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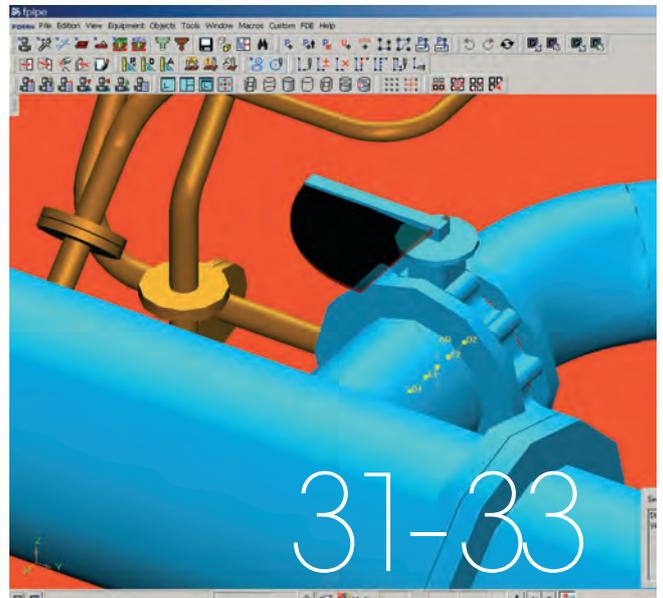
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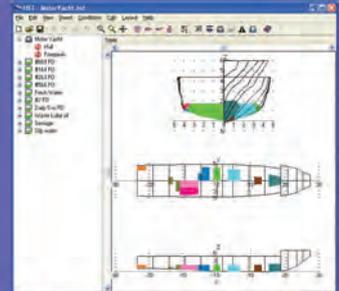
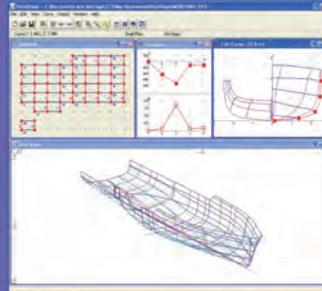
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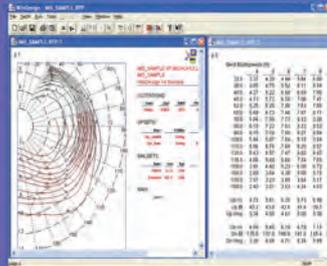
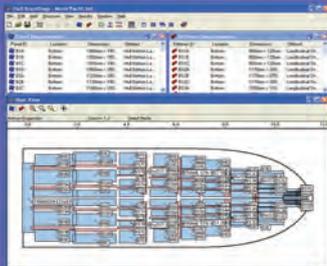
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China's thirst for knowledge

The first Hudong-Zhonghua-built liquefied natural gas carrier is due to be delivered in November.

The need to support China's fast-expanding shipbuilding industry with strength in depth research and development is being recognised through the welcome establishment of new ventures dedicated to progressing homegrown maritime and offshore expertise.

One such move has seen the establishment of the CCS-DNV Technology Institute, a unique joint venture between China Classification Society and Det Norske Veritas, which was officially inaugurated in Shanghai in early November.

Witnessing the fact that the Institute is geared towards addressing the challenges that face shipbuilding today, as well as those to come, its first objective is to focus on coating testing to respond to the IMO rules on the Performance Standard for Protective Coatings. The laboratory performs testing according to the PSPC requirement of prequalification testing of coatings for seawater ballast tanks.

This is the first step for an important venture that will play a key role in embedding research and development at the heart of Chinese shipbuilding. Already, plans are afoot for the Institute to expand its laboratory services into fuel; lube oil testing, and materials and strength during the next phases.

In a separate development, DNV and Cosco Shipyard Group signed a Strategic Cooperation Agreement at the World Shipping (China) Summit 2007. Under the new agreement, the two parties are

committed to enhance the competence on commercial shiprepair, conversion, newbuilding and offshore Classification. Technical support services and training through DNV Academy are also covered by the new agreement. The cooperation agreement is valid to 2012.

In recent weeks, meanwhile, Lloyd's Register, Germanischer Lloyd and RINA have opened new training centres in Shanghai to support China's marine industry.

LR's move put in place the cornerstone of a YUAN3 million (\$405,000) commitment this year to the development of educational courses and related infrastructure in China. It creates a centre of learning through which working surveyors and auditors can share their technical knowledge with China's shipbuilders, owners and maritime students through specifically tailored seminars, lectures and training courses.

John Stansfeld, Lloyd's Register Asia director, said: 'China's rapid emergence as a modern maritime power has been spectacular to watch. But it is no secret the country's shipbuilding industry has technical challenges to surmount before it can become the world leader by 2015.'

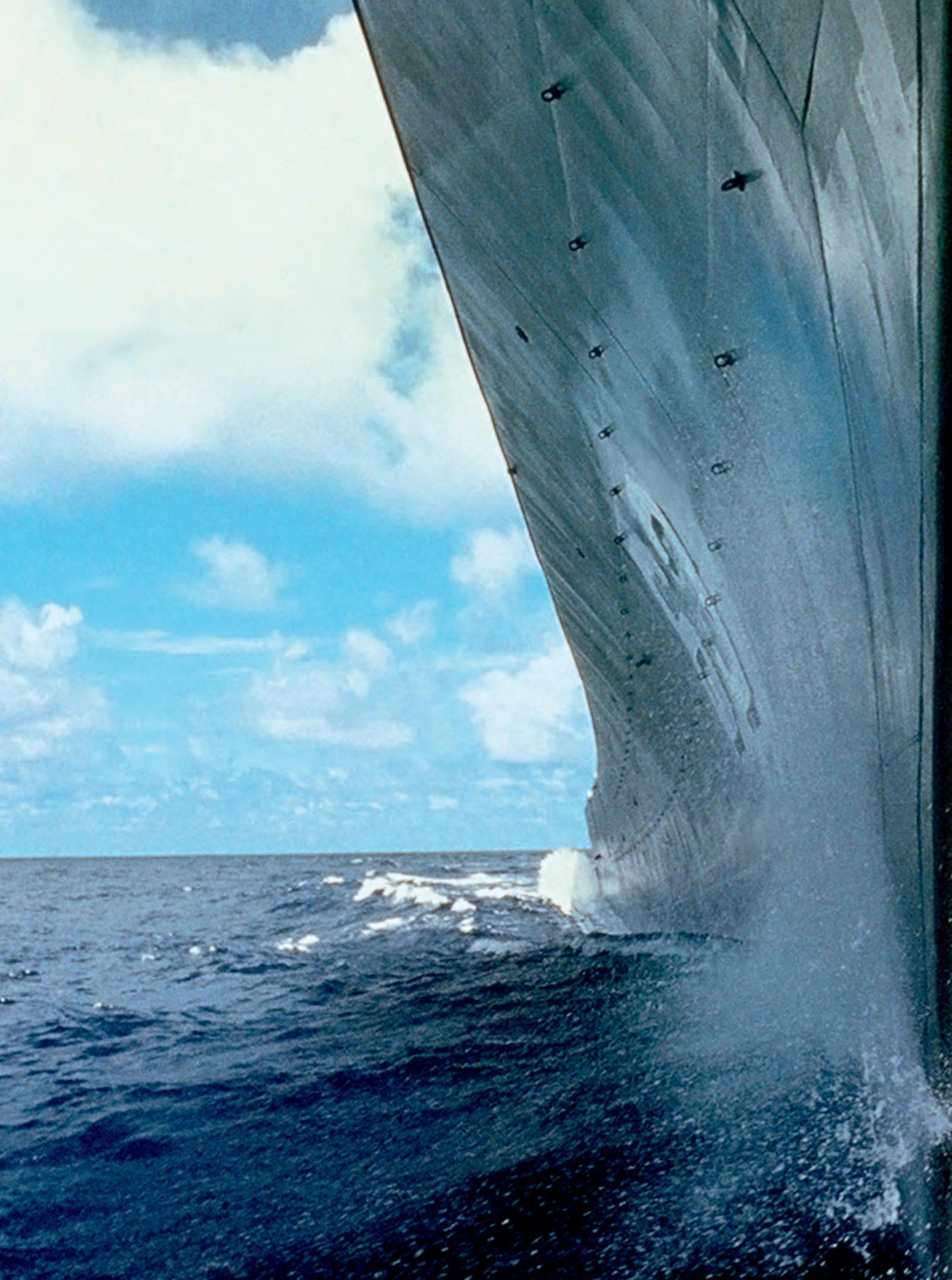
The LR Shanghai office, which is expected to be the first in a network of such facilities provided by Lloyd's Register Asia in China and North Asia, will have the capacity to seat up to 50 students at each seminar, lecture or training course.

Again, PSPC is an early topic for knowledge transfer. 'The Chinese shipping industry has an insatiable appetite for knowledge which translates into demand for not only training courses, but short lectures and seminars on their latest challenges.'

"China's rapid emergence has been spectacular to watch. But it is no secret the country's shipbuilding industry has technical challenges to surmount"

said Roy Ellams, LR marine client training manager, North Asia. 'Understanding the impact of the new regulations governing the performance standard for protective coatings on ships is a good example.'

GL's new divisional training centre covers the training needs for all Germanischer Lloyd employees in Greater China. The program encompasses all aspects of shipbuilding classification requirements. NA





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Shipbuilding

Harmonised BIMCO contract

BIMCO has officially published its NEWBUILDCON – the shipping industry's first international standard newbuilding contract.

Nils-Gustaf Palmgren, who headed the project, says: 'Most existing forms used for shipbuilding are routinely amended and supplemented. NEWBUILDCON incorporates these common amendments and additions in a simply and clearly worded document. It has been uniquely structured in a way that easily guides the parties through the sequence of events involved in a shipbuilding contract.'

BIMCO's ambition has been to produce a standard document representing the entire lifecycle of a ship from construction through trading to demolition, and to provide builders and buyers with a choice of contract over those currently in use. At present, most buyers are obliged to rely on the chosen yard's contract.

In its simplest form, the BIMCO Contract provides both parties with a checklist, to help ensure that the final agreement between the parties contains the key provisions required in any shipbuilding contract. It is not an attempt to impose a set of rigid terms and conditions as a replacement for existing yard contracts.

Most importantly, says Mr Palmgren: 'NEWBUILDCON allows the parties to concentrate on the underlying main particulars and specifications of the contract without the need for a wholesale review of the entire contractual terms.' It will allow 'the clearer legal provisions dealing with important aspects such as permissible delays, guarantees, responsibilities, and exclusions from liability, insurance, termination, and dispute resolution. It is hoped that some of these clauses will assist in harmonising contractual provisions in the shipbuilding sector.'

Bulk carriers

Ice class Capesize for Fednav

Fednav is set to order what will become the largest ice-class bulk carriers ever to be built, by some distance. The Canadian operator said it was looking to deploy up to nine 130,000dwt polar carriers to transport iron ore from Canada's high north to Europe, after being selected in May by Baffinland Iron to deliver industrial shipping services for its Arctic iron ore mine, to be operational by 2013.

The DNV Ice-17 (equivalent to IACS UR PC4) vessels will be built to operate in multi-year floes and cut through 1.7m of ice. As well as featuring very heavy scantlings, the ships will feature an ice bow similar in shape to that seen on the Fednav OBO *Arctic*.

At 130,000dwt, and with a length overall of 310m, a

beam of 46m, and a draught of 17.8m, these ships will dwarf Fednav's largest Ice-Class bulk carrier to be built to date – the 2006-built DNV Ice-15 Class, 32,000dwt *Umiaki*.

Fednav said it would await quotes from shipyards before releasing any more details of the ships' designs. However, it revealed that it had considered, but rejected, a proposal for the Capesize bulk carriers to be built as double acting ships, as such a vessel type had not so far been deployed in the Canadian Arctic. Even so, the shipowner said that the idea had not been ruled out for a second generation of ships, orders for which would be contingent on whether Baffinland doubled ore production in the years after 2013, as currently envisaged.

Design

Ulstein LOI for Sea of Solutions

In a move that signals a further broadening of its ambitions, the Ulstein Group has signed a letter of intent that looks towards the acquisition of Dutch design house Sea of Solutions by January 2008.

Sea of Solutions designs ships for the heavy offshore sector, effectively extending Ulstein's product portfolio.



The 5000tonnes heavylift vessel *Borealis*, designed by Sea of Solutions, and currently under construction at Sembawang Shipyard for Nordic Heavy Lift. Planned delivery date March 2010.

It focuses on deepwater ships, for drilling, pipelay, or heavylift operations. It is also actively involved in upgrade and conversion projects for existing offshore vessels.

Established in 2001, Sea of Solutions now has 12 employees. If the contemplated transaction goes through, the name of the new company will be Ulstein Sea of Solutions.

Research & Development

Marin bid to cuts fuel bills

High fuel oil prices and increasing restrictions on exhaust gas emissions are prompting shipowners to

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look again into reduction of fuel consumption while maintaining schedule integrity.

Accordingly, Dutch research and development institute MARIN is managing a new joint industry project, entitled 'Service Performance Analysis' (SPA-JIP), that looks to develop a method for a speed-power performance analysis for ships in operation.

Fleet comparisons have shown that fuel consumption of sisterships on the same trade may vary up to 10%. Reasons are differences in hull, propeller, and machinery, but also smart operation of a vessel can reduce fuel consumption significantly. Especially optimum trim, weather routing, speed control, and auto pilot setting contribute to fuel savings by more than 5%.

Companies participating in the new project, which has just started and is due to report in late 2008, will obtain a standard software tool for continuous performance monitoring onboard their ships. The tool can optimise ship operation with regard to ballast, trim, routing, or speed setting, and improve the ship systems such as auto pilot or CPP pitch setting.

It will also look to enable advantageous planning of maintenance on hull and propulsion.

As part of the project, monitoring campaigns are being conducted onboard four ships. In the first project phase, the speed-power analysis method is developed based on monitoring results. Data are generated from sensors already onboard and made available through Voyage Data Recorders (VDR). Vessel speed, shaft torque, and rev/min are basic input signals. These measurements will be combined with wind and wave conditions. The project is being conducted in close cooperation with shipowners

and operators, class societies, VDR suppliers, and fuel consumption specialists. To date, participating companies include Danaos, DNV, Germanischer Lloyd, Hapag Lloyd, L3-SAM, Lloyd's Register, Maersk, Marorka, NYK, Stena, Stolt-Nielsen, UECC, Wagenborg, and Wallenius.

Propulsion

Wärtsilä signs for Russian low speed

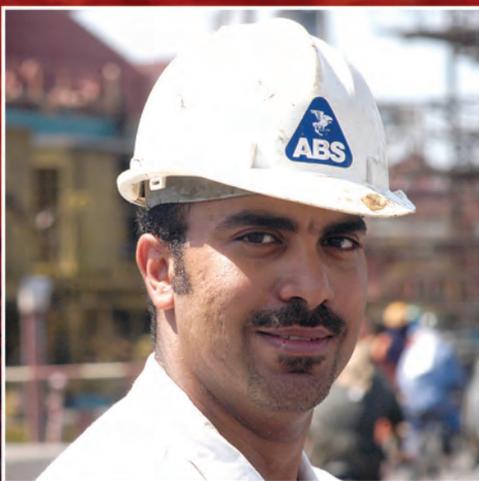
Wärtsilä and Bryansk Engineering Works (BMZ), manufacturing subsidiary of Transmashholding, JSC of closed type, Russia, have signed a licence agreement for the manufacture of Wärtsilä low-speed marine diesel engines by BMZ.

Wärtsilä and BMZ said the agreement was a basis for a long-term cooperation. The large marine engines concerned will incorporate RTA engine technology and RT-Flex electronically-controlled common-rail technology. BMZ will focus on manufacturing engines of up to 82cm bore size, with power outputs from 8MW to 30MW, which are in most demand by the marine market. The first Wärtsilä engine built by BMZ will be delivered in 2009.

Propulsion

MAN steps up with Burckhardt

MAN Diesel and Swiss reciprocating compressor maker Burckhardt Compression have concluded an agreement



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

on a strategic partnership, the aim of which is to achieve a significant market share for the ME-GI propulsion system for LNG vessels.

The philosophy behind the ME-GI system is that it can alternatively be operated with natural gas or heavy fuel oil. The fuel gas compressor system, developed by Burckhardt Compression, will deliver boil-off gas (BOG) to MAN Diesel ME-GI engines for injection.

MAN Diesel senior vice president, Ole Grøne, said: 'To maintain high efficiency, safety, and reliability when operating the ME as an ME-GI engine, it is vital that the LNG system for providing gas to the engine is based on

top-quality products and state-of-the-art technology. MAN Diesel values Burckhardt's long experience, its ability to tailor its designs, and its high quality end-product as recognised within the industry.'

Research & Development

DNV signs research deal with NTUA

A strategic research and development collaboration agreement has been signed between DNV and the National Technical University of Athens (NTUA). This agreement will then be followed up by DNV establishing a research and innovation hub in Athens/Pireaus early next year.

The collaboration will focus mainly on the maritime industry and the university's School of Naval Architecture and Marine Engineering. Ship design optimisation and effective bulk transportation are the two main topics initially selected.

According to the latest agreement, DNV will donate an annual sum of money to NTUA. A number of doctoral students, post doctoral students, and professors will be involved in developing this new collaboration. At this stage and for the first three years, NTUA's two laboratories, Ship Design and Maritime Transport, will have a central position in the programme. [NA](#)



Ole Grøne, senior vice president of MAN Diesel (left) pictured sealing the agreement with Burckhardt Compression chief executive, Valentin Vogt.

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Propulsion

Wärtsilä drives forward

A 20-cylinder version of Wärtsilä's 46F medium-speed engine was recently launched, and is said to have low operating cost and emission levels. It develops 23,000kW at 600rev/min, and offers more power than the existing 18-cylinder version, while maintaining high energy efficiency.

The 46F is claimed to be environmentally friendly, with NOx emissions down to 710ppm. The complete diesel genset is 21m long, with an extreme width of 6.275m, and a height of 6.2m above the underside of the baseframe, and has a total weight of 413tonnes. Manufacture of the 20V46F will take place at Wärtsilä's Trieste factory in Italy and the Vaasa factory in Finland, with the first engines expected to be shipped in the latter part of 2009.

Wärtsilä has also been awarded a propulsion package order by Ben Kien Shipyard in Haiphong, Vietnam, to be installed aboard a 564TEU multi-purpose carrier to be built for Hai Duong Shipbuilding and Shipping Co, both companies being Vinashin subsidiaries. The vessel has a length on 115m and a moulded breadth of 20.8m.

