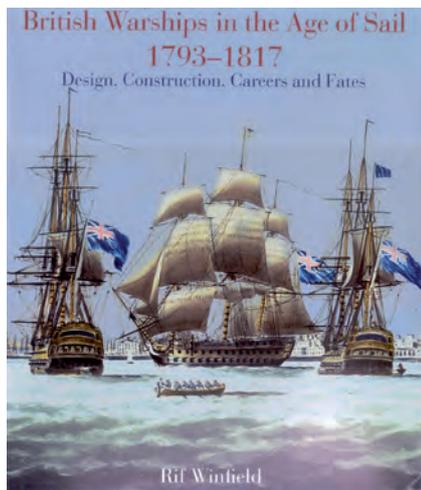


British Warships in the Age of Sail Design, Construction, Careers and Fates

Review by E. C. Tupper

British Warships in the Age of Sail Design, Construction, Careers and Fates

By Rif Winfield
published by Seaforth Publishing as a hard back, 2008, 420 pp. ISBN 978-1844157174, £50.
The author has made a lifetime's study of the sailing warship and is the author of *The 50-Gun Ship*, published in 1997. He also completed *The Sail and Steam Navy List: All the Ships of the Royal Navy 1815-1889*, after the untimely death of David Lyon who had begun the work.



This current book covers the period when the Royal Navy was at its peak of its dominance in the maritime sphere. In 1809 it comprised one half of the warships in the world's navies. Although much has been written about the design of the ships involved, less is available about their careers in a readily accessible form. This gap is filled by this present volume. First published in 2005, this second edition includes the results of additional research and has enabled a number of errors to be corrected. It is a companion volume to the author's *British Warships in the Age of Sail, 1714-1792*, also published by Seaforth (2007). A further book dealing with the Stuart period up to 1714 is being researched.

The book covers every vessel which served in (including any hired), or which was ordered by the Royal Navy between 1793 and 1817. It is organised by rate (the first six chapters dealing with first rates to sixth rates), classification and class. It includes 427 ships of the line, 463 frigates, 646 post ships and sloops, as well as many smaller craft, in all well over 2000 craft. For each ship in

every class the information covers: dates of commission, major refits, changes of captain, stations on which they served and when, details of noteworthy actions in which they were involved. It is well illustrated with lines plans and photographs of models and paintings. It is interesting to see records of the designers, builders, the master shipwrights and the costs involved in building and refitting.

In addition to the main chapters there is a useful Glossary of terms with abbreviations, a chronology of the naval wars and fleet actions (with list of ships involved on both sides) plus a listing of the annual expenditure on the Navy. It is noteworthy that expenditure and manning levels were higher in the decade post Trafalgar than in the decade preceding that battle. Both peaked in about 1813/14 when expenditure on the fleet was of the order of £20m (£15m in 1805), manning was at 140,000 (120,000 in 1805) and ships in commission were 614 (508 in 1805).

This is not the sort of book you pick up and read as you would a novel. It is intended as a reference work in which the reader can obtain data on any warship and which provides a researcher with sound information on which to

base further study. In this connection, whilst the author gives a general list of his sources, individual ship data is not referenced. This is a pity as sometimes sources are inconsistent. Whilst the author admits that in a project of this scale, some errors may not have been detected, the care he has taken over his research and the number of people who have assisted in checking it, should make this a very reliable source of data for the naval historian. It is a mine of valuable and interesting information. *NA*

Big Gun Monitors Design, Construction and Operations 1914-1945

Review by E. C. Tupper

Big Gun Monitors Design, Construction and Operations 1914-1945

By Ian Buxton, published by Seaforth Publishing as a hard back, 2008, 256 pp. ISBN 978-1844157198, £35.00.

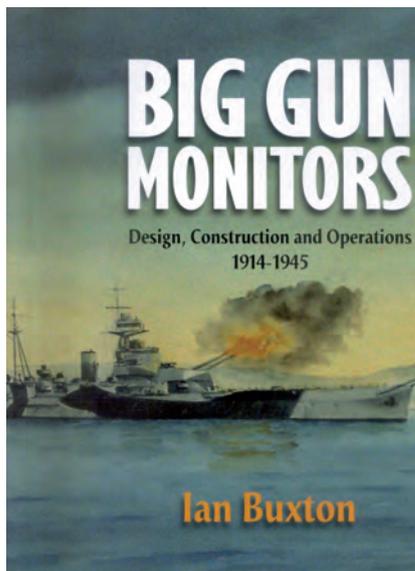
The author is well known to members of RINA as a naval architect and as a Reader in Marine Transport in the School of Marine Science and Technology at Newcastle University from 1974 to 2002. He still lectures in the School as a visiting professor.

The first edition of this book was published

privately in 1978. It proved popular and *The Naval Architect* at the time said it was a “fascinating story, well worth telling.” That edition, which went out of print 15 years ago, is now almost unobtainable, so this new edition is very welcome. It has been completely revised, extended and redesigned to a generous large format, allowing material excluded from the original through lack of space to be added. It is well illustrated with 180 photographs and 45 line drawings.

The author’s interest in monitors began in 1965 when he spent time on board Britain’s last big gun monitor, *HMS Roberts*, after she arrived in Inverkeithing to be broken up. He later found that very little information was available on these vessels, possibly because these are essentially ‘hostilities only’ ships. He determined to fill the gap and so started more than 10 years of painstaking research. He set out to produce an account of interest to the general reader and a definitive reference for the specialist. In this he has succeeded.

The first Monitor was the new type of vessel designed by John Ericson of Sweden for the Americans during the Civil War. The name Monitor was chosen because he said it would ‘...admonish the leaders of the Southern Rebellion that the batteries on the banks of their rivers will no longer present barriers to the entrance of the Union forces. The iron-clad intruder will thus prove a severe monitor to those leaders...’ The Shorter Oxford English Dictionary defines Monitor as one who admonishes another as to his conduct. Whilst the clash between Monitor and Virginia in 1862 was inconclusive the iron clad vessel spelt the death sentence for the wooden sailing ship which had dominated the oceans for so long, although the trend towards cladding



and the turret ship was already established in Europe.

The essential role of the monitor is as a coast offence or coast defence ship. As it turned out the British navy was the only one to build ships of this type in significant numbers. They played a significant part in the 1914-18 and 1939-45 wars. In WWI Churchill and Fisher saw that they could be used in the Dardanelles against shore batteries while the Allies tried to force a passage to Russia, and on the flank of the German army in Belgium. They decided to build monitors as a matter of some urgency and by 1916 the RN had a fleet of 35 monitors mounting guns from 6 inch to 15 inch calibre. Altogether 50 monitors saw service in WWI, including 3 ex-Brazilian river monitors and 2 Norwegian coast defence battleships.

In WWII the RN had 4 monitors, two older ships – *Erebus* and *Terror* - and two

new 15 inch ships – *Roberts* and *Abercrombie*. With the exception of Anzio no major British assault on any European shore took place without monitors playing their part in the bombardment.

Compared with battleships, monitors required only a third of the men and resources to provide a similar bombarding capability. It is this relative economy that the author feels justified the building and operating of these specialist ships, in spite of their absorbing valuable shipbuilding capacity and their need for big guns. He provides detailed figures to back up this view. The lower cost of monitors meant they could be risked in operations where a capital ship could not.

