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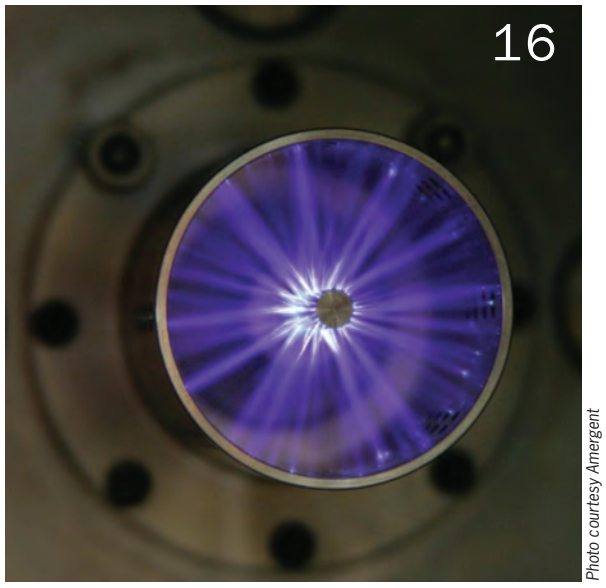

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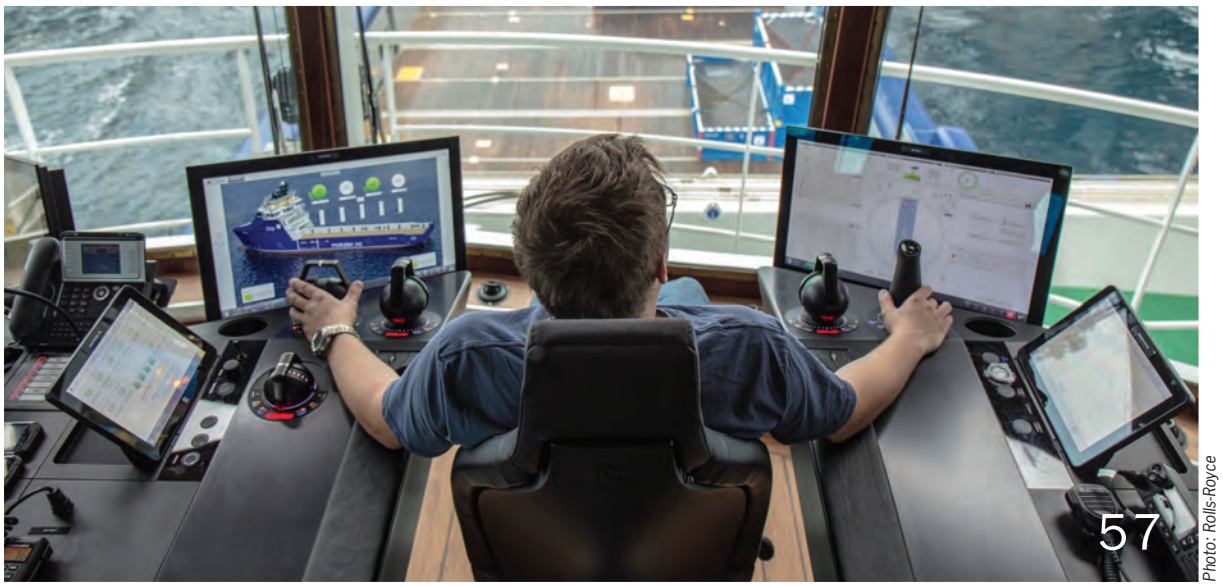

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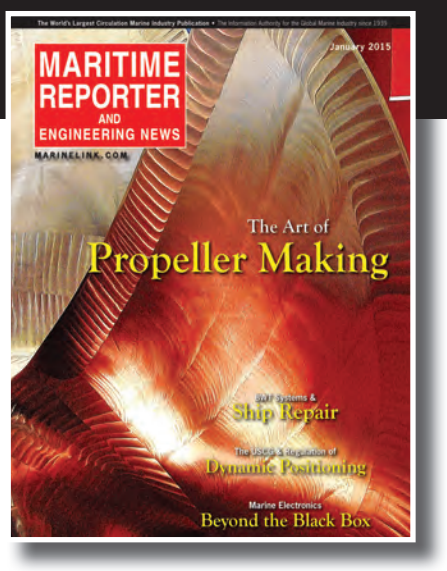
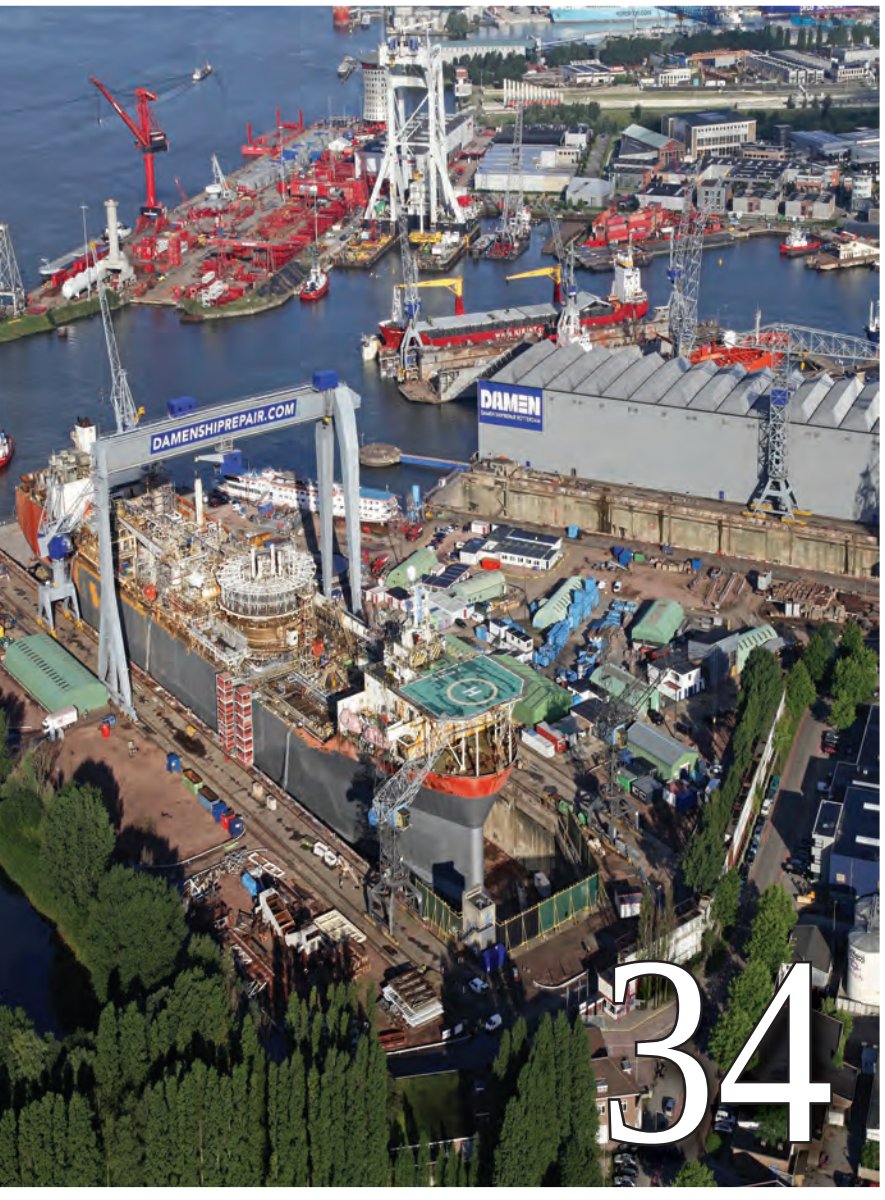
While a good deal of maritime construction and supply has headed east ... Far East ... MMG builds and ships from Germany some of the world's largest propellers for some of the world's largest ships. To see how they do it, **turn to page 44.**

Cover Image: MMG





Ballast Water Technology &

Ship Refit

The Ballast Water Technology issue continues to cause confusion and consternation in the maritime community. Read on to see how ship owners are coping and shipyards are planning.

By Patricia Keefe

(Photo: Royal Caribbean Intl.)

(Photo: Volvo Penta)

(Photo: Bollinger Shipyards)

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The Bridge of Tomorrow

Transas, founded in 1990, has built and maintained a stronghold on ship's bridges around the world through consistent innovation.

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GREG TRAUTHWEIN, EDITOR & ASSOCIATE PUBLISHER

With age comes perspective, and in my 20 plus years reporting on this industry I have seen my fair share of regulation that has served to 'raise the hackles' of ship owners. It is quite simple really; new regulation often means new procedure, new design, new equipment and new costs. With the possible exception of the new rules in the wake of the Exxon Valdez which mandated double hulls on tankers, the Ballast Water Management System issue is the most acrimonious debate I have witnessed.

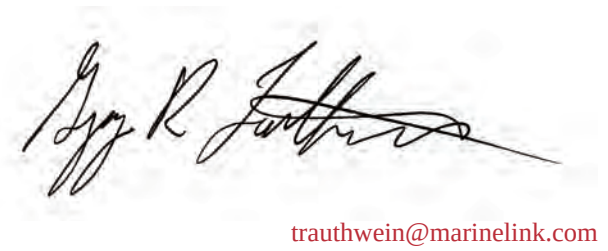
While ship owners understand the environmental need for a solution to the invasive species problem, the acrimony centers on uncertainty; uncertainty that comes when melding political agenda, technological development and market reality. While equipment manufacturers have been working furiously to develop, test and gain approval for their systems, deadlines for compliance and the threat of fines for ship owners are approaching rapidly. The overriding concern among ship owners is two-fold: fitting a system onto a ship, a system to procure and install that may cost millions, that ultimately might not be approved by the U.S. Coast Guard; and the shipyard backlog to get a system installed and operational in a timely manner.

Digging into the topic this month is Patricia Keefe who spoke with a long list of representatives of nearly every side of the topic, including vessel owners, ship yards and the U.S. Coast Guard. Disdain of the BWT issue among ship owners is no state's secret, but perhaps the most telling quote comes from **Graham Westgarth**, COO of GasLog Logistics and a former Intertanko Chairman when he said:

"This legislation was pushed before the technology was ready, and it has led to a massive amount of uncertainty and a massive financial burden on the industry. When you look at the amount of money that must be spent on this, it's really something of a tragedy."

Patrica's story is the centerpiece of our Ship Repair coverage and starts on page 34.

Another recurring topic in our pages has been the migration of shipbuilding and ship equipment technology production from the U.S. & Europe to the Far East, specifically China, Korea and Japan. This month reporting from Germany is Peter Pospiech who delivers an insightful piece on MMG, a German manufacturer of some of the world's largest ship propellers. Propeller technology is one of this industry's great 'secret sauces,' and depending on the vessel type, area of operation and mission, propellers vary wildly. Pospiech recently visited with MMG CEO **Manfred Urban**, who shares with *Maritime Reporter* the art and science behind his company's ongoing success in building and shipping from Germany to the Far East some of the world's largest propellers.



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Marine Casualties &

Fast Ferry Follies

Joseph Keefe is the lead commentator of MaritimeProfessional.com.

Passenger vessel safety isn't just a third world problem. It's a worthy challenge to take up in 2015 and at the same time, a completely sobering way to ring in the New Year.

As the clock ticks down on yet another year, I couldn't help but take note of the new cruise ship passenger drill requirements, effective from 1 January. These rules involve heightened requirements for mustering of newly embarked passengers prior to or immediately upon departure. Appropriately, the amended regulation in the International Convention for the Safety of Life at Sea was adopted in 2013 in the wake of the Costa Concordia incident. This is intended to ensure that passengers undergo safety drills, including mustering at the lifeboat stations, before the ship departs or immediately on departure. And, not a moment too soon; apparently.

Previously, the rule called for the mustering of passengers to take place within 24 hours of their embarkation. Beyond this, an amendment to SOLAS regulation III/19, on emergency training and drills, makes mandatory the carrying out of enclosed-space entry and rescue drills, which will require crew members with enclosed-space entry or rescue responsibilities to participate in an enclosed-space entry and rescue drill at least once every two months.

High Profile Tragedies

The end of the year also brings my attention – as well it should yours – to the latest high profile ferry incident; in this case, an Italian-flagged ferry carrying 466 passengers and crew which caught fire and resulted in the deaths of at least 11 while sailing from Greece to Italy recently. Before that, a South Korean ferry capsized in April, killing 304 passengers. And, who could forget the Costa Concordia?

All three cases are particularly disturbing, not only because of the tragic loss of so many, but also because these incidents occurred in, and around (and the vessels operated by) so-called first world maritime nations. On this side of the pond, North American operators are hardly immune to the dangers of mishaps, with more than a few casualties occurring in the not-too-distant past, as well. That's not to say U.S. and Canadian operators don't have very good safety records – they do. The U.S. Coast Guard agrees. That said; the NTSB has its own opinions on the matter.

Are Domestic Passenger Vessels Safe?

The National Transportation Safety Board (NTSB) also released its annual "Top 10 Most Wanted List" of Transportation Improvements for 2014. New this year was the issue of passenger vessel safety. Between 2000 and 2010, several accidents involving passenger vessels occurred. Additionally, NTSB investigations "revealed in numerous cases that the cause of an accident was not the failure of the vessel but the lack of good safety practices that led to the loss of life and injuries." Notably, the U.S.-based Passenger Vessel Association (PVA) earlier this year took vigorous exception to the NTSB attention, and our examination of the data backs up that position.

The domestic passenger vessel industry is highly regulated. Safety regulations for small passenger vessels took effect starting in 1996 for new construction, with phased implementation for existing vessels to be completed no later than March 2006. These regulations substantially upgraded small passenger vessel lifesaving equipment requirements. Since then, the defined weight of passengers on these vessels has been adjusted to 185 pounds, fully 25 pounds more than the previous benchmark of 160 pounds. Myriad other regulations also apply.

By the Numbers

I'm currently fully switched on to the world of ferries and passenger vessels, having just completed our annual Ferry and Passenger Vessel edition of MarineNews magazine. Yes, I edit that one, as well. We covered the world of passenger vessels from stem to stern, inside and out and when it was all 'done and dusted,' we also dug up some interesting – but thoroughly depressing – statistics about this vital sector. Consider the following (global) facts:

- 162 ferry accidents have occurred around the world from January 2000 to December 2014.
- 17,098 people died in these accidents.
- Accidents occurred in 40 countries around the world
- 4 countries – Bangladesh, Indonesia, the Philippines, and China – account for > 50% of accidents.
- 95% of accidents occurred in developing world countries.
- Bangladesh is far and away the most dangerous place to board a ferry.
- Adverse weather is implicated in over 50% of accidents
- Overloading is implicated in 34% of all cases.
- Human error is implicated in 77% of accidents.
- Human error is implicated in 87% of fatalities.

(*) Statistics courtesy of Roberta Weisbrod and the Worldwide Ferry Safety Association.

As noted above – Bangladesh, Indonesia, the Philippines and China – account for the lion's share of all accidents, with Bangladesh a clear leader in safety issues. But, as we all found out this year, you don't have to be in Bangladesh in order to lose your life on a ferry. That could happen in Greek, Italian, or South Korean waters, and a hundred other places in between. And, it can happen whether or not your crew is STCW certified, or not.

Looking Ahead

It is easy enough to write about such issues, but another thing altogether to propose what might be done to mitigate the dangers fraught with boarding the world's sometimes motley fleet of passenger conveyances. I don't pretend that I am that person. Within the last couple of years, however, and as a licensed mariner, I took and passed two such training courses intended to do just that. In my case, I did it in an on-line format. The courses – Crisis Management (RO-RO/Passenger STCW), 2009 and Crowd Management (RO-RO/Passenger STCW), 2009 – are both Coast Guard approved curricula intended to satisfy STCW requirements, and are given by a reputable U.S.-based training institution. Both courses involved proctored final examinations.

