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MARINE ENGINEERS MESSENGER

mem Issue 9
20 June 2016

EU rules on CO2 not fit for purpose

Carbon emissions measurement tools required

MXP auxiliary turbocharger unveiled

New cylinder lubricant completes engine validation tests

Is Carl Schulte the most sustainable box ship ever?

DNV GL kick starts LPG carrier design project



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MARINE ENGINEERS MESSENGER

Telegraph

As you will read in this issue, the global emissions debate is heating up with members of the International Chamber of Shipping banding together to lobby the European Union to align its rules on ship CO₂ emissions with that of the mandatory reporting regime imposed by the International Maritime Organisation.

Whatever the result of this particular debate may be, there can be no doubt that the shipping industry has to find a more environmentally-friendly, cost-effective energy to fuel the fleet.

Four years ago it was estimated that shipping accounts for 2.2% of global CO₂ emissions, 30% of global NO_x emissions and about 9% of SO_x; but what fuel available today can the shipping industry realistically burn without further detriment to the environment? LNG, you say. While this has many emissions-reducing benefits, burning natural gas is by no means a panacea to reducing global greenhouse gases and could in fact create more of a problem than the one we're trying to find a solution for.

According to a January 2016 article published in Science for Environment Policy, a European Commission DG Environment News Alert, which reported on a study that measured emissions from a cruise ferry running a lean-burn dual-fuel engine on LNG, emissions of carbon monoxide and total hydrocarbons were higher compared to a ship running on MGO. While measurements revealed that emissions of particles NO_x and CO₂ were indeed lower, analysis showed that around 85% of hydrocarbon emissions were methane.

Emissions of unburnt methane (methane slip) were around 7g/kg of LNG at higher engine loads, rising to 23–36g at lower loads. The news alert reported that these escaped emissions are significant, as methane has a global warming potential 28 times higher than that for CO₂.

Methane slip through bunkering activities could be significantly higher. The US Maritime Administration (MARAD) reported in February findings from a study quantifying methane slip and fugitive emissions from ships bunkering and burning LNG. In partnership with the University of Delaware and the Rochester Institute of Technology, MARAD reported that that "fugitive methane emissions from bunkering operations pose a potentially greater source of methane release than methane slip at the engine".

A 2009 Nasa Goddard, meanwhile, found that methane is 33 times more detrimental to life on earth if it interacts with other airborne pollutants; something which scientists have hypothesised could have been responsible for the Great Dying, when 70% of all land species and 96% of all marine life became extinct.

Some food for thought there.

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The advertisement features a dark background with a white and blue color scheme. On the left, there is a blue box with the text 'The Rolls-Royce marine magazine' and 'InDepth' in white. Below this is a white box with 'InDepth' in blue. In the center, a large white ship is shown on a dark sea. On the right, a tablet displays the magazine cover with the title 'In control' and an image of a person's hands on a control panel. At the bottom right, there are icons for Apple and Android, and a text box with the URL 'www.rolls-royce.com/indepth'.

EU CO₂ RULES NOT FIT FOR PURPOSE, SAYS POULSSON AS ICS LOBBIES FOR CHANGE

The International Chamber of Shipping (ICS) is to press European Union institutions, including member states, the European Parliament and the European Commission on aligning regulations on the monitoring of shipping's CO₂ emissions with the mandatory worldwide CO₂ reporting regime agreed by the International Maritime Organization (IMO).

In addition to working closely with the European Community Shipowners' Associations (ECSA), ICS says it intends to enlist the support of non-EU governments including the United States, China and other Asian nations.

Speaking after the ICS AGM in Tokyo last week, ICS Chairman, Esben Poulsson (pictured), said: "Shipping is a global industry requiring global rules, in order to have a truly level playing field – otherwise we have chaos. ICS members greatly welcome the IMO CO₂ reporting regime that was unanimously agreed by all IMO Member States in April, as a precursor to further measures that will hopefully deliver a serious contribution from shipping towards reducing the world's CO₂ emissions.

He said that while ICS fully supports the mandatory IMO data collection mechanism, many non-EU governments initially had some reservations which were only overcome by the industry arguing that the alternative to IMO making progress would be a unilateral regional regime being imposed by the EU. "The EU needs to live up to its side of the bargain and align its regime with the IMO system that's now been agreed by the entire international community," he said.

The EU Regulation on the Monitoring, Reporting and Verification (MRV) of ships' CO₂ emissions was adopted in 2015 and will be fully implemented in three years' time. But all ships trading to Europe, including non-EU flag ships, will be legally required to comply with some of its provisions by as early as 2017. Significantly, however, the EU Regulation contains a provision to the effect that the European Commission can propose adjustments to ensure alignment with any similar regime adopted by IMO.

"It is vital that the Commission now commits to the task of modifying its regime to make it compatible with the global system which is about to be adopted by IMO," Poulsson said.

"Quite frankly, the regional verification mechanism being developed by the EU will not be compatible with the way in which the IMO regime will be enforced by maritime flag states. It's therefore going to be completely unfit for purpose. We also suspect that many non-EU shipping nations will be strongly opposed to their ships being required to submit commercially sensitive information for publication by the Commission, at variance to what has been agreed at IMO.



"Quite frankly, the regional verification mechanism being developed by the EU will not be compatible with the way in which the IMO regime will be enforced by maritime flag states. It's therefore going to be completely unfit for purpose."

"The key thing that really concerns the shipping industry is that if the EU refuses to realign its regime with IMO, as its own Regulation permits it to do, this will be perceived by other governments as a sign of bad faith, which could then potentially inhibit the consideration of any additional CO₂ reduction measures by IMO."

ICS says it is deeply committed to supporting the development of further CO₂ reduction measures by IMO, on top of the mandatory IMO CO₂ reduction regulations which have been in force worldwide since 2013.

Immediately after the adoption of the Paris Agreement, in December last year, ICS proposed that IMO should develop an 'Intended IMO Determined Contribution' to reduce CO₂ – a suggestion that will be discussed further by the IMO Marine Environment Protection Committee in October 2016.

