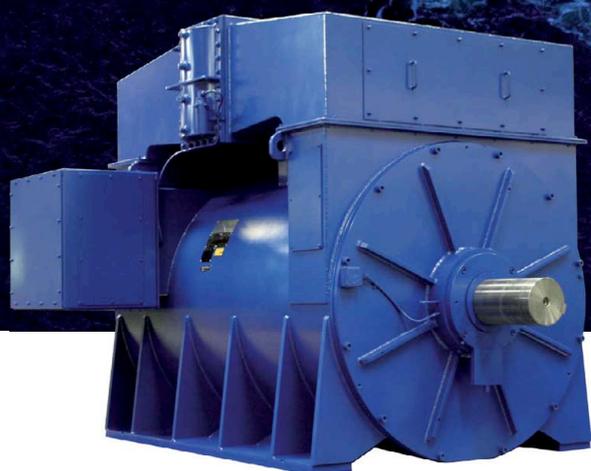
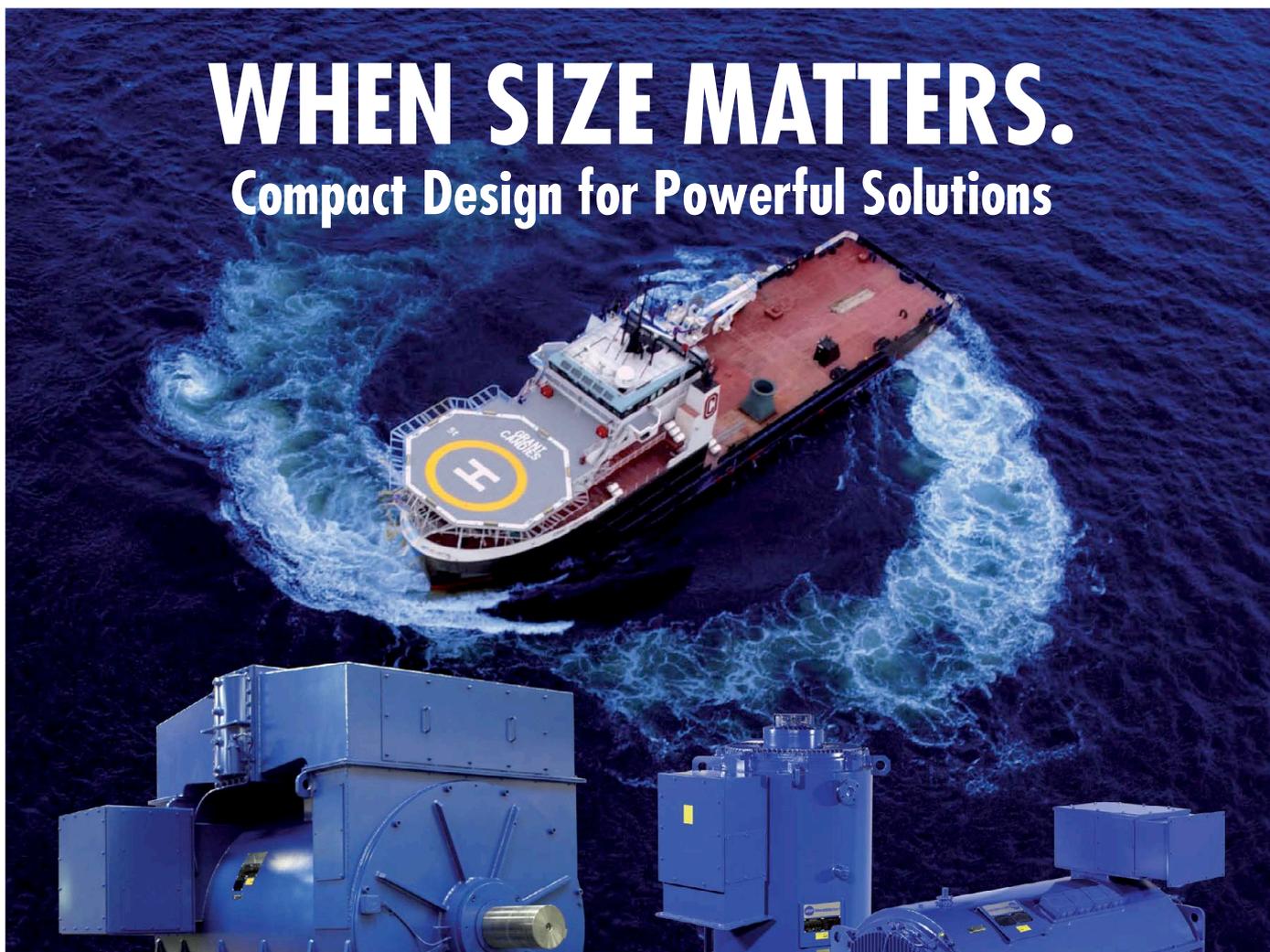




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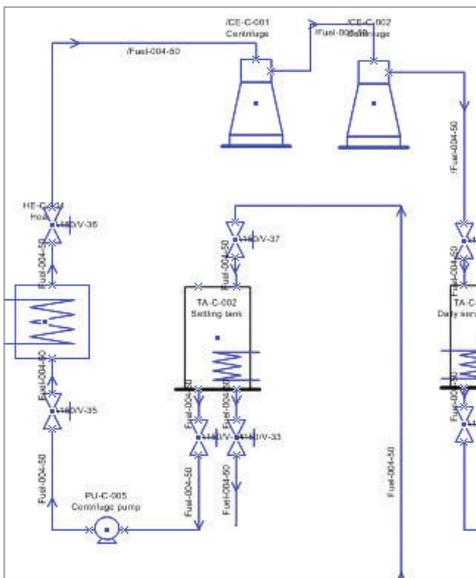




ENGINEER

DESIGN

MANAGE



Undefined	cyan
Information	yellow
OK	green
Accepted Difference	cyan
Check Required	limegreen
Warning	yellow
Minor Error	yellow
Member Attribute Diffe	orange
Attribute Difference	orange
Sequence Difference	orange
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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
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Printed in Wales by Stephens & George Magazines.

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A 2013 subscription to *The Naval Architect* costs:

	12 Months	24 Months	36 Months
Inland	£163	£282	£407
Europe	£170	£297	£424
Overseas	£182	£318	£457

Average Net Circulation 10,574
 1 January to December 2011
 ISSN 0306 0209



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Dream on

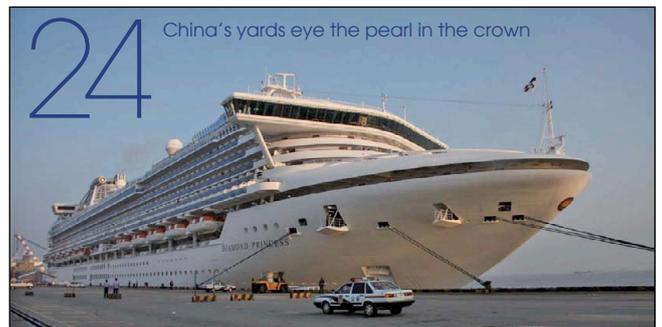
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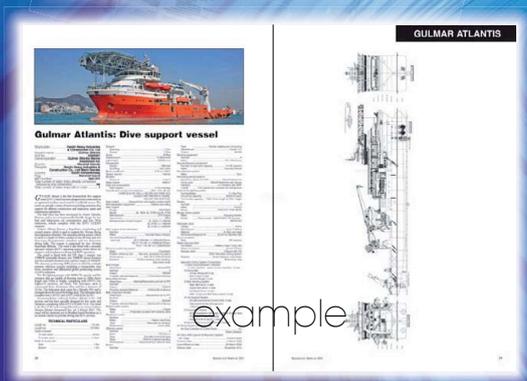
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The Royal Institution of Naval Architects published the 23rd edition of its annual **Significant Ships** series in February 2013. Produced in our usual technically-orientated style, **Significant Ships of 2012** presents approximately 50 of the most innovative and important commercial designs delivered during the year by shipyards worldwide. Emphasis is placed on newbuildings over 100m in length, although some significant smaller cargo ships, fast ferries and offshore vessels are considered, including a cross-section of ship types, with each vessel being either representative of its type or singularly significant. Each ship presentation comprises of a concise technical description, extensive tabular principal particulars including major equipment suppliers, detailed general arrangement plans and a colour ship photograph

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World NAOE Forum 2013 & International Symposium on Marine and Offshore Renewable Energy



Organized by
The Japan Society of Naval Architects and Ocean Engineers
and The Royal Institution of Naval Architects

28–30 October 2013 - The Sasakawa Hall, Tokyo, Japan

Prospectus

As carbon dioxide emitted from fossil fuels has been found to be the major cause of ongoing global warming, renewable energy is now receiving more attention. Various possible candidates for renewable energy—other than solar or wind energy, which are currently at the forefront of renewable energy options—that could be extracted from the ocean are also being re-evaluated.

This trend has been further accelerated because of the Fukushima nuclear power plant accident. Several national projects that focus on the development of ocean energy commenced last year in Japan. Surrounded by vast oceans, Japan has great potential to utilise ocean energy. This should also hold true for the United Kingdom, which is surrounded by oceans as well. Actually, in the U.K., the development of ocean energy has been extensively carried out.

Under these circumstances, the Japan Society of Naval Architects and Ocean Engineers (JASNAOE) and the Royal Institution of Naval Architects (RINA) will organize the World NAOE Forum 2013 & International Symposium on Marine and Offshore Renewable Energy in October 2013. We believe the Forum and Symposium are well timed and thus contribute to the promotion of the use of ocean energies not only in Japan and the U.K. but also in other countries.

*Steering committee chairman
Hiroshi Kagemoto, Prof., The University of Tokyo*

Forum & Symposium Content

- 1) Projects in recent years in Japan, East-Asia, and EU countries
- 2) Devices, systems, and technologies of marine and offshore renewable energy
- 3) Vessels for installation, support operation, and removal stage
- 4) Mooring equipment for floating systems
- 5) Other topics

Supporting Organisations

Ministry of Land, Infrastructure, Transport and Tourism, Japan. ClassNK, Lloyd's Register, ABS, Bureau Veritas, Det Norske Veritas, Germanischer Lloyd

Further details may be found at www.rina.org.uk/MORE_Symposium.html

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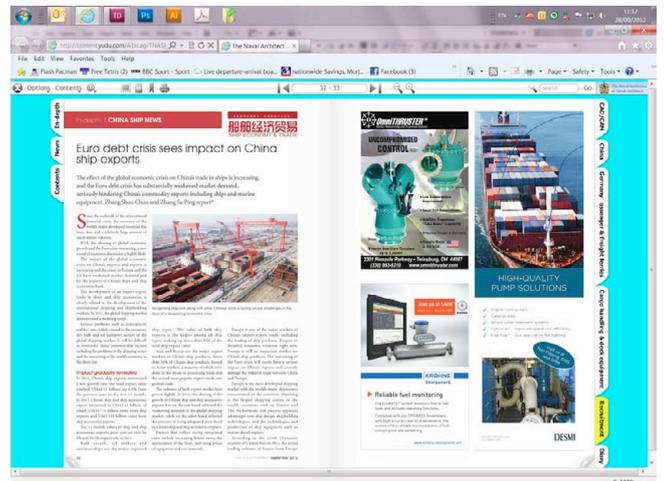
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24-26 September 2013 | Busan | South Korea

The 16th International Conference on Computer Applications in Shipbuilding (ICCAS) will review operational experience from existing computer applications in the design and build of ships and offshore structures and will cover a full range of topics including; CAD, CAM, integrated systems, knowledge management, simulation and virtual reality applications, etc.

It will also examine the advances in Information Technology which have contributed to increased productivity in both shipbuilding and maritime operations; including increasing co-operative working between shipyards, marine equipment and system manufacturers, engineering partners and shipping companies.

These conferences attract a large international audience and provide a excellent forum for both those developing and using computer applications in shipbuilding.

Call for Papers

Please send us an abstract of about 200 words before the 24th of February in order to begin the reviewing process. The successful papers will be related to the research, development and application of information technology in shipbuilding and will focus on the following subjects:

- **EARLY DESIGN**

Concept design, tendering, initial design, general arrangement, cost & work estimation, hull form, hydrodynamic analysis & basic structural design, risk based design

- **DETAILED AND PRODUCTION DESIGN**

Structure, machinery, hull and outfitting

- **FUNCTIONAL DESIGN**

Capture and management of systems diagrams and schematics with 'intelligence'. Identification and consolidation of diagram contents for comparison with physical design layout. Verification that detailed design meets functional design specifications and intent.

- **PARTS MANUFACTURING & ASSEMBLY**

Prefabrication, shop automation, robotics, assembly & accuracy control

- **MATERIAL MANAGEMENT: Material control, supply chain management, logistics & e-solutions**

- **MANAGEMENT OF SHIPBUILDING PROJECTS**

Planning, work-flow analysis, PDM & ERP applications, Management of co-operative working between different actors in shipbuilding projects, e.g. shipyards and equipment and systems manufacturers.

- **PROCESSES: Life cycle management. Design and/or manufacturing processes and their use. Systems engineering. Multi-functional processes with progressive information capture and sharing.**

- **COMMISSIONING, INSPECTION AND MAINTENANCE**

Life-cycle maintenance, lifecycle cost management, environmental cost management, parts & systems reliability, inspection standards & risk management inspection standards, risk management & security

- **DATA MODELLING: Each stage of design, build and operate cycle. Shared environments (multi-company or multi-site). Long term data capture and management**

- **INNOVATION, INNOVATION MANAGEMENT AND INNOVATION IMPACT ASSESSMENT**

New materials & eco design

- **INDUSTRY / ACADEMIA**

Working partnerships between universities and industry. Developing solutions by academia for practical application to design and/or manufacture

- **SKILLS MANAGEMENT, KNOWLEDGE TRANSFER AND OTHER HUMAN RESOURCE ISSUES: Artificial Intelligence, Knowledge-based systems, Acquiring, retaining and sharing knowledge. Capturing the experience and skills of the workforce for younger engineers.**

- **SIMULATION, VIRTUAL ENVIRONMENTS and GAMING TECHNOLOGIES: Use in design, manufacturing, productivity, safety, human factors etc**

Papers should focus on advances made in information and communication technology with respect to methods, tools, standards and organisational adaptations in the different application sectors of the shipbuilding industry. Where appropriate, papers should also describe the potential impact of the innovation described to productivity improvements.

Abstract submission deadline: 24th February 2013

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Dream on

Hopes of a shipbuilding recovery this year are already fading as overcapacity and record deliveries counterbalance the effects of record scrapping

Hope that the Narnia-style winter that has enshrouded shipping since the economic crisis kicked in 2008 would finally loosen its grip appear to be receding. European demand is flat while the US growth remains below expectations.

According to the Organisation of Economic Cooperation and Development (OECD) the global economy is showing signs of weakening again. "Over the recent past, signs of emergence from the crisis have more than once given way to a renewed slowdown or even a double-dip recession in some countries. The risk of a new major contraction cannot be ruled out. A recession is ongoing in the euro area. The US economy is growing but performance remains below what was expected earlier this year. A slowdown has surfaced in many emerging market economies, partly reflecting the impact of the recession in Europe."

Growth in demand in the mature economies is essential in order for the developing countries to maintain their growth. Trade also means demand for shipping services and at present the contraction over the last five or so years has left a surplus of capacity with the ordering boom that took place before the global crisis still being delivered following the delays in construction agreed by owners and yards to try and weather the economic storm.

According to shipbroker Braemar Seascope: "The best case scenario

for shipbuilders is for ship finance liquidity to return and for a cut in Chinese overcapacity. There needs to be renewed interest in eco-designs and ships with options such as LNG or ballast water treatment systems and then possibly any increased demand will support pricing from the shipyards' point of view," says Braemar Seascope.

Braemar added that the worst case scenario is a continuation of the slump that will depress freight rates and stymie newbuilding orders, extending "the low point in the contracting cycle" and adding to the cash flow crisis.

That means "Investors are unlikely to invest in new tonnage this year without a fair prospect of economic return even if there is a short term recovery in freight markets, with many believing more needs to be done to encourage a return in confidence in the newbuilding sector," added Braemar.

One sector sums up the calamity facing the industry as a whole. The bulk sector suffers from the acute overcapacity that will stifle demand for new ships. Clarksons reports that capacity in the bulk sector will expand at double the rate of demand in 2013. Some 8% growth in capacity will be met with a meagre 4% growth in demand. "That equates to a surplus of 411 Panamax-sized vessels, more than last year's 404," reports Bloomberg.

Higher scrap prices should encourage owners to renew their fleets admits Braemar, but: "the ongoing credit

crunch and weak freight markets are reducing the economic life of today's ships, which are now depreciating to scrap value in their teenage years or early twenties," says the broker.

Newbuilding prices tend to follow demand with input costs only providing a floor which can be broken through. When ship orders decline to less than around 18 months of work, shipyards start to discount prices in an effort to gain a competitive advantage.

However, Braemar says yard prices are showing signs of reaching a nadir. "There is far too much shipbuilding capacity out there. 2012 was the peak delivery year since the mid-1970s. So it is a question of who will blink first?" asks the broker.

Scrapping of all ship types increased 35% to record levels in 2012, totalling 63million dwt from 412million dwt in 2011. Older tonnage tends to be less fuel efficient and this will have an effect, yet as scrapping increases the payments for scrapped ships fall, making it a less attractive option. Bloomberg reports a decline in scrap prices of 13%, year-on-year, for bulkers, down from US\$490/tonne to US\$425/tonne.

This means that any recovery in the shipbuilding sector is looking very shaky indeed. Those heady pre-2008 ordering days are now a distant memory and any hopes of a return to levels that are even close to those days are a pipedream. *NA*

BWTS

Tripartite concern on BWTS Convention

Shipowners, builders and classification societies' associations have voiced their concerns over delays to the ratification of the Ballast Water Treatment System (BWTS) Convention and the "serious shortcomings" in the type-approval process.

Meeting in Korea in late December delegates at the Tripartite meeting agreed that the slow ratification process has meant that implementation programme deadlines will have been passed by the time the convention comes into force.

