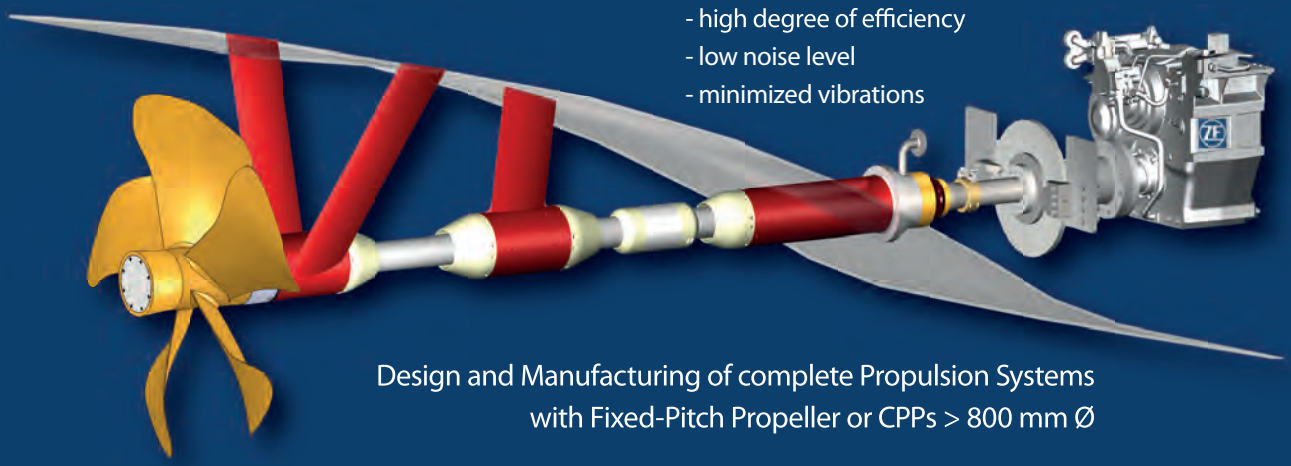
THE NAVAL ARCHITECT

A publication of The Royal Institution of Naval Architects | www.rina.org.uk/tna

POWER PACKAGE
PIENING PROPELLER

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



Design and Manufacturing of complete Propulsion Systems
with Fixed-Pitch Propeller or CPPs > 800 mm Ø

Otto Piening GmbH
Am Altendeich 83
25348 Glückstadt
Germany

Piening Propeller
specialist Plant for propellers and stern gears

Tel: +49.4124.9168-0 · Fax: +49.4124.3716 · pein@piening-propeller.de · www.piening-propeller.de

Cruise ship technology / Finland /
LNG/LPG / India / **February 2011**


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

Editor Nick Savvides
Assistant Editor Samantha Fisk
Design/Production Manager Sandy Defraine
Group Sales Director John Payten
Assistant Advertisement Manager Daniel Payne
Advertisement Production Manager Stephen Bell
Marketing Manager Josie Pearlson
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
© 2011 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 2011 subscription to *The Naval Architect* costs:

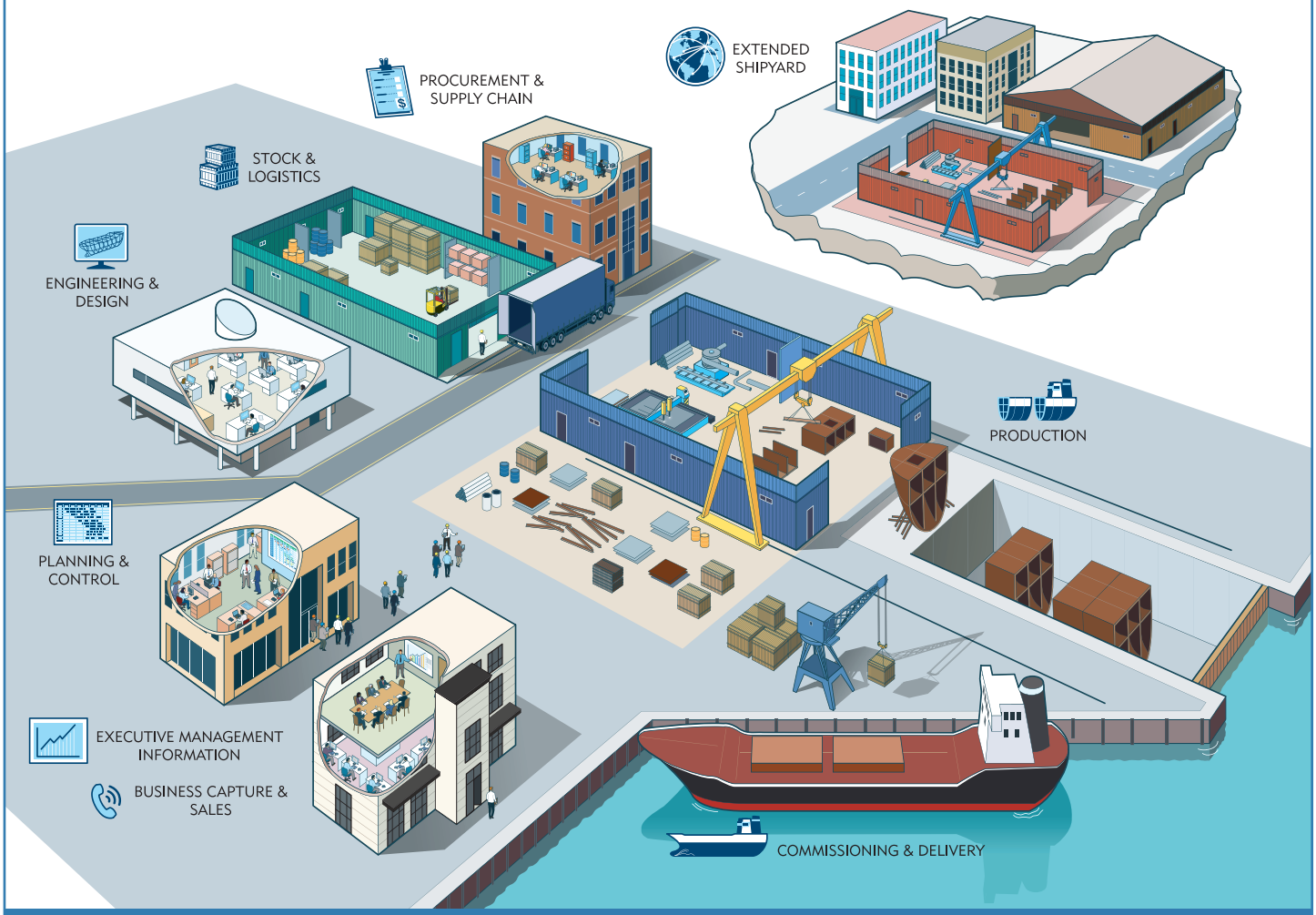
	12 Months	24 Months	36 Months
Inland	£150	£260	£375
Europe	£156	£272	£390
Overseas	£168	£292	£420

Average Net Circulation 11,221
1 January to December 2010
ISSN 0306 0209

ABB Turbocharging
Setting a new standard.

Power and productivity for a better world™ ABB

ABB Turbocharging introduces the all-new A100 turbocharger generation as a significant step in the development of single-stage, high-efficiency, high-pressure turbocharging.
www.abb.com/turbocharging



The Industry's most complete Integrated Shipbuilding Solution

For more than four decades, AVEVA has been delivering unmatched engineering and design solutions to shipyards around the world. This tradition lives on, but AVEVA is much more than simply 3D. The new AVEVA Integrated Shipbuilding Solution embraces the business lifecycle of the entire shipyard.

Unique to the marine industry, we offer field-proven solutions that integrate key business operations to dramatically enhance productivity and profitability, lower overall production costs, and reduce project build times. AVEVA understands your critical success factors and we can help you deliver the right information, in the right format, to the right place, at the right time.

Drive down costs, beat schedules

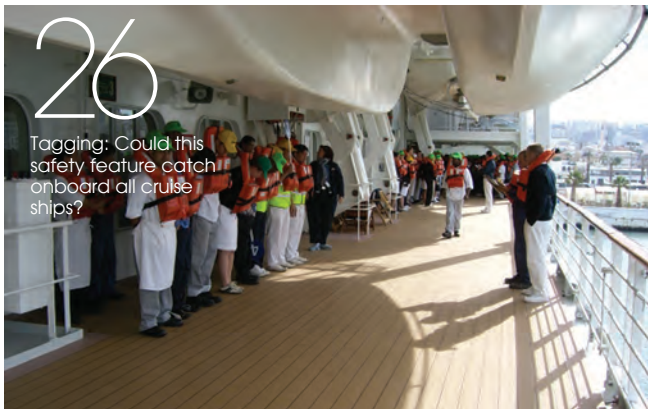
Learn more about AVEVA's Integrated Shipbuilding solution by downloading our new white paper at **www.aveva.com/whitepapers**

AVEVA

CONTINUAL PROGRESSION

Head office:
High Cross, Madingley Road
Cambridge CB3 0HB UK
marketing.contact@aveva.com
Tel +44 (0)1223 556655

22-50 Features



26 Tagging: Could this safety feature catch onboard all cruise ships?

34 Viking Line orders LNG powered ferry..

37 India's shipbuilding capacity looks set to increase.

On-line Edition

The Royal Institution of Naval Architects is proud to announce that as of January this year, *Shiprepair and Conversion Technology* 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/srct 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.

NUPAS CADMATIC

3D Ship Design Software

Ship model courtesy of Wärtsilä Ship Design Norway AS

VERSION 6

increases ease of use and efficiency

Nupas-Cadmatic latest software version, V6, is an extremely powerful tool for ship design and engineering. The most eye catching feature of V6 is the introduction of a new user interface that will further ease work and bring new efficiencies throughout the ship design process.

The new user interface combines a modern Office 2007 look and feel with enhancements welcomed by both novice and experienced users. It will change the way the software is used and allow for faster and more efficient work. In V6 it is available in Plant Modeller with other modules to follow in due course.

The software's easy-to-use 3D modelling tools 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 detailed engineering and final production phase. It improves engineering quality and shortens design and construction times. Nupas-Cadmatic seamlessly distributes engineering projects globally between different sites while ensuring effective communication between project partners.

Version 6 highlights

New GUI For the first time in history an Office 2007 style User Interface has been applied to 3D software, making it easier and faster to learn than comparable systems. Nupas-Cadmatic's intuitive and efficient User Interface speeds up design projects. **Distributed design** Nupas-Cadmatic's CoDesigner technology is the most advanced and easiest tool to use for distributed projects. It does not require massive hardware or very fast internet connections. **Easy administration** Administration of 3D software has never been so easy. Nupas-Cadmatic has the most modern tools for library and catalogue management. **Internet-based technology** Nupas-Cadmatic was the first developer to launch an Internet-based 3D model viewer and data query tool on the market in 2003. Today eBrowser is the most advanced software to visualize 3D models, to walk through, to query data and to communicate design details interactively with other users and project parties. The internet-based technology has unlimited scope for easy integrations.

Design and engineering of:	Comprehensive information for:
GA and MA	Plate and profile cutting
Classification drawings	Plate and profile bending
Hull structures	Pipe spools and isometrics
Piping and other diagrams	Pipe cutting and bending
Machinery & piping, HVAC	Other material lists
Accommodation & interior	Weights
Outfitting	Centers of gravity
Virtual 3D models	Logistic data
On-line Walk Around	Data for production robots
Windows AVI Video files	FEM Analysis
	Interfacing other systems

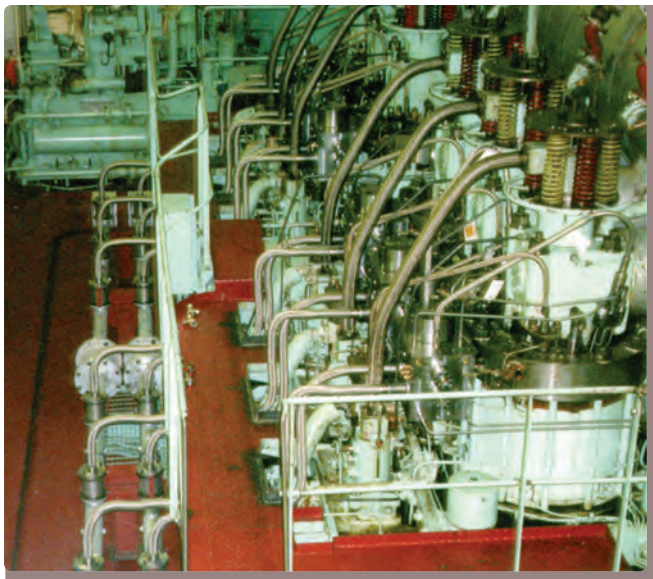
www.nupas-cadmatic.com

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

OPTIMIZING RESOURCES



Flashpoints

The engine room of the LPG powered *Navion Viking*.

Meeting new environmental regulations could become easier with new rules that will allow owners to power their ships with LPG. More portable, easier to store and a by-product of LNG production so with the increased demand for LNG as a marine fuel will come the comparatively (compared to HFO) cheap alternative of a butane and propane mix that is LPG.

Many of the advantages that are gained from LNG are also found in the use of LPG, reductions of around 20% in carbon dioxide and significant reductions in NOx, SOx and particulates, but LPG is heavier than air and could present a danger should a leak occur in the fuel system.

MAN Diesel & Turbo believes that it has solved this problem with the monitoring of key elements of the system for a drop in pressure or through hydrocarbon detection systems. If the International Maritime Organization (IMO) accepts these safeguards as adequate and will allow the use of LPG as a maritime fuel the global spread of the gas may be very fast indeed.

Few of the hindrances that pose a problem for the use of LNG apply to LPG. A major difficulty for LNG is the storage and bunkering processes that concern regulatory authorities that an explosion could occur mean that the authorities are reluctant to see refuelling in port, or with loaded passenger ships. Cryogenic pumps and specialist vessels that can deliver LNG are also expensive to build and operate making the creation of a network of bunkering stations around the globe a ponderous process.

None of these difficulties apply to LPG which has many tankers available with reliquefaction plants already aboard the ships. MAN Diesel itself has five ships successfully operating on LPG as a fuel, including the shuttle tanker *Navion Viking*.

Technically the engines are comparatively easy to adapt to LPG operation. MAN Diesel says: "The engine requires a gas supply pressure of 550barg and a temperature of 45°C. At this temperature and pressure, the LPG is liquid and different fuel supply solutions are available for generating this pressure for the liquid. Hence, the ME-GI for LPG will use liquid gas for injection, contrary to the ME-GI for LNG, where the methane is injected in gaseous form.

"All the way from tank to engine the LPG remains in liquid phase and non-cryogenic pumps can be used to generate the pressure. These pumps are standard equipment in the LPG industry, where quite a big number of suppliers are available."

All this technology is already "well proven", concludes MAN Diesel. What is more the company adds: "The control and safety system for the ME-GI system is based on the experience achieved from working gas plants, including the 12K80MC-GI-S in Japan, followed by the development of the VOC engine in the late nineties. The classification societies have contributed to the development and, furthermore, after a successful test, they issued an approval for the MC-GI operating on an LPG/VOC mixture back in 1998."

The use of LPG as a successor to the heavy fuel oil and marine diesel oil is a better alternative to LNG in terms of the logistics of supply to the marine industry and the technical difficulties that need to be overcome. Safety is, of course, an over-riding concern, but with ships such as *Navion Viking* already operating safely on LPG with the proper monitoring and venting systems in place the ship has shown that it is a credible solution.

Meanwhile, our regular readers may notice a slight change towards the back of the magazine. My Cousin Bobby Khan, a direct descendant of Genghis apparently and a professional mariner, has kindly agreed to write a column for us which will be called 'Crew's Views'. Cousin Bobby will be evaluating the equipment that has been designed for use onboard ships from a user's perspective.

In effect Cousin Bobby will give a little technical feedback for designers who thought the things they designed were user-friendly, Bobby will ensure that they live up to expectations and will say so if they are not up to scratch. But, he will equally give a considered view on those designs that do perform to expectations. Either way we hope readers find Cousin Bobby informative and interesting to read. *NA*

Companies

Credit crisis forces Wilhelmsen merger

A 35% decline in revenues for the engineering and ship equipment subsidiaries of Norway's Wilhelmsen Group has prompted a merger of the Wilhelmsen Ships Equipment and Wilhemsen Marine Engineering divisions into a single entity under the banner Wilhelmsen Technical Solutions (WTS).

The company will be headed by Petter Traaholt who told *The Naval Architect* that the lost revenues, between 2008 and 2010, meant that the business areas needed to be "re-aligned".

WTS will be divided into three regions, Northern Europe, with its HQ in Gothenburg, Asia from Singapore and North America whose regional office will be in Fort Lauderdale, Florida.

Customers for the marine engineering division are largely in Europe and North America, while the ship equipment business is focused on the yards that are mainly to be found in Asia.

"The high newbuilding levels of 2005-2008 will not return, but neither will the new orders be as low as 2009-2010 either," said Mr Traaholt, "A new sales focus is needed and we need to focus on cost savings", he added.

The two divisions will offer synergies, and where previously two investments were needed, the company will now make a single investment in administration and IT systems that will reduce costs.

Further job losses are considered unlikely as the separate companies have already shed 100 staff, from its 800 strong pre-credit-crunch permanent workforce during 2008. A further 300 staff will be under short-term contracts, said WTS.

"We are looking for a margin of around 10%," said Mr Traaholt, though he admitted that "competition is fierce with fewer contracts, the tender processes can be more tedious than it used to be," he said.

Shipbuilding

HHI clinches US$520 million order

Hyundai Heavy Industries Co., Ltd. (HHI) has won a US$520 million order to build a new ultra-deepwater drillship for Diamond Offshore Drilling Ltd., a subsidiary of Diamond Offshore Drilling Inc. The agreement includes a fixed-price option Diamond Offshore Drilling can exercise for a second drillship by the end of the first quarter of 2011.

The vessel will measure 229.2m in length and 36m in width with a capability of drilling in water 12,000feet (3600m) deep, is scheduled to be delivered by the middle of 2013.

This drillship will be built to the Gusto P10000 design. Certain features of this design will mean that the drillship will be able to stabilise itself whilst in operation and to use less fuel by less usage of the thrusters. Adding to this the vessel will also have a location controlling system, computer propulsion system and seven blowout preventers.

Hyundai Heavy expects that this new order will serve as a stepping stone for further drillship orders in the USA and Europe. So far HHI has won five drillships orders.

Starting with this US$520 million order, HHI has set new orders targets for 2011 of US$11 billion from Shipbuilding division (including Hyundai Samho Heavy Industries) and US$4.8 billion from Offshore and Engineering division.

Engines

MAN powers Chinese rescue ships

In a prominent contract involving two large rescue ships, MAN Diesel & Turbo is to supply two twin-screw complete propulsion packages based on its latest MAN L48/60CR engines, Renk RSHL reduction gears and newly designed Alpha Mk 5 propellers.

The two new rescue ships are to be built by the CSSC GuangZhou HuangPu Shipbuilding Company

TECHNICAL PARTICULARS

Ship type Rescue Vessel

Owner:	Rescue & Salvage Bureau, Ministry of Transport.
Shipyard:	CSSC GuangZhou HuangPu Shipbuilding Co. Ltd.
Length o.a.:	116.95m
Draft, design:	5.50m
Breadth, moulded:	16.20m
Speed (100%MCR), light load:	22knots
Calculated Bollard Pull:	1400kN
Twin screw propulsion system	
Output:	2 x 7200 kW
Main engines:	2 x MAN 6L48/60CR (Tier II)
Main Gears:	2 x Renk RSHL1000
CP Propellers:	2 x Alpha VBS1020, Mk 5
Propulsion Control:	Alphatronic 2000 PCS

A hard hat, a flashlight and sound, professional judgement will always form the bedrock of effective classification services.

Setting the Standard for Service.

www.eagle.org

FOUNDED 1862 ABS
Setting Standards of Excellence

Limited, China. At 117m overall, and speeds up to 22knots the newbuildings are to operate for the BeiHai Rescue Bureau and DongHai Rescue Bureau - of the Chinese Ministry of Transport. The first of the ship sets is due for delivery in October 2011 with the second ship set expected for delivery in March 2012.

Mr. Goetz Kassing, General Manager, MAN Diesel Shanghai Co. Ltd. explains: "The 48/60CR engines have been chosen for these rescue vessel newbuildings due to their wide operational flexibility and their combination of favourable fuel efficiency, low emissions levels and invisible smoke under part-load operation. With flexible control of injection pressure, timing and rate shaping, common rail fuel injection allows emissions and fuel consumption to be optimised over the engine's entire load range. Combined with the new Mk 5 generation of Alpha CP Propellers, ultimate ship propulsion power and speed flexibilities are offered for the many operating modes and mission tasks of the rescue vessels."

Shipbuilding

KFAB develops solution for Kogas

KFAB, White Smoke and Swedish Marine Technology Forum have entered into a joint agreement with the Korean energy giant KOGAS to evaluate the possibilities for developing a Korean system for delivery of LNG to gas-fuelled ships. The project will be carried out from now until April 2011 and will form a basis for further development of an LNG supply system in Korea.