Poulsson said: "The international shipping sector has cut its total CO₂ emissions by around 10 per cent since 2007, despite increased maritime trade. With oil prices having risen some 80% since January, this

reinforces how it is truly in every shipowner's interest to do everything possible to further reduce fuel consumption and thus cut CO₂.

"Further measures at IMO will help the industry deliver this. So the last thing we want is intransigence from EU climate change officials that will seriously frustrate and complicate this IMO process, which is what we fear will happen if the EU refuses to do what it promised to do.

"It's worth reiterating, yet again, the industry's strongly held view that as a global industry we need a global framework. Only IMO is equipped to provide this."

TECHNIQUES TO MEASURE CARBON EMISSIONS NEED TO BE DEVELOPED, WARNS VTT

Tightening environmental regulations and the emergence of a compliance monitoring market has led Finland's VTT Technical Research Centre, the Finnish Meteorological Institute, Tampere University of Technology and the University of Turku to join forces in a project aimed at improving the reliability of the measurement of black carbon emissions from shipping

The Shipping Emissions in the Arctic project has already affirmed that engine loads and fuel types have a major impact on black carbon emissions from ships, but pressure is mounting, because no common international environmental targets have been set for reducing black carbon emissions and no standardised measurement techniques have been developed. This is of particular concern considering the entry into force of the Polar Code next year as incomplete combustion generates soot containing black carbon, which warms the atmosphere.

"A reliable method of measuring black carbon emissions from shipping is sorely needed, now that the IMO is evaluating the need to control such emissions, but no reliable measurement technique has been identified," says VTT research team leader Jukka Lehtomäki.

Alongside the Finnish Meteorological Institute, Tampere University of Technology and the University of Turku, VTT is seeking a straightforward and reliable way of evaluating and measuring black carbon emissions from ships, through the two-year project.

"The initial results have already revealed critical parameters in the measurement of black carbon; such parameters can be used to achieve more reliable results. Engine loads and fuel types had a major impact on black carbon emissions from the engine we studied", explains VTT's principal scientist Päivi Aakko-Saksa.

The study will enable preparations to meet tightening international environmental regulations. Finnish businesses and industry can prepare now, by

investing in research and development and new business activities. More precise information on the emissions impact of different fuel types is helpful for developers of fuel and engine technology. The results can also be used to improve the accuracy of ship emission models and global emission inventories.

Last autumn, emission tests were performed at VTT's engine laboratory in Espoo, using a 1.6MW diesel engine which corresponds to a typical auxiliary ship engine. The test matrix was extensive enough to make the results internationally applicable. Four marine fuels were tested, of which three contained varying amounts of sulphur (0.1%, 0.5% and 2.5%), whereas an oxygen-containing bio-component accounted for 30% of the fourth fuel.

The next step will be to validate the results in a real

ship equipped with the latest technology, including a desulphurising exhaust scrubber. The project also explores the business potential of emission measurements. In addition, the engine measurement tests leveraged the results of another measurement technology research project – HyperGlobal;

a multicopter equipped with sensors was used to measure sulphur dioxide levels in the vicinity of an exhaust pipe during the tests.

The critical examination and measurement of maritime black carbon emissions is made all the more urgent by the fact that black carbon is a major contributor to Arctic warming. New shipping routes are opening up due to the melting ice caps, which will prove detrimental to the climate as emissions from shipping extend to the highly vulnerable Arctic region. Even small deposits of black carbon accelerate melting and climate change, by reducing the reflectivity of snow and ice.

The project is part of the Tekes 'Arctic Seas' programme. With a budget of €700,000, the project was launched in January 2015 and will complete this December 2016.

"A reliable method of measuring black carbon emissions from shipping is sorely needed, now that the IMO is evaluating the need to control such emissions, but no reliable measurement technique has been identified."

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TURBOCHARGING

ABB UNVEILS THE MXP TURBOCHARGER

During the recent CIMAC Congress, ABB Turbocharging presented for the first time details of a new turbocharger for marine auxiliary engines.

Jointly developed in cooperation with Japan's IHI Corporation, the new Marine Auxiliary Power (MXP) turbocharger, designed for ease of operation and service, supports a condition-based maintenance concept and forms a key part of the ABB Turbocharging's strategy to focus on increased value for engine builders and operators.

Oliver Riemenschneider, head of ABB Turbocharging said: "Continually pushing the boundaries of turbocharging technology is central to our offering, which translates into segment-specific products and solutions, supporting our customers to increase their productivity. With this new turbocharger, we do this through combining the roles and expertise of ABB and IHI.

"Highly conscious of the continuous pressures facing the global marine industry, we believe in a focus on enhancing the operation and maintenance of our customers' applications. This is demonstrated by the launch of MXP dedicated for auxiliary operation, at the most significant meeting place of the large engine industry; the CIMAC Congress."

MXP has been designed for auxiliary engines with power output up to 2MW running on Heavy Fuel Oil. The complexity of parts required in turbochargers with broader usage has been simplified for ease of maintenance, based on condition, as well as optimised load response behaviour, and improved efficiency at part load, which both contribute to fuel savings.

A simplified service approach was also a significant focus in the development as MXP allows for condition-based maintenance, optimising operational costs. As a 'user-friendly' turbocharger, it enables easy and fast service preparation and simplicity of replacing parts. Self-service maintenance by the ship's crew onboard additionally lowers costs while maximizing application availability and flexibility. This will be supported by a digital, interactive solution from ABB.

Roland Schwarz, head of marine auxiliary product group and ABB Turbocharging Japan, added: "In unveiling MXP, we are delivering a dedicated product in response to true market needs for auxiliary engines: simplified and designed for service; with competitive total cost of ownership; and fully meeting load response and fuel efficiency requirements."

MXP is cited as maintaining the reliability and robust quality of ABB turbochargers, whilst delivering the required auxiliary engine operation performance for vessels such as, bulkers, tankers and mid-sized container ships. In addressing emissions regulations, the new turbocharger enables IMO II compliance of the engine without the need for any additional measures.