As a general statement, and for those who haven't had the opportunity or need to take such a class, the courses convey valuable information to the prospective passenger vessel employee. You don't need to be a rocket scientist to get through them, however.

Combined with the other required regulatory training that seafarers everywhere must master in order to become certified for the tasks at hand, they may or may not be enough to avert the kind of tragedies which, unfortunately, have become altogether too familiar in the recent past.

What else can be done? For starters, it is clear – at least to me – that training and competency protocols represented by the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (or STCW) have, as a minimum, fallen short of their intended goals. Others, including the current President of the Massachusetts Maritime Academy, RADM Richard Gurnon, take the position a step further. For his part, Gurnon insists that STCW has done nothing to make mariners safer in today's commercial merchant marine. He may be right. But, that leaves open the question of what else can be done. I don't have the answer.

What we do know as a tumultuous 2014 comes to a close is that passenger vessel safety remains as a hot topic, an unresolved challenge and one which crosses all boundaries; financial or otherwise. We can pretend that it is, by and large, a third world problem. The people of South Korea, Italy and Greece might just disagree. As you launch into the New Year, add the challenge of making passenger vessels safer, no matter where they might operate, to your considerable

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PROFILE

BDD Logs Successful '14

Bayonne Drydock kicked off last year with the repair and drydocking of the U.S. Navy Ship, Pomeroy followed by the successful drydocking and repairs of the USNS Watkins. It closed the year with the completion of the USNS Seay; all were completed on time, with the Seay coming in ahead of schedule with work t=hat included bowthruster overhaul repairs, blasting and painting and hull coatings.

In addition to the Grey hulls, BDD serviced several commercial customers via drydock and pier side repairs. Mike Cranston, President of BDD (pictured above) said improved programs and initiatives in the areas of Management, Quality Assurance and Safety coupled with Innovative and strategic planning as part of the outcome in having another successful year. "Bayonne Drydock has always been motivated by our motto to be the Drydock and Repair facility of choice by our customers with the emphasis 'On Time and On Budget.' BDD is proud of the improved programs that were put into place. We don't want to be complacent and we recognize that positive growth is essential to continued achievements."

BDD's approach to 2015 is continued improvement. "We are increasing staff to better service our customers and gearing up for facility improvements including a state-of-the-art Water Treatment System Environmental Upgrade," said Cranston.

RCL to Install Scrubbers

19 Ships to get Refit. Pictured is the view "inside the stacks" of Quantum of the Seas.

(Photo: RCL)

Royal Caribbean Cruises Ltd. (RCL) will retrofit 19 of its ships with advanced emissions purification (AEP) systems, (aka. scrubbers), units designed to remove more than 97% of the sulfur dioxide emissions generated by the ships' diesel engines. The move to scrubbers versus switching to a low sulfur fuel was made for a variety of reasons, chief among them though was the fact that with scrubbers RCL ships can be compliant everywhere they sail, and they are not dependent on spotty availability of lower-sulfur fuels.

RCCL has developed, tested and planned for the use of scrubber technology since 2010, and two newly built RCL ships that entered into service this year – Quantum of the Seas and Mein Schiff 3 – were among the first cruise ships to be built with AEP systems installed during initial construction. Royal Caribbean International's Liberty of the Seas has been operating one of its six engines with a retrofitted AEP system for two years.

"A retrofit project of this size and complexity – and the scale and intricacy of the research, planning and design required – is unprecedented for our company, and has required a very systematic process," said Harri Kulovaara, EVP, Maritime, Royal Caribbean Cruises Ltd.

To ensure the right systems are available for each ship's unique requirements, RCL contracted two different AEP technology suppliers: Alfa Laval and Wärtsilä, with additional companies being hired to execute the installations.

Beginning in January 2015, installation will take place on 13 Royal Caribbean International ships and six Celebrity Cruises ships, during scheduled drydockings and while ships are in service. While preliminary work has begun on several of the ships receiving AEP systems, most will take place between 2015 and 2017.

Each installation will take approximately eight months.

AEP systems that scrub sulfur particles from exhaust streams are one of several different emissions reduction tools that RCL employs. Installation of the AEPs is part of the companies overriding strategy to use less fuel, and already RCL has implemented hundreds of energy-saving initiatives throughout its fleet. Several new approaches were taken in building Quantum of the Seas, including a full-hull air lubrication system that reduces friction between the ship and the water, which can result in up to seven percent energy savings depending on ship speed and itinerary; a keycard-operated master switch for lights and air-conditioning in guest staterooms that reduces unnecessary energy usage; and the use of only LED or fluorescent lights.

N-KOM: Increases Tanker Business

Nakilat-Keppel Offshore & Marine (N-KOM), which recently celebrated its fourth year in operation, has seen an increasing number of tankers dry docking at its facility in Qatar. With the introduction of de-mucking and de-slopping facilities, tie-up with local customs for 'ship spares in transit' and an expanded range of on-site service providers, the shipyard has attracted several major clients over the past year, such as Maran Tankers, Odfjell, V Ships, Euronav and Dynacom Tankers. N-KOM has already undertaken the installation of a Ballast Water Treatment System (BWTS) for STASCO's LNG carrier Al Utouriya, and will be undertaking its first ME-GI (Main Engine Gas Injection) conversion project for a Q-Max LNG carrier in the first half of 2015. The yard signed an agreement with Greek engineering firm HeLeNGI to work on the retrofit of Greek ferries as part of the Poseidon-Med Project.

(Photo: N-KOM)

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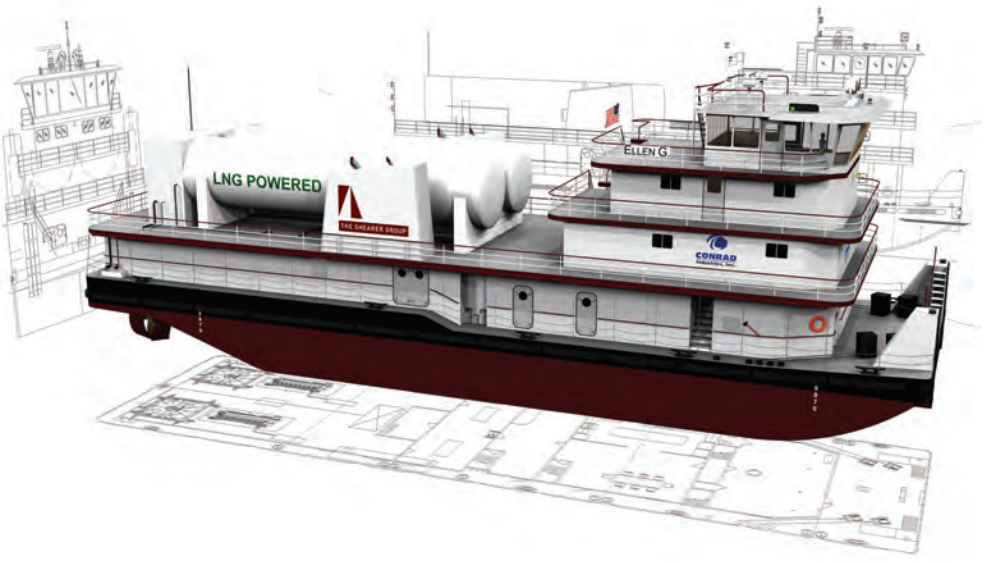
LNG-Powered Towboat Gets ABS AIP

A 4,200 hp LNG-powered towboat from Conrad Shipyard and The Shearer Group, Inc. (TSGI) received "Approval in Principle" (AIP) from the American Bureau of Shipping (ABS). The boat is based on TSGI's azimuth drive (Z-drive) towboat design that made its debut in 2008 as the Frank T. Stegbauer. To date, eight of these towboats have been built for Southern Towing Company, which to date has been a true pioneer in the use of Z-drives for brown water operations. The new LNG powered towboat design is baed on Wärtsilä's dual fuel technology, but it is not wedded to it. While Wärtsilä's existing dual fuel engines are medium speed diesels, it is anticipated that future engine developments will result in lighter and smaller high speed units. "By combining two widely accepted technologies; Z-drives and dual fuel engines and fuel system, we have mitigated most of the risks associated with being an early adopter of this novel technology" said Greg Beers, P.E., TSGI's President. "By incorporating proven technologies, we have minimized the risks that first movers will be taking with the switch."



Lamprell Delivers Jackup Rig

Lamprell completed the construction of jack-up drilling rig Shuwehat, and delivered the rig to Abu Dhabi's National Drilling Company (NDC) within budget and schedule. The delivery follows Lamprell's announcement on November 12 stating that the group received a new $365m contract from NDC for the construction of two additional jack-up drilling rigs of a similar design and spec.

Shuwehat is the fifth in a series of eight rigs ordered in April 2012 with the LeTourneau Super 116E (Enhanced) Class design which are being built and delivered by Lamprell to NDC. The third and fourth rigs, Qarnin and Marawwah, were completed earlier this year. Lamprell said that the delivery of three drilling units to a single client in one year is a record.

Shuwehat rig is the 11th Super 116E jack-up drilling unit that the group has delivered in the last six years. The Shuwehat rig is the third rig delivered to NDC in 2014, with another due for delivery in a matter of months.

HE Sheikh Saud Bin Khalid Al Qasimi (center) cuts the ribbon for the NDC Shuwehat rig alongside Lamprell CEO Jim Moffat (right) and NDC Chief Executive Officer Abdalla Saeed Al Suwaidi (left)

Reefer RoRo Ship Design Rebooted

Knud E. Hansen A/S has continued the development of the new Reefer RoRo Ship design with version II. According to the designer, the ship, which is intended for worldwide operation as a Reefer RoRo Ship in the banana trade, emphasizes low box rates by fast and efficient cargo handling in port, which enables slow steaming. In version II, the bridge and engine have been positioned forward to optimize the cargo handling on the under deck areas. Noting large back haul cargo potential to Central America, the designer has also increased the height of the four inside decks to 4.5 m to allow for general RoRo cargo. With the new design, the ship has a capacity of about 12,500 HC pallets – 6,800 HC pallets on cassettes inside the ship and other 5,700 HC pallets in refrigerated containers on the weather deck. The ship can be loaded/discharged in 12 hours. On the back haul, the ship has 4,400 lane meters, equivalent to about 900 – 1,000 cars, but with the new design general project cargo can be transported as well.

Image: Knud E. Hansen A/S

Do Larger Tankers = Better Returns?

Investors looking for returns in the tanker markets can invest their capital in a variety of ways. Should an owner invest in a VLCC or an Aframax? How about an LR2 or an MR2? What is the historical rate of return for these tankers? Which tanker class is the riskiest? To answer some questions, McQuilling Services developed a return-on-shipping index that calculates a monthly return by assessing the earnings for a given month (TCE less OPEX) and the gain/loss on the asset value of the specific tanker for that month.

7%

The best performing five-year old tanker index was the VLCC, which returned 7.04% during the period.

In **Table 1**, McQuilling Services displayed the calculation used to compute the NAV (net asset value) for the five-year Aframax Tanker Index. Extending the data through December 2014, this index would have hit a high of 220.8 in August, 2008 and a low of 78.5 in October 2012. The current NAV for this tanker index is 125.2. Based on today's NAV, this index would have returned 59.4% from its low point, but would have lost an investor 43.3% if entered into at the high. From inception point (January 2005), McQuilling Services calculate a cumulative return of 25.2% which is annualized to just under 2.3%. The 2.3% annualized return since inception (January 2005) was the second lowest among all the five-year old tankers evaluated. The worst performing, as measured by an annualized return, was the MR2 tanker which returned just 0.03%, essentially flat. **The best performing five-year old tanker index was the VLCC which returned 7.04% in the period.**

Table 1: Total-Return Calculation – 5-YR Old Aframax Index January 2005 – June 2005

Month	Asset Value (Beginning)	Asset Value (Ending)	TCE Earnings	Monthly Return*	NAV
					100.0
Jan-05	52.0	61.0	42,960	19.38%	119.4
Feb-05	61.0	61.0	31,530	1.20%	120.8
Mar-05	61.0	62.0	29,339	2.73%	124.1
Apr-05	62.0	63.0	20,641	2.27%	126.9
May-05	63.0	63.0	23,849	0.80%	127.9
Jun-05	63.0	60.0	20,069	-4.15%	122.6

**the monthly return factors in OPEX*

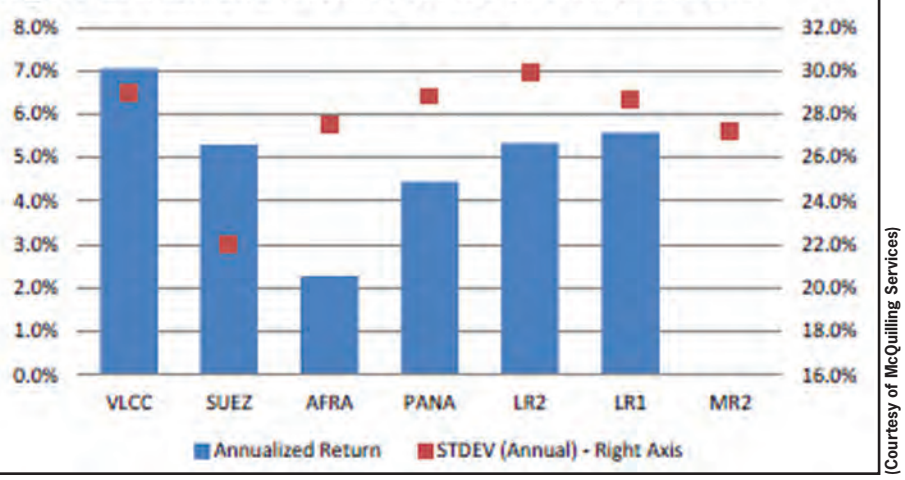
This analysis indicates that the larger tankers on both the dirty and clean side may provide investors with the highest returns over a long-term period. Intuition would also suggest that they would also carry the highest risk profile of the tankers analyzed. However, as displayed in Figure 2, this is not necessarily the rule.

The Suezmax tanker index has returned 5.28% on an annualized basis since inception with a standard deviation of 22.02%, which is well below the variations for the Aframax (approximately 27%). Therefore, in order to identify the tanker index with the best risk-adjusted return, McQuilling Services used the Sharpe Ratio as the measuring stick. The Sharpe Ratio describes how much excess return an investor is receiving for each incremental unit of risk incurred and is calculated by the following formula: Sharpe Ratio = (Return of X – Risk-Free Rate)/Standard Deviation of X with X being the specific tanker index. By using the formula above, it was noted that the higher the ratio, the more attractive the investment is on a risk-adjusted basis.

On the crude tanker side, VLCC and Suezmaxes demonstrated the ability to produce risk-adjusted returns greater than those of the Aframaxes and Panamaxes. On the clean side, LR1 and LR2 tanker indices outperformed the MR2 index confirming the advantage of the larger vessels. The analysis was performed on the 10-year old tanker classes with generally similar results. For more details visit:

www.mcquilling.com

Figure 2: Risk and Return Profiles of Tanker Indices



(Courtesy of McQuilling Services)

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Transient Plasma Tech

Increasing Fuel Efficiency to the tune of $2.8m

BY JILL MORGAN

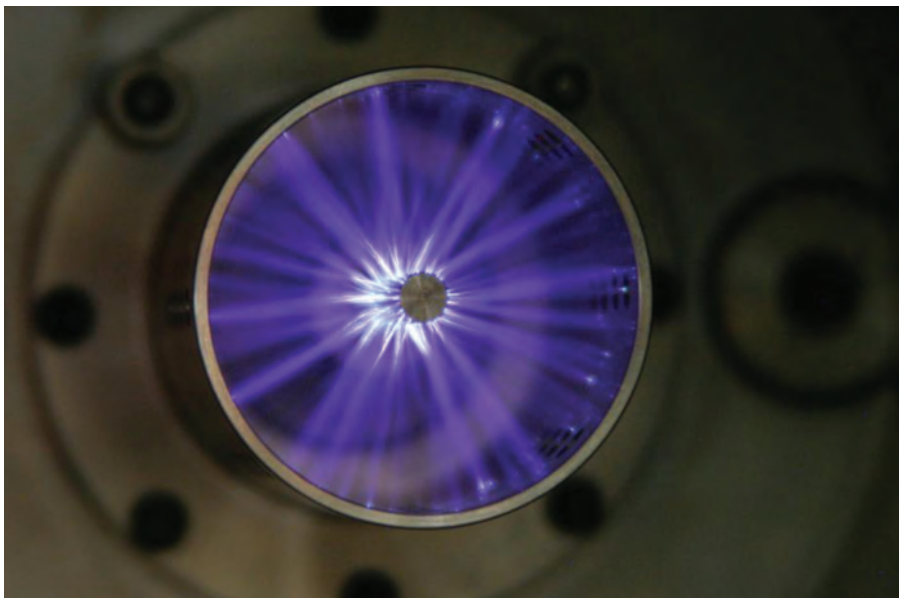
Commissioned by The Tai Chong Cheang Steamship Co. (H.K.) Ltd (TCC), an international seaborne trade company, TCC has joined with a team of the world's leading pulsed power and combustion researchers at the University of Southern California (USC) Viterbi School of Engineering, and with Amergent Techs to transfer the technology to shipboard applications. This team has made progress in developing a more efficient method to initiate combustion, providing a breakthrough, technological step forward in clean shipping design, and breaking new ground in the field of high pressure combustion science.