The package will comprise an eight cylinder Wärtsilä 38 diesel engine, 4.4m diameter four-bladed CP propeller, shafting, reduction gearbox, stern tube, and shaft seals. The propeller will be equipped with a Lipstronic 7000 pitch control system, and the main engine will develop a maximum continuous power of 5800kW at 600rev/min. The package is due to be delivered in January 2009.

Additionally, Wärtsilä's new LJX 1500 waterjets were put through sea trials by Sinclair Knight Merz Pty Ltd in July 2007. The units have a capacity



Two of the four Wärtsilä LJX waterjets in action at full power onboard *Natchen Rera*.

of 9000kW, and are claimed to reduce transom mounting flange by 25%, and weight by 10%, with a 35% improvement in cavitation margin compared to other waterjets on the market.

Test results showed that the predicted weight reduction figure was exceeded, reaching 14.5%, and the jets only emitted low noise levels. The first LJX 1500 waterjets have been installed aboard the 112m-long *Natchan Rera*, the high-speed catamaran built by Incat Australia, able to reach trial speeds of up to 45.4knots with 250tonnes deadweight onboard.

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

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The new Wärtsilä 20V46F develops 23,000kW at 600rev/min.

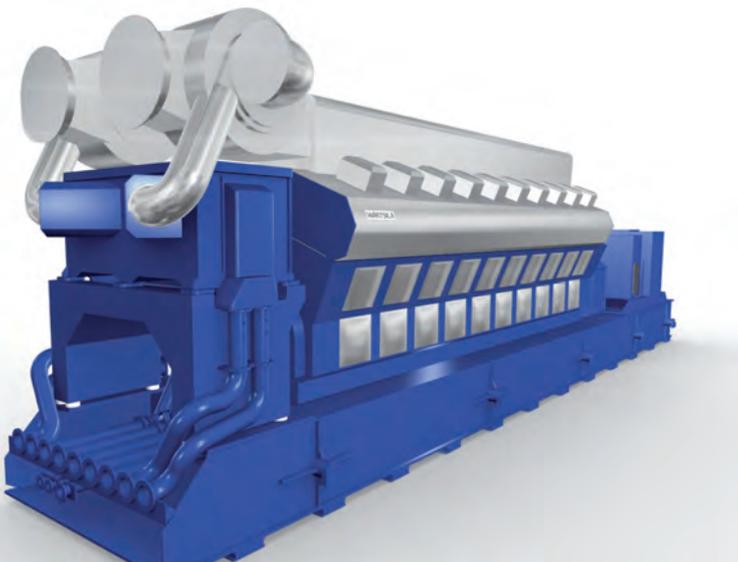
Ancillary equipment

Chinese hatch plan

Marine equipment manufacturer TTS has joined forces with Keyon, a Chinese steel structure fabricator, in order to increase TTS' worldwide production capacity. The joint venture manufacturing facility will have a potential capacity of 35,000tonnes of steel, employing 260 people to fabricate hatch covers, ro-ro equipment, and cranes.

Stellan Bernsro, head of TTS' dry cargo division, commented: 'This joint venture will further enhance our capacity to meet the market demand, also giving us better control of project execution, while bringing our technical team closer to the fabrication process.'

The establishment of TTS Keyon Marine Equipment is projected to double the output of manufactured products, with the company already holding orders in excess of 20,000tonnes of steel structures for delivery



in 2008 and 2009. The business will use TTS' production technology and experience to manufacture goods, creating a steady and continuous capacity for its European and Asian customers.

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Fax +47 55 94 74 01

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Ancillary equipment

Costa Crociere takes the Fläkt

Fläkt Woods has been selected to provide 74 air handling units for three large cruiseships recently commissioned by Italian shipowner Costa Crociere. The contract, worth €6.5 million, comprises AHUs from Fläkt's EUMM range.

The vessels will be built at Fincantieri's Marghera shipyard near Venice, Italy, and will each be 292m long, designed to carry 2260 passengers and a crew of 900.

The EUMM range is manufactured specifically for marine and coastal environments, and is a modular system said to offer flexibility of function, size, and process. The units feature flush fitting stainless steel panelling with a 50mm-thick double skin, housing rigid sheet mineral wool insulation optimised for heat retention and sound attenuation, and all components are corrosion-resistant.

Anders Mårtensson, group communications manager, Fläkt Woods Group, noted: 'The EUMM air handling units are specifically made for the environment for which they have been selected. We are proud to be involved in such a prestigious undertaking.' Delivery of the units started during October 2007 and should continue through to the end of 2009 when the final vessel nears completion.

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Automation

Pieter Schelte powers up

Technical services provider Imtech has signed a €35 million contract with Allseas to provide the automation and technical infrastructure onboard newbuilding *Pieter Schelte*, said to be the largest offshore construction vessel in the world when completed. Allseas specialises in the deployment of pipelaying vessels for the international oil and gas market.



Pieter Schelte will have its automation and technical infrastructure provided by Imtech.

Pieter Schelte will measure 360m in length and 117m in width. It will have the capacity to assemble, disassemble, or relocate jackets of up to 25,000tonnes, as well as topsides of up to 48,000tonnes. Due to the vessel featuring a high-tech system for laying pipelines on the ocean floor, down to a depth of around 3500m, it can also play a role in the transport of oil and/or gas.

Imtech will provide a major part of the integrated power and automation package for the vessel, as well as the technical infrastructure, including drives and transformers for the eco-friendly electrical propulsion, power management, power generation and distribution, and the vessel management system with all the integrated automation solutions. The firm will also be responsible for commissioning and operation, and will perform the project management for other equipment for propulsion and energy generation to be supplied by third parties.

In addition, Imtech will fit a dynamic positioning system that makes it possible to manoeuvre the vessel accurately at sea all weather conditions. The design, engineering, implementation, and commissioning will start this year and will take several years to complete, and the ship is scheduled to be put in service by 2011.

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Ancillary equipment

New group's wide range

The Kockumation Group has been formed with the acquisition of both Texon Automation and Polarmarine, by Kockum Sonics, and the company can now



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Ecospeed is an extremely durable hull coating that will save on fuel costs and give increased speeds. It is expected to last for up to 25 years and is guaranteed for 10.

Amongst recent applications are a 275 metre, 5000 TEU container ship, several ice-class cargo vessels and a major cruise liner—with more of each category planned for the near future.

The Belgian Navy have been using Ecospeed on a number of their vessels since 2004 and have committed to applying it on the remainder of their fleet as the time comes for repainting.

The growing appeal of Ecospeed comes down to a number of key factors.

The final hull surface has very low roughness levels. This, together with its corrugated surface, gives fuel savings through reduced consumption and increased speed.

The strength and impermeability of the coating provides a very high degree of protection against mechanical impact and corrosion. The endless cycle of hull repainting every two to five years can therefore be dispensed with. Even after being tested under extreme Baltic winter and ice conditions it has proven to

be an effective protection against mechanical impact.

In addition, the coating has no adverse effect on the environment as it is entirely toxic-free.

Ecospeed can be used on most ships, offshore vessels and structures. It has proven to be ideally suited for fast moving container and cargo ships, cruise vessels and ice-going ships. Its use can remove major headaches for ship superintendents. With no repainting necessary, yet protecting the hull surface against corrosion, there will be many additional advantages such as significant savings on repair and maintenance costs.

offer a wider range of packages to all customers, covering loading computers, boiler automation, tank cleaning equipment, cargo and ballast automation, ship's whistles, and sonic cleaning systems.

Texon Automation provides control and combustion process engineering services, and has implemented several major upgrades as well as installation, commissioning, and operation of more than 250 marine boilers, of which 22 are dual fired onboard LNG carriers. All installation work is done at docking, without any additional off-hire time, plus the company offers combustion controls, burner management systems, boil off gas control systems, and flame monitoring.

Kockum Sonics Marine was associated with Kockum Shipyard and has a product range spanning from acoustic signal systems to level gauging systems. All of its products are said to be developed in cooperation with sailing masters and naval architects, as well as shipowners and classification societies.

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Water treatment

Lazur beams out clean water

Hydroscape has launched its Lazur water disinfection system in the UK, a unit which combines ultraviolet radiation and ultrasonic/acoustic vibrations in the treatment of water. This combination produces oxidants that are uniformly distributed in the water volume and are said to provide 99.9% elimination of all micro-organisms, viruses, and protozoa, at initial concentrations of up to 10⁶units/litre.

The ultrasonic transducer, located directly in the ultraviolet radiation chamber, causes the formation of steam-gas bubbles in the water under low pressure. These bubbles form around a nucleus that can be spores, fungi, or bacteria, and when the water is pressurised, the bubbles 'burst out', creating zones of high temperature and pressure, which destroy organisms in the vicinity. The transducer also provides a cleaning action, preventing the build-up of biological films or chemical residue on the quartz sleeves of the UV lamps.

At the same time, free radicals, ozone, hydrogen peroxide, and other active substances are generated in the bubbles under ultraviolet radiation at 185nm wavelength. Due to the amount of bubbles and their tendency to burst, the free radicals are mixed through the water to destroy any remaining organisms. In this case, ultraviolet radiation

essentially stimulates the disinfection action of the free radicals.

Power consumption for this treatment is about 7W-8W per m³/hour, and the service life of the UV lamps is approximately 16,000 hours. Lazur systems are available in flow rates from 0.5m³/hour to 500m³/hour, and higher flow rates can be reached through the parallel set-up of standard units.

Contact Hydroscape Ltd, Water House, 10 Carvers Industrial Estate, Southampton Road, Ringwood, Hampshire, BH24 1JS, UK

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www.hydroscape.co.uk

Propulsion

LNG carriers opt for MAN

Three of the world's largest LNG carriers have successfully tested their propulsion packages, with each vessel being powered by two MAN B&W 6S70ME-C electronically controlled, two-stroke, low-speed diesel engines. The engines operate on HFO.

The three ships have been delivered from three different shipyards. *Al Ruwais* comes from Daewoo Shipbuilding and Marine Engineering, and is owned by German PRONAV. *Tembek* is from Samsung Heavy Industries and is owned by the US Overseas Shipholding Group. The third, *Al Gattara*, is also owned by the Overseas Shipholding Group and built by Hyundai Heavy Industries. Doosan Engine Co built the engines for the Daewoo and Samsung-built vessels, while HHI-EMD built the engines for the Hyundai-built vessel.

The vessels have also been fitted with four MAN Diesel 9L32/40 gensets each. STX Corp built those for the DSME and Samsung vessels, while those on the Hyundai vessel were built by Hyundai itself.

The LNG carriers are part of a Qatargas project that comprises 45 vessels, each fitted with two MAN B&W low-speed prime movers, making for a grand total of 90 electronically-controlled two-stroke engines. Of these, 31 QFlex carriers will receive two 6S70ME-C engines, each developing 18,660kW, while the 14 larger QMax carriers will employ two 7S70ME-C engines, each rated at 21,770kW at 91rev/min.

Contact MAN Diesel A/S, Teglhølmegade 41, DK-2450 Copenhagen SV, Denmark

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Samsung selects advanced CFD solution

Samsung Heavy Industries (SHI) has selected ANSYS technology to improve the quality and fluid dynamics of the ships it builds.

SHI has contracted ANSYS channel partner Advanced Technology Engineering Service Co, Ltd (ATES) in Korea to provide 128 parallel licences of ANSYS computational fluid dynamics (CFD) software. This is the largest parallel licence add-on ever completed in the Korean shipbuilding industry.

SHI investigated CFD analysis solutions to increase its ship design quality and fluid dynamic technology with the goal of reducing design time and the cost of new products.

'Shipbuilders must respond quickly to changing customer requirements,' said C B Hong, a research engineer at SHI's research and development centre. 'In addition, increasing trade with China has seen demand increase for both high-speed and larger vessels. To satisfy owners' requirements quickly, SHI is investing heavily in advanced computer-aided engineering (CAE) solutions,

including ANSYS. Many commercial CFD codes were tested, but ANSYS showed the best results, and we are satisfied with the technical support and customer care provided by ATES.'

As CFD software has matured, SHI believes that ship design based on CFD simulation is one of the most important steps to ensure that a design meets the customer's requirements for design and quality.

B Y Kim, sales manager for ATES, said: 'We intend to provide SHI with generous high-quality support to ensure that SHI gets the very best out of its software from ANSYS and to further increase usage of this technology with SHI.'

Ferit Boysan, vice president and general manager at ANSYS, Inc, added: 'The increased use of ANSYS CFD tools for shipbuilding design by SHI is another example of how a leading Korean company

is relying more and more on ANSYS technology to remain dominant in its field. SHI chose to increase its usage of ANSYS software because its engineers were confident in being able to rely on our technology and our company vision. Whether customers use our solutions for hull design or applications involving fluid structure interaction, ANSYS provides a comprehensive range of software products that are unbeatable.'

ATES distributes the commercial CFD codes FLUENT, ANSYS(R) CFX(R), ANSYS ICFM CFD(TM), and all other CFD products from ANSYS. In addition, the company performs engineering services and project consulting. In April 2007, ATES opened its first regional office in Daejeon to provide technical support to customers in central Korea; it plans to open another regional office in Pusan to support users in southern Korea. **NA**

New platform from ShipConstructor

ShipConstructor Software Inc has officially launched its next-generation shipbuilding platform, ShipConstructor 2008. The developer said the new package delivered a new standard in advanced AutoCAD-based, three-dimensional product modelling and production planning software.

To accomplish customer-focused goals, the SC 2008 design team enhanced the parametric modelling functionality introduced in the SC 2006 version, incorporated key data from customer needs analyses, conducted extensive beta testing by long-term users, and undertook a rigorous quality assurance process.

In addition, SC 2008 leverages the AutoCAD capabilities that reduce the time it takes to migrate to a ShipConstructor solution and simplify data exchange with other parties.

SC 2008 is compatible with programs such as Inventor, Rhino, MaxSurf, Multisurf, NavisWorks, and all versions



Vripack Yachting International - a ShipConstructor user.

of SQL Server 2000 and SQL Server 2005.

'This new function facilitates collaborative shipbuilding and floating offshore project development between engineering design teams in a completely secure IT environment,' said Steve Ivison, project manager, software development, SSI. 'It will be easy to outsource portions of a project to subcontractors

while maintaining overall control and concurrent engineering through periodic merges.'

Over 6000 ShipConstructor software licences are used by more than 300 organisations worldwide, including the US Navy, Dubai Drydocks, Austal Ships, Genoa Design, Vripack Yachting International, and Labroy Offshore. **NA**



**Formal agreement of cooperation:
The Royal Institution of Naval Architects
(RINA) and VINASHIN Shipbuilding Group**



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In addition, RINA will be present at VietShip 2008 and a further 800 copies of the first Vietnamese language edition will be distributed from our stand at this esteemed event.

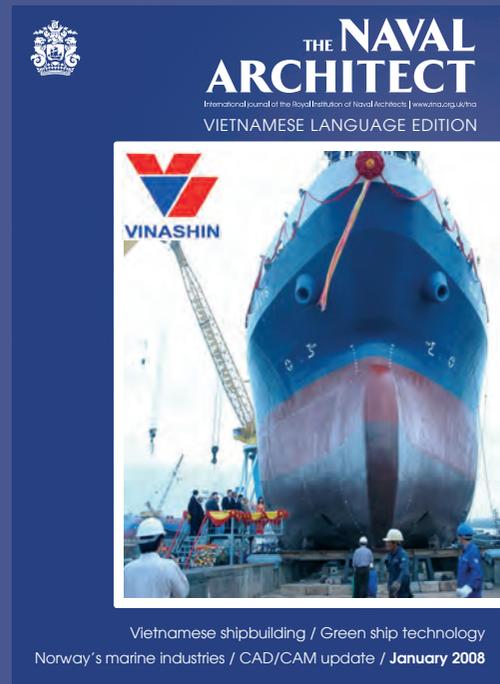
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Inching towards the goal

The IMO's latest Maritime Safety Committee meeting sees concepts relating to goal-based standards inch forward.

While the key decisions emanating from the International Maritime Organization's October session of the Maritime Safety Committee, in Copenhagen, may have related to the implementation of the Long Range Identification and Tracking (LRIT) System, progress was also made on matters related to regulating ship construction.

The MSC accepted the contingency offer of the United States to host, build, and operate, on an interim and temporary basis, the International LRIT Data Exchange (IDE), agreeing that a permanent home should be found for the IDE as soon as possible (within two years from 1 January 2008, subject to a further review by the Committee). An MSC resolution on the establishment of the IDE on an interim basis was adopted.

The LRIT system will consist of the shipborne LRIT information transmitting equipment, the Communication Service Provider(s), the Application Service Provider(s), the LRIT Data Centre(s), including any related Vessel Monitoring System(s), the LRIT Data Distribution Plan, and the IDE. The LRIT Data Centres communicate with each other and exchange information and data through the IDE and thus the IDE has a key and pivotal role in the establishment and functioning of the system.

LRIT information will be provided to Contracting Governments and search and rescue services entitled to receive the information, upon request, through a system of National, Regional, Cooperative, and International LRIT Data Centres, using where necessary, the IDE.

The establishment of the interim IDE will allow the LRIT system to be launched on schedule with multiple LRIT Data Centres operating and joined through the IDE.

Goal-based standards

Meanwhile, the MSC re-established the Working Group on Goal-based Standards (GBS) for New Ship Construction and made further progress on the issue.

A work plan for the further development of GBS was agreed, with both the prescriptive and the safety level approach included as integral elements of IMO GBS. The plan includes: clarification of the work to be done to develop a generic GBS framework; identification and compilation of the elements of the framework

“The MSC also agreed a short term plan, which would lead to finalisation of the GBS for bulk carriers and oil tankers, including Tier III and the associated SOLAS amendments, with adoption of relevant SOLAS amendments and associated guidelines at MSC 86, scheduled for 2009”

that have already been agreed to or proposed in previous MSC submissions, working group reports or other IMO instruments (eg, FSA Guidelines, HEAP process guidelines) and identification of existing gaps; and development of a prioritised plan to close the gaps and provide a unified framework that ensures consistent development of GBS, ie both the prescriptive and safety level approaches.

The MSC also agreed a short term plan, which would lead to finalisation of the GBS for

bulk carriers and oil tankers, including Tier III and the associated SOLAS amendments, with adoption of relevant SOLAS amendments and associated guidelines at MSC 86, scheduled for 2009. A correspondence group on GBS was established to report to the next session of MSC.

The reports of two correspondence groups were reviewed, namely the Correspondence Group on GBS for oil tankers and bulk carriers and the Correspondence Group on GBS based on the safety level approach.