The project has been divided into seven tasks; the Swedish cluster has the main responsibility for five of these. Each of these five tasks has a special focus such as national and international regulations, demand forecasting, and risk evaluation. The project will deliver a common report and also be presented at a common workshop that will be held in Korea at the beginning of April 2011.

Lifesaving

Stolt Tankers signs up with Viking

Viking Life-Saving Equipment has signed a liferaft exchange contract with Stolt Tankers BV worldwide. Viking maintains a worldwide exchange pool for liferaft servicing at Viking stations in 42 strategic ports across the globe. Stolt Tankers vessels will receive Viking liferafts, which will be exchanged for new liferafts as their certificates expire.

Stolt Tankers Procurement Management Team, believes the new contract offers many advantages for their company. "Having a single point of contact for Stolt Tankers for all its liferaft management will save us a lot of time and reduce the number of interventions alongside the vessel. At the same time, the transparency and fixed cost basis of the Ship owner Agreements make it much easier for us to predict our servicing costs over the next decade. And in this business, predictability can be worth gold."

Stolt Tankers opted for Viking Lifesaving Equipment because of the quality of the service and the product. "We feel very comfortable with the way Viking has addressed our servicing requirements," said Stolt Tankers Procurement Team. "They have been in the marine safety business for fifty-odd years, so they were able to demonstrate both the experience and the flexibility we were looking for."

Henk van der Drift, Vice President for South West Europe, said: "Long-term contracts like this are made possible by a high level of trust between the parties, and by the flexibility that is built into Ship owner Agreements to enable changes during the contract period. It becomes an easy, convenient choice for far-sighted ship owners like Stolt."

Newbuilding

Austal launches catamaran

Australian ferry builder Austal launched the largest catamaran it has ever built late last month. The 112.6m *Leonora Christina* has a beam of 26.2m and a depth of 8.5m.

The ship will have a capacity of 1400 passengers and 357 cars. It is powered by four MAN 20V28/33D engines each producing 9100kW of power which gives the vessel a top speed of 40knots.

The vessel is owned by Danish company Færgen (formerly Nordic Ferry Services), and will be operated by Færgen subsidiary Bornholmer Færgen on the route between Rønne on the Danish island of Bornholm and Ystad in south east Sweden.

Austal was awarded the contract in April 2009 and the vessel is now on track to commence sea trials in March, with delivery scheduled to take place in May 2011.

The Leonora Christina in the final stages of construction.

Reliability in Steering and Mooring Safety—

Assured by Kawasaki Production Centers in Japan, China and Korea

Kawasaki Precision Machinery (UK) Ltd.

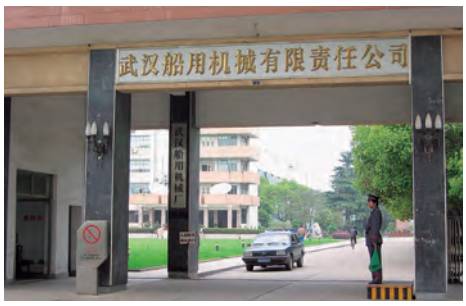
ENGLAND

Flutek, Ltd.

KOREA

CHINA

JAPAN



CSIC/Wuhan Marine Machinery Plant Co., Ltd.

Kawasaki Heavy Industries, Ltd.
Nishi-Kobe Works

Kawasaki

http://www.khi.co.jp/kpm/

KAWASAKI HEAVY INDUSTRIES, LTD. PRECISION MACHINERY COMPANY

Tokyo Head Office World Trade Center Bldg., 4-1, Hamamatsu-cho 2chome, Minato-ku, Tokyo 105-6116, Japan Phone:81-3-3435-6879 Fax:81-3-3435-2023
Nishi-Kobe Works 234, Matsumoto, Hasetani-cho, Nishi-ku, Kobe 651-2239, Japan Phone:81-78-991-1133 Fax:81-78-991-3186

Engines

Starting from the back

On 25 November Becker Marine Systems GmbH & Co. KG and MAN Diesel & Turbo SE have made an agreement to develop efficient aft ship solutions.

The aim of the Becker/MAN cooperation agreement is to further develop and optimise integrated propulsion and manoeuvring solutions related to complementary design for MDT propulsion bulb and BMS high performance rudders, combined optimisation of propellers and energy saving devices, steerable nozzles, high-efficient nozzle profiles and alignment with propellers.

Becker Marine and MAN Diesel & Turbo have highlighted that the cooperation will explore new potentials within thrust management, propulsion efficiency, cavitation control and noise reduction – resulting in improved manoeuvrability, lower fuel consumption, reduced exhaust gas emissions and better onboard comfort.

Klaus Deleroi, Senior Vice President and Head of MAN Diesel & Turbo's Business Unit Medium Speed, expresses his satisfaction with the agreement: "Both parties, Becker and MAN, have unique engineering know how to offer each other, and we have great expectations to the combination and outcome of these key competences".

Contact MAN Diesel & Turbo SE, Stadtbachstrasse 1, D-86153 Augsburg, Germany.
Tel +49 821 3220
Fax +49 821 3223382
E-mail info-de@mandieselturbo.com
www.mandieselturbo.com

25 November, ready to go – the cooperation agreement between Becker Marine Systems and MAN Diesel & Turbo signed and confirmed by Henning Kuhlmann, Becker Marine Systems (left) and Klaus Deleroi, MAN Diesel & Turbo.

Engines

Wärtsilä launches new engine

Wärtsilä has introduced a more powerful version for marine applications of its popular Wärtsilä 32 engine. The latest version is expected to expand that range even further.

The upgraded version is available with an increased power output of 580kW per cylinder at 750rpm. This represents a 15% increase in power output over the earlier 32 engine, despite having the same external dimensions. This increased output means that the Wärtsilä 32 now covers a power range from 3MW to 9.3MW. One area where this new power output is of particular interest is in the offshore drillship market. It is felt that in combination with Wärtsilä's Low Loss Concept, the new engine can offer a powerful yet compact package for diesel electric propulsion.

In announcing the introduction of this latest engine upgrade, Mr Juhani Hupli, vice president, Ship Power Technology, Wärtsilä Ship Power commented: "The

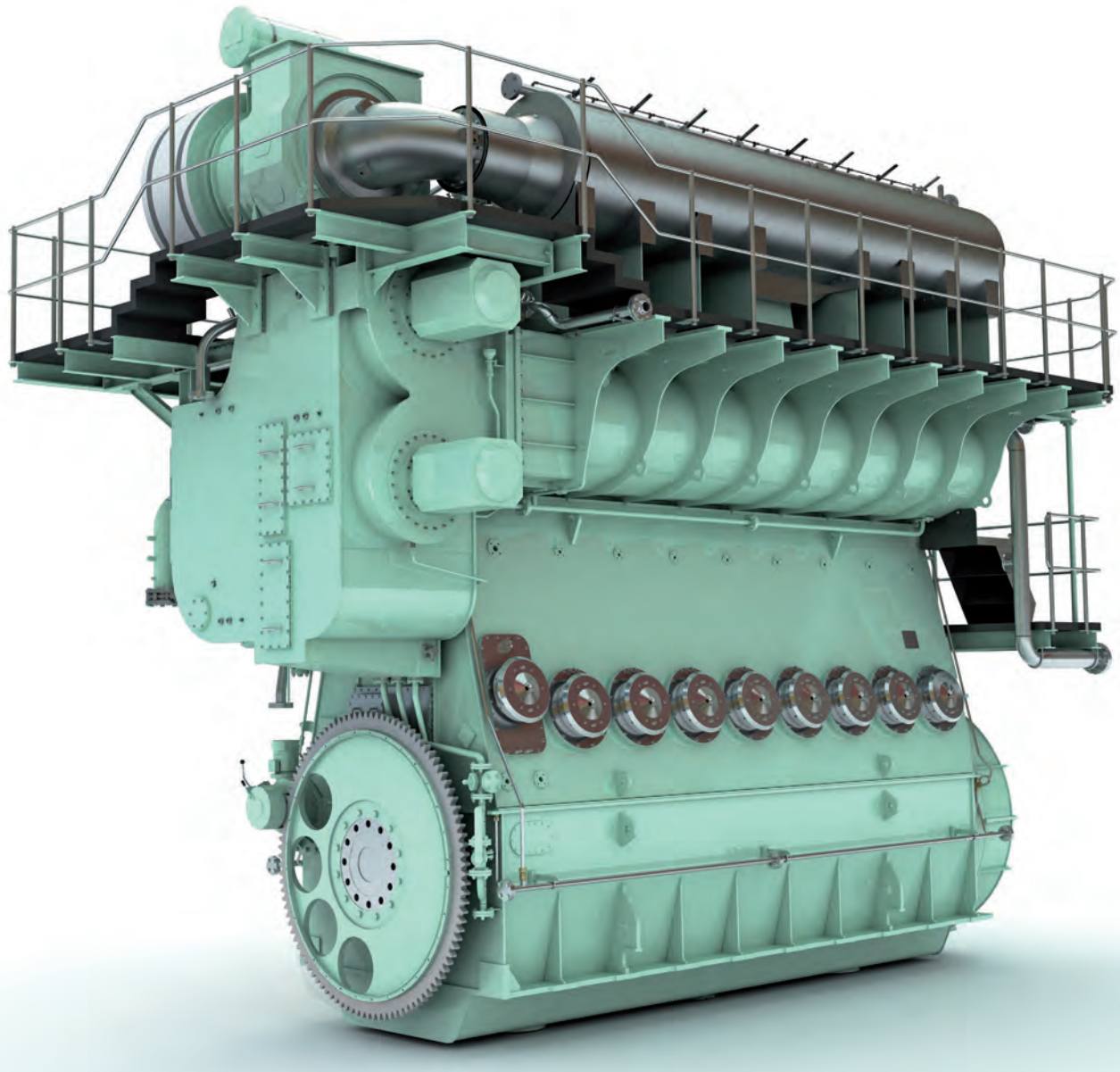
The Wärtsilä 32 engine.

Wärtsilä 32 engine has been the preferred choice of yards, owners and operators for several decades already. However, in order to ensure that our leading position in propulsion technology is maintained and strengthened, Wärtsilä is constantly seeking to improve and further develop its engine portfolio. This on-going development work enables us to offer our customers around the world, the very latest solutions. These solutions enable them to meet the challenges posed by rising fuel and operating costs, and increasingly stringent environmental legislation."

Contact Wärtsilä Corporation, John Stenbergin ranta 2, P.O. Box 196, FI-00531 Helsinki
Tel+358 10 709 0000
Fax+358 10 709 5700
www.wartsila.com

MAN B&W MC-C9 Engines

optimised for short sea and coastal operation



MAN B&W MC/MC-C Engines MAN B&W ME/ME-C/ME-B Engines MAN B&W ME-GI/ME-C-GI/ME-B-GI Engines

The world's most versatile two-stroke engine programme has been further extended with new small bore MC-C9 designs. Our new low speed 35- and 40-cm bore engines are targeted to vessels designed for short sea and coastal operation. Great manoeuvrability, flexibility and unsurpassed operating economy – delivered by compact and reliable MAN B&W engine technology. Consider a C9! Find out more at www.mandieselturbo.com

Engineering the Future – since 1758.

MAN Diesel & Turbo

Ancillary equipment

Miko succeeds in trials

Miko Marine AS has announced that it has successfully completed the first full-scale test of its ShipArrestor system. This enables a helicopter to attach a sea anchor on a tow line to an unmanned vessel such as a tanker that is drifting without power. By reducing the speed of the ship's drift, the ShipArrestor increases the time available for rescue tugs to reach the vessel before it runs aground with potentially severe environmental consequences.

The trial was undertaken by Miko Marine in association with the Norwegian Technical Institute and Norway's Coastal Administration. It took place off the north coast of Norway using the 120,000tonne LNG tanker *Arctic Princess* which was made available by Hoegh LNG and Statoil.

The tests were conducted in two phases, the first being with a helicopter operated by Luftransport that successfully "lassoed" the winch gear and bollards on the foredeck of the *Arctic Princess*. The second phase of the trial tested the performance of the sea anchor itself. A 30m diameter nylon parachute anchor was deployed from the *Arctic Princess* by a tug. It then turned the LNG Tanker up into the wind in less than 20 minutes and reduced its rate of drift by 58%.

Miko Marine holds the patent for the ShipArrestor principle which is being developed with help from an European Union (EU) investment grant and a consortium of eight European organisations. This includes companies from Norway, France, Germany, Netherlands and Austria as well as the Norwegian Institute of Technology and the UK's Ship Stability Research Centre.

Miko Marine is in talks with the Norwegian Coastal Administration about sales of the ShipArrestors, which it would be expected to keep at its depots around the Norwegian coastline. They would then be readily available in an emergency and could reduce the likelihood of groundings and the pollution that can result from them

ContactMiko Marine AS, Ruseløkkveien 26,
P.O. Box 1534 Vika, N-0117, Oslo, Norway.
Tel +47 46 90 50 00
Fax +47 22 83 65 15
E-mail info@miko.no
www.miko.no

Ancillary equipment

NG^2 plugs in

New Generation Natural Gas (NG^2), a startup company proposing innovative solutions to improve the shipping industry economical and environmental performance has been awarded a contract to equip with its Power Generation during Loading & Unloading (PLUG) shore power technology Color Line Color Magic RoPax.

Based on a unique concept of self mating /de mating connector, PLUG makes shore power connection a press button operations, bringing superior advantages in terms of speed of operation, safety with no direct handling of high voltage connector and cables, compactness no impact on ship side payload volume, negligible quayside footprint, capital and operational expenses: simplified installation, no manpower required,versatility : a single PLUG Unit can provide up to 11 000Volts / 700Amps power exchange capability.

For this application, PLUG will provide both the ship side and quay side high voltage (11,000Volts) connection interfaces with a power exchange capability of more than 4MVA.

To cope with Oslo port winter conditions, specific technical solutions have been implemented, such as a thermally insulated and heated storage of the quay side high voltage connector to avoid any exposure to ice/snow build up. All operations will be performed by a single crew member who will control from the ship side the whole PLUG system.

Contact NG^2, 174, boulevard Haussmann, 75008 Paris, France.
Tel +33 6 47 88 11 93
www.Newgeneration-naturalgas.com

CAD/CAM

MasterShip offers upgrades

Dutch-based Computer aided design (CAD) software provider MasterShip has announced further upgrades to its software MasterShip XL. One of the features in the upgrade is the multi-language support. MasterShip has introduced a Chinese and Dutch version, besides the existing English one. MasterShip has also said that versions in any other language will be easy to implement by a local distributor.

The other new feature is the large extension of end details for stiffeners. The stiffener library now contains more than 90 end details for seven different types of stiffeners such as flat bars, angle bars, flat bulbs, T bars and H bars. MasterShip XL software generates production lists of stiffeners that can also be connected to robotic profile cutting lines such as the PCL 600 of the Dutch company HGG.

Contact MasterShip Software BV / MasterShip Services BV, Croy 18, 5653 LD, Eindhoven, The Netherlands.
Tel +31 40 707 3554
Fax +31 40 707 3605
www.mastership.nl

DISCOVER A NEW VIEW ON WEIGHT, SAFETY, ENERGY AND COMFORT

Wherever specialists work together, new perspectives are bound to emerge. For this reason, Saint-Gobain Marine Applications has brought together no less than eleven renowned specialists in the field of glazing, insulation, flooring, interior finishing, climate control and more.

This new approach will enable lighter and more efficient ships to be constructed, reduce energy consumption, increase security and fire safety and improve the comfort of passengers and crew - with integrated solutions that will be a sound investment for the future.

Want to know more about how easy it is to work with one innovative advisor and experience real benefits? Then discover new perspectives at www.saint-gobain-marine.com

SAINT-GOBAIN

MARINE APPLICATIONS

ISOVER SAINT-GOBAIN · weber SAINT-GOBAIN · DUBRIT · Saint-Gobain Glass Solutions · Saint-Gobain Deutsche Glas · Gyproc SAINT-GOBAIN · SAINT-GOBAIN SULLY · raab karcher Fliesenwelt · SAINT-GOBAIN TECHNICAL FABRICS · SAINT-GOBAIN GLASS Interior Glass Solutions · vetrotech SAINT-GOBAIN · Halton MARINE

Psychological engineers can protect industry

More than 80% of maritime accidents have been attributed to human error. These events can have a massive impact on an organisation's operational capability. Chris Parker, senior Human Factors Engineer (HFE) consultant at BMT Designers & Planners analyses the HFE approach to safety.

The risk of human error is an ever present danger in the maritime environment affecting all sectors of the industry. Not least in the list of possible impacts of a marine accident is that of personal injury, disability or the tragic loss of life that can be caused by human error-related accidents, along with the costs associated with such incidents; which can be staggering. But often we blame the user unnecessarily when in fact systems are frequently designed in such a way that does not allow humans to successfully carry out their required tasks.

Implementation of a human factors engineering (HFE) programme during the design process can have a profound effect in reducing the likelihood of human error. But what do we mean by HFE? Focusing on human considerations when designing any equipment, systems and facilities with which humans interface or interact, can not only improve operational efficiency, but most importantly, reduce the health and safety risks of its employees.

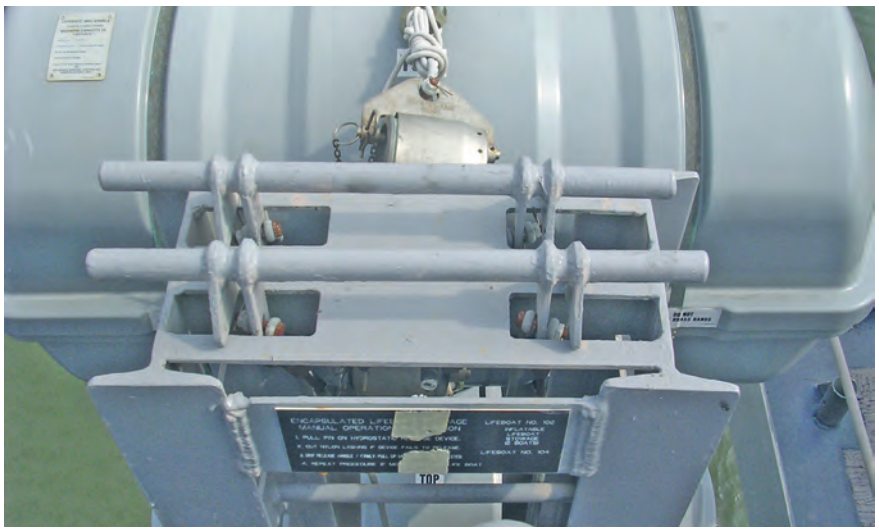
The solution to mitigate these errors is the application of HFE principles. Such an approach can reduce and even eliminate opportunities for 'human error' and alleviate the associated risks.

Excessive hazard warnings may become ineffective in conveying critical information.

HFE is tied to the systems engineering process whereby research on human beings' capabilities and limitations, psychological, physiological and social, is applied to traditional engineering design in order to better match the interface between the individual user and the systems that they interact with. The ultimate goal of HFE is to improve human performance and to get the most out of the end user while reducing the opportunities for error. Notably, as the likelihood or resulting consequences of human error is lessened the safety risk also diminishes.

Increasingly in the maritime environment complex technology is proliferating and has started to overtake the capabilities of the end user. As a result the interface between the end user and the system has become critical. It is vital that the interface is optimised and that expectations about how a system works and how a system will behave absolutely matches the mental model of the individual. Any kind of mismatch will lead to opportunities for error and reduction in performance, creating potential accidents and incidents which in turn may translate into significant remedial and compensation costs for the ship owner. For this reason BMT Designers & Planners advocates applying HFE principles right from the concept design stage where it will have the greatest impact on both performance and potential cost.

Throughout the design's development HFE principles should be used to test, evaluate and validate that the system is suitable for the intended end user. If a design is developed without due consideration of the capabilities and limitations of the end user it may well render that design unusable, inefficient or at worst dangerous.

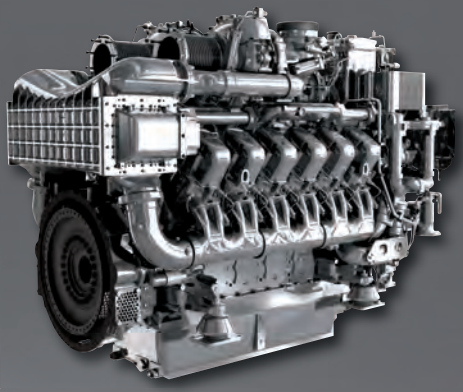


Hidden instructions are almost useless, especially when they are needed most.

MTU – A Tognum Group Brand

I'M ONE OF THE IRONMEN.

"When we choose our engines, we don't just take performance into account. It's just as important to have a clean engine. In our role we are also required to operate in an environmentally friendly way, and the MTU engine allows us to do this. It even already satisfies the future, stringent requirements for exhaust emissions."