In a joint statement the associations pointed out that, "the fixed timeline for implementation has passed without entry into force it means that, as soon as the BWTS Convention does meet its ratification criteria, thousands of ships will need to be fitted in a very short time."

According to the associations the maritime industry has attempted to meet the convention's requirements, but equipping all 70,000 ships in the world fleet was always going to be a challenge.

The BWTS Convention "will put unattainable demands on ship repair facilities, engineering capabilities and on the relatively small number of manufacturers that have developed suitable treatment equipment"

In addition the tripartite meeting said there were considerable problems with the certified performance criteria of new treatment equipment which "seems to fall short of testing requirements that may be applied by port state control authorities".

The meeting agreed that: "We note that IMO decided not to reopen the G8 guidelines but asked BLG 17 to look into certification guidance on the G8 guideline with the aim of providing greater clarity on the operating conditions in which BWTS are expected to operate. Factors to be taken into account include seawater salinity, temperature and sediment load, as well as operation at flow rates significantly lower than the rated treatment flow rate.

Member states were also asked to provide case studies with evidence of BWTS failures, with the aim of identifying areas of weakness within the approval process.

Cruise

Third Oasis class ship ordered

Royal Caribbean International (RCI), a subsidiary of Royal Caribbean Cruise Lines (RCCL) has ordered a third Oasis class cruise ship from STX France which is due for delivery in 2016 with an option for a fourth ship to be delivered in 2018.



At 361m long and 66m wide *Oasis of the Seas* (pictured) and *Allure of the Seas* are the largest cruise ships in the world. They span 16 decks, encompass 225,282grt and can accommodate 5,400 guests at double occupancy.

Both *Oasis of the Seas* and *Allure of the Seas* were built at STX Europe's Turku yard in Finland, but the next two vessels will be the biggest vessels built at STX's Saint Nazaire facility in France. Some 10 million working hours over more than three years started last month, while production is planned to start in September this year.

Meanwhile, Italian shipyard Fincantieri has agreed to buy a 50.75% share of the offshore vessel producer STX OSV, from the Holding company, STX Europe for €455 million (US\$ million).

The deal is expected to be finalised in the first four months of this year and once the sale of the stock is confirmed Fincantieri will buy the remaining shares, bringing the total price to total payment for the company to €900 million (US\$ million).

Fincantieri says that it will finance the acquisition from its own resources and with a syndicated loan from a number of banks, including Banca IMI, BNP Paribas, Carige and Cassa Depositi e Prestiti as a lender guaranteed by SACE.

Listed on the Singapore Stock Exchange STX OSV produces support vessels for the offshore industry. Its 10 yards, five in Norway, two in Romania, One in Vietnam and one in Brazil with another under construction, have an annual turnover of €1.6 billion (US\$ billion) with pre-tax earnings of €190 million (US\$ billion). At the end of the third quarter of last year the order backlog stood at €2.1 billion (US\$ billion).

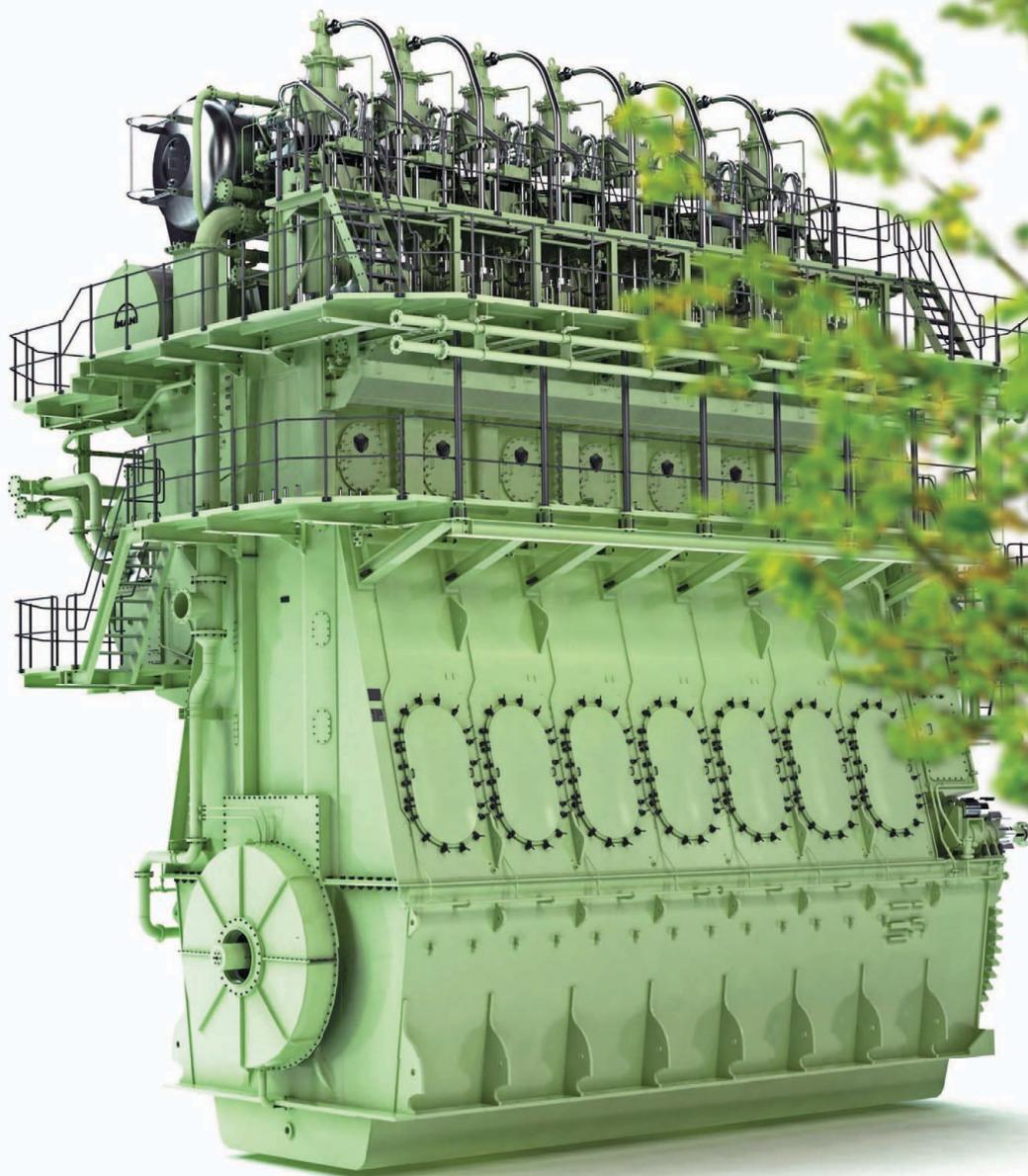
Newbuilds

Finns seal chem tanker design deal

Naval architects Deltamarin of Finland has been contracted by Stolt Nielsen to design a series of five 38,000dwt parcel tankers.

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The ships will be built at the Hudong-Zhonghua yard in China and will have 43 stainless steel tanks that will give a total cargo volume of 44,000m³ and will meet MARPOL Annex I and Annex II requirements and comply with the common structural rules for tankers.

The ships, measuring 185m long and 32.26m wide, will be based on the B.Delta bulk carrier hull form and propulsion design. This will give the vessels a “substantial improvement” in fuel consumption. “With a relatively shallow draft when fully loaded, the ships will consume significantly less fuel compared with existing parcel tankers,” claims the designer.

Adding that the design with its fully stainless steel cargo tanks, cargo pumps, heating and cooling capacity will offer operational flexibility to the owners, allowing them to handle the full range of cargoes that Stolt Nielsen normally carries.

Markku Kanerva, director of sales at Deltamarin says: “The preliminary model tests confirmed the performance and further optimisation will be carried out with the final propulsion arrangement. Development of structural configuration to meet the Common Structural Rules and to optimise the amount of stainless steel has been a demanding task.”

Market Economics

No loosening of maritime winter’s grip

Shipping consultants Moore Stephens says that the industry will continue in its attempt to accelerate the rate of scrapping.

“Despite record scrapping levels in the past twelve months, there still exists a considerable gap between the volume of newbuilding deliveries coming onto the market and both the amount of tonnage scrapped and the availability of suitable demolition facilities,” says the consultant.

Even with a significant supply ‘hangover’ in most of the major maritime sectors some owners are considering their ordering options. Moore Stephens reports that one owner believes that, “Global tonnage oversupply is irrelevant. It isn’t, but the fact remains that now is a good time to build eco-friendly ships at reasonable prices for which there will be strong demand in the future.”

Should owners follow this lead there may yet be some ordering in spite of record deliveries into a stagnant global economy, where demand is anaemic at best, over the last three years.

Furthermore, the consultant warned: “Expect vessel values to fall further in 2013, last year having closed with a VLCC selling for the lowest price since the mid-90s. The danger is that each successive fall creates

a new benchmark. Expect also further increases in the cost of regulatory compliance.”

Regulatory compliance will most likely include the Ballast Water Convention which will enter into force 12 months after the IMO ratification conditions are met, and that process is nearing its end. “Owners need to be thinking now about where the money for retrofitting – and it is a lot of money – is coming from.”

The consultants also forecast that the banks will tighten their grip on shipping finance restructuring debt in the face of deteriorating debt-to-equity ratios in the face of a challenging market where operating costs will increase, but incomes will stagnate.

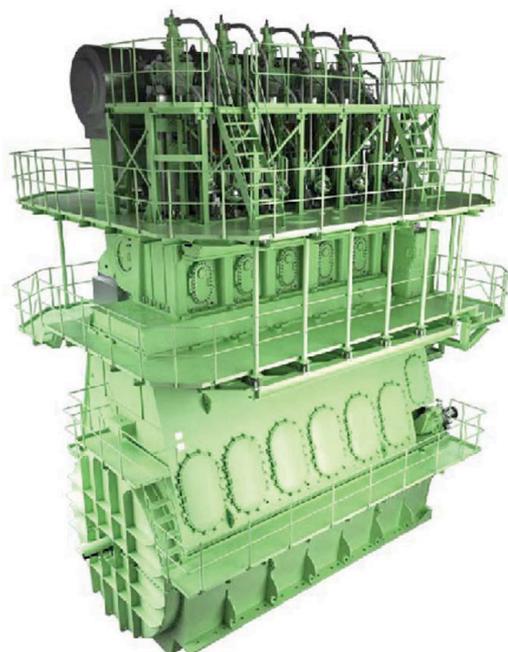
Engines

DF engines for Teekay LNG ships

Canadian-based operator Teekay has placed an order for two 173,400m³ LNG tankers with an option for a further three similar ships with Daewoo Shipbuilding and Marine Engineering. The first two ships will be delivered in 2016 and they will be powered by the latest MAN B&W ME-GI dual Fuel super long stroke engines.

Teekay CEO Peter Evensen says: “The newbuildings will be constructed with M-type, electronically controlled, gas injection (ME-GI) twin engines, which are expected to be significantly more fuel-efficient and have lower emission levels than other engines currently being utilised in LNG shipping.”

The 5G70ME-GI engine

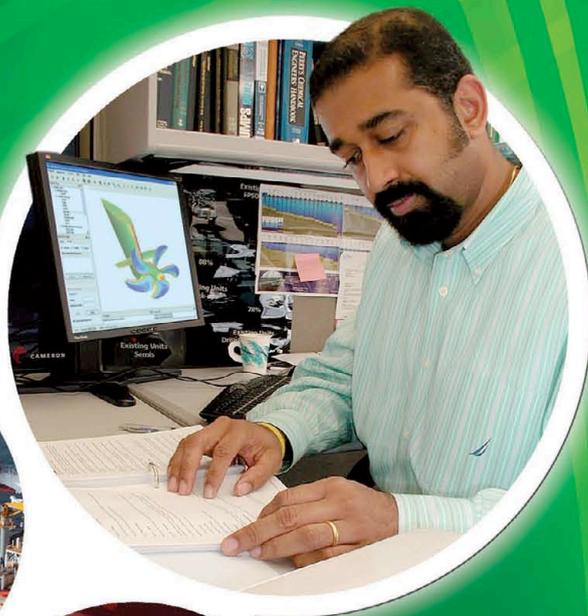


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DNV and GL, a class act

In the wake of December's announcement by Norwegian class society DNV and the Hamburg-based GL that the companies will merge, the CEO of the newly created DNV GL Group ((DGG), Henrik Madsen told *The Naval Architect* that the new company will spend 5% of its US\$3.34 billion revenues annually on research and development, writes *Nick Savvides*.

According to Madsen DGG will be well placed to compete with other class societies as shipbuilding and other activity develops. "We don't think that the crisis [in shipping] will last, by the end of 2013 or 2014 there will be more activity because many ships that were ordered previously have now been delivered, so there will be a return to a more sustainable shipbuilding approach. Offshore businesses will continue to order floating LNG carriers, OSV's, gas carriers and we expect container shipping to start again by the end of this year."

Expectations of a return to a "more normal ordering situation" reveals an expectation from the senior DNV and GL management that the global economic crisis will also ease, fuelling greater demand for shipping. If the Germans and Norwegians are correct then the timing of the merger will be opportune with a combined GL and DNV well placed to take advantage of growth in the market.

The merger of what is essentially a heavyweight and a middleweight class society has created a super group

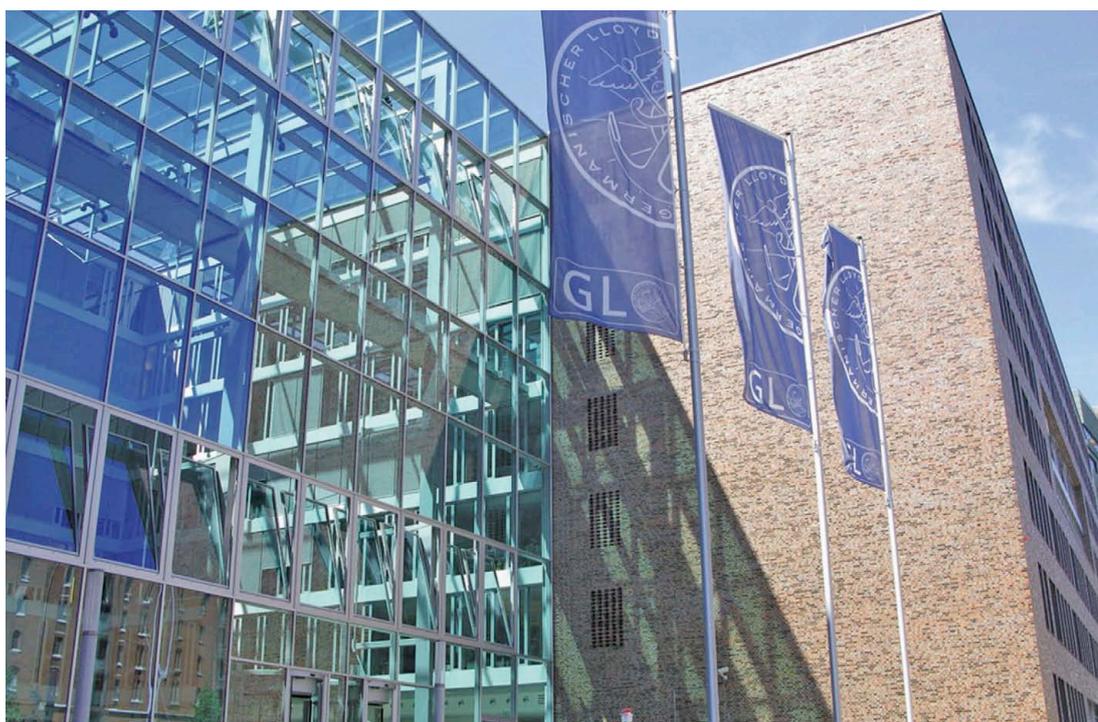
that eclipses all other competitors in the classification field and the collaboration is the first of its kind between class societies. Integration of the two groups, however, cannot start before the green light is given in all of the jurisdictions in which DGG will operate, a process that could take several months according to a DNV media spokesman.

Madsen says that the merger will create a highly competitive entity: "Certainly in the class industry it will be a very powerful company, but this was a natural fit," he claims. In fact the two companies had attempted to co-operate on two previous occasions, the first in 1999 when discussions were around creating an "alliance similar to that found in the airline industry. And in 2006 DNV made an offer to buy GL, but its current owner, Mayfair, won the bidding process.

Since those heady, pre-economic crash days the two class societies have been investing in research and development that will allow them to offer improved services to customers. According to Madsen, much of this research was overlapping work such as research into LNG as a fuel and designs for more efficient hull forms.