MARINE ENGINES

ME-GI ENGINES FOR DSME NEWBUILDS

Daewoo Shipbuilding & Marine Engineering (DSME) has signed newbuild contracts with Maran Gas Maritime and Maran Tankers Management for two ME-GI powered LNG carriers and two VLCCs. Maran Gas Maritime has already four ME-GI powered LNG carriers on order at DSME.

The newbuildings are described as the next generation of eco-friendly vessels meeting IMO Tier III.

The 173,400m³ LNG carriers will each be fitted with two MAN B&W 5G70ME-C9.5-GI gas and fuel burning engines, while the 318,000dwt VLCCs will each be powered by a single MAN B&W 7G80ME-C9.5 high-efficiency engine. Both designs will also be fitted with an exhaust gas recirculation system ensuring Tier III compliance.

The ME-GI dual fuel low speed diesel engine represents the culmination of many years of development work. Depending on relative price and availability, as well as environmental considerations, the ME-GI engine gives shipowners and operators the option of using either HFO or gas – predominantly natural gas.

MAN Diesel & Turbo sees significant opportunities arising for gas-fuelled tonnage as concerns about both CO₂ and SO_x emission increase. According to the enginebuilder, research has indicated that the ME-GI engine delivers significant reductions in CO₂, NO_x and SO_x emissions. In comparison to other engines, the ME-GI engine has only a negligible, unburnt gas slip, consequently adding very little to the greenhouse effects of such slips. In addition, the Diesel combustion principle leaves no formaldehyde emissions. All together, this makes the ME-GI engine series the most environmentally-friendly technology available for marine propulsion, claims MAN Diesel & Turbo.

The LNG carriers are slated for delivery in 2019 and the VLCCs are due in the first half of 2018.

VOLVO PENTA'S D11 MEETS CLASS APPROVAL

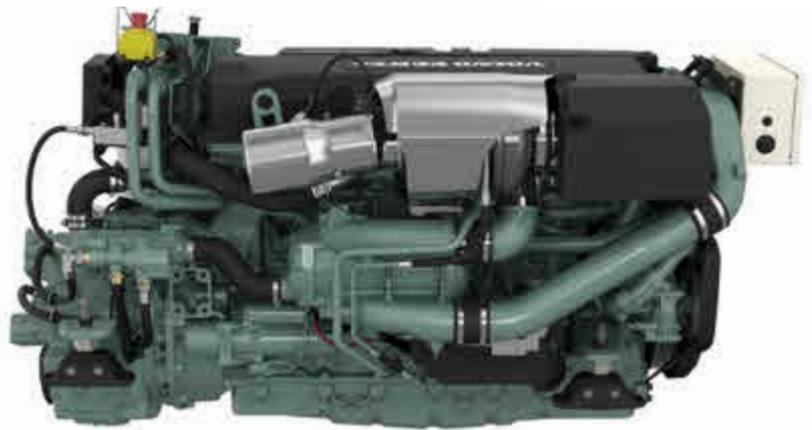
Volvo Penta's D11 engine has gained type approval from several classification societies, namely DNV-GL, RINA, LR, CSS, Russia Maritime Register of Shipping (RS) and the Indian Register of Shipping (IRS).

Thomas Lantz, product planning manager for Volvo Penta's commercial marine division, said: "We've seen great success already with this engine in pilot boats, passenger transportation and fishing vessels, and it's a great step forward that our 11-litre engine has been type approved. With type approval, it will be available for a much wider range of high-speed applications all over the world.

The 510hp model in particular complies with demands of classification societies in relation to unmanned machine rooms, so we see this as continuing in popularity. The D11 really strengthens our total commercial offer by adding the new ratings both in our inboard and IPS high speed engine range."

The D11 is an in-line six-cylinder engine designed to fill the gap between the company's D6 and D13 engines with two power classes: 510 and 625hp both in the inboard and the IPS range.

With a strong and robust engine block and cylinder head with efficient cooling, the D11 is equipped with a twin-entry turbo where each exhaust pulse is used to maximise charging pressure. This gives an extremely powerful torque at low revs. Noise and vibration levels are minimal.



LUBRICANTS

WÄRTSILÄ APPROVES NEW CYLINDER OIL FOR USE IN TWO-STROKES

Talusia Optima, a new cylinder lubricant developed by Total Lubmarine, has received a 'no objection' letter from Winterthur Gas & Diesel for use in a range of Wärtsilä engines with fuels ranging in sulphur content from 0-3.5%. The product is currently being tested on a range of ships and is expected to be brought to market later this year.

Talusia Optima completed over 4300 h of validation tests onboard a ULCS deployed on Asia-Europe liner routes. The vessel's engine, a two-stroke Wärtsilä 14RT-flex96C-B, underwent a series of engine inspections and oil analyses throughout the test period and performed satisfactorily, meeting Wärtsilä's requirements, according to Total Lubmarine.

The oil uses ash-free neutralising molecules (ANM), which provide super-neutralisation, outstanding cylinder cleanliness and the potential to reduce feed rates.

Total Lubmarine's technical director Jean-Philippe Roman said: "Talusia Optima is an exciting new development and a step forward for the lubes industry. It is the first and only cylinder lube oil on the market able to lubricate engines operating with fuels with any sulphur content. It will bring an end to the need for vessels to change lubricant when entering and leaving ECAs, making life easier for ships' crews. We're delighted with its performance to date and are confident that we will bring it to market soon."

The principle drivers behind the development of Talusia Optima have been emission regulation deadlines set by the IMO, technologies created in response to these regulations and the recommendations of OEMs and vessel operation optimisation.

Winterthur Gas & Diesel has given approval for the use of Talusia Optima with its Wärtsilä RTA, RT-flex and X engines as well as in Sulzer two-stroke engines.

VICKERS OILS EAL APPROVED FOR ROLLS-ROYCE THRUSTERS

Rolls-Royce tunnel thrusters can now use Vickers Oils' Environmentally Acceptable Lubricant BIOGEAR XP 68, following approval from Rolls-Royce Marine in Ulsteinvik, Norway.

"We have worked with Rolls-Royce over many years to develop our products in order to meet the stringent performance requirements required for lubricants in today's equipment," said Vickers Oils in a press statement.