The MSC also considered the report of the Pilot Panel on the Pilot project on trial application of the GBS Tier III verification process using the IACS Common Structural Rules.

Trial applications

The Working Group reviewed draft guidelines for the verification of compliance with GBS, prepared by the Pilot Panel, following which the Committee agreed that a second trial application of the guidelines using the IACS CSR for oil tankers would be necessary in order to finalise the draft guidelines and approved the project plan for a second trial application.

The MSC noted that the GBS Working Group had discussed a draft MSC circular on guidelines for the information to be included in a Ship Construction File and that this would be further considered at the next but one session of MSC, when the GBS Working Group would finalise the draft SOLAS amendments on GBS for bulk carriers and oil tankers.

With regard to GBS for bulk carriers and oil tankers, the MSC has already agreed on a five-tier system, consisting of goals (Tier I), functional requirements (Tier II), verification of compliance criteria (Tier III), technical procedures and guidelines, classification rules and industry standards (Tier IV), and codes of practice and safety and quality systems for shipbuilding, ship operation, maintenance, training, manning, etc (Tier V). Tier I goals and Tier II functional requirements have already been agreed in principle. **NA**



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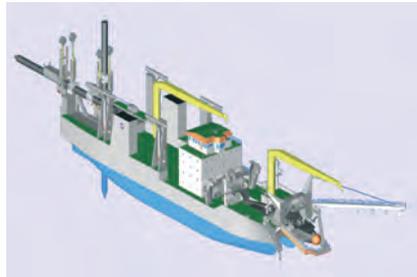
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Vosta dredger a Chinese first

Vosta LMG has signed a basic design and components package for one of the largest self-propelled cutter suction dredgers in the world.

Envisaging a dredging capacity of 4500m³/hour, Vosta LMG's design and components package for Tianjin Dredging Corp's new dredger is based on the cutter section dredger *Ursa* - formerly known as *Bilberg I* - which was designed, built, and supplied by LMG, Lübeck, Germany in the 1980s.



The proposed self-propelled cutter section dredger for Tianjin Dredging Corp.

The vessel will be built at a Chinese Shipyard and launched in 2009.

Following a year of tank tests at Hamburg's HSVA modelling basin, Vosta is specifying a new foreship section, with the hull effectively divided into catamaran for the front 25m of the ship. Vosta says the configuration will confer superior manoeuvrability over former designs.

Also new for a dredge of this size will be the arrangement of the cutter and dredger heads underwater, a feature Vosta says will offer better production efficiency in shallow water conditions, and which will be incorporated into a Chinese-built dredger for the first time.

The self-propelled CSD will have a cutter power of 4200kW and a dredging depth of 30m. **NA**

TECHNICAL PARTICULARS	
Tianjin Dredging Corp cutter suction dredger	
Length, oa.....	approx 128m
Breadth, moulded.....	approx 23m
Draught.....	approx 5.5m
Speed.....	approx 13knots

However, the new CSD design has been significantly upgraded to feature latest technology and a newly configured hull-structure for best sailing results under all conditions, a state of the art spud system, and the Vosta T6 cutter system.

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Barreras adds dimension and value

High specification, tailored ro-pax and seismic ships are coming out of Vigo-based shipyard Hijos de J. Barreras, writes David Tinsley.

An astute, market-attuned owning group made up of maritime and industrial interests and the yard management has steered business development at Hijos de J. Barreras since the transition from the state sector to private control in 1998. Profits have been ploughed back into the Vigo shipyard, a strong in-house design capability has been retained, and contract performance has been such as to foster customer loyalty and a constant replenishment of the orderbook in target, higher value-added fields.

The award this year of an export project entailing four large seismic vessels incorporating the revolutionary Norwegian X-BOW design was an endorsement of the Galician shipbuilder's technical capabilities and willingness to augment its product lines.

At the same time, continuity in the sphere of ferry and ro-ro construction, the market with which the Barreras name has come to be closely identified in recent years, has been expressed in a new

generation of vessels for the expansion-minded, Canary Islands-based owner and operator Naviera Armas.

As a high specification vessel tailored to a particular trading environment, the ro-pax *Volcan de Tamadaba* is the first of a new pair contracted by Armas, and the fifth in a series brought into commission since 2003. The new ferry has been assigned to the route connecting Tenerife with Las Palmas de Gran Canaria and Arrecife, Lanzarote, and is scheduled to be joined early in 2008 by sistership *Volcan de Tijarafe*, launched at Vigo on 30 August.

As a development on the preceding two *Volcan de Timanfaya*-class vessels, the *Volcan de Tamadaba*-type is longer and faster, offering a service speed potentially in excess of 23knots. In addition, the latest pair has been specified with improved passenger facilities, to raise standards on year-round inter-island duties while also increasing the operator's flexibility to run short mini-cruises. Armas is contemplating follow-on tonnage in the shape of two ferries larger in size than the *Volcan de Timanfaya* type, which offer a productive blend of capacity and

performance within main dimensions of 154.35m overall and 24.20m breadth.

Designed to provide year-round transport services in support of the Canaries' population and economy while also catering to the tourist traffic, *Volcan de Tamadaba* and *Volcan de Tijarafe* each combine provision for approximately 1000 passengers with a ro-ro intake corresponding to 1870 linear metres of 3m-wide lanes. While an all-up car intake would amount to some 630 units, the versatility of the arrangements suits the seasonally changing demands of the various routes, and the need to combine freight transport and car-accompanied passenger traffic. The maximum freight load is 80 trailers of 16m, and a freight-orientated mix could be 57 trailers plus 174 cars.

The *Volcan de Timanfaya* type introduced a significant number of passenger cabins into the design series and provided the template for the *Volcan de Tamadaba* duo, such that each of the latest newbuilds incorporates cabin accommodation for 206 passengers. The arrangements comprise eight double-berth cabins and 46 four-berth cabins, as well as two three-berth cabins fitted

TECHNICAL PARTICULARS

Volcan de Tamadaba

Length, oa.....	154.35m
Length, bp.....	137.00m
Breadth, moulded.....	24.20m
Depth, to main deck.....	8.35m
Depth, to upper deck.....	13.55m
Draught, design.....	5.50m
Corresponding deadweight.....	c.3350t
Draught, scantling.....	5.80m
Passengers.....	approx 1000
Ro-ro capacity.....	1870 lane-m@3m width
Vehicle units, maximum.....	630
Freight, maximum.....	57 trailers@16m (plus 174 cars)
Main engines.....	2 x 11,700kW
Service speed.....	23knots
Service range.....	approx 2200nm
Class.....	Bureau Veritas

Volcan de Tamadaba - representing a new standard from Spanish builder Barreras.





Wärtsilä main engines on *Volcan de Tamadaba*.



Volcan de Tijarafe - nearing completion.

for disabled people, all of which are located on Deck 6.

Particular attention has been paid to the design of the public spaces so that travellers, be they tourists or local dwellers, are not only comfortable but also derive a feeling of wellbeing from the sea passage. Besides the substantial outside deck area, which includes a pool and a solarium, the ferries feature large windows and balconies, creating a light environment and proximity to the surrounding waters and sea life. The

interior design reflects the input of the Spanish company Oliver Design.

One of the most popular designs of medium-speed diesel machinery among ro-ro, ferry, and passenger ship operators, the Wärtsilä 46 series, has been specified in its 12-cylinder, vee-form model for the twin-engine plant in *Volcan de Tamadaba* and *Volcan de Tijarafe*. The 23,400kW power concentration bestowed by the brace of Wärtsilä 12V46B engines has enabled transit time to be reduced on the

Tenerife-Las Palmas-Arecife route, and the higher speed offered by the class will have a similarly beneficial effect wherever the new ships may be used in the future.

The two drive lines culminate in CP propellers, speed reduction being achieved through the two gearsets. The overall efficiency of the installation is enhanced through the use of shaft alternators activated by power take-offs from the gearboxes. The 1500kVA shaft generators produce current at 400V 50Hz, backed up by a pair of 1350kVA genset alternators driven by 1200kW diesel auxiliaries. Manoeuvring properties of the new class of inter-island trader benefit appreciably from the adoption of two 1000kW tunnel thrusters in the bow.

Conditions in the waters around the Canaries can be rigorous at certain times of the year, prompting the incorporation of a pair of retractable, Rolls-Royce fin stabilisers in the interests of passenger comfort and cargo security.

Volcan de Tamadaba and the nascent *Volcan de Tijarafe* signify a commitment to the more classical ro-pax concept, at a time when the highly competitive traffic within the Canaries archipelago has seen major investments in catamaran and trimaran high-speed ferries. The initial pair of ships in the Barreras-built series, *Volcan de Tindaya* and *Volcan de Tamasite*, were delivered in 2003 and 2004, followed over the next two years by *Volcan de Timanfaya* and *Volcan de Taburiente*.

Payload enhancement over the course of the programme is reflected in the design draught deadweight of approx 3350t of the two latest newbuilds, *Volcan de Tamadaba* and *Volcan de Tijarafe*, compared to the 2350dwt of the *Volcan de Tindaya* type. Relative to the 1000-passenger, 80-trailer *Volcan de Tamadaba* pair, the first two vessels are about 12m shorter, and offer a higher passenger capacity of nearly 1500, but a lesser intake of commercial freight, at 69 trailers. There has also been a significant power advance, from 16,800kW to 23,400kW, giving up to 2knots extra for extra scheduling flexibility.

The particular skillset applied to the Naviera Armas programme has a

further outlet in the Vigo workload by way of a series of ro-pax ferries to be built for Spanish operator Balearia. In addition, and illustrative of the yard's versatility, current production includes a containership of 1267TEU for Trasatlantica Espanola, and an offshore accommodation/service vessel for the Ostensjo Group of Norway, besides the four seismic research ships contracted earlier this year to the account of the Dubai-based company Eastern Echo.

The newbuild for the Ostensjo affiliate Edda Accommodation is an unusual project, and testament to Barreras' capacity and propensity for outfitting-intensive assignments. The vessel will provide living quarters for 600 people working offshore, but will also offer scope as a shoreside accommodation unit housing up to 1000 people, or as a transport vessel, conveying personnel to and from offshore installations.

Owner-stipulated design criteria relating to efficiency, comfort, safety, environmental compatibility, and quality suggest that the prospective addition to the fleet at the end of 2009 will mark a milestone in the evolution of floating accommodation. The vessel will be built to the highest dynamic

positioning standard, DP3 class, and will employ multi propulsors within a Voith Schneider system to confer precision and speed as well as overall efficiency in position- and station-keeping. Main dimensions will be 130m length by 27m width, and a telescopic gangway deployed from the 1400m² deck will give safe access for personnel moving between the 'hotel' unit and offshore platform, FPSO, or other vessel.

The Spanish shipbuilder's involvement in the booming offshore market assumed greater dimension some months ago with the formalisation of a contract to supply a series of Ulstein SX124-class seismic vessels for worldwide deployment by Eastern Echo, the Dubai-headquartered company whose operations office is located in Cyprus. These highly sophisticated ships will be equipped for 3D seismic work, incorporating up to 10 streamer winches each, and will afford an opening reference in the field of offshore seismology for the novel X-BOW form, conceived by Ulstein Verft's design specialist Ulstein Design.

Barreras tendered a very competitive delivery timescale, such that the first of the Eastern Echo newbuilds is scheduled to be ready for operation in the latter

part of 2008, with the three subsequent vessels expected to be delivered a few months apart during 2009.

A high proportion of the vessels' main equipment will be delivered by Ulstein Design, and Ulstein Verft's engineering department is closely involved in project development. The group's electrotechnical specialist Ulstein Elektro will supply navigation, communication, electrical, and monitoring equipment and systems to the four newbuilds, amounting to some of its largest contracts to date. Norwegian firm Odim will furnish the complete handling solution for the seismic equipment.

The backward-sloping X-BOW had previously been selected for anchor-handler and platform supply ship types, and more recently also for offshore construction vessel and emergency response vessel projects. The Norwegian group is marketing the concept in a range of other applications, including a self-sustaining feeder containership type. The areas concerned, incidentally, are within the ambit of Barreras, which has undoubtedly consolidated its position as a Spanish bastion of top-end, specialist tonnage. **NA**

The Barreras yard: high value ships provide the mainstay for production.



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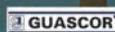
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Sestao's CNN digs deep for new ideas

Now operating as an independent private entity, Sestao's Construcciones Navales del Norte looks to build on a growing reputation for ship design flexibility.

Having established a niche presence in liquefied natural gas carrier construction under its former guise as Izar Sestao, the now privatised yard Construcciones Navales del Norte says it is looking to other markets for new orders.

At the point of privatisation, in December 2006, CNN secured an order for a 46,000m³ trailing suction hopper dredger from Jan de Nul, with the option being taken up for a second ship in July 2007. The two ships are due delivery, one apiece, in February 2009 and April 2010.

These 213.5m long by 41m across dredgers will feature two shore discharge dredge pumps of the double wall type, driven by an electric motor via a gearbox, with power rating given as 7500kW at between 280rev/min-336rev/min at constant power. They will also feature two submerged dredge pumps driven by a 6500kW electric motor.

Greater fanfare was to meet the May 2007 contract, again with Jan de Nul, to build what



CNN's Sestao yard is diversifying into new markets.



Sestao Knutsen - the 138,000m³ capacity LNG carrier is due delivery in November.

TECHNICAL PARTICULARS	
JDN8622/NB-333 multi-purpose fallpipe rockdumping vessel	
Length, oa.....	191.5m
Length, bp.....	175m
Breadth moulded.....	40m
Depth to main deck.....	13.2m
Design draught.....	7.5m
Scantling draught.....	9.25m
Dwt at 7.5m draught.....	26,000tonnes
Rock carrying capacity at 7.5m draught	24,000tonnes
Capacity of rock storage.....	16,000m ³
Speed at mean moulded draught (7.5m).....	15.5knots
AC diesel driven	
main gensets.....	5 x MAN Diesel 9L32/40
Power.....	4500kW
Speed	720rev/min
Electrically driven aft rudderpropellers	4 x 3350kW
Vessel can accommodate 70 persons	

was billed the world's first subsea mining ship, to be known as *Jules Verne*. However, for the moment at least, the eventual newbuild that will emerge from the Sestao yard will not immediately find work digging towards the centre of the earth.

Heads of agreement were signed in October 2006 between Canada's Nautilus Minerals and dredging group Jan De Nul (see *The Naval Architect*, February 2008) that looked towards the early 2009 delivery of the unique 191.5m long ship, featuring derricks with up to 300tonnes of lifting power, a strengthened deck, uprated power, and an oversize moonpool

for mining equipment. The ship was to enter service in the deepsea copper and gold mining project, Solwara 1, located in waters near Papua New Guinea.

Model tested at the Maritime Research Institute Netherlands, the ship was to be built to recover mineral ore materials from depths of up to 1700m beneath the surface of the sea.

However, by the due date that the firm agreement was to be signed, July 2007, the deal had unravelled. Neither party expressed interest in going into details over the reasons behind the parting of the ways. Nautilus Minerals is now looking for

another ship, and is understood to believe that a suitably equipped barge could meet its needs, while Jan De Nul has reworked its design so that the ship (no longer named *Jules Verne*) will be delivered as a 'multi-purpose fallpipe rockdumping vessel'.

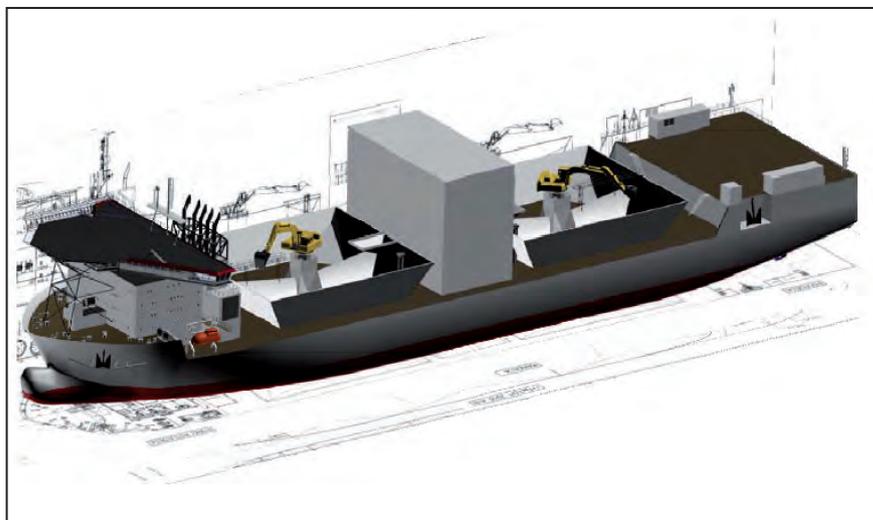
Jan De Nul said that the original build schedule remained, and vessel JDN8622 remains a very interesting ship design.

Capable of transporting rock, or similar deck loads, on deck in two hoppers, with a total capacity of 30,000tonnes, it will be equipped with two excavator cranes for cargo discharge, as well as conveyor belts working via a fallpipe situated in a moonpool amidships, at rates of 2000tonne/hour and in water depths of 1700m. The feeding system to the fallpipe will be able to deal with rock sizes of 350mm – more than any other fallpipe vessel in the market.

With its own helideck, the dynamic positioning class DP2 vessel will also be available for use as a support vessel for pre- and post-trenching, mining, and survey operations.

Interestingly, Jan de Nul said that the ship would be built with the 'foundations' for later conversion into a mining ship. It will still feature an outsize 10m² x 10m² moonpool, for example, suitable for mining equipment, while the aftdeck will incorporate launching and recovery equipment for two mining crawlers. These contingencies suggest that the dredging contractor believes other opportunities could arise for its specialised use as a subsea mining vessel.