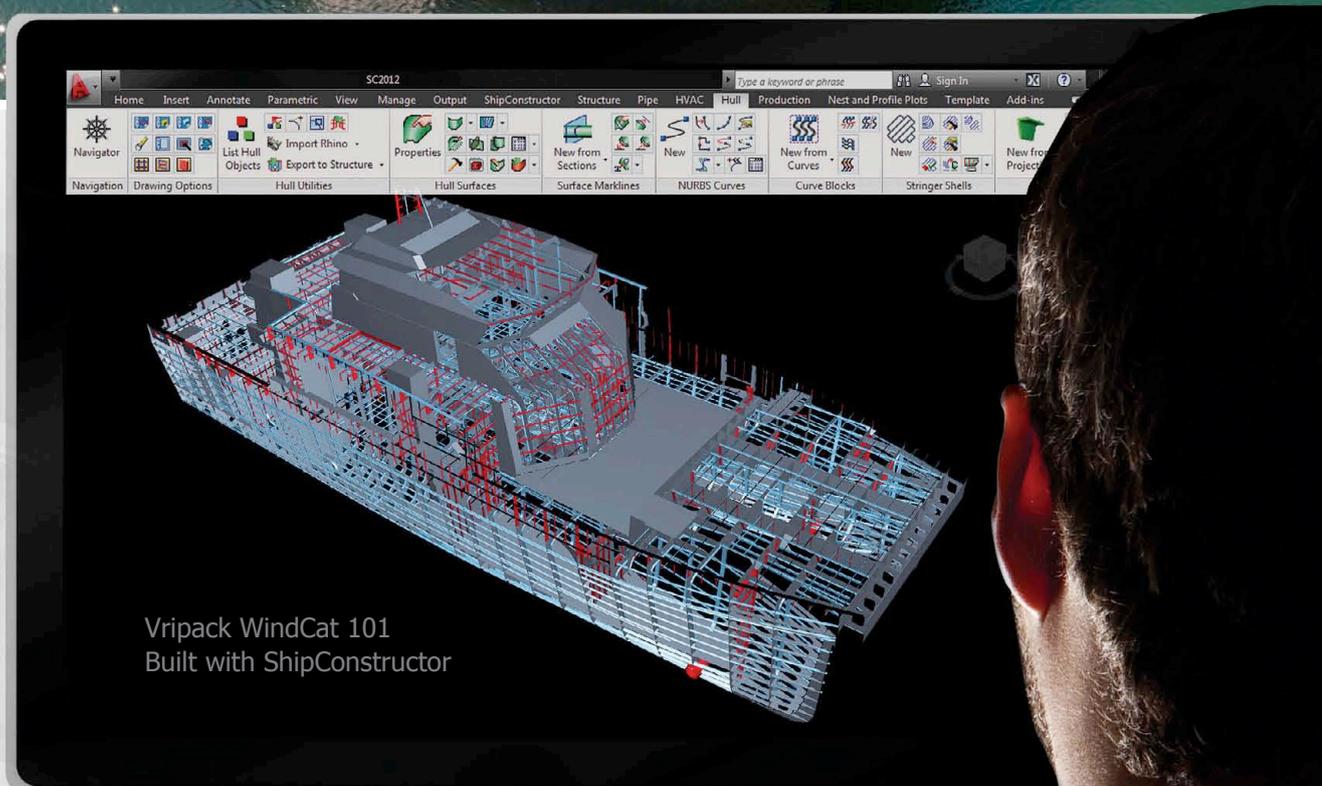
Instead of "duplicating research and development the process can be far more efficient now," says Madsen. With the merged company the R&D budget will stretch further because the two companies will no longer engage in similar research making the

Germanischer Lloyd's new office building in Hamburg could be the home for DNV GL Group's new Maritime Division



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DNV CEO Henrik Madsen says the newly merged DNV GL Group will be ready to compete in an improving market

use of R&D funds more cost effective; but also the increased turnover will see the annual research budget, set at 5% of its annual revenues, increase to around US\$167 million.

Both class societies were active in research on environmental requirements for shipping as well as the use of LNG as a fuel, while both organisations have looked closely at developing more efficient hull forms. “GL and DNV have a high focus on innovation and so the fit with GL is very good,” explained Madsen.

In addition to the collaboration on research and development Madsen says that the two class societies complimented each other in other ways, for example GL’s maritime division has a focus on multi-purpose and container ships, whereas DNV has many more tankers and offshore vessels on its books.

The combined tonnage on the DGG books will be around 260 million grt, significantly higher than

Erik Van der Noordaa, current chairman of GL’s executive board and CEO, could be in line to head up DNV GL Group’s maritime division



ClassNK’s total of around 220 million grt and ClassNK recently claimed the mantle of world’s largest class society calculated by gross tonnage.

However, there will be costs involved in the integration of the two companies, mainly concerning the IT systems. Madsen explains that DGG will set aside between £100 - £200 million (US\$160 – 320 million) over the next three years to cover these integration costs which, include using a common IT platform, in this case DGG will operate on DNV’s Nauticus system, a common management platform and the creation of offices.

In fact DGG will be divided into four business units with the Maritime division based in Hamburg; the Oil & Gas division headquartered in Norway; Energy in The Netherlands and the Business Assurance sector operating out of Milan, Italy.

With the notable exception of CEO, key positions have not yet been allocated, but with the Maritime hub set to be in Hamburg, the current home of GL, Erik van der Noordaa, GL’s current CEO, appears to be a good bet for this position. DNV’s president Tor Svenssen has temporarily taken over DNV’s Asian operations, but his secondment to Asia is expected to end soon.

Madsen insists that all of the 17,000 staff currently employed will be needed and that there will be no redundancies. “Last year DNV recruited 1,500 people and GL recruited 500, we may slow down the recruitment, but there is no need for redundancies,” says Madsen.

In fact he went further to say: “We have a staff of well-educated people who need exciting jobs”. That will be offered through an expansion by DGG of its renewables and oil and gas sectors.

“After the Lehmann’s Bank shock in 2010 we reduced our staff by 500, but only 50 of those were forced, the others left through the natural turnover of staff,” explained Madsen. [NA](#)

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Environment

Danes call for inspiration

The Danish Maritime Authority is taking part in European network research and development for maritime technologies (ERA NET MARTEC) that will allow Danish Universities and research institutions to apply for means to develop maritime technologies. The network will be financed by the EU.

The goal of ERA-NET MARTEC is to establish a permanent network focusing on the development of maritime technologies through transnational calls for maritime technology programmes. The calls will typically be smaller than calls under the EU framework programmes for technological research and development and make it possible to develop more nationally focused projects.

All Danish universities, research institutions and companies can participate in the network. As regards to the financing of any Danish projects they will be able to apply to the Danish Maritime Fund, the Danish Agency for Science, Technology and Innovation, the Danish Business Authority and the Environmental Protection Agency, etc.

www.martec-era.net

Ancillary equipment

PSM expands its portfolio

PSM Instrumentation has expanded its TankView product portfolio by adding two mechanical marine tank level measurement gauge ranges. The HCG Hydrostatic Contents Gauge and the KD-LG tank level gauges will give the user a simple visual, low cost measurement of tank levels where the accuracy and electrical output of a level transmitter is not required.

The HCG self-powered hydrostatic contents gauge requires no external power source for operation and gives a continuous readout of the contents within a tank without the aid of batteries or hand pumps. Stainless steel sensor construction allows compatibility with common marine fluids such as fuel oil, seawater and bilge waste.

There are two KD-LG gauges in the range. Flat Glass Level Gauges (KD-FLG) are used when the liquid is opaque, commonly for measuring the levels in a liquid plus liquid interface. Suitable for low pressure applications with fluids such as fuel oil or lubricating oil, they are constructed using a transparent glass with a reflective layer behind.

Reflex glass level gauges (KD-RLG) are used when the liquid is transparent, commonly for measuring the levels of drinking water or boiler feed water. Constructed using a glass with a reflective layer behind, the light entering the gauge is internally refracted and lost where there is liquid present behind

the front glass, but conversely reflected back where there is no liquid present.

www.psm.co.uk

Propulsion

Humphree intercepts

Humphree has released its latest Interceptor system the HCS-5 (Humphree Control System 5). The HCS-5 system features a number of new components that are said to improve the dynamics of any vessel. The company says that the response to operator input is instantaneous and precise.

The system features its latest control panel featuring a high resolution colour screen that provides better readability for the user. Other features include an intuitive user interface, night mode and actual trim and list data presented in real time. The servo motors incorporate brushless technology and enhanced response time, which will also expand the products lifecycle the company claims.



Humphree offers better dynamics for users

The control unit has motion sensors which, provides power distribution to the servo motors. There are also tuned automatic control options for better response to hull dynamics. The automatic control options have also been renamed to better explain option functionality. The interceptors also feature additional design improvements and are available in a wide range of standard versions and fully customised units to fit any transom.

www.humphree.com

Propulsion

Steerprop receives orders from Russia and India

Steerprop Ltd. has received orders from the Severnaya shipyard in Russia and the Bharati shipyard in India for the latest generation ECO CRP propulsors. The combined value of these orders is approximately €10 million.

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Steerprop takes it propulsors world wide

The multi-purpose vessel ordered by the Russian Federation will be powered by two SP 120 ECO CRP –propulsors that will allow it to operate at speeds of roughly 18knots. The units have a power rating of 6,000kW per propulsor and will be classified according to the Arc4 ice class of the Russian Maritime Registry of Shipping (RMRS) classification authority. The vessel will be built in the Severnaya shipyard in Russia, where Steerprop Ltd. will deliver the propulsors in March 2014.

The technical multi-purpose vessel due to be built at the Bharat shipyard will be powered by two SP 60 ECO CRP propulsors, the first CRP propulsors sold to India. The units will have power rating of 5,000kW per propulsor. The vessel has been ordered by the Republic of India. The units will be delivered to the Bharati shipyard in autumn 2014.

www.steerprop.com

Navigation

ECDIS Workbook from Transas Marine

In response to the growing demand in ECDIS Training and in order to contribute to the knowledge improvement on ECDIS use, Transas Marine has published an ECDIS Workbook which can be used together with the Transas ECDIS demo software, both available for free download from the company's website.

The main goal of the ECDIS Demo Workbook is to provide the vessel's crew with knowledge, understanding and proficiency in the use of Navi-Sailor 4000 ECDIS and Chart Assistant Utility. The workbook is designated for nautical officers and other persons in charge of navigational tasks, and consists of theoretical and practice parts. Shipping companies can train their crews worldwide through the Transas Global ECDIS Training Network GET-Net.

www.transas.com

Ancillary equipment

Lankhorst stops Breakaway

Lankhorst Tipto Winchlines will be used as mooring ropes onboard Norwegian Cruise Line's, *Norwegian Breakaway*, when it comes into service in April 2013.

Currently under construction at German shipyard Meyer Werft, the 4,000 passenger ship will be the largest ship ever to call at its home port in New York City year-round.

All the Tipto ropes are dedicated floating ropes. The Tipto Winchline is a load-bearing 7- strand core combines high strength and low elongation. The winchline has a non-loadbearing braided cover which protects the rope and increases crew and guests safety by minimising the risk of snap-back. *Norwegian Breakaway* will utilise the Tipto Winchline with the A3 splice on the ship's mooring deck in addition to Tipto Eight support ropes.

"The combination of long life, safety, innovation and reduction of cost-of-ownership were key factors in our decision to utilise these ropes on *Norwegian Breakaway*," says Capt. Harvard Ramsoy, nautical superintendent, of Norwegian Cruise Line. "We find the ropes very reliable."

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Norwegian Breakaway opts for Lankhorst for its mooring solutions



Is the 1969 Tonnage Measurement Convention still relevant?

This month the 55th session of the IMO's Stability and Load Lines and Fishing Vessels Safety (SLF) Sub-Committee will scrutinise the latest proposals into the interpretation of the 1969 Tonnage Measurement (TM) Convention. Dr. Raphaël Baumler, and Dr. Aykut Ölçer of the World Maritime University, Malmö, Sweden, discuss the implications

Despite the well-known drawbacks and impacts on vessel selection, ship design and innovation, the TM Convention has never been amended. The main causes of this unfortunate situation are the absence of the tacit amendment procedures and the reluctance of some stakeholders to open what they consider to be a Pandora box.

Those same people tend to forget that, since 1969, shipping context and ships have profoundly changed and that a frozen convention may in the long term have destructive effects on ships and the industry's ability to evolve.

Today, the industry is facing a severe crisis. It is maybe the appropriate moment to undertake the opening of Pandora's Box in order to cope with the present context.

New era in shipping

Shipping is entering an unforeseen and uncertain era. Economic conjuncture and structural factors are merging; the aftermath of the 2008 crisis affects trade patterns and the global terms of exchange; the shipping crisis constructed during financial euphoria is accompanying the economic turmoil; the shortage of easy to extract fossil fuels has announced the end of cheap energy and is driving the increase of resources costs; the rise of environmental concerns has prompted to regulators to emphasise the negative externalities of the industry, promoting the polluter pays principle. For the industry, the mid and long term consequences should be: scarcity of financial resources for operational and investment purposes; and operating cost increases related to the growth of fuel and cost increases related to regulatory compliance.

While shipping and its innovations cannot directly drive the economic climate, shipping can and must anticipate the structural



Dr. Raphaël Baumler (left) and Dr. Aykut Ölçer (right), both Associate Professors at the World Maritime University, say that shipping economics and structural design are "merging"

changes ahead in order to prepare for a sustainable future.

The internalisation of environmental costs constitutes today's main structural challenge. This internalisation requires that the present fleet complies with unexpected norms; and new technologies and solutions through design have to emerge despite the lack of investment support.

The green washing of human activities is a worldwide tendency, which found its justification in the visible harmful effects of human activities on ecosystems as well as on individuals and societies. The actions and regulations to preserve ecosystem stability form an important paradigm shift and are set to influence business practices. Consequently, *the Imperative of Responsibility* claimed by the German philosopher Hans Jonas is not an option, but a present obligation. A growing number of environmental regulations materialise this obligation locally or globally.

Despite its relative historical and field independence, shipping deeply connects and

is connected to the world. Therefore, major social paradigm shifts affecting the world retroactively impact shipping.

Origins of a motionless system

Designed on ideas defined during the 17th century, TM based on enclosed volume calculation built a yardstick to evaluate ships' magnitude. It established a quantitative standard on which levies could be based.

In addition to its primary function of tax collection, tonnage serves, among other usage, to establish regulatory thresholds, determine the entry into force of conventions, and numerous other criteria. Today, multiple standards depend on the accuracy of the tonnage figures and the reliability of its calculation process. Therefore, this norm acquires a particular sensitivity in shipping and its economics. So, its modifications may affect numerous stakeholders and the business patterns.

The TM influences owners' choices in shipbuilding decision-making because,

with the present method, non-earning volumes are transferred into permanent costs. Consequently, the control of ship space during the design stage becomes a constraint restricting builders and naval architects' freedom. This constraining parameter affects design, which may have detrimental effects on vessels.

The measurement doctrine secures the link expenditure/volume. It was fixed in 1854 by the adoption of the Morsom's system. Each country absorbed the doctrine but the details of the Tonnage determination was nationally defined by interpretation and adjustment of the original system. Moreover, Flag administrations regularly fine-tuned the measurement process to promote local interests as well as to address weird designs and identified drawbacks.

Before the 1969 harmonisation, deductions and exemptions flourished and the tonnage measurement lost its uniformity. For example, the Merchant Shipping Act, 1867 introduced tonnage deductions to promote crew accommodation enhancement.

This example is particularly relevant because the issue of deduction for crew accommodation is under discussion at the IMO again since the submission of the Indian paper MSC 85/23/6 on berths for trainees and the German papers MSC 89/9/5 on deductions for crew accommodation.

In short, present discussions address issues, which found their solutions in the past. Today and despite the necessity, the international nature of the convention makes it more complicated to modify.

Before 1969, the multiplication of deductions and exemptions made the calculation increasingly complicated and affected fair competition. To restore the relevance of tonnage as a yardstick for shipping, an agreed international standard became a must. The 1969 Tonnage Measurement Convention concluded decades of negotiations. The Convention targeted two main goals: no impact on ship design that could hamper safety and/or crew well-being and the adoption of a simple system not affecting shipping economics.

Since the 1969 TM Convention (entered into force in 1982), two tonnage figures coexist: the Net Tonnage (NT) created to evaluate the 'useful capacity' or earning possibility of the ship and the Gross Tonnage (GT) expected to represent the 'overall size of

a ship. Most of the expenditures, thresholds and data collected on tonnage are using the GT because it represents the magnitude of the ship and is the largest figure on the certificate.

Computing the total enclosed space, the GT does not operate any distinction between ship's spaces. Two categories are distinguished: cargo and non-cargo spaces. The second category constitutes a net burden, costing without earning. Consequently, designers must propose ships shrinking non-cargo spaces in order to curtail the GT figure. Important volumes are reduced: safety spaces for equipment, stability and other safety related needs; accommodation and living areas; security spaces (e.g. citadel); working areas and workshops; storage places; mechanical & equipment locations; etc. This space hunting impacts the resilience of the whole ship.

Ship design is an iterative and sequential process which requires the consideration of multiple disciplines such as resistance, stability and so on. The main aim of a naval architect or a designer is to find a compromised solution, which maximises the performance and safety while minimising the life-cycle cost of a ship. However, due to the GT-based port charges, they are also tasked by shipowners to deal with another unnecessary objective which is to minimise non-cargo spaces. This might result in ships with low freeboard and reduced stability, unnecessarily compromising the inherent safety of the ship.

Unexpected conditions or the miscalculation of one element (e.g. wrong cargo declaration) may even drive the collapse of the whole structure and may result in the foundering or capsizing of ships.

The disaster of the *M.V. Dongedijk* represents the perfect illustration. After 44 years of existence, the convention fails to prevent weird, unsafe and uncomfortable ships. In addition to its inability to prevent adverse design, the convention fails to respond and mitigate its flaws. The lack of tacit amendment procedures impedes its evolution. The convention remains locked in the past and unable to accompany the dynamics of shipping.

One may praise this stability, arguing that this preserves a certain status quo because numerous criteria use GT or NT. Undeniably; stability features are required in an uncertain and deeply interconnected world because the

effects of the change may disturb and alter the economics and practices of the industry.

On the contrary, considering the mid and long-term effects of the tonnage measurement in association with the present context of shipping, others suggest opening the box in order to respond to present and future challenges. Four main reasons underpin this stance: safety and identified drawbacks cannot be neglected; the convention must evolve and its interpretation will not be sufficient to address the 1969 TM convention drawbacks; the maritime community needs a yardstick able to keep pace with the industry dynamics and; no such restriction should constrain a designer's freedom and innovation, particularly when the industry needs new ideas.

Innovation and shipping

Uncertain economics and paradigm shifts require innovative responses in shipping. Consistent solutions necessitate the consideration of present context and future trends including the regulatory instruments under development. Several regulations under discussion or adopted or recently entered into force demonstrate the need to develop integrated solutions.

Among the regulations deeply impacting the future of shipping, the environmental regulations occupy a key role. The Ballast Water Management Convention (BWMC) and the development of MARPOL Annexes I to VI impose the revision of the existing practices and to think of innovative design for the future.

To reach the performance standards set by the BWMC regulation D-2, the main stream is the development of Ballast Water Treatment Plants or Systems. To operate, the systems require piping and equipment, in short, additional space. What will be the effect of the BWMC on ships having insufficient enclosed spaces to retrofit treatment units? How to consider alternatives to treatment plants if all volume enhancements are disregarded?