BIOGEAR XP is a range of high performance EAL designed for use where there is potential for fluid loss to occur, for example from thrusters and some controllable pitch propellers. These products are extreme pressure gear oils with excellent anti-wear and micro pitting performance.

This is the latest in a wide range of OEM approvals received for the Vickers Oils BIOGEAR XP range. Kawasaki Heavy Industries, Nakashima, Hyundai Heavy Industries, Kamome, KTE and Caterpillar Propulsion are other manufacturers to have approved the lubricant, which is available in ISO 68, 100 and 150 viscosities and is stocked on a global basis.



FUEL

BOS EMULSIFIED FUEL SYSTEM TO BE INSTALLED ABOARD *P&O ORIANA*

Singapore's Blue Ocean Solutions, a subsidiary of Keppel Offshore & Marine, received an order from P&O Cruises this week for two emulsified fuel systems for the cruiseship *P&O Oriana*. Installation and commissioning will take place without disruption to the ship's schedule.

One of the reasons claimed for opting for the BOS solution was improved fuel atomization, resulting in a 2-5% fuel efficiency improvement. Other benefits cited are reduced NOx emissions due to cooler combustion as well as cleaner exhaust and reduced emissions of particulates. The better combustion and presence of steam reduces and softens the soot, resulting in cleaner exhaust. This is evident visibly in the emission from the funnel.

The system is designed for easy and trouble free operation. It is fully automated and fail safe with safety interlock built in. But the main component of the technology is the patented BOS dynamic mixing emulsifier that has no mechanical moving parts. It is designed to produce the optimal emulsion for best fuel savings on demand reliably and consistently in ever changing sea conditions.

Blue Ocean Solutions has now supplied the technology to about 30 vessels, with Wärtsilä and classification societies having allegedly verified performance of the system

Blue Ocean Solutions has offices in Singapore (HQ) and in Finland with a international network of local representatives. It is a subsidiary of Keppel Offshore & Marine, one of the largest offshore & marine groups in the world.

BALLAST WATER



RAYCLEAN APPROVED FOR USE ONBOARD TANKERS

DESMI Ocean Guard has achieved ATEX certification for its RayClean-EXTM ballast water treatment system, enabling installation in hazardous areas on tankers.

Germany's DEKRA EXAM GmbH issued the certificate which covers both the RayClean™ UV unit and the UV control panel powering the UV unit. The filter, valves and sensors in the RayClean™ system can also be delivered in ATEX certified version meaning that all components of the system except the main control panel can be installed directly in hazardous areas. The main control panel, however, must be installed in a safe area, such as the engine control room.

“We are of course very pleased to announce that we have received this important certification, which will open up an entirely new market segment for our ballast water treatment system”, said Rasmus Folsø, CEO of DESMI Ocean Guard.

“So far we have not been able to offer our customers a certified version of our RayClean™ system, which could be installed in hazardous areas on tankers, but now we can! While we await US Coast Guard’s final decision regarding our USCG type approval application submitted to them in March 2015, as only the second company in the world to do this, we continue to develop the system in order to strengthen our market offering, and the ATEX certificate is a good example of this.”

Mark Kalhøj, technical manager, DESMI Ocean Guard, explained: “We have designed our ATEX certified version of RayClean™ in order to enable installation in all typical hazardous areas found onboard normal commercial tankers and gas carriers. The general protection principle used is purge and pressurization, which means all potential ignition sources are covered by enclosures that are purged and pressurized with air in order to maintain an overpressure inside the enclosures. This way gas cannot access the enclosures and get close to potential ignition sources. The overpressure is constantly monitored and if it disappears the RayClean-EXTM system will automatically de-energize immediately.”

The RayClean™ Ballast Water Treatment is based on mechanical filtration and UV treatment. The system has received IMO, DNV-GL and ClassNK type approval, as well as AMS acceptance by the USCG, which is valid in all salinities ranging from freshwater to marine water. The system has no limitation with regard to temperature of the water to be treated. It can also treat extremely dirty and unclear water.

EVOQUA INTRODUCES A COMPACT VERSION OF SEACURE

Evoqua Water Technologies launched a compact version of its SeaCURE ballast water management system (BWMS) at Posidonia earlier this month.

Ian Stentiford, vice president and general manager of Evoqua's Electrocatalytic business, said: "We listened to our customers' needs and requirements for a smaller, lighter, more flexible and adaptable system than is currently available. We have repackaged the original SeaCURE BWMS in response to this feedback by developing a compact version, while maintaining the same high quality components of Evoqua's original BWMS."

With a footprint of 5.7m² for a 3,000m³/h flow rate, the new SeaCURE system is a more compact solution for shipowners and operators where vessel space is at a premium. Easily transportable to port as one unit, the arrangement is simple to install, and can be assembled offsite to shorten build time onboard.

SCRUBBERS

ECOSPRAY SCRUBBER GETS SMALLER

Following full scale trials of its exhaust gas cleaning solutions, Italy's Ecospray Technologies is able to bring two new products to the market designed to reduce further the dimensions of its compact sea water scrubber.

The new ECO-SOx™ ULTRASea Water Scrubber is over 10% more compact than its predecessors, while the ECO-TRIOTM DeNOx PLUS, specifically aimed at super-yachts, navy ships and small to medium sized ferries (for marine diesel engine from 150 to 4.300 kW), is a combined system which offers an all-in-one unit aimed at removing nitrogen oxide, reducing soot and visible smoke, and improving noise and vibration levels.

The advancements are based on the operation experience from 200 scrubber installations worldwide, furthering the development of a new generation of proprietary high efficiency spray nozzles and tower design, which includes a new triple swirl demister, to remove any water carryover from the stack.



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HULL FORM

IS CARL SCHULTE THE MOST SUSTAINABLE BOX SHIP OF ITS CLASS?

A state-of-the-art containership designed to meet stringent environmental standards is attracting industry attention as a vessel that reduces port dues.

Designed by the Schulte Group, the 5400TEU *Carl Schulte*, along with its two sister vessels, *Christa Schulte* and *Clemens Schulte*, is claimed to push the boundaries in hull design and environmental efficiency, with sophisticated software to optimise voyage planning and to measure the CO₂, SO_x and NO_x emissions implemented during the design phase.