The technology, Transient Plasma Ignition (TPI), would allow two-stroke marine diesel ships to reduce harmful emissions and achieve significant fuel consumption savings without additional investments in peripheral hardware such as scrubbers, chillers, hull coatings or fundamental modifications to the hull design.

The team is also investigating whether TPI would allow optimal main engine output to be maintained without resorting to super slow steaming, which seems to be the lone alternative to achieving significant savings in fuel oil consumption. This increase in fuel economy and reduction in emissions would provide significant opportunity for vessel operators to meet the International Maritime Organization's (IMO) emissions mandate with minimal modifications.

How Transient Plasma Ignition Works

Transient plasma, by definition, is a non-thermal plasma that exists during the transient, formative phase of an arc. It is created by generating short nanosecond high-voltage pulses. These pulses result in plasma production wherein the plasma includes a significantly larger fraction of energetic species, and does not form a complete arc, or spark. When transient plasma is introduced into an internal combustion engine, it alters the bonds of the fuel and air molecules making it easier for combustion chemistry to happen.



A single transient plasma discharge in air. Streamers generated by a 54 ns, 61 kV pulse across a 15 mm gap.

Long exposure photo of transient plasma streamers generated by multiple shots with a large air gap.

These molecular changes produce a significantly faster ignition, faster combustion and more complete burn of the fuel, which results in increased power per unit of fuel and fewer emissions.

The Marine Engine Challenge

While transient plasma is not a new technology, the application in the marine industry is quite novel. Getting transient plasma out of the laboratory and into a marine application for testing required innovative problem solving.

As with any new technology application, there are many challenges—in this case, the high operating pressure of a marine diesel engine presented a significant challenge, as well as overcoming the issues involved in transitioning new technology to a real world application. Professionals in the industry were quick to point out the many obstacles of generating plasma inside an operating two-stroke marine diesel engine:

"You can't put anything in a diesel engine combustion chamber, it will burn off and end up in the turbocharger"

"The conditions in a two-stroke main diesel engine are too harsh to support this technology, it's like a high pressure hurricane in there; any object in the combustion chamber will impair the carefully designed space perfected over years of manufacturer research and development."

"Diesel engines have already reached their peak efficiency, there are no more efficiencies to be gained."

In addition to those challenges, the high degree of electrical engineering sophistication in nanosecond pulsed power generation also posed an obstacle. Insulating the engine from the high voltage pulses is critically important as is ensuring the plasma generating equipment is physically located near the engine to reduce electrical power losses.

The team also had to design a safe way to generate plasma within the combustion chamber of the two-stroke marine diesel engine while overcoming the ambient effects of the engine room, such as the temperature and vibration.

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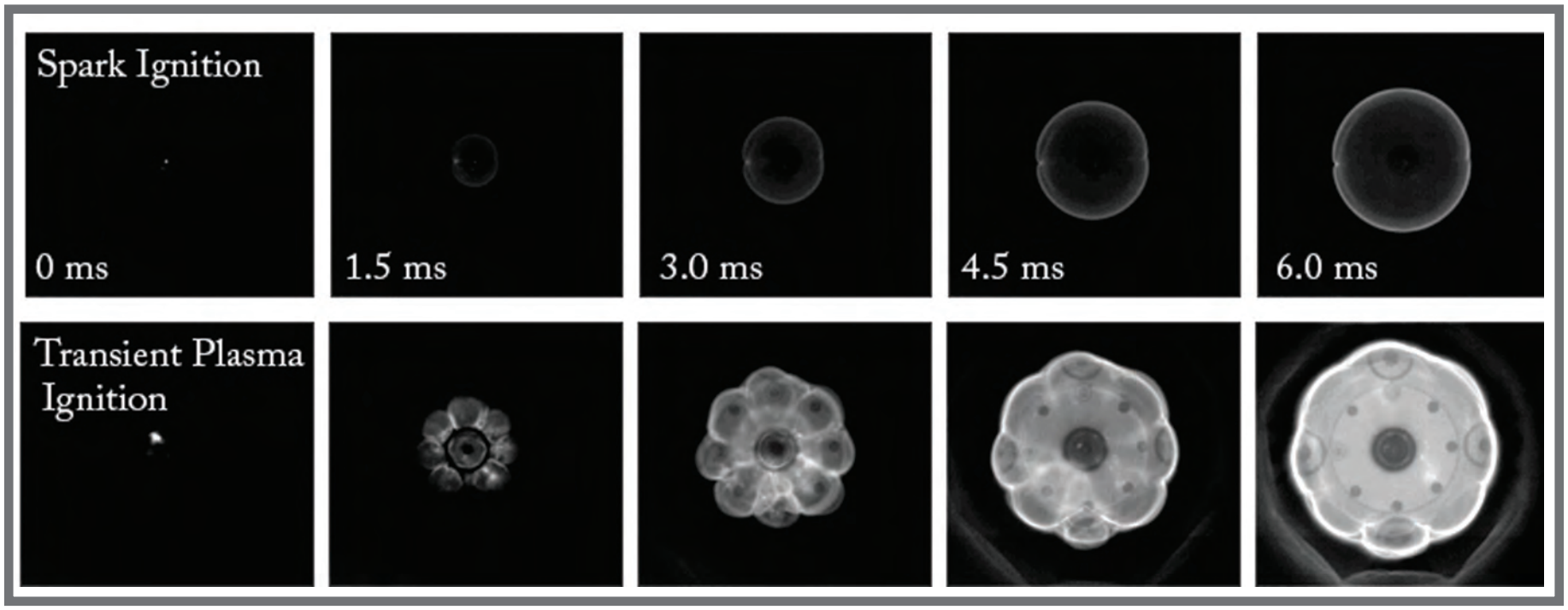
Fig 1.
Transient Plasma Ignition produces faster ignition and combustion than traditional spark ignition.



Designing the Solution

Despite the challenges, what makes TPI so different is that it tackles the problem at the molecular level. TPI alters the chemistry and physics of ignition and combustion by changing the way the molecules behave in a way never before seen. After considering all the factors, the team designed a TPI system consisting of a pulse generator, electrodes and a special cable connecting the two components

The team considered (and continues to investigate) how to use the existing engine design to their advantage while keeping modifications and cost to a minimum, as they explore uncharted research territory.

The project team was able to retrofit an existing cylinder head relief valve, accessible from the top of the engine and exposed to the combustion chamber, to accept the TPI electrode. This allowed the electrode to be situated within the combustion chamber without making any modifications to the engine's cylinder head. Operating the engine without a relief valve didn't reduce the safety of the engine operation either because of the relatively small relieving capacity of the existing relief valve.

The next step was designing the electrode and insulator to withstand the high operating temperatures found within the combustion chamber. Thus, the electrode was fabricated from a high temperature alloy material suitable for the peak temperatures occurring within the combustion chamber and insulated from the engine block with a specially designed alumina insulator. The electrode was then connected to the pulse generator via a special cable and housed in the modified relief valve.

In-field Testing

An initial TPI proof of concept test was conducted underway in May 2014 with TPI installed and operating in one cylinder of a large marine diesel engine. This test confirmed that plasma could be generated in an operating diesel engine combustion chamber and provided initial confirmation of structural integrity of the components designed and used to accommodate the TPI equipment. The engine was a Sulzer RND68M two-stroke, turbocharged Category 3 engine. A visual inspection and non-destructive testing of the electrode was conducted after the underway testing with positive results and no defects. The electrode was found to be in good structural condition and free of debris after being in an operating engine for more than eight hours. Plasma discharges were synchronized with the piston as it reached top dead center and successfully ran for several cycles with no adverse effect on the engine.

Real-world Application and Potential

Although fuel savings cannot be determined without further testing and research, assuming that, TPI has the potential to reduce fuel consumption by three percent, depending on the operating speed, fuel type and ship/engine size, among other factors. With low-sulfur (0.1 % sulfur) fuel likely to become the most prominent fuel type for ships operating in North American waters due to

Breakdown of savings for vessels operating at optimal speed
(24 Kts., on IFO 380 and LSMGO fuel for 365 days)

Vessel Size	10,000 TEU	7-8,000 TEU	4-5,000 TEU
Estimated Fuel Consumption	310 tons/day	200 tons/day	90 tons/day
IFO380*	$445	$445	$445
Cost Per Day	$137,950	$89,000	$40,050
Daily Savings (3%)	$4,138	$2,670	$1,201
Annual Savings (3%)**	$1,510,552	$974,550	$438,547
0.1% Low Sulfur (LSMGO)			
Fuel Price*	$830	$830	$830
Cost per day	$257,300	$166,000	$74,700
Daily Savings (3%)	$7,719	$4,980	$2,241
Annual Savings (3%)**	$2,817,435	$1,817,700	$817,965

*Based on Bunkerworld Index data from November 2014
**365 days for easy referencing

the Emissions Control Area (ECA), TPI has the potential to save vessel operators more than $2.8 million annually.

Another potential capability of TPI is reduction of emissions. To meet the International Maritime Organization's upcoming NOx requirements, engine manufacturers are currently using Exhaust Gas Recirculation (EGR) and Selective Catalytic Reduction (SCR) technologies. EGR may be an option for new builds, but a retrofit scenario is certainly more complex and costly. Meanwhile, SCR technology requires a lot of room and storage as well as the purchase and disposal of a catalyst. In comparison, TPI is small and compact, relatively inexpensive, has low expected maintenance, very few components, low power consumption (about 200 watts of power while in operation, so no measureable fuel penalty) and requires minimal consumables for operation. Laboratory testing has shown that transient plasma can reduce NOx emissions between 20 – 40 percent when applied to exhaust gases.

Additional Testing

A second underway testing cycle that is scheduled for December 2014 will be carried out on the same vessel, but on a larger scale with two electrodes inside multiple cylinders. The trial will also focus on applying TPI in the engine's exhaust gas stream with the expectation of observable, quantifiable NOx reductions.

Emissions testing for both the in-cylinder TPI and the exhaust gas treatment tests will include measurements of the following gases: Nitrogen Oxides or NOx (NO/NO2), Sulfur Dioxide (SO2), Carbon Monoxide (CO), Carbon Dioxide (CO2), and Oxygen (O2) using a multi-component tester, the Horiba PG-350 (Horiba). The Horiba uses a Chemiluminescent Detection Method to test NOx, Non-Dispersive Infrared Absorption Method for SO2, CO and CO2, and a Paramagnetic Method for O2 testing, which is consistent with the California Air Resources Board (ARB) Recommended Emissions Testing Guidelines for ocean-going vessels.

References:

D. Singleton and M. A. Gundersen, "Transient Plasma Fuel-Air Ignition," IEEE Transactions on Plasma Science, Issue 99, 27 May 2011.

D. Singleton, A. Kuthi, J. M. Sanders, A. Simone, S. J. Pendleton, and M. A. Gundersen, "Low Energy Compact Power Modulators for Transient Plasma Ignition," IEEE Transactions on Dielectrics and Insulators: Special Issue on Power Modulators, Vol. 18, No. 4, pp. 1084-1090, August 2011.

D. Singleton, S J. Pendleton, and M. A. Gundersen, "The role of non-thermal transient plasma for enhanced flame ignition in C2H4-air," J. Phys. D: Appl. Phys. 44 (2011) 022001.

The Author

Jill Morgan is a consultant to the maritime industry specializing in shipboard engineering and international trade development. Jill has been providing engineering support to the Transient Plasma project since 2013 as well as consulting expertise on other projects and studies involving new technologies for emissions reduction. Jill holds a current USCG license and sailed as an engineering officer for ten years on board oil tankers. Jill holds a MBA and a BSc in Marine Engineering.

BY PETER FRENCH

BY T. BLAKELY

What Keeps 'Good Ship' RINA Buoyant

When the Institution of Naval Architects was formed in 1860 it became one of the bastions of Victorian engineering, enabling and encouraging the exchange of knowledge, information and good practice in the field of naval architecture. The basic principles laid down in the early days saw the Institution thrive as a body representing all the maritime nations of the world and this was recognized in its incorporation by Royal Charter in 1910 as the Royal Institution of Naval Architects (RINA). RINA's positive impact on the global maritime industry through the 20th century should not be underestimated. However with the explosion of the internet and many highly effective professional networks therein one might argue that a Royal Institution is nothing but a quaint anachronism. Indeed professional associations of all types across the world have to fight hard just to stay afloat and many are sinking without trace. Yet RINA not only remains determinedly afloat it is showing remarkable growth on all four points of the compass. ***Trevor Blakeley****, Chief Executive of RINA and* ***Peter French****, former President of RINA and Chief Executive of BMT Group, discuss what has contributed to this remarkable success story and what decisions and challenges have ensured its continued buoyancy.*

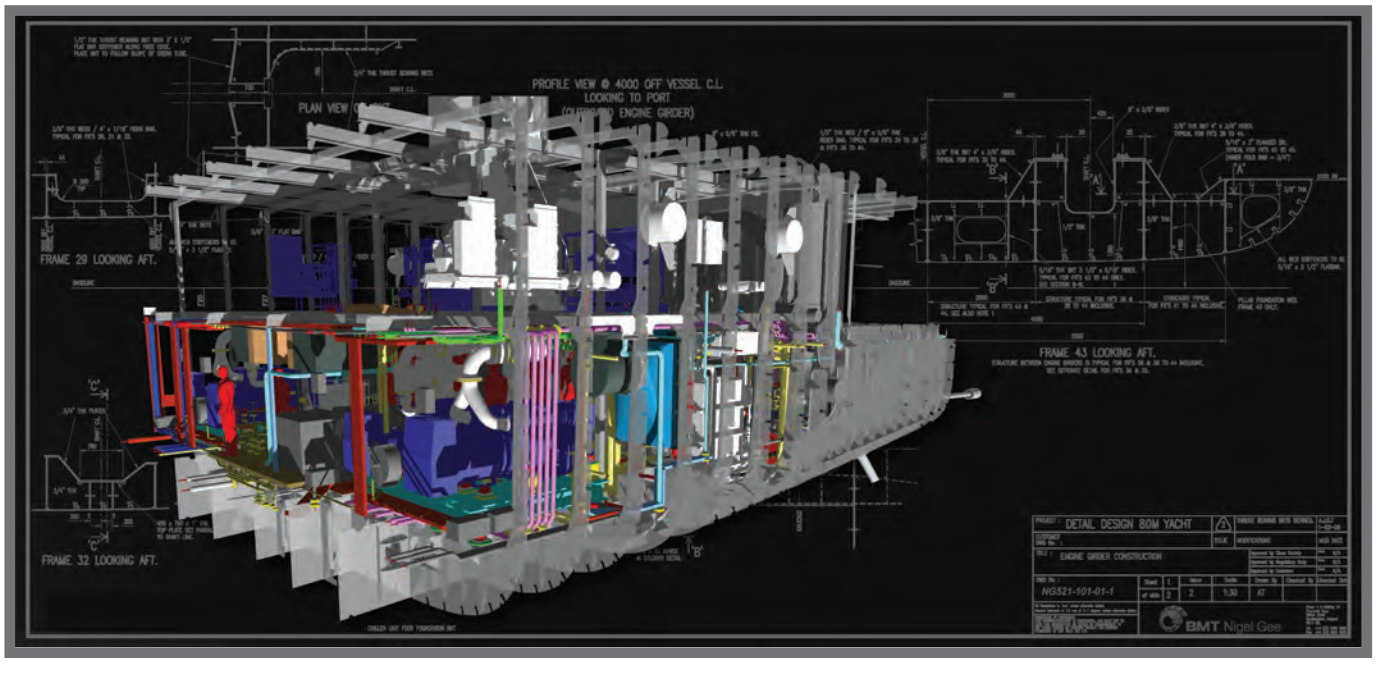
It is fair to say that the world we live in today would be a very different place without the professional institutions that took the various disparate strands of engineering and weaved them into cohesive professional entities thriving on best practice and the desire to improve. Born out of the Second Industrial Revolution the professional institutions gathered and shared breath-taking technological progress born out of industry's insatiable hunger for engineering solutions to apparently insurmountable challenges of the day. As the industrial economy evolved into a service economy the profile of engineering waned and, like many professional institutions, RINA found itself needing to change and adapt in order to remain relevant. By the mid-1990's the Institution was not in great shape and membership had all but stalled.