To cope with tightening regulations on SOx, certain owners will consider scrubbers but, what about their long-term costs in terms of volume enhancement? The Second IMO GHG Study 2009 highlighted the importance of design for energy efficiency improvement. How to achieve such improvement when volumes cannot be expanded? Innovative

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hull design and equipment will probably have to be dismissed because they may impair the GT figure.

In addition to these environmental tools, other important instruments and principles must be considered. The GBS development should modify the ship design and building and will need to free innovation. The impending entry into force of the MLC2006 combined with the growing emphasis on the human element to enhance system-ship reliability will require appropriate design and ergonomics support.

These regulations and driving principles will enter into force and penetrate shipping during a severe crisis. In such a situation, the temptation to refuse change is high, but crisis may also prompt drastic changes and opportunities for innovators.

However, innovations need an appropriate environment to develop. While intelligence is a clear human characteristic, freedom and resources are framework-dependent. In this respect, the 1969 TM Convention seriously reduces freedom by obliging designers to imagine solutions not affecting GT or NT. Therefore, innovative ships requiring increased GT may be disregarded to preserve an unsuitable tonnage measurement system. Innovations – technical or social, require appropriate space to develop creativity thinking.

Today, despite the imperative need to explore new areas for shipping, the innovation stays trapped by ‘volume’ management constraint. The opening of the Tonnage Measurement box is a must for the sake of innovation and designer’s

freedom, which will drive the future of shipping so that shipping can still grow while meeting the challenges of the 21st century. **NA**

Main References:

Grey, M. (2005b, December 12). GT and safety; a fatal link. Lloyds list.
 IMO (2005). Review of 1969 Tonnage Measurement Convention. Submitted by Australia. MSC 81/23/7. London: Author.
 IMO (2011). Concept of a reduced gross tonnage. Submitted by Germany. (MSC 89/9/5). London: Author.
 IMO (2012). Short study on the 1969 TM Convention’s impacts on crew well-being, vessel safety, limitation on innovation and competition distortion. Submitted by ITF. MSC 90/INF.3 13. London: Author.



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China eyes window of opportunity to enter cruise market

Is the luxury cruise ship building market an unmissable opportunity for China's shipyards? Asks Li Sheng, from HIT Marine Company Ltd

China's shipbuilding industry has had some great achievements in the 30 years following the adoption of the nation's open door policy. The country's shipbuilding sector has evolved from one with an annual shipbuilding production volume of around 3 million dwt in the early 80s – which amounts to approximately the production volume in a year of South Korea's Hyundai Heavy Industries – to the largest player in the world in terms of shipbuilding production volume.

However, the economic downturn following the global financial crisis in 2008 has hit the shipping sector hard. Baltic dry bulk indices dived to a historic low of 647 in February 2012. The shipbuilding sector, as part of the lower chain in the shipping industry, has been struggling.

It was just delivery postponement in the beginning, but as demand continued to dwindle, more than 70% of the shipyards in China have received no new orders in 2012. A majority of Chinese yards will face a lack of orders in the second half of 2013 with no ship to build.

About 400 yards producing vessels of more than 10,000 tonnes that started building during the boom have halted production. As the recovery of shipbuilding companies usually lags behind the revival of shipping enterprises by half to one year, Chinese yards are expected to face a hard time in the coming two years.

Some private shipyards have relatively less capital investment and their owners do not have a long-term commitment to shipbuilding. The closing down of these yards would not have a big impact on the whole sector. However, the way that large state-owned shipbuilding enterprises and publicly-listed yards emerge from the dark is a pressing issue which has attracted much attention from China's authorities.

Questions are being asked. Such as whether China's shipbuilders should continue to compete with foreign yards



Diamond Princess first berthed at Shanghai in 2008

on the three major ship types and enlarge their market shares? Or should they compete for the high-end market? High-end products for shipbuilders include LNG tankers, marine engineering vessels and what is often called the pearl in the crown for shipbuilding industry - luxury cruise ships.

Japan and South Korea have mastered the technology for building LNG carriers; China has also grasped the technologies of building marine engineering ships. State-owned Hudong-Zhonghua Shipbuilding (Group) Company Limited is the first Chinese yard to build an LNG tanker. But, why is it that Chinese yards have yet to build luxury cruise ships? Are there technical barriers? Or have they just overlooked the opportunity?

Do the Chinese cruise?

Since the first cruise terminal in China was built in Shanghai's Beiwaitan in 2006, the cruise economy has continued to grow. Up to now, cruise terminals have been, or are being set up, in cities such as Dalian, Tianjin, Qingdao, Shanghai, Zhoushan, Xiamen, Guangdong, Sanya etc. According to unaudited statistics,

mainland China welcomed 718,000 travellers in 2011. As the economy booms, more Chinese tourists will choose to travel on luxury cruises.

Based on the experience of foreign countries, when GDP per capita reaches US\$6,000 or above, the cruise economy will thrive; it is estimated that the number of outbound Chinese travellers will reach 100 million by 2015. The standard estimate used in the US and Europe is that 5% of travellers will choose to travel on cruises. If that number is used in the Chinese market there would be a more realistic five million local Chinese tourists travelling on cruises by 2015; that equals the total number of European cruise travellers.

Moreover, cruise travel is a global business and cruise travellers in China will not be limited to local tourists. As China's influence grows and becomes more open, and since Beijing and Shanghai already allow tourists from 45 countries to stay in China for 72 hours without a visa, it has become more convenient for foreign tourists, especially those who plan to travel on cruises on their outbound journeys from China, to visit the country.

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According to statistics, the total size of the global luxury cruise market was US\$29.4 billion in 2011, up 9.5% from 2010; while the total number of travellers reached 19.2 million in 2011, up 4.1% from 2010. These figures show that the global economic downturn has had a limited impact on the luxury cruise sector.

Can China build cruise ships?

An overseas research institute has suggested that China has some advantages in entering luxury cruise ship market: Growth potential for the Chinese cruise holiday market is enormous with the wealthy class who are willing to travel expanding; China has a vibrant shipbuilding sector with a comprehensive accessories supply chain; the country has advanced manufacturing technology; and the integrated capability of Chinese shipyards is improving.

However, the country also has some disadvantages, such as the experience in design, construction, marketing, business operations and training.

There are three types of Chinese shipyards that are suitable to enter the luxury cruise building market. The first group is the state-owned large shipbuilding enterprises with strong technological know-how; the second group is publicly-listed capital rich shipbuilding companies; and the third group are conglomerates, especially those which operate both shipping and shipbuilding businesses and have the capacity to invest.

Given that these three yard groups have the potential to enter cruise shipbuilding market, why is it that Chinese shipyards have yet to build a luxury cruise ship? An answer could be found in the analysis of the characteristics of the shipbuilding sector.

First of all, shipbuilding is demand-driven. Unlike car manufacturing, a customer order is the prerequisite for shipbuilding. Shipbuilders usually design, produce and deliver according to the needs of customers, because shipbuilding is a highly tailor-made business, and that the building of a ship involves many components and the price of a single ship is high.

There have been cases of batch ship production when demand was high, but there has never been mass production in shipbuilding as in car manufacturing. Even for batch production, shipyards may install different components in vessels belonging to the same batch or alter the structure of later ships from a previous design of the same batch to improve functionality. Therefore, strictly speaking, no two ships are identical.

Second, shipbuilding has been moving from the west to the east. Modern shipbuilding began in the UK driven by the industrial revolution. The UK had the largest shipbuilding volume between the late 19th and the early 20th centuries – the country's shipbuilding volume once reached 60% of the world's total volume.

However, due to the appreciation of the pound and rising labour costs, shipbuilding volumes in the UK shrank. The US then replaced the UK as the leading shipbuilding nation during the Second World War. From the 1960s Japanese shipyards emerged and dominated the shipbuilding industry for 20 years.

Chinese yards aim to sail into the high end, high margin market with an assault on the cruise shipbuilding sector



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However, and again due to the appreciation of the Yen from the 1980s, Japan lost its advantage in the bulk ship and containership markets. Japan's market share has been eroded gradually by South Korea and later China. It is not difficult to see from this history that shipbuilding moves toward countries with lower production costs. Therefore, countries that are strong in shipbuilding must also be highly-industrialised and usually also play an important role in world economics during the same period of time.

Furthermore, the shipbuilding sector in a country tends to start with low-end products and move towards the high-end markets. A country with a booming shipbuilding sector will naturally face competition from other lower-cost countries. And it will then be forced to abandon the lower-end products and move to the high-end markets.

There are two main types of commercial ships; passenger carriers and cargo carriers. The safety and comfort standards of passenger ships are very high and thus the technology requirements for yards that build them are also high. However, the production of those high-end vessels has almost never been transferred or has been slow in being transferred to countries with lower costs.

European shipbuilding countries still dominate the construction of luxury cruises, as well as the research, design and manufacturing of key components; while the US is still the largest producer for military naval vessels. Although Japan has lost to China and South Korea in the bulk vessel market, it still occupies a very large market share in the large-scale offshore support vessel and LNG tanker markets.

Finally, the development of the shipbuilding sector in a country is limited by market demand and technological barriers. As explained above, market demand is a prerequisite for building ships. Shipbuilding companies can only build its expertise and achieve technological advancement based on market demand. Without market demand, shipyards will not invent new products. Shipbuilding enterprises will face many different technological barriers

while moving from the production of low-end products to high-end ship types. This is why most new comers start with building less complex vessels such as bulk carriers.

Based on the above analyses, it is not difficult to conclude that China needs to jump two hurdles to enter the luxury cruise market: commercial opportunity and technological barriers. Commercial opportunity means market demand. The key question is how can China turn opportunity into real shipbuilding orders? While the domestic and international shipbuilding markets remain sluggish, Chinese yards should actively participate in the research and development of luxury cruises.

In the past when there were plenty of new orders, shipyards would not invest in the development of luxury cruises liners. But, it is now a good time for established shipbuilding enterprises to enter this market. The major technological barriers are the dominance of the design, craftsmanship, construction and outfitting technology of luxury cruise ships by foreign, mainly European, countries. Chinese shipyards need to facilitate a knowledge transfer and this can be done through hiring foreign experts or sending their own men overseas.

Chinese shipyards will face the following problems when entering the luxury cruise market:

- How to manage the pipe work and cabling systems
- How to manage equipment suppliers with licence and master the outfitting of components
- How to grasp the outfitting and production technologies of thousands of cabins
- How to ensure steel plates remain unchanged when being cut and welded
- Whether to install floor plate to avoid deformation during section lifting
- Whether they need to consider how to smooth the joining of different machine parts while making ship sections
- How to negotiate with hundreds of subcontractors
- How to ensure products from vendors meet requirements
- How to minimise noise and vibration

in cruise cabins and other public areas, so as to avoid complaints from passengers

- How to measure the stability of vessels
- Whether workers have mastered the welding techniques for super-thin steel plates
- Have yards understood the requirements of classification societies, flag states and the US Coast Guard towards luxury cruise ships?
- Do yards understand thoroughly the requirements of US regulations regarding disability rights on cruises and that all cabins have to come with access for the disabled?
- How to verify fire test results for furniture and decorations?
- How to ensure hygiene and food safety onboard?
- Apart from passenger cabins, the crew cabins also need to fulfil the comparatively high standards of the western world
- Do yards understand the latest requirements of international ports for cruises?
- Do yards understand classification societies' latest requirements for cruises?
- Do yards understand the requirements of the International Labour Organisation for cruises?
- How do yards handle complex technical specifications?
- Do yards understand the differences between the signing of commercial cruise ship contracts and the signing of commercial cargo ship contracts?

The author believes that although the Chinese shipbuilding sector is facing an unprecedented crisis, it is also presented with a golden opportunity to enter the luxury cruise market. If the country does not grasp this opportunity, it may lose its leading position in shipbuilding as labour costs keeps rising and the Yuan keeps appreciating.

It may also become more difficult for China to enter the luxury cruise market. While the opportunity is there, it is the task of shipbuilders to seize it to maintain the country's leading position and help the country to become a dominant force in shipbuilding. **NA**

ANSYS Launches version 14.5

Engineering simulation software producer ANSYS launched the most recent version of its multiphysics software late in 2012. Spiro J. Pahos, ANSYS UK, explains what the latest update brings

ANSYS14.5 provides a great number of new and advanced features that bolster product performance and integrity through deeper design insight. The many new features in ANSYS 14.5, combined with ANSYS Workbench, deliver additional physics depth and breadth that can be scaled to meet the changing needs of customers.

Many enhancements focus on solving large models for all applications, with specific improvements that are applicable to marine and offshore-related problems. ANSYS Workbench users now have more options to prepare, submit and post-process their models with significantly improved robustness. General enhancements have been incorporated at all levels of systems analysis, promising high-fidelity simulation results and further reduction in pre-processing time.

Many improvements to the ANSYS structural mechanics software are pertinent to, but not limited to, marine and offshore applications are very briefly mentioned.

General and analysis enhancements

Large models (1000+ bodies), typical in marine structures, can be pre- and post-processed easier thanks to filtering and searching objects in the tree outline that reduce the size of the exposed branches according to matching terms. The terms can be based on the state of the bodies: suppressed, unsuppressed, under-defined or user-defined names. Further options allow suppression and exposure of result items only if desired. Creating named selections aided by the worksheet interface includes distance as a selection criterion for surface and solid bodies. As a result of these enhancements, users can very efficiently select a large number of bodies based on a number of criteria, analogous to using MAPDL commands without the

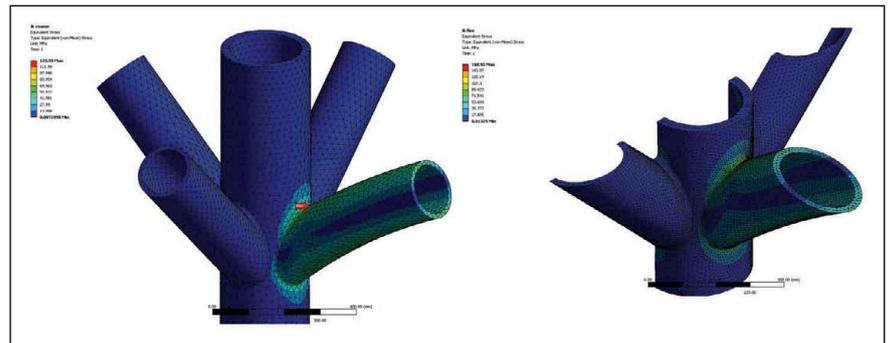


Figure 1: Contour plot of Von Mises stress with coarse mesh (left) and fine mesh (right). Stresses with the coarse mesh were underestimated by 21

need to use command objects. Overall, general performance of named selections has improved in the areas of generation, selection and usage. Improvement can be as much as 10 times faster than in previous releases, which will go far to facilitate and accelerate the modelling experience of marine structures without sacrificing accuracy.

Submodelling on structural and thermal analyses is now available in Workbench Mechanical without the need to implement command objects in the outline tree. For example, after identifying a specific model segment, users can get more accurate results in that region by using a finer mesh for that section only. Data can be transferred from a 2-D coarse model to a 3-D submodel with the appropriate settings, if desired. Results from a submodelling analysis at the joint of a tubular structure are shown in Figure 1, in which the stress results between coarse and fine mesh are notably improved.

In dynamic analyses, ANSYS 14.5 includes capabilities for performing a mode superposition transient analysis linked to a pre-stressed modal analysis. Constrained nodes can be used in the calculation of reaction forces and moments without the need to redefine boundary conditions in downstream systems. This process enables a better understanding of the dynamic response and provides easier access to

results data. Damping controls in this type of analyses support the definition of a constant damping ratio, mass-proportional, stiffness-proportional and numerical damping for mode superposition transient analysis. These controls are available in the engineering data level as well as through the graphic user interface (GUI) on a body-by-body basis.

Built-in macros allow for a modernised way of studying rotor dynamics in Workbench Mechanical, enabling users to define bearings in rotor dynamic analyses applicable to rotating machinery onboard platforms and ships. A new connection object, Bearing, enables the user to define bearing properties in a tabular format that streamlines the modelling experience. Setting up the analysis and applying loads no longer requires tedious hours of modelling. Damping and stiffness characteristics are used to model four spring-damper sets (COMBI214) in the rotating shaft plane that confines the relative motion/rotation of a rotating part. Optimisation becomes a straightforward task by combining ANSYS DesignModeler parameterisation tools at the geometry level and ANSYS DesignXplorer to answer what-if questions, set up design of experiments, and extract response surfaces. All this contributes to earlier decision making by decreasing development time

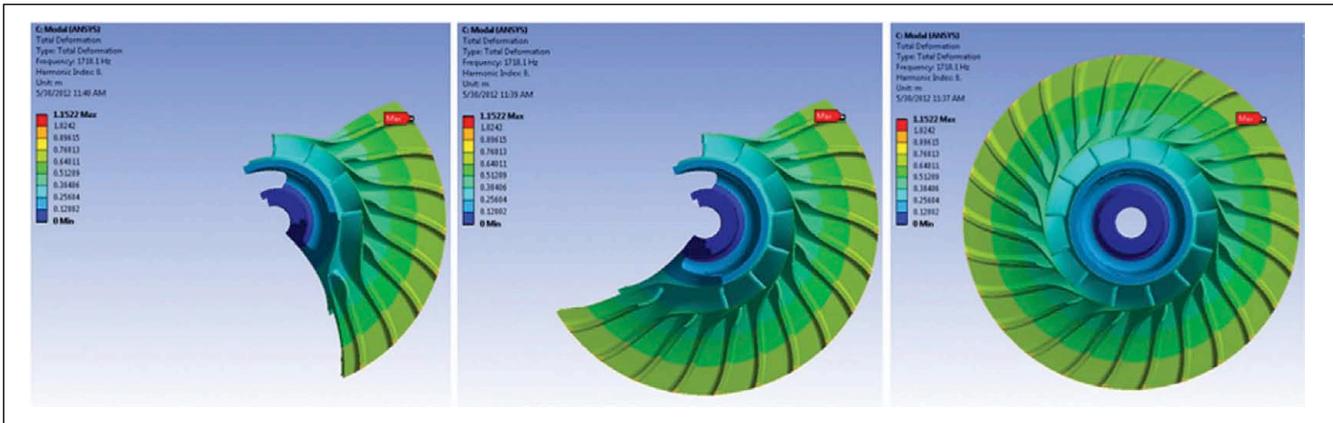


Figure 2: Contour plot and graph results of the stress intensity factor along the crack front

and eliminating the trial-and-error cycle in the design process.