The owner, Bernard Schulte Shipmanagement (BSM), worked with DNV GL to ensure its vision could be realised. This resulted in the vessel being fitted with a class approved emergency response system to deal with any untoward environmental incidents. Subsequently, DNV GL issued a Green Passport to all sister vessels.

According to Prakhar Singh Chandel, fleet manager - energy optimisation for BSM, construction and operation of such a vessel is fully aligned with the Group's commitment to preserving and respecting the environment in all its activities.

"We have installed new hardware and software solutions, carried out intensive crew training and introduced new environmental processes and procedures to ensure that the highest environmental standards are maintained at all times," he said.

So impressive is *Carl Schulte's* operating results that it is currently performing in the top 2% of containerships of its size and type. The vessel has been graded by RightShip, the maritime vessel vetting specialist, as A+ on the Greenhouse Gas (GHG) Emissions scale, and has been given a five-star Environmental Score rating, placing the ship in the top 20 vessels out of 76,000 ships graded by RightShip.

As a result, this vessel attracts significant discounts from ports that place environmental protection at the centre of everything they do. Recently the *Carl Schulte* established an environmental first by consecutively visiting two of these ground breaking ports, Port Metro Vancouver and Prince Rupert Port Authority – and in so doing attracted significant economic benefits.

Port Metro Vancouver's EcoAction programme recognises and rewards vessels that go beyond pre-set requirements to reduce their air emissions, offering a discount of up to 47% in harbour dues.

Vessels are eligible for reduced fees if they use alternative fuels and technologies; shore power; or have obtained acceptable scores in third party environmental programmes such as the RightShip Environmental Score, Environmental Ship Index, Clean Shipping Index, Green Marine, Green Award or ship classification societies.

CUBA ORDERS IHC'S EASYDREDGE DESIGN

A Royal IHC designed and built Easydredge3700 trailing suction hopper dredger has been contracted for delivery to Cuban owner Tecnoimport and Empresa Constructora de Obras Marítimas.

The 3,700m³ vessel, the largest in the series of standardized Easydredge twin-screw TSHDs, designed and built by IHC features upgrade options such as larger crew accommodation and increased autonomy; a booster pump, which enhances shore-pumping capacities to more than 4km; and a dynamic positioning system that will help to navigate through narrow passages to protect the coral reefs around the Cuban coast.



An extensive training programme will also enable the customer to open up the full potential of the vessel.

When delivered in early 2008, it will be deployed for maintenance works and beach nourishment projects, which are fundamental for stimulating further investment in the Cuban tourism industry. "The confirmation of this order once again shows that our focus on building standardised TSHDs with proven technology appeals to the market, and by ensuring a short delivery time, we met our customer's requirements," said Mr Bram Roelse, CEO IHC.

DNV GL UNVEILS LPG CARRIER DESIGN PROJECT

Classification society DNV GL has initiated a joint industry project for the design of a state-of-the-art next generation LPG carrier.

LPGreen aims is to develop a more energy efficient, environmentally friendly, and safer vessel for the transportation of LPG products, taking into account existing and future trading patterns and ensuring the overall competitiveness of the concept.

Bringing together Hyundai Heavy Industries (HHI), Wärtsilä, MAN Diesel & Turbo and Consolidated Marine Management (CMM), each contributing their unique expertise and experience, the project will investigate the potential for hull form optimisation, improved cargo handling and management systems as well as machinery systems integration using the DNV GL COSSMOS tool. An additional feasibility study will assess the total competitiveness of the concept.

The LPG concept vessel will include significant improvements in terms of its energy efficiency, environmental track record and the level of safety. The target is a concept that will be ready to be implemented as soon as the project is completed.

George Dimopoulos, principal specialist at DNV GL's Maritime R&D and Advisory unit in Greece, who acts as the classification society's project manager for LPGreen, said: "Using our partner's experience, technology expertise and coupling it with state-of-the-art tools such as hull form CFD optimisation and COSSMOS for integrated machinery systems, we are confident that we will develop a competitive, compliant and safer concept vessel, with significant advances in a range of its features."

The LPGreen project is planned to be completed by the end of this year.

STENA NEWBUILD FERRIES WILL BE 'GAS READY'

Stena Line's new RoPax ferries, designed by Deltamarin and under construction at China's AVIC Weihai Shipyard, will be built to DNV GL's new GAS READY class notation, which was introduced in January.

The RoPax ferries will be constructed for optimal efficiency and flexibility. Intended for short international routes, the first four vessels are planned to be used within Stena Lines' route network in Northern Europe. They will each have a 3,100m lane and 1000 passenger-carrying capacity. The vessels and their main engines will be 'gas ready', prepared to be fuelled by either methanol or LNG.

"These ships will be the most fuel efficient ferries in the world and will set a new industry standard when it comes to operational performance, emissions and cost competitiveness, positioning Stena Line to



support its customers in the next decades”, said Carl-Johan Hagman, managing director of Stena Line.