The last two decades, however, has seen The Royal Institution of Naval Architects (RINA) develop from a failing anachronism to a thriving professional body that develops knowledge, talent and quality while adding value to UK PLC and sharing knowledge with the world. It has travelled the path from financial instability to commercial solvency and, in a world which has struggled to attract bright young things into the profession; RINA's membership has grown from 5123 in 1997 to some 9816 last year. This has been achieved in no small part to a deliberate and concerted effort to transform the membership profile by focussing on securing increased membership across the globe. This strategy has seen the 17 branches which existed in 1997 more than double to 38 in 2013 with multiple energetic, enthusiastic hubs being established in Australia

The Authors

Peter French was appointed Chief Executive in 2005. A maritime civil engineer by profession, he joined BMT in 1990, before which he was a partner in Peter Fraenkel and Partners. Peter is also Chairman of the Society of Maritime Industries and of the International Transport Intermediaries Club, Vice President of the Association of the Independent Research & Technology Organisations and of European Co-operation in Maritime Research, a member of the Business Advisory Board of Living With Engineering Change and of the Advisory Board of the University of Southampton's School of Engineering Sciences. He is a Fellow of the Royal Academy of Engineering and a Fellow and President of the Royal Institution of Naval Architects until July 2014.

Trevor Blakeley was appointed Chief Executive of The Royal Institution of Naval Architects in April 1997 after a career as an officer in the Royal Navy. A Naval Engineering specialist, he enjoyed a wide range of seagoing and shore appointments after reading for his degree at the Royal Naval Engineering College, Manadon. He served at sea in minesweepers, frigates, destroyers and aircraft carriers. Shore appointments included specialist technical teams, ship construction, training and general staff appointments in technical and personnel support.



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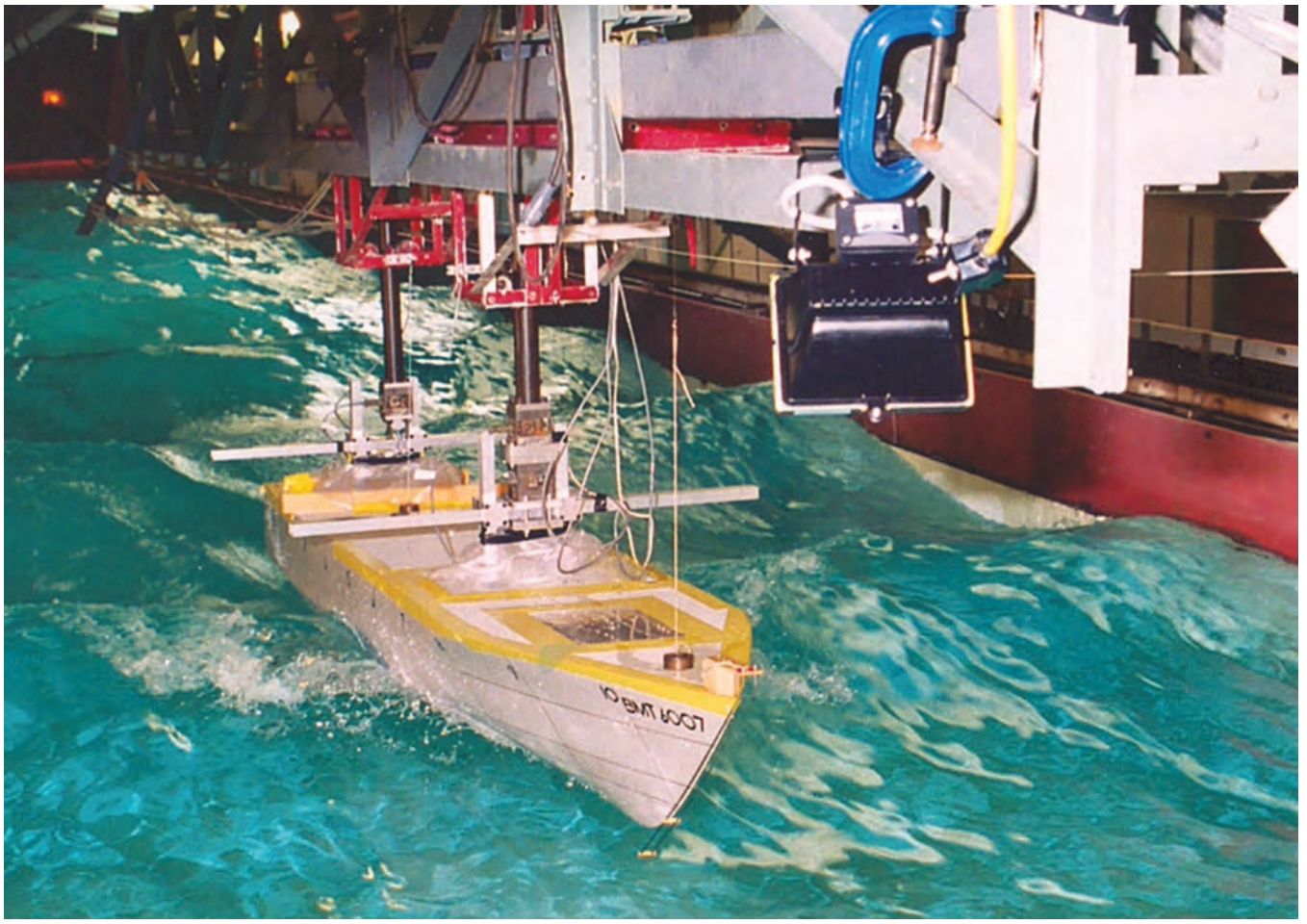
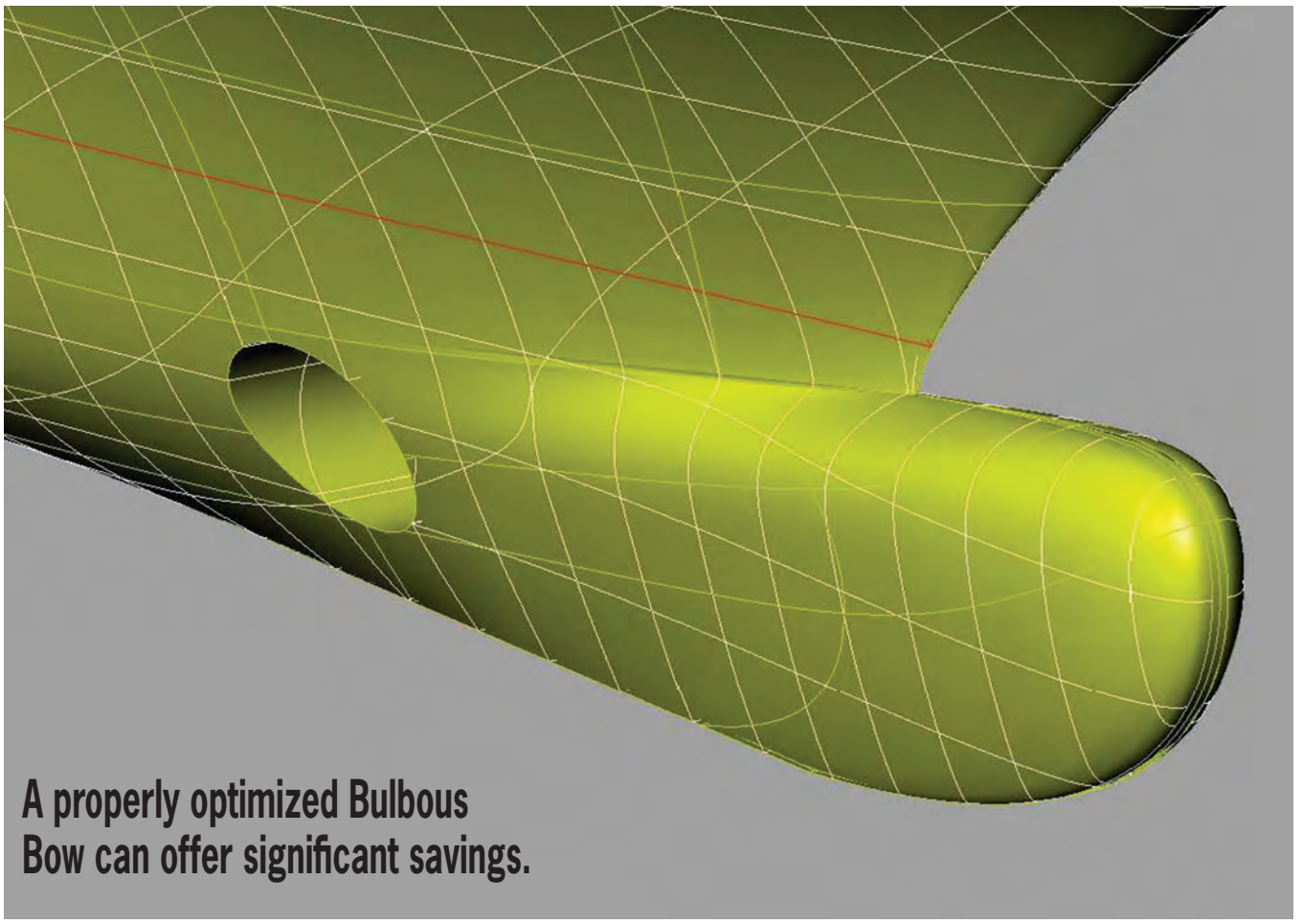
and across Asia. RINA's reputation is now confident and dynamic - membership is booming and branches proliferating. The decisions and challenges that contributed to this renaissance have largely been concerned with redefining RINA's role, modernizing its operation and strengthening its financial position; all of which had to be delivered with a healthy dose of dynamism and determination. It's fair to say that Engineers don't join professional institutions just for the sake of being a member; membership has to mean something. It wasn't a case of turning up at companies, universities and schools and saying 'join RINA'. Being on the ground, visible and in attendance, travelling for many hundreds of hours and many thousands of miles has clearly been important. But, there also needed to be a clearly articulated rationale, communicated with conviction to engineers on every point of the compass for this to result in such resurgence in membership. Resurgence was a reaction to the Institution addressing the challenge and becoming relevant to a new breed of engineer.





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Defining that compelling rationale to answer the question 'why become a member?' required a clear understanding of what the role of a modern professional institution should be. A professional engineer is defined by not only what he or she does, but the manner in which they practice their profession. That is the difference between a profession and a job, between a professional engineer and an engineer. The role of the modern Institution is to enable and advance how the individual engineers conduct themselves and progress their career for the benefit of the profession as a whole. And, if the institution is to 'enable and advance' it must demand in return that standards of behaviour and professional competence are met because these are key attributes which directly reflect on how the profession is perceived as a whole. Hence effective governance, setting and measuring professional standards, academic achievement and professional development all form part of the modern Institution's remit – in addition to promoting and sharing knowledge and expertise. Achieving this clarity of perspective enabled RINA to present itself in a pertinent and coherent way to the global engineering community.

So, if being a member of an institution such as RINA means a commitment to behaving according to the rules and standards set down and enforced by the Institution in order to benefit from being under its auspices; what are the benefits?

The value of being part of a community of likeminded individuals sharing and promoting their ideas and achievements is that it enables the community to extend its skills and knowledge while adhering to certain standards. It is never more accurate than in this context that the whole is worth more than the sum of its parts. Individually naval architects can achieve remarkable things; together they can push the boundaries of what is currently considered possible.

Less esoteric, perhaps, is what membership means to those buying the services of the profession. In this context membership gives them a point of both assurance and differentiation. This is perhaps the key to RINA's renaissance overseas. As different parts of the world have matured and industrialized, international membership of RINA has been embraced. Some parts of the world, which historically may have been considered somewhat suspect in their prac-

tices, have embraced the concept of a professional community, recognising the need and benefit of community support and professional standards both for self-advancement and economic advantage.

Essentially the value of RINA bringing together and promoting best practice is in fact as valid today as it was in 1860 - now with the advent of computing it is able to deliver it somewhat faster.

Modernizing RINA's operations to make them lean and efficient necessitated a change in the structure to enable effective decision making, responsive to the needs of the profession and the Institution. Creating a membership structure and events program which encourage and promotes the profession to youngsters has been a priority and one that is beginning to reap rewards. There are now are 41 Student Naval Architect Awards presented to the most promising naval architecture students all around the world. The vast majority of these awards are sponsored by industry, reflecting the status with which RINA initiatives are now viewed. Deciding to remain focused on naval architecture and not diluting membership by perhaps merging with other institutions was a decision not taken lightly but was, absolutely, the right one. The decision enabled the communication to remain tight and relevant to the audience but, interestingly, it also meant that in order to grow RINA had to put resource and effort in building, supporting and recognizing the importance of its global membership. Establishing a credible multi-national platform became key to securing RINA's future and the Institution has worked hard to achieve international credibility. When the International Maritime Organization (IMO) recognized RINA as a Non-Governmental Organization with Consultative Status in 2002, this was seen as an endorsement of the decision to remain independent and focus exclusively on the international community of naval architects. The buoyancy of RINA has been enabled because naval architects believe the Institution is relevant and delivers value. As the Institution's current guardians we identified the diverse challenges it faced and took the decisions we considered necessary to make the best of each set of circumstances. We had no way of knowing if we would be successful but the idea of failure 'on our watch' was sufficiently unpalatable that we never dwelt on it for long. The focus at every stage was, and continues to be, to deliver the best-in-class of whatever we are doing in order to meet the needs of the profession. It is perhaps this focus which has earned us the engagement and loyalty of naval architects across the world. 'Best-in-class' is possibly an ethos shared by our members and why RINA is now regarded as a highly respected professional institution around the world. With members in over ninety countries, it is widely represented in industry, universities and colleges, and maritime organisations world-wide, RINA appears to be successfully delivering the remit set out in 1860 to 'advance the art and science of ship design' and is set to continue to do so assuming a fair wind and a strong hand on the helm.