Design Assessment users with Beamcheck can now obtain results within ANSYS 14.5 in single result objects over a time or pseudo-time range spanning multiple substeps for an upstream transient or static analysis. Fatjack results can be accessed and presented faster in single result objects based on multiple intervals, wave cases or spectra. The technology offers the ability to both specify a particular inspection point and investigate all the inspection points and retrieve minimum, maximum, absolute minimum or absolute maximum result for that point. Using the built-in Application Customisation Toolkit, users can extend existing capabilities, add new ones, and automate repetitive tasks in an interactive Python-based environment. An added database result format and commands to retrieve results within Microsoft Excel are available, resulting in reduced time in extracting solutions in a more streamlined manner.

Naval architects involved in fracture analyses can compute fracture parameters that help them to design within a structure's catastrophic failure limits. The meshing application supports fracture meshing capabilities, enabling Workbench Mechanical users to insert multiple surface cracks into a mesh. These fracture meshes can then be used to analyse crack fronts through a new "Fracture Tool" object, which allows grouping all of the different types of fracture results associated with one single crack or pre-meshed crack object. Figure 2 shows a crack in a solid model and the stress intensity factor result. Additional results like J-integral and total energy release rate are available.

Graphics and performance enhancements

ANSYS 14.5 offers improved performance when using cyclic symmetry in a static structural analysis. Even though only one sector is analysed, results are valid for the full symmetry model without the

need for command objects. By defining a number of sectors, users can control the extent the model is expanded from the raw solution. Results are generated more quickly and consume less memory and file storage according to the number of sectors requested. Figure 3 depicts different results from an impeller used in a centrifugal pump.

Graphical views offer the ability to manage and save multiple view settings, allowing for a consistent graphical view when reporting results and creating reports. Users can return to a specific view at any time in the future. Users can export the graphical view in an .xml format and share it with other partners if needed.

On the whole, ANSYS 14.5 offers improved animation performance. Typical speedup is about a factor of two, compared to prior versions. For complex analyses with thousands of bodies that use named selections, mesh connections, contacts or joints scoped to over a thousand entities, the graphics performance has improved drastically and the memory footprint has decreased. As an example, Mechanical implements a better data caching mechanism for harmonic stress results, which sharply reduces the file I/O, by a factor of five and speeds up post-processing and drawing times by up to 75% and 60%, respectively. Copying and extracting large amounts of tabular data has been accelerated by at least a factor of 10. **NA**

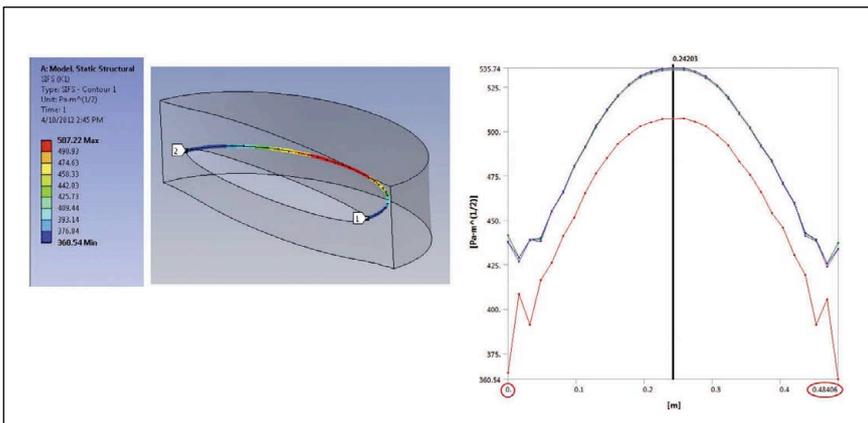


Figure 3: results from modal cyclic symmetry analysis (from left to right: 4, 7 and 13 sectors)



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Delta Marine's *Zealand Juliana* takes a bow

New general cargo vessel offers flexibility on cost savings says ship designer

Zealand *Juliana* is proclaimed by its designers as a significant reference for the new generation of general cargo ships providing a double hull structure, single screw propulsion, unrestricted navigation (including the St. Lawrence area) and the ability to carry a variety of cargoes including steel coil, coal, grain, grab and dangerous goods at shallow drafts.

The 152.50m-long new building built by the Sefine Shipyard in Turkey was designed by the Istanbul-based consultancy Delta Marine Engineering Co.

Incorporating a high technical specification to better ensure service dependability the 16,750dwt *Zealand Juliana* is a shallow draught vessel that offers operational flexibility through being capable of entering draught restricted ports as well as operating in ice covered seas with its reinforced hull and appropriate propulsion system.

The Bureau Veritas-classed ship, has the BV Cleanship class notation where mandatory measures are taken to prevent pollution by the spillage of garbage, sewage, waste water and oil while reduced NO_x, SO_x and PM₁₀ emissions are identified.

The vessel boasts a 21,760m³ cargo carrying space in four cargo holds all double skinned. The holds are divided by transverse corrugated bulkheads and are box shaped allowing for easy maintenance and stowage as well as protection against minor damage. From an operational perspective the 24 x 18.2m hatch coamings ease loading operations.

In addition cargo hold tops are reinforced against loads of up to 20tonnes/m² while the bottom of the cargo holds are reinforced for heavy cargoes, particularly for grab operations.

The weather deck hatch covers are of high stowing folding type, operated by means of external hydraulic cylinders. The hatch covers constructed with flat top plates are of double skin construction. Cargo operations are handled by three pieces of



The 16,750dwt *Zealand Juliana* following its launch from the Sefine Shipyard

NMF-produced DKV 30025 type deck cranes, installed on centreline pillars and presenting safe working loads of up to 30tonnes with a 25m outreach.

Between the four pairs of "L-shaped" ballast tanks that surround the cargo holds, the arrangement of the tunnel structure at the double bottom level and centreline keeps the ballast/bilge lines/valves inside and accessible.

Installation of all deck pipes (hydraulic, electric, fire, CO₂ etc.) and cables in void spaces under the main deck side (top sides) not only serves for protecting the pipes from the hard sea conditions but also protects against oil pollution.

For propulsion one in-line, two stroke, low speed turbo charged STX-MAN 6S35MC-MK7, main engine of 4440kW at 173rpm drives a 4m, four bladed NiAlBr fixed pitch propeller. The engine complies with MARPOL Annex VI, Regulation 13 Tier II requirements.

For electric generation three LIAG-MAN-made D2840 LE 301 type 475kW, 1800rpm auxiliary diesel engines and one 99kW emergency diesel generator are used. Additionally one AVK-produced DSU 62, L1-4 250 kW type shaft alternator coupled to the main engine via step-up gear from Kumera AS is installed. The voltage/frequency of the ship's electrical system is 440V/60Hz.

The heating of tanks and accommodation is maintained by a 600kW

THM/V 650-type thermal oil boiler from Garioni Naval and an economiser.

Accommodation, located aft is divided into four decks and includes 20 cabins and a pilot's cabin, all with private facilities.

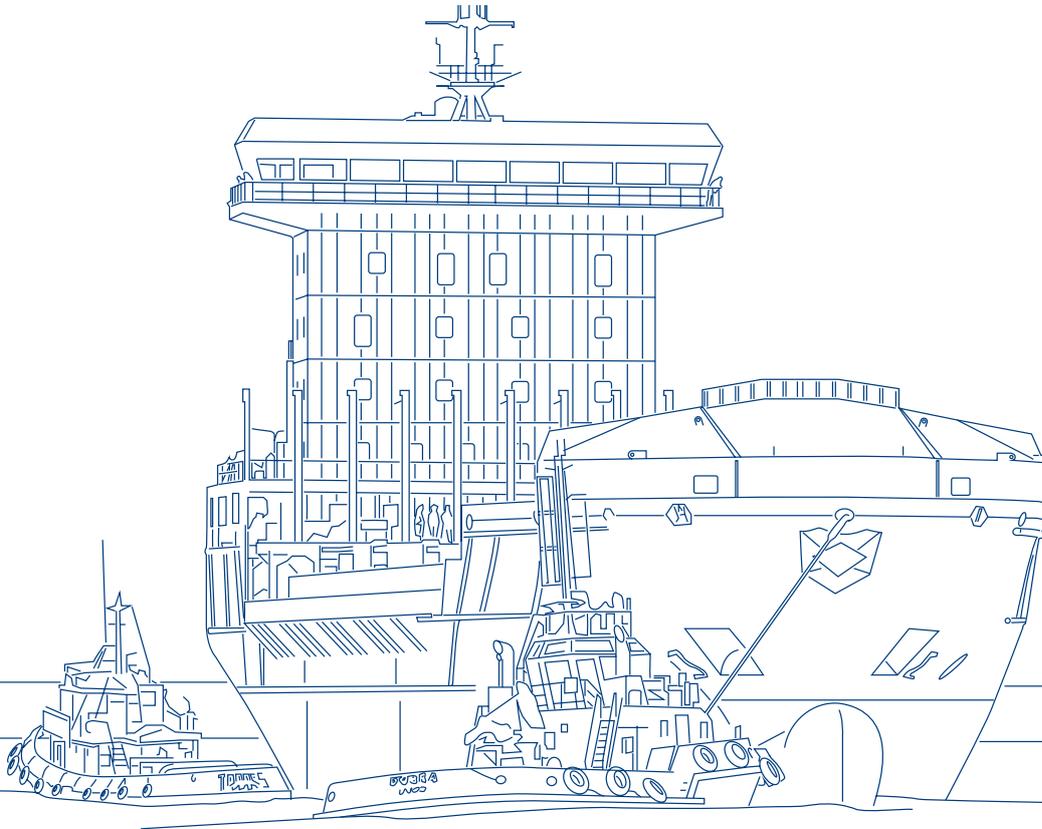
From both an environmental and a fuel-efficiency perspective, the design of *Zealand Juliana* has an EEDI value below the present IMO baseline curve as described in Chapter 4 of MARPOL Annex VI Regulations.

Zealand Juliana's hull structure has been carefully analysed by special finite element analysis (FEA) tools to enhance safety, weight and vibration characteristics. Structural precautions have been considered to minimise vibration and noise levels in accommodation area. At design stage, the weight of steel material has been optimised by structural analysis which has contributed into reduction of building costs.

Fuel consumption has been reduced through an intensive optimisation programme at the design stage. Delta Marine carried out the optimisation studies in two phases where a potential flow analysis to rapidly identify the wave resistance, dynamic pressure distribution and streamlines was carried out by using in-house software DeltaFlow. This work was followed by detailed CFD studies covering the calculation of the ship's friction, form and wave resistance that enabled the designer to improve performance of the hull form. **NA**



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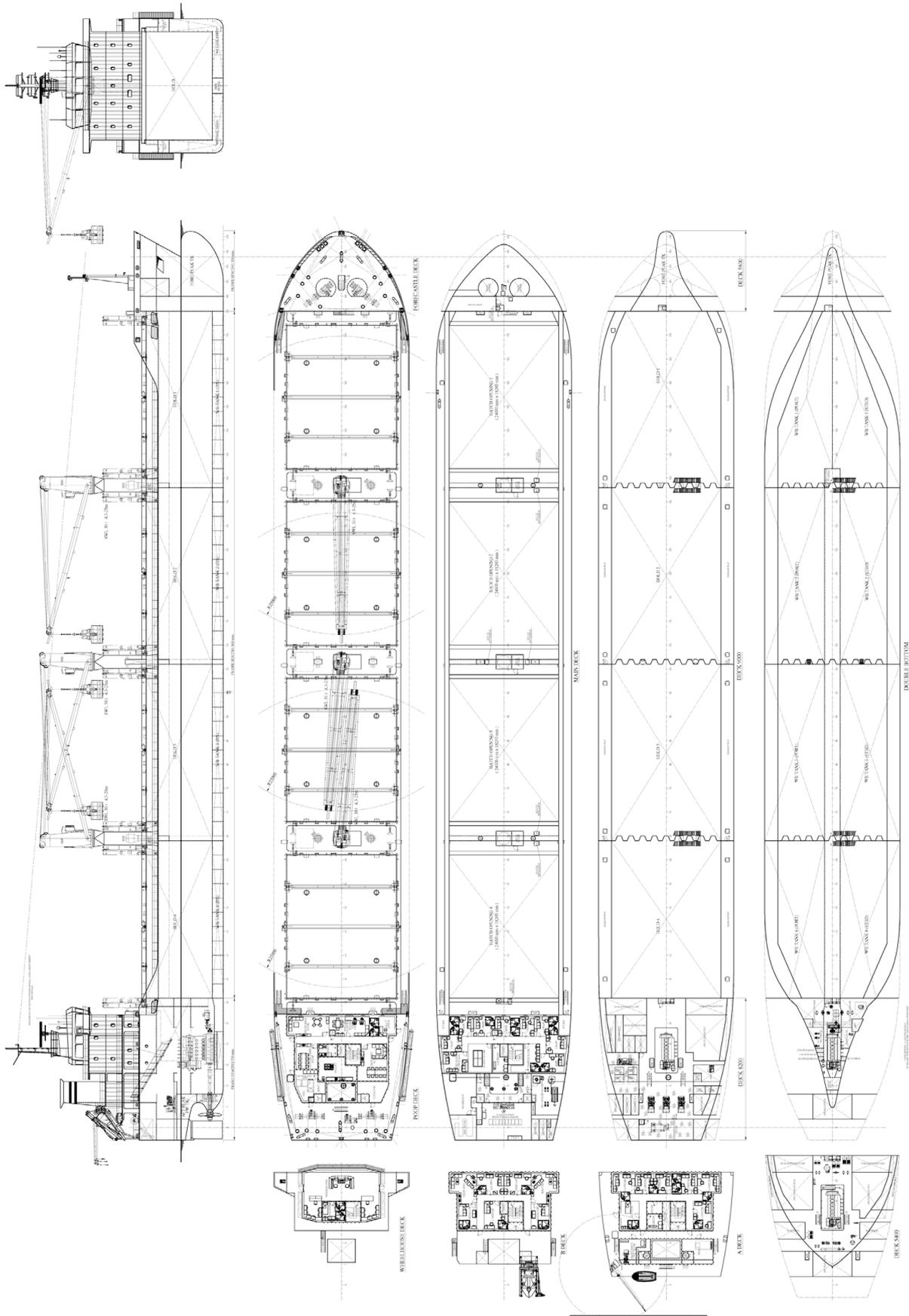
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GA Plan for the Zealand Juliana



Risk-based ship security analysis

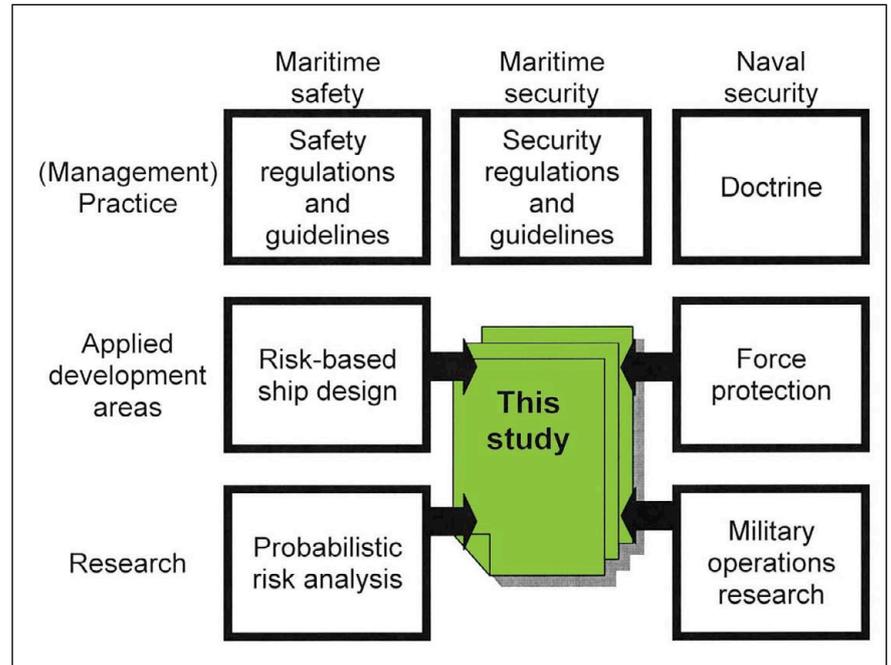
Chalmers University of Technology and the Swedish National Defence College research the conditions for a risk-based ship security analysis approach. Hans Liwång, licentiate in Engineering, at Chalmers explains further

There have always been hazards at sea, both traditional safety hazards, such as the probability of grounding, and security threats such as piracy. As shipping and society changes, the threat also changes. In the work at Chalmers University of Technology (Chalmers) and Swedish National defence College (SNDC) there is a need for differencing between the terms *safety* and *security*. The term security is used only in relation to external antagonistic threats and security is, therefore, achieved when the ship is protected from such threats. Safety, on the other hand is achieved when the ship is designed, manned and equipped to reduce the possibility of hazards (without intent) leading to harm.

Shipping and ships represent great monetary as well as symbolic value and can, therefore, be the target of security threats such as robbery, piracy or terrorist attack. The purpose of naval ships is to protect, both offensively and defensively, national interests against threats during war or other types of crisis. Therefore, for both civilian and naval ships there is a need to analyse the threat and reduce the possible harmful effects of an attack.

The demands on both military and civilian maritime operations are increasingly higher in terms of control, efficiency and cost. The margins for accidents and security incidents are, therefore, decreasing. In the area of ship safety the regulations, guidelines and methods have a history and culture of systematic research, development and implementation. In contrast, international security is highly politicised and are not as transparent. The result is that a tradition of ship security is not as well established.