With such specialised references in train, and an expected turnover of €150m in 2007, CNN said it was now looking to the fertile product, chemical, and shuttle tanker markets, where it has solid historical references, and beyond to the ro-ro, ro-pax, and offshore markets for new orders. The yard's 85-strong technical department would take a leading role in ambitions to keep the yard's two slipways (one of 286m x 42.8m, and the other of 270m x 43.16m), and its two outfitting



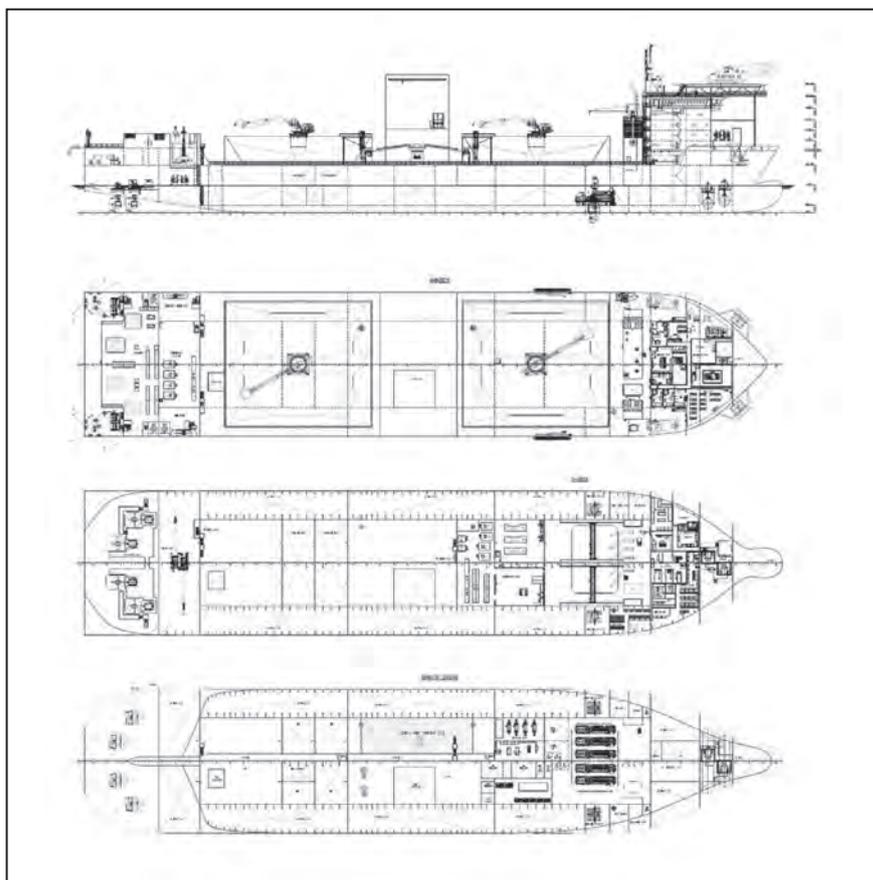
Multi-purpose fallpipe rockdumping vessel.

piers (870m long) occupied.

For the moment, though, work won when the yard was part of state-owned Izar has contributed to keeping activity levels high. Sea and gas trials were underway at time of writing on the 138,000m³ capacity LNG carrier *Sestao Knutsen*, the third of three steam turbine-driven (28,000kW),

membrane-type GTT NO96 E2 ships ordered by Knutsen OAS. Delivery of the 284m long ship is due in November.

As with predecessors *Catalunya Spirit* (ex-*Inigo Tapias*) and *Bilbao Knutsen*, the single screw *Sestao Knutsen* will feature a bulbous bow and a raked stern, as well as a semi-balanced spade rudder. **NA**



General arrangement plan of multi-purpose fallpipe rockdumping vessel JDN8622.

Vulcano spreads its wings

Deliveries and ships on order for the newly expanded Vigo-based yard group extend it into new and specialised markets.

Specialising in smaller, high-tech ships, Vigo-based Factorias Vulcano has so far made two significant deliveries this year, in the shape of a Type II coated chemical/oil tanker and a complex offshore construction vessel.

The tanker, *Calajunco M*, was delivered to Italian owner Augusta Due in March and has been classed by RINA. The yard has an identical chemical carrier on order for the same owner, with delivery scheduled in early 2008. These 25,000m³ cargo capacity ships feature 14 deepwell cargo pumps capable of discharging at a rate of 300m³/h, as well as a centre hose handling crane capable of lifting 10tonne loads at a 17m outreach.

Factorias Vulcano also has a chemical carrier on order for Russia's Rosneft, while the yard also recently sealed a deal for a new cement carrier with Tudela Veguín, for a mooted 2009 delivery.



The chemical/oil tanker, *Calajunco M*, delivered from Vigo's Factorias Vulcano yard to Italian owner Augusta Due in March 2007.

But *Calajunco M* is the latest merchant marine vessel delivery for a group gradually spreading its wings into more specialised tonnage. At the end of 2006, Factorias Vulcano subsidiary Factorias Juliana SAU emerged to take control of the former Izar yard at Gijón.

In 2006, the Gijón yard delivered a single hospital ship to the Spanish government but, since the takeover, Factorias Juliana has not delivered a single ship. However, it has been engaged in a project to deliver four 100m seismic ships to Norwegian owner G C Rieber, with the first due delivery in the spring of 2008.

As a group, the Factorias stable's ability to complete complex projects was witnessed in July, when Vulcano's Vigo yard handed over the offshore construction/pipelaying vessel *Boa Sub C* to Boa Deep C II. The builder said that the ship represented a 'step-change in capacity, workability, safety, and comfort for offshore construction work'.

At 138.5m long by 30.06m wide, this 10,806dwt, DNV-classed offshore ship is distinguished by its two separate engine rooms, switchboards, and steering

gears, and its accommodation of IMO DP3 dynamic positioning performance. The total propulsion capacity of *Boa Sub C* is in the range of 23,000kW. Its DP3 performance is supported by five tunnel and azimuth thrusters. One of the bow thrusters weighed in at 62tonnes and was, in fact, the largest of its kind ever delivered from maker Brunvoll.

Its diesel electric power features two 3300kW electric motors on each shaft, while control is conferred via a Dynpos Autro remote joystick. The vessel also features two remotely operated vehicle hangars, from Oceaneering Millennium, rated to 3000m depth, and an ROV control room, as well as a 7.2m x 7.2m moonpool. Both the starboard and port side WROV hangars have a guided launching system for operation in extreme conditions - typically wave heights of 4.5m.

The total accommodation count is 135 beds with 105 single cabins.

Boa Sub C's attractions for the offshore construction market include what are said to be the largest heave compensated crane (400t) and towing winch (600t) of their kind. **NA**

TECHNICAL PARTICULARS

Calajunco M

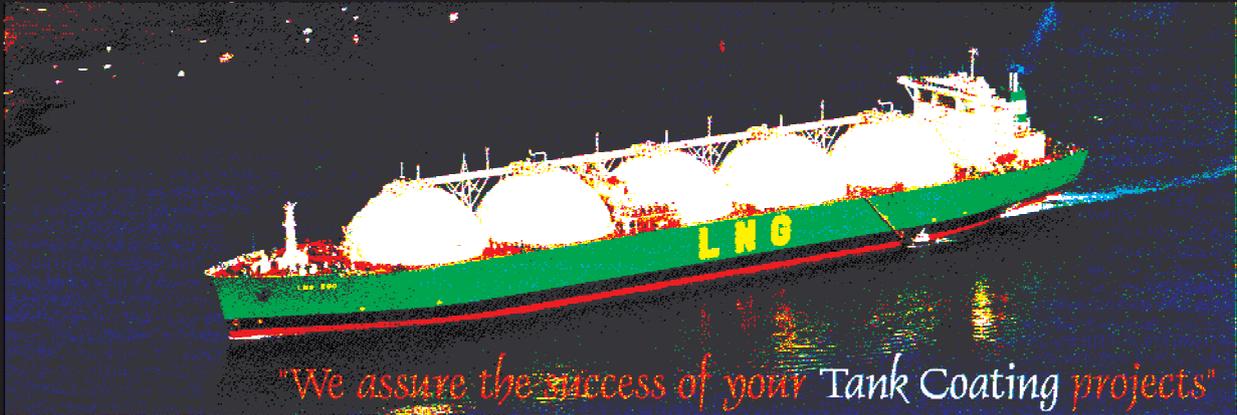
Length, oa.....	161.12m
Length, bp.....	149.80m
Moulded breadth.....	23.00m
Depth.....	13.40m
Scantling draught.....	9.65m
GT.....	13,671
DWT.....	21,600
Capacities	
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Slop tanks.....	561m ³
Heavy fuel.....	663m ³
Diesel oil.....	178m ³
Lub oil.....	49m ³
Fresh water.....	428m ³
Ballast water.....	9781m ³
Engine.....	
Output.....	MaK 9M43
Gearbox.....	8100kW at 500rev/min
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VIGO - SPAIN

Manises marine business wound up

The Spanish engine builder's marine business is officially to close, after a breakthrough in deadlocked negotiations between unions and the State.

Agreement has finally been reached between state agency Sociedad Estatal de Participaciones Industriales (SEPI), what remains of shipbuilding group Izar, and the trade unions CCOO and UGT, signalling the winding up of the marine engine business of Spanish company Manises.

Izar's Sestao, Seville, and Gijon shipbuilding facilities had found new homes by the end of 2006, respectively with Construcciones Navales del Norte, Astilleros de Huelva, and Factoria Vulcano, after the long-running European Commission probe into state subsidies resulted in the liquidation of the commercial part of the Spanish shipbuilding group, Izar.

However, although unable to take new orders, the Manises engine-building component continued under state ownership, with negotiations deadlocked, as unions and the state wrangled over workers' rights. Its last two stroke engine, built under license to MAN Diesel, was delivered at the beginning of this year - a 70cm bore 6L70ME-C unit.

Late last year, a single bidder expressed an interest in taking over Manises, in the shape of diversified industrial conglomerate Grupo Ros Casares, but SEPI ruled that the offer did not meet EC conditions on recovering the value of assets involved. SEPI decided that it would recover more from closing the Manises operation altogether.

SEPI presented its proposals for the full winding up of the Manises operation on 8 October, with a plan that looks either to pay off workers with early retirement, or to outsource them to centres operated by Navantia, the naval part of Izar that survived the EC scrutiny.

The 'Labour force adjustment plan' states its goal as being the termination of all work contracts for the Izar Manises workforce no later than 31 January 2008. An early retirement plan will be brought into play for all workers over the age of 50 on 31 December 2007 who have been with Izar for at least five years. For the rest, an 'outplacement' programme will be brought into place, with their terms and conditions to match those previously enjoyed at Izar.

This process, which must be completed by 31 January 2008, guarantees that workers are hired at a Navantia facility, should they so wish it. Workers redeployed in 'the same area' will receive compensation equivalent to 33 days per year worked, to a maximum of 42 monthly payments, with the minimum set at 24 monthly payments. Those relocating to Navantia facilities outside their locale can expect job change and travel expenses of around €40,000.

Those ineligible for early retirement and declining the relocation scheme are entitled to compensation of 60 days salary per year up to a maximum of 60 monthly payments.

MAN Diesel said it no longer had a Spanish licensee for its two stroke engines, while its four stroke engine business was being taken care of by Navantia, with licenses covering its 20/27, 32/40, 40/45, and 40/54 engine models. In 2007, Navantia has delivered one 18V 40/45 engine and one 16V 20/27 unit, both for the Spanish Navy. **NA**

Huelva sets new pace in deliveries

Huelva-based yard brings 'Heysham Max' concept to reality as it works through significant ro-ro freighter series.

Irish Sea freight-only ro-ro operator Seatruck Ferries christened *Clipper Pace* at the end of September, the second in a series of four identical new ferries under delivery from Astilleros de Huelva.

The ship, due delivery in November, was undergoing sea trials at time of going to press. She is identical to *Clipper Point*, delivered earlier in 2007.

Designed by Copenhagen-based consultancy Knud E.Hansen, these 142m long vessels offer 1800 lane-metres for trailer traffic, equivalent to 120 standard trailers and more than double the 55-

unit *Riverdance* and *Moondance*, which currently ply services between Heysham and Warrenpoint. Dubbed 'Heysham Max' ships and driven by two, powerful Wärtsilä 46-series diesels, of 9240kW apiece, the new series also offer a much faster service speed of 22knots, cutting transit time by 2.5 hours, to 6.5 hours.

The remaining ships in the series, *Clipper Pennant* and *Clipper Panorama*, will be delivered in January 2008 and March 2008 respectively.

Seatruck fast-tracked its fleet expansion plans in October, following the September

takeover of Celtic Link's Dublin-Liverpool route, with the purchase of two ro-ro ferries from Elmira Shipping of Greece, in the shape of the 1997-built *Triumph* and the 1998-built *Arrow*, which are sisterships. They have a length overall of 121m, capacity for 65 trailers, and a speed of 16.5knots.

The company has also said that it has been considering options for more newbuilds, either to the Heysham Max specification, or of a larger type, with a carrying capacity of 140 units, but still with a service speed of 22knots. **NA**

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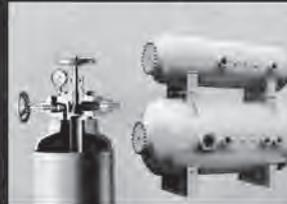
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Access rights for 3D modelling

Spanish CAD/CAM specialist Sener says it has responded to new trends in ship design and construction in its recent release of the updated FORAN package V60R2.0.

CAD/CAM developer Sener says that new features have been incorporated in all the areas of its latest generation V60R2.0 FORAN package, with a view to reducing design man hours and increasing design process performance.

Building on references for FORAN in the naval market, but equally applicable to commercial shipbuilding, the 2.0 version of FORAN V60 introduces a configuration tool to organise the access rights of different levels of users to each area of 3D modelling. It incorporates functions for the traceability of changes and the maturity control of the design.

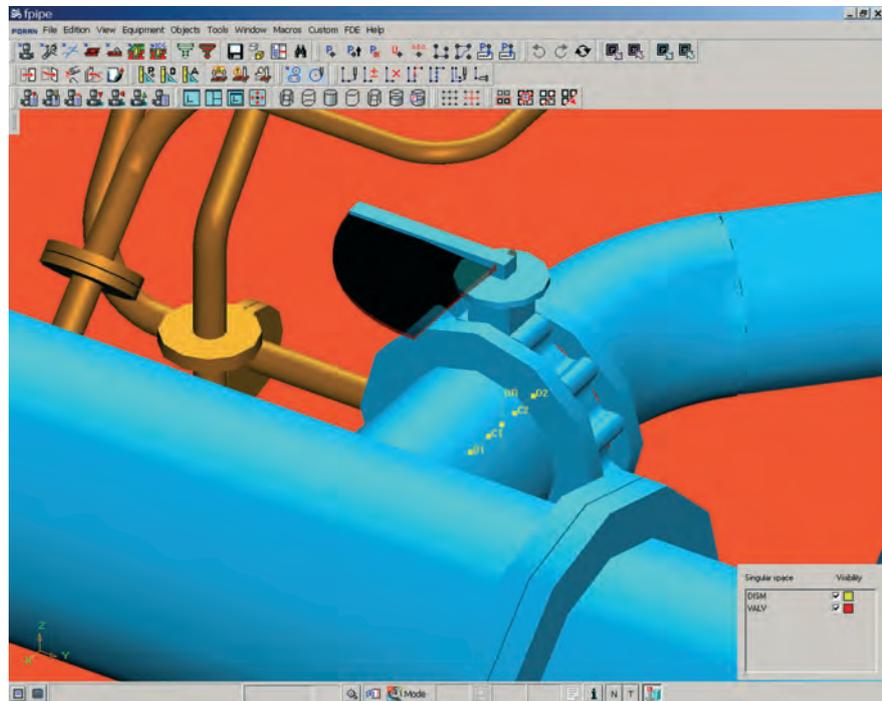
The aim, according to Sener, is to provide the FORAN system with an internal access and change control that is compatible with any working procedure and data structure.

The company says that the control unit is a new FORAN entity to define where and how a change, and the access control, is applied. In addition, the FORAN Control Manager (FCM) is the new application for the complete management of control units.

Sener says FORAN V60R2.0 introduces new capabilities to improve performance at the detailed design level, allowing an easier working procedure during the definition of the internal hull structure, while also making possible a more automatic definition of entities (profiles, scallops, brackets, longitudinals, plates, etc). As a result, designers can optimise the design while reducing the lead time.

Other new features are: automatic insertion of collars in cut-outs produced by profiles crossing other profiles; advanced bracket definition; and the insertion of scallops in plate and profile edges. For example, brackets outside the structural element plane can be topologically linked to it.

During the lifecycle of a ship it is common to dismantle auxiliary structures with the consequent limited space and interferences. Awareness of this problem has led Sener to focus on facilitating the design of auxiliary



Operational valve space detail from Sener's FORAN package.

structures and supports, taking into account dismantling spaces, in order that the designer can extend any singular space, and assign any special part as a singular space, using specific tools (parametric, sweep, etc).

The same concept can be applied to the operational space around auxiliary structures and equipment, Sener says.

FORAN outfitting also offers new specific design techniques related to pipe definition such as pipelaying on existing supports, and advanced tools for routing parallel pipes.

HVAC balance

Sener has also considered the fact that some of the most complicated aspects of the design of HVAC systems in shipbuilding are the correct evaluation of onboard fresh air needs and the correct balancing of the ducts that supply this air and evacuate the existing heat onboard. As opposed to piping systems, due to the particular characteristics of the air flow,

the balancing of the ducts is very sensitive to the routing and aspect of the ducts, so the correct design requires a close interconnectivity between calculations and routing.

Historically, shipbuilding CAD/CAM systems capable of modelling HVAC ducts did not cover calculation aspects, the routing of HVAC ducts being reduced to the input of previously balanced circuits into the 3D model for the purpose of interference checking and drawings generation. Moreover, any modification in the routing of the HVAC ducts, derived from design needs, obliged engineers to re-balance the ducts and eventually re-size them independently of the CAD environment, thus cancelling out the advantages of the 3D model.

Accordingly, in its latest approach, Sener has embedded the possibility of defining HVAC diagrams and sketches into FORAN's HVAC ducts routing tool, in order to calculate pressure drops, to balance systems,

and to dimension ducts automatically. Thus, the engineers can make the complete HVAC design in a single working environment, fully integrated with all other disciplines, Sener says.

FORAN V60R2.0 includes a complete HVAC 3D design application for the definition and management of 3D diagrams,

featuring pressure losses calculation, ducts dimensioning and balancing, fan dimensioning (pressure and flow), faster ducts 3D modelling from diagrams, etc. This functionality completes the 3D detail modelling and fabrication tools already available in former versions of FORAN.

Meanwhile, new cable routing functions

make electrical system design easier, with an option included for automatic cable routing through mandatory nodes.

More Cable Reports are also available, such as the new automatic cable pull sheet and isometric sketch with the possibility of customisation by using FORAN Development Environment (FDE). *NA*

JUST in time for CAD/CAM

The first FORAN China Technical Support Centre in China has been inaugurated, in Zhenjiang. Concurrently, a cooperation agreement has been signed between Jiangsu University of Science and Technology (JUST), Sener Ingeniería y Sistemas and CAD/CAM consultancy United Force Corporation.