The book deals more with the technical aspects of the ships and their armament than with their operations about which more detail can be found in the National Archives. However he does describe in some detail how the use of monitors in shore bombardment pushed the science of naval gunnery to its limits in the context of accuracy and sustained firing. This led to improvements which led to the monitors becoming more effective in the later years of WWI. They have always boosted the morale of the soldiers ashore.

Having discussed the origins of the British monitor, the book devotes separate chapters to each of the main types, to the various guns fitted and to bombardment techniques. A useful glossary of abbreviations is included. All in all this is a very readable and fascinating book on a subject on which relatively little has been written. It is very thoroughly researched and illustrated. It can be recommended to all those interested in naval ships and actions. **NA**

“Why Not?” Puzzle - Solar Solved

By preSSMan, reporting on exceptional achievement by British Marine enterprises

Solar Solve Marine is promoting their “Why not?” philosophy because their customers often think they have done the impossible. I was puzzled.

They manufacture roller screens that fit onto vessels navigation bridge windows to reject impressive amounts of glare, heat and UV light from the sun.

Apparently their SOLASAFE® product is the worlds brand leader and considered to be an essential navigation safety aid. 75,000 have been supplied to 7,500 vessels worldwide. Around half of the vessels built in Korea every year are delivered with at least 3 SOLASAFE® screens installed.

ROLASOLV® is a range of Type Approved roller blinds designed for crew and passenger

areas, that comes in various flame retardant fabric types including blackout and see-through net.

There is lots of information on the new look website www.solasolv.com, with very impressive comments from their customers on the Testimonials page.

They imply that orders can be dispatched within a couple of hours, which is no mean feat for products that cannot be made until a specific order is received.

There was no reference to “Why Not?”, so I rang Chairman John Lightfoot on +44 191 454 8595.

He told me, “Twenty years ago I was inexperienced and often used the word ‘cannot’ to make life easy. Consequently we lost a lot of

business.”

“One lunchtime we had an order if we could meet the delivery time.”

“It’s just not possible to make it and get it to Rotterdam for 9am tomorrow,” I said.

“The production foreman replied, “Why not?””

“We re-thought, re-organised and got the order there on time.”

“Those two words were a huge inspiration and have proved to be our main advantage ever since.”

“That preSSMan is your puzzle Solar Solved.”

“Your readers can e-mail us at info@solasolv.com for more specific information.”

**If you're looking for a change in direction,
we have roles to suit you.**

Bring your experience to the Maritime and Coastguard Agency and look forward to enhanced personal development, generous leave and an excellent pension scheme. You'll also have the satisfaction of playing a major role in UK maritime safety and security.

**MARINE SURVEYORS
(Nautical, Engineer or Ship Discipline)**

Starting salary £34,564 (pay award pending) + substantial benefits rising to a maximum of £43,525

Based in Marine Offices around UK

Working both autonomously and as part of a team within the UK's maritime authority, you'll survey and inspect a wide range of vessels. In these varied roles, you can also expect to be involved in plan approval, Port State Control inspections and the examination of seafarers; you may also act as a customer service manager for UK-registered shipping clients. Extensive UK travel is a feature of the role, sometimes to remote coastal locations, overseas and offshore.

For an application pack and full details of these posts please visit our website www.mcga.gov.uk or call 02380 329308. Please note that we do not accept CVs.

Closing date: Midday, 3 October 2008. No agencies please.

Look back on your experience.
Look forward to your future.



Naval Architect - Germany - € 50,000 DOE

Working in a new build yard in Germany, you will help design and engineer a mixture of vessel types. Junior to Senior roles available with strong promotion opportunities.

Naval Architect - UK Oil Major - £90K Package

Our client requires an experienced Naval Architect to act as Structures & Marine Technical Authority for their FPSOs. A rare chance to work for an oil major!

Surveyors - Dubai - Excellent Expatriate Package

This is an exciting chance to work for an international company in Dubai. You should have a background in Marine Engineering or Naval Architecture. Previous surveying experience is an advantage.

t: +44(0)23 8033 4444 - e: marine@faststream.co.uk
www.faststream.co.uk



faststream
marine recruitment



THE **NAVAL
ARCHITECT**

ABC audited circulation 11,440
January - December 2007

FACT, not FICTION

IF YOUR **NEXT** ADVERTISING SCHEDULE

INCLUDES TITLES

THAT **AREN'T AUDITED** FOR
CIRCULATION.....

ask.... WHY?



Maritime and Coastguard Agency

Department for
Transport

For further information on other opportunities at the MCA please visit our website www.mcga.gov.uk or call 02380 329308.

A steely point

Dear Sir,

In full retirement for some time now, I have become an avid reader of the publications of the Institution, in order to keep abreast with the various developments in my profession. Thus I should like to make a case by drawing four strands from the articles in your recent publications of 'The Naval Architect' and 'Design and Operations of CONTAINERSHIPS' of June 2008 as follows:

CONTAINERSHIPS After Napoli page 21, penultimate paragraph

1. 'DNV concluded 'Alternatively, the Still Water Bending Movement (SWBM) may be reached by modifying the load conditions.'

NAVAL ARCHITECT Unsettled waters ahead for Shipping page 93, Sub-heading: Safety and Costs, paragraphs 5 and 6

2. 'Another way these costs could be combated would be to limit vessels speed' & 'Due to bunker prices doubling CMA CGM implemented just such a "slow steaming" scheme and found it could add an extra ship to the route'

Class NK's new voice Page 35, Sub-heading: Brittle cracking

3. 'These ships feature YP 47 on their launch coaming tops'

CONTAINERSHIPS New Steel Process Page 25

4. In this article the rationale is developed for the use of the E grade YP47 steel to enable a reduction of plate thickness to be obtained from 100mm to 65mm - 70mm.

The arguments against the use of

100mm steel plate are well taken and could indeed be expanded, but the question arises in my mind whether the use of such heavy steel plates cannot be avoided by design. Adjustment of the SWBM is one way of doing it and, to my certain knowledge, this method was applied by Lloyd's Register as long ago as the early 70s when approving loadicators to be placed on board.

Further, it seems to me that a re-distribution of longitudinal material should not be beyond the scope of design, either by judicious selection of deck plates and longitudinals or by varying the main dimensions of a ship i.e. the Depth and/or Breadth. No doubt the latter solution will impact on the ship's speed, but speed is only one variable in the economic running of ships.

My reason for raising this question is that the critical defect size in materials, i.e. the size of defect which may give rise to a fracture, is inversely proportional to the stress applied; the higher the stress allowed the smaller the size of the critical defect. This, in turn, means that significant defects will be much harder to detect. In my view, the potential to use higher allowable stresses based on the inherent properties of higher tensile steel are constrained by a natural limit imposed by our ability to detect significant defects.

I note that the proposed YP47 steel has at present been limited to the top of the hatch coamings as a trial.

Yours faithfully,

R.J.C. Dobson, MBE, C.Eng, FRINA,
FWedl

25 Buckswood Drive

Glossops Green

Crawley

West Sussex, RH11 8JB

Telefax: (+44) - (0)1293 - 522385

Technical gibberish

Dear Sir,

I recognise that changing times have inevitably brought alterations over the years to 'The Naval Architect'. It strikes me that insightful articles on technology have largely given way to descriptions of proprietary products and services.

Despite these changes, 'The Naval Architect' remains an RINA publication, and it should therefore maintain a certain standard of technical correctness. I was therefore quite dismayed to read on page 25 of the recent NA supplement 'Design and Operation of Container Ships', that steel grade YP47 has a bending moment measured in kgf/m².