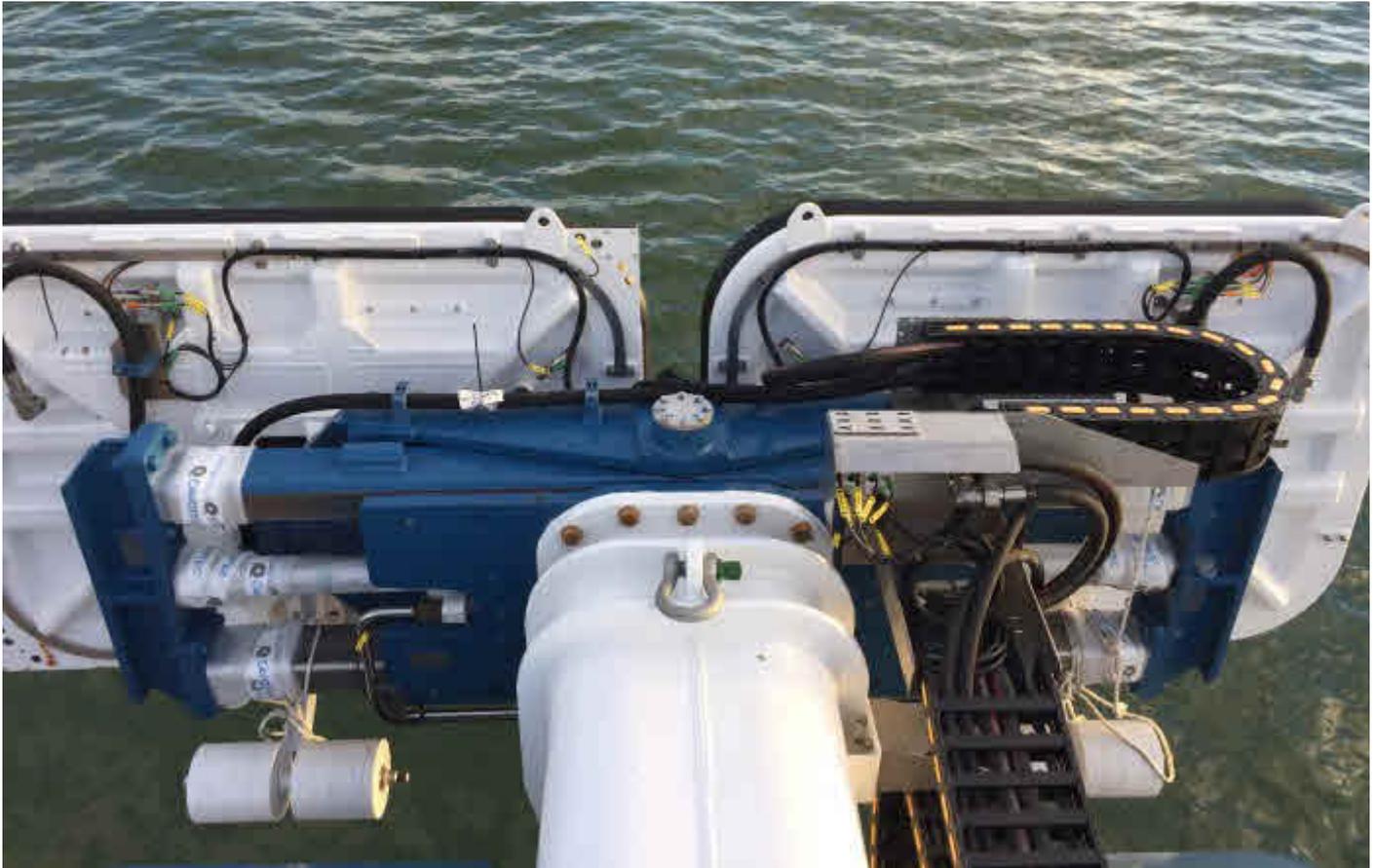
“During the course of the past 24 months our engineering staff has managed to develop a design that is not only 50 per cent larger than today’s standard RoPax vessels, but more importantly, incorporates the emission reduction and efficiency initiatives that have been developed throughout the Stena Group during the past years.”

DNV GL said its GAS READY notation provides a clear picture of the level of gas fuelled preparedness of a vessel, as well as guidance on the scope of the contemplated work to all involved parties. During the classification process DNV GL will also carry out statutory work on behalf of the UK’s Maritime and Coastguard Agency (MCA).

The initial order is for four 221m loa ferries, with an option for four more. Delivery is planned for 2019 and 2020.

MOORING

CAVOTEC SUCCESSFULLY DEMONSTRATES ITS ADVANCED MOORING SYSTEM



Cavotec's automated mooring system MoorMaster last week completed at-sea demonstrations of the US Navy's Advanced Mooring System (AMS) for ship-to-ship operations in what marks a significant breakthrough for the Cavotec system.

The AMS employs MoorMaster to control vessel movement and eliminate the need for conventional mooring lines. The system can deploy and detach in less than 30 seconds.

Previously, MoorMaster units had been mounted on the quay face, onto the berth surface, or built into lock walls. But AMS is the first version of system specifically designed for use at sea and for ship-to-ship mooring operations. The AMS MoorMaster MM200E60 units are integrated into reinforced TEU shipping containers and installed on US Navy vessels to enable "sea-basing" operations such as the transfer of personnel and materiel at sea.

The at-sea demonstrations were conducted at Naval Base Coronado in California, during which a total of between 40 and 50 mooring operations were completed over the course of several days.

Meanwhile, Cavotec has won an order for an electric hybrid passenger ferry application in Finland, for which the Group will manufacture, install and commission a combined MoorMaster and battery charging system.

This system integrates MoorMaster to moor the ferry; Cavotec's Alternative Maritime Power, (AMP), cable management systems to connect the ferry to electrical power; and the company's Automatic Plug-in System, (APS). APS automates the connection of cranes, ships and other mobile equipment using cable reels.

The 90m FinFerries electric hybrid vessels will be able to carry up to 90 cars, and is due to enter service in summer 2017.

OFFSHORE MAINTENANCE

GE MARINE TO SERVICE GAZFLOT SEMI-SUBMERSIBLE DRILLSHIPS

The drydocking of two of Gazflot's semi-submersible drilling vessels, *Northern Lights* and *Polar Star*, will be under the supervision of GE Marine Solutions, which will provide maintenance services to the vessels in order to optimise performance.

After the drydocking at Shanghai's CIMC Raffles GE Will Continue to provide remote technical assistance for the vessels to further enhance drilling productivity.

"GE will not only carry out the required maintenance activities on the two vessels, but will also be assisting with the supervision of the activities throughout drydocking. We are impressed by GE's technical and operational finesse and look forward to working with them in the long-term," said Yongqiang Shao, deputy general manager, CIMC Raffles.

Commenting on the contract, Andrey Nikireev, deputy head of power supply department, Gazflot, said: "We have been very happy with GE, and its technology is running flawlessly onboard our vessels. GE's deep understanding of these technologies makes them an ideal partner for this dry-docking, and with GE's engineers carrying out the maintenance activities, we are confident that our vessels are in a safe pair of hands."