For safety it has been found that analysis of statistics based on the past cannot on its own anticipate emerging

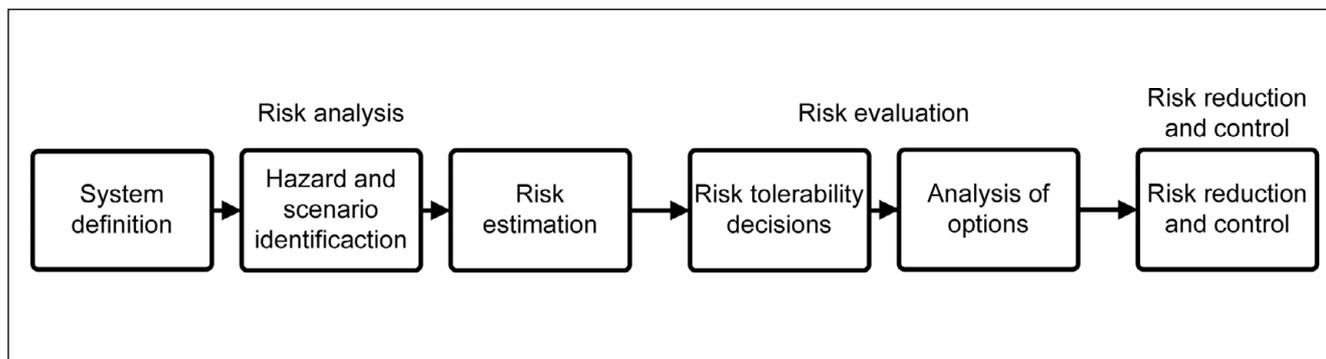


The work performed uses both civilian and military tools and lessons learned in order to ensure a complete and appropriate approach

risks. There is a need for a more dynamic tool kit. This is exemplified by the IMO when the High speed craft code states that for traditional ships it is possible to use a prescriptive code and ensure a suitable low safety risk level. However, for novel or specialised types of ships a prescriptive safety code is too restrictive and probabilistic methods, where the risk for different incidents are kept acceptably low, need to be used. Such a probabilistic code uses a series of standardised expressions to evaluate events and assess the risk associated with the operation of the ship. This is one of the reasons for IMO to introduce risk-based procedures such as the Formal Safety Analysis (FSA) for rule development. It is reasonable to assume that the conclusions with regards to safety also are valid for security, but as ship security lacks the tradition of research and development, which is

present for safety there is a need for further development.

The research on ship security analysis aims at developing a risk based method for risk analysis with regards to ship security development and evaluation. The method is a part of the risk management process and has so far been applied on simulation of tactical task for naval vessels and risk analysis for shipping under the threat of piracy. To be able to increase the overall safety, the proposed analysis must facilitate compromises between traditional maritime safety and security. The objective is to develop a method that is systematic and ensures that assessment and response is complete and effective. It must be possible to use the method in future scenarios and thus describe and model the causal relationships from threat to risk. The aim in this work has so far been broken down



The proposed method should be seen as a method for performing the risk analysis as a part of the ship security risk management process

into three steps, chosen to gradually increase the complexity and develop a consistent method base:

- define the requirements of the ship security analysis process
- test the feasibility of scenario modelling, and
- test the feasibility of expert based threat analysis.

In the approach proposed, the aim is, as often as possible, to use quantification of low-level aspects such as aspects of the threat's capability. The low-level aspects are then linked to the risk with causal relationships. The proposed approach is consistent with the requirements for maritime safety work. However, the methods proposed as a result of the research are specifically tested for security cases. This is because hazards (without intent) and threats (with intent) evolve in different ways into risk; therefore, they must be analysed differently in order to capture the causal relationship. There must be particular focus on:

- the lack of objective data, because each intent has its own set of probabilities
- the antagonistic threat, i.e. the threat changes according to intent and the ship's tactics and protection, and
- the relation between the operations measure of effectiveness and the risk taken.

The proposed approach consists of three steps, which all allow stringent documentation of the analysis and results. The first step consists of a threat analysis that documents qualitative and quantitative aspects that together describe how the threat will act *in relation to* protection methods and the specific ship. The threat analysis is based on expert assessment, but should if possible also be supported by such things as empirical measurements and

intelligence data. The second step uses the results of the threat analysis to define the system studied as well as the scenarios that collectively describe the harmful consequences. The definition should be such that it describes the causal relationships involved and is, therefore, also able to describe how a change in the threat or protection changes the risk. In the third step the risk is evaluated with tools from probabilistic risk assessment.

The result of the security risk analysis described above is meant to be used as a risk knowledge model together with other knowledge models on the same system. Such knowledge models could describe safety risks or the system's effectiveness as a function of operational freedom. Based on this comprehensive understanding of the system studied,

To ensure that the naval ship is as effective as possible in solving its tasks the survivability and security measures must be chosen carefully. The decision must be based on knowledge on how that specific ship's characteristics and tactics will interact with the relevant threats and lead to possible harmful consequences to the crew or ship. This a rigorous analysis and can cover a wide range of harmful consequences, ranging from technical aspects such as physical damage to the hull to effects on the crew such as man over board. Photo: Hans Liwång



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decisions regarding such as risk control options can be taken. It must, however, be clear that there will be uncertainties in the outcomes of the analysis, which must be taken into account when decisions are taken.

In relation to other maritime security work performed today, which most often lacks a quantitative perspective, the proposed method utilises both qualitative and quantitative knowledge. The quantitative aspects allow well-defined ship performance data, such as speed, size and sensor performance, to be included into the model. This enables the analysis to examine how performance data affects the risk for example to test how ship speed affects the probability of successful pirate approach or to test how the detection distance affects the security scenarios. This kind of relationships is not possible to obtain without a quantitative analysis.

The quantitative aspects, however, make the proposed analysis more demanding than the analysis often performed today. The benefits are that it is possible to verify and validate the results, which means that the analysis can be improved over time. The improvements can be a result of lessons from the validation, but also from the fact that the input to the threat analysis, system definition or scenario definition, can be updated.

The overall conclusion is that the proposed method brings the procedure and results of ship security analysis into the open and therefore allows for criticism, improvements and shared risk knowledge, not possible with less structured methods. The proposed method, therefore, enables a discussion on probabilities and facilitates feedback to experts on their assessment which will lead to better assessments in the future.

As described above the existing research on ship security risk analysis is limited. Much more is needed in order to develop reliable methods that can be applied generally. The work performed at Chalmers and SNDC however show that it is reasonable to assume that the approach is feasible. The approach can also already give important input to the risk analysis process when discussing such issues as anti-piracy measures on ships and quantify the effectiveness of different security risk control options such as increased ship speed, increased lookout and routing alternatives. The aim in the coming years therefore, based on the current results, is to deepen the analysis completed so far, in order to be able to verify the results and validate the proposed method more thoroughly.

About the author:

Hans Liwång, M.Sc. in Naval Architecture from the Royal Institute of Technology (KTH) successfully presented and discussed his thesis on risk-based ship security for the degree of Licentiate in Engineering in Shipping and Marine Technology at Chalmers on November 15th 2012. He has more than 10 years of experience as an engineer and teacher from the Swedish Defence Materiel Administration, KTH and the SNDC. Since 2010 he is a PhD-student at SNDC and Chalmers in naval ship design and risk analysis for maritime operations. **NA**

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Concordia underlines need for better design

One year on from the *Costa Concordia* disaster an interim report from the Italian authorities into the accident suggests there is a need for more and better regulation and more and better technology and design, writes Sandra Speares

Costa Concordia's capsizing off the Italian coast one year ago has underlined the need for new technological requirements already outlined in amendments to the safety of life at sea convention (SOLAS) but, while the final report into the accident has yet to appear there may be more work to do as far as cruise ship design and technology are concerned.

As the Italian interim report presented at the IMO's Maritime Safety Committee meeting in November stated some measures that have already been incorporated into SOLAS include requirements for segregation and redundancy of vital equipment for propulsion, steering and onboard stability computers; flooding detection systems and use of an Electronic Chart Display System (ECDIS).

Other measures highlighted in the interim report for evaluation in accordance with the new safe return to port rules included: double skins for protecting the water tight compartments containing equipment vital for propulsion and the production of electricity; more partitioning and sub-partitioning of each watertight compartment to limit the

effects of free surfaces and discontinuity between compartments containing ship's essential systems, in order to preserve their functional integrity.

In addition the report highlighted more detailed criteria for the distribution along the length of the ship of bilge pumps and possible arrangement of at least one high capacity pump to drain huge quantities of water from an isolated compartment and relocation of the main voltage propulsion transformers to a higher position.

Other issues raised in the report included the relocation of the main switchboard rooms above the bulkhead deck, distribution of electrical power through a main electrical switchboard for each generator room, the interface between the flooding detection and monitoring system, onboard stability computer and ballast/bilge systems and adequate emergency generator capacity to support all essential services, including those meant to manage flooding conditions.

While *Costa Concordia* was built before the new probabilistic rules and safe return to port principles came into force, there could well be further technological and design issues that will have to be

addressed in the light of the final report of the Italian authorities into the accident. Industry concerns have already been raised about safe return to port rules and the fact that the technical investigation into the accident is being superseded by the criminal investigation.

Passenger ship safety will be the focus of the Paris Memorandum on Port State Control's Harmonised Verification Programme, which will be taking place during the course of 2013.

"Every aspect of the cruise industry is heavily regulated and cruise shipping has a long track record as one of the safest forms of vacation travel," said Rob Ashdown, director, Technical, Environment & Operations, for the Cruise Lines International Association Europe. "The industry is subject to a rigorous inspection regime and regularly monitored under international and EU law. As an industry that is both confident and transparent in our safety procedures we very much welcome this new programme of inspections and look forward to maintaining our co-operation with the member States of the Paris MOU to help ensure that cruise ships continue to meet the highest safety standards." **NA**



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INVESTING IN THE ORIGINAL PAYS OFF

Saving Grace

New Baltic cruise ferry will reduce emissions and cut fuel costs and still offer comfort and refinement to passengers claims the operator, Viking Line which will operate the LNG powered *Viking Grace* on a route between Turku, Aland Islands and Stockholm. Sandra Speares reports.

Viking Grace, the world's first large passenger ship to be fuelled by LNG entered service on 15 January. The vessel which cost €321 million (US\$ million) was built at STX's Turku shipyard.

According to Viking Line "the vessel is an environmental pioneer in the cruise industry. Viking Line has systematically planned the construction of the *Viking Grace* in a way that will enable the use of cutting edge technology to achieve a cleaner environment, in accordance with sustainable development principles."

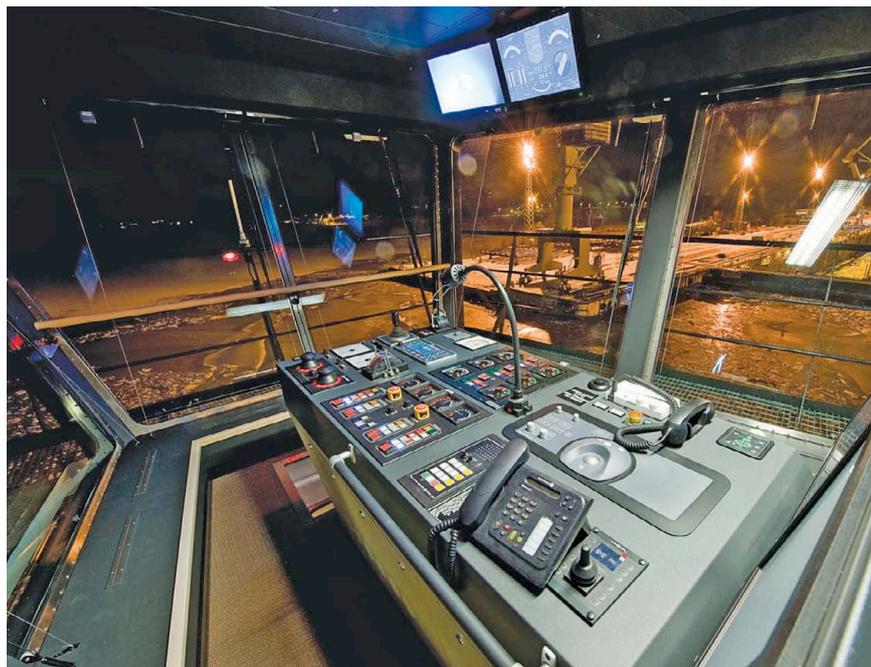
The demands of new regulation on sulphur and nitrous oxide emissions have made LNG a popular fuel to consider for the future. Viking Line estimates that nitrogen emissions and particulates will be reduced by 85% and greenhouse gases by 15%. Sulphur emissions, the company says are practically zero.

The vessel has a hydrodynamically optimised hull shape and highly effective propulsion machinery that saves energy. Extensive development work has been devoted to the hull shape, to minimise swell impact. The 57,600 gross tonnage vessel is 218m in length and 31.4m across the beam, the vessel has a service speed of 22knots. Passenger capacity is 2,800 with 1,275 lane metres for cargo and 500m for cars.

Viking Grace is flagged in Finland and classed by Lloyd's Register (LR). The classification society commented that: "Apart from its unique green credentials, the vessel's two standout features are its LNG-powered Wärtsilä engines and its safe return to port compliance technology."

As the vessel will be operating within the Baltic emission control area, its ability to meet the new rules coming in 2015 is a key issue.

Lloyd's Register was closely involved in testing procedures of the new ship, helping the owner and builder handle the complexities of its LNG tanks on the stern deck and four Wärtsilä 8L50DF engines as well as its regulatory, class and operational requirements, LR said.



Detail of *Viking Grace*'s wheelhouse

"Not only does this ship have LNG as fuel gas technology installed but it is also designed for safe return to port compliance. This involves advanced levels of control technology and risk assessment not traditionally applied to cruise ferries," said John Hicks, LR's vice president for passenger ships.

LR says that the previous design and build of vessels incorporating LNG as propulsion fuel is in much the same as any other standard design. But, there needs to be recognition that LNG as a propulsion fuel requires overcoming new design challenges, and significantly, challenges to the approaches required to operate the ship including, of course, bunkering - safety of bunker station areas would prove to be one of the critical risk areas to be designed and approved.

The design and build contracts needed to recognise the challenges that will be faced. These challenges may take more time and increased 'up front work', that

needs to be done, to effectively ensure that the LNG propulsion fuel systems have been successfully incorporated into the vessel and to help ensure smooth future in-service operations.

When commencing the *Viking Grace* project, extant regulations covering LNG ships did not necessarily cover the requirements for such new LNG propulsion projects, explains the class society. This is not to say that existing rules (the IGC Code for example) have no relevance but, there needs to be recognition that with novel concepts new frontiers need to be crossed in addressing risks and securing regulatory acceptance.

Specifically this means that the shipyard needs to fully understand what is required to safely integrate a new technology into the vessel; specifically how to demonstrate the hazards of this new technology have been effectively identified and managed in the design.

Viking Grace at the Turku yard in Finland where the vessel was constructed

“Attention to detail and the vast experience of LR’s engineers have played a crucial part in supporting this project and ensuring the design review, testing and trials of this novel vessel have gone smoothly, providing confidence for a good future operating in the Baltic,” says Hicks.

Customer perception is optimum to the owner, he added, and the fact that the maiden voyage from Turku was sold out well ahead of departure seems to indicate a degree of enthusiasm from the public.

Wärtsilä’s agreement to deliver propulsion equipment for *Viking Grace* included an option for the supply of equipment for a sister ship, according to the company.

The supply package includes four 8L50DF main engines, the transverse bow and stern tunnel thrusters, as well as two stainless steel fixed pitch propellers with propeller shaft lines including environmentally sound shaft line seal systems, the LNG tanks and fuel supply and handling equipment with safety and automation systems.

“Due to the lowest possible pressure impulses generated by the propellers, the vibration level in the stern hull is very low. Wärtsilä will supply a sound-absorbing system to minimise noise generated by the engine, thus increasing passenger comfort. A low noise level is also important as the



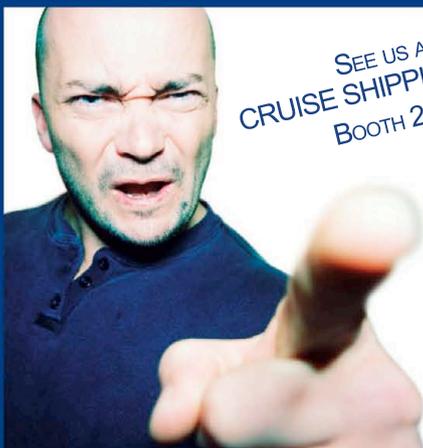
vessel’s route passes through the Turku and Stockholm archipelagos”.

“A domestic supplier close to us, Wärtsilä offers us the opportunity to collaborate in optimal operation, engine maintenance, technical training and field testing. All this is very important especially now that Viking Line is entering a new era of gas-electric driven operation”, Tony Ohman, technical director in charge of marine operations and newbuilding at Viking Line commented when the contract was concluded.

The vessel’s dynamic positioning system was supplied by Finland-headquartered DP manufacturer Navis

Engineering. The DP system delivered by Navis Engineering is a non-redundant DP0 (joystick control system) solution comprising two control stations located in the wheelhouse wings. It will be used mostly for docking the cruise ferry at points on the Turku – Mariehamn – Stockholm route.