According to the agreement, 50 FORAN licenses will be installed in JUST for educational purposes and the execution of real projects. Dong Shirun, vice president of JUST, Luis Garcia, executive vice president of

Sener Marine and Jeff Song, vice president of UFC attended the ceremony.

Mr Dong said: 'As an educational organisation, we are willing to take advantage of our situation to give FORAN courses to our students and also to the people from shipyards.' He emphasised that JUST would develop necessary functions, such as localization and customisation, based on FORAN.

Mr Garcia also announced that Sener would grant a scholarship to a graduate from JUST to study in Europe for a shipbuilding related Masters Degree.

'To help Chinese shipyards in building up a Digital Shipbuilding System is the strategic step of UFC,' said Mr Song. 'We will leverage our experience and best practices in CAD/CAM/CAE/PLM implementation into the shipbuilding area. Now our FORAN team is ready to provide high quality services to Chinese users.'

Training and a part of the localisation of FORAN has already been started in JUST's School of Machinery and Power Engineering. Later on, JUST's School of Naval Architecture and Ocean Engineering will also use FORAN in its work.



Signing ceremony inaugurating the new agreement between Sener, JUST, and UFC – a first for FORAN in China.

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DAPPB concept for Arctic shipping

A new concept for harsh environment transportation has recently been developed, combining the advantages of two existing ideas, and showcased in a 70,000dwt Ice Class 1A tanker design.

A hybrid design for Arctic transportation has been created by a collaboration between Wärtsilä and Aker Arctic, comprising the benefits of both the double acting ship (DAS) concept and the pusher-barge concept, entitled the double acting pusher puller barge system (DAPPB).

Aker Arctic's DAS concept is based on the principle of a ship operating stern first in ice, a compromise between good icebreaking capability, water inflow to the propellers, and course stability. However, the diesel-electric propulsion arrangement is relatively expensive compared with a conventional arrangement, and the electrical transmission losses are high.

The pusher-barge concept is said to use crew and machinery efficiently, but it is a complicated system which attains its largest benefits when transporting goods with long cargo handling periods. Combining the advantages of these ideas, the DAPPB claims to offer sound icebreaking properties without being detrimental to open water performance, at a lower investment price for an entire ship fleet.

DAPPB is based on the principle of a barge being pushed by a dedicated pusher tug in open waters, and when the combination comes to the edge of an ice field, the pusher is replaced by a specially designed icebreaking tug that pulls the barge through the ice.

Pusher and puller tugs

The ice puller has two electrically driven azimuthing podded propulsors located forward, enabling the propellers to move through rough ice, while at the same time flushing the hull behind it to reduce ice friction. Its diesel-electric propulsion is based on four medium-speed main generating sets and one smaller generating set, with a total power output of 26MW.



Barge with open water pusher.

The puller is required to be larger compared to the pusher tug, due to heavier machinery and a hull which features a wider aft section. The extra beam allows the puller to open a channel that is wider than the dimension of the cargo barge, which further enhances the capabilities of the double acting concept.

Offshore loading facilities are incorporated, and are said to be beneficial, as only a small number of puller tugs need to be equipped

with this facility, rather than the main cargo barges. However, the ice class required for the puller has to be at least equal to the ice class of the cargo barge.

The open water pusher is not designed for icebreaking, and therefore can utilise conventional machinery. With a bulbous bow optimised for low resistance in open water, it is propelled by a single CP propeller, mechanically driven by one or two diesel



Concept drawing of a pusher/puller unit change.

The Royal Institution of Naval Architects

Marine Heavy Transport & Lift II

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Second Announcement



The marine heavy transport and lift sector is enjoying a buoyant and growing market due to the recent boom in offshore oil & gas and large project cargo work. Current oil & gas prices have led to an increase in the number of offshore project requiring transportation, installation or removal of a wide range of structures and modules. The project cargo transport market has been growing by 8-10% per year, particularly power generation and refineries work in US, South America, Africa, India, Pakistan and China.



As the structures and cargo become bigger and heavier and destinations seemingly more difficult to access the market is looking for more and better equipped vessels. There are also increasing safety and greater environmental concerns for all aspects of marine operations. Currently, there are about 450 heavy lift ships worldwide but of these about 40% are older than 25 years. The new generation of heavy lift vessels designs are responding to the demand for higher lifting capacity and larger outreach. There are also an increasing number of new designs concepts aimed at servicing this increasing demand in the marine heavy transport and lift industry;



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engines connected to one shaft to increase redundancy. The CP propeller gives smooth thrust control during unit change operations.

Power output is 11MW at the propeller, and the total installed propulsion power is 12.6MW. Three auxiliary engines are utilised for electrical power generation, although a gearbox equipped with PTO and shaft generator can provide additional electricity production. Overall, the total installed power is about 16MW.

Cost advantages

The cost of the propulsion machinery for the puller tug is high, but it is only used in ice conditions, where it can reap maximum benefits. In comparison, the pusher tug's machinery cost is low, with low transmission losses.

Construction costs for the barge would be more expensive than a standard ship, but if conventional ice-going ships are used on a route with both ice and open water, the ship will not be optimum in all situations – the longer the open water transit, the more money and energy will be wasted.

As the expensive ice puller is only used during ice operation for the DAPPB concept, overall, operating costs are lower. Ideally, there should be many more open water pullers than ice pushers, reducing total investment costs.

The pusher tugs do not need specialised crew, therefore ice experienced crew are only required for the ice pullers, which is useful as experienced ice crew are scarce at the present time.

Specialised tanker design

To showcase the features of the concept, Wärtsilä and Aker Arctic have designed an Ice Class 1A super tanker of 70,000dwt, based on the DAPPB principle. The main difference compared to a conventional tanker is the aft opening for the pusher and puller units.

The tanker does not require any propulsion machinery, but is equipped with one small auxiliary engine for generating the electrical power when disconnecting from the pusher or puller unit. Due to the opening and the lack of machinery, the barge is claimed to be able to float at even keel and in ballast. The ballast capacity corresponds to that of a conventional tanker.



The 70,000dwt Ice-Class 1A super tanker based on the DAPPB principle.

The fuel tanks for the open water pusher and ice puller are located in the cargo barge in order to keep the size of the tugs as small as possible. The barge's draught is relatively high at 9m, which maximises propeller diameter and propulsion efficiency, but it is still lower than that of a conventional ice-going tanker.

The service speed of the pusher-barge combination in open water is 15knots.

Comparative studies

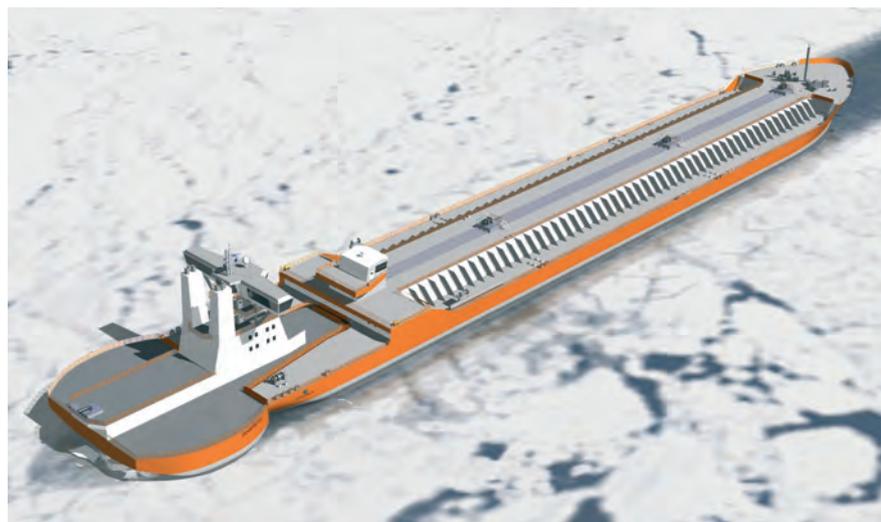
During comparative studies, the DAPPB was compared to a conventional 70,000dwt double acting tanker with equal cargo capacity. The studies found that as the cargo capacities are the same, the loading and unloading times are also the same.

Service speeds in both open water and ice were suggested to be equal as well, but for the DAPPB, the pusher and puller change

requires more time and a sheltered location. This would slightly increase the distance for it to travel.

When operation routes contain a combination of ice and open water conditions, better economy is predicted for the DAPPB compared to a conventional icebreaking tanker. On a simulated route between the Varandey terminal in the Barents Sea to Port Fourchon in the USA, calculated annual savings were in excess of US\$50 million.

The novel DAPPB system represents an attractive solution for transportation tasks in combination conditions, however the concept is still said to require some development with regards to connection units and hullform optimisation, with the possibility of the design being tailored for an operator's specific logistic chain. *NA*

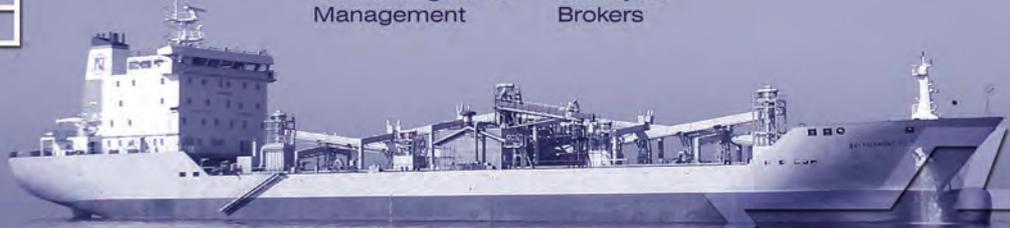




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President wins the market vote

October saw delivery of *Stena President*, the latest in the series of ‘P-Max’ vessels for Concordia Maritime.

Like her predecessors, *Stena President* found the type of long term charter arrangement long before her delivery last month that persuaded Concordia Maritime to extend its order for P-Max vessels to 10 ships last year.

Delivered by Croatia’s Brodosplit Shipyard, the tanker will enter a 10-year charter with the Russian company Argo Shipping and transport refined products from the Baltic Sea and the White Sea to Europe and the USA.

The fifth in the series of 10 units, the 65,200dwt *Stena President* is 183m long, has a beam of 40m, a draught of 11.3m, and commands a cargo volume of 68,900m³, and the swift uptake bears witness to the market’s appetite for the P-Max concept.

The first P-Max tanker was delivered in December 2005, and delivery of the tenth unit is planned for 2010.

In addition to having mandatory double hulls, the P-Max series have been designed according to a new concept for safer oil transportation with double main engines in two completely separate engine rooms, with full fire and water integrity, double rudders



Stena President, after delivery from the Brodosplit yard.

and steering gear, two propellers and double control systems. All this combined with manoeuvrability, an integrated bridge layout to facilitate safe navigation in narrow waters, and a dedicated, well-trained crew.

These tankers have also been certified with a Green Passport by DNV. To receive this certification, all potentially hazardous materials used in the construction of the vessel have to be identified and documented.

The ships are also equipped with Vacon-controlled Hamworthy Svanehøj

all-electric deepwell cargo pump systems. Both of these are essential when sailing in the sensitive waters of the Baltic Sea. Vacon said the benefits from using an electric instead of a hydraulic pump system onboard were obvious: ‘An electric system gives greater flexibility in vessel design, provides energy savings, and causes less noise and less contamination of the cargo liquid. The ability to control the pump speed, flow, and load are excellent, regardless of the liquid level in the tank.’ **NA**

GEM glows in the mist

Gulf Energy Maritime (GEM), the Middle East’s largest independent commercial product tanker operator, has taken delivery of its eleventh tanker and the fifth of 13 tankers on order with South Korea’s Hyundai Mipo Dockyard (HMD).

The US\$55 million Handysize tanker *Gulf Mist* is an IMO II N2 type, 37,000dwt multi-purpose (M-Class) carrier, the third of its kind to be delivered in less than four months. Ahmed Al Falahi, GEM chief executive, said:

‘Like all its sisterships, *Gulf Mist* will go into a long-term charter with an oil company, generating revenue from the onset.’

Gulf Mist comes equipped with all IMO stipulated requirements that are in line with the oil majors’ specifications.

GEM boasts the world’s most modern product tanker fleet. Its Tanker Management Self Assessment System, required by the Oil Companies International Marine Forum, has been approved by ExxonMobil, BP, and Shell – the first Middle East product tanker operator to be approved by three of the world’s oil majors. **NA**

Gulf Mist, the fifth of 13 product tankers on order by GEM at Hyundai Mipo.



TECHNICAL PARTICULARS

Gulf Mist

Built (Year/Place):	October 2007 Hyundai Mipo
DWT	37,000
GT	23,500
Scantling draught	11.3m
Length, oa	184m
Beam	27.4m
Depth	17.2m
Cargo capacity	41,858m ³
Tank Coating	Zinc
Cargo Heating (Type)	Deck Heaters
Cargo Pumps (Type)	12+2 Framo Submerged, Centrifugal 200m ³ -500m ³ /hour
Cargo Segregations	7
Cargo Cranes	1/10tonnes
Classification Society	Lloyd’s Register

Aegir breaks from the pack

BMT Defence Services has made what could be a significant breakthrough in advancing the cause for its new Aegir family of tankers, after being preferred as design partner by Chilean yard Asmar.

Development of the Aegir family of tankers was initially stimulated by the prospect of orders to come from the UK's MARS (Military Afloat Reach Sustainability) project, looking to replace the main part of the Royal Fleet Auxiliary's underway replenishment ships.

However, with the MARS project taking time to crystallise, the UK company has found another possible route to an order, having been selected over Damen and Rolls-Royce by Chilean yard Asmar as the technical partner charged with coming up with an auxiliary ship design concept for naval support duties. The Chilean Navy, which is understood to be in the market for a single underway replenishment tanker, owns 50% of state shipbuilder Asmar.

The UK's MARS project, which envisages building six fleet tankers, two 'fleet solid support ships', plus three logistics vessels, changed course over the summer, when the UK Ministry of Defence abandoned plans to create a joint MoD/industry alliance to manage the £2.5 billion programme.

Replacing the competition to establish a lead project integrator, which had identified AMEC, KBR, and Raytheon Systems as potential integrators in 2006, the MoD formally announced at an 'Industry Day' on 24 October 2007 that its procurement strategy would be directly competitive, posted in the EU's Official Journal, and open to bids from all designers and yards worldwide. MARS integrated project team leader Tony Graham said that the MoD hoped to post the formal advertisement for the project in November, with a view to shortlisting potential designers and yards in April 2008.

Even so, the Chilean deal means that BMT can point to the first tangible progress towards a firm contract for Aegir, which the company points out draws on experience of both commercial



Aegir – a new family of tankers drawing on both commercial and naval expertise, looks to be the preference for the Chilean Navy.

and military shipbuilding to create a tanker that could operate in both environments.

Alternative strategies

For naval customers, one alternative strategy might be to convert an existing commercial tanker for a naval support role. This may yield a 'quick fix' but, with oil prices at record levels, it would also be expensive, with the end ship unlikely to match the true wants of a naval customer. There have been examples of commercial tankers converted for a naval support function, but there have been limitations in performance; the quarterdecks of commercial tankers, for example, tend to be too short.

According to Andy Kimber, BMT Defence Services senior manager, naval architecture: 'What the market has lacked has been a purpose-designed ship that drew on a commercial basis to reduce risk when buying into the supply chain, a design that opens up the

build to a number of yards, taking it away from those yards focused only on naval systems.'

Developed in a joint venture with Norwegian designer Skipskonsulent, which specialises in product tankers in the 5000dwt-25,000dwt range, the Aegir concept creates a family of Auxiliary Oilers (AO) and Auxiliary Oiler Replenishment (AOR) vessels that satisfy new commercial rules, including the 2009 introduction of mandatory protected fuel bunker tanks. BMT points out that Aegir auxiliaries can be built by any shipyard able to construct commercial tankers. Risk is reduced by basing Aegir on Skipskonsulent's double hull, twin skeg hullform, with an economical mechanical diesel drive solution, which has already been proven in commercial operations, and applying BMT's expertise and auxiliary support pedigree to transform the design into a flexible and fully functional naval platform.

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“There have been examples of commercial tankers converted for a naval support function, but there have been limitations in performance; the quarterdecks of commercial tankers, for example, tend to be too short.”

Since AEGIR was designed from the outset for the naval replenishment role, a number of desirable features, mostly now common in commercial product tankers, were inherent in the baseline platform:

- Hullform and powering to meet a sustained 18knot speed requirement
- Legislative compliance
- Unattended machinery spaces
- Full propulsion redundancy in separated machinery compartments
- Enhanced manoeuvrability
- Flexible power generation
- Quiet generating machinery and cargo pumps.

From the military perspective, features to be made inherent in Aegir, of course, include a replenishment at sea capability. The cost will depend upon the actual functions required of the platform and the equipment selected to support this. The RAS systems resulted in the addition of the RAS deck, RAS control, and space for the stern reel, and had an impact on the cargo system design in the basic platform. The additional cost linked to RAS capability is estimated to account for around 8% of the naval replenishment tanker unit production cost.

There are three basic designs in the Aegir family, envisaging ships of 10,000dwt, 18,000dwt, and 26,000dwt but, according to Mr Kimber, the idea has been to build

in flexibility. “The offering has always been that we can adapt to customer needs. The intention with the Aegir is to offer it as a basic design. We could, for example, vary the speed by changing the hullform, where the baseline design was for a ship operating at 18knots, but we can offer a ship operating at up to 27knots.”

The largest add-on cost in building such a tanker, is associated with increasing the hull size to accommodate the flight deck and if required the hangar. Of the estimated 6% increase in unit production cost for the full aviation capability, half is accounted for by the increase in steel weight for the additional length and superstructure.

It is also of note that some 4% is associated with provision of the basic flight deck facilities for a minimal capability, suggesting that once the decision to fit a flight deck is taken, then provision of increased capability or fit to receive of additional facilities is not a further significant driver.

BMT contends that, if a fully ‘navalised’ replenishment tanker is required, significant savings can be achieved by building the ship to commercial standards in a commercial yard and then adding the ‘true’ naval features in a naval shipyard. **NA**

Lauritzen steps up MR range

Larger size MR tanker proves popular with Danish owner.

Lauritzen Tankers has ordered two further 50,500 dwt (31,000gt) IMOII/III MR product tankers from Guangzhou Shipyard in China, in addition to six identical newbuildings ordered earlier this year.