The two vessels are equipped with GE's dynamic positioning, automation, drilling drives, MV 7000 propulsion drives, power and vessel management systems, and thruster assisted mooring system. Through the current contract, GE's team of on-site engineers will ensure the longevity of installed systems while working with the yard to supervise the drydocking activities.

"We have had a long-standing relationship with Gazflot and are happy to further our partnership through this deal. With our reliable technologies on board their vessels, GE is at the heart of Gazflot's exploration activities. Our thorough maintenance services and assurance of providing technical support for these vessels will ensure uninterrupted operations for Gazflot in the years to come," said Tim Schweikert, president & CEO, GE Marine Solutions.

CARGO HANDLING

PALLFINGER TO SUPPLY WORLD'S LARGEST CRANE SHIP

Pallfinger Marine has been contracted to supply cargo handling equipment to Heerema Offshore Services' semi-submersible crane vessel *Sleipnir*.

The vessel, under construction at the Jurong shipyard in Singapore, is designed to install and remove offshore facilities worldwide and will be equipped with two 10,000t heavy-lifting offshore cranes and a large reinforced work deck area. At 214m x 97.5m, *Sleipnir* will be the world's largest semi-submersible crane vessel.

"We are very proud to be chosen as supplier for this prestigious project and it shows once again our ability to work closely with our customers to tailor-make the best possible and most cost effective equipment solution," said Sverre Mowinckel-Nilsen, head of sales at Pallfinger Marine Winches and Offshore Equipment. The delivery consists of two complete bulk loading stations, one starboard, one on the port side. Each of these consists of four bulk loading reels in various sizes including loading hoses, HPU and control system. The equipment is scheduled for delivery Q1 2017.

COATINGS

PPG INTRODUCES A NEW COAT FOR DRY CARGO HOLDS

PPG's protective and marine coatings business unveiled a new protective coating for dry bulk carrier cargo holds at Posidonia earlier this month.

Designed specifically for the cargo holds of dry bulk carriers, PPG Sigmashield MTC features a unique chemistry that maximises technical performance and offers a commercially sound solution for spot and full repairs as well as for application at newbuild. Its robust properties make it the ideal coating for premium performance in the demanding dry bulk cargo environment.

The new system is built on a unique coating technology that comprises a PPG SigmashieldPrime undercoat and PPG Sigmashield MTC topcoat.

"The chemistry within the system includes a pre-reacted amine hardener in the coating," said Christophe Cheikh, PPG global product support manager. "This effectively provides a 'kick-start' for the curing reaction, which results in shorter curing time and return to service that is among the fastest in the industry. After just two coats of 100µ, a vessel can resume service in only two days when transporting iron ore and five days when carrying hot coal."

PPG claims that the selection of inert raw materials in the formulation ensures that any unwanted chemical reactions at the surface are avoided and the system delivers excellent chemical resistance, allowing safe operation with all International Maritime Solid Bulk Cargoes (IMSBC) Code cargoes.



In addition to super-fast curing, the system's excellent anti-abrasive and anti-corrosive properties extend the service life of vessels and are effective across a wide range of operating temperatures due to the high glass transition epoxy matrix, said the manufacturer. As a result, damage commonly caused by cargo settlement during vessel operation is minimized.

"PPG Sigmashield MTC system has undergone extensive tests in controlled situations designed to replicate actual loading and cargo carriage conditions," Cheikh said. "The surface wetting properties built into the hardener provide excellent adhesion, anti-corrosion and creep resistance. So when inevitable mechanical damage eventually does occur, the area affected remains limited and so extends the service life of the coating."

When applied in enclosed environments containing various chemically-active cargoes and subjected to temperature cycles in the presence of moisture, it was found that the PPG Sigmashield MTC system offered best-in-class performance, exhibiting the smallest amount of undercreep (similar to that of a water ballast tank coating system).

BEARINGS

SKF BEARINGS IMPROVE AZIPOD RELIABILITY

SKF has claimed its thrust bearing technology has enhanced the reliability and life-cycle costs of the ABB Azipod units installed to the 170,000m³ ice-breaking LNG tankers destined for the Yama peninsula later this year.

The company says that ABB Marine chose to work with SKF on the development of its Azipod propulsion units for 10 LNG carriers because of its application engineering expertise, particularly in demanding applications, and proven reliable innovations. Included in SKF's offering are custom made thrust bearing arrangements, which incorporate housing and seals, and high performance self-aligning CARB toroidal roller bearings for the propeller shafts. As a result, ABB was able to build-in superior operating reliability with a long service life.

SKF project manager Sami Kontturi said: "We are privileged to be lending our expertise and state-of-the-art technologies to one of the largest industrial undertakings in the Arctic. With our engineering support and products we can help ABB and its Azipod propulsion units to deliver enhanced performance and efficiency on the LNG carriers as the Yamal project takes a great step forward in the global search for natural resources." In addition to the bearing arrangements supplied for the Yamal vessels, SKF has also delivered Turbulo Bilge water separators and SKF BlueMon, an environmental monitoring system for recording and mapping ship emissions.

MEM understands that the company is also gearing up to the launch of a new design of Simplex Intermediate shaft bearing; and a SKF Dynamic Stabiliser Cover (DSC). The new products are expected to be unveiled at the SMM exhibition in Hamburg this September.



SHAFTING

SHAFT ALIGNMENT BY BLUETOOTH

Shaft misalignment can write-off rotating machinery if not resolved in time, but a new wireless alignment tool can keep shafts up to 6 inches in diameter running to optimum.

VibrAlign's Fixturelaser features two laser transmitter-detector units that pair via Bluetooth to the user's iOS or Android device running the Laser Kit app. The app is designed to be installed on an iOS or Android mobile device, which replaces the traditional display unit. The app communicates with the laser transmitter-detectors via Bluetooth and performs all the alignment calculations.

The V-Brackets come pre-assembled with chains and can be mounted on shafts up to 6 inches in diameter, although extension chains are available to accommodate larger shafts. The Laser Kit is designed as an economical solution to perform horizontal shaft alignments, available for direct purchase at VibrAlign's website.