Werner Kallweit,
Deputy manager of the technical department, B. Dettmer Reederei, Bremen

IRONMEN: BUILT TOUGH TO TAKE IT.

MTU SERIES 4000 WORKBOAT EDITION

www.mtu-ironmen.com

Power. Passion. Partnership.

Required access to equipment overhead should be minimised, however a safe means should be provided.

No one will claim to produce an engineering design which deliberately puts the end user in any danger or creates an opportunity for error – but that doesn't stop it happening. It is important to understand that HFE is a dedicated discipline.

While early HFE involvement in design is preferable it is not to say that human factors principles cannot be implemented after a system has already been designed or is already operational. When a system has already been designed and incident or accident data is available with risks or hazards identified, HFE's can analyse this to identify the root cause of the problem and propose mitigating actions. The benefit of a post-design investigation is that there is a physical thing to assess rather than a conceptual system. It also means that there is something physical to work with, users can be put into scenarios in a physical environment, the actual operating environment and data can be collected in a way which is tremendously valuable.

In broad terms there are four stages in the HFE process. At the outset HFE principles are deployed at the design stage to minimise errors, or opportunities for errors. Then, because it is not always possible to affect design and completely eliminate the opportunity for error, we look to design to mitigate the consequences of errors and reduce the impact of those consequences.

The next stage is to warn the individual of a potential error that may occur and perhaps write a procedure to prevent error and finally, the last thing would be to train to prevent the error. While training is important in the roll out of systems and when introducing an operator and user to a system, it should not be the primary focus in ensuring that a system and intended user match sufficiently.

Training should only be required to address those gaps between the individual's expectation and the interface. If the Human Factors Engineers have done their job thoroughly, only minimal training should be required. At BMT Designers & Planners we have found that training is often used as a means to cover gaps in poor design or lack of implementing human factors principles to design. Training should never be a key mechanism for mitigating risk only the rigorous application of HFE principles will affect human performance in high stress maritime environments.

A key issue recognised by HFE's is that the most effective designs work in harmony with normal human behaviour rather than trying to enforce 'un-natural' patterns of behaviour. At times of stress or pressure, when clarity of thought and action is vitally important people will always revert to these 'natural' tendencies. Examples of HFE principles which bring tangible benefits to the maritime industry include consistency, simplicity, homeostasis and accessibility.

The most important of these is consistency in design because in a high pressure situation people revert to what they know. If someone is unfamiliar with a system they will look for cues that they have seen in a similar interaction in the past and assume that the system will react in a similar way. If a system responds differently to expectations especially in a high pressure environment the risk of 'human error' is heightened.

Simplicity is another key HFE principle. In a high stress or extreme setting it is best practice to reduce workload on an individual, both physical and cognitive. It is also advantageous to minimise the amount of information that they have to recall in terms of training and standard operating procedure. The information they require needs to be provided in such a way that they can make swift assessment and take any necessary action before an alarm situation unfolds.

Homeostasis is rooted in rudimentary principles of human nature: that an individual will always consciously or subconsciously look for a short cut. Whenever a task is presented a person will

closed gauging

The HERMetic UTImeter Gtex is a portable elecronic level gauge for closed gas tight operation.

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 Tanksystem helps customers improve business performance.

Honeywell

For more information visit our website
www.tanksystem.com or call +41 26 919 15 00
E-mail: tanksystem@honeywell.com

© 2011 Honeywell International, Inc. All rights reserved

ACO Marine
Advanced Wastewater Solutions

Priceless

Type approved to IMO MEPC 159 (55)

Complete system solutions for wastewater management

ACO Clarimar – extended aeration and settling system

Using the activated sludge principle, ACO Clarimar effectively accelerates naturally occurring biological processes within the waste. Final stage chlorination followed by discharge de-chlorination produce a clean, safe, effluent suitable for discharge overboard.

- Type Approved to IMO MEPC 159(55) and MED Module B.
- Compatible with both gravity and vacuum collection systems.
- Automated liquid chemical disinfection and de-chlorination produce an effluent suitable for discharge at sea.
- Manufactured entirely in the EU entirely from high performance fire retardant composite materials which, unlike coated black steel, are completely corrosion resistant and light weight.
- Modular design concept for simple installation requiring only one power connection, even when a direct mounted vacuum collection system is used.
- Simple automated operation requires minimal operator intervention and maintenance.

Maripur advanced membrane wastewater treatment systems, fully automated Lipatomat fat, oil and grease separators handle wastewater from the galley.

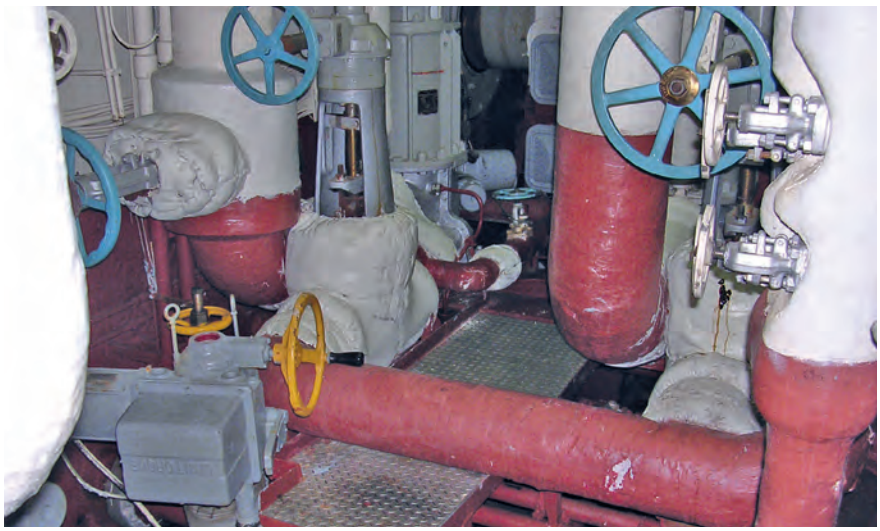
Push fit pipe systems in both stainless and galvanised steel complete the system.

ACO

ACO Marine
Tel.: +49 4407 716 6841
E-mail: info@acomarine.com
www.acomarine.com

Temporary handrails must be able to meet the same requirements of preventing falls as permanent.

Cryptic icons can be misinterpreted or ignored increasing the opportunity for error.



Simple trip and fall hazards are a probable source of injury and can often be overlooked.

assess their environment and regardless of training and of any perceived risk will look for the easiest way to perform the task. It is simply human nature to conserve energy and this must be recognised and properly addressed when designing for the maritime environment the extent of providing physical barriers and ensuring that access routes are as direct as possible.

Another human need is accessibility and this does not just mean physical access, but depending on the task, can include visual or auditory access. On the bridge of a ship there is a lot of verbal communication that is required. Human factors engineers look at the requirements of the tasks on the bridge, which individuals are involved, what tasks are required and what are the characteristics of each of those tasks. For instance, individual X needs to talk to individual Y in order to share certain information. Are they talking over a radio or do they need to communicate in person within the space? This will then need to be reflected in where they are positioned spatially as well as the optimum location of physical access, controls and displays.

During accident investigation, the cause is often put down to 'human error' but what does that really mean. In order to properly understand why the accident happened it's vital to look closely at the circumstances and design parameters that promoted the human behaviour. Did the controls match the individual's mental model or were they inconsistent with other similar controls around that system? Was the operator provided with the information that's required in a timely manner to make a decision? By applying HFE, we can analyse the 'human error', understand the background drivers and address the root cause making seafaring safer more efficient and less costly.

While HFE must not be seen as a 'silver bullet' that will address all the health and safety issues in the maritime industry, it is certainly a proven tool that can help control the opportunities for error and minimise hazards while optimising performance. With the march of technology showing no decline, HFE looks to play an ever bigger role in years to come. *NA*

BRUNVOLL THRUSTERS

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

A successful story...

Thruster Systems from BRUNVOLL

Brunvoll's operation is dedicated to thrusters, and we supply and service complete thruster packages

We take full responsibility for your thruster needs, including drive system packages

For more information, www.brunvoll.no

BRUNVOLL
Strandgata 4-6,
N-6415 Molde
Tlf. +47 71219600
e-mail: office@brunvoll.no

EUROPORT ISTANBUL

23 -26 March, Istanbul Expo Centre

REGISTER ONLINE FOR A FREE VISIT

Join the 11th edition of the leading maritime exhibition in Turkey

At Europort Istanbul maritime professionals from all over the world meet in the heart of the Turkish Shipbuilding Industry. The exhibition takes place in conjunction with MARE Forum Istanbul and presents a special super yacht route.

Organised by: Ahoy. NTSR | In exclusive cooperation with: | Supported by: -ANCONAV- GICAN BEPA

www.europort-istanbul.com

+ 31 10 293 3250
info@europort.nl

Taking the heat out of shipping

At a time when cruise lines are looking to make more energy efficiencies to reduce costs and emissions, maximising the efficiency of the heating, ventilation and air conditioning systems will be a key component, writes Sandra Speares

The propulsion system on a cruise ship is the largest energy consumer on a cruise ship, but the air conditioning system is the second largest, and energy savings and efficiencies aside, air conditioning is a part of the cruise experience when the aim is provide maximum comfort for passengers.

"Clever, intelligent and highly automated total solutions make the realisation of significant amounts of energy savings on board possible while at the sa me time the passengers' comfort will be optimised", Imtech chief executive René van der Bruggen, said in January when announcing that the firm had secured an order from Papenburg-based shipyard Meyer Werft for heating, ventilating and air conditioning (HVAC) systems on two new Norwegian Cruise Line ships. At 143,500gt, the cruise ships are the largest ever to be built in Germany and are set for delivery in 2013 and 2014.

The company also gained the contract for the installation of HVAC systems on Celebrity Cruises' Solstice class ships. The first in a series of five ships in an investment by the cruise line of US$3.7 billion, *Celebrity Solstice's* HVAC system includes 85 air handling units, 1600 cabin fan coil units, 110 public and 70 technical fan coil units, a special cabin area with air induction units and a separate cabin control and monitoring system. Air handling units have energy recovery measures and independent cabin monitor and control systems are installed as well as a new fan coil system for public areas.

A new generation of vertical and horizontal fan coil units were developed for passenger cabins which are accessible from outside the cabin for maintenance purposes.

Air induction units are used in selected cabin areas, which, the company says, unlike fan coil units are equipped with an induction nozzle system through a cabin cooling coil without an additional fan. This, the company claims, will lead to lower electrical installation costs at the yard and less maintenance time for the crew.

James Giles, director of engineering at Giles Consulting, said: "After propulsion it (the heating and ventilation system) is the next biggest load".

Direct monitoring of the fan coil system is assured via a separate cabin control and monitoring system. Fan coils can be controlled by the room temperature controller.

Independent air conditioning specialists to the marine industry Giles Consulting specifically work for owners in two main areas, newbuildings and drydockings of older cruise ships to bring the ships up to date.

This work has been going on over the last 15 years, explains James Giles, director of engineering. "What we have found is that the focus on air conditioning increases every year" and quality has been improving.

In the last five years, the company has concentrated a great deal on energy reduction. "The numbers for the air conditioning load to the cruise ship are very substantial. After propulsion it is the next biggest load".

At a time when oil was relatively inexpensive "it was easy to encompass the whole cruise ship load in one big hit," Mr Giles said, and costs were not dissected. The company then started to look at how much it cost to operate the HVAC system alone. "The numbers are quite heavy".

Energy saving and energy management "were not headline issues" 10 years ago, now the situation has "turned on its head," he says. This puts pressure on ships that were built 10 or 12 years ago.

Giles Consulting has been working with the likes of Princess Cruises, P&O Cruise Line, Carnival and Disney on their older ships which helped to establish specification, energy improvements and energy cycles which would have to be built into the new ships, Mr Giles explained.

As far as air conditioning is concerned "it really comes down to the management, not the compressors," he says, "and the management of the handling systems and how to reduce the performance when nobody is using the space. If you have not got the automation and the hardware and criteria, it just won't happen."

In new ships there is a lot of smart technology, *Disney Dream*, for example, has a lot of smart technology in the cabin systems. When a passenger swipes the entry card going down the gangway, the air conditioning system will know where he or she is and can regulate the temperature in the cabin.

Another example is CO_2 monitors in public spaces, which is one of the ways of measuring rapid build-up of people as the CO_2 monitor would recognise that before the temperature began to rise and warns the system to get prepared.

One area of massive change has been the use of variable speed drives, Mr Giles says. Variable speed drives are fitted to nearly all the air conditioning fan units nowadays because costs have fallen dramatically for that kind of unit. "The payback time for some of these units can be as little as six months, he says".

Use of these units means it is possible to dictate the flow of air through the system according to the conditions and number of people present in the room. All the systems are centrally controlled.

Giles Consulting developed a system with Princess Cruises where the company monitor every system, sensor and fan every hour and report the results in terms of kilowatt hour usage. This means the engineer can look at the trends and see how the system performs.

The system has been running for three or four years and means the cruise company can monitor costs, although fluctuations in the currency make this difficult. However, "if you monitor in kilowatt hours you can see the energy you are required to produce," Mr Giles explains. Before, he says, companies would not have taken advantage of drydocking to install variable speed drives, "Now you can measure very accurately what the payback is and what the energy saving is going to be and from that you can measure all sorts of targets like carbon reduction and future fuel consumption"

The big question is what is going to happen going forward. According to Mr Giles, with existing technology it is possible to reduce fuel consumption by up to 3.5% just from better technology and hardware, just from the HVAC system. However, targets must be much higher than that, and he believes the target should be closer to 10%. "There is going to be something radical in the way that HVAC is carried out on the ship over the next generation of ships."

What the company is studying at the moment is where the load of the air conditioning (AC) system is – one is in the fan and the other is in the refrigeration compressors.

The move towards using freon gas is moving ahead, but Giles Consulting is studying the whether the electric compressor is the way forward. "We have been studying some very successful systems where you don't need electricity to manufacture the chilled water and you don't need freon." The process is adsorption which uses waste heat and Giles Consulting reckons that if it can introduce the system on cruise ships it will make the kind of energy reduction they want. "We are talking about knocking out compressors that are consuming 3MW or 4MW of electric power. If you can take that away and replace it with waste heat from the engine it's a real win situation".

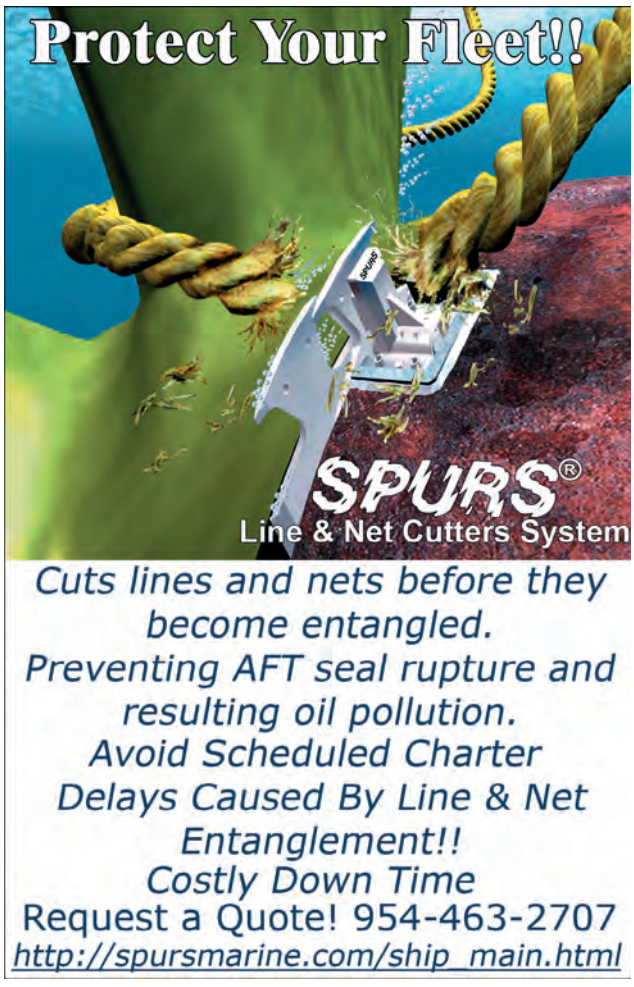
Landside systems already exist, but Giles Consulting is "marinising" the system so that parts of it could be used in cruise ships. Issues like movement of the unit when the ship rolls or its weight and size have obviously to be considered.

The final area they are considering is hygiene. The company did extensive research on mould growth and Mr Giles said that there have been huge improvements in systems on ships. New products are coming on line moving on from ultra-violet to different systems that make a release into the airstream to kill germs.

Some engineers favour 100% fresh air going through the system while others favour half being re-circulated although this has to be cleaned. Systems that have been developed in hospitals could be applied to cruise ships.

The application of this material is not expensive and brings peace of mind, Mr Giles says.

With no relief from fuel cost pressure, cruise companies will need to consider these initiatives to make the efficiencies. *NA*



Making the most of waste water

As cruise ships all generate huge amounts of waste, considerable investments have been made in order to handle this as efficiently as possible, writes Sandra Speares.

New cruise ships have the latest technology to recycle, water, incinerate waste and crush glass. Cruise lines are also working to try and minimise the amount of packaging they use, like crates and pallets that come onboard their vessels.

One means of cutting down on emissions is by using scrubbing technology which has been trialled on Holland America Line's *Zaandam* by Hamworthy Krystallon. The system aims to remove 98% of sulphur and almost all particulate matter from a 3.5% sulphur residual fuel.

However, one problem with the use of scrubbers is the wastewater criteria. Although there are International Maritime Organization (IMO) wastewater regulations, many states have introduced their own requirements so there is a lack of conformity internationally. Scrubbing technology, however, is only one part of the mix as cruise ships seek to improve their environmental performance.

Other systems use hot engine water from the engines for heating round the ship, while water used to cool the engines can be used to distil fresh water.

Deerburg Systems, for example has an integrated bio-waste dryer which does not need additional energy for drying but uses the off heat from the incineration process.

Hamworthy Serck Como has recently secured a new order for its multi stage flash (MSF) evaporator, which produces fresh water from seawater to meet World Health Organization potable water standards. Hamworthy won the order from STX Europe to install its MSF evaporator on a 133,500gt newbuild due to be built at St Nazaire in France.

Udo Attermeyer, sales director at Hamworthy Serck Como, said that around 130 cruise ships now feature Hamworthy's MSF evaporator technology and the latest newbuild will feature two MSF 950-8 units, with the plant being used to generate both technical water, for use to feed boilers and in the ship's laundry, and potable water.

> "Advanced water treatment technologies, he suggests, "Are increasingly finding wider appeal in the commercial freight market"

Drawing on waste energy from the ship's diesel engines, the Hamworthy 'multi-flash' plant solution uses positive pressure to evaporate seawater, producing a distillate meeting WHO standards for potable water that can either be discharged or used as technical water onboard ship as required. It represents the only evaporation principle where heat transfer and evaporation are strictly separated, according to the company.

Using the system, seawater is first pumped through condensers and then a heat exchanger. After the water has been heated to a certain temperature, energy required for evaporation is stored in the sea water.

Hamworthy has also recently received its first order for its wider demand membrane bioreactor (MBR) technology from ferry operator DFDS.

The company will install a bespoke advanced wastewater management system onboard Pearl of *Scandinavia*.

The company will manufacture the process tank, pump skids and pipe work in kit form its plant in the UK, to enable it to be retrofitted through the ship's existing hatches and doorways. It will then be assembled, welded and pressure-tested during dry-dock under the supervision of company engineers.

According to Hamworthy project manager, Julian Nicholas, the MBR would be one of the first new generation Hamworthy Mark IV MBR to be delivered.

"This MBR was sized to utilise the existing structure from the old sewage plant, thus minimising disruption and additional work needed by the owner," he said when the contract was announced. "With a bit of ingenuity we have been able to integrate the permeate and cleaning tanks with the process tank, making for a more compact installation and minimising any disruption.

Advanced water treatment technologies, he suggests, "Are increasingly finding wider appeal in the commercial freight market. This order demonstrates the way that more and more operators are turning to environmentally-friendly technology, ahead of regulations that will have an impact across the passenger ship market."

Since it introduced MBR technology in 2000, Hamworthy has supplied over 100 MBR units to a range of new and existing cruise ships, ferries, offshore rigs, naval ships, and yachts. Some 58 MBR plants are installed on 27 cruise ships and a further 19 plants are on order for 10 other cruise ships. The company has just completed projects for the *Pacific Sun* and *Pacific Jewel*, and the whole of the Carnival Australia cruise fleet is now fitted with Hamworthy's MBRs. *NA*

HILANDERS

Onboard performance

Worldwide experience

PureBallast 2.0 gives you more

When ballast water treatment regulations take effect, you'll want a mature technology to meet them. PureBallast 2.0 is the second generation of Alfa Laval's market-leading ballast water treatment system, which means it's even better adapted to your vessel's real-life needs.

Reduced power consumption, more responsive control and a PureBallast 2.0 EX version for explosive onboard environments are just a few of the new advantages.