Dynamic Positioning

& the potential of emerging USCG Regulations

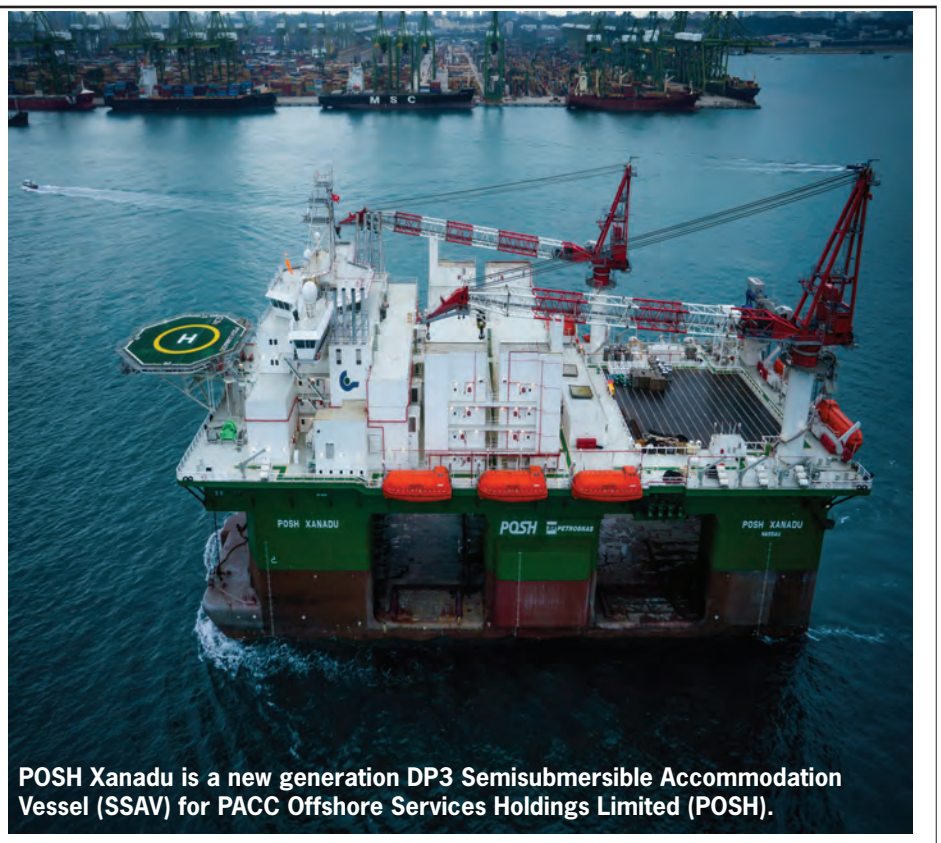
BY DENNIS BRYANT

Dynamic positioning is a vessel capability provided by integration of a variety of individual systems and functions to automatically maintain a vessel's position and heading by use of the vessel's propellers and thrusters, and has been in use, particularly in the offshore oil and gas exploration business since the 1960s. To date, use of dynamic positioning has relied on industry best practices, classification society rules, and guidance from the International Maritime Organization (IMO). If the US Coast Guard has its way, that may change soon. On 28 November 2014, the Coast Guard issued a notice of proposed rulemaking (NPRM) entitled "Requirements for MODUs and Other Vessels Conducting Outer Continental Shelf Activities with Dynamic Positioning Systems." When, and if, finalized and promulgated, the rulemaking would constitute the first government regulations specifically applicable to dynamic positioning (DP) systems.

Positioning by dynamic means involves a sophisticated engineering system that allows or has the potential to allow virtually any vessel to keep station and/or maintain its heading to a very precise standard in almost all sea states and weather conditions. The technology has allowed, for example, the drilling of oil and gas wells in waters so deep that anchoring or otherwise attaching the vessel to the sea floor would be impracticable or even impossible. DP systems rely on numerous sensors on the vessel and some external input, particularly position reference system (e.g., GPS) data. That information is combined into a sophisticated program that takes into account the physical characteristics of the vessel (such as draft, drag, and sail area), to send commands to the various propellers and thrusters to achieve the desired results. While DP originated with offshore oil and gas operations, it has expanded into use by platform support vessels, oceanographic research vessels, cruise ships, cable layers, diving support vessels, dredges, and other vessels where maintaining a precise position or heading is vital. All players seem to have agreed that there are three DP system classifications: (1) DP Equipment Class 1 has no redundancy so that loss of position or heading may occur in the event of a single fault; (2) DP Equipment Class 2 has redundancy such that no single fault in an active component or system (such as generators and thrusters) will cause the system to fail; and (3) DP Equipment Class 3 has further enhancements such that it can withstand fire or flooding in any one compartment without the system failing. Various classification societies use different terminology and some have adopted refinements to the level of redundancy and sophistication required for each level, but the three-level system remains largely in effect.

One of the key issues regarding DP systems is redundancy, having alternatives available if a primary piece of equipment fails. Redundancy also holds true with regard to guidelines. In addition to the IMO guidelines mentioned above, other guidelines have been issued by other entities. The Coast Guard expresses concern, though, that there can be a significant performance disparity among DP systems having the same equipment class rating because system configuration, operational, and maintenance decisions may effectively degrade DP systems rated at a high level to the extent that they perform as if they were rated at a lower level. Requiring strict adherence to existing standards regarding such things as Activity Specific Operating Criteria (ASOC), Critical Activity Mode of Operation (CAMO), and Failure Modes and Effects Analysis (FMEA) is intended to ensure the retention of redundancy in high level DP systems without introducing new and unnecessary requirements.

There are no shortages of guidelines regarding the design, equipment, and operation of DP systems. In addition to the IMO guidelines mentioned about, the IMO addresses the training of DP personnel in the STCW Convention. The Marine Technology Society (MTS) has issued excellent and detailed guidelines on virtually all aspects of DP systems. On page 70947, the NPRM states: "We developed these proposed standards after considering internationally accepted standards and input from industry." The US Coast Guard proposes to incorporate, almost without exception or qualification, both the IMO and the MTS guide-



(Photo courtesy of PACC Offshore Services Holdings Limited)

POSH Xanadu is a new generation DP3 Semisubmersible Accommodation Vessel (SSAV) for PACC Offshore Services Holdings Limited (POSH).

lines, as well as several others found to be relevant. The NPRM, on page 70946, states, for example:

[W]e propose to incorporate IMO MSC/Circ.645 into regulations as mandatory provisions. We also propose to adopt in regulations DP guidance issued by the Marine Technology Society (MTS) as mandatory provisions to provide owners or operators of DP MODUs and other vessels essential information on how to meet some of the requirements of this notice of proposed rulemaking (NPRM).

In other words, a goal of the rulemaking is to mandate that all participants adopt proven best practices. In analyzing the costs of this proposal, the Coast Guard notes that costs should be minimal because, for the most part, the regulated entities already are or should be taking actions that incur these costs, thus the added expense in many instances is almost zero. The major difference between the current process of voluntary guidelines and the proposed US Coast Guard rulemaking is that, when and if implemented, the USCG regulations will mandate certain operational procedures, reporting, and recordkeeping. While not creating many new provisions in this regard, there is a major paradigm shift that deserves attention. Failure to comply with those operational procedures and reporting requirements, as subsumed by the Coast Guard rulemaking, could result in civil penalties. Intentional failure to comply with the recordkeeping and reporting requirements could result in criminal charges against both the individual and the vessel owner and operator.

By rough count, there are at least 15 different reports and records that are to be maintained with regard to covered vessels with DP systems. It is assumed that most are maintained properly now, but there may be exceptions. In the future, exceptions may have consequences, even when no casualty results therefrom. One of the sets of records to be maintained involves the resumes and vessel-specific work records of all key DP personnel. Let's assume that one of those persons materially fudged his or her resume at some time in the past – perhaps by falsely claiming to have taken a particular training course. If the Coast Guard proposal is adopted, that old but fraudulent entry in a resume may have severe legal consequences.

For the most part, I heartedly endorse the Coast Guard approach to regulation of this important and expanding technology. By adopting industry standards, the Coast Guard is minimizing the burden on good operators while working to bring others up to the accepted mark. Any bad apples should be weeded out. The legal impacts of mandating previously voluntary records and reports are an unfortunate but natural secondary consequence. Your view may differ. Either way, your comments should be submitted to the Coast Guard by February 26.

The Author

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‘Like Other OSVs’

With innovation in its Norwegian DNA, Uksnoy Shipping took a chemical tanker and made it into an Offshore Service Vesel with an innovative propulsion system.

By William Stoichevski, Norway

(Photo courtesy Uksnoy Shipping)

In its former life, Uksnoy Shipping’s seismic support vessel **Rig Adromeda** was a Turkish-built chemical tanker, converted to an Offshore Service Vessel with a twist: **an innovative permanent-magnet propulsion system from Inpower.**

The conversion of a Turkish-made chemical tanker and its retrofitting with a promising new energy-saving propulsion system in 2013 suggested Uksnoy Shipping might not be like other owner-managers of offshore service vessels (OSV).

The ship, the 90-foot Rig Adromeda and its permanent-magnet propulsion from Inpower have made it possible for Uksnoy to ply the more remote offshore support markets — the domain of seismic vessels operating in virgin offshore acreage — with a special offer for survey outfits and oil companies paying for surveys and an OSV presence.

Uksnoy chief exec Oystein Uksnoy can now tell oil companies and geophysics surveyors that he's compliant with upcoming energy efficiency rules for vessels; that the larger tanks in his converted fleet have made it cheaper to keep other OSVs on hand, and that he has a lower carbon footprint because of the Inpower retrofit of his vessel.

"We would like to have oil companies as partners, to have closer dialogue with them, for sure," said Uksnoy, adding, "We see the market." Yet, both he and his chairman tell us the goal is "to operate like other OSVs."

The market is the huge new Barents Sea arctic oil province north of Norway as well as East Africa's giant, untapped Rovuma Basin off Tanzania and Mozambique. Compatriot oil company Statoil — a giant local contact and charterer extraordinaire of high-spec Norway-based OSVs — is active in the Barents and soon to be very active off Tanzania. Anadarko, another oil major in Mozambique, is already an Uksnoy customer in the Rovuma, where other big oil companies have recently installed themselves. In these prohibitively remote areas, it can be several days steam between oilfield and depot, and today's deepwater provinces are increasingly distant. OSVs must keep up

Uksnoy's core activity of "following seismic vessels globally" is part of a business that earned $18.1m in revenues in 2013. Pictured, EMGS seismic vessel **Polar Duchess** receives a fuel line.

(Photo courtesy Uksnoy Shipping)

(Photo courtesy Uksnoy Shipping)

"We know the market outlook for next year isn't bright, but we expect to have a good year. **We're optimistic."**

Uksnoy chief executive Oystein Uksnoy (left) with an Inpower representative.

with the newest high-spec rigs, the larger deck space of which enable prolonged drilling operations in need of prolonged supply. In the Barents and Tanzania, slow-moving survey vessels covering upwards of 10,000 sq. km. in a shoot are the perfect match for Uksnoy's support vessels, especially the Adromeda, with its quiet, permanent-magnet motors.

"We have the quality they're asking for, the vessel sizes and the capacities," he said. Some of that quality is sure to be reflected in contract clauses that recognize what the Andromeda brings.

"The devil is in the (contract) details," for a ship-owner/manager, said Uksnoy. The devil might be who pays for fuel, designates shipyards, supply routes, performance milestones or the day rates in a time charter. Uksnoy's recent contract with Dolphin Geophysical off West Africa shows a contract can include crew transfers and fuel savings passed on.

The Inpower engine's clear fuel-savings edge (a year on and still said to be up to 30 percent) means a smaller environmental footprint, increasingly a "binding" attribute under International Maritime Organization strictures. An industry source close to vessel deals confirmed for *Maritime Reporter & Engineering News* that "proximity" to an operational area and the corresponding fuel use and footprint are still, however, what wins contracts.

"NOx, carbon, (an ability to safely carry) urea are taken into consideration, but if you need a vessel at Port A instead of one staying at Base B, they'll take the closer one," the source said. The 12-knot Adromeda's efficient engine, which can gear down, and its large refuel tank size could trump those winning conditions. Uksnoy ensured the supply tank on his 3,500 dwt conversion — largest vessel among the fewer than 100 support vessel types in the world, with most around 1,000 dwt — was also the largest of its kind at 2,800 cu. m., or three-times as much as rival support vessels. The Andromeda's 166 cu. m. for its own steam means it can get to the 4,000-odd OSVs worldwide even if Uksnoy is only targeting the "low-spec" market.

"We're in the volume market, the 2,000 (generally older types). We're below the typical market for the brokers," said Uksnoy, a former Farstad ship's captain, while pointing to a map of Tanzania. Africa supplies 90 percent of his earnings.

Good Signs

Mr. Uksnoy's core activity of "following seismic vessels globally" is part of a business that earned $18.1m in revenues in 2013. This year, he says, looks like a banner year at $20.6m, and one of his Barents clients has just secured arctic survey contracts with a trio of Norway-based oil companies.

The Rig Andromeda is in the second year of a contract supporting the operations of Dolphin Geophysical and Anadarko offshore East Africa.

The rest of the Uksnoy fleet comprises survey support vessels and the Geo Barents, an eight-streamer seismic vessel understood to be taking a pause in Aalesund, Norway after serving a major, multi-client seismic geophysical survey in the Barents Sea. A majority of Norwegian parliamentarians still support controversial Arctic exploration, so future surveys ought to continue well beyond next year's expected bottoming out of seismic fortunes.

Any downtime after a contract is cause for some degree of nerves for any vessel owner, so wanting to trade "like other OSVs" likely indicates, our source says, "a desire to keep utilization up through the course of year, to be less seasonal and to have less downtime after periods of high activity."

In the meantime, the Tanux I, Tanux II and Tanux III — Rig Adromeda's "sister" ships — are all on charter, and this grandson of the Uksnoy who in '33 started a family fishing business has also kept alive his father's 1970's drive into the offshore market.

Mr. Uksnoy has taken the company into remote East African operations, where Statoil and other charterers have found some of the world's largest deepwater gas fields. Maturing these discoveries into oilfields requires more seismic support.

"We know the market outlook for next year isn't bright, but we expect to have a good year. We're optimistic," Uksnoy said.

Brazil Quick Fix

The growth trend continues in the Brazilian shipbuilding industry, a trend that has been relatively constant during the last five year. While shipbuilding is 'ship shape,' the reality of the Brazilian ship repair industry is somewhat muddled, populated by only a few dedicated repair yards as the focus has been squarely on newbuild.

By Claudio Paschoa, Rio de Janeiro

On the other hand, Brazil's ship conversion industry has enjoyed steady growth, growth directly related to orders from Petrobras, mostly to convert VLCC tanker hulls to FPSOs.

According to Ariovaldo Rocha, President of SINAVAL (Ship Construction, Repair and Offshore National Syndicate), the investments in the shipbuilding industry have reached around $56.5 billion in the last decade and since 2004 the industry growth has averaged 19.5% per year. This is largely due to the increase in Petrobras orders, which are a direct consequence of the discovery of large pre-salt plays offshore Brazil.

"The future growth prospects for the national shipping industry also depends on the consolidation of market niches such as coastal shipping or cabotage, oil and gas transportation and offshore supply vessel orders," said Rocha. "The regional cabotage, with better strategic prospects are related to the Amazon Basin and Mercosul. In tanker shipping, Petrobras is keeping active and its maritime branch (Transpetro) is now quite competitive. Ship repair services are still lagging behind in terms of dedicated repair yards, yet the growing number of operational shipyards and those being build should be enough to service the older ships and rigs in need of repairs."

That is not to say that all is well, because there are large numbers of aging

(Photo: EAS Shipyard)

Worker at the EAS shipyard in Pernambuco.

rigs in the Campos and Espírito Santo Basins and also along the Northeast coast, some of which, according to Sindipetro (Offshore Workers Syndicate) are in dire conditions and their repair has only recently become a priority for the national operator. According to Brazilian Government reports and the Brazilian Work Ministry (Ministério Público do Trabalho), Petrobras has between seven and 10 rigs in need of repairs, which may force them to stop production and tow them to repair yards soon.

Ship Repair

The Merchant Navy Fund (FMM), managed by the Ministry of Transport, said that 357 vessels and five shipyard construction or expansion projects, have been completed since 2007. But not only rigs and large ships need repairs. The large and growing fleet of OSVs sailing in Brazil also demand repair berths.