This sort of technical gibberish does little to raise the Institution's reputation.

Yours sincerely,

Alan Robinson

Member 207208

electronicsjobs.com

www.beechwoodrecruit.com

recruitmentregister.com

SENIOR NAVAL ARCHITECTS - MARINE DEFENCE INDUSTRY BASED SW ENGLAND

Based in the south west, our client is a world leader offering a complete range of design, build and support solutions across both defence and commercial sectors.

You should be qualified to degree level in an appropriate discipline and have achieved or be eligible to achieve chartered status. You should have a background in Naval Architecture, Ship Science, Offshore Engineering with structural or stability bias or Marine Technology with structural or stability or systems bias, as well as post qualification experience in a design environment.

Knowledge and experience of the following are essential for this role; Stability, Launching and Docking, Structural design and Analysis, Powering and resistance, Seakeeping and Manoeuvrability, Weight Management, Ship Design and Ship Production.

CVs please to George Low, Beechwood Recruitment Limited, 221 High Street, London W3 9BY.
Tel: 020 8992 8647. Fax: 020 8992 5658. E-mail: cv@beechwoodrecruit.com

Beechwood
Appointments Register

Help build our lifesaving service.

New Construction Surveyor

• c£26,200 • Poole with travel throughout UK and Eire

This is an exciting time to be involved in new construction within our lifesaving organisation. We're currently building the most technologically advanced 16 metre boat in the world and tendering for some of the most lucrative contracts we've ever been involved in. You'll be central to this – supporting the New Construction Manager, sourcing contractors, overseeing developments and ensuring that the highest standards are maintained. A proven understanding of machinery/electrical systems or boat building will be essential, combined with strong negotiation skills, commercial awareness and experience of contract management.

Use your engineering expertise to help save lives at sea.

PRIDE. PURPOSE. PEOPLE. To find out more and apply, we encourage you to visit our online job opportunities area. If you don't have access to the Internet, you can request an application pack on 01202 663363, quoting ref: 1026.

Closing date: 21st September 2008.

Interview date: 29th September 2008.

www.rnli.org.uk/jobs

A charity registered in England, Scotland and the Republic of Ireland.



Lifeboats



(A spin-out company of the Universities of Glasgow & Strathclyde)

3 DAY COURSES

STRUCTURAL RESPONSE UNDER BLAST LOADING
1 – 3 December 2008, Glasgow, UK

DISTORTION CONTROL IN SHIPBUILDING
15 – 17 December 2008, Glasgow, UK

The registration form can be downloaded at
www.asranet.com

Please send the completed form by fax, email or post to:

ASRANet Ltd., 141 St. James Road, Glasgow G4 0LT
T 0141 552 7287
F 0141 552 3886
E asranet@live.co.uk



TECHNICAL SUPERINTENDENT

WELLINGTON, NEW ZEALAND - NEGOTIABLE

You will be managing 2 MR product tankers that trade around the New Zealand coast as well as trans-tasman and occasional pacific island trips. This opening has good prospects for advancement and is an excellent opportunity for a tanker superintendent who is interested in the lifestyle opportunities that New Zealand presents. NA/150808/NZ

SENIOR SURVEYOR

BARROW-IN-FURNESS, UK - COMPREHENSIVE PACKAGE

You will be directly responsible to the Project Manager of the site team for aspects of assigned survey and verification work on a specific new construction naval project. This work is associated with a new build programme for a series of nuclear submarines that are now under construction at a major UK shipyard and is a long term project.

Ref: NA/170808/BW

To apply please forward your CV and salary requirements to jobs@kingfishrecruitment.com



KINGFISH
Recruitment
is proud to
be a Corporate
Partner of RINA

KINGFISH
Recruitment
www.kingfishrecruitment.com

Marine Industry Careers

Senior Consultant – Naval Architect £40,000–£60,000

Burness Corlett - Three Quays Ltd is a part of a world leading group of marine consultancies that has been providing a wide range of Consultancy Services to the Maritime Industry for over 50 years. We are currently recruiting a Senior Naval Architect for their London office.

The successful candidate will be experienced in Project Management of allocated projects and will also be expected to seek work opportunities, produce tenders, project development, contract and sub contract management, management of diverse in house resources and reporting to Clients. Other activities will include new designs on commercial ships and super yachts as well as existing vessels.

There are also opportunities within the London office and the parent group for career advancement and development.



Matchtech Group plc
1450 Parkway, Solent Business Park
Fareham, Hampshire PO15 7AF
Tel: 01489 898160
www.matchtech.com

matchtech
GROUP

Specialist recruitment to the offshore and marine industry

ADVERTISERS' INDEX

If you would like to receive further information on the advertisers featured within *The Naval Architect* please contact **John Payten**, Group Sales Director, jpayten@rina.org.uk, quoting the relevant enquiry numbers listed below.