By choosing PureBallast 2.0, you choose the world's most experienced supplier in ballast water treatment. Behind the updated system are thousands of hours of experience, logged both with shipyards and out at sea.

In addition, you select a global working partner. With a far-reaching organization and a worldwide network of harbour support, Alfa Laval can provide the parts, service and true peace of mind you need.

ALFA LAVAL

www.alfalaval.com/pureballast

When the going gets tough cruisers get tags

Monitoring people during the evacuation of a cruise ship is one of the most vital roles to be carried out, not least when cruise ships sizes are on the increase and the number of people onboard could be of the order of 8000. Sandra Speares reports.

Tagging passengers and crew on cruise ships is evidently an important means of ensuring passengers make it to the muster station when a ship needs to be abandoned and those with physical disabilities or reduced mobility are cared for.

Research on reactions to traumatic events on passenger ships has suggested that there may be, aside from those who are physically prevented from acting quickly, people aboard who simply freeze and are incapable of helping themselves.

In these circumstances, being able to monitor their movements, or if they arrive at the muster station, is going to be vitally important.

While cruise lines like Royal Caribbean have been introducing innovative communications links to ensure direct contact between the captain and crew and passengers in the event of an evacuation, tagging passengers is one effective way of locating them when a crisis occurs, or indeed on family cruise ships when parents are keen to keep an eye on their children while they move round the ship.

Tagging passengers in more general terms remains a matter for some debate. What happens, for example, if the passenger is located in the wrong cabin at the wrong time? With recent moves in the USA to ensure that it is impossible for a cruise passenger to fall overboard without instantly being detected tagging or other technology may be the way forward.

Some cruise companies have been reluctant to acknowledge, at least to journalists, that an evacuation at sea might have to take place at all and others that ships will always be in the vicinity to assist in the evacuation. In the case of the 1991 evacuation of *Oceanos*, it was only the courage of South African helicopter pilots, plus the proximity of the coastline which prevented a disaster.

According to Captain Trevor Bailey, managing director of Seatag he was teaching about crisis management and crowd management and began wonder about how individuals were going to deal with the situation. "One of my immediate concerns would be information and whether I have all the information I need about people onboard," he says. In considering the problem he decided there must be an easier way than running round with a chipboard or people reading out names which they might not understand or be able to pronounce.

Captain Trevor Bailey said that a primary concern in any emergency is whether there is sufficient information on passengers aboard the vessel.

Seatag's product is under consideration by a number of cruise companies and Captain Bailey says he has had "great support" from the US Coast Guard (USCG). In 2009 the USCG, Ketchikan Fire Department,

Mustering passengers during a trial of the system aboard a cruise vessel.

Holland America Line and US Customs and Border Control along with Seatag organised a joint exercise to demonstrate their product.

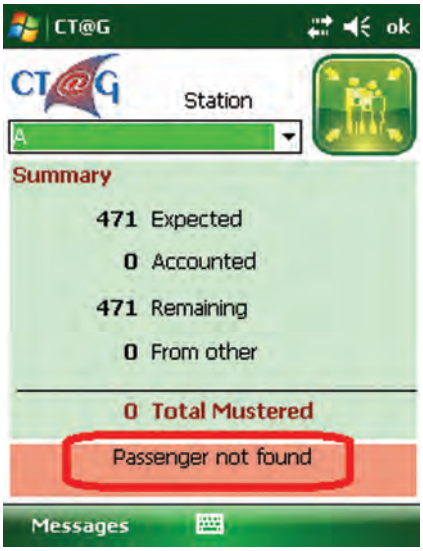
What the US authorities were interested to see was if the technology could be used to locate people after they had abandoned ship, Captain Bailey explains. The company came up with their landfall product by which if technology was taken ashore when the vessel was abandoned, so the company developed the go box which means you can take the box ashore and still have the means to track people.

Part of the method at the cruise mustering station is to scan the passengers' cruise card and use the information. This will provide information on who they are, if they do not have the card, the functions are still there to establish their identity and details.

Assuming there is a wireless network on board the ship while the network exists, each of the PDAs will continue talking to the server.

The technology is not only aimed for use in cruise ship situations but in any situation where personnel need to be accounted for quickly, as in shipyard emergencies. In the case of cruise ships, disabilities or mobility issues are listed as are personal details.

So do the cruise companies accept that they are one accident away from more regulation? The aim, as far as Captain Bailey is concerned is to have systems in place to comply with any regulation before it happens. *NA*



A screenshot from the Seatag identification system.

Working together, we create novel designs to improve our customers' business

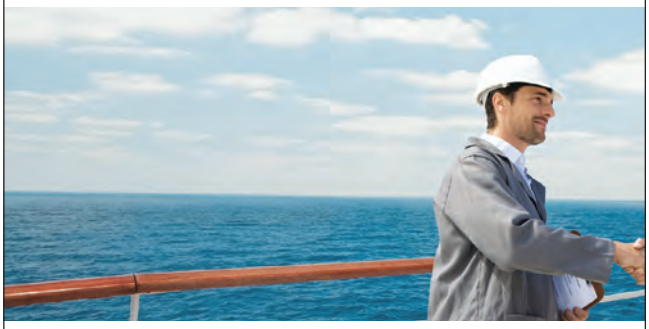
Combining cost-efficiency with sustainability

DELTAMARIN™

Makes the difference

www.deltamarin.com info@deltamarin.com
head office +358 2 4336 300

Based on a valuable
BRAND



With unique heritages from both shipping and maritime services, Wilhelmsen Ships Equipment and Wilhelmsen Marine Engineering are joining forces.

Combined with the reputable Unitor and Callenberg product brands, this provides a strong foundation for the new company – Wilhelmsen Technical Solutions.

www.wilhelmsen.com/technicalsolutions

Wilhelmsen
Technical Solutions

Industry submits gas code revision proposals for IMO approval

In 2007 the International Maritime Organization (IMO) agreed that industry specialists would be allowed to revise a major regulation, its International Gas Code, for the first time. Three and a half years later the results of industry's revision are up for approval at this month's BLG.

A revision to the 1986 International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk, otherwise known as the IGC Code, was long overdue according to specialists in the industry.

Changes in equipment and ship design had rendered the code out of date and in need of revision. In addition the sheer growth and scale of the industry which had spiralled from 150 ships with a capacity of 600,000m^3 in 1996 to more than 66million m^3 and nearly 1500 ships by 2010.

New systems, such as onboard LNG reliquefaction plants, and dual fuel engines as well as new environmental regulations meant that the codes needed to be brought up to date. As a result industry specialists proposed to the IMO a new method to revise the code, they wanted to appoint industry specialists to scrutinise certain elements of the code that they deemed would need updating and to suggest necessary changes.

In February 2008 the IMO accepted the industry's proposal to review the code although the UN body required a national, government, administration to sponsor the work. In this case David MacRae of the UK's Maritime Coastguard Authority was appointed chairman and work began in March 2008.

Project co-ordinator for the 10 working groups established to scrutinise the gas code was the principal technical adviser for the Society of International Gas Tanker & Terminal Operators Roger Roue. Each working group was set the task of reviewing selected chapters from the code and two years and 39 working group meetings later amounting to over 1050man days in working group meetings, plus many more hours of 'homework', a draft was sent to the IMO in August last year.

The following areas of the IGC Code were identified as requiring review or inclusion in the revised code:

- **Gas Burning Propulsion Systems**
- **Reliquefaction Systems**
- **Environmental benefits of Gas Burning in Ports**
- **Hazardous Area Classification**
- **Manifold Strength**
- **Shore Power Systems**
- **Containment Systems**
- **Flammability and Resistance to thermal Degradation of Insulation**
- **Gas Combustion units**
- **Pressure Relief Systems**
- **Instrumentation and Controls including programmable Software systems**
- **ESD Systems**
- **Operational Training**
- **Personnel Protection**
- **Custody Transfer Systems**
- **Ambiguous Terms and Archaic Terminology**
- **Regasification Systems**
- **Cargo Sampling Systems**
- **Prescriptive Style.**

"We are hoping that the document will go directly to drafting group so that there will be no re-opening of discussions on technical issues; because with 130 industry experts working on the revision for over 2 years little more would be achieved by re-opening a technical debate, because a small minority did not get the results they had hoped for.," said Mr Roue.

In fact one authority, the German Administration believes that more debate is needed and they want the document to be returned to the IMO working group. As *The Naval Architect* goes to press the Bulk Liquids and Gas subcommittee of the IMO, BLG 15, is meeting (7-11 February) and the draft will be debated.

If all goes to plan, following drafting, the document will be returned to the BLG sub-committee of the IMO in February 2012 and MSC, the Maritime Safety Committee, will approve it in May of the same year and adopt it in 2013 with the code entering into force by July 2014.

A number of significant changes have been made to the IGC code according to Mr Roue including new regulations regarding the emergency isolation of relief valves, the designation of hazardous areas, new limits on the distance between shell plating and tanks for liquefied petroleum gas (LPG) carriers with type A tanks and a complete reorganisation and revision of the chapter on containment systems.

In addition the revised code stipulates the requirement for a cargo operations manual to be carried with the ship that gives guidance that will ensure safe operation.

Furthermore, the failure of relief valves has resulted in the release of tonnes of hydrocarbons to the atmosphere, and potentially dangerous attempts to stem the flow have put crew members at risk. These practices are unacceptable in today's more environmentally and safety conscious

WAVE MONITORING

WAVEX - THE DIRECTIONAL WAVE MONITORING SYSTEM USING A MARINE NAVIGATION RADAR

- For use on high speed crafts, fast ferries, shore installations for ports and coastal waters, traditional vessels, naval vessels and research and service vessels.
- Providing real time and historic wave data.
- For optimized vessel speed and course, improved regularity and reduced heavy weather damages.

Type Approved Product

- measuring the ocean surface

WAVE PROFILES / RIDE CONTROL

MIROS RANGE FINDER - THE PERFECT AIR GAP SENSOR FOR RIDE CONTROL SYSTEMS

- Designed for very accurate measurements of wave profiles and air gap from high speed vessels.
- In use on commercial and military vessels of single hull, catamaran, SES and SWATH type as input to various types of ride control systems.
- Analogue or digital output 1-50 Hz with 1 mm resolution.
- The SM-048/2 Microwave sensor is not affected by rain, sea spray, mist or fog.
- A reliable, robust, well proven and very accurate sensor.

MIROS

Solbråveien 20, NO-1383 Asker, Norway
Tel: +47 66 98 75 00, Fax: +47 66 90 41 70,
E-mail: office@miros.no, Web site: miros.no

THE MARSHALL ISLANDS REGISTRY

SERVICE & QUALITY ARE WITHIN YOUR REACH

We look forward to seeing you at Gastech 2011

Visit us at **BOOTH D050**

INTERNATIONAL REGISTRIES (MIDDLE EAST) DMCEST

The Marshall Islands Maritime and Corporate Administrators

TEL: +971 4 3379974
DUBAI@REGISTER-IRI.COM
For a complete list of offices please visit: **WWW.REGISTER-IRI.COM**

We came up with something

NEW

Our new broader range of comprehensive solutions gives added value to our customers:

- Environmental solutions
- Safety solutions
- HVAC-R solutions
- Power solutions

Combined with our global services covering the entire life cycle, we are now one solid company.

www.wilhelmsen.com/technicalsolutions

Wilhelmsen Technical Solutions

world. However, by requiring a safe means of emergency isolation to enable replacement or repair of the faulty valve these problems can be alleviated.

Other proposed changes to the Code are the adoption of the International Electrotechnical Committee's Standard – 60092 for the classification of hazardous areas. This introduces the concept of Zone 0, Zone 1 and Zone 2 areas, classified according to the likelihood of a flammable atmosphere being present and the types of electrical equipment that may be used in these areas. This would replace the 'gas safe' and 'gas dangerous areas' currently used, allowing more flexibility of design.

Another working group completed a reorganisation of chapter four of the code which relates to containment systems. Included in this section is the restatement of design loads, a restatement of the fatigue criteria that will impact on Type B and membrane tanks and new requirements for a partial secondary barrier and a small leak protection system.

In the case of LPG carriers with Type A tanks the revised IGC Code has updated the design requirements for these vessels which they believed were subject to less stringent safety precautions than conventional tankers.

The Q-flex LNG carrier Al Ruwais, was built by Daewoo Shipbuilding and Marine Engineering and delivered in 2007.

A sliding scale for the distance between the shell plate and the cargo tank has been proposed. Previously LPG carriers required a 700mm between the tank and the side of the ship, this has been increased to 800mm for the smaller LPG tankers and this measurement increases through the vessel sizes up to a maximum of 2m for the largest ships.

Many more revisions have been made to the latest IGC Code, but the final approval of these proposals must come from the Maritime Safety Committee at the IMO. *NA*

TANABE Marine Compressors

Superior Compressor Design & Development

Strict Quality Control

Attentive Service

LPG Cargo Compressor

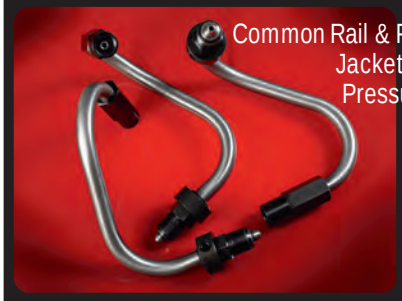
TANABE COMPRESSORS

info@tanacomp.co.jp

www.tanacomp.co.jp

Giro Engineering Ltd

High Pressure Diesel Fuel Injection Pipes



Common Rail & Pump and Line Formats
Jacketed and Standard Types
Pressure Ratings to 2500 Bar
Class Approved

Lloyd's Register TYPE APPROVAL

CIMAC

Ultrasonic Cleaning and Flushing of Fuel System Components

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

One solid
COMPANY

Wilhelmsen Technical Solutions is a solid and global provider of cost efficient and fully engineered solutions to the maritime and offshore industries.

Our solutions, equipment and services, combined with our global network, give us a unique ability to serve our customers – today and in the future.

www.wilhelmsen.com/technicalsolutions

Wilhelmsen Technical Solutions

MAN Diesel has designs on new LPG rules

Current International Maritime Organization (IMO) regulations do not allow liquefied petroleum gas (LPG), which is heavier than air, to be used as a fuel onboard a ship. MAN Diesel & Turbo anticipates a change to these regulations and has ME-GI dual fuel engine that can fill the gap.

Reducing carbon emissions and other pollutants from the exhaust gases that are expelled from marine engines has become the single most important issue for the maritime industry as the governments seek to slow the effects of global warming.

In the maritime sector a front-runner in the race to find the fuel of the immediate future has liquefied natural gas (LNG) tipped to be the propellant of choice. Indeed, many industry observers believe that the flood of very large LNG carriers allied with over-production of the gas will see a glut of LNG in the near future.

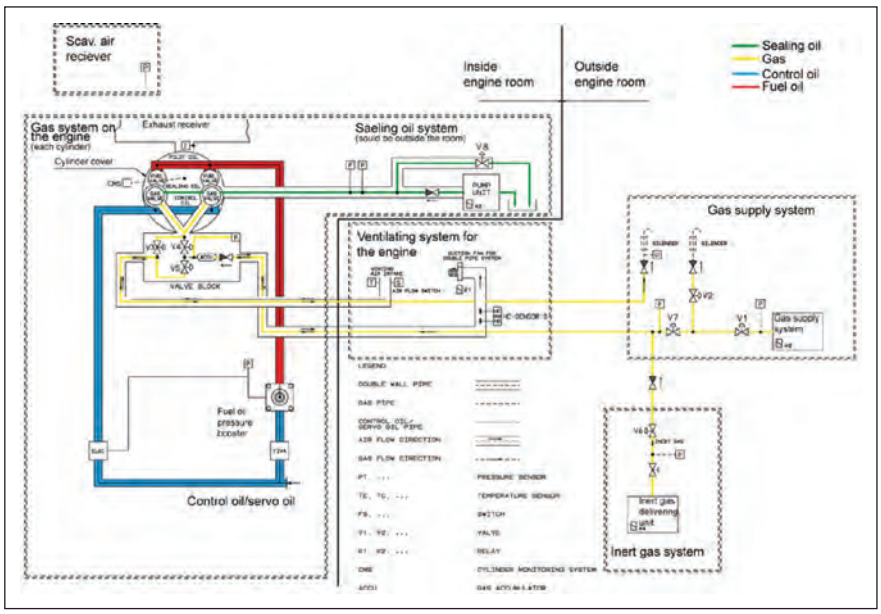
However, according to MAN Diesel: "establishing the LNG bunkering facilities, comprising small-size LNG terminals and a network of LNG supply ships, is costly and time consuming and, furthermore, it is subject to safety concerns and public debate in some countries."

Very few nations have the LNG infrastructure in place for general use as a marine fuel, MAN Diesel argues. The company goes on to say: "Unless an unrealistic high price for the LNG can be obtained, the use of LNG is not just around the corner for ship operation."

In contrast the supply of LPG would be far easier and consequently cheaper to establish, partly because LPG has been available for longer and existing LPG tankers can be used as bunkering stations and all these vessels have a reliquefaction plant already fitted.

In fact some ships already operate on LPG. The shuttle tanker *Navion Viking* has been approved to operate on volatile organic compounds (VOC) that are released as gas during the transportation of crude oil.

As a portable fuel LPG has an advantage over its LNG competitor that will allow it to be transported to most ports and harbours where it will be needed. In addition LPG has



The complete ME-GI system in schematic form.

JETS VACUUM AS. Myravegen 1, 6060 Hareid, Norway. Tel. + 47 70 03 91 00. Fax + 47 70 03 91 01. E-mail: post@jets.no
JETS

2nd International Conference on
Advanced Model Measurement Technology for EU Maritime Industry (AMT'11)

In combination with the inauguration of Newcastle University's new and improved Marine Testing Facilities
4-6 April 2011, Newcastle upon Tyne, U.K.

Organised by, Newcastle University & FP6 Hydro-Testing Alliance Network of Excellence (www.hta-noe.eu)

AMT'11 is the 2nd International conference focused on the use of advanced measurement technologies for model and full-scale testing in the maritime environment. The conference topic includes PIV operation in hydrodynamic experimental facilities; Flow data analysis and visualization; 3-D wave field measurements; Azimuthing pod dynamic forces; Wireless data transmission; High speed video; Intelligent materials and production methods; Wetted surface measurement; Free running model technologies; Noise measurements; and other advanced measurement techniques and benchmarking and validation in marine environment.

AMT'11 is a 3 day conference with 35 technical presentations which represents an opportunity for industry and test facilities, for researchers and academics to learn more about Europe's experimental research capabilities for maritime constructions.
The conference will also inaugurate the recent major upgrade to Newcastle University's Experimental testing facilities and launching of the new Research Vessel in compliance with the University's increased focus on "Environmental Sustainability". Delegates will be able to visit and interact with the researchers from the Hydro Testing Alliance and School of Marine Science and Technology as well as enjoying several demonstrations with the facilities.

Conference website: **http://conferences.ncl.ac.uk/amt11** E-mail: **amt11@ncl.ac.uk**

LNG – Clean Fuel for the Future

TGE Marine Gas Engineering provides customized solutions for LNG fuel gas handling systems and tanks for merchant and passenger vessels. With its vast experience as leading contractor for design and construction of liqufied gas handling systems in the Marine and Offshore Industry, TGE is also your best partner for all aspects of the LNG supply chain.

- **LNG Fuel Gas Systems and Tanks**
- **Ship Design for LNG-fuelled Vessels**
- **LNG Storage Solutions**
- **LNG Bunker Barges**
- **LNG Carriers**

tge-marine.com

TGE Marine Gas Engineering

all the environmental advantages of LNG, reducing carbon emissions by around 20%, with virtually no sulphur present SOx is not a problem either. According to MAN Diesel all NOx scrubber techniques can be used on its ME-GI engine except water emulsification. A test on a stationary 12K80MC-GI engine fitted with a selective catalytic reduction system showed that NOx emissions were reduced by 98%.

MAN Diesel added: "Five vessels with MAN B&W two-stroke engines are [currently] in operation with SCR, and this is also the case on 15 power stations. All in the range of reducing NOx by 94-98%."

However, the main concern over the use of LPG is that the gas is heavier than air and as such a build up of the gas from a potential leak from a faulty valve or pipe could pose a detection problem. MAN Diesel has put a number of safeguards in place that will prevent explosions from leaking gas caused by faulty components.

"Leaky valves and fractured pipes are sources of faults that may be harmful. Such faults can easily and quickly be detected by a hydrocarbon (HC) analyser with an alarm function. An alarm is sounded when the gas concentration reaches a maximum 30% of the lower explosion limit (LEL) in the vented duct, and a shutdown signal is given at 60% of the LEL," according to MAN Diesel.

Other malfunctions that are monitored are the sealing oil supply system in the gas injection valve, which if it becomes too low creates gas pockets. Pressure sensors will measure and react to low pressure and start a second sealing oil pump and if the pressure does not increase sufficiently the system will shut down the gas mode on the engine and operate in fuel oil mode.

Additionally a lack of ventilation in the double walled piping system could also pose a threat to the integrity of the gas supply system as a result double walled piping will be fitted with flow measurement sensors that will automatically shut down the gas mode on the engine if gas flow reduces significantly.