In terms of OSVs, PROREFAM, which is a Petrobras OSV construction program has 87 vessels ordered, of these 26 are in operation and 61 under construction. The fleet in operation in Brazil according to ABEAM (Brazilian Association of Offshore Support Companies) number 450 vessels, of which 211 are registered in Brazil and 239 registered abroad. ABEAM also forecast that expansions until 2020 will add 236 more vessels, and of this total of 686 vessels, 300 will be registered in Brazil and 386 registered abroad. These number show what can be easily seen in some shipyards in Rio de Janeiro, such as Mauá Shipyard, Aliança Shipyard, Renave and Inhaúma Shipyard, where there are nearly always some OSVs being repaired.

The table on the next page shows clearly that there is only one large shipyard dedicated to ship repair and although all the other yards listed are capable of repair jobs, their berths are primarily aimed at attracting full construction jobs.

"With the large number of ships, rigs, FPSOs, drillships and OSVs being built in Brazil, along with the large number local and foreign vessels operational in our waters, there is a need for more shipyards dedicated to ship repair. Presently only the RENAVE yard in Rio fits this category and this may eventually cause delays in repairs that may eventually affect oil and gas production," said Rocha. Even though Petrobras has a pair of repair rigs, which perform some repairs to production rigs offshore, major repairs may still need to be done ashore.

The greatest fear now is of a bottleneck in ship and rig repairs, if the majority of the existing shipyard berths are occupied by new construction. This problem will only increase as more ships and rigs become operational and building efforts continue at the level they are without more dedicated repair yards being built. It is possible that Petrobras itself may opt to build or lease at least one more shipyard to work exclusively on needed repairs, yet there is no firm position from the national operator at this time.

Ship Conversion

There are a five or six shipyards working on ship conversions in Brazil. Most of these are converting VLCC hulls into FPSOs, as well as manufacturing and installing topsides and auxiliary equipment. However, there are also some yards working on converting existing production and drilling rigs in order to increase production through the installation of new equipment or to enhance drilling capabilities at deepwater pre-salt plays, such as Petrobras' recent demand for drilling rigs to install MPD systems.

There are four VLCC hull being converted to FPSOs at the Inhaúma shipyard in Rio de Janeiro and another eight "replicant" FPSOs being built at the Rio Grande shipyard in the southern state of Rio Grande do Sul. Brasa shipyard in Rio de Janeiro has recently completed the conversion of the Cidade de Ilhabela FPSO, which is already linked to the Sapinhoá pre-salt field at the Santos Basin. Brasa shipyard is already building modules for two more FPSOs, although the hulls to be converted have not yet arrived.

In 2013, the P-55 semi-submersible rig had its hull conversion done at the EAS yard in Pernambuco, while the topsides were integrated at the QGI yard in Rio Grande do Sul. During the same year another five hulls had their topsides integrated at QGI, BrasFels, Quip and EAS shipyards, while in 2014, two FPSO hulls were converted and topsides integrated at Brasa shipyard and BrasFels, (FPSO Cidade de Mangaratiba), both of which are in Rio de Janeiro.

"There will be more than 15 new platforms necessary by 2020, other than the 16 in construction in Brazil at the moment. Until 2030, the demand is forecasted at 41 more platforms. A new format will be necessary for the collaboration between local and international shipyards in order to supply this large demand," said Rocha.

With these hull conversions and topside integration jobs being done in Brazilian shipyards, local content ceases to be a problem for the shipyards since more than 95% of their workforce is local.

Although there have been a few delays

Largest Shipyards in Brazil

Shipyard	State	Scope of work
Estaleiro Atlantico Sul	Pernambuco (NE)	Big oil tankers, drilling and production rigs
BrasFels	Rio de Janeiro (SE)	Production platforms and drilling rigs
Estaleiros Rio Grande	Rio Grande do Sul (S)	Production platforms and drilling rigs
Eisa	Rio de Janeiro (SE)	Bulk carriers, containerships, OSVs, patrol ships
Estaleiro Mauá	Rio de Janeiro (SE)	Oil and product tankers
Vard Promar	Pernambuco (NE)	Gas tankers and OSVs
QGI	Rio Grande do Sul (S)	Integration of modules and oil platforms
RENAVE	Rio de Janeiro (SE)	Ship Repair
Brasa Shipyard	Rio de Janeiro (SE)	Integration of modules and prod. platforms

(Photo: Vard Promar)

(Photo: BrasFels)

Above: **Vard Promar** shipyard in Pernambuco at night.

Left: **BrasFels** shipyard in Angra dos Reis-Rio de Janeiro.

Right: Pelicano-1 Heavy Lift crane, lifting a module onto FPSO Cidade de Ilhabela at quayside **Brasa yard** in 2014.

(Photo: Stephanie Chauvin)

in these conversion and integration projects, Rocha believes that delays will diminish with increased experience of the yards and their workers. If the number of FPSOs needed for production at the larger pre-salt plays stands strong, it is a virtual guarantee that orders for hull conversions and topside fabrication will continue.

The Libra pre-salt field for example, is expected to need at least 12 FPSOs for its 1,500 sq. km and an unspecified number of wells, which some Petrobras executives believe may be more than 90 wells, including production and injection wells. That is not considering other large finds such as Franco and Carcará, which are also massive, with the latter potentially being bigger than Libra, as its 470 meter thick reservoir is almost 50% bigger than Libra's.

All these figures serve to show the importance to local shipyards of dominating the techniques and procedures used to convert VLCC hulls into FPSOs and seamlessly fabricate and integrate the topsides in the least amount of time possible.

One of the greatest fears at Petrobras and within the higher spheres of the Brazilian government are delays in the FPSO deliveries, because these delays will directly affect the potential for increased pre-salt production, which is a key factor in reaching Petrobras' goal of doubling Brazilian oil and gas production to 5.2 million barrel/day by 2020 and tripling the production by 2030.

"The work related to ship conversion and module integration is complex and highly technical, this large amount of conversion and integration projects will greatly increase the technical expertise and experience of the local workforce, consequently decreasing delivery times, while maintaining high quality and safety standards, permitting this sector of the shipbuilding industry to also become globally competitive." said Rocha.

Maersk Flensburg ballasting water.

(Source: Maersk Maritime Technology / Public Domain)

Ballast Water Management

U.S. System Approvals are Key; Detailed Pre-Planning Urged

By Patricia Keefe

Ten years on, there's little certain about ballast water management regulations that the industry can chart a course around other than that it will be expensive – possibly the most costly marine retrofit to date. With install estimates running from $500,000 to as much as $5 million per vessel, across some 68,000 commercial ships estimated by the IMO to transfer 7 billion tons of ballast water annually – industry players say we could be looking at as much as an $80 billion market. Eventually, that is, because there is not a lot of activity right now.

That's because much of the industry is waiting for the International Marine Organization (IMO)'s regulations to finally come into force, which by most estimates will happen in 2016, a year from whenever the widely anticipated final ratification of the IMO ballast water convention occurs sometime this year.

But no one really knows when ratification will take place. Or when the United States Coast Guard (USCG) will start announcing system approvals. Or when more vendors will step up to the plate and submit their products and data to the USCG's two independent test labs. Or when the IMO will finish its recently agreed to review of the G8 testing protocols. Or whether suppliers and shipyards will be able to meet pent up demand down the road. And on and on.

In the face of so many unknowns it's hard for ship owners to justify taking the BWMS plunge as the irresolution of so many issues has left every option fraught with risk.

"The owners just don't want to take a substantial cap-X decision since the regulations are still vague and the technology is not proven," shrugs an executive at global tanker company.

And so at the start of of 2015, well after the passage of the initial 2013 compliance deadlines, and almost two decades after the IMO first started to look at the issue, frustration is as widespread among the owners as their coping strategies are wide ranging.

Tragedy of BW Regulations

"This legislation was pushed before

“This legislation was pushed before the technology was ready, and it has led to a massive amount of uncertainty and a massive financial burden on the industry. When you look at the amount of money that must be spent on this, it’s really something of a tragedy. [Ship owners] run the risk of spending billions on equipment that doesn’t fulfill the purpose for which it was intended.”

Graham Westgarth, COO GasLog Logistics (& a former chairman of Intertanko)

> If we install a $2M system per ship, we expect it to meet the demands of the IMO and U.S. Coast Guard. If you buy a car that fulfills all the requirements for emissions , you would not expect to have to have extra equipment to montior this. If we invest this kind of money, we expect that when the system got all those approvals, that it will live up to the convention.
>
> *Palle Wredstrom*, Maersk Maritime Technology

the technology was ready, and it has led to a massive amount of uncertainty and a massive financial burden on the industry," said Graham Westgarth, COO of GasLog Logistics, Ltd., and a former chairman of Intertanko. "When you look at the amount of money that must be spent on this, it's really something of a tragedy. [Ship owners] run the risk of spending billions on equipment that doesn't fulfill the purpose for which it was intended."

And, to put it simply, nobody wants to do that.

"The market has changed, or correctly said, slowed down considerably. We have not been approached by any supplier during this [past] year," said Kjell Gestranius, Bore Ltd.'s technical manager.

The reverse is also at work. Although Bore had installed Hyde Marine's Guardian BWMS in two ships, the Bore Sea and Bore Song, "there remain seven ships, where we have done pre-studies and have some idea of what to do," said Gestranius. "We had a few candidates, where we [have] decided to go further, if the regulation comes into force. But, this has also been put [on hold], waiting for what will happen."

Many owners and operators are just not installing anything if they can help it. The global tanker company has put all BWMS on hold, outside of new build contracts it has taken over that already included treatment systems. "As a supplier, you could not pay us enough to take the risk that you'll be obsolete in a couple of years, so no deal," said the **GasLog will probably have five or six ships in dry dock this year.** "I'd very much like to install a system that the Coast Guard approved. I think most ship owners think if you can't trade with the U.S., you're devalued to a degree," said Westgarth.

(Source: GasLog)

Making Your List & Checking it Twice

BWMS Evaluation Services Target Ship Owners

Possibly the most important thing ship owners need to know about ballast water management systems (BWMS) is that they will need to invest a lot of time and detailed upfront prep work before selecting the right technology or supplier for each vessel. There are a lot of factors to consider, things to measure, products to pre-fabricate, design approvals to obtain, etc.

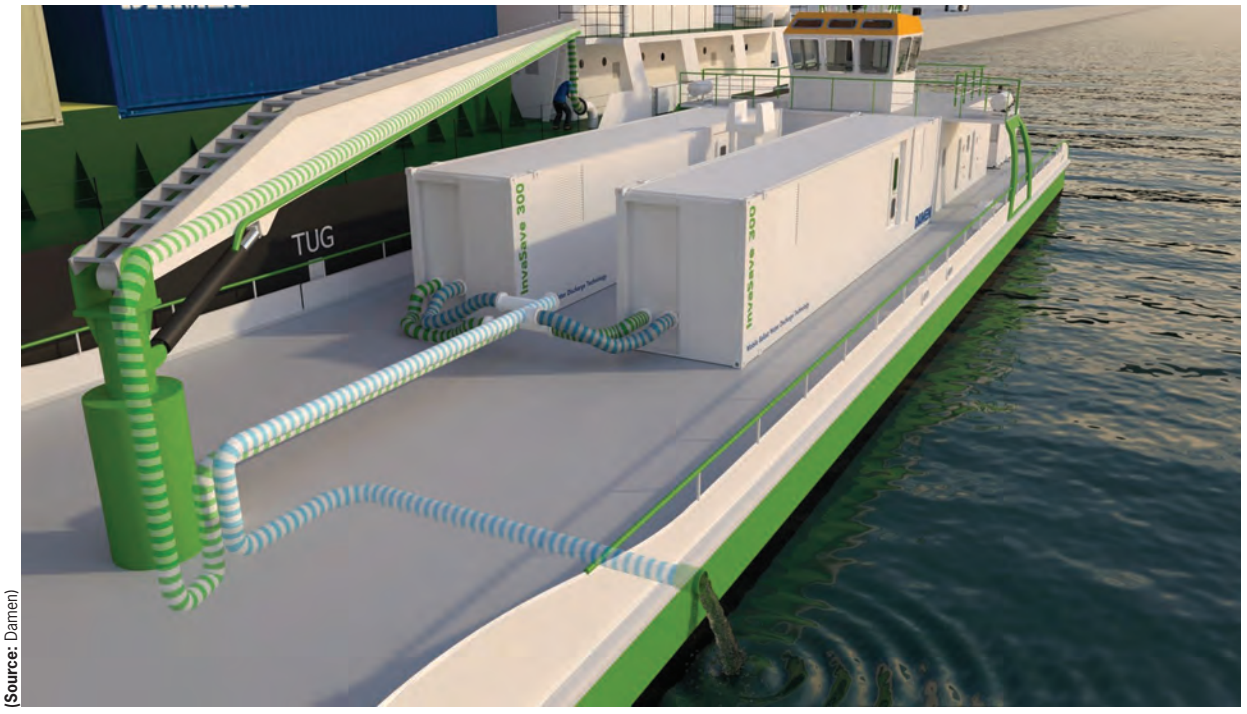
Standing by to help with free checklists and for-fee services are classification societies like the American Bureau of Shipping (ABS) and Lloyd's Register Group Limited, owner associations such as BIMCO, and shipyards such as Damen, which has put together a "one-stop shopping" program that will take owners from start to end of the decision process, handling a lot of the work along the way, such as pre-engineering, obtaining 3-D laser scans and getting classification sign offs. In the case of Damen, one of its goals is to make sure retrofits can be done during the usual time period – about two weeks – a ship is in dry dock for survey renewal.

Many of these programs include a database of available technologies and product comparison tools. Typical services include an operational and performance team that will look at vessel characteristics such as design, shipping routes, regulatory requirements, existing space and ship systems, lifecycle costs, etc. The program usually offer selection tools, and explain regulatory requirements.

Some examples of what ship owners will need to consider from the recently updated ABS guidance for ballast water management and its BWMS Selection Service.

There are a number of factors to look at before selecting and installing a treatment system, including but not limited to:

- ☐ Capital cost (CAPEX) and operating cost (OPEX)
- ☐ Ship operating profile and associated ballast activities
- ☐ Ballast water pump size/rate and ballast water treatment capacity requirements
- ☐ Ship integration constraints, for e.g. space and power and ventilation requirements
- ☐ System durability and maintenance requirements
- ☐ Ease/cost of installation
- ☐ Supplier credibility
- ☐ Ports of call and operational areas
- ☐ Necessary approvals
- ☐ Vessel-specific information
- ☐ Materials, equipment protection (IP rating) and hazardous spaces
- ☐ Installation considerations, such as the impact on surrounding areas of the vessel.
- ☐ Life cycle costs
- ☐ Vendor qualifications and reputation



(Source: Damen)

While the majority of BWSM solutions entail ship refit, Damen has put forward an innovative solution to simply offload Ballast Water.

company executive, who asked not to be named.

For those owners who prefer to wait, Kathy Metcalfe, director of maritime affairs for the American Council on Shipping (ACS), is advising members to seek extensions from the Coast Guard. To date, it has issued 340 such waivers to vessels scheduled for dry docking in 2014 and 2015, says CMDR Ryan Allain, who is the chief of the Coast Guard's Environmental Standards Division.

Maersk Covers Its Bases

Not doing anything, however, is impractical for some companies, such as shipping conglomerate Maersk Group, which is taking a mixed, measured approach to ballast water management. "What we are concerned about is U.S. Coast Guard approval. Our strategy is to install in new buildings with systems where we have a commitment from the supplier that they expect to obtain U.S. Coast Guard approval, and a commitment to ensure that they will," said Palle Wredstrom, department head of Maersk Maritime Technology. The company has so far installed UV technology-based BWMS on about 30 ships – all new builds.