LNG CONTAINMENT

GTT MEMBRANE TANKS FOR SK SHIPPING NEWBUILDS

GTT has received an order for two new LNGCs building for SK Shipping at Hyundai Heavy Industries' shipyard in Ulsan. Delivery is scheduled in 2019.

The vessels, designed according to the new IGC standards¹ published in 2016, will be equipped with GTT's Mark III Flex membrane technology. Mark III Flex is particularly well-suited for the highly efficient XDF propulsion system installed on SK Shipping's LNG carriers, as the technology offers a high level of insulation performance.

"GTT is very pleased to continue our collaboration with HHI. This new contract demonstrates HHI's confidence in GTT technologies which already equip some fifty LNG carriers in service built by the shipyard", said Philippe Berterottière, Chairman and CEO of GTT.

"SK Shipping has been using vessels equipped with GTT membranes for some time, and we are very committed to this excellent partnership."

Mark III Flex technology is a proven solution, with more than 60 LNG carriers ordered worldwide since 2011, 34 of which are in service. GTT continues to develop its Mark range, particularly through improvements in design and the use of components that are more and more efficient.

The development allows GTT to offer insulation solutions that provide ever-increasing performance adapted to the requirements of the latest vessel propulsion systems, which are more fuel efficient, as well as new projects that require greater resistance to liquid motion, particularly for multi-gas applications, or partially filled tanks.

COMPANY NEWS

AURAMARINE OPENS ASIA SERVICE CENTRE

Auramarine has opened a new service office in Hong Kong to expedite the supply of spare parts, periodic maintenance and other service across the region.

"We want to show our distributors, ship owners, shipyards and ship management companies in Asia, that even shipbuilding market is quiet at the moment, Auramarine is willing to take care of our common goals and serve its customers even better than in the past," said Marko Karsikko, Auramarine's manager, retrofit and after sales.

ELCOME EXPANDS ITS SERVICE NETWORK

Elcome International has expanded its maritime service network with the opening of new facilities in Egypt, Sri Lanka and Singapore.

"We are aggressively growing our service and support footprint with Elcome factory-trained technicians and spare parts now available at more than 20 strategic ports from Suez to Singapore, as well as flyaway service on a global scale," said Surjit Singh, Deputy General Manager – Customer Support of Elcome International. "Elcome is now firmly established as the largest and best-equipped marine electronics and safety sales and support network in Asia, as well as the Middle East."

With the addition of the three new locations, Elcome is now performing more than 830 shipboard service calls per month, with a first-time fix rate of 96 per cent.

The new Elcome facility in Egypt is strategically located inside Port Tawfik Free Zone by the southern entrance of the Suez Canal, ensuring rapid response times and eliminating custom delays for ships transiting the canal. The Singapore office provides a strategic presence for Elcome at one of the world's most preferred international ports of call. As the country is emerging as the logistics hub in South Asia, the Sri Lanka office located inside the Port of Colombo plays a vital role in commercial and military projects.

COFELY MOVES AND REBRANDS

Cofely Refrigeration, the Lindau-based refrigeration specialist will be moving into its new head office on the former Bahlsen site in Lindau, Germany and will now operate under the name ENGIE Refrigeration GmbH.

Since the middle of last year, the French parent company GDF SUEZ has been operating under the new name ENGIE, and has been rebranding worldwide.

“The new building not only offers us the perfect presentation for our new ENGIE brand, but above all, the opportunity to optimise our processes and logistics and to secure our market position over the long term,” said Jochen Hornung, CEO, ENGIE Refrigeration GmbH. “Our new head office is a springboard for the planned expansion under our new umbrella brand ENGIE.”

GBFL AND ENOC COLLABORATE ON LUBE SALES

GAC this week announced an exclusive partnership between its bunker fuels trading arm GAC Bunker Fuels (GBFL) and ENOC Global Marine.

The deal marks the first time GBFL has been appointed to provide sales and distribution for a lubricants manufacturer, on the strength of the GAC Group’s extensive logistics expertise, strong agency network and experienced bunker fuels team.

“ENOC is an exceptionally strong brand in the Middle East, and their business ethics and values are very similar to GAC’s,” said Nicholas Browne, GAC Bunker Fuels Director. “Sales and distribution is a logical extension to GAC’s existing service offering, and it meets a very real need. We’re excited to see this partnership develop and open new avenues of growth for both parties.”

Zaid Alqufaiidi, Managing Director, ENOC Marketing, added: “This newly forged collaboration with GAC presents ample opportunity for us to expand our network and cater to the ever evolving needs of our customers.”

Since its inception in 2015, ENOC Global Marine has built a strong presence across Africa, covering some of the continent’s key ports in Egypt, Nigeria, Angola, Ghana, Kenya, Morocco and Mauritania and now South Africa. The newly announced partnership with GAC Bunker Fuels will contribute to increasing the division’s vessel delivery by 300,000 litres of marine lubricant annually.

DANELEC ESPOUSES THE VIRTUES OF SERVITIZATION

Danelec Marine has published a White Paper calling for adoption of a servitization business model for maritime industry manufacturers.

The White Paper describes how Danelec Marine has embraced a comprehensive servitization strategy in its new-generation Voyage Data Recorders (VDR) and Electronic Chart Display and Information Systems (ECDIS). This involved all phases of designing for serviceability, upgrading the service network, automating the service process, as well as creating a suite of remote access solutions for configuring and trouble-shooting product issues.

“Most manufacturers of shipboard systems today still follow a traditional silo approach in which the product development, engineering, manufacturing, marketing and sales functions are separated from the service department,” said Hans Ottosen, CEO, Danelec Marine.

“Adopting a servitization strategy for products on commercial ships sailing global routes across 24 time zones presents unique challenges, but we have demonstrated that these can be surmounted.”

“Servitization has important benefits for all parties on the sell side and buy side,” said Ottosen. “For the manufacturer it provides competitive differentiation, deeper relationships with customers, enhanced customer satisfaction and loyalty, and a source of recurring revenues. For the customer it provides more value for the money and lower cost of ownership, in addition to faster and better after-sale service and support.”



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