Client	page	enquiry	Client	page	enquiry	Client	page	enquiry
ABB Turbo Systems Ltd	05/83	U01	Gwangyang FEZ	32	U69	Osaka University	207	U137
ABS	06	U02	HRP Thruster Systems	208	U70	Graduate School		
ABB Industry Oy	91	U03	Hagglunds Drives AB	235	U71	PG Marine Group	214	U138
CD Adapco	149	U04	Halton Marine Oy	173	U72	PSM Instrumentation Ltd	205	U139
Air Products AS	181	U05	Hamburg Messe	71	U73	Palfinger Systems GmbH	237	U140
Aker Arctic Technology Inc.	87	U06	Hamworthy Plc	08	U74	Pemamek Oy	98	U141
Alcoa European Mill	185	U07	Harland & Wolff	181	U75	Piening Propeller	62	U142
Alewijnse Marine Technology BV	84	U08	Heavy Industries Ltd			Poliski Rejestr Statkow SA	156	U143
Alfa-Laval Tumba AB	67	U09	Hatlapa	69	U76	Polyflor Limited	29	U144
Allweiler Pumps	39	U10	Henri Systems Holland BV	98	U77	Pompe Garbarino SpA	211	U145
Altro Ltd	125	U11	Hoerbiger Ventilwerke	169	U78	Promat SpA	118	U146
AMOT	210	U12	Hydrex NV-Belgium	88	U79	RFD Beaufort Ltd	132	U147
Astillero Barreras	125	U13	HydroComp Inc	143	U80	RINA	214	U148
Atlas Copco Ketting Marine	210	U14	IHC Lagersmit	IBC	U81	RNLI	258	-
Alutronica Fire & Safety AS	135	U15	IMDS Naval Show 2008	220	U82	RWO GmbH	81	U149
Aveva AB	21	U16	IMO Publishing Services	IBC	U83	Reintjes GmbH	76	U150
Azcue Pumps	200	U17	Incat Australia Pty Ltd	132	U84	Renk Aktiengesellschaft	133	U151
BAS Engineering AS	212	U18	Indasa	103	U85	Rivertrace Engineering	217	U152
Bergaflex	77	U19	Industrie Cometto SpA	35	U86	Rolls-Royce Marine AS	73	U153
Bakker Sliedrecht Electo	94	U20	Infoma	186	U87	SAM Electronics GmbH	127	U154
Baltic Design Centre Ltd	165	U21	Inmarsat	13	U88	J P Sauer & Sohn	70	U155
Becker Marine Systems	56	U22	Interferry 2008	150	U89	Scana Volda AS	189	U156
Beechwood Recruitment Ltd	257	-	International Paint Ltd	37	U90	Scandinavian Electric Systems	197	U157
Beluga Shipping GmbH	49	U23	Jaure SA	135	U91	Schottel GmbH & Co	117	U158
Blohm & Voss Industries	69	U24	Jets Vacuum AS	131	U92	SDC Ship Design	57	U159
Bronswerk Marine Inc.	153	U25	Jowa-Consilium	223	U93	& Consult GmbH		
Brunvoll AS	208	U26	Kahlenberg Brothers Co	186	U94	Sea Asia 2009	108	U160
Bureau Veritas	183	U27	Kamag Transporttechnik	65	U95	Seatrade Cruise	139	U161
Cadmatic Oy	140	U28	GmbH & Co			Shipping 2009		
Callenberg Flakt Marine AB	172	U29	Kamome Propeller Co Ltd	104	U96	Seatrade Europe 2009	218	U162
Camelot Marine	174	U30	Kawasaki Heavy Industries	106	U97	Seatrade Med 2008	222	U163
Caterpillar Marine	61	U31	Kawasaki Precision	232	U98	SEC Bremen GmbH	76	U164
Power Systems			Machinery Ltd			Semco Marine AS	202	U165
Centa Antriebe Kirschej	74	U32	Kingfish Recruitment Ltd	258	-	Sener Ingenieria Sistemas	143	U166
Centrum Techniki Okretowej SA	161	U33	Kinon Aachen GmbH	155	U99	Ship Design Group Ltd	202	U167
Chugoku Paints BV	137	U34	KM Europa Metal AG	52/53	U100	ShipConstructor Software Inc	111	U168
Ciba Design	165	U35	Kongsberg Maritime AS	178	U100	SigmaKalon Marine (PPG)	101	U169
Class NK	04	U36	Korean Register of Shipping	11	U101	Sika Danmark AS	178	U170
Clorius Controls AS	162	U37	KRAL Krautler GmbH & Co	54	U102	Skipsregistrene	63	U171
CM Hammar AB	99	U38	Kwant Controls BV	194	U103	SNAME	239	U172
Convertteam SAS	23	U39	Langham Industries Ltd	194	U104	Solar Solve Ltd	255	U173
Croon BV	158	U40	Lautex AB Oy	130	U105	Spurs Marine	45	U174
Daihatsu Diesel (Europe) Ltd	86	U41	Liebherr Werk GmbH	228	U106	SSAB Laminated Steel	227	U175
Damen Shipyards	24	U42	Liferaft Systems Australia	128	U107	SSPA Sweden AB	227	U176
Deltamarin Contracting Ltd	104	U43	Lloyd Werft Bremerhaven	70	U108	Stadt AS	199	U178
Desmi AS	174	U44	Lloyd's Register	0BC	U109	STX Corporation	42	U179
Det Norske Veritas AS	25	U45	Logimatic AS	111	U110	Sunflame Co Ltd	94	U180
Det Norske Veritas AS (Software)	144	U46	Loipart AB	75	U111	G.Schwepper	80	U181
DongHwa Entec	28	U48	MARIN	96	U112	Beschlag GmbH & Co		
Doosan Engine Co Ltd	26	U49	MHI Equipment	230	U113	Tanabe Pneumatic	96	U182
EMRI AS	245	U50	MTU Friedrichshafen GmbH	IFC/02	U114	Machinery Co Ltd		
ESAB Holdings Ltd	236	U51	MacGregor Group	FC	U115	Thordon Bearings Inc	27	U183
Eliche Radice SpA	39	U52	MAN Diesel SE	17	U116	Tracto Technik	80	U184
Enraf Marine Systems SAS	169	U53	Marine Engineering Services SRL	138	U117	Trafotek Oy	33	U185
Enraf Tanksystem SA	199	U54	Maritime & Coastguard Agency	256	-	Trelleborg Orkot Marine	212	U186
FEA-Online Ltd	146	U55	Matchtech Group Plc	258	-	TTS Port Equipment	36	U187
FKAB AB	114	U56	Merima Inc	128	U118	Unifrax Ltd	122	U188
Faststream Recruitment	256	-	Merrem & La Porte BV	93	U119	University Of Strathclyde	258	U189
Fischcon Trading & Engineering	181	U57	Metaldyne			Vacon PLC	176	U190
Force Technology	146	U58	International (UK) Ltd	217	U120	Veth Motoren BV	199	U191
Formation Design Systems	202	U59	Meyer Werft	51	U121	Vicinay Cadenes SA	165	U192
Foro Maritimo Vasco	116	U60	Mitsui O.S.K Techno Trade Ltd	97	U122	Victor Marine	103	U193
Friendship Systems	78	U61	Munters Europe AB	189	U123	Voith Hydro	74	U194
G Baglietto SAS	172	U62	Muraspec Marine	135	U124	AB Volvo Penta	114	U195
Genfer Lloyd Sp. Z o.o.	156	U63	NEVA 2009	82	U125	Vulkan Kupplungs GmbH	78	U196
Germanischer Lloyd	31	U64	Napa Oy	15	U126	Vuyk Engineering	113	U197
Gertsen & Olufsen AS	35	U65	Napier Turbochargers Ltd	41	U127	Walton Engineering Co. Ltd	156	U198
Giro Engineering Ltd	169	U66	Navalimpianti SpA	127	U128	Wartsila Finland Oy	193	U199
Glosten & Associates	69	U67	Navis Engineering	191	U129	Western Shipyard	154	U200
Graphics Research Corp.	144	U68	Ned-Deck Marine	111	U130	Wichita Company Ltd	207	U201
			Neuenhauser	78	U131	Yantar Shipyard	152	U202
			Kompressorbau GmbH			ZF Padova SpA	217	U203
			Nexans Shipbuilding	19	U132			
			Niigata Power Systems Co Ltd	191	U133			
			Nora Systems GmbH	77	U134			
			Norac AS	151	U135			
			Noske Kaeser GmbH	176	U136			