Viking Grace is one of the several innovative vessels equipped with the Navis DP system. These include the ice-class OSV *Vitus Bering*, delivered recently to the Russia’s largest shipowner SovComFlot, the multi-purpose bio-fuel powered deck cargo vessel *Aura II* and the series of 30 axe-bow FSIV vessels built by Damen. **NA**



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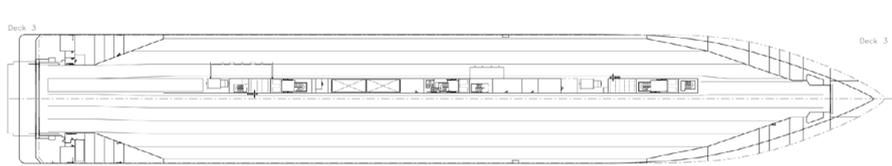
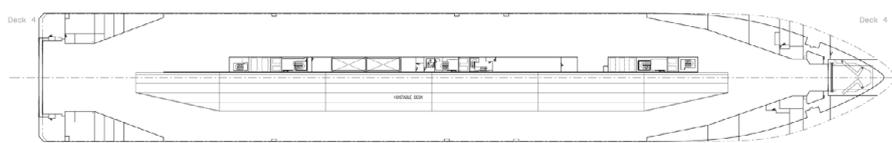
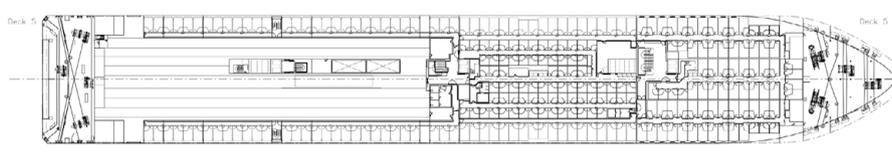
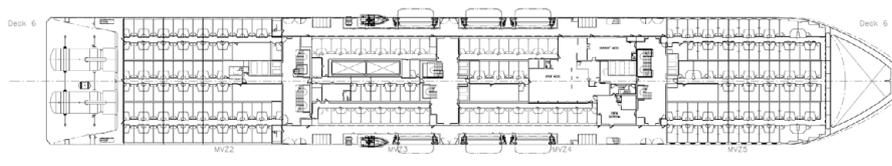
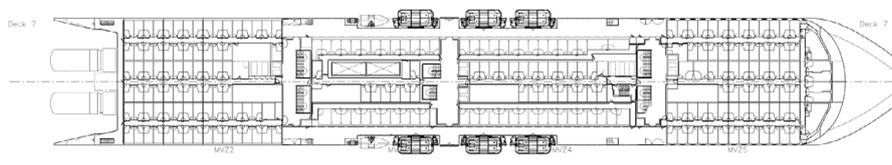
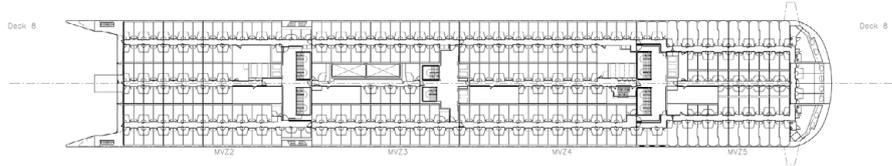
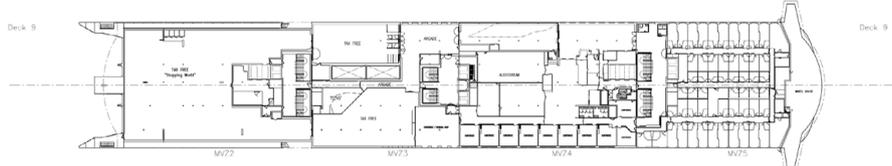
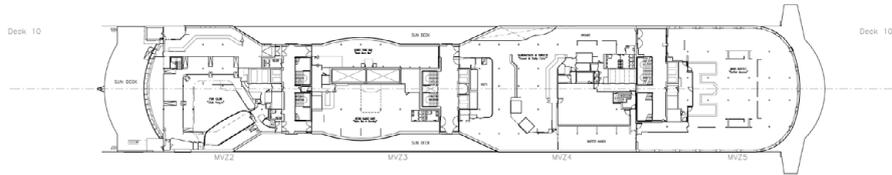
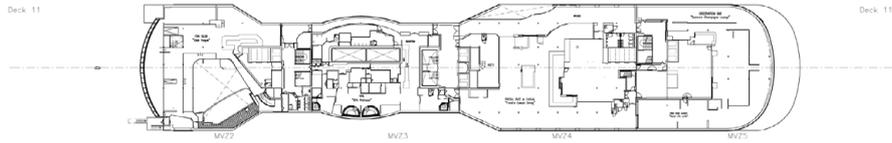
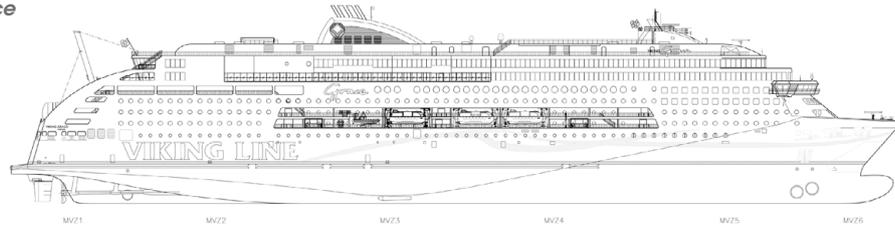
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GA of Viking Grace



Rubbish regulation adopted

New rules to regulate the disposal of waste from ships were adopted in January

Tighter regulations for the prevention of garbage pollution from ships came into force on 1 January 2013. Almost all discharges of dry waste into the sea will be prohibited and the rules relating to discharge of food and galley waste will be more stringent.

The revised MARPOL Annex V regulations for the prevention of pollution by garbage from ships adopted in July 2011 in resolution MEPC.201(62), include changes that will impact ship and rig operation from January onwards.

Discharge of raw food waste will no longer be allowed inside the Special Areas and outside the Special Areas only if it is ground up and able to pass through a screen with openings no greater than 25mm and the ship is more than 12nm from the nearest land. Discharges are only allowed when the ship is en route, which may require the vessel to store the food waste onboard for long periods until discharges are possible.

From January 2013 all discharge of cooking oil will be prohibited, including cooking oil and grease mixed with the galley grey water.

To date it has been permissible to discharge many dry waste products in ground up

form outside the Special Areas. From January 2013 all vessels and rigs will be prohibited from discharging practically all dry waste fractions anywhere, including cargo residues, plastic, floating dunnage, paper, glass, metal, rags, and incinerator ash containing plastics.

Swedish company Uson has come up with new technology to meet the waste challenge. This includes the Uson One-Way Macerator System which is a combination disposer and vacuum system and designed for hygienic collection and treatment of food waste in compliance with the new regulations. The new food shredder also handles bones, fish skin, and seafood shells, as well as pasta, potatoes and rice in large quantities.

The food waste is shredded and ground by macerators in the galley. It is then transported by vacuum to a special holding tank which makes it possible to run the system when the vessel is operating within an area where discharge is prohibited.

Innovative functions include bridge control of waste discharge. This provides extra protection against accidental discharges, when the vessel is in an area where discharge is prohibited.

The system handles food waste safely and has functions to minimise water consumption. With small pipe diameter and flexible pipe routing, it is easy to install on newbuilds or retrofit onboard existing vessels, the company says. The system is guaranteed to avoid blockage of food waste in the piping.

Other technology includes the Uson grease separator which the company says reduces the risk of damage to equipment caused by grease build up.

The separator is semi-automatically controlled, which means that draining of separated water is done automatically through gravitation. No heating, steaming or chemicals are required and the treated water goes safely to the grey water tank or sewage treatment plant.

The grease separator is equipped with an automatic grease level alarm that alerts when it is time to drain the separator of cooking oil. The complete discharge and cleaning process is performed manually by pushing buttons. The grease, fat and oil are discharged to the dedicated grease holding tank.

Uson also offers shredders and compactors to reduce the volume of waste in transit and the company claims that its compactor system can reduce waste volume by up to 90%. *NA*

Consumer power drives RCCL's IT innovation

Royal Caribbean has recently cemented a deal with CA Technologies to use the company's integrated and automated IT management solutions on 35 of its ships. Sandra Speares reports

Technology is an increasingly important part of the passenger experience on cruise ships including interactive screens allowing passengers to locate where they are on the ship, or providing them with details of restaurant menus or shore excursions.

"Our investment in technology has increased dramatically. Thanks to CA Technologies business service innovation approach, we have transitioned our focus from maintaining IT systems to delivering

new, innovative guest services with speed and agility," says Bill Martin, chief information officer for Royal Caribbean Cruises.

"CA Technologies has enabled us to transform our IT organisation and address the high expectations guests have as a result of the trend towards consumerisation of IT. Guests want wireless access to the Internet from their smartphones, tablets, laptops and game consoles the second they board the ship to access a range of services; it's imperative that we provide them the best

possible experience with those services," he adds.

The ability to manage an increasingly complex IT environment with as few resources as possible is vital to Royal Caribbean's ability to exploit new technologies that improve the guest experience, CA Technologies says. RCCL uses a range of CA Technologies solutions, including application performance management, infrastructure management, automation, and project and portfolio management. *NA*

Cruise lines invest in green technology

Going green can be cost effective. Disney Cruise Line outlines the initiatives it has taken to meet new rules. Sandra Speares reports

All cruise lines have been invested heavily in green systems, partly to meet new environmental regulations, but also to reduce costs and show a commitment to becoming more “green”.

Bert Swets, vice president of marine and technical operations for Disney Cruise Line outlined some of the company’s initiatives at the Seatrade Med conference in Marseille in November.

“Disney Cruise Line is committed to minimising its impact on the environment and we have focused our efforts on utilising new technologies and ongoing programmes to increase fuel efficiency, minimise waste and promote consideration worldwide. We comply with, and sometimes exceed all international environmental regulations. All Disney ships have a low resistance 100% non-toxic hull coating, which helps to increase fuel efficiency.

“During the construction of our two newest and largest Disney ships, *Disney Dream* and *Disney Fantasy* we kept sustainable operations top of our mind and made significant strides in energy efficiency.”

Examples he cited include a smart HVAC technology system that maximises heating and cooling systems throughout the ship. “For example guest staterooms self-adjust when unoccupied and return to the desired temperature upon the guests return. Additionally the system recognises when public spaces will be in demand and measures temperatures and humidity to ensure comfortable conditions based on occupancy.”

Disney has also installed advanced wastewater purification systems that utilise natural processes to treat and purify onboard wastewater to levels far exceeding international shipping standards he said. Cold ironing capabilities allow the ships to turn off engines and plug into shoreside grids to receive electrical power at ports that are equipped to accommodate the technology.

Both *Disney Dream* and the *Disney Fantasy* have been designed to be more hydrodynamic vessels with an optimised propulsion system and hull design thus

increasing fuel efficiency, he told delegates.

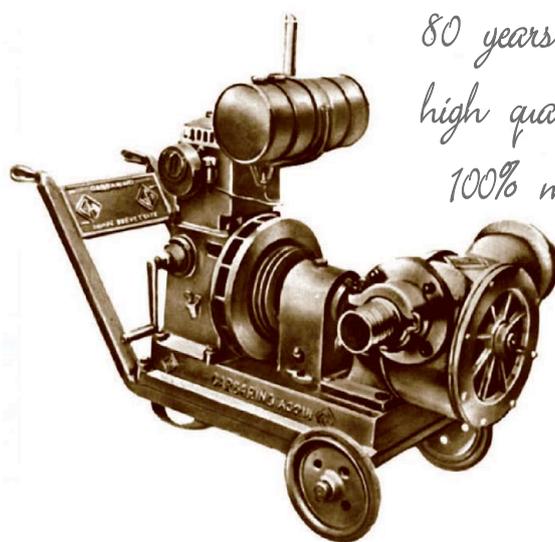
Maurizio Cergol, cruise vessel chief designer at Fincantieri told delegates, the cruise industry “will be affected by the introduction of up-to-date technical solutions on new platforms, in compliance, too, with the introduction of new environmental and

safety rules”. The situation he said offered a big chance for the renewal and revitalisation of the sector.

However he added: “This process requires a strong collaboration between ship-owners and shipyards with their suppliers’ network. **NA**



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Manage the risk

As cruise ships get bigger the demand for lifesaving equipment increases, the Swedish-based SSPA has completed model studies into overhanging life boat designs

Any new or modified design of a ship or its equipment may be subjected to risks or harmful effects when operating in a seaway. As they are often impossible to predict theoretically, model testing in waves is a well-established method. But, how can a scale model be tested in realistic situations? Ocean waves are random by nature which makes the behaviour of ships on the open sea unpredictable. The key is called wave statistics; a multitude of data that is collected during decades from all over the world.

Helen Janssen, communications & marketing, SSPA says that one example of conducting accurate model testing, for new situations in waves, is when approaching a request on investigating new equipment for a ship. A new concept adding equipment could increase the risk of higher loads in severe sea conditions. In such cases the classification societies can even require model tests to determine the dimensioning forces.

The challenge at that stage is then to develop a test programme that could predict the most probable maximum forces acting on the ship with and without the added equipment during the ship's expected lifetime of 30 years. Moreover, it should be done in a cost-efficient way with a minimum number of tests and yet be to a statistically satisfactory level.

"You start off by identifying the most critical combinations of sea states and wave directions related to the positions of the new equipment. The next step is to mount the equipment at these positions, run tests for the relevant situations that need to be identified, and measure the forces. At SSPA this is carried out in the Maritime Dynamics Laboratory, using an autopilot-controlled, exactly scaled down ship model. The height at which the waves hit the ship sides is measured at several positions along the ship", explains Janssen.

The key is to predict the random behaviour of waves. Measured and observed wave data

has been collected from all over the world for decades, which has been compiled into useful statistics. Therefore, the most probable extreme values that will occur during one year can be worked out.

Janssen notes that in order to predict the wave induced forces; a combination of tests and probability calculations are used. This can be a challenging task, as the magnitude of the force caused by the water impact is a random variable and the most extreme behaviours occur infrequently. "To obtain a statistically valid set of data, tests had to be repeated until the total measuring time corresponded to the probable time the ship would spend in critical sea conditions during its lifetime", she added.

Combining the measurements with the probability calculations, the forces can then be determined with a highly satisfactory level of certainty. The risk that comes with adding new equipment can then be managed by the shipowner. **NA**

Smart operators

Growth in mobile phone usage onboard cruise ships is providing a challenge for the operators to meet the increasing demand. Maritime Communications Partner says it has the answer. By Sandra Speares

Keeping in contact with friends and family while on a cruise has often proved difficult but Maritime Communications Partner reckons it has found a revenue earner for cruise operators with its Smartphone product.

"We're easily talking 100% gains over current mobile-phone driven revenue on cruise ships," says Ole-Kristian Sivertsen senior vice president at Maritime Communications Partner.

One of the biggest challenges for cruise lines is to deal with diverse customers, different languages and cultures. "If you have a technology that is time and location aware and dynamically adapts content, look and

feel to the real-time context, this could be the foundation for becoming one global local cruise company – or as HSBC says: the World's Local Bank," says Sivertsen.

Cruise lines have an array of devices available for entertainment, information and marketing initiatives. From cabin TV and phone to smartphones, iPads, and PCs. "Imagine delivering content from a single platform seamlessly to any device at any moment," says Sivertsen.

With 10 years of experience serving the cruise and ferry industry, the company has a portfolio of more than 140 vessels. During the years these services have been available, the cruise line industry, according to MCP, has

earned more than US\$250 million in revenue simply by providing onboard mobile services.

There are practically no bill shocks associated with onboard mobile phone use any more," says Sivertsen.

Today some 30% of all guests actually use mobile services onboard. Current trends show a decrease in the number of voice minutes per user and a slight decrease in SMS but an explosion in mobile data, keeping total revenues growing.

"An increase from 1,000 to 1,500 passengers using their mobile for some calls, SMS's and internet access, easily represents 100% total growth in revenue just from providing the service," **NA**



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Making the right noises

ABS has updated its Guides from the update of the IMO Code, and the ILO MLC, 2006 Address Improved Noise Levels for Seafarer Safety and Performance

Hearing loss is considered one of the most common occupational diseases. Long term exposure to adverse noise levels can contribute to noise induced hearing loss. Also, inappropriate noise levels within seafarer spaces can interfere with concentration, thought and decision making processes, disrupt sleep, and cause fatigue. However, noise levels onboard a maritime vessel are one of the few seafarer habitability considerations that can be vastly improved if addressed early in the design process.

The IMO Maritime Safety Committee (MSC) has adopted a new Safety of Life at Sea (SOLAS) regulation II-1/3-12 that will require new maritime vessels to be designed and constructed to criteria which will reduce onboard noise, minimising potential noise induced hearing loss, and help improve the quality of life onboard ships. On 1 July 2014 the new regulation enters into force which will institute mandatory maximum noise level limits for machinery spaces, control rooms, workshops, seafarer accommodation areas and other spaces onboard ships.

Prior to the IMO adoption of the revised Code on Noise, the International Labour Organization (ILO) ratified the Maritime Labour Convention, 2006. Key objectives of this Convention, which enters into force in August 2013, are to provide seafarers with a safe and secure workplace and provide them with decent working and living conditions onboard ships. The MLC 2006 establishes minimum requirements for almost all aspects of working conditions for seafarers including conditions of employment, hours of work and rest, accommodation, recreational facilities, food and catering, health protection, medical care, welfare and social security protection.

The ILO MLC, 2006 does not provide specific decibel (dB) units for noise levels, but recommends conformity with the ILO international guidelines on noise exposure levels or with other international instruments for acceptable noise levels.

Crew habitability and comfort criteria published by various classification societies may be used to demonstrate compliance with the noise requirements in the ILO MLC or flag states may utilise the revised IMO Code on Noise to provide the criteria to satisfy the MLC requirements.

Various regulations and guidance documents have been issued to help control noise levels says Kevin McSweeney, manager of ABS's Safety & Human Factors Group. "The important point to remember is that no one noise level is appropriate for all spaces. Consideration needs to be given to the activities that occur within a space (sleep, reading, etc.), the communication requirements within the space (person-to-person such as bridge operations), and noise level expectations of the seafarers." ABS' crew habitability Guides offer criteria not only for noise, but for other ambient environmental aspects that can impact task performance such as whole-body vibration, indoor climate, general lighting and task lighting criteria.

Limiting noise onboard is an important factor for crew health



The noise levels in the new IMO Code on Noise represent a significant step forward in the development of industry standards that will help improve safety by providing the seafarer with a work (or rest) environment with minimal interference or annoyance from potential negative task performance effects from noise.