The eight ships, which will be delivered between 2009 and 2011, will all feature 55,000m³ of cargo capacity and will be 183.1m long overall, with a 32.2m moulded beam. They are said to be more sophisticated, and hence more flexible, than standard MR tankers. Featuring 14 centre tanks and a bulbous bow, they will trade worldwide, but have been designed in line with requirements laid out by the Danish Ship Registry, in case the owner decides they will trade under the Danish Flag.

This contract brings Lauritzen Tankers

newbuilding portfolio to a total of 14 vessels, of which 12 will be owned and two taken on long-term time charter. Lauritzen has two product tankers on order at SLS Shipbuilding in South Korea, plus two more 53,000dwt MR ships on order with Japan’s Shin Kurushima yard. The latter ship type, of which Lauritzen has already taken delivery of four units, featured an unusually high cargo capacity of 60,000m³.

A Lauritzen spokesman said that the company had changed direction regarding supply, where it had formerly taken delivery of the main part of its product tankers from Japan, a policy that had reflected its tendency to charter out new tonnage on a term basis to Japanese owners.

Its move into China had been prompted by a combination of factors, including

flexibility on design, delivery availability and price. IMOII/III ships had not been available from Japanese yards.

Around 20 ships of the latest type had been ordered by owners in the Copenhagen area, Lauritzen said, denoting a significant step up in capacity for MR-type product tankers of IMOII/II class, capable of carrying chemicals, but also vegetable and particularly palm oil. Commonly, IMOII/III type ships are of the Handysize variety.

Lauritzen’s spokesman said that the ships would feature Chinese license-built MAN Diesel main engines, believed to be of the 6S50MC-C type (8058kW), and would also be distinguished by their inclusion of electrical, rather than hydraulic, cargo tanks. **NA**

RINA – LLOYDS REGISTER SHIP SAFETY AWARDS

Nominations are invited for the 2007 RINA - Lloyds Register Ship Safety Awards.
Entries close 1st January 2008

The RINA- Lloyds Register Ship Safety Awards recognise recent innovations or developments which have led to an improvement of safety at sea, or which have the potential to do so.

Entries may be submitted directly by individuals or teams from universities and industry from any country, and may cover design, construction, research, equipment or operations. Entries are judged on originality, quality of design, feasibility of production and contribution to ship safety.

Members who are aware of recent work by a university, company or organisation which has or could lead to an improvement in safety at sea are invited to nominate them for one of the Awards, giving brief details of the achievement. The nominated university, company or organisation will then be invited to submit an entry.

There are separate categories for universities and industry. An Award of £1500 is made in each of the categories and will be presented at the 2008 RINA Annual Dinner.

Requests for further information and expressions of interest should be forwarded to:



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Stolt-Nielsen enters Asian bitumen market

Stolt-Nielsen SA has set up a new division covering Asia-Pacific distribution of bitumen and has placed first orders.

Diversified bulk liquid chemicals, edible oils, acids, and other specialty liquids distribution giant Stolt-Nielsen recently signed an agreement with Xinshun Shipyard in China looking to build up to six 5,900dwt bitumen tankers, with the first ship due for delivery from February 2010.

Under the terms of the agreement, SNSA has placed firm orders for two ships and holds options to purchase a further four ships.

Niels G. Stolt-Nielsen, chief executive officer of SNSA, said: "This investment in new, superior performance bitumen tankers represents our entry into an attractive sector, in a region where SNSA has long been one of the leaders in the chemical products transportation market."

Stolt declined the opportunity to give more details of the design of the new ships.

However, this is the latest piece in a newbuild programme for Stolt Nielsen that also saw Stolt-Nielsen Transportation Group (SNTG) sign an agreement with South Korea's SLS Shipbuilding Co to build four 43,000dwt chemical parcel tankers earlier this year. In this case, deliveries of these 182.88m long by 32.2m wide ships are expected to take place in 2011 and 2012. The SLS newbuildings will have 24 stainless steel tanks and 15 coated tanks. The main dimensions of the ships will follow the same design of the four parcel tankers that SNTG ordered in October 2006 from SLS. SNTG

now has a total of 12 ships on order from SLS, although four of them feature a slightly larger 44,000dwt, while maintaining the same dimensions.

The new fully double-hulled parcel tankers will meet both Marpol Annex I and Annex II cargo requirements. They will have IMO I, II, and III capabilities and will be able to handle the full range of difficult to handle cargoes, which SNTG carries.

SNTG and its partners today own and operate globally 156 ships ranging in size from 1100dwt to 40,200dwt. SNTG has an orderbook of 18 intercontinental parcel tankers totalling 788,000dwt with expected delivery between 2007 and 2012. **NA**

Partnership behind 45 tanker orders

A powerful new partnership has emerged whose members can boast 45 tankers on order.

With 15 product and Aframax tankers on order linked to operation by Seearland Shipping Management, the Amsterdam-based company said it was expanding its growing global network into Germany by setting up a joint venture with Hamburg-based TB Marine-Hamburg. TB and its partners have, in turn, 30 tankers on order.

Earlier this year Seearland and TB jointly

ordered four IMO II shallow draft 29,000dwt product carriers plus two coated LRIs to be built at China's Zhejiang Hongguan Shipbuilding Co for delivery 2011. To manage the ships and to provide access to the German equity market Seearland and TB Marine have now set up Seearland Shipmanagement (Hamburg) GmbH & Co.

TB Marine-Hamburg was founded in July 2005 by Stephan Bracker and Steffen Thate to initiate, finance, own and manage newbuildings and secondhand ships for

private and public investors in the German KG market. It has strong relations with Chinese shipyards and a Chinese investment group via Aquarius Marine Consulting, Hamburg. Thorsten Schablinski, sole partner of AMC, provides technical consultancy, plan approval and newbuilding supervision for TB's projects. TB Marine and its partners said that most of its 30 tanker newbuildings on order were being built as Ice Class 1A chemical/product tankers and had been fixed with long term employment. **NA**



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MaK breaks through in tanker deal

A series of up to six oil and chemical tankers that are to be the first in class to be built in the USA using modular construction methods will be powered using MaK generator sets.

A project that looks to build an initial three 49,000dwt oil and chemical tankers will see - among others - Atlantic Marine Alabama, of Mobile, Alabama, involved in the hull construction and final assembly in a first US-based tilt at modular tanker construction.

Details of the scheme emerged after Caterpillar Marine Power Systems said MaK-branded engines would propel the tankers, to be built and operated in the USA according to domestic Jones Act regulations.

Propulsion will be of the diesel-electric type, with each ship utilising three MaK 12M32C generating sets, equipped with Siemens alternators. Each set will weigh about 120tonnes and provide 5760kW at 720 rev/min.

The tankers have been ordered by AHL Shipping Co, San Antonio, Texas, following a charter agreement with Shell Trading (US) Co, Houston, Texas, to transport crude oil, chemicals, and products within domestic USA trade lanes from 2009/2010. Approximate vessel dimensions are as follows: length 188m, breadth 32m, draught 11m, cargo capacity 330,000 barrels.

Caterpillar will deliver nine MaK 12 M 32 C generating sets in total from its medium-speed engine facility in Rostock, Germany. Shipment of the first set of engines is scheduled for August 2008, with the second and third set due in July 2009 and January 2010.

There is also an option to power three more tankers with the same engine configuration.

Gary Aucoin, MaK business unit manager

at Louisiana Machinery Company LLC, the Caterpillar dealer for the US Gulf Coast, said: 'The tanker business is new to Louisiana Machinery, and the experience gathered will open up future opportunities.

'We are committed to building a first-class MaK dealership, to complement the already successful Caterpillar dealership.'

Bruce Strupp, territory manager US Gulf Coast, Caterpillar Marine Power Systems, emphasised: 'This deal is one of the largest single orders ever for MaK engines in the US. We are more than happy that last year's reassignment of MaK distribution in the Americas to six well-experienced Caterpillar dealers is bearing fruit. And I am very confident this move will result in other exciting business soon.' **NA**

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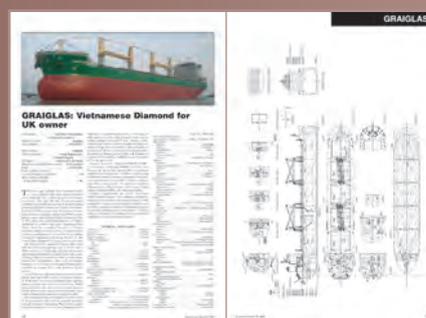
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Inland environmental performance

Concepts to Reduce Environmental impact and Attain optimal Transport performance by Inland Navigation (CREATING) has been funded within the EU's Sixth Framework Programme. A report by Juha Schweighofer and Petra Seiwert, of via donau – Österreichische Wasserstrassen, Austria.

Inland navigation is known as a safe and environmentally-friendly transport mode. Due to its low share (of about 2%) of total traffic energy consumption (road, rail, and inland navigation), see Fig 1, its contribution to global total traffic emissions is regarded as almost insignificant.

Regarding emissions to the air, especially with respect to emissions of the greenhouse gas CO₂ (carbon-dioxide), the performance of inland vessels is outstanding. On average, the CO₂ emissions of an inland vessel are only about one third of those emitted by a truck per tonne-kilometre (tkm). Therefore, if cargo is shifted from road to water, inland navigation can play a significant role in the reduction of greenhouse gasses as required by the Kyoto Protocol. With respect to CO (carbon monoxide) and HC (hydro carbon) emissions per tkm, inland navigation is also significantly superior to road transport.

SOx, NOx and PM

SOx (sulphur oxide) emissions are directly related to the sulphur content of the fuel. For inland navigation within the EU, in accordance with Directive 1999/32/EC, the maximum sulphur content of fuel is limited to 0.2%. Starting from January 2010, this sulphur content limitation will be reduced to 0.1% in accordance with Directive 2005/33/EC. However, this is still 100 times higher than the sulphur content of fuel used in road transport today. Therefore, the SOx emissions associated with inland navigation are actually much higher than the ones resulting from road transport, even when related to tkm (today, these emissions are about 60 times higher).

The introduction of emission limits for road transport since the early 1990s has led to a significant reduction of the pollutant emissions of NOx (nitrogen oxide) and PM

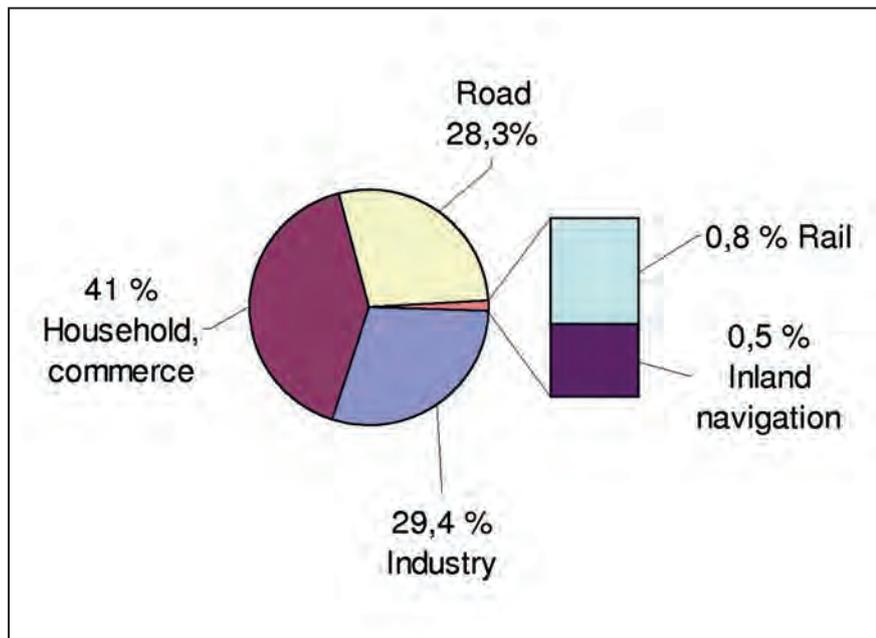


Figure 1. Distribution of final energy consumption by sector in EU 25 (2003) according to the European Environmental Agency (EEA).

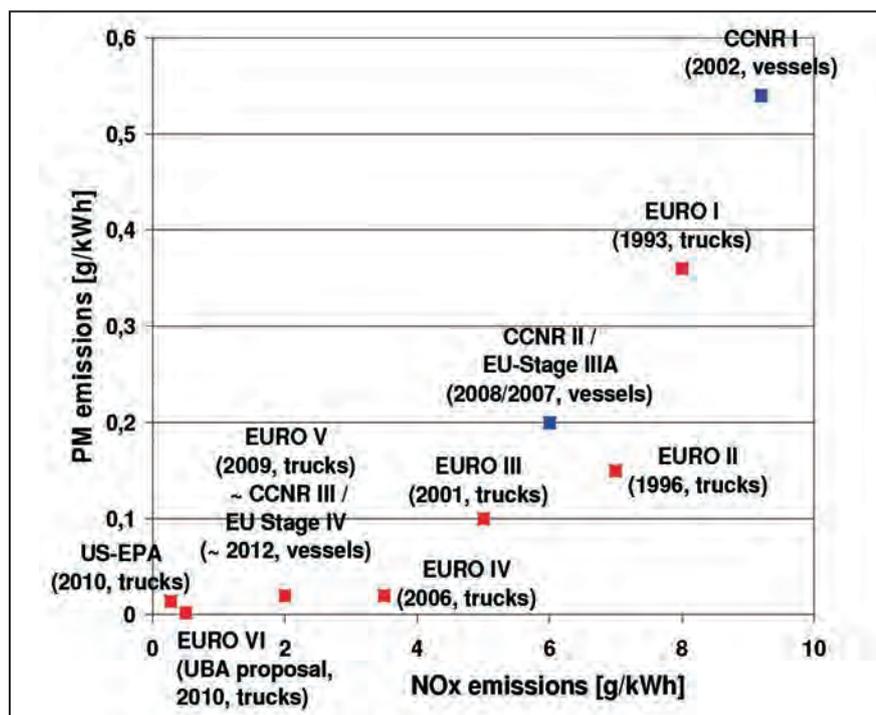


Figure 2. Emission standards for inland waterway and road transport.

(particulate matter) on road. For inland navigation, such strict emission limits are still missing. Consequently, the superiority in the environmental performance of inland vessels compared with trucks has become less marked in this regard, and with the introduction of EURO V and EURO VI limits for road transport in 2009 and 2010 (proposed by the German Federal Environmental Agency, UBA), respectively, new trucks may emit even significantly less NO_x and PM per tkm than inland vessels (Figs 2 and 3). The dates denote when the regulations are considered to be fully in force.

Additionally, truck engines are generally replaced after five years in operation. This implies that only five years after the introduction of a new emission limit, the average truck fleet complies with this limit. Inland vessels, by contrast, have their engines replaced on average once every 20 years. Thus, it takes much longer to achieve compliance with new emission standards compared with trucks. For example, the majority of inland vessels will only comply with CCNR II (Central Commission for Navigation on the Rhine) and EU Stage IIIA by approximately 2025, if no stricter standards are introduced in the very near future and engines already in service stay exempt from the new regulations.

Emission reduction

Taking into consideration the developments in the emission legislation described above, compliance with EU transport policy and environmental friendliness as a competitive factor are of increasing significance, and the CREATING project examined possible solutions for improvement of the environmental performance of inland vessels. These solutions comprise internal engine improvements (exhaust gas recirculation – EGR, advanced injection systems, inlet air humidification, in-cylinder water injection, and homogeneous charge compression ignition - HCCI), exhaust gas after treatment (diesel oxidation catalyst, selective catalytic reduction – SCR, particulate matter filter - PMF, scrubbing of exhaust gas, and electrostatic precipitation), higher diesel fuel quality (low sulphur fuel - LSF), alternative fuels (biodiesel - BD, biodiesel blend - BDB, diesel-water emulsion, natural gas, and hydrogen), alternative combustion engines (natural gas engine – NGE), new propulsion and auxiliary systems (diesel-electric propulsion and fuel

	NO _x	PM	FC	CO ₂	SO _x
After treatment techniques					
SCR (selective catalytic reduction)	-81%	-35%	+7.5%	-7.5%	-7.5%
PMF (particulate matter filter)	none	-85%	+2%	+2%	+2%
Drive management systems					
ATM (advising tempomaat)	-10%	-10%	-10%	-10%	-10%
Diesel fuel quality / substitutes					
BD (bio diesel)	+10%	-30%	+15%	-65%	~100%
BDB (bio diesel blend, 20 % BD)	+2%	-6%	+3%	-13%	~20%
LSF (low sulphur fuel)	none	-17%	none	none	~100%
New engine technologies					
NGE (natural gas engine)	-98.5%	-97.5%	+4.5%	-10%	-100%

cells), as well as electronic drive management systems (advising cruise control – ATM, River Information Services – RIS).

The emission reduction potential associated with the application of the most significant emission reduction techniques for the reduction of NO_x, PM, CO₂ and SO_x emissions to engines complying with CCNR I standard is presented in Table 1. The application of selective catalytic reduction and particulate matter filters will have the most significant impact on the reduction of NO_x as well as PM emissions. For the proper application of particulate matter filters, the usage of low sulphur fuel (10ppm) is imperative. Fuel consumption may be effectively reduced by the application of drive management systems, giving information about the most economical speed of the vessel, thus leading to reduced emissions. Using biodiesel will lead to a significant reduction of CO₂ and SO_x emissions. However, this will be associated with increased NO_x emissions and fuel consumption making it necessary to apply additional techniques for NO_x and PM reduction.

Engines already in service may be damaged when run on pure biodiesel, and the availability of biodiesel will not be sufficient to satisfy the energy demand of the total traffic sector. The SO_x emissions are directly related to the sulphur content of the fuel, and reducing the sulphur content of fuel will lead to reduced SO_x and PM emissions. Using low sulphur fuel is the precondition for the application of several emission reduction techniques, eg particulate matter filter, exhaust gas recirculation, NO_x adsorber, and, conditionally, diesel oxidation catalyst.

According to a TNO (Netherlands) study issued by the CCNR in 2007, 98% of current engines may be run on low sulphur fuel (EN 590) and new engines require a fuel with

Table 1. Changes in mass emissions with respect to the application of different emission-reduction techniques compared with the basic case complying with CCNR I where no emission-reduction technique is used. FC means changes in fuel consumption.

a sulphur content of 50ppm or less. Using natural gas as fuel will significantly reduce NO_x, PM and SO_x emissions. However, application of natural gas engines to inland navigation is associated with very large storage spaces for tanks, possibly resulting in insufficient cruising ranges, non-existing rules for technical certification, and a lack of adapted tax regulations and infrastructure on inland waterways.

To reduce CO and HC emissions, the application of a diesel oxidation catalyst is recommended.