MARINE WEB DIRECTORY



www.veth-motoren.com



www.shipconstructor.com



www.harland-wolff.com



www.bctq.com



www.fleetech.com



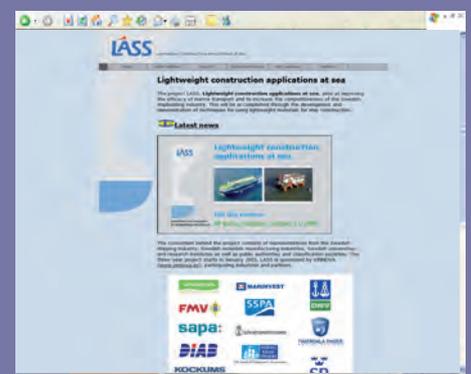
www.bmt.org



www.jaure.com



www.checkmateuk.com/avon



www.lass.nu



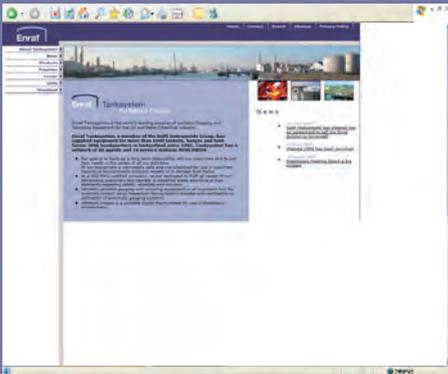
www.napa.fi



www.akerarctic.fi



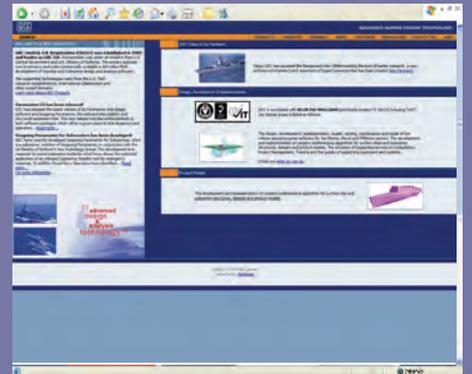
www.wumtia.com



www.enraffanksystem.com



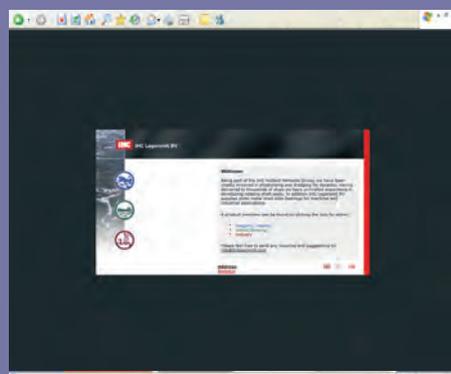
www.bv-industrie.com



www.grc-ltd.co.uk



www.pbcf.motech.co.jp



www.ihclagersmit.com



www.giroeng.com

BAE SYSTEMS

DESIGN SERVICES

Whole Lifecycle Marine Consultancy

- Naval Architecture
- Marine Engineering
- Ship Design
- Human Factors
- Safety Management
- Requirements Engineering
- Litigation & Expert Witness
- Acoustic, IR & RCS Signatures
- Engineering Dynamics & Simulation
- Supportability Engineering

Customer Solutions & Support

South Street, Scotstoun
Glasgow, G14 0XN
United Kingdom

Telephone +44 (0) 141 957 2453
Fax +44 (0) 141 957 2328
Email keith.figg@baesystems.com

KINGFISH Recruitment

www.kingfishrecruitment.com

GHS
General HydroStatics
Ship Stability and Strength Software

Creative Systems, Inc.
Creators of GHS™

P.O. Box 1910 Port Townsend, WA 98368 USA
phone: (360) 385-6212 fax: 385-6213
email: sales@ghsport.com
www.ghsport.com/ghs

BMT Fleet Technology
ShipmoPC
Seakeeping Predictions Software

Tel: 1 613 592-2830 fleet@fleetech.com www.fleetech.com

ROBIN A WILLIAMS & Co Ltd

Watson House, 2 Cora Street
Barry, Vale of Glamorgan
CF63 4EP, United Kingdom

Tel: (01446) 739127
Fax: (01446) 732945
e-mail: robin@rawcoltd.fsnet.co.uk

RR CONSULTING GROUP BV

- Naval Architecture
- Engineering & Design
- Consultancy

R.R. CONSULTING GROUP B.V.
P/O BOX 1419 ■ 9701 BK GRONINGEN ■ THE NETHERLANDS ■ +31 6 30285465
INFO@RRCONSULTINGGROUP.COM ■ WWW.RRCONSULTINGGROUP.COM

Taking on maritime challenges ... together

KEEL MARINE LTD
MARINE CONSULTANTS, DESIGNERS AND SURVEYORS

Ridgeway Office Park,
Unit 6-8,
Bedford Road, Petersfield
Hants, GU32 3QF, UK

T: (01730) 268889
F: (01730) 269361
E: office@keelmarine.com
www.keelmarine.com

Malin Marine Consultants Ltd
naval architects & heavy lift specialists

- Heavy Lift and Transportation Specialists
- Naval Architecture
- Structural Analysis
- Motion Response Analysis
- Bespoke Software Solutions
- Marine Procedures
- CAD Services

17 Sandyford Place, Glasgow G3 7NB info@malinmarine.com
Tel: 0141 243 2242 Fax: 0141 226 5501 www.malinmarine.com

P.O. Box 54
NL-8064 ZH Zwartsluis
www.kerstholt-teakdecks.com
Tel: +31 38-3867677
Fax: +31 38-3867728

KERSTHOLT
Teakdecksystems B.V.

**COST EFFECTIVE DESIGN & PRODUCTION
ENGINEERING SERVICES**



Fred Black, Engineering Manager
Email: fredb@harland-wolff.com
Mobile: 07967589830

Queen's Island, Belfast, BT3 9DU
Tel: +44 (0)28 9045 8456
Fax: +44 (0)28 9045 8515
www.Harland-Wolff.com

**Harland and Wolff
Heavy Industries Ltd**



offices in: Douglas (Isle of Man), Oslo (Norway), Qingdao (United Kingdom), Castellón (Spain)

PROVIDING ENGINEERING AND DESIGN SERVICES

- Full Design Capabilities (Conceptual, Class & Detail Design, Workshop & Production Information)
- Full Range of Hydrodynamic Tests, R&D and Consulting
- Latest CAD-CAM Solutions
- Project Management & Through Life Support

TO THE MARINE, ENERGY AND SHIPBUILDING INDUSTRIES

International Contract Engineering Limited
19-21 Circular Road, Douglas, Isle of Man, IM1 3AF British Isles
Phone +44(0)1624 823-195, Fax +44(0)1624 828 297
Registered in the Isle of Man; www.ice-design.com

WOLFSON UNIT
FOR MARINE TECHNOLOGY & INDUSTRIAL AERODYNAMICS

- Model tests in towing tank and wind tunnel
- Wide range of PC based marine software
- Bureau service and stability booklets
- Trials data acquisition and onboard analysis
- Expert witness on technical issues
- Innovative research to customers world wide
- Full consultancy service at competitive rates

University of Southampton, Southampton, SO17 1BJ, UK
Tel: +44 (0)23 8058 5044 Fax: +44 (0)23 8067 1532
www.soton.ac.uk/~wumtia e-mail: wumtia@soton.ac.uk



Safety Through Innovation

**Ship Stability and Safety | Consulting Engineering
Accident Investigation | Research & Development**

SafetyatSea Ltd 280 St Vincent Street Glasgow UK G2 5RL
Tel +44 (0)141 572 5570 Email enquiries@safety-at-sea.co.uk
Fax +44 (0)141 572 5590 Web www.safety-at-sea.co.uk

**The Royal Institution of Naval Architects
The Naval Architect
Chinese-language edition**

Twice each year, *The Naval Architect* is translated into Chinese-language, for a further distribution to more than 7000 Shanghai SNAME members and also to 500 members of the Shanghai Association of Shipbuilding Industries. Advertisements in the Chinese-language edition are offered FREE OF CHARGE, including translation, to those advertisers participating in the regular February and September issues.

To reach these key decision-makers, book your advertisement space now by contacting:

Debbi Bonner, dbonner@rina-org.nl

**Tired of bearing problems?
Then try Vesconite Rudder
and Stern Tube Bearings**

No swell. Low friction. Long Life.