Hamworthy already produce Type C high pressure LPG tanks that would be mounted on deck with no further equipment needed other than the piping and connections.

Additionally MAN Diesel is developing a dual fuel control system to "control the dual-fuel operation when the engine is operating on high pressure LPG. The control system is the glue that ties together all the dual fuel parts in the internal and the external systems and makes the engine run in gas mode.

"The system is designed as an add-on system to the original ME control system. Therefore, the bridge panel, Main Operating Panel and Local Operating Panel will stay unchanged.

"For the GI control system, an extra panel named the GMOP (Gas Main Operating Panel) is available. All manual operations can be initiated from this panel." *NA*

Viking orders dual fuel ferry

A new dual fuel ship ordered by Finland's Viking Line is a first for the company and marks the beginning of a new era of LNG/electric power.

Helsinki listed Viking Line has ordered a new dual fuel ro-ro ferry from STX Finland, in Turku. Delivery of the vessel is expected in early 2013.

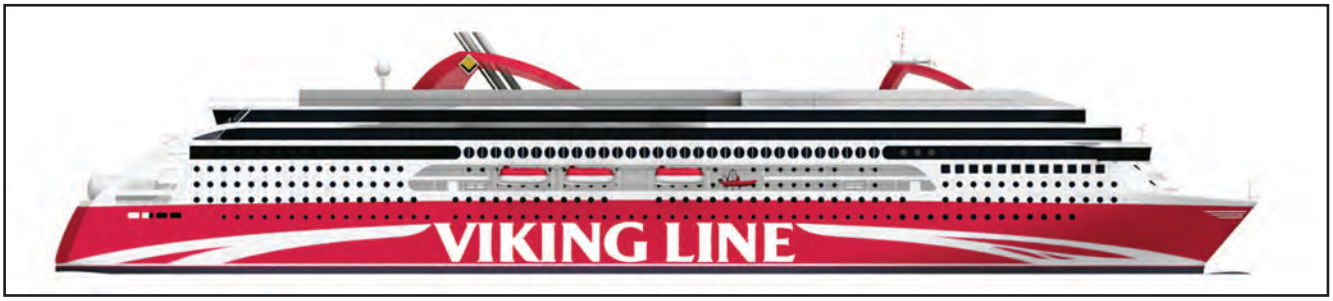
Partial funding for the ship will come from an environmental grant from Finland's ministry of Transport and Communications. The ministry recognises that the vessel, which will operate on the route between Turku, Aland Islands, Finland, and Stockholm in Sweden, will reduce NOx, SOx particulates and CO_2 by a significant amount.

Engines powered by either diesel or LNG will be used to generate electricity that will power the ferry. In addition to the reduction in pollution, "Electrical power will mean there is less vibration and it will be quieter for passengers," explained Mikael Backman Viking Line president and CEO.

Total investment by the company for the 57,000gt vessel will be €240million with an option for a second vessel. The 214m ship will have a crew of 200 and carry 2800 passengers in 880 cabins. The ship will have 1275 lane metres for cargo with 500 lane metres reserved for passenger cars and while extra car space can be made available through the lowering of shelves. The vessel will be classified by Lloyd's Register and carry its ice class 1 A Super notation.

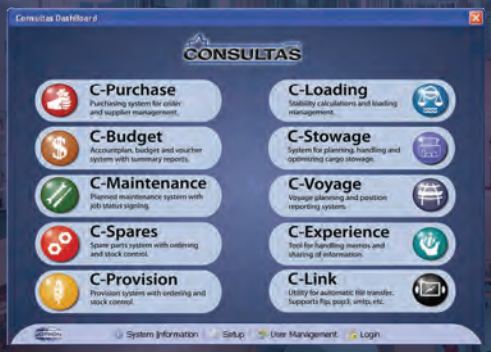
A company statement said: "The vessel represents a new generation of passenger ferries, and the planning process has included devoting great attention to environmentally friendly solutions, a high level of passenger comfort and new passenger experiences. *NA*

An artist's impression of the new Viking Line dual fuel ship ordered from STX Finland in Turku.



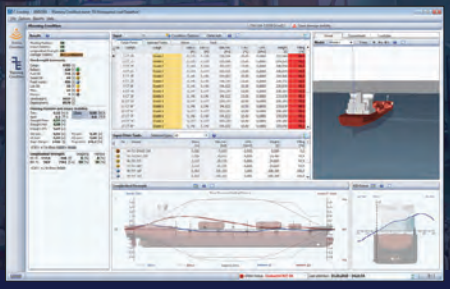
VERSION 4.0

FLEET MANAGEMENT SOFTWARE



C-LOADING

– a new loading system, where all calculations are based on a 3D geometric model of the hull and inner structure



Jotron Consultas AS
P.O. Box 743 NO-33196 Horten Norway

Tel: +47 33 03 07 00
Fax: +47 33 03 07 10

JOTRON
www.jotron.com

Global transportation takes vessels into some of the harshest and unforgiving environments on the planet. One of the challenges facing shipowners is to ensure that their crew have a suitable onboard climate regardless of how cold it becomes outside. Custom-built to the highest Dutch quality standards, backed up by global service and support, Heinen & Hopman's heating solutions ensure that the heat is on whenever and wherever it is required.

HEINEN & HOPMAN ENGINEERING BV

AIR CONDITIONING HEATING VENTILATION REFRIGERATION

Netherlands - Germany - India - Peoples Republic of China - Romania - Singapore - Spain - Turkey - United States of America

www.heinenhopman.com

Raising Rajapur

A new optimism in India is seeing the development of a number of yards, as expectations grow that the ship building industry will gain another Asian competitor. Commodore Balasubramaniam and Electromech MD Tushar Mehendale expect the fledgling Rajapur Shipyard to take off within two years.

Set on top of a cliff, 32m above the sea, the site for the new Rajapur Shipyard is unique according to commodore Balasubramaniam. It will not need dry docks with more than 485.5hectares to be spread the shipbuilding and repair yard vessels will be constructed on dry land and will then be launched over the cliff via a slipway.

Placed some 380km south of Mumbai and 180km north of Goa on India's west coast the commodore says that the yard will be the region's largest facility. "In India there will be no comparable yard," he said.

An investment of around US$500million is being sought and the group is confident that the company will reach its target. It is a zero sum game, so although a significant level of investment has already been pledged, building work at the yard will not commence without the full investment requirement being secured, but the commodore will not disclose how close the company is to meeting its target. "We need to get the whole US$500million or we have nil," he said.

Although some funds are already available as the company is buying the land requisite for the yard and orders for two 1000tonne Goliath cranes have been placed in South Korea for delivery in two years time or whenever the yard begins its operations.

When it is completed phase one of the Rajapur Shipyards will be capable of handling vessels of up to 330,000dwt, it will have a fabrication facility as well as a launch slipway, power plant and desalination plant.

"Ships will be built and assembled on land and moved to one of the landside berths through a bogies and cradle transfer system. Based on the site conditions, a number of land berths will be built, based on the initial level of demand," said the company.

A view of the 140 hectare shipyard site from the South West.

All major buildings such as ship building, steel preparation bays and ship repair workshops will be built with steel frames and clad in coloured plastic coated steel or aluminium sheets with polycarbonate translucent sheets. The steel structures will be double legged cantilever stanchions with a portal frame or supported roof trusses. The structures will have braced bays between selected stanchions, horizontal wind girders over large door openings and high level crane beams to support electric overhead cranes (EOT).

The entire fabrication and block making facility will be spread over 140hectares of land and the plan is to segregate this from the ship assembly site. "This would be a new concept in ship building, in India, with the entire waterfront area dedicated to its core activity of ship building while block level manufacturing is physically separated. As a result the yard plan allows for growth in both areas of the yard facility," said the company.

In order to allow the building and assembly work to move smoothly 500tonne fully outfitted blocks would be transported on low-bed trailers moving on a dedicated corridor designed for such loads. In addition the block making site will have an independent entry point for steel carrying convoys and low-bed trailers.

The launch slipway will have a total internal length of 800m with a breadth of 140m and a dock depth that is varied between two chambers. The inner chamber will be of 400m length and width of 140m will have a depth of 21m, it will have a pontoon that is supported on winches.

The outer chamber will have the total depth of 16+32m. Ships will be launched by skidding them on rails over the pontoon. As the pontoon immerses, under winch control, the engine alignment along with water tight integrity and operational capability of all underwater fittings will be checked. Once certified correct, the ship will move to the pier for mooring trials, followed by sea trials. The chambers will have two gates. The inner gate will be 21m and the outer will be 52m in height.

Commodore Balasubramaniam said:

"Now there is a sudden upsurge [in shipbuilding in India] and a whole lot of yards are coming up in the state of Gujarat and elsewhere. At the moment 24 medium and small yards are engaged in repairs and provision of vessels for the offshore sector. Pipavav Shipyard has already been commissioned and can build very large crude carriers (VLCC)."

Accommodation will be built for a 1000 families on a site near to the yard and the town will provide homes for the staff employed to operate at the yard. The surrounding town, like the yard itself will be a green safe haven.

It will have a school and a hospital for the employees and the complete establishment is planned with a "Green concept" as its base requirement. No hydrocarbon fuelled vehicles will operate within the yard and town. Cycles, Pedi cabs and electric vehicles will provide transport.

"In tune with our philosophy regarding welfare and well being of the employees a self contained, eco-friendly town spread over 250 acres is planned for the employees and their families. An architect experienced in designing large resorts in the coastal areas has been entrusted with this task of setting up this town. Design of the towns will be emphatically local in flavour, yet have world class facilities," a company statement said.

It is for these reasons that commodore Balasubramaniam believes that, "Availability of skilled and trained manpower is not an issue."

"Rajapur Shipyard, when ready, presumably a couple of years down the line, will emerge as the largest facility in this part of the world. She is designed to deliver 30+ large vessels per year. She will concurrently handle repair and newbuilds for the commercial, naval and oil sectors. The yard design is completed and major vendors to build the infrastructure identified," he added.

Commodore Balasubramaniam added that the yard will be "green". And the town "has been planned, in consonance with the surrounding environment, in lieu of the standard process of building a concrete jungle. Innovative processes have been planned, considering that the site is at a height of 32 metres from the water level."

Competing with the Chinese and Koreans will be the real gauge to whether this yard and other will be a success and that competition is set to get tougher. *NA*

SCI outlines US$5.9 billion acquisition plan

The Shipping Corporation of India (SCI) has outlined its plans for a US$5.9 billion spree on ship acquisitions, including newbuildings, which it expects to conclude over the next 10 years.

Orders for 29 ships of a variety of types, including tankers, anchor handling ships, bulk carriers and container ships, have already been made and are expected to be delivered by 2012.

However, a further 74 vessels will be "processed" said the company over the coming years. Of these 74 vessels, seven will be ordered by SCI's joint venture companies that operate bulk carriers, chemical tankers and LNG tankers.

SCI said: "We will be reviewing our acquisition strategy and will streamline the same on an ongoing basis to determine the size of the vessels to be ordered."

Last year the company took delivery of five product tankers, *Swarna Sindhu, Swarna Ganga, Swarna Brahmaputra, Swarna Krishna* and *Swarna Kaveri* all at a little over 73,000dwt were also delivered last year. A sixth product tanker, 104,862dwt *Swarna Kamal* was also delivered last year. Two other product tankers, *Swarna Godavari* at 73,000dwt and the 105,000dwt *Swarna Jayanthi* are due for delivery in September this year.

Two aframax tankers have also been

Swarna Sindhu was delivered on 27 July last year. The 73,368dwt ship was built at South Korea's STX yard.

S. No	Name of the Vessel	Type of vessel	Date of delivery	Shipyard	Total GT	Total DWT
1	Swarna Sindhu	LR-I Product Tanker	23.07.2010	STX Shipyard, Korea	42,845	73,368
2	Swarna Ganga	LR-I Product Tanker	05.08.2010	STX Shipyard, Korea	42,845	73,368
3	Swarna Brahmaputra	LR-I Product Tanker	15.09.2010	STX Shipyard, Korea	42,845	73,606
4	Swarna Godavari	LR-I Product Tanker	27.09. 2011	STX Shipyard, Korea	42,845	73,368
5	Swarna Jayanthi	LR-II Product Tanker	27.09. 2011	Hyundai Heavy Industries, Korea	57,702	105,000
6	Swarna Krishna	LR-I Product Tanker	05.10. 2010	STX Shipyard, Korea	42,845	73,368
7	Swarna Kaveri	LR-I Product Tanker	21.10.2010	STX Shipyard, Korea	42,845	73,368
8	Desh Mahima	Aframax Tankers	27.10.2010	Hyundai Heavy Industries, Korea	64,397	114,686
9	Swarna Kamal	LR-II Product Tanker	10.11.2010	Hyundai Heavy Industries, Korea	57,702	104,862
10	Desh Garima	Aframax Tankers	20.01.2011	Hyundai Heavy Industries, Korea	64,397	114,790

Vessels recently delivered to the SCI fleet.

	Name of Shipyard	No. of	Type of vessel	Total GT	Total DWT
1	Hyundai Heavy Industries Co. Ltd. S.Korea	2	Aframax Crude Oil Carrier	121,000	230,000
2	Bharati Shipyard Ltd.	4	Anchor Handling, Towing & Supply vessel of 80 TBP capacity each	6,000	8,000
3	STX (Dalian) Shipbuilding Co. Ltd.	6	Handymax Bulk Carriers	204,000	344,400
4	STX (Dalian) Shipbuilding Co.Ltd.	4	Panamax Bulk Carriers	172,000	322,620
5	Cochin Shipyard Ltd. Kochi	2	Anchor Handling, Towing & Supply vessel of 120 TBP capacity each	4,000	3,940
6	Cochin Shipyard Ltd. Kochi	2	Platform Supply Vessels (UT 755 Design)	4,400	6,120
7	Jiangsu Eastern Heavy Industries Co. Ltd., Jiangu, China	4	Kamsarmax	172,000	328,000
8	Jiangsu Rongsheng Heavy Industries, China	2	VLCCs	324,000	634,000
9	STX (Dalian) Shipbuilding Co., China	3	Cellular container vessels of 6500 TEUs each	225,000	256,800
	Total	29		1,232,400	2,133,880

Vessels currently on order for SCI.

ordered, the 114,686dwt *Desh Mahima* was delivered in the autumn of 2010, while the 114,790dwt *Desh Garima* was delivered in the second half of January this year.

Of the 29 ships already ordered by SCI four 8000dwt anchor handling ships have been ordered at the Bharati Shipyard Ltd in Mumbai. Two more anchor handling vessels, 3940dwt will be built at the Cochin Shipyard and two 6120dwt platform supply vessels will also be constructed at the Cochin yard. ***NA***

Fincantieri delivers tanker to India's Navy

In late January the Italian yard delivered *Deepak*, the first of two 27,5000 tonne double hulled tankers to the Indian Navy. According to the Italian yard the order was the first surface vessel India has ordered from a European yard which was in direct competition with international players, notably in Russia and Korea.

Shakti, the sister ship to *Deepak*, was launched last October at Sestri Ponente yard in Genoa and is currently being fitted out at the Muggiano yard in La Spezia. Delivery is scheduled for autumn this year.

Deepak and *Shakti* are 175m long with a 25m beam and a 19m height and are powered by two 10,000kW diesel engines with a variable pitch propeller will power the vessels to a maximum speed of 20knots.

A Fincantieri statement said: "We consider the market in the East strategic and we hold in high regard the development of co-operation with our prestigious Indian partner, proof of which is both the opening in recent years of a representative office in New Delhi and, now, of a Fincantieri technical support unit in India in order to guarantee to the Indian Navy maximum availability and efficiency of the new Fleet Tankers." ***NA***

Deepak takes to the sea, the 27,000dwt tanker is the first delivery of two tankers built by Fincantieri.


WORKING AT SEA
REQUIRES CLARITY
OF VISION
KONGSBERG
THE FULL PICTURE
MAXIMIZE YOUR PERFORMANCE
BY UTILIZING OUR KNOWLEDGE
& INSIGHT
KONGSBERG understands the challenges faced by those who operate on and beneath the waves. This knowledge is present in every solution we provide and bringing it on board gives you control. It enables you to act with certainty and reveals countless new opportunities for you to explore. And wherever you may venture on the globe, you will always have our total support. Our determination, insight and innovative proficiency will work as one for you. In all waters, in all conditions, KONGSBERG will always give you THE FULL PICTURE.
www.km.kongsberg.com


Ship Stability Solution
By Euroballast
Heavy-weight solid ballasts to correct
newbuilding and converted ship stability
Densities of 3.2 to 4.5
Quick turn-key installation (up to 800 metric tons per day)
Inert (passivating properties)
Locally removable
Approved by the major classification societies
tel : +33 4 67 60 64 85 - p-alengrin@euroballast.com - fax : +33 4 67 60 59 94 www.euroballast.com

P&O's ferry of the future

Finnish design consultants, Delatamarin, said that *Spirit of Britain*, P+O Ferries' latest acquisition is an important step forward in ferry design.

Spirit of Britain is the largest vessel to sail the Dover to Calais route with its sister *Spirit of France* joining it later in 2011. P&O have said that this latest vessel to join its fleet is the realisation of the presentation that was given at the RoRo conference in Bremen last May, where John Garner, fleet director, P&O ferries presented the two ferries in conjunction with safety and stability under the new SOLAS 2009 rules. He also commented that the vessels have been built to a new standard that will take them into the next century.

The concept behind the ferries was a fleet review in 2006, where a need for new tonnage on the Dover to Calais route was recognised. "There was an increase in tonnage, we saw freight transport go up by 6%, so needed to respond as we also compete with the Euro Tunnel for business. We needed more capacity for freight growth, one of the problems was that we couldn't lift all the freight off the quay quick enough. With these ships we can lift up to 180 units if we feel like it, which means that we are able to load the vessel quickly," said Mr Garner.

Spirit of Britain the largest ferry to sail the Dover to Calais route, constructed under the new SOLAS 2009 regulations.

TECHNICAL PARTICULARS

Spirit of Britain

Length oa:	213m
Length pp:	197.5m
Breadth:	30.8m
Draught, scantling:	6.7m
Gross:	49,000gt
Main Engines	MAN 7L48/60CR
Generators	MAN 7L21/31
Propulsion power:	30,4MW CP-propeller, 2 pcs, type Alpha.
Bow thrusters,	3 pcs, type Wärtsilä CT300M, 3000kW, 6,6kV
Speed:	22knots
Classification society:	Lloyds Register
Passengers:	1750
Max. LSA:	2200
Passenger seats:	2179
Crew:	150
Lane meters:	2800m
	2 main ro-ro decks for trailers and other ro-ro vehicles, 3rd ro-ro deck for caravans and private cars

Another factor was that by 2011 the vessels would be up for their 25 year drydocking and it was the decision by P&O that they wanted to renew the ferries at 24 years old. Mr Garner highlights that economies of scale was also a factor in the decision for the new vessels, as they can carry twice the payload (180 freight units and 195 cars), the vessel also has three fixed decks, but uses the same amount of fuel as the older ferries used for carrying half the amount.

The design for *Spirit of Britain* and *Spirit of France* was carried out by Deltamarin, with the construction taking place at Finland based STX Rauma yard. "We initially went out to 23 shipyards then drew up a short list. We chose to go with STX Rauma because they are specialists in building ferries and they are known for there expertise and standards. Another key decision for the vessel was that we had it certified under Lloyds Register (LR) and it sails under the UK flag. We felt that by having these key players we were able to deliver a ship that our customers would want," said Mr Garner.

Spirit of Britain is the first vessel of its type that has safe return to port and has been designed to be energy efficient with focus also on safety has also been a crucial part of the design. Deltamarin has run extensive tests on the vessel design in line with the new safety regulations. "There was a concept meeting in 2007 with LR and Maritime and Coastguard Agency (MCA) where we were deciding whether to apply the SOLAS 2009 regulation and the Stockholm regulation, and in the

Comparing new with old, *Pride of Calais* sits along side *Spirit of Britain*.

end we decided to use both," said Mr Garner.

Spirit of Britain is classified by Lloyds Register and has the notations + 100A1, Roro Passenger Ship, +LMC, UMS, IWS, EP, PSMR*. The vessel has a hydrodynamic hull form, which in the design stage went through computational fluid dynamics (CFD) testing which allowed the hull to be optimised. The scale model was then tested in Marin in The Netherlands test basin.

Spirit of Britain is 213m in length overall and has a breadth overall of 30.8m with a scantling draught of 6.7m and a gross tonnage of 49,000gt. The ferry has two main engine rooms to allow it meet the requirements for safe return to port, with each room containing a pair of engines and two gensets, arranged in a staggered but adjoined way.

The vessel is powered by four MAN 7L48/60CR engines that have a total propulsion power of 30,4MW and has four MAN 7L21/31 generators giving the vessel a speed of 22knots. Giving the vessel more manoeuvrability are three Wärtsilä CT300M bow thrusters, each with a power output of 3000kW, allowing the vessel to manoeuvre in port more easily and also giving the vessel a tolerance to stand up to winds of 50knots.