Techniques with very high emission reduction potential consist of homogeneous charge compression ignition and using fuel cells. However, these techniques require still major efforts in development and will not be available for general application to inland navigation in the near future.

Furthermore, wet scrubbers and electrostatic precipitators require too much space for meaningful application to inland navigation.

Environmental performance

The comparison between road and inland transport has been performed for a DDSG -Steinklasse motor cargo vessel pushing a Europe II B barge, sailing from Passau to Vidin and back (2884 km), and trucks in service complying with the respective EURO standards. For the basic case, the vessel engine complies with CCNR I standard and no emission reduction techniques are applied.

The PM and NO_x emissions in g/tkm associated with the basic case (M1) are significantly higher than the ones of a truck complying with EURO V (Fig. 3). Application of selective catalytic reduction (SCR) to the vessel yields significant superiority in the case of the vessel with respect to NO_x emissions, and equality with respect to PM emissions, compared with the EURO V truck. Application of selective catalytic reduction, low sulphur fuel (LSF), particulate matter filter (PMF), and drive control techniques will lead to a clear superiority for inland navigation



HMS *Belfast*, London's Floating Naval Museum, is preparing a family-orientated exhibition using hands-on and computerised interactive displays to demonstrate techniques of shipbuilding, from the 'age of sail' to modern prefabrication methods. Graphic elements will concentrate strongly on the socio-historical aspects of the industry, for example, the role of women in the shipbuilding industry during the Second World War. The exhibition will directly relate to the fabric of the ship providing a unique opportunity to link theory to practice. This link may be further developed using a trail pointing out different shipbuilding techniques used in the construction of HMS *Belfast*. The exhibition will have direct links with the Science and Design and Technology curriculum at Key Stage 2 and Key Stage 3.

The broad appeal of the subject matter and the high level of interactivity will make this of interest to our 275,000, mainly family, visitors, with an additional 60,000 school children visiting each year as part of the national curriculum.

The life of the exhibition, opening in the spring of 2008, will be for a minimum of two years, ensuring maximum exposure for exhibition sponsors.

The exhibition gallery is located on the main visitor route, ensuring that every visitor to the ship (young and old) has the opportunity to experience and interact with the gallery space, themes and learning outcomes, providing maximum brand awareness to exhibition sponsors.

If you would like to sponsor Shipbuilding, or support the exhibition with a donation, please contact Mr Brad King, Director of HMS *Belfast* for further details and information about our attractive sponsorship packages.

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Royal Institution of Naval Architects



with respect to both NOx and PM emissions, compared with the EURO V truck, and equal environmental performance, compared with the EURO VI truck.

The most significant reduction of PM results from the application of the particulate matter filter in combination with low sulphur fuel.

Application of selective catalytic reduction, a particulate matter filter and low sulphur fuel to a CCNR I – vessel engine will lead to compliance with EURO V and CCNR III standard. Compliance with EURO VI standard may be achieved by either the application of similar technology as is used in road transport, including respective fuels, or the introduction of new engine technologies like homogeneous charge compression ignition (HCCI) and natural gas engines (NGE) to inland navigation. Euro truck and CCNR vessel denote the emission limits in g/kWh prescribed by the respective emission standards for road and inland waterway transport (IWT). Generally, vessel engines complying with CCNR I (BC) show much better performance than is required by the standard with respect to PM emissions.

Inland navigation is, however, in danger of losing its status as being more environmentally friendly than road transport in terms of NOx and PM emissions in g/tkm. For emissions in g/kWh, inland navigation can already be seen to be a worse performer than road transport. In order to turn the tables, the very first step must be to introduce low sulphur fuel (EN 590) to inland navigation.

Today, the European Commission is considering the introduction of LSF for inland navigation (300ppm by 2009, and 10ppm by 2011), and on 3 May 2007, at the Round Table of the CCNR, consensus was achieved about introducing fuel of equal or similar quality to

road standards for inland navigation and lowering the sulphur content of fuel to 10ppm in one step as soon as possible.

The Cleanest Ship

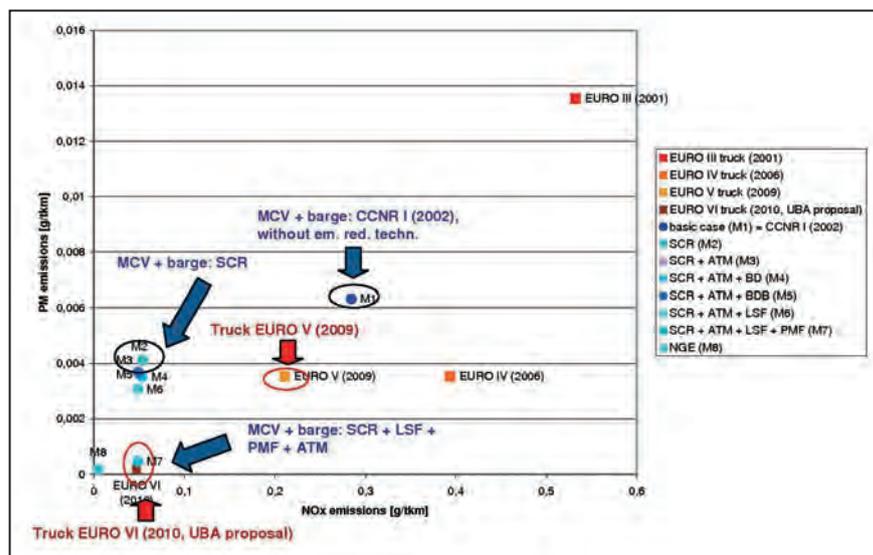
Application of selective catalytic reduction, particulate matter filters, low sulphur fuel, and advising cruise control were found to be the most effective and practicable solutions to improve the environmental performance of inland navigation. These systems will be implemented in a demonstrator, The Cleanest Ship, confirming the general applicability of these systems to inland navigation and the emission reduction potential evaluated. The demonstration will be carried out on a lubrication oil tanker owned by BP Shipping, managed by the Verenigde Tankrederij (VT) and operating in the Port of Rotterdam area.

It will last one year, starting by the end of 2007. The results with respect to NOx, PM, CO₂ and SOx emissions will be monitored and presented on a regular basis at www.cleanestship.eu. *NA*

Literature

Schweighofer J and Seiwerth P: Environmental performance of inland navigation. Proceedings of the European Inland Waterway Navigation Conference, Visegrád, Hungary, 27-29 June 2007. www.via-donau.org/uploads/media/paper_EIWNC_June2007.pdf
 Kampf A and Schweighofer J et al: Environmental impact of inland navigation, CREATING Work Package 6, final report, 2006, to be released 2007. www.via-donau.org, juha.schweighofer@via-donau.org, petra.seiwerth@via-donau.org

Figure 3. Emission comparison in g/tkm between motor cargo vessel pushing a barge and trucks in service, considering different emission reduction techniques.



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Composite key to new carrier

The project to develop a new low weight, self-propelled inland barge built of composites is coming to the end of its design phase.

Dutch government funding of the full design study for the 'CompoCaNord' project was made available in June, after The European Commission authorised the release of €600,000 in state aid, on the basis that the forward-looking venture would encourage the development of waterway transport by improving the technical characteristics of inland navigation vessels.

The objective of the project is to develop an innovative, multi-purpose, lightweight, composite inland shipping vessel, for use as either a dry or wet bulk carrier, or as a general cargo ship. The ship will be able to maintain and expand the waterways currently used by the existing fleet of 'smaller' conventional steel ships, in waterway networks stretching from France to Germany, Poland, the Czech Republic, Romania, and elsewhere.

It is calculated that a hull built of composites

would be half the weight of an equivalent vessel built from steel.

The CompoCaNord project has been running for over three years, and comprises a consortium including ELV (The European Logistic Transport Co-operation, a partnership of barge owners), TNO, and 10 other Dutch companies. It is led by consultancy Schipco BV, in turn headed by Leen J Schipper, and was initially instigated in part to generate work for companies in the Medenblik area – a traditional base for composites manufacturing in The Netherlands.

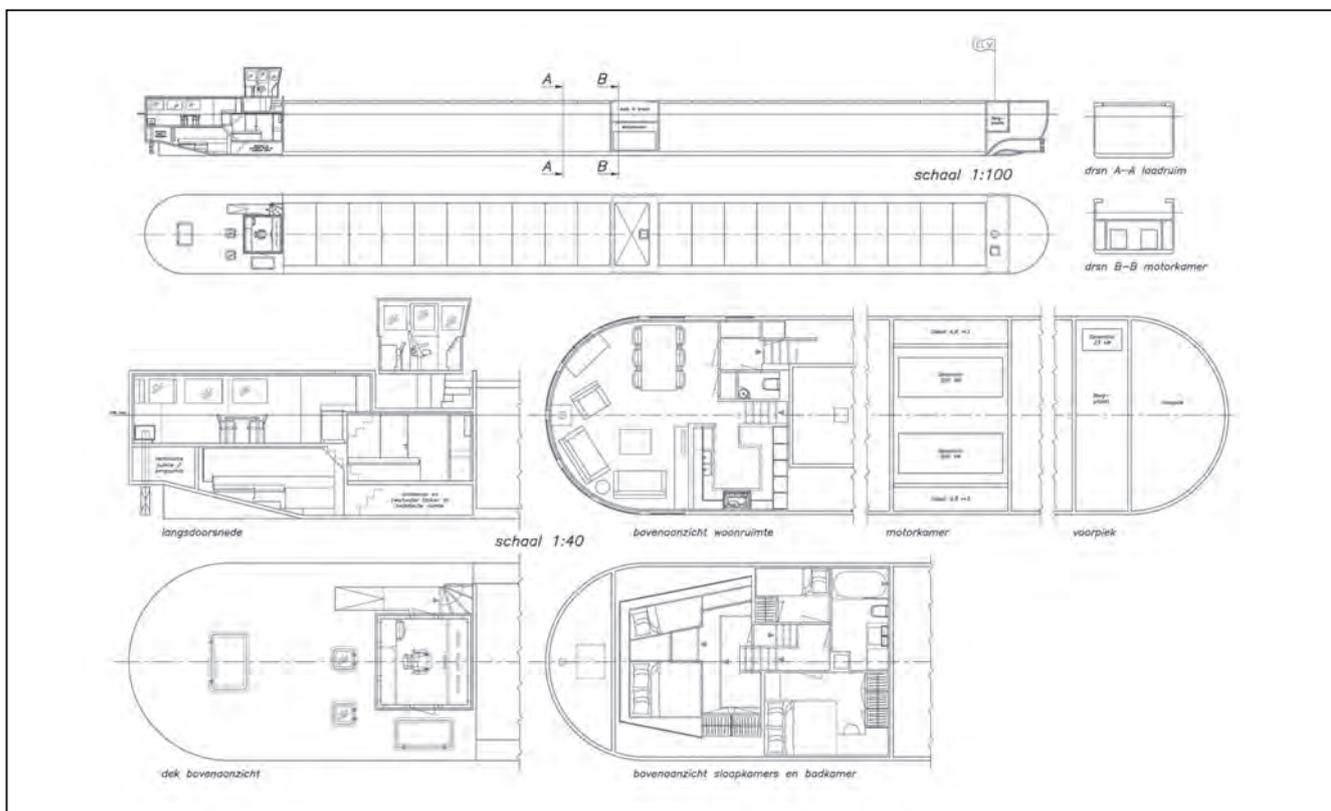
The release of state aid fast-tracked completion of the full design study, Mr Schipper said. He emphasised that, once this part of the project had been completed, CompoCaNord would be an entirely commercial enterprise, with the plan being to build barges for uptake by individual owners

“Where a standard steel barge of 65m length requires two 200kW thrusters, the equivalent vessel built of composites would require 180kW”

on a lease-sale construction basis.

Mr Schipper said that partners were currently verifying calculations over the thickness of the composites used for hull and superstructure, with the plan being that steel would only be used for common components, such as cranes and winches.

Design drawing for the CompoCaNord self-propelled barge for European inland transportation.



The initial CompoCaNord vessel envisaged would be a 65m long by 5.75m wide by 3m deep self-propelled barge, Mr Schipper said. Where such a hull without engine would weigh in at 75tonnes, an equivalent steel hull would weigh 170tonnes.

It is understood that an unspecified owner has already committed to the construction of such a barge. Selling and ordering of such vessels is being done by Schipco. Yacht builder Jachtwerf Jongert, of Wieringerwerf, is one of the members of the consortium, and a spokesman for the yard said that it was willing to make shed space available for the assembly part of the build, should its booming super-yacht business allow. Jongert, in fact, has been responsible for coming up with the general arrangement drawing and interior lay-out drawings of this first proposed barge.

The new ship would have an expected lifetime of 50 years, as sustainable as the current standard steel ships in navigation.

Mr Schipper said that current thinking was that a construction project would start in

January 2008, with a view to having the first barge in the water by September 2008.

Plans were afoot for a second, 77m long example of a CompoCaNord barge to be built. Current thinking was that up to six 77m vessels would be built, to operate on the Paris to Rotterdam route, each capable of carrying 1000tonnes of cargo while drawing a draught of just 2.5m.

With the weight savings envisaged, the CompoCaNord project is also promising consequent fuel savings. These will be enhanced by what Mr Schipper termed 'new ideas' on propulsion. Where a standard steel barge of 65m length requires two 200kW thrusters, for example, the equivalent vessel built of composites would require 180kW of power in total, by virtue of the ease with which its flat bottom would move through the water.

In 2005, Voith entered a partnership arrangement with AIR Fertigung-Technologie, based in Hohen Luckow, near Rostock, Germany, the developer of the 'Contur-Propeller' in the mid-1990s –

claimed to be the first marine propeller screw made of composite materials.

Mr Schipper said that the combination of the lower power necessary, the hull lines, and the lighter weight would add up to a fuel saving equivalent to at least 25%, when compared with a conventional all-steel barge. Emissions would, consequently, also be lower.

He also pointed out that composites present better insulating properties than standard steel, meaning that cooled and frozen products might be transported using less electrical power.

It should be noted that the composite construction envisaged involves hull sidewalls built of a polymer/foam/polymer sandwich of between 25cm and 28cm thick, while the barge's flattened bottom would be 30cm thick. There would thus be a 'loss' in storage capacity when compared to a standard all-steel barge, where hull sections tend to be 8mm thick. However, Mr Schipper said that this attribute was 'nothing compared to the profits that will be gained when the lighter weight and fuel savings are taken into account.' *NA*

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Den Breejen takes inland route

Dutch inland vessel specialist Den Breejen has continued to gather an impressive portfolio of luxury river cruise vessel orders through 2007.

Hardinxveld-Giessendam based Den Breejen has recently taken its forward tally of river cruiseships to five, with two orders for 135m long ships from Australia's Scenic Tours and three 110m long vessel orders coming from Germany's Avalon Waterways.

The yard's wider inland vessel orderbook also includes the outfitting of ten cargo vessels, including tankers and dry cargo units for such customers as Euromaritime, Oudcomb, and a number of Belgian shipping companies and owners.

In October, Den Breejen delivered the 110m long by 11.4m wide river cruise vessel hull *Swiss Sapphire* to Scylla Tours AG, while the full extent of its expertise was once more demonstrated by the delivery of *Nestroy*, to Swiss Cruises International, in April.

The *Nestroy* contract saw Den Breejen build not only the hull, but undertake the complete outfitting of the vessel, with the whole project taking just nine months. All construction work took place on site at the yard, from the very first drawings, steel cutting with computer-controlled plasma



Nestroy – a 2007 delivery from Den Breejen, witnessing the yard's prowess in building luxury river cruise vessels.

cutting machines up to and including outfitting works.

The luxury inland passenger vessel, measuring 125m in length and with a breadth of 11.45m, was named after Johann Nestroy, an Austrian writer of stage plays and operettas. She has been deployed for luxury cruises on the Danube river and in the Black Sea.

Design and construction fully comply with the requirements of the Transport and Water Management Inspectorate (IVW) for international sailing on the Rhine river (including the Danube Delta) and the Dutch and Belgian inland waters, Zone II, and with the requirements for one man radar operation and full continuous sailing.

The triple-deck vessel features a double bottom construction with a height of 800mm. This section accommodates the storage tanks for ballast water, fuel oil, black and grey water, and potable water.

The amidships section has been strengthened with longitudinal web frames. Fore ship and aft ship sections

feature transverse framings. Passengers are accommodated in 113 twin-berth passenger cabins distributed over lower deck, main deck, and upper deck. All cabins are equipped with a telephone, a thermostat for temperature control, and a fan coil unit for ventilation.

Officers and crew are accommodated in 26 single and twin-berth cabins. The cabins feature separate sanitary units. Passenger facilities include a spacious saloon with seating for 226 persons, a horseshoe-shaped bar, and panoramic windows providing an unobstructed view to the vessel's surroundings. The ship's restaurant seats 226 persons.

The vessel features 113 twin-berth cabins and has been designed in such a way that she is able to carry the maximum capacity of passengers. She has a specially designed forward section, allowing an elongated inner volume, of which the major part is situated above the waterline, thus not affecting the vessel's speed.

In the aft ship, the foundations for engines and rudder propellers have been designed

TECHNICAL PARTICULARS

Nestroy

Length, o a	124.85m
Length, on waterline	119.00m
Breadth, o a	11.45m
Breadth, moulded	11.40m
Depth, in sides	3.15m
Draught	1.55m
Air draught	6.00m
Cabins	
Total number of passengers	226
Passenger cabins	113
Crew cabins	26
Tank capacities	
Fuel oil	130m ³
Fresh water	300m ³
Sewage	80m ³
Ballast water	500m ³

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The World Superyacht Awards

Young Designer of the Year 2008

A new prestigious award for talented young superyacht designers is to be awarded at the Boat International Group 2008 World Superyacht Awards in Venice

Camper & Nicholsons International, the Royal Institution of Naval Architects and the Boat International Group are proud to announce the introduction of a new prestigious award for the world's most promising young superyacht designer. The award recognises the achievement of an outstanding young designer and the potential impact of their work on current or future designs for the superyacht industry. The Young Designer of the Year award will be presented at the 2008 World Superyacht Awards in Venice, which recognises the remarkable ingenuity and innovation demanded in the design, engineering and construction of the world's finest luxury yachts, and is the most obvious place for new designer talent to be recognised and celebrated.