- ABS, Lloyds, DNV etc. approved

Call for Free Design Manual

VESCO PLASTICS SALES Tel.: +27 82 853 1434
marine@vesconite.com
www.vesconite.com




BURNESS CORLETT - THREE QUAYS
THE MARITIME CONSULTANTS www.bctq.com

Ship Design - Naval Architecture - Marine Engineering - Surveying - Expert Legal & Casualty Investigation Services

MARINE DESIGN, NAVAL ARCHITECTURE & ENGINEERING SERVICES

London t: +44 (0)20 7929 2299 f: +44 (0)20 7929 1650 e: enquiries@bctq.com	Southampton t: +44 (0)23 8033 9449 f: +44 (0)23 8033 9440 e: info@bctq.com	Australia t: +61 2 9887 3966 f: +61 2 9887 3977 e: info@bctq.com.au	Dubai t: +971 4 35 22 112 f: +971 4 35 22 366 e: enquiries@tqjuae.com
--	---	---	---

EXPERT SERVICES DIVISION

London t: +44 (0)20 7621 2943 f: +44 (0)20 7929 4167 e: london@bctq.com	Isle of Man t: +44 (0)1624 815110 f: +44 (0)1624 8815113 e: iom@bctq.com
--	--

MARINE SAFETY & SURVEY SERVICES

London
t: +44 (0)20 7621 2955
f: +44 (0)20 7929 1655
e: mss@bctq.com



Books

Please note all prices include postage & packaging

BUSINESS FUNDAMENTALS FOR ENGINEERS

By Professor Chengi Kuo FRINA Ref: BFE01

This book deals with essential business topics, so often treated in a specialised and lengthy way, as related to practical engineering situations. Eight chapters cover: business and the engineer; fundamental elements of business; markets; management; money; manpower; case examples; and application. This volume provides engineering students and practising engineers with an effective and well-integrated introduction to business.

Member price: UK £27.00 EUR £28.00 OVS £32.00
Non-Member price: UK £28.00 EUR £29.00 OVS £33.00

DRYDOCKING & SHIPBOARD MAINTENANCE

A Guide For Industry - First Edition - Ref: DRYD

The need for shipboard maintenance in an age of the principles of International Safety Management (ISM) has never been more important. If the industry is to operate at all it must be within the safety guidelines. Many shipboard tasks fall inside the planned maintenance programmes which can be conducted on a day to day basis but many of the annual tasks required to operate ships tend to accumulate and can only be catered for within a docking scenario. Over 100 Photographs - Numerous diagrams and check lists. Listing of Dry Dock operations, handling facilities, main ship builders and repair yards.

Member price: UK £37.00 EUR £42.00 OVS £46.00
Non-Member price: UK £40.00 EUR £45.00 OVS £49.00

EVER THE APPRENTICE

By Kenneth Rawson FRINA Ref: ETA

This book recalls a time and way of life which are beginning to fade from memory. Kenneth Rawson saw major changes in society from a hangover of Victorian attitudes through his war experiences. He provides wonderful snapshots of life of life lived against a backdrop of historical events. He won a scholarship into the body responsible for the design of all warships for the Royal Navy thereby satisfying an intellectual endeavour and a deep love of the sea and ships. He was recognized in 1996 by the University of Portsmouth with the award of Doctor of Engineering, Honoris Causa.

Member price UK £15.45 EUR £16.45 OVS 18.95
Non-member price UK 17.45 EUR £18.45 OVS £20.95

MERCHANT SHIP NAVAL ARCHITECTURE

By Dr DA Taylor FRINA & Dr Alan ST Tang MRINA

Ref: MSNA

This new and up-to-date book defines a ship and its parts, the methods used in calculating the areas and volumes of ships hulls (with worked examples), followed by chapters on Buoyancy, Stability and Trim; Ships and the Sea; Structural Strength; and Resistance, featuring the use of model testing and its relationship to full scale ships. It also features Propellers and Propulsion Manoeuvring and Motion Control; and Vibration, each of which is described from the first principles through to various formulas used in necessary calculations.

Member price: UK £33.50 EUR £34.50 OVS £36.50
Non-Member price: UK £36.50 EUR £37.50 OVS £39.50

SEA OFFICER

By Michael Penny

Ref: SO

This book records the life of a working sailor in The Royal Navy & British Merchant Marine in the second half of the 20th Century. The narrative begins in the closing days of World War II when a teenager discovers his lifelong vocation. His subsequent career at sea is filled with people and ships, famous and everyday. A life rich in excitement and love, triumph and disaster, humour and laughter unfolds. Whilst this is a biography of a mariner it encompasses naval architecture, architects and the technical complexities of ships. Mr Penny is a companion of RINA.

Member price : UK £27.50 EUR £30.00 OVS £34.50
Non-Member price: UK £31.50 EUR £34.00 OVS £38.50

MULTI-HULL SHIPS

By V. Dubrovsky FRINA, A. Lyakhovitsky Ref: MHS

Catamarans, SWATH, and other multi-hull ships are among the dynamically progressing types of marine vessels both in terms of performance and production growth. This progress has been accompanied by a remarkable growth in the number of technical publications. Although these publications, scattered over many sources, decades, and languages, constitute a great database they cannot fulfill the demand for a comprehensive state-of-the-art reference book. This monograph satisfies such demand. For multi-hull ships it is what "Principles of Naval Architecture" (PNA) is for traditional ships.

Member price: UK £192.50 EUR £192.50 OVS £192.50
Non-Member price: UK £202.50 EUR £202.50 OVS £202.50

ROYAL NAVY SUBMARINES 1901-Present Day

By Maurice Cocker Ref: RNS

A must-buy for the Royal Navy and Submarine enthusiast, being a complete directory of RN submarines from the first Holland boat to the latest Astute class. With a wealth of detail on each class and highly quality drawings by John Lambert this hardback book will be widely welcomed. Mr Cocker is a Companion of RINA. Member price- UK £ 50.50 EUR Member price UK £18.99 EUR £22.50 OVS £23.50
Non members price UK £21.99 EUR £25.50 Ovs £26.50

SAFETY MANAGEMENT AND ITS MARITIME APPLICATION

By Professor Chengi Kuo FRINA Ref: SMMA

The author introduces this book by asking a seemingly obvious question "What is safety?". To show there is no straightforward answer he illustrates from his experience in conducting a number of safety workshops worldwide. In the foreword to this book Mr E E Mitropoulos Secretary General of the IMO writes: "As Professor Kuo points out early in his book, safety is not an absolute concept and the levels chosen are based on shared values. It is for this reason that this book is so useful because it introduces safety concepts, explains safety terms, and demonstrates how the different techniques can be applied in practice."

Member price UK £25.75 EUR £28.00 OVS £30.50
Non-Member price UK £29.25 EUR £31.50 OVS £34.00

SHIP KNOWLEDGE

Third Edition By K Van Dokkum Ref: SHKN

Ship Knowledge is all about ships and shipping. Topics range from the structure and systems of various types of modern ships, to engineering, maintenance, safety and the laws and regulations governing the shipping industry. The text is richly illustrated with detailed drawings, photographs and cross-sections of many different types of seagoing vessels, all in full colour, making the book extremely attractive and very informative for anyone interested in shipping. After reading this book you will no longer think of a ship as an inanimate object, but as a completely self-supporting entity embodying all the modern technologies found in a small town. An indispensable book for anyone interested in modern shipping.

Member price: UK £50.00 EUR £51.00 OVS £57.00
Non-Member price: UK £54.00 EUR £54.00 OVS £61.00

SHIPS WITH OUTRIGGERS

by V. Dubrovsky FRINA Ref: SHWO

This book is focused specifically on a multi-hull-ship type having one or more small hulls, called outriggers, connected to a much larger main hull of any form. This book is kind of a supplement to MULTI-HULL SHIPS by Dubrovsky & Lyakhovitsky (MHS). Like MHS, the new "Ships with Outriggers" provides detailed technical discussions of arrangements, hydrostatics, propulsion and seakeeping in calm and rough seas, maneuvering, strength, and design of these ships, assuming that the reader is generally familiar with the background or can find it in MHS.