The 49,000gt ferry is capable of carrying 1750 passengers and has a total of 2800 lane meters for vehicles. *Spirit of Britain* features s two main ro-ro decks for trailers and other ro-ro vehicles, and a third deck for caravans and private cars. *Spirit of Britain* is also the first ferry that has only marine evacuation systems (MES) onboard. RDF Marin Ark systems have been fitted onboard with the total capacity for 2200 persons. Mr Garner hightlights the reason for this decision: "We decided to go with MES systems because the ferries are not more than 20 miles away from land."

"Also we decided not to have lifeboats onboard due to the incidents that have happened to crew members over the years. The dry shod MES system is much better, hence we went 100% with MES," he added.

Delivered at the beginning of January *Spirit of Britain* entered into service on 21 January. *NA*

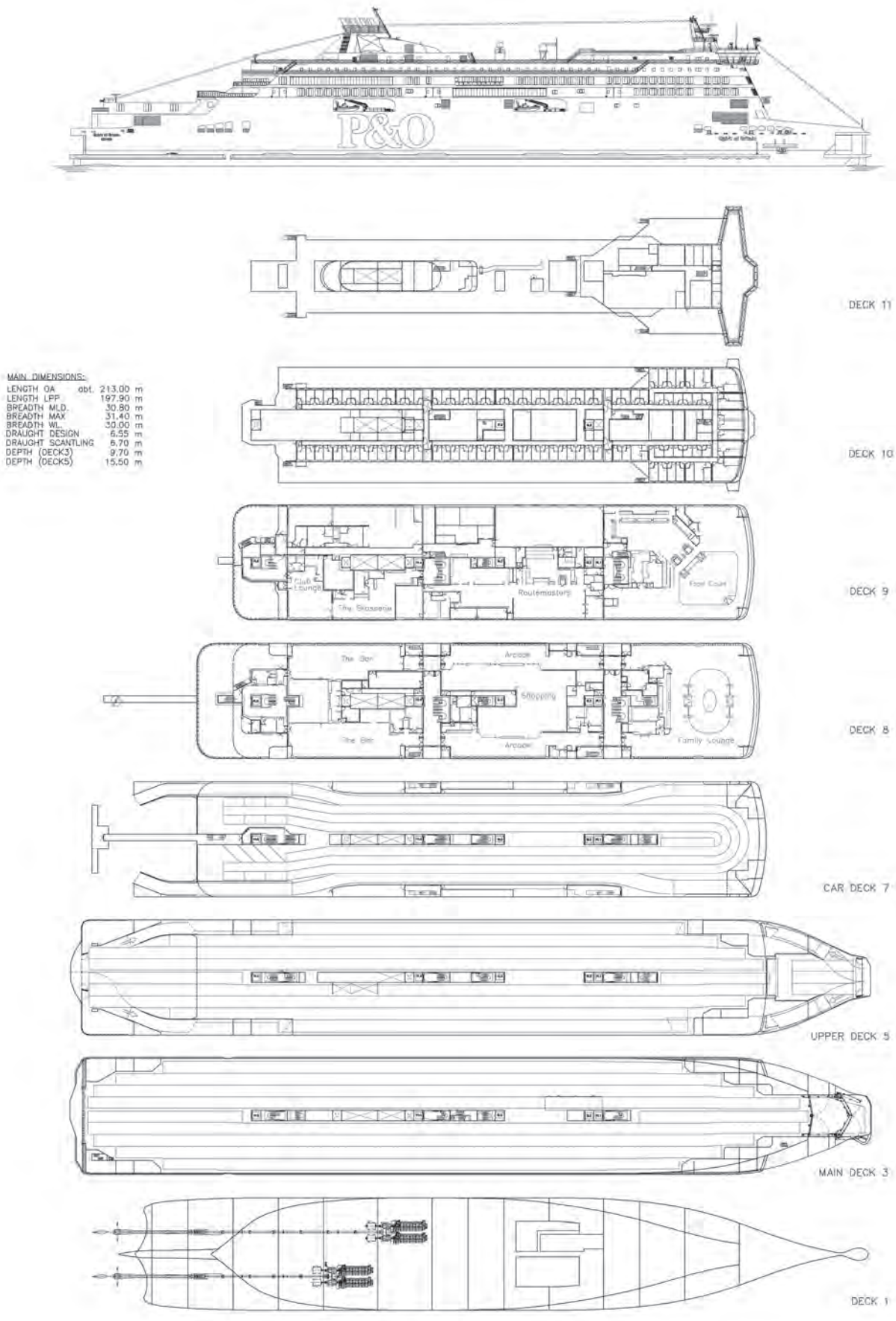
Complying with the latest return to port regulation *Spirit of Britain* features two engine rooms, each exactly the same as the other.

shipyard logistics and handling

INDUSTRIE COMETTO S.p.A. Italy
web site: www.cometto.com
e-mail: cometto@cometto.com

INDUSTRIE COMETTO
building for the heaviest duties

GA of *Spirit of Britain*.



MAIN DIMENSIONS:

LENGTH OA	abt.	213.00 m
LENGTH LPP		197.90 m
BREADTH MLD.		30.80 m
BREADTH MAX		31.40 m
BREADTH WL		30.00 m
DRAUGHT DESIGN		6.55 m
DRAUGHT SCANTLING		6.70 m
DEPTH (DECK3)		9.70 m
DEPTH (DECK5)		15.50 m

Rivertrace Engineering Ltd

RTE

Rivertrace Engineering is a market leader with over 30 years exprerience 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 parts.

Smart Cell
15ppm Bilge Alarm
MEPC 107(49)

Smart ODME
Oil Discharge
Monitoring Equipment
MEPC 108(49)

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

The Principles of Naval Architecture Series

Six updated volumes available from this classic SNAME text

To purchase log on to www.sname.org
or contact Tommie-Anne Faix at tfaix@sname.org
or 1-201-499-5068

Pemamek extends its reach in 2011

Finnish welding company Pemamek Oy looks to expand its business in 2011 believing that today's shipbuilding industry needs more automated welding solutions to keep up with demand coming from the new shipyards.

With the recent backlash of the recession, the business of shipbuilding has seen a shift from ocean going vessels to the offshore market. Picking up on this trend Pemamek has already been looking at business in Brazil, where the market is expanding rapidly.

Tapani Hyysalo, marketing manager, Pemamek Oy explains: "We see that a lot of new yards are starting in Brazil and we see that the production demand can not be met, so we see the opportunity in this market for automated welding tools. This is a very interesting market, we have already received our first order for a panel line."

Further to the Brazilian market, Mr Hyysalo also sees opportunities opening up in China, Indonesia and the USA and in particular in regards to the offshore market, where shipyards are relying more on automated tools to construct projects on time.

"The offshore market hasn't been that slow. We have had deals in the USA which we delivered last year. 'Traditional' shipbuilding has been on a downturn and not as fast to come through as offshore," added Mr Hyysalo.

The concern for the shipyards that are doing well is the capacity that those yards have at current for completing projects. Although there is not many orders coming through for ultra large projects, Mr Hyysalo points that when the first large order came through it was a realisation of what will be needed to handle the work load that will be expected from these new yards in places such as Brazil. He also pointed out that Brazil would not be able to cope without welding automation.

Pemamek are currently working on the robotics side of its business with its robotic portals. Improvements in cost-effectiveness usually calls for more automation, with its proven high arc time ratio (over 80% and utility ratio (100%), user-friendly robot portals significantly raise the productivity of steel panel production lines. A robot portal may consist of a sturdy robot welding gantry with three external robot axies, a six axis welding robot combined with a Vision (an online programming method for ratio's 1/30 or better) machine system based robot programming unit.

Two robots welding simultaneously in a PEMA Vision Robot Welding Portal at STX Cruise Finland.

With just a few days of training, it is easy for a Vision robot operator to rapidly programme all needed welds. An image of the scanned work-piece is displayed to the operator.

The Vision system is user-friendly and offers the user fast work-piece programming. Programming required for an entire eight hour welding shift can be carried out in 30 minutes. During a single shift, a Vision robot can weld approximately 160m.

In 2011 Pemamek will be looking to develop these stations to be able to handle larger projects. Mr Hyysalo explains that that demand for this type of system is high, but what we currently think of a large capacity is diminishing for even larger projects. What we need to do now is realise new ideas and looking in to new ways of developing larger capacity robots. Currently we have 10 weld heads on a machine; we will probably be looking to double that to 20.

Along with the robotic system Pemamek also look to bring further welding products to the markets in 2011. *NA*

Marine Design and Engineering for Specialist Operators

Caspian Shallow Draft
Ice Class Pusher Tug

3000te Flexlay Universal
Carousel System

MAATS
TECH LIMITED

MAATS Tech Ltd
AN ISO 9001: 2008 Reg. Co.
Unit 4 Aziz Court, Parkhill, Micheldever, Winchester, SO21 3QX
Tel: +44 (0)1962 774 986 • Fax: +44 (0)1962 795 113
Email: enquiries@maats.co.uk • www.maats.co.uk

Services offered: Conceptual Design, Full Production Drawings, Naval Architecture, Finite Element Analysis, Class Approval, Design Engineering, Supervisory teams, Installation and Commissioning

PEMA panel line at ECO/LA Ship, Houma, La, USA.

Multiplied productivity
for the shipbuilding and offshore industry

Improvements in productivity call for more automation. PEMA's range of welding automation solutions for the shipbuilding and offshore industry include automated and robotised complete steel production lines, and corresponding single stations for flat panels, micropanels, double-bottom construction and profile processing.

PEMA. Sparking your shipbuilding and offshore industry business.

www.pemamek.com

pema
WELDING AUTOMATION

Forward planning for ship owners

Creating vessels that are more environmental to run is now becoming par for the course for the shipbuilding industry. However, Napa onboard solutions takes a closer look at the operations of a vessel with the release of it latest software Napa for Operations.

Napa launches it software that will aid ship owners in cutting costs through the whole life cycle of a vessel.

The major concern of the shipping industry is energy efficiency. The International Maritime Organization (IMO) has been very active on this subject with regulations coming into effect to drive down emissions both to the air and the sea. One implication of this has been the ship energy efficiency management plan (SEEMP), which has been developed by member states and the shipping industry. The SEEMP incorporates best practices for the fuel efficient operation of ships, such as better speed management throughout a ships voyage, for example. Such efficiency measures will significantly reduce fuel consumption and, consequently, CO_2 emissions.

Napa has developed a piece of software, Napa for Operations, in partnership with a major shipyard that gives ship owners and masters more control over their vessels from the start of the journey to the end. The design of the software has come about through the increased demand on the market. Mr Esa Henttinen, business development manager, Napa Oy, commented: "There is increased demand in the market for energy efficient vessels. We have been playing about with this idea for the last 10 years. It is now that there is a need in the market, as a few years ago when the fuel prices where low there was no interest. Now that the environmental regulations are pushing ship owners to make their vessels greener, we see this as a good time for this software."

"Based on this plan Napa has developed software that takes onboard the vessel and its operations and looks at bringing all the operational sectors together, with the basic principle of before, during and after; ie. when the ship is first loaded, the route that a ship will sail and then the end of the voyage. Using the SEEMP will point out and help calculate optimum floating position, hull and propeller condition, voyage optimisation and weather routing, just in time operation and engine usage profile," said Mr Henttinen.

Bringing all these factors together Napa believes that it can offer ship owners a comprehensive package. The operator of the vessel will be able to define the optimum floating position (not only the trim) and minimise the depth of the vessel in the water, as the deep a hull is in the water the more resistance it has against it.

Mr Henttinen added: "Working out the vessel's optimum float level takes in not just the trim of the vessel but also the float line. To achieve the optimum float level the vessel may have to take on more ballast or less. However, there are requirements that each type of vessel has to fulfil, that the system will also take into account with its calculation. Tankers are an example of this as they have restrictions due to their cargo, but they can still achieve an optimum float line within the limits that are set."

The next stage is to look at and optimise the vessel's route from A-B and take in the environmental conditions, pointed out Mr Henittenen.

"The software can make predictions for up to two days in advance, but during the voyage would need to monitor the weather. Once you have done this you can then monitor your speed and fuel consumption. By taking in more data you can reoptimise the route and use the engines in an efficient way. The data that is collected can also create a 'normalised' voyage, where for instance you can take out the weather and focus on certain parts of the vessel. The information is also duplicated and sent back to the operator's office where it can be analysed and measured against key performance indicators," said Mr Henttinen.

The voyage planning section of the software uses a traffic light system that is tailor made to each ship owner's particulars requests. Mr Henttinen believes that companies should be able to offer its customers comprehensive packages that are a one stop solution. Recently, Norwegian cruise operator Norwegian Cruise Lines (NCL) adopted the Napa Onboard solution for its whole fleet, which also includes parts of the latest Napa solution. *NA*

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 please contact **sales.ev@hoerbiger.com**

HOERBIGER
because performance counts

---

www.steerprop.com

FLOWER POWER

Steerprop The Azimuth Propulsion Company

Introducing Steerprop ECO contra-rotating propeller line-up.
For high powers it combines the benefits of a pulling propeller with the augmented efficiency of a CR propeller. It is your choice when you demand speed, maneuvrability, and environmental friendliness.

New look to future cruising

Cruise ships have always been a symbol of luxury and in recent years these vessels have grown in size, with some such as *Oasis of the Seas* being able to accommodate 5000 passengers. However, D*eltamarin has seen* a new market opening for smaller cruise vessels operating in more exotic regions.

Deltamarin has identified that there is a demand coming from the cruise market suiting the needs of passengers that want niche cruise holidays. The standard cruise lines cater for the masses, but there is a trend for smaller tonnage that can cater for this market. Along with its parametric design study that the company is currently undertaking in co-operation with Wärsilä, Deltamarin believes that it can deliver a cost effective solution to this market.

Paivi Haikkola, director, marketing, Deltamarin said: "We have seen a trend growing in smaller tonnage for vessels that can go to exotic places like the Artic or the Antarctic."

"Because of environmental regulations for sailing in these types of areas there will be strict regulations for these types of vessel to comply with. In addition operators will not be able to take a ship with more than 200 passengers into these areas. Cruise ships operating in remote regions will need to be cost effective whilst still needing a high level of service onboard," Ms Haikkola added.

She also pointed out that the changes to the design of a smaller cruise vessel are what can make a significant difference. She highlighted: "If we look at the layout we can create a more efficient service by having less clutter onboard. The GA can also be used as a tool looking at design and layout and in future there might be new options for fuel, with LNG, etc."

Still looking at the design aspect, the new energy efficiency design index (EEDI) that recently came into play, along with new regulations such as safe return to port will also impact future cruise vessel design.

Ms Haikkola said: "We must also note the impact that the EEDI will have. The index will cap the speed of vessels, cruise vessels travel at a fairly good speed, but not always at full speed. If we are able to design for a slower speed cruise vessel then we can redesign the hull and block and also the buoyancy of the vessel. With these small changes it can amount to something big all together."

Deltamarin has said that the designs for these cruise vessels will also incorporate parts of the parametric design study that it is currently working on in co-operation with Wärtsilä. "We are exploring ideas for unique vessels, so yes there will be a link with the parametric design studies, which looks at ferries. These two types of vessels have different features, but are also similar in the fact that they are both

Is this what ferries in the future could look like? Deltamarin in cooperation with Wärtsilä look to modernise the ferry industry.

passenger-carrying vessels. The differences between the types of vessels are the price bands [costs], length; with the ferries we are looking at vessels between 100-120m, whereas cruise vessels are usually much larger. Also the standard of service between the two is different due to the services that they operate," said Ms Haikkola

Parametric design method

The parametric design study co-operation between Deltamarin and Wärtsilä was announced back in October last year at Interferry, New York. The aim of the study is to produce a cost effective design solution for the ferry market, as Deltamarin highlighted that this is an area of shipping that is due for modernisation.

By using the parametric design method, Deltamarin has aimed to look to find a rational way of dealing with customer needs, but also looking closely at the vessel to see where other savings can be made. Deltamarin has said that in the past most designs have been platform designs, with this approach it will adapt the design for the customers requirements but also look at standardising the equipment onboard.

The parametric design method allows designers to make a clear distinction between the marketable and non-marketable features of a vessel. For example, the size and architecture of the passenger accommodation and recreation areas are marketable features of a ship, and can be tailored to each customer's particular needs. The construction of the ship, such as the engine room layout, piping and ventilation, power, navigation and automation systems can all be designed using a more industrial method. By modularising and parameterising these elements within the ship, the same benefits can be utilised in subsequent ships without them becoming duplicates.

Mikko Mattila, marketing manger, Deltamarin, commented on how the parametric design can save costs in the future, under the current study for ferries: "We are taking all the aspects of the design under one umbrella along with operation of the vessel. We are looking at savings of 15% for building costs. There are certain building blocks that we must have and there are building blocks that we can adapt. It is all about giving the customer possibilities."

The way forward is also to standardise equipment wherever possible onboard, which can be achieved by optimising machinery and systems, and by implementing the latest innovations in propulsion technology, said Deltamarin.

Ms Haikkola said that Deltamarin is far along the concept stage for designs of this vessel type and that there is potential to see a contract within months. "We are in discussions with clients for designs. However, investment is the key factor, with the financial instability, owners and operators need to be willing to invest," commented Ms Haikkola. *NA*

One size does not fit all

The European Maritime Safety Agency (EMSA) has recently awarded Finnish-based design house Deltamarin a contract for a study on tests and trials of the energy efficiency design index (EEDI) as developed by the International Maritime Organization (IMO).

Deltamarin previously worked on the EEDI in 2009 and was a major contributor to how the EEDI was handled by the IMO. It has recently become clear though that the EEDI does not benefit all vessels and in particular smaller vessels such as roro's, short sea vessels and specialist vessels are finding issues with the current EEDI.

The main objective of the contract will be for Deltamarin to provide EMSA with a technical study on the EEDI, in order to refine the EEDI application for certain vessel categories and to identify the potential application of the EEDI or any alternative method to improve energy efficiency of purpose built vessels from a technical and design point of view.

The new EEDI may work for many, but not all find that the EEDI fits the design.

John Garner, fleet director, P&O Ferries supports the study that is to be carried out by Deltamarin, as at the moment he feels that the EEDI does not help the ro-ro industry. He said: "There is an issue with the EEDI, Deltamarin has been contracted by EMSA to do a study looking into EEDI and how it would work for smaller vessels. The EEDI at the moment covers all vessels, but a ro-ro vessel is not the same as a container vessel which has different requirements."

He adds: "The new ferries [*Spirit of Britain* and *Spirit of France*] have a large installed power, but this is not always used. The Danish study penalises against the higher installed power vessel, even though they may not use the full capacity. So we welcome the study by Deltamarin."

Deltamarin will firstly look in to the refinement of the EEDI formula for ro-ro (volume and weight carriers) and ro-pax vessels. Deltamarin shall then assess the current baselines approach for volume and weight carriers and consider various IMO submissions from the previous MEPC. If it is found that refinement or adjustment of the baselines is needed this shall be proposed. Deltamarin has also proposed that if there is no factor that is suitable to address the problem it shall develop an alternative approach to address the energy efficiency for these vessels, arrange tests and trials of the approach and to draw a conclusion on its suitability. The study will also include a comparative analysis looking at greenhouse gas (GHG) emissions and the potential reduction between the current EEDI approach and the new approach.

Mikko Mattila, sales director, marine & engineering, Deltamarin has said: "The EEDI is good for deep sea vessels [which covers most of world trade]. We did see problems for the short sea vessels and ro-ro's with the EEDI. Ro-ro vessels also have to compete against road traffic for delivery times. So where we see that EEDI supports slow steaming, which is fine for deep sea vessels, this is not so good for smaller vessels. If we penalise too much [slow steaming], then we will have to look at how this will effect the service that the ship owner can give, and also in the port turn around times. This type of service does not have the opportunity for slow steaming."

"We will need to look at what can be done and taken into account. We shall look closely into this and refine the EEDI for ro-ro's and specialist vessels," he added.

Deltamarin will also develop a frame to address the energy efficiency of purpose built vessels and specialist ships. Based on the representative samples establishing baselines for these vessel categories, requirement for any addition correction factors will be identified. The main goal will be to develop methods on how to improve the energy efficiency of these vessels at the design stage.

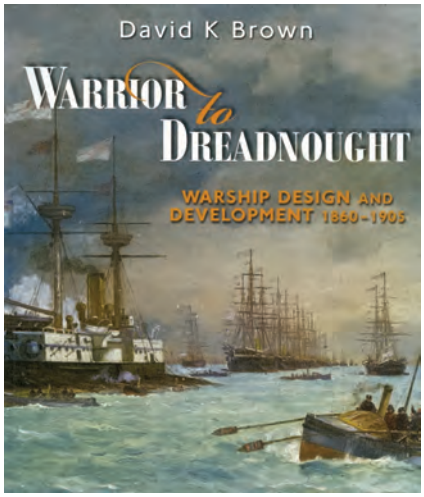
As yet there is no time frame set for Deltamarin to produce any result. Mr Mattila has commented that there findings will not be going to the next MEPC and that the IMO is not in a hurry for the results as yet.