That strategy echoes the strongest piece of advice (see sidebar on page 37) that shipyards, classification societies and even the U.S. Coast Guard are giving owner/operators: **Make sure vendors guarantee their products will meet USCG standards and revised G8 testing protocols, and negotiate up front who will pay for this retrofit of the retrofit, if it comes to that.**

Maersk is taking a different tact with its existing fleet, which includes 260 container vessels, 160 tankers and 60 supply ships. The company has said it expects to invest more than $600M to meet the new requirements over time. One thing Maersk learned from installing on new builds is that the process is challenging. "It's even more challenging to install ballast water management systems on board older ships," said Wredstrom, who adds that the company is going to wait for the renewal survey and the safety of dry dock before installing BWMS on its existing fleet.

Similarity GasLog will probably have five or six ships in dry dock this year. "I'd very much like to install a system that the Coast Guard approved. I think most ship owners think if you can't trade with the U.S., you're devalued to a degree," said Westgarth, adding one thing he could do is get an extension until such time as the Coast Guard approves a system.

He could also opt to install a Coast Guard–approved AMS, or Alternative Management System, good for 5 years – but like many of his peers, he is wary of "paying $2 million for a system and having to write it off over five years, versus the lifetime of the ship."

But he says there is a high probability that GasLog will install something when its ships dock.

Interest in waiting for scheduled dry dock dates before retrofitting is so widespread that Frost & Sullivan lists as a key industry challenge, "persuading ship owners to purchase ballast water treatment systems, especially for retrofits."

U.S. Type Approval: The Gold Standard

That's not likely to happen while everyone waits for

> **The pressure will be on the owners once the convention is in force.** The IMO says they have to be compliant after the renewal survey, so they can only sail away when the system is installed.

Gert-Jan Oude Egberink, Damen Shipyards

the implied safety of U.S. –approved systems to buy. "Ship owners are reticent to fit a system that won't be able to operate in the U.S.; they are all hanging on, waiting for U.S type-approved systems. Ships are generally designed for worldwide trade; we're not asking for anything special, just systems that will operate in our normal sphere," said Jonathan Spremulli, technical director of International Chamber of Shipping (ICS), which claims to represent 80% of the world's fleet.

Toward that end, the ICS, and its brethren, including Intertanko, Bimco and the American Chamber of Shipping (ACS), succeeded last fall in winning agreement from the IMO to strengthen its G8 testing protocols. This is important because although ships in global trade operate in a wide range of conditions, the G8 protocol doesn't require testing in all those situations. For ex., the G8 only requires testing to two levels of salinity, yet global shippers operate across three levels, as well as in a range of temperatures. "This means you could have a system not verified to operate in all of the water conditions in terms of salinity that you'd expect a worldwide ship to encounter over its lifetime," exclaims Spremulli.

And that's the big worry.

There's a reason for the U.S. Coast Guard to set up their own rules for approval, said Maerk's Wredstrom. "I'm sure if a supplier fullfills U.S.Coast Guard approval – which is more stringent than the G8 protocls – then we are sure it does work under most of the conditions." And it will, according to CMDR Allain.

"I would say the U.S. Coast Guard requirements are consistent with the G8 protocols, but more stringent and with less room for interpretation. Whenever you have guidelines, there is room for interpretation. When you have multiple countries reviewing multiple systems

to the guidelines you are going to have multiple variations on how certain aspects of those guidelines are interpreted. Here [the U.S.] you have regulations and one entity reviewing. It's going to be very consistent," promises the Coast Guard Commander.

That's what the industry is counting on. "If we install a $2M system per ship, we expect it to meet the demands of the IMO and U.S. Coast Guard. If you buy a car that fullfills all the requirements for emmissions, you would not expect to have to have extra equipment to montior this. If we invest this kind of money, we expect that when the system got all those approvals, that it will live up to the convention," said Maersk's Wredstrom.

And yet the skepticism about whether existing G8-tested systems will indeed live up to the IMO convention is such that some ship owners are convinced that there are no working, or trustworthy, systems on the market today. This is reflected in the decision by some outfits to take delivery of new builds with no BWMS – just space reserved for a future installation.

"The existing technology is not fit for purpose," according to GasLog's Westgarth.

The Waiting Game Continues

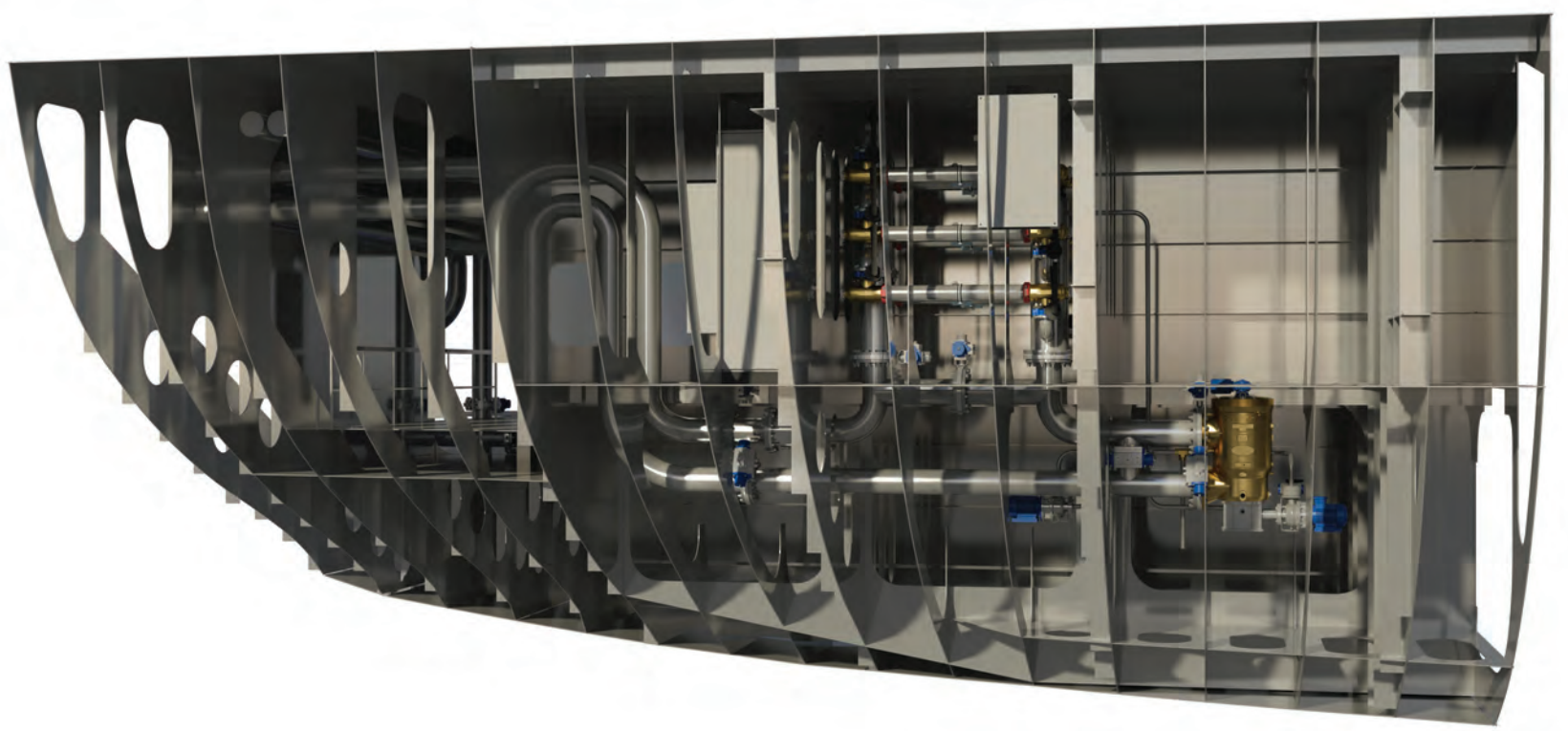
Still, ship owners know that invasive organisms must be stopped, and they are anxious to cross compliance off their regulatory to-do list. But the already interminable waiting period is about to get longer. Despite the much bandied about estimate that the U.S. Coast Guard will start issuing approved systems by mid-2015, the reality, says the man who should know, is it will probably be mid- to late 2016 before that happens.

The reason, says Thomas Stevens, technical manager at NSF International, one of two independent labs contracted by the Coast Guard to test BWMS for U.S. compliance, is that system testing requires a minimum of 18 months to two years (and at a cost of $1M to $2M to the vendors, according to some estimates.) Once the testing is done, the labs have to package up the results for delivery to the Coast Guard, which will then review the data before issuing approvals. And depending on how much time is involved, that could push the availability of U.S. approved systems into an industry patience busting 2017.

Worse, there are only 10-12 products in the testing cycle, according to Stevens, USCG CMDR Allain and Intertanko, which actually surveyed vendors on

Right: Shipyards around the world, including Damen Ship Repair in Rotterdam, anticipate a healthy and prolonged influx of business to re-fit the world's fleet with new Ballast Water Management Systems.

Below: Artist impression of retrofit design.



(Source: Damen)

> People are not waiting for the Coast Guard; our regulations came out in 2012. What they are waiting for is for the vendors to get system type approval from the Coast Guard. The onus is on the vendors to complete . . . the process."
>
> *Ryan Allain,* USCG CMDR

their plans for obtaining U.S. approval.

Don't Look at Us

"People are not waiting for the Coast Guard; our regulations came out in 2012. What they are waiting for is for the vendors to get system type approval from the Coast Guard. The onus is on the vendors to complete . . . the process,'' said Allain. Trojan Marinex, a maker of UV systems, and one of three vendors chosen to partner with Damen shipyards, says it tested from the start to meet U.S. requirements and believes it is one of three products that have completed testing at DNV GL, the other independent testing lab. "The balance of the other seven to nine are in the early stages and need to complete both land and ship-based testing, will take them well into 2016," said Jim Cosman, market manager for the company. "The Coast Guard has said it can review test results in as little as 30 days," he adds, predicting that his company's products will receive USCG approval at the latest by second quarter this year.

The Perils of Pent-Up Demand

2016 approval dates are not what ship owners and operators are going to want to hear. The longer pent-up demand builds, the more concern there is that overwhelmed vendors and overbooked shipyards could force vessels into waiting queues, screwing with scheduled dry docking dates, creating a backlog situation and increasing the amount of time a ship is offline.

Like other shipowners, Maersk recognizes the issue. The challenge for ballast water is from the existing fleet, says Wredstrom. "We see 60,000 ships needing to be compliant in the next five years."

The Maersk Group was so concerned about the possibility of a backlog, that in 2009, back when the convention was expected to be ratified quickly in the face of a handful of system managment suppliers, it invested in a joint venture with Skjølstrup & Grønborg ApS and the Desmi Group to develop and help test ballast water treatment systems. Fast forward five years into a more robust market and Maersk no longer feels the need for its system "insurance."

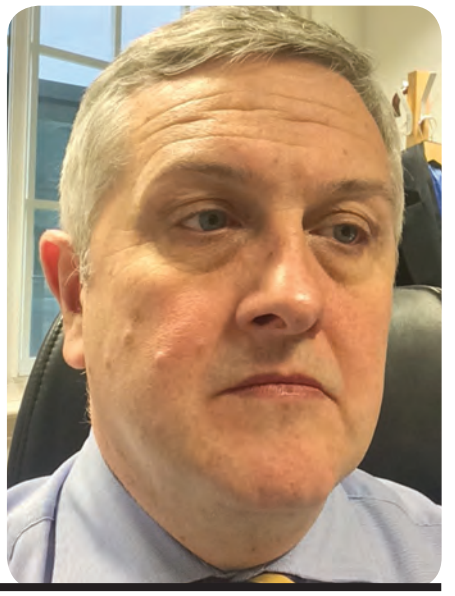
"DESMI Ocean is not part of Maersk any more. The reason for the investment was that we were very concerned about suppliers, as the demand was far bigger than the number of suppliers, but today I think the numbers may be sufficient," said Wredstrom. Today there are 51 IMO-approved suppliers that "hopefully" will all have U.S. Coast Guard approval, he adds. "I expect that they have done their calculations" and are prepared to meet demand.

And should bottlenecks turn up with suppliers or the shipyards, CMDR Allain notes that those situations qualify for Coast Guard extenions.

From Maersk's point of view, the bigger issue is the extension of time a ship will need in drydock when it goes in for its renewal survey and mandated BWMS retrofit. "Without a doubt, [the retrofits] will extend the time needed. There might be increased demand for years."

And not just on the ship yards. "It will demand a lot from the whole supply chain. The classification societies need to approve all installations. These things have to be tested to make sure they actually work. We've seen on a new build how it can be a challenge to integrate the

> Ship owners are reticent to fit a system that won't be able to operate in the U.S.; they are all hanging on, waiting for U.S type-approved systems. Ships are generally designed for worldwide trade; we're not asking for anything special, just systems that will operate in our normal sphere.



Jonathan Spremulli, International Chamber of Shipping

[system] into the ship's control system. I have to imagine it will be an even bigger challenge on a retrofit," Wredstrom said. "So to ensure that all systems work to expectations, and the training of the crew post installation, it would be beneficial to all to extend the time involved, '' he adds, echoing a growing push among ship owners and operators to get the IMO to once again push out compliance dates.

Shipyards Gearing Up

Shipyards too are worried about the time involved in retrofitting BWMS, particularly during scheduled dry docks, which typically run two weeks. Ship owners who want to stick to that schedule will need to start preparing 10 to 12 months in advance of a vessel's dry dock date, warns Gert-Jan Oude Egberink, manager, ballast water treatment, Damen Shipyards. "Later is too late."

"A lot of ship owners are just looking at the cost of the treatment system. There's also a high cost involved in engineering and installing the system. Sign off of integration, drawings and plan by class can worst case take several weeks."

"You need to do pre-fabrication, engineering, and testing has to be prepared. If you don't time it right, you'll have to stay in dry dock longer," he warns. "The pressure will be on the owners once the convention is in force. The IMO says they have to be compliant after the renewal survey, so they can only sail away when the system is installed."

Egberink agrees with Wredstrom that owners who do not plan ahead may run into backlogs in other areas, such as finding people to do the pre-engineering work and scheduling class societies to review their designs.

In fact, choosing a technology and a vendor specific to the needs of each vessel's type, characteristics and operating zone, requires a great deal of advance work. All these ship owners who are sitting tight should be working their way through the necessary and time-consuming prep work in advance of eventual retrofits. Damen, and others, can organize and oversee the entire process if needed.

Maersk, Bore and GasLog have all done the legwork needed to put together a short list of suppliers and technologies that they can focus on once they do decide to move ahead with retrofits. In the case of Maersk, another strategic decision has been to focus on bigger suppliers. "It's mainly because of worldwide service, and without a doubt, there will be a huge demand for support based on our experience from new build installations. It's an even higher challenge on retrofits," said Wredstrom.

As a practical matter, Maerk will spread its retrofit work around. "We have a huge fleet; these ships will drydock at different yards." Gaslog is looking at Samsung and Hyundai.

Scheduling yard time will be easier for companies in the liner trade, where it's possible to have an idea of the position of the ship out in the future. In the tramp trade, where you don't have the benefit of predictability of where a ship will be, it creates more of a scramble to find drydock space. "The single biggest avoidable cost of dry docking is the amount of time the ship is steaming without cargo, so the position of the yard in relation to the position of your ship is quite important," according to the tanker company executive.

All three shipping companies expect ship and repair yards to pitch their own solutions – and all seem open to at least discussing those options, recognizing that shipyards can't possibly be expert in a large number of specific systems, including systems they are leaning toward.

Partnering with Clients and Suppliers

As for the shipyards, there is of course money to be made in retrofit work. But there is more money to be made in both allying themselves with vendor partners and in guiding clients through the heavily detail-oriented pre-planning and design work, lining up needed expertise to handle specific parts of the job.

Damen has partnered with three vendors across several technologies in order to "cover the whole range of vessels' and provide flexibility in choice. It also enables the ship yard to build expertise with specific systems. "To be efficient and cost-effective, we need to specialize," says Egberink.

The partnerships also enable Damen to do product development. For example, when it saw the need for a smaller flow rate capacity in the market, it worked with partner Bio-UV to develop "a small flow rate plug-and-play system."