Member price: UK £69.50 EUR £69.50 OVS £69.50
Non-Member price: UK £72.50 EUR £72.50 OVS £72.50

When purchased with Multi-Hull Ships
£25 RINA member £23 + p&p for MHS only.
SHIPS AND SCIENCE

The Birth of Naval Architecture in the Scientific Revolution,

1600-1800, By Larric D. Ferreiro MRINA Ref: SSBNA

The first book to portray the birth of naval architecture as an integral part of the Scientific Revolution, examining its development and application across the major shipbuilding nations of Europe. "Naval architecture was born in the mountains of Peru, in the mind of a French astronomer named Pierre Bouguer who never built a ship in his life." So writes Larric Ferreiro at the beginning of this pioneering work on the science of naval architecture.

Member price UK £29.35 EUR £ 38.70 OVS £40.90
Non Member price UK £33.65 EUR £42.70 OVS £44.90

SHALLOW WATER AND SUPERCritical SHIPS

By Anatoly Lyakhovitsky Ref: SWSS

This book presents systematic and detailed results of studying the hydrodynamics of ships in shallow water. Due to the current trend of building larger and faster ships, many coastal waters and inner waterways become shallow for these and future ships. Clear and detailed explanation is given how ship performance declines in shallow water at speeds approaching the critical speed, and how wasteful can be attempts to boost the propulsion engine unless the ship is designed for optimal regimes at sub critical speeds and can transit to supercritical regimes. Detailed description is also given how the energy wasted for propelling a ship at near-critical speeds in shallow water is transformed into generating destructive and dangerous waves.

Member price UK £82.00 EUR £82.00 OVS £82.00
Non member price UK £92.00 EUR £92.00 OVS £92.00

SWAN HUNTER BUILT SHIPS

By Ian Buxton FRINA Ref: SHBS

The first order for a warship at 'Swans' was placed in 1907. There then followed a steady stream of orders, peaking during the course of the two World Wars and culminating with the orders in 2000 for two Auxiliary Landing Ships (Logistic) and the subsequent debacle. During this intervening period, the actual organisation behind the shipbuilding effort changed on a number of occasions, albeit the name of 'Swans' remained to the fore. Following on from Swan Hunter's final withdrawal from shipbuilding in 2006, this book is a nostalgic look at a proud heritage of shipbuilding on the Tyne.

Member price: UK £16.99 EUR £20.50 OVS £21.50
Non-Member price: UK £19.99 EUR £23.50 OVS £24.50

BOOKSHOP ANNOUNCEMENT

Please note you will receive a 10% discount if you order any book from Elsevier through the following link on our website:

www.rina.org.uk/bookshop.html, then on the Elsevier icon. Please note you do not have to register to receive the eNEWS to receive your discount.

A selection of books available includes: An Introduction To Naval Architecture, Basic Ship Theory, Contemporary Ideas on Ship Stability, Practical Ship Design, Practical Ship Hydrodynamics, Safety and Security at Sea, plus many more.

For a full book list please contact the Publications department on: Tel: +44 (0)20 7235 4622, e-mail: publications@rina.org.uk or visit our website at <http://www.rina.org.uk>

Journals

THE NAVAL ARCHITECT

Published 10 times a year

- Providing up-to-date technical information on commercial ship design, construction and equipment.
- Regular reports on centres of shipbuilding activity worldwide.
- Comprehensive, technical descriptions of the latest newbuildings.
- News, views, rules & regulations, technology, CAD/CAM, innovations.

quarterly publication
OFFSHORE MARINE TECHNOLOGY
bi-monthly publication
WARSHIP TECHNOLOGY

2008 SUBSCRIPTION
UK: £115 Europe: £120 Overseas: £130 Ref: J6

SHIP & BOAT INTERNATIONAL

Published 6 times a year

- In depth coverage of small craft/small ship design, building & technology.
- Specialist sections include: fast ferries, tugs, salvage & offshore, patrol & paramilitary craft, coastal & inland waterway vessels, pilot boats, propulsion and transmissions.
- Advances in construction materials, electronics, marine equipment.
- Contract news and the latest market developments.

2008 SUBSCRIPTION
UK: £88 Europe: £93 Overseas: £105 Ref: J7

SHIPREPAIR & CONVERSION TECHNOLOGY

Published Quarterly

- In depth coverage of all aspects of shiprepair and conversion work and comprehensive technical descriptions of major conversion projects.
- Regular regional surveys on the major shiprepair centres.
- Developments in shipboard and shipyard equipment technology.
- Contract news, appointments, industry views, new regulations.

2008 SUBSCRIPTION
UK: £39 Europe: £44 Overseas: £49 Ref: J8

Transactions

TRANSACTIONS PART A (IJME) PART B (IJSCT) & ANNUAL REPORT

Members Volume 150 (2008) Price per volume £48 Ref BV08

Non-Members Volume 150 (2008)

Price per volume £120 Ref BV0150

INTERNATIONAL JOURNAL OF MARITIME ENGINEERING (IJME)

2008 Members Part Ref: IJME08 Set Ref: ST08 Part A1 Part A2 Part A3 Part A4 Set £9 £9 £9 £9 £30

Non-Members Part Ref: IJME08 Set Ref: ST108 Part A1 Part A2 Part A3 Part A4 Set £18 £18 £18 £18 £60

INTERNATIONAL JOURNAL OF SMALL CRAFT TECHNOLOGY (IJSCT)

2008 Members Part Ref: IJSCT08 Set Ref: SS08 Part B1 Part B2 Set £9 £9 £18

Non-Members Part Ref: IJSCT08 Set SS108 Part B1 Part B2 Set £18 £18 £32

For further information on previous editions please contact the Publications department on: Tel: +44 (0) 20 7235 4622, Email: publications@rina.org.uk or Website: <http://www.rina.org.uk>

October 5-7, 2008

Interferry 2008, international conference, Hong Kong.
Contact Interferry, 1619 Warren Gardens, Victoria, BC, V8S 1S9, Canada.
Tel +1 250 592 9612
Fax +1 250 592 9613
www.interferry.com

October 8, 2008

Superyacht Underwater Corrosion, seminar, London, UK.
Contact Conference Department, RINA, 10 Upper Belgrave Street, London SW1X 8BQ, UK.
Tel +44 20 7235 4622
Fax +44 20 7245 6959
E-mail conference@rina.org.uk

October 23-24, 2008

3rd European Conference on Production Technologies in Shipbuilding, international conference, Hanseatic City of Stralsund, Germany.
Contact Dr Frank Roland, Center of Maritime Technologies eV, Bramfelder Straße 164, D - 22305 Hamburg, Germany.
Tel +49 40 691 99 47
Fax +49 40 691 99 73
E-mail roland@cmt-net.org
www.cmt-net.org

October 23-25, 2008

Shipport China 2008, international exhibition, Dalian, China.
Contact Exhibition Management Office, Dalian Xinghai Exhibitions Co, Ltd, EAST 14, No 18, Huizhan Road, Shahekou District, Dalian 116023, PR China.
Tel +86 411 8881 6904
Fax +86 411 8480 9988
E-mail office@dxce.com
www.shipport.com.cn