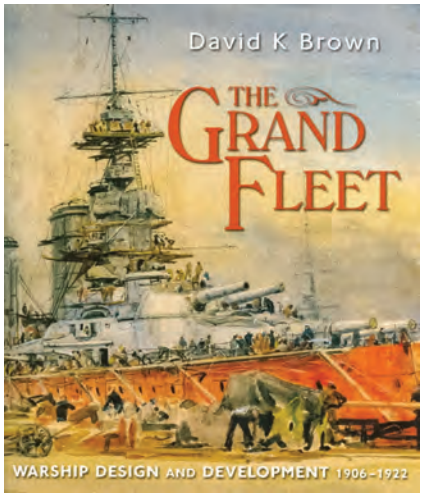
While this recent study has been contracted to look into the EEDI for smaller vessels there may be the same revision process for other types of vessels that may not necessarily fit into the current EEDI framework. Mr Matilla highlights that other vessel types may be taken into consideration in the future, but the current focus is to refine the EEDI for smaller vessels. *NA*

Warrior to Dreadnought/The Grand Fleet

By E. C. Tupper

Warrior to Dreadnought/ The Grand Fleet
Both written by D. K. Brown, published in 2010 by Seaforth Publishing, Barnsley, as paperback editions, 224 and 208pp respectively, ISBN 978-1-84832-086-4 and ISBN978-1-84832-085-7, £16.99 each.





The late David Brown will be well known to our readers. He was a distinguished naval architect and a member of the Royal Corps of Naval Constructors retiring in 1988 as Deputy Chief Naval Architect for the Ministry of Defence. He was highly respected as a naval historian and wrote many books on warship design. These two books are part of a series detailing warship design and development in various periods, showing how changing technology and tactics led to changes in design. They were first published in hardback in the late 1990s.

Warrior to Dreadnought covers the period 1860 to 1905.
The Grand Fleet covers the period from 1906 to 1922.

As one has come to expect of this author, both books have been thoroughly researched, are clearly written and fully referenced. They are profusely illustrated with photographs, many of which are from the author's own extensive collection, and line drawings. Each has about 240 illustrations. As an experienced designer, the author is able to offer opinions on the soundness of design decisions taken at the time. He makes allowance for the knowledge at the time but also makes comments in the light of modern knowledge and the way in which the ships were actually used. Hindsight is a great thing but in this context it is very revealing and useful. Perhaps surprisingly, he finds most of the decisions well founded which says much for the calibre of the people involved. He recognises that different people see things in a different light depending upon their individual experiences and their responsibilities at the time. This is well illustrated by his declension of the irregular verb "To Design" which he produced when the head of preliminary design in the MOD.

I create,
You interfere,
He gets in the way,
We co-operate,
You obstruct,
They conspire.

I think we will all know what he means. In the same way we must recognise the restrictions under which those early designers worked. Contrary to popular ideas the money for the Victorian navy was not generous and a clear idea of the role of the ships was sadly lacking. That sounds very familiar, as well.

Both books discuss not only the ships themselves but the parallel developments in machinery, guns, turrets, torpedoes, mines and armour that drove the design changes. They contain a wealth of detailed information on design features backed up by model testing and full-scale trials. As such they provide other researchers with much data for studying different aspects of warship design and ship tactics. The accounts of gunnery trials, for instance, show rates of fire and percentage hits. They show clearly the advantage of the larger guns. It was largely the increasing gun size that drove up the displacement of the battleship. The books also discuss the different personalities involved both in the technical design departments, in politics and in the wider research fields.

Both Warrior and Dreadnought were milestones in their day but equally they were, in many ways, simply the logical outcome of changes in technology – the art of what was possible. In most features they were evolutionary rather than revolutionary. The biggest achievement of the designers was to blend all the technical developments into one coherent and successful design.

Many comparisons are made with French ships in the mid-nineteenth century but as the 20th century dawned, all eyes were on the build up of the German High Seas Fleet. Much is made of the loss of HMS Captain and the growing knowledge concerning transverse stability. It is surprising how long it took for many to appreciate the importance of the GZ curve, for large angle stability. It is interesting also, to read of applications of ideas we might consider more modern. For instance, in 1866 HMS Waterwitch, an armoured gunboat, was fitted with water jet propulsion. A destroyer, HMS Viking (1909) was the only six-funnelled ship in the Royal Navy. A photograph is given.

In gunnery rifling was introduced to give greater accuracy and breech loading was used. Neither was without its problems. The developments in explosives and the various types of shell are discussed including their deficiencies. On the machinery side turbines were introduced in place of (or rather alongside) reciprocating machinery; oil fuel appeared as an alternative to coal for produc-

ing steam which was progressively replacing sail as the main means of propulsion. William Froude made great contributions to the designer's ability to predict the power needed for a given speed by his work on model testing. He also arranged for rolling trials of ships and demonstrated the importance of bilge keels.

Dreadnought as a fast, all big-gun ship, rendered all previous battleships obsolete. Some argued that it was not in Britain's best interest to introduce it but, David brown argues that the timing was good. Britain could take advantage of being first in the field and its ability to use steam turbines. In any case other nations would soon have produced their own dreadnoughts as the advances in technology were leading in that direction. One myth the author does demolish is that Dreadnought was built in a year. He points out that the real time was about 18 months which was still a remarkable achievement. The "one year" derives from the twelve months between keel laying and preliminary sea trials but ignores the pre-production of many structural members which could be erected in the first days after formal keel laying and also the final period of fitting out.

As the 1914-18 war loomed much thought was given to the significance of torpedo and mine developments on ship design and tactics and these are discussed.

Dreadnought undoubtedly set the pattern for future battleships and from then on these ships were referred to as "dreadnoughts". Each new class was generally larger, had larger guns and was faster than its predecessor. Speed was helped by the adoption of geared turbines. By September 1914 Britain had 25 dreadnoughts and other countries were building a great number. Also developed in the years running up to the 1914 war was the battlecruiser. This also carried big guns but was faster and les heavily armoured than the battleship. By 1914 Britain had nine.

Whilst the battleship and battlecruiser were the backbone of the Grand Fleet they needed the support of many smaller vessels. David Brown gives details of these – cruisers, destroyers, torpedo boats, sloops, minesweepers and submarines. These latter, with the torpedo as their weapon, were developing very rapidly. Other ships new to the naval scene were the balloon and aircraft carrying vessels. Britain led the world in using aircraft and by 1918 had HMS Argus, the first true aircraft carrier. Argus established the main design features for carriers and these became very important in the Second World War.

It is interesting that during the first 20 years of the 20th Century, when the design and build programmes were so hectic, our knowledge of naval architecture developed so little. In fact, by 1900 most of the basic concepts were in place and one had to await the arrival of the computer before real progress could be made towards the subject as we know it today.

Many historians with no knowledge of naval architecture will find these two volumes, and indeed the whole series, fascinating and informative. The author provides the reader with some basic insights on stability and strength of ships so that such readers can better appreciate the background to developments discussed. The books are full of interesting detail but are very readable and the author's enthusiasm for the subject is obvious. They can be recommended to anyone with an interest in warships generally and in the years between 1860 and 1920 particularly. In their paperback form they are very affordable. *SCRT*

STONE MARINE SINGAPORE

Propellers and Shafting packages designed and manufactured for superior performance, maximum speed, minimum noise and vibration. *Ideal for:*

- Patrol Boats
- Fast Ferries
- Luxury Motor Yachts
- Crew Boats

Certificate No: 160412

Military/Civilian applications. Monohulls/Catamarans/Trimarans

STONE MARINE SINGAPORE (PTE) LTD

4 Tuas Basin Close, Singapore 638797. Tel: (65) 68632681, Fax: (65) 68632683

E-Mail: office@stonemarine.com.sg Website: www.stonemarine.com.sg

Confirm your position in the Russian market at...

NEVA 2011

ST. PETERSBURG, RUSSIA, 20 - 23 SEPTEMBER 2011

XX

1991 – 2011

TWENTY YEARS DEVELOPMENT
OF THE RUSSIAN COMMERCIAL
MARITIME INDUSTRIES

THE 11TH NEVA EXHIBITION & CONFERENCE FOR SHIPPING, SHIPBUILDING, OFFSHORE ENERGY, PORTS & OCEANOGRAPHY

Contact Dolphin Exhibitions: Tel: +44 1449 741801 • Fax: +44 1449 741628
E-mail: info@dolphin-exhibitions.co.uk • Web: **www.transtec-neva.com**

Cruising opts for the military solution

Cold ironing in Los Angeles is the 6500TEU NYK Atlas, which was that the container line's first ship capable of using shore power.

Photo: Captain Greg Bishop.

Raised eyebrows may normally be the response elicited by sceptics of the cruise industry when it comes to pollution prevention, and who can blame this misconception, as vessel sizes gets bigger and bigger year on year, with passenger numbers added as a result. It is, however, this very industry that has pioneered many of the developments being adopted on other commercial vessels, trialing new innovations to combat the environmental challenges faced by the shipping industry as a whole.

In 2001, Princess Cruises was a pioneer of cold ironing in Juneau, Alaska when it invested US$4.5 million to implement the programme. The technology allows vessels to utilise shore power and removes the necessity to burn fuel while alongside. While the concept was not new, the US Navy has been connecting to shore power at its ports for decades to reduce wear and tear on its ships' equipment; Princess Cruises was the first to recognise the commercial benefits of adopting cold ironing for its cruise ships.

In spite of the fact passenger vessels tend to use fuel with a sulphur content ranging from about 1.5 to 3.3% because it is less corrosive, the combination of reducing both the environmental impact from contaminants associated with the burning of bunkers and the risks associated with diesel particulate matter (PM), while making savings in both costs and fuel consumption of between 20 to 35M/T per call was a persuasive one.

The program was further rolled out in Seattle in 2005 and has since then, gained popularity with many of North America's western seaboard states which have seen the improvement of the air quality in their ports from the reduced levels of nitrogen oxide (NOx), sulphur oxide (SOx) and PM. In the case of ports such as Juneau, Seattle and Vancouver, power is supplied by hydroelectric plants, which means emissions of both air pollutants and CO_2 are effectively zero with minimal costs.

According to Cavotec, during a single port call, a 7000TEU container ship can emit sulphur oxide equivalent to 30,000 cars. While electricity produced by power stations and used by ships in port has 35 times less nitrate oxide and 25 times less particle matter compared to the heavy fuel normally used by ships when docked.

Cold ironing which also goes by the names of Alternative Maritime Power and High-Voltage Shore Connection (HVSC) is now available in Los Angeles, Long Beach, San Francisco, San Diego and Vancouver in Canada. As well as European ports in Germany, Sweden, Finland and The Netherlands.

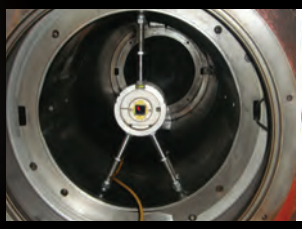
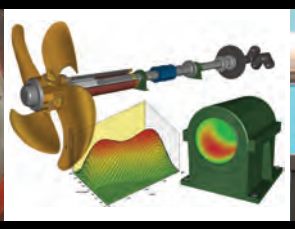
Using a dual-voltage transformer from the local grid both 6.6kV and 11kV at 60Hz can be provided. Ships outfitted with a custom-built electrical connection cabinet, automatically connects the electrical power transmitted from the landside transformer to the vessel via four 3-1/2 inch diameter flexible electrical cables, using traditional but oversized male/female plugs and sockets. The whole operation of "plugging in," which is the length of time needed to connect a ship to shore power and shut down the vessel's diesel generator is approximately 40 minutes.

HVSC have been retrofitted on many vessels, the cost of equipping each ship is around US$500,000. Companies include Holland America Line and Norwegian Cruise Line, which signed a multiyear agreement with the Port of Los Angeles that includes the use of AMP. It is estimated about 200 vessels worldwide now have the facility to plug into shore power.

The technology is also seen as a cost efficient alternative to burning expensive distillate fuel like Marine Gas Oil (MGO) in ports, in order to comply with the EU Directive 2005/33/EC now in force which mandates that while alongside a berth or at anchor within a European Union (EU) port, only fuel with a maximum sulphur content of 0.1% can be burnt. In fact, all ships as contained in MARPOL Annex VI, Regulation 14, should use fuel oil containing less than 1.0% sulphur on entering any Sulphur Emission Control Area (SECA) which is within the English Channel, North Sea and Baltic Sea.

Sceptics of HVSC claim the different voltages and frequency systems of ships can be a hindrance to the widespread use of this technology. Additionally, there are limitations as to how many ships can be catered for at one particular time without repercussions in power load sharing, not to mention the costs associated with actually providing the electricity in the first place. While the pro and cons continue to be debated, the pioneering cruise industry is evaluating the next generation of alternatives to reduce air emissions. *NA*

ALIGNMENT AND MACHINERY MOUNTING SOLUTIONS


Vibracon® adjustable steel chocks:

- **Eliminates soft foot**
- **Succesful for over 20 years**
- **750 000 pieces installed**
- **Available from stock**
- **U.S. Navy approved**

Services:
Alignment with laser, strain gauge & jack load technology
On-site machining
3D measurements with total station & laser tracker
Shaft alignment calculations & procedures
Supervision and mounting services.

Products:
Vibracon®, adjustable steel chocks
Steelshim, stainless steel shims and kits
Epocast, two component chocking compounds
ShaftDesigner, the shaft alignment and vibration calculation software.

MACHINE SUPPORT
Alignment, On-Site Machining and Chocking Solutions

THE NETHERLANDS | USA | UAE | BRAZIL
WWW.MACHINESUPPORT.COM

25 YEARS OF EXPERIENCE

paramarine™ Advanced Marine Design Software

delivers improved accuracy, reduced design cycle times and a fully integrated design solution.

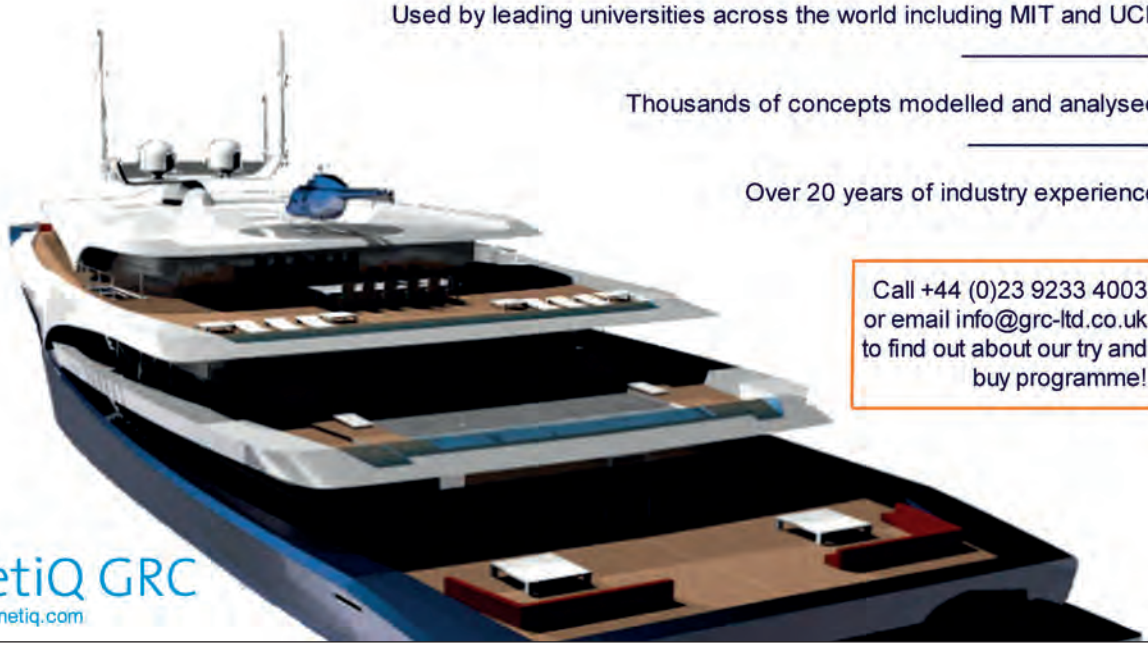
Fast to deploy, easy to use and fully integrated with leading CAD design software

Used by leading universities across the world including MIT and UCL

Thousands of concepts modelled and analysed

Over 20 years of industry experience

Call +44 (0)23 9233 4003 or email info@grc-ltd.co.uk to find out about our try and buy programme!



QinetiQ GRC
www.grc.qinetiq.com

Nuclear Power

Sir

I was very dismayed to read the Editorial Comment in the January 2011 issue of *The Naval Architect*. The article starts by making an immediate, and unhelpful, link between the application of nuclear fusion to peaceful use and the more contentious use of nuclear weapons, through reference to the anti-nuclear weapons campaigns. Whilst the use of nuclear fusion technologies for land-based power generation still has its critics and undoubtedly has long term issues that remain unresolved the impact on the environment, and public health, of the few well-known incidents involving commercial and research reactors and fuel processing/reprocessing should be considered in relation to the impact of alternative technologies, such as coal, oil and gas burning.

When considering the potential use of nuclear fusion technologies for the powering of merchant ships the industry is fortunate to have appropriately-sized solutions available, with extensive marine experience from the adoption by some navies, including the Royal Navy. This compares with some other candidate low-carbon technologies where at present the available scale does not provide the necessary power density for merchant ship application. The statement in the eighth paragraph which suggests that the proportion of carbon dioxide saved would be marginal is disingenuous, since absolute numbers of ships would not be relevant. If a relatively small number of large ships adopted nuclear power the reduction in carbon dioxide would be proportionally more significant.

The potential use of nuclear propulsion for merchant ships must be a viable option, although there will be serious challenges, which will include not only the achievement of public and political acceptance but also the availability of suitable crews and the long term cost modelling. In reporting on the essential debate it is disappointing to see a professional journal perpetuating the confusing messages of the popular media and drawing inferences that are incorrect.

Yours faithfully
Vaughan Pomeroy (Fellow)

Watertight Bulkheads

Sir,

I was very interested in the UNESCO announcement about the Chinese invention of watertight bulkheads. However, this seems to be a gross under-acknowledgement of the overall invention of which watertight bulkheads form only a part of what we understand to be the basis of Chinese shipbuilding over the centuries.

We believe that this involved construction based on the assembly of multiple individual compartments. These were of wood and probably limited in length by the lengths of planking. They were possibly of dimensions similar to the modern container and watertight except for access, probably, limited to top entries.

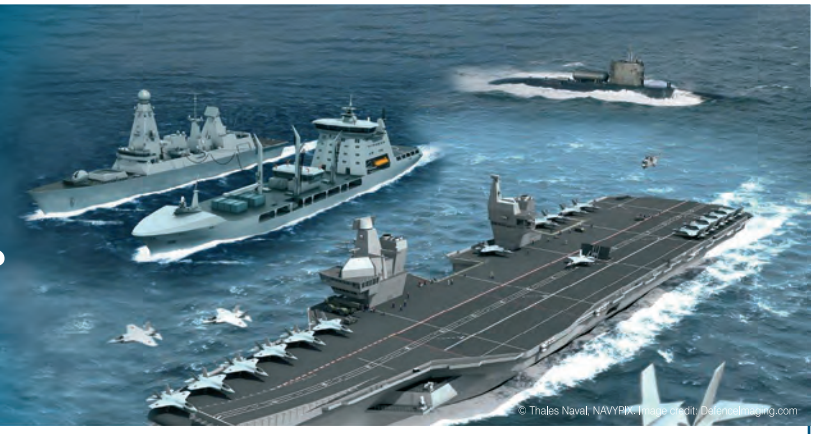
They, therefore, incorporated watertight bulkheading both athwartships and fore and aft and double bottoms as well. Assembled in suitable groups and secured together they formed the structural strength for the ship which only required a skin planking to arrive at a seagoing form. This is how we understand the legendary great ships were built for the 14th century Admiral Cheng Ho. It may also be a clue as to the rather rectangular form of the classic junks.

In historical importance it can be seen as a precedent for our current shipbuilding techniques as we move away from our traditional fitting out of shell hulls.

There is much in traditional Chinese constructions which is relevant to current developments in the west. They would make for a most instructive set of papers for the RINA.

Yours truly
Colin Mudie
Naval Architect.

Are you looking for a new challenge to kick start your 2011?



BMT Defence Services is currently looking for innovative and inspiring individuals who have the passion and drive to join our forward thinking and expanding Naval Architecture team based in the centre of Bath.

We are looking for people with a background in both Structural Engineering and Technical Assurance Services to work on projects such as the design of the Royal Navy's new aircraft carriers, supporting the UK's in-service submarines, the development of warship concept designs for overseas clients and internal company research programmes.

Structures Team

You be will undertaking and leading structural analysis and design work, including the application of Finite Element Analysis techniques, on a wide range of ship and submarine design and in-service support projects.

Technical Assurance Services

You will support the Naval Architecture department's Technical Assurance team which is responsible for ensuring that assurance frameworks are maintained for all projects, developing a best practice approach, supporting project teams and developing standards and guidance documents, when required.