The Award

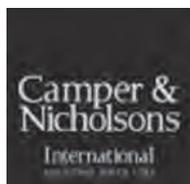
The award is open to anyone who is studying for a degree or vocational qualification in a subject relating to yacht or small craft design, or anyone who has already graduated within three years of the closing date for entries, which is 31 January 2008. Young naval architects and yacht designers from all over the world have been called upon to enter the competition via the extensive RINA global network. RINA has already had an impressive response from universities in countries as far afield as New Zealand and China, to those closer such as the UK and Italy. RINA's CEO Trevor Blakely is proud that RINA is supporting the new award for young designers: 'The superyacht industry is one of the most successful sectors of the maritime industry, and owes much of that success to the work of its designers who provide that unique combination of form and function, which is the modern superyacht. 'The World



Superyacht Awards Young Designer of the Year prize 2008 will be presented to the young designer who produces the best concept design for a superyacht. The entries will be judged by a group of leading world-class designers selected by the Boat International Group and RINA. The judges will be announced in the next issue of Boat International. 'The World Superyacht Awards Young Designer of the Year competition will provide an opportunity for superyacht designers of the future to demonstrate their ability and talents. I certainly do not envy the judges in their task of selecting the best,' adds Blakely. The winner of the Young Designer of the Year 2008 will receive a prize of €5,000 and will be invited to receive the award at the renowned World Superyacht Awards ceremony on 18 April 2008 in Venice, Italy.

Sponsored by Camper and Nicholsons International:

'Following the joint Camper & Nicholsons International - Boat International initiative three years ago to reward the work of yacht designers and naval architects, we thought it was only natural to continue to collaborate with the Boat International Group and RINA in order to identify the young designers of the future,' says Camper & Nicholsons International's CEO Jillian Montgomery. 'Taking an active part in this competition prepares the grounds for the future in many ways. Firstly, by giving up and coming designers exposure and the opportunity to get in touch with potential clients, and secondly by offering our existing and future clients a glimpse of designs that could soon be on the drawing boards,' explains Laurent Perignon, director of marketing for CNI.



to avoid resonances in the structure. Box coolers have been integrated in the vessel's aft ship construction such that the cooling pipes of the bundles can be inspected or exchanged while the vessel is still afloat.

The stern section features a bow thruster tunnel and a hawse pocket for the stern anchor. The stern hawse pocket has been designed to ensure the anchor does not protrude when fully retracted. The bow anchors are retracted in two hawser pockets.

Deck machinery and equipment on the forecandle include an electro-hydraulic windlass with two wire drums and two capstans. The aft windlass/mooring winch is fitted with a wire drum of the same capacity and handles a 765kg stern anchor. Dyvler supplied the anchors and wire drums. Fitted forward at port side is a rescue boat with davit.

Low air draught

In order to be able to navigate on the Danube and in the Black Sea region, the Swiss passenger vessel features a very low air draught of 6m thanks to its height-adjustable aluminum wheelhouse and foldable sun awnings.

Elevation of the wheelhouse is carried out with a hydraulic lifting installation. Wheelhouse and hydraulic installation were supplied and installed by EBR. The wheelhouse can be vertically moved up

and down up to a full metre allowing optimum visibility and low air draught when passing low overhead hanging bridges or other obstacles.

The wheelhouse has been equipped with an Alphantron Marine Multi Colour Line navcom package.

The propulsion plant consists of two HRP rudder propeller units, each with built-in reduction gearbox, hydraulically controlled clutch coupling and free-rotating propellers. The units are driven via a cardan shaft and elastic coupling by two Cummins marine diesel engines, type KTA38-M1, each with an output of 820kW at 1,800rev/min. The two HRP rudder propeller units are fitted with non-similar contra-rotating propellers: one 1250mm (aft) and one 1400mm diameter propellers. Manoeuvring capacity has been optimised by the installation of a 300 kW electric Verhaar-Omega bow thruster unit with a 1200mm diameter propeller.

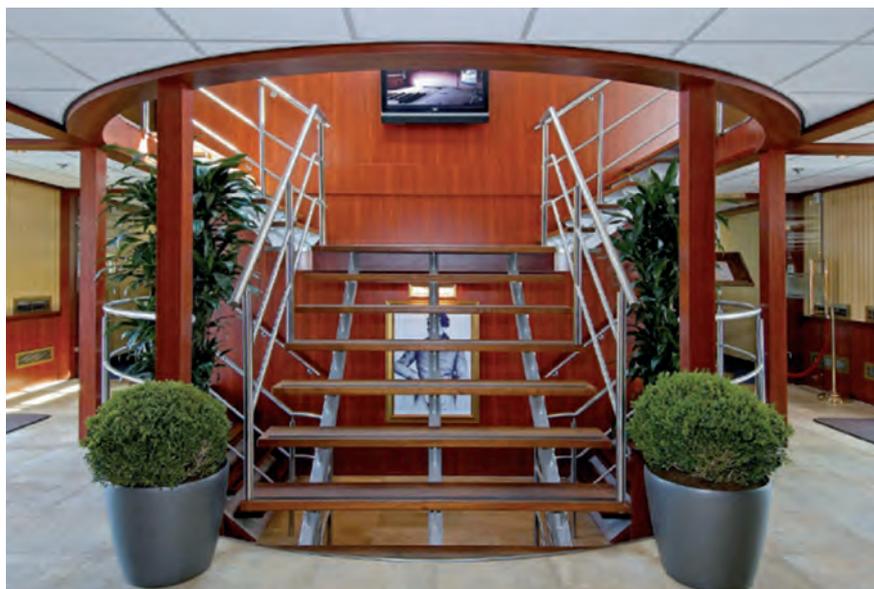
Electric power is generated by two Volvo Penta/Marathon diesel generator sets, each supplying 360kVA, 50Hz at 1500rev/min. The Cummins emergency set generator is automatically started when a blackout occurs. Furthermore, the engineroom accommodates the main switchboard that can be combined with a second main switchboard situated in the fore ship for the 415 kVA generator. All the diesel engines are electrically started by a 24VDC mains powered by

accumulator sets. The harbor generator set consists of a Cummins diesel generator set of 415kVA, 60Hz.

Auxiliary systems fitted in the engine room include heating, ventilating, air treatment, sanitary, and refrigerating systems. The heating system consists of two fully automatic oil-fired central heating water boilers. The system incorporates a valve chest box in the engineroom accommodating the groups for hot water, heat recovery, and air treatment (ventilation) for saloon, restaurant, and cabins. The cabins are fitted with 1000W heating elements integrated in the fan coil units. The sanitary system consists of an EVAC toilet system including 143 vacuum toilets. Sewage water is collected and processed by a combined vacuum/sewage water treatment plant, also from EVAC. Sanitary systems, freezing and refrigerating systems, as well as the air conditioning system, have been supplied by Klimateerservice Holland.

HO Technoship BV, agent for Ultra Fog in the Benelux, has delivered an Ultra Fog high-pressure water mist fire-fighting system. The system complies with IMO A800 and IMO 668, for total flooding. Klimateerservice Gorinchem BV executed the installation of the Ultra Fog system onboard. The Ultra Fog system protects the accommodation as well as the machinery spaces, including the freezing room and the fat-fryer. The accommodation is protected by quick response glass bulb nozzles; machinery room and technical spaces are covered by open type nozzles. For the bilge, Ultra Fog uses a foam bottle and specially designed bilge nozzles.

The Ultra Fog system features a touch screen graphic control panel in the reception area, providing alarm information as well as information about the operation of the system. With its touch screen panel the Ultra Fog system is reckoned to be the only independent high-pressure water mist fire-fighting system providing full information for the crew with regard to all actions and alarm systems onboard. **NA**



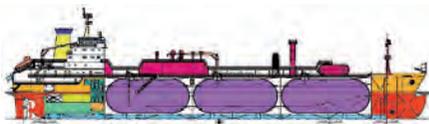
Interior of the inland ship *Nestroy*, with all outfitting done by den Breejen.

The Royal Institution of Naval Architects

Design & Operation of LPG Ships

30 - 31 January 2008, RINA HQ, London.

Sponsored by:



Second Announcement

Following the success of the 2006 International conference on Design, Construction and Operation of Natural Gas Carriers and Offshore Systems, RINA will be holding a new conference in January 2008 relating to the Design and Operation of Liquefied Petroleum Gas (LPG) ships.

LPG vessels may have pressurised, semi-pressurised or fully refrigerated cargo systems, able to trade from both pressure and refrigerated storages. Fully-refrigerated ships will require a chiller to cool down LPG at the loadport or a re-heater to warm LPG discharging into pressure storage. The problematic characteristics of LPG have made it a late developer. Seaborne trade in LPG was less than 1 million tonnes in 1960, reached 17 million tonnes by 1980 and was in excess of 47 million tons by the year 2000.

The United Arab Emirates is the largest producer of LPG. Qatar's LPG market is now tipped to go the same way as its LNG market; it is on course to become the second largest producer of LPG by 2010 with an output of 14 million tonnes per annum. With increased LPG supplies, driven by increased LNG production and crude oil refining, operators could expect dramatically increased freight rates. At present there are orders for over 200 LPG ships, 60 of which are over 60,000 cu m. With the great changes expected in the LPG industry, this conference will provide a forum for discussion and a means of professional development for those involved with the design, construction and operation of LPG ships.

RINA invites papers on all aspects of the design and operation of LPG ships and associated systems, including the following topics:

- Design of vessels, large capacity, Shortsea and Coastal vessels.
- Design and Construction of pressurised, semi-pressurised and refrigerated cargo systems.
- Design practice, construction and materials selection.
- Corrosion and fatigue management and control.
- Stress and integrity analysis.
- Tank construction, welding and weld inspection.
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Estonia studies avoid asking why

Sir - The work commissioned by VINNOVA to investigate the sinking mechanism of the ro-ro ferry *Estonia* has been reviewed at its mid-term in a workshop at Strathclyde University.

The hugely expensive research programme is specifically to investigate the sinking mechanism of the vessel with a view to improving safety. It is, therefore, a very restricted project that is likely to produce a well researched and viable scenario (or possibly more than one) for the sequence of the sinking. It will, in other words, explain HOW the vessel sank.

What the project will not do, however, is explain WHY she sank, nor investigate the chain of events that took place prior to the incident, or the events afterwards.

The conclusions of the Consortia will therefore only be another piece in the

jigsaw, albeit a large and probably definitive piece. What must be guarded against is the use of the results by others to claim that the matter has been fully investigated again. It has not – only a restricted part is being investigated, and the main questions will still remain. Hopefully it will enable some of the wilder claims to be discounted, but the work of those who continue to ferret for answers to the questions as to what led up to the water getting in must continue, although the current research will probably enable us to understand what happened to the ship between the water getting in and her coming to rest on the bottom.

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Avoiding errors due to water pressure

Sir - In *The Naval Architect* January 2007, Patrick Couser wrote a detailed review of various commercial hydrostatic programs. In this, he discusses the differences between the conventional approach with sections and the approach where the vessel is defined by a surface mesh.

MSC, being a designer of floating offshore rigs like jack-ups and semisubmersibles, has long used the surface mesh approach. The nature of the rigs, having large flat shells, justified such an approach. In MSC's approach, each buoyant space is described by its watertight boundary. Thus, the rig is built up of a collection of compartments.

The forces on each compartment are calculated by a pressure integration over all planes, not only the outer shell. In this way, the forces on adjacent planes may be evaluated twice, but may cancel each other.

Experience indicates that computing speed is very satisfactory. Evaluating the forces on each compartment separately, has advantages when considering damage or internal filling of a compartment.

A particular problem present with the pressure integration method is that of flatness and water tightness. Though for a modest draught, errors in flatness or water tightness may not be significant, but they can be relevant for large draughts due to the increase in hydrostatic pressure. Any error increases with depth of that compartment. An example is a jack-up with its legs lowered. For the spudcans at a depth of say 100m, accurate modelling is needed to avoid errors related to the water pressure being high at such depths.

Reference: J A van Santen Stability calculations for jack-ups and semi-submersibles, International Conference CADMO 86, Washington 1986.

Joost van Santen
Marine Structure Consultants
(MSC) bv

Propeller size limits challenged

Sir - I refer to your edition September 2007 and was interested to read an article by Patrick Martin entitled 'Limits to Growth' under the Safety section.

The writer states that propeller size has already reached its limit for single screw large container ships. He furthermore states that the efficiency of large propellers is at its maximum to absorb their high power on a restricted diameter.

I dispute these statements. As a proponent of large diameter-single-screw-configuration I can show that there is still scope to increase propeller size and power on such single screw ships. To support this I present the results of some simple calculations as indicated in the attached table.

Power MW	RPM	Diameter	BAR	Weight
80	102	9000	1.02	100
90	99	9350	1.04	117
100	95	9800	1.06	135
110	90	10300	1.07	155

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Using the data supplied for *Emma Maersk*, as an example, the optimum propeller diameter using present-day NBS technology, (see Ref.) results in a 9m diameter propeller at 102rev/min. By increasing the power and reducing the revolutions to ensure the same efficiency is achieved the table shows that powers of up to 110 MW at 90rev/min could be achieved with a diameter of up to 10.3m. This latter would be considered practicable for the maximum rated draught limit of 15m currently available.

Expressed in other words, an additional 40% increase in power remains possible for the ultra large containership on a single screw without sacrificing the propeller efficiency.

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Let Us Not Get Carried Away with LPS

Sir - The shipping industry has for some time been exposed to what I call 'Legislation Proliferation Syndrome'. Nowadays, in the global electronic environment, it is considerably easier to generate un-called for pieces of legislation than to find any time to digest, let alone process their content.

I now wish to refer to the article 'Goal-based, but what was the aim?' (See *The Naval Architect*, September 2007, p.10-13).

Well written and presented, the article announces that IMO is to undertake work on 'ship construction standards' because it is "an issue that IMO should take on and work on" and that 'it is included in the strategic plan of IMO'.

Why? Because the existing standards of construction are (presumably) not deemed to be sufficiently goal-based, and therefore only the introduction of 'five tier system of functional requirements' will ensure compliance with desirable safety standards. One of these goals

states that ships 'should have adequate strengths, integrity and stability to minimise the risk of loss of the ship or pollutions' (tier 1).

Is it possible that none of the Class Societies have already identified this 'tier-one goal'? It is my belief that, for example, Part 1 of LR Rules, defines quite adequately the objectives of safety goals and targets (see Explanatory Note in the very preamble of the Regulations); in that respect the proposal for introduction of goal-based standards appears to be an attempt to re-invent the wheel.

Further on, in the part 'What goal-based standards mean' it is stated that '.....shipowners for that matter, didn't have a leg to stand on if they did not agree with what the shipyard is doing or what the classification society was approving' - that is, unless something is added to international conventions.

A pretty bold statement because it appears to imply some sort of collusion

between the shipyard and the Class, which not everyone would agree with.

The idea that IMO should produce 'not very explicit prescriptive standards', raises a logical question: what is wrong with current situation where both prescriptive and risk-based standards are under jurisdiction of IACS or individual classification societies'?

I have a feeling that IMO intends to spread its wings into the territory where it has neither sufficient expertise nor research-based support facilities, or systematic feedback from ships in service. That is why it seems to me that they are struggling to find the solution for a non-existent problem. I, for one, find this effort rather bewildering.

Surely, over-abundance of (superfluous) legislation is detrimental to the health of the industry and should be discouraged.

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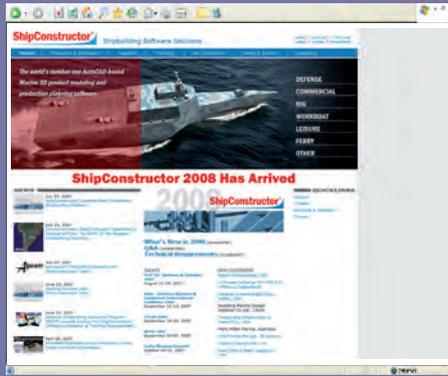
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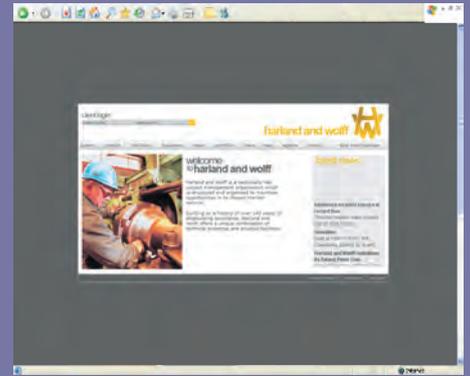
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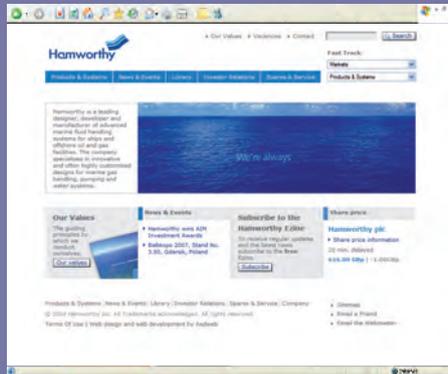
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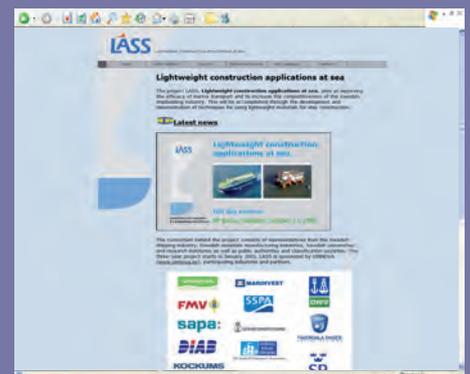
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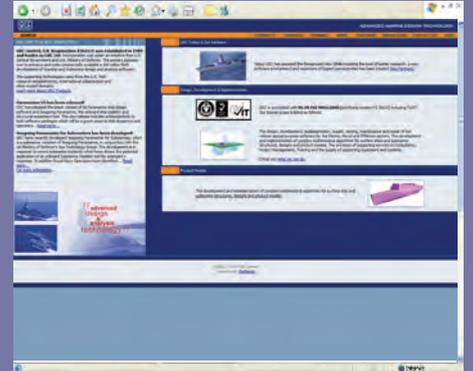
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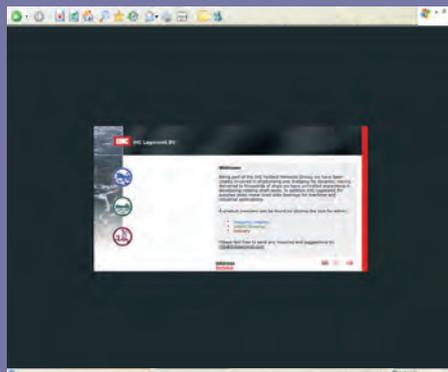
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