The IMO Code on Noise Levels onboard Ships was originally adopted in 1981 after the maritime industry realised that high noise levels could affect seafarers' health and impair the safety of the ship. At the time, the Code primarily stipulated maximum sound pressure levels for each habitable and recreational space, noise pressure limits, acoustic insulation requirements between accommodation spaces and required ear protection. These new amendments will supersede the previous non-mandatory Code, which was adopted by resolution A.468 (XII).

There are many basic approaches to noise regulation. The two most often used involve hearing loss prevention (hearing conservation) and crew comfort. There are shipboard noise sources that contribute to hearing loss over an extended period of time in spaces such as machinery areas where noise from auxiliary engines, pumps, compressors, fans and other equipment are major contributors. However, it should be noted that a key contributor to noise levels within seafarer accommodation areas is the heating, ventilation, and air conditioning (HVAC) system. The HVAC system has consistently been found to be a key contributor to noise levels within a space.

"Owners and operators have generally been following crew habitability guidelines and methodologies, so changing the design guidelines to accommodate appropriate noise levels should not be difficult to incorporate into designs says McSweeney. "By lowering the dB unit established by the Guides, appropriate noise levels for improved seafarer performance can enhance their comfort and enable them to

utilise a space for its intended purpose with minimal interference from noise.”

The revised Code will generally lower the maximum noise level by approximately five dB, depending on the actual location within the vessel (e.g. the engine room, cabin space, or recreational area). The Code is intended to provide a maximum noise level to help prevent the occurrence of potentially

hazardous noise levels onboard ships and to provide for an acceptable environment for seafarers. Although full application of the Code will differ among maritime vessels, the Code is intended to provide the basis for a design standard. “The adoption of the revised Code is a proactive step for owners and operators to take to protect their seafarers,” says McSweeney.

“Crew habitability and seafarer performance are important factors to consider in terms of overall ship safety,” says McSweeney. “If they aren’t getting the appropriate rest they need due to noise levels in living quarters, they may not be able to properly recover from the demands of their everyday assignments, putting them, the vessel, and possibly the environment at risk.” *NA*

Sure footing from MarineSafe

The Voyager Transport division of commercial flooring specialists Polyflor Ltd has expanded its range of marine sector floorcoverings with the introduction of Voyager MarineSafe sheet vinyl safety flooring

The flooring has been specially developed for the marine sector and is available in a choice of four colours. MarineSafe is a heavy duty flooring that is suited for use in areas which are normally dry, but where there are occasional slippery

surfaces— including stairway enclosures, control stations, staff quarters, en-suites, back of house corridors, circulation areas, service areas, washrooms and toilets, bar serveries, food preparation areas, kitchens and canteens.

New Voyager MarineSafe fully meets

Marine Equipment Directive 96/98 EC, and with all the required regulations and standards for the marine environment, and provides sustainable wet slip resistance throughout its guaranteed life in strict adherence to Health and Safety Executive guidelines. *NA*

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Loggers offers cutting edge technology

Noise and vibration problems are often encountered in the maritime industry. Higher productivity demands, compliance with working and safety regulations and environmental awareness require these problems to be taken seriously as Dutch-based Loggers explains

Whether induced by the heavy engines of an oil tanker, HVAC systems or pumps: vibration and noise have a negative impact on the systems onboard the vessel, the crew, the environment and the ship itself.

Solutions to noise and vibration problems vary from relatively simple to highly complex. Especially rotating equipment such as engines and generator sets are notorious sources of noise and vibration. Selection and installation of the appropriate vibration isolators usually does the trick, but more complex situations pose bigger challenges.

One of the most challenging maritime vibration problems is encountered on cutter suction dredgers. This type of dredger has been specifically designed for dredging in hard soil even under harsh conditions. Grinding rock, shock and vibrations are transmitted from the cutter head throughout the whole vessel. This negatively impacts the working and living conditions onboard and creates an unhealthy working environment leads to a failure to comply with safety and environmental regulations. Non-compliance simply means missed opportunities in countries and regions with strict local laws and regulations on working and living conditions onboard.

To safeguard their leading position in dredging, Dutch maritime contractor Van Oord ordered two of the world's most powerful self-propelled cutter suction dredgers at IHC Shipyards, named *Athena* and *Artemis*. *Athena* is deployed for dredging activities all over the world, while the sister ship *Artemis* is currently being built at IHC Shipyards in Kinderdijk, The Netherlands, which is due to be delivered in the first half of 2013.

The protection of the crew, the equipment and vessel against vibration and noise is considered of high importance by Van Oord. To overcome the notorious vibration problems of this type of dredger, one of



Artemis air spring suspension

world's most innovative companies in shock, vibration and noise control was asked for help. The shipyard consulted Loggers to suspend the complete deck house designed to accommodate up to 50 persons. This superstructure with dimensions of 13 x 17 x 14 metres weighs well over 400 tonnes.

There were two main challenges: vibrations of the first order of the cutter of 3-4Hz to be isolated and ship motion that needed to be taken into account. Loggers gathered all relevant data required, even through field research when needed, such as dimensions, weight, centre of gravity and maximum ship motion during operation. Due to the low frequency and nature of the vibration problem, Loggers concluded that only an air suspension based solution would isolate the annoying and harmful vibrations in an effective manner.

Based on previous experience with their patented air suspension systems for submarines, towboats and offshore rigs, Loggers developed the most advanced

maritime air suspension system to date for the superstructure, Dredgair.

The data acquired was used as input for calculation and design of the solution. After analysis the optimal outcome was determined by the engineers. They came up with a design consisting of:

- Supporting air springs for a high degree of isolation at low frequencies
- Stabilisation air springs to absorb ship motion
- A fully automated pneumatic system for inflation, exhausting and regulation
- A design for an internal boundary structure in vertical direction on operational air spring setup.

The Dredgair solution features an automatic height positioning system and an adjustable system sensitivity that are controlled through a user-friendly control panel. The air springs for *Athena* and *Artemis* are grouped into seven separate sections, which are actively being monitored by the

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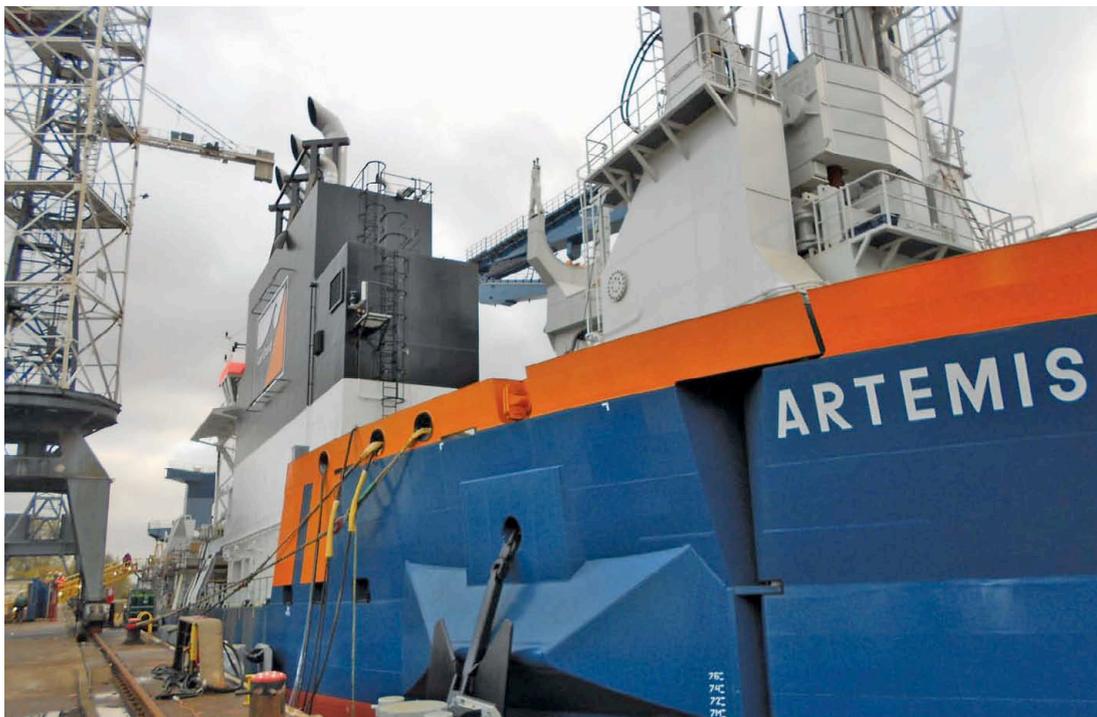
system. When, for instance, roll or pitch movements occur, the system automatically takes action by inflating and/or exhausting the relevant sections.

When the air springs are empty during normal sailing mode the deck house rests on the hull, secured by sea-fasteners. Before dredging activities start the system is put into dredging mode in which the sea-fasteners are removed and air is inflated

into the air springs that lift the deck house from the hull. This prevents shock and vibrations being transmitted through the hull to the superstructure where the crew works and lives.

The end result exceeds all expectations as vibration isolation already starts at 1.5Hz, resulting in unprecedented calm and silence in the accommodations. The Dredgair solution also provides a high

isolation rate of higher frequencies and is capable of absorbing shocks induced by the cutter head when it encounters rock or irregularities in the hard soil. After their shift the crew is able to rest on board while the next shift takes over dredging. The system provides Van Oord the competitive advantage of 24/7 dredging in regions where the strictest working and safety regulations apply. [NA](#)



Artemis at IHC Shipyard

KONE eco-efficient solutions for TUI Cruises vessel

KONE has signed an agreement for the installation of elevators and escalators onboard TUI Cruises' vessel, *Mein Schiff 4*

The latest cruise ship is the sister ship of *Mein Schiff 3*, which will also have KONE's solutions installed onboard. Both vessels will be built at STX Finland's, Turku shipyard, the former being set for delivery in the spring of 2014 and the latter in the spring of 2015.

KONE will provide a total of 22 units for the vessel, consisting of 10 elevators for passengers and eight elevators for service use, two escalators and two platforms for people

with impaired mobility. All of the elevators are KONE MiniSpace elevators with compact machine rooms and are equipped with the latest KONE eco-efficient technology, including energy recovery systems. Powered by the KONE EcoDisc hoisting machine, these solutions are 50-70% more energy efficient than conventional elevators, highlighted the company.

KONE says that its People Flow solutions will facilitate the smooth and efficient

movement of 3,500 passengers and personnel onboard *Main Schiff 4*. "We appreciate the long lasting and strong collaboration with the shipyard, shipowner and the architects during the design phase of the first ship," says John Hemgård, head of Marine Business at KONE. "Our ability to provide reliable and energy-efficient people flow solutions with state-of-the-art design has supported STX and TUI Cruises to develop their next generation cruise ships." [NA](#)

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NAPA looks to a greener future

Finnish-based software provider NAPA is developing its software so that it will help yards and shipowners to design more efficient ships

The latest developments at NAPA to its structural design tools has come about through the latest amendments to the rules and regulations for tankers and bulk carriers and also from customer demand, where more finite element analysis (FEA) in the design process will be needed to keep up with the latest rules the company has highlighted.

Ilmo Kuutti, executive vice president, NAPA says: "The Common Structural Rules (CSR's) are harmonising, this will mean that they won't all be the same but similar, which will call for more finite element analysis (FEA)."

Kuutti also highlights that the harmonisation of the CSR's will create more work for naval architects when designing tankers and bulk carriers, but this task will be made more of a challenge if the correct tools are not available. Kuutti says that it will be harder for naval architects without the proper tools to make 3D models. "This period is fraught. It will be a big challenge for designers, but there is time to cover it all."

Added to the demand for the analysis is the need for the software to be able to complete the analysis. Kuutti also highlighted that the CSR harmonisation has put pressure on software developers to create workable, user-friendly software.

Further development in its structure design process, NAPA has also made improvements to its NAPA Steel tool. "The software has been more integrated into the design process; we have seen a move from 2D drawings to



Mein Schiff 3 the latest edition to TUI Cruise's fleet that has used 3D modelling in its design

3D models, where we now see technical drawings being pulled from the 3D model for approval by classification societies. This is not that new in the industry as the 3D way of working has been used in the cruise industry for the last 10 years."

One trend that NAPA has noticed from its customers is that Asia is now moving more heavily into specialist fields such as the offshore market where designs of vessels require more specialist knowledge and tools. Kuutti also notes that Korea has been quick to move on this sector with Japan sticking with conventional cargo ship designs and China focusing on series of vessels.

"China in general is still at a lower technical level compared to Korea, where as some companies are more up to date. However, China is catching up and they seem to be taking on the new technology quickly. I do not think that it will take them long to catch up with Korea", Kuutti says.

NAPA has also been working closely with STX Europe with the coordination and design on one of their projects for two cruise ships for TUI Cruises. This project used the NAPA 3D modelling software comprehensively.

The production of the first cruise ship, *Mein Schiff 3* (NB 1383) started in November and is scheduled for delivery in spring 2014. The production of the second ship will start in summer 2013 and it will be delivered from Turku Shipyard in spring 2015.

Mein Schiff 3 will be constructed at the Turku Shipyard. The 99,300gt cruise ship will be approximately 294m long and approximately 36m wide. The ship will have 1,250 staterooms, serve 2,500 passengers and have a crew of 1,000 persons. The cruise ship will have many environmentally friendly features, with a particular emphasis on the vessel's energy efficiency.

NAPA has also been working on developing its Safe Return to Port functionality. Further development has been made in the area of fire situations and how to handle fire safety. Further development of flooding simulation has also been completed.

The testing that was carried out in this area can be applied to a range of vessels, but is especially applicable to passenger ships. A variety of equipment was tested for its behaviour, such as doors, under water pressure, which was carried out under the auspices of the EU project Floodstand. The results have been applied in NAPA for improving the accuracy of flooding simulation, comments Kuutti. **NA**

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Russian icebreakers get Finnish thrust

Steerprop, The Finnish-based propulsion specialist, has received an order from the Russian Federal Agency of Marine and River Transportation for thrusters for two new icebreakers

Steerprop will deliver two SP 110 ARC PULL propulsors to each icebreaker, with the total value of the order exceeding €30 million (US\$39,177 million). These units will have a power rating of 9,000kW per propulsor with open pulling propellers and each will be classed according to the icebreaker 7 ice-classification of the Russian Maritime Register of Shipping. The ships will have diesel-electric power plant and the propulsors will be driven by AC electric motors.

The multi-purpose icebreakers that are a development of *St. Petersburg* and *Moscow* icebreakers will operate in the Gulf of Finland. They will be built to operate in up to 1.5m of



The SP 110 ARC PULL propulsor that will be installed in the two icebreakers

ice and their operational capabilities will include assisting tankers and cargo vessels as well as acting as towing and rescue vessels. The first shipsets will be delivered to the shipyards in

Vyborg in the spring of 2014 and the following two shipsets three months and six months later.

Steerprop says that the thrusters were chosen by the customer because of good manoeuvrability and propulsion efficiency, which means that the ship can turn around on the spot, move forward, backwards and sideways, has good ice management capability, allowing for the icebreakers to leave behind a much wider channel by using the propeller flow of the propulsors.

Also, it notes that the reliability of the thrusters in the most severe conditions has been proven by previous vessels that have operated in harsh environments such as the Russian Arctic areas and Finnish Gulf without problem. **NA**

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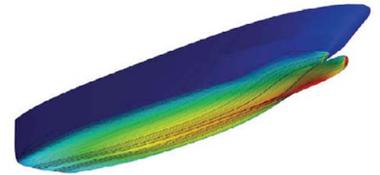
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Design, Construction & Operation of Super and Mega Yachts



8-9 May 2013, Genoa, Italy

First Notice & Call for Papers



The Royal Institution of Naval Architects will be returning to Genoa, to host the International Conference on Super & Mega Yachts for a third edition.

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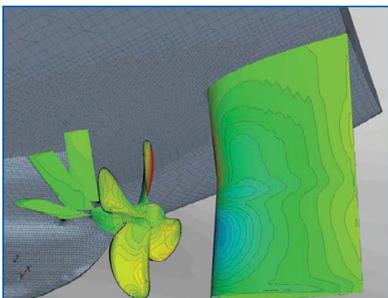
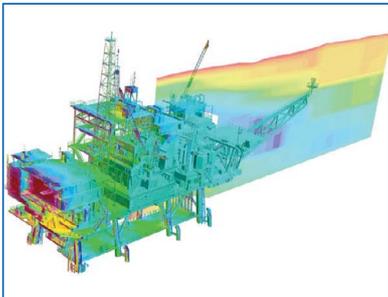
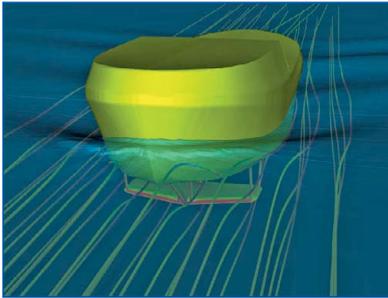


The Royal Institution of Naval Architects

DEVELOPMENTS IN MARINE CFD

12-13 December 2013, Chennai, India

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Computational Fluid Dynamics (CFD) is now used to solve a wide range of maritime applications from resistance prediction to slamming loads calculation. While it may still lack the accuracy to match results obtained in real-life experiments, it can provide important insights into physical flow characteristics and offers an economic way to investigate a range of design options.

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While it might not yet be possible to develop a single CFD tool suitable for all maritime applications significant progress has been made in the past two decades towards the development of the 'numerical towing tank' and 'virtual basin or cavitation tunnel'. Research and development work is still ongoing to enhance their stability, accuracy, computational speed and to integrate CFD into the overall design process.

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Overseas:	£182	£318	£457	

2013 SUBSCRIPTION

Period	12 Months	24 Months	36 Months	Ref: J7
Inland:	£124	£217	£309	
Europe:	£131	£227	£327	
Overseas:	£149	£260	£374	

2013 SUBSCRIPTION

Period	12 Months	24 Months	36 Months	Ref: J8
Inland:	£57	£100	£142	
Europe:	£63	£109	£159	
Overseas:	£70	£119	£173	

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