£Competitive + Excellent Benefits Package

Please contact Victoria Johnson on +44 (0) 1225 473 601 for further information.
For details on how to apply for one of these roles please visit www.bmtdsl.co.uk/NA001.

BMT Defence Services Ltd, Maritime House, 210 Lower Bristol Road,
Bath BA2 3DQ UK T: +44 (0) 1225 473 600 W: www.bmtdsl.co.uk

best company 2010

BMT Defence Services

"Where will our knowledge take you?"

cussons TECHNOLOGY

Cussons Technology are the world's leading supplier of
Marine Hydrodynamics Research Instrumentation & Facilities.

Due to a new £13 million overseas contract for a
Sea Keeping & Manoeuvring Basin we now are interviewing for;

Mechanical Design & Electrical Control & Instrumentation Engineers
Degree qualified engineers. Manchester based but international travel & site work required.

Project Manager
Degree qualified with minimum of 5 years project management experience in running large international multi-disciplined projects, preferably overseas experience with engineering background.

Marine Hydrodynamics Proposals Engineer
Engineering degree qualified, background in technical proposals/ solutions in export marine sector.

A background in Marine Hydrodynamics
would be an advantage for all positions. Salaries negotiable.

For further details & application criteria please forward CV to -
Carl Horne, Engineering Manager **e-mail: carlhorne@cussons.co.uk**

Please visit our website at **www.cussons.co.uk**

Marine Industry Careers

PRINCIPAL NAVAL ARCHITECT

REF: 229294
Devon, £42 - £48K plus benefits

Required to join a major defence contractor. The successful candidate will lead a team of specialists and engineers to provide consultancy support, promoting best practice across all departments. You will provide specialist input to the development of processes and procedures for design and safety activities and the implementation and maintenance of design and safety code documentation, compliant with relevant codes and regulations.

Candidates will be degree qualified, or equivalent and will ideally be Chartered or eligible for Chartership.

Call 01489 898160 or email marine@matchtech.com

Matchtech Group plc
1450 Parkway, Solent Business Park
Fareham, Hampshire PO15 7AF
www.matchtech.com

matchtech GROUP

Specialist recruitment to the marine industry

Check out our new website www.faststream.com

specialist

global people specialist

Senior Naval Architect - London - £Competitive

The client is a leading consultancy and they currently seek a Naval Architect to join their design services team. You will get the opportunity to work on an array of cutting edge, new build, vessel design projects within the Oil and Gas/Renewables sectors with assignments ranging from jack-up wind farm installation vessels to semi-submersibles. You will be providing marine expertise to international clients and will upon occasion get the opportunity to travel to the shipyard and meet with the clients and stakeholders.

Naval Architect - London or Southampton £Attractive

A leading Asset Integrity Consultancy urgently requires the skills of a degree qualified Naval Architect with a clear understanding of the lay-up of a typical mooring arrangement. Experience of reviewing drawings of typical floating installations & hydrodynamics or ORCAFLEX, AQWA or MOSES will be a distinct advantage. This is an opportunity to be involved with a variety of technically stimulating projects globally with an attractive package on offer.

t: 023 8020 8760
e: marine@faststream.co.uk
w: www.faststream.com

faststream recruitment group

Commences: 24th May 2011

NORTH WEST KENT COLLEGE

LLOYD'S MARITIME ACADEMY

Commences: 19th April 2011

DIPLOMA IN

MARINE SURVEYING

THE INTERNATIONAL SURVEYING QUALIFICATION FOR THE MARITIME INDUSTRY

DISTANCE LEARNING - 12 months

Core Modules

1. The Maritime Industry and Marine Survey Practice
2. Budgeting and Accounting for Surveyors
3. Effective Writing and Reporting
4. Naval Architecture for Surveyors

Specialist Modules

- **A** Non-Liquid Cargo Surveys
- **B** Liquid Cargo Surveys
- **C** Surveying of Superyachts
- **D** Marine Environmental Surveying

"The course gave a comprehensive and valuable overview of the shipping industry and in particular the role of the Marine Surveyor within that sphere. I would strongly recommend it to anyone wishing to pursue a career in shipping.
(Stephen Foster, United Nations Development Programme)

www.lloydsmaritimeacademy.com/msAA201

CERTIFICATE IN

NAVAL ARCHITECTURE

INTRODUCING THE KEY PRINCIPLES AND TOOLS USED BY NAVAL ARCHITECTS IN SHIP DESIGN

DISTANCE LEARNING - 12 weeks

Course Modules

1. Introduction to Naval Architecture
2. Hydrostatics
3. The Marine Environment
4. Operating in the Marine Environment
5. Durability in the Marine Environment
6. Regulatory Frameworks and Ship Maintenance
7. Fundamentals of Ship Design

"A comprehensive introduction to the fundamentals of naval architecture"

"The perfect way to learn about the key principles of ship design"

www.lloydsmaritimeacademy.com/naAA201

E: andrew.matthews@informa.com T: +44 (0)20 7017 5906 Quote VIP: LP0065AA201

an informa business

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"

MARINE APPLICATION ENGINEER

Excellent Benefits Package + Car + Bonus

Hertfordshire

VOLVO PENTA

Volvo Penta is a worldwide market leader in the manufacture of marine and industrial engines with a product range synonymous with quality, technology and performance. Central to its success and reputation is the ability to provide excellent technical support to its broad range of customers, including Marine OEM's, dealers and end users.

As a member of the Volvo Penta UK Sales & Application's team, you will provide technical advice and support to all Marine OEM's for the complete engine range, including active involvement in applications, installation, commissioning and training. In addition you will provide comprehensive technical back-up to the Volvo Penta Centre's, including product information, technical installation and approval of 'certified installation programs.' This exciting and challenging role will involve regular travel to customer sites, and combines technical expertise with excellent customer service.

A qualified engineer, ideally a naval architect, you will be working in the marine sector with experience of petrol or diesel engines together with a good knowledge of modern engine control systems. Relevant experience with Marine OEM's would be ideal, as would any expertise in applications, diagnostic tools and installation sign off. Self motivated and organised, you will combine an enthusiasm for technical excellence with a passion for customer service.

Headquartered in Watford, this role could be office/home based with travel to customer sites, primarily on the South Coast and Midlands.

A major player in both the UK and Europe, success in this role could lead to significant career opportunities.

Please apply by emailing your CV with a covering letter and including your current salary to Daniel McDonald at **dmcdonald@leanexecutives.co.uk**

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

RINA publications

Books

Please note all prices include postage & packaging

HUMAN FACTORS FOR NAVAL MARINE VEHICLE DESIGN & OPERATION

By Jonathan M Ross MRINA Ref: HFNM

There is a driving need for naval professionals to focus on human factor issues. The number of maritime accidents is increasing and the chief cause is human error, both by the designer and the operator. Decreasing crew size, lack of experienced operators, operations in higher sea states and fatigue worsen the situation. Automation can be a partial solution, but flawed automated systems actually can contribute to accidents at sea. This book integrates knowledge from numerous resources as well as the advice of a panel of eight recognised experts in the fields of related research, development and operation.

Member price UK £50 EUR £55 OVS £57.50
Non- Members price UK £55 EUR £60 OVS £62.50

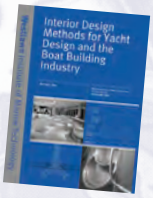
SAFETY MANAGEMENT AND ITS MARITIME APPLICATION

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 £28.75 EUR £31 OVS £33.50
Non- Member price UK £31.75 EUR £34 OVS £36.50

INTERIOR DESIGN METHODS FOR YACHT DESIGN AND THE BOAT BUILDING INDUSTRY



By Lisa C. Hix Ref: IDMYD

In a first-time release to industry and the general public, the Westlawn Institute of Marine Technology announced in April 2009 this textbook was now available for purchase. Specifically prepared as a textbook for Westlawn's intensive Yacht & Boat Design Program, and also used as the text for Westlawn's continuing education course in boat interior design this book provides detailed technical information not available from any other source. Heavily illustrated, with numerous line drawings and photos on nearly every page, this textbook will answer almost any question a designer, builder, surveyor, crewmember, or serious boater may have about the accommodations and arrangements required for safe, comfortable, and efficient crew and passenger spaces. Though focused on boats (vessels under 200 feet or 60 meters), the information is equally valuable for commercial vessels of all sizes.

Member price UK £57 EUR £57 OVS £57
Non Member price UK £67 EUR £67 OVS £67

SHIP STABILITY

By Klaas van Dokkum, Hans ten Katen, Kees Koomen and Jakob Pinkster Ref: SS

Due to the advances in computer power and software, the authors are able to present the material in a drastically different form from that of other stability textbooks, including the order and approach of topics. The subject should interest college and university students, as well as fishermen and sailors. Lack of knowledge about stability means great risk for the ship, crew, passengers and environment. Thus, this comprehensive book suits all levels of navigational and shipbuilding schools. All required topics are addressed and can be easily understood with help from the many illustrations. The terminology and abbreviations conform to international usage as much as possible, meaning that Maritime English is used.

Members price UK £28 EUR £28 OVS £33.50
Non- Member price UK £31 EUR £31 OVS £36.50

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

SHIPS AND SHIPBUILDERS: PIONEERS OF SHIP DESIGN AND CONSTRUCTION

By Fred Walker FRINA Ref: SAS

Ships and Shipbuilders describes the lives and work of more than 120 great engineers, scientists, shipwrights and naval architects who shaped ship design and shipbuilding world wide. Told chronologically, such well-known names as Anthony Deane, Peter the Great, James Watt, and Isambard Kingdom Brunel share space with lesser known characters like the luckless Frederic Sauvage, a pioneer of screw propulsion who, unable to interest the French navy in his tests in the early 1830s, was bankrupted and landed in debtor's prison. With the inclusion of such names as Ben Lexcen, the Australian yacht designer who developed the controversial winged keel for the 1983 America's Cup, the story is brought right up to date.

Members price UK £12.50 EUR £16 OVS £21
Non- Member price UK £17.50 EUR £21 OVS £26

For other books available in the RINA bookshop, see www.rina.org.uk/bookshop

Journals

THE NAVAL ARCHITECT

Published 10 times a year

quarterly publication
OFFSHORE MARINE TECHNOLOGY
bi-monthly publication
WARSHIP TECHNOLOGY

- 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.

2011 Subscription

Period	12 Months	24 Months	36 Months	Ref: J6
Inland:	£150	£260	£375	
Europe:	£156	£272	£390	
Overseas:	£168	£292	£420	

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.

2011 Subscription

Period	12 Months	24 Months	36 Months	Ref: J7
Inland:	£114	£200	£285	
Europe:	£120	£208	£300	
Overseas:	£138	£240	£345	

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.

2011 Subscription

Period	12 Months	24 Months	36 Months	Ref: J8
Inland:	£52	£92	£130	
Europe:	£58	£100	£145	
Overseas:	£64	£110	£160	

RINA publications

Conference Papers

If the CD ROM format is required please add CD after the reference number.

		Non-Members	*Members*
2011	**The Damaged Ship** Ref: DS11 - **CD ROM only**	£120	£100
2010	**The William Froude Conference** Ref: WFA10	£120	£100
	Systems Engineering in Ship & Offshore Design Ref: SOD10	£120	£100
	INNOV'SAIL - Innovation in High Performance Sailing Yachts Ref INNOVSAIL10	£120	£100
	Warship- Advanced Technologies in Naval Design & Construction Ref: WS10	£120	£100
	Marine Renewable Energy & Offshore Wind Energy Ref: MRE10	£120	£100
	Ship Design & Operation for Environmental Sustainability Ref ES10	£120	£100
	Marine Offshore Coatings Ref: COAT10 - **CD ROM only**	£120	£100
	Marine Offshore Composites Ref: MOC10 - **CD ROM only**	£120	£100
2009	**Historic Ships** Ref: HIST 09 - **CD ROM only**	£120	£100
	ACV & Surface Effect Craft Ref: Ref: ACV09 - **CD ROM only**	£120	£100
	ICSOT - Ice Class Ships Ref: ICSOT09	£120	£100
	ICCAS International Conference on Computer Applications in Shipbuilding Ref: ICCAS09 - **CD ROM only**	£120	£100
	Warship - Air Power at Sea Ref: WS09	£120	£100
	SURV 7: Surveillance, Search & Rescue Craft Ref: SURV09	£120	£100
	Super & Mega Yacht Design Ref SMY09 - **CD ROM only**	£120	£100
	Human Factors Ref HF09	£120	£100
	Int'l Conference on Innovation in High Speed Marine Vessels Ref: HSMV09	£120	£100
2008	**Waterjet Propulsion 5** Ref: WP08	£120	£100

International Journal of Maritime Engineering (IJME)

2011	*Members Part Ref: IJME11 Set Ref: ST11*	**Part A1** £13	**Part A2** £13	**Part A3** £13	**Part A4** £13	**Set** £37
	Non-Members Part Ref:IJME11 Set Ref: ST111	**Part A1** £20	**Part A2** £20	**Part A3** £20	**Part A4** £20	**Set** £68

International Journal of Small Craft Technology (IJSCT)

2011	*Members Part Ref: IJSCT11 Set Ref: SS11*	**Part B1** £13	**Part B2** £13	**Set** £25
	Non-Members Part Ref: IJSCT11 Set Ref: SS111	**Part B1** £20	**Part B2** £20	**Set** £37

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

Payment Details: Payments must be made in pounds sterling to **RINA** by sterling cheque drawn on a UK bank, International Money Order or Credit Card, we accept Visa, Mastercard, or AMEX.

I enclose a cheque for _____ payable to RINA.

Please charge my Credit Card No: _____

Expiry date: __/__/__ Security code: _____ Signature: _____

Print name: _____

Name: _____

Address: _____

Country: _____ Postcode: _____

Tel: _____ Fax: _____ Email: _____

Please allow 30 days for dispatch and delivery. Post to:

The Marketing Department, RINA, 10 Upper Belgrave Street, London SW1X 8BQ, UK.

Tel: +44 (0)20 7235 4622 or **Fax: +44 (0)20 7259 5912.**

ORDER FORM

Please send me the following:

REF:NA/Feb11

REFERENCE	QUANTITY	PRICE
	TOTAL:	

For a publications catalogue please call the Publications Department on
+44 (0)20 7235 4622 e-mail: publications@rina.org.uk or visit our website at http://www.rina.org.uk

February 23-24, 2011
Design & Operation of Passenger Ships, international 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

March 1-3, 2011
Asian Work Boat 2011, international conference, Singapore.
Contact Baird Events, 135 Sturt Street, Southbank, Melbourne 3006 Australia.
Tel +61 3 9645 0411
Fax +61 3 9645 0475
E-mail marinfo@baird.com.au
www.bairdmaritime.com

March 2-3, 2011
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

March 14-17, 2011
Cruise Shipping Miami, international **conference, Miami, USA.**
Contact UBM International Media, 212 Carnegie Center, Suite 203, Princeton, NJ 08540, USA.
Tel +1 609 759 4700
Fax +1609 759 4774
www.cruiseshippingmiami.com

March 21-24, 2011
Gastech, international conference, Amsterdam, The Netherlands.
Contact dmg: events, Northcliffe House, 2 Derry Street, London, W8 5TT, UK.
Tel +44 203 180 6574
Fax +44 203 180 6550
E-mail info@gastech.co.uk.
www.gastech.co.uk

March 22-23, 2011
Developments in Marine CFD, international 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

March 23-26, 2011
Europort, international conference, Istanbul, Turkey.
Contact NTSR International Fair & Convention Organisations, Ekinciler Cd. Ertürk Sk. M. Özçelik İş Merkezi No:5 Kat:3 34810 Kavacık, İstanbul, Turkey.
Tel +90 216 425 63 00
Fax +90 216 425 63 02
E-Mail info@europort-istanbul.com
www.europort-istanbul.com

April 7, 2011
Managing Reliability and Maintainability in the maritime industry, international 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

April 12-14, 2011
Sea-Asia, international conference, Singapore.
Contact Seatrade, 42 North Station Road, Colchester, UK.
Tel +44 1206 545121
Fax +44 1206 545190
E-mail events@seatrade-global.com
www.sea-asia.com

May 2-5, 2011
OTC, international conference, Houston, USA.
Contact Offshore Technology Conference, P.O. Box 833868, Richardson, Texas, 75083-3836 USA.
Tel +1 972 952 9494
Fax +1 972 952 9435
E-mail OTC@experient-inc.com
www.otcnet.org

May 5-6, 2011
Design, Construction & Operation of Super and Mega Yachts, Genoa, Italy.
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

May 10-13, 2011
Basic Drydock Training Course, 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

May 17-19, 2011
IMDEX, international conference, Singapore.
Contact Singapore Airshow & Events Pte Ltd, Changi Airport Post Office, PO Box 1053 Singapore 918156.
Tel +65 6542 8660
Fax +65 6546 6062
E-mail sales@imdexasia.com
www.imdexasia.com

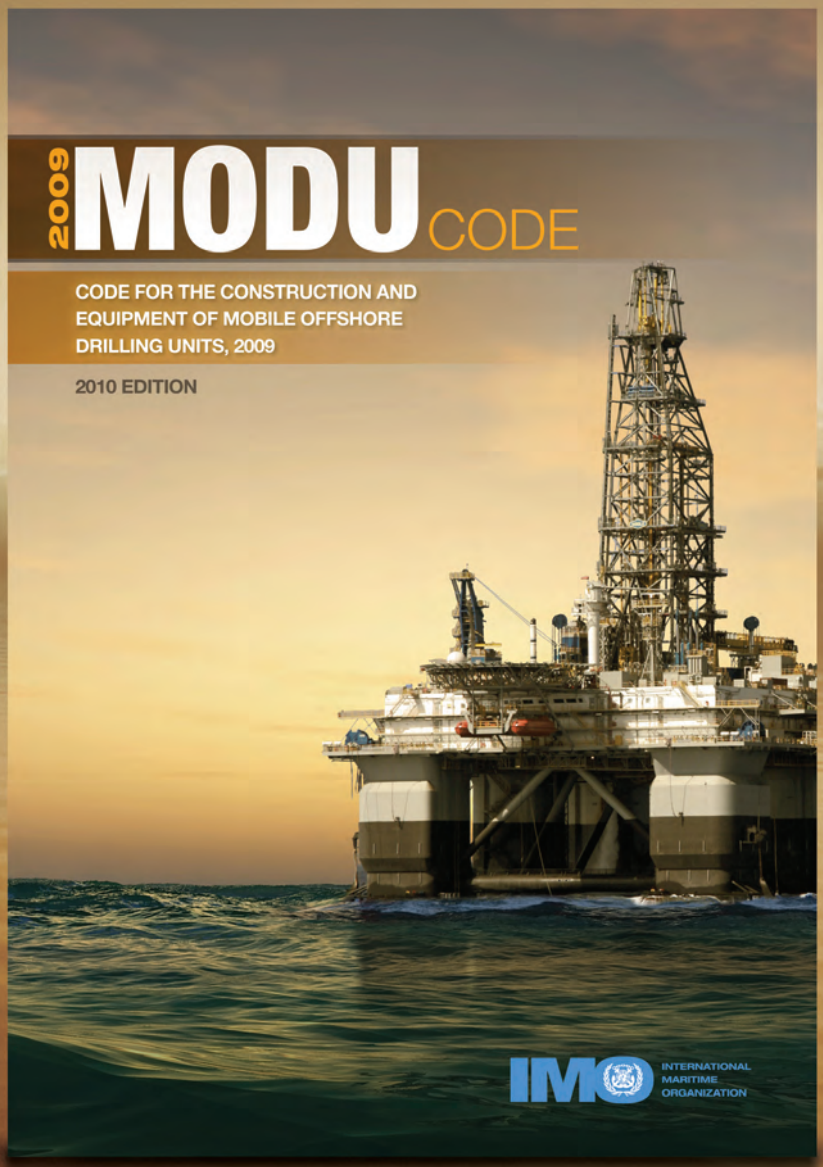
May 18-20, 2011
Ship Manoeuvring in Shallow and Confined Waters, international conference, Trondheim, Norway.
Contact Conference Department, RINA, 10 Upper Belgrave Street, London, SW1X 8BQ, UK.
Tel +44 20 7235 4622
Fax +44 20 7245 6959
E-mail conference@rina.org.uk

May 24-27, 2011
Nor-shipping, international conference, Oslo, Norway.
Contact Norway Trade Fairs, P O Box 75, Messeveien 8, N-2004 Lillestrøm, Norway.
Tel +47 66 93 91 00
Fax +47 66 93 91 01
www.messe.no

May 25-26, 2011
Design and Operation of Tankers, international conference, Athens, Greece.
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

2009 MODU CODE

2010 EDITION



IMO INTERNATIONAL MARITIME ORGANIZATION

PUBLISHING

visit www.imo.org for your local distributor


Partnership
From the day your ship is ordered, our team of experts will be there to make sure everything is done right. A safe ship is a partnership, and we'll be with you every step of the way.
We're your partner in safe shipping.
ClassNK
www.classnk.or.jp