October 29-31, 2008

Fundamentals of Contract & Change Management for Ship Construction, Repair & Design, training course, London, UK.
Contact Conference Department, RINA, 10 Upper Belgrave Street, London SW1X 8BQ, UK.
Tel +44 20 7235 4622
Fax +44 20 7245 6959
E-mail conference@rina.org.uk

October 30-31, 2008

4th International Marine Coatings Summit, Westin Chosun Hotel, Busan, Korea.
Contact Calae McDermott.
Tel +1 281 228 6263
Fax +1 281 228 6363
E-mail calae.mcdermott@nace.org

November 3-6, 2009

Basic Dry Dock Training Course, Virginia Beach, USA
Contact DM Consulting, 12316 Dormouse Road, San Diego, CA 92129, USA.
Tel +1 858 705 0760
Fax +1 858 538 5372
E-mail jstiglich@aol.com

November 5, 2008

President's invitation lecture, London, UK
Contact Conference Department, RINA, 10 Upper Belgrave Street, London SW1X 8BQ, UK.
Tel +44 20 7235 4622
Fax +44 20 7245 6959
E-mail conference@rina.org.uk

November 12-13, 2008

MASTECH, international conference, Dubai
Contact Marine BizTV, P.O Box 94354, Dubai
Tel +971 4 2997939
Fax +971 4 2997940
E-mail conference@mastechdubai.com
www.mastechdubai.com

November 19-20, 2008

Marine Renewable Energy, international conference, UK.
Contact Conference Department, RINA, 10 Upper Belgrave Street, London SW1X 8BQ, UK.
Tel +44 20 7235 4622
Fax +44 20 7245 6959
E-mail conference@rina.org.uk

November 26-28, 2008

INMEX China, international exhibition, Guangzhou, China.
Contact IIR Exhibitions, 205 Henderson Road #03-01, Henderson Industrial Park, Singapore 159549
Tel +65 6319 2668
Fax +65 6319 2669
www.maritimeshows.com
December 2-4, 2008
High Performance Yacht Design, international conference, Auckland, New Zealand.

Contact Conference Department, RINA, 10 Upper Belgrave Street, London SW1X 8BQ, UK.
Tel +44 20 7235 4622
Fax +44 20 7245 6959
E-mail conference@rina.org.uk

December 9-11, 2008

Seatrade Med, international conference, Venice, Italy.
Contact Seatrade Communications Ltd, Seatrade House, 42 North Station Road, Colchester CO1 1RB, UK.
Tel +44 1206 545121
Fax +44 1206 545190
E-mail events@seatrade-global.com
www.seatrade-med.com

December 11-12, 2008

Waterjet Propulsion 5, Conference, London, UK
Contact Conference Department, RINA, 10 Upper Belgrave Street, London SW1X 8BQ, UK.
Tel +44 20 7235 4622
Fax +44 20 7245 6959
E-mail conference@rina.org.uk

December 14-16, 2008

Seatrade Middle East Maritime, international conference, Dubai, UAE.
Contact Seatrade Communications Ltd, Seatrade House, 42 North Station Road, Colchester CO1 1RB, UK.
Tel +44 1206 545121
Fax +44 1206 545190
E-mail events@seatrade-global.com
www.seatrade-middleeast.com

January 28-29, 2009

Innovation in High-Speed Marine Vessels, international conference, Fremantle, Australia.
Contact Conference Department, RINA, 10 Upper Belgrave Street, London SW1X 8BQ, UK.
Tel +44 20 7235 4622
Fax +44 20 7245 6959
E-mail conference@rina.org.uk

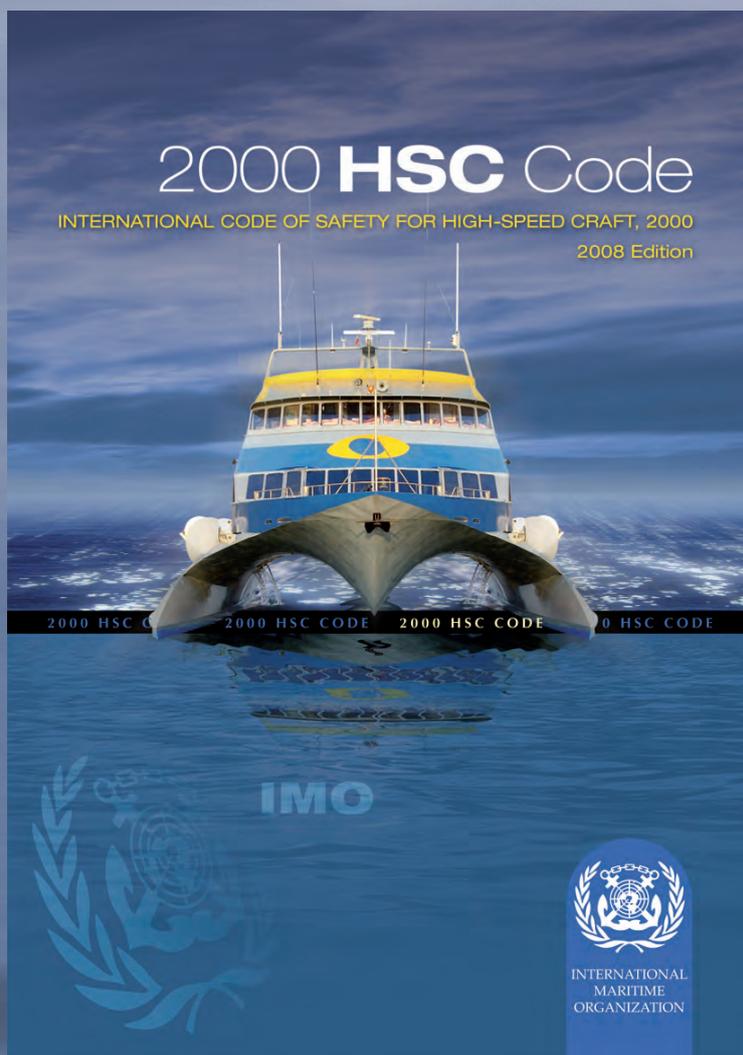
February 25-26, 2009

Human Factors in Ship Design & Operations, Conference, London, UK
Contact Conference Department, RINA, 10 Upper Belgrave Street, London SW1X 8BQ, UK.
Tel +44 20 7235 4622
Fax +44 20 7245 6959
E-mail conference@rina.org.uk

2000 HSC Code

INTERNATIONAL CODE OF SAFETY FOR HIGH-SPEED CRAFT, 2000

AVAILABLE TO ORDER NOW



IMO Publishing

International Maritime Organization

4 Albert Embankment

London SE1 7SR

United Kingdom

www.imo.org



INTERNATIONAL
MARITIME
ORGANIZATION

ОРГАНИЗАЦИЯ
ИНТЕРНАЦИОНАЛЬНОГО
МОРСКОГО ТРАНСПОРТА



INTERNATIONAL
MARITIME
ORGANIZATION

- FLEXIBILITY - FOR US IT'S NATURAL

OUR FLEXIBLE ENVIRONMENTAL
SERVICES HELP YOU REDUCE
EMISSIONS AND SAVE ENERGY.

www.lr.org/marine

**Lloyd's
Register**

LIFE MATTERS

Giant kelp forest in the Pacific Ocean. Their flexible fronds provide a unique habitat for marine organisms.

Services are provided by members of the Lloyd's Register Group. Lloyd's Register is an exempt charity under the UK Charities Act 1993.