Separately, Damen has developed a fourth option it calls InvaSave - a mobile, self-contained ballast water Discharge Technology that it is marketing as an alternative or emergency measure. It is targeted at older vessels where owners do not want to install a retrofit, waste water collectors and barges, and port-states for emergency use.

"Say a ship owner has installed a system but it malfunctions in port. What will they do then? They'll have to wait, at a very high cost. There needs to be a service provided in port to deal with this," says Damen's Egberink.

Retrofits can prove particularly challenging to older vessels, and it is expected that the cost involved laid against the lifespan and value of an older vessel may in some cases lead to either early scrapping or force owners into alternative strategies, for example offloading ballast to a third party or using a portable treatmenert system on deck, such as Damen's InvaSave containerized technology. The advantage with InvaSave is owners can put it on top of the deck and when the vessel is at the end of its life, it can be removed and placed on another ship, keeping its economic value versus losing the investment in an expensive retrofit.

On the client project management side, Damen is offering Global One Stop Ballast Water Treatment Retrofit Service, which provides project management, consulting, design and engineering services. The shipyard is suggesting that owners can avoid supply problems in a booming market by signing on to its turnkey package of services.

All the uncertainty surrounding ballast water management compliance aside, there is one certainly after all. Ship owners and operators who plan ahead for their retrofits, doing the due diligence to fit the right system to their vessels, and who snag guarantees of U.S. test approvals, stand the best chance of serving both the environment and their bottom lines well.

So Near, Yet So Far Away

IMO Ballast Water Convention Percentage Points Away From Ratification

Eighty percent of the world's goods are moved by ship, and it is estimated that some 7 billion tons of ballast water is transferred globally every year. To mitigate the environmental threat from any of 7000 invasive species that might be transported in ballast water, the IMO has produced a convention that will require that ballast water be treated before it is released back into the environment.

Launched in 2004, The IMO Ballast Water Convention (International Convention for the Control and Management of Ships' Ballast Water and Sediments) will apply to all sea-going ships greater than 400 gross registered tons that use ballast water.

A minimum of 30 IMO member states representing at least 35% of the world gross registered tonnage must ratify the convention before it can go into force. The regulations will actually go into effect 12 months after that occurs. As of September 2014, 42 countries representing 32.54% of the world's dead weight tonnage have signed on. Ratification is expected to occur sometime this year, with the first deadlines hitting in 2016. Once the IMO regulations are finally ratified, vessel owners will have a five-year period in which all new builds, along with each existing vessel, as it goes into dry dock for its five-year survey, must be fitted with a type-approved BWMS. Between 60,000 to 70,000 vessels will be affected.

Additionally, vessels will have to meet BW requirements enacted by national and local administrations. These typically mirror IMO regulations with some additional rules. For example, vessels coming into the U.S. will have to meet not only U.S. Coast Guard (USCG) regulations already in force – with no compliant/type-approved systems - but similar U.S. Environmental Protection Agency (EPA) Vessel General Permit requirements and a raft of additional regulations from 16 states.

There is no one-solution-fits-all BWMS. Owners must pick between three distinct methods of ballast water treatment, from a field over 50 vendors. Owners will need to look at a variety of factors per each individual vessel, including variables such as vessel type, age, size, ballast water exchange rates and volumes, shipping routes, BWMS capital investment, operating and maintenance costs, etc. **Alternatives to installing a BWMS include offloading ballast water** to mobile on-deck facilities, barges or waste water facilities in port or out, using public water systems for the exchange, or in the case of U.S. waters, installing a Coast Guard approved Alternative Management System or getting an extension.

On a regulatory level, several issues are still being sorted out:

- In the U.S., there has been an effort underway for several years now, backed by organizations such as the American Chamber of Shipping (ACS), to pass a bill that will create ballast water regulations at the federal level. These regulations would absorb and add to the USCG's rules, while also superseding state regulations implemented under the EPA's Clean Water Act. States that passed regulations via their state legislative process would be able to retain those rules, according to Kathy Metcalf, director of maritime affairs, ACS. She will refile the bill for the new session of Congress.
- Intertanko , the International Chamber of Shipping (ICS) and other maritime organizations, have lobbied the IMO to reopen the G8 testing protocols with an eye toward stiffening those requirements - in effect, making them more definitive and less open to interpretation, which critics claims has led to inconsistent and in some cases, inadequate performance levels. The problem is worse than that, according to USCG CMDR Ryan Allain. Under G8 testing a product can be shown to work effectively in two of three levels of salinity, for example, and yet its stamp of approval won't note that it does not work in the third level. Not so with the USCG. Its approvals will spell out where the product works and when it doesn't.
- **Concerned about unnecessary ship detainments**, ICS, Intertanko, Bimco, Intercargo, InterManager, the World Shipping Council (WSC) and other organizations and flag states have asked IMO to revise a rule that allows port states to inspect BWMS at any time and to demand additional testing without first establishing the need to do so. They want a four-tier inspection process that would allow port-states to sample ballast water only if "clear grounds" for non-compliance have been determined. These industry groups also won agreement to grandfather in early adopters of BWMS.
- Groups like the WSC, which represents 90% of the world's container fleet, and the Danish Shipowners' Association, last year were questioning **whether the industry will have sufficient time to meet the expensive IMO requirements.** This is driven in part by concerns about possible failures to pass U.S. testing sending some vendors back to the drawing board, and pent up demand overwhelming suppliers and ship yards should the rule go into effect next year.

The Art of Propeller Making

Waren/Müritz: The "Silicon Valley of Ship Propeller Technology

The world's biggest propellers have their cradle in the North of Germany. MMG – Mecklenburger Metallguss GmbH – has manufactured for more than 65 years propellers for ships, including the biggest and fastest, in the State of Mecklenburg-Vorpommern. With the manufacture of propellers up to 130 tons, its manufacturing process requires a delicate hand and lots of patience.

By Peter Pospiech, Germany

Despite the fact that commercial shipbuilding has shifted to the Far East, the melting-furnaces in Waren an der Müritz, headquarters of MMG, have not switched off. Quite the contrary – the business runs well to this day, manufacturing ship's propellers – 95% of which are for export, mainly for delivery in Asia.

Just two years ago Manfred Urban, CEO of MMG, and his 235 employees landed a big deal for a supply to a South Korean shipyard. "We equipped the world's 20 biggest container vessels with our propellers," said Urban with pride. They have been built for the Danish Shipping Company Maersk and feature about 18,000 container slots each. Particularly lucrative was the fact that these vessels feature two propellers instead of one.

MMG has a history of supplying propellers to the world's largest ships, as it previously supplied product for the then-largest 13,4000 TEU containership, a propeller supplied by MMG with a weight of 130 tons and a diameter of 10 meters.

"Size and weight is important, but all parameters had to be optimal tailored for this particular vessel," said Urban. Giants of the sea such as the "Queen Mary 2" also boast propellers tailor-made by MMG engineers.

The 60-year-old Urban, who was born in Mecklenburg, is fairly pleased with his company's current order situation: "By the end of 2014 we will have supplied 148 propellers and for the time being there are around 160 propellers in our order book for 2015 - worth $118m," Urban said.

The Critical "Interface"

It comes without saying that the manufacturing of propellers is the "ultimate discipline" of building vessels of any size of shape, as the propeller is the all-important link between the engine power and the water, and a critical factor in a ship's overall efficiency. The propeller must help the ship navigate across the oceans, turning 140,000 times a day onboard the large container vessels, even more on cruise ships.

MMG designs its propellers in-house, leaning on more than five decades of experience. To date more than 2,400 ships have been equipped with propellers from the "Müritz-lake," a number which is increasing by about 150 each year.

In the era of CAD CAM and computer simulation, it is worthy to note that all drafts are reviewed on ship models in Ship Model Basins, even if all complex flow conditions around the propeller vanes can be calculated on the computer. Strength calculations are completed to ensure that the propeller withstands all stress situations.

Made in Germany

MMG's continued success is remarkable, particularly in the face of the large loss of domestic and regional shipbuilding capability to the Far East. It is significant that the shipyards in Asia have yet to fully take up the mission of full propeller design and construction, and MMG counts not only on its accrued propeller building experience and knowledge, but also its casting

"Our experience from more than 50 years are not that easy to copy," Manfred Urban, CEO of MMG

Magnetic flaw detection to show up possible blowholes or cracks.

(Photos: MMG)

1,100 degree Celsius liquid bronze is flowing into the prepared propeller mould.
Particularly sensitive areas, the leading and trailing edge, are sharpened by hand.

technique which is difficult to replicate. This leads to the point that Japan, Korea and China could not form large competition for manufacturing propellers "Made in Germany" … so far. "Our experience from more than 50 years are not that easy to copy," said Urban bluntly.

It also can become very expensive if a propeller of a giant container ship or tanker – or for that matter any commercial vessel – breaks during normal operation, as lost time is lost money, and in many of today's markets that is a commodity that many ship owners can ill afford to lose.

When he engineering graduate Urban took over the management of the company after the 'fall of the wall,' it was a new territory for him to fight for new customers. "After the fall of the wall our employees would not want to be part of the old management any longer," Urban said.

But when Urban took the helm, he barely had a chance.

The former State DDR built vessels exclusively for the Soviet Union – for rubles, which were almost instantly without value in the West. Regardless, practically overnight the company lost its only large existing customer.

But the problems did not end after the privatization.

MMG was sold in 1992 by the trust company (Treuhandgesellschaft) to Bremer Vulkan, which has taken over most the East-German Shipyards. One of the big financial scandals after the German reunification followed: The Vulkan-bosses took hundreds of millions Deutsche Mark of subsidy payments for their western companies – but went bankrupt in 1995 and this influenced also MMG.

A second privatization followed.

The Path Forward

"Engineering in 'Waren an der Müritz' has a more than 135-year tradition," said Urban. The "Maschinenbauanstalt mit Eisengießerei" was founded in 1875, which has been changed into "Eisenwerk Waren" in 1913. Since 1948 the first bigger ships propeller have been manufactured here for the former DDR-fleet. In 1991 the partly modernized Mecklenburger Metallguß GmbH (MMG) was founded; 170 people worked there in 1992, and sales were around $8.8 million.

The final breakthrough and build-out towards the worldwide leading manufacturer of giant ship propellers was enforced by the acquisition of Deutsche Gießerei- and Industrie-Holding AG (Dihag) in 1999. In the beginning of 2008 about $32 million we invested into the production facilities to be "ready for the future."

Up to today the company has invested about $82.9 million to create what it dubs the largest and most modern propeller factory world-wide.

The Art of Making Propeller

Making propellers to drive ships at sea is a liberal mix of art, science and experience. The mix of the material is not a secret, as about 80 percent is copper with the remaining 20 percent consisting of aluminum, iron, manganese and nickel.

The true art of propeller making comes in the design, casting and mechanical post-processing, and unlike many manufacturing entities in 2015, the lowest price is certainly not the most appealing virtue for owners that are serious about running efficient ships.

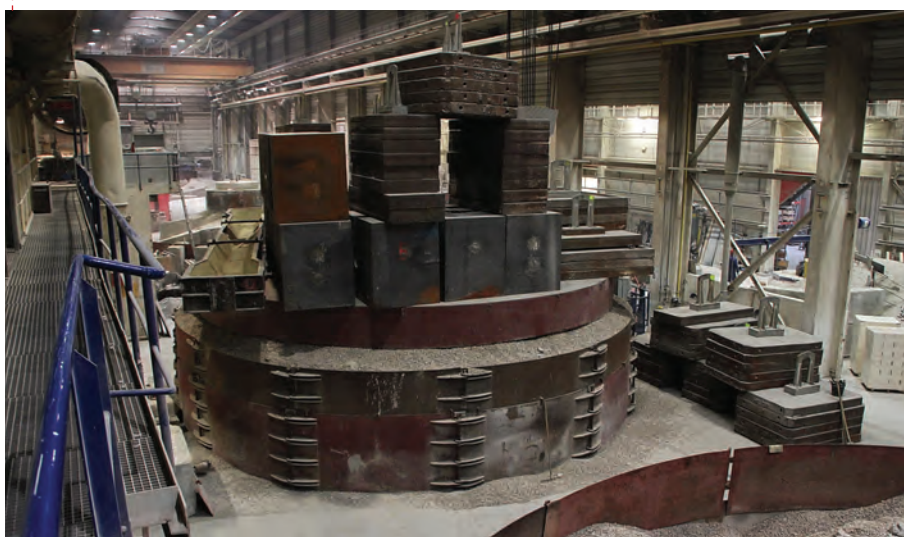
But what is it that makes a medium-sized company from the Mecklenburg province a world market leader for big ship propellers?

"Well," said Urban a bit reserved, there are certainly a "few tips and tricks."

But the real reason in addition to technological intuition and optimal quality, is "the confidence" which customers put into MMG.

"Ship builders must rely on us to receive on-time what they expect," said Urban. This confidence in MMG has been increased continuously during the

The mold is ready to be filled.



The final propeller during mounting on a ship's shaft.

last years. Confidence is therefore so essential because the propeller is the only component which cannot be modified or changed after undocking without again taking the ship out of the water. Propeller tests before launching cannot be done under real conditions, so everything has to be just right. Design or material defects as well as delays in delivery may have big and costly consequences, both short- and long-term.

MMG combines the most modern processing technology combined with craftsman skills, as the experienced MMG employee is one of the secrets of its high quality propellers. Particularly sensitive areas, for example the leading and trailing edge, are sharpened by hand – even on the biggest propellers. Measurements are taken: again, again and again. And after the propeller finally passes all tests an original shaft is mounted as a trial to ensure that the work was done well and the propeller runs smoothly.

Looking ahead, Urban discusses prospects for his company in a fluid and fast-moving shipbuilding environment, which today takes place predominately many thousands of miles from his headquarters in Germany.

"It is clear that new vessels will be built," said Urban, "as ship owners must comply with the new emission standards." At the same time, there are tremendous cost pressures that seemingly increase daily. This plays directly to the advantage of MMG and Urban. "A vessel which consumes three percent less fuel can save up to 70,000 EURO on a trip from Shanghai to Hamburg," said Urban. "Particularly for this we developed specific fuel saving propellers and complete drivelines together with fuel saving rudder shapes."

A so continues a German manufacturing heritage in the matter of ship's propulsion.

Lindner Sees Strong '15

On the last day of what proved to be a busy Workboat show in New Orleans, Mikael Lindner, President, Scania North America, sat with *Maritime Reporter & Engineering News* to reflect on the current and future direction of the power company's marine business in North America.

As the marine market follows in step with other transport and industrial sectors to literally clean up its collective act, marine power providers are at the tip of the spear in the quest to make commercial marine operations more environmentally benign and in line with new regulations on emissions.

Broad-based global corporate power companies such as Scania boast an advantage in this regard, able to apply lessons learned from other industries and leverage a well-funded R&D budget to ensure its lines are modern, capable and ready. "There is a buzz regarding Tier 4, even though it is still two to three years away," said Lindner. "I think we have a really good plan, and it is not rocket science by any means; you will likely need to have after-treatment in some form. As Scania is a global manufacturer of power for trucks, buses and many different markets, we have all of these technologies within our own company (to meet the strictest new emission regulations)."

Scania has been a face in the North American workboat market for several years now, entering a large and mature market with a history of providing power solutions across multiple industries globally. With a long-term plan to penetrate one of the world's largest workboat markets, Scania's patience is starting to pay dividends with steady growth in new installations and re-powers.

"Looking at North America, 2014 should be similar to 2013 in that we are on a constant growth pattern; 2013 was a record year for us, 2014 should be close and things look promising for 2015," said Lindner. "Five or six year ago we started with our plan, and we're starting to see this bear fruit now."

Huibers Drives Volvo Penta Full Steam Ahead

For a several years Ron Huibers – President of Volvo Penta of the Americas – and his team have led a steady fight for share of market in the commercial workboat sector. While the war is far from over, battles are being won.

"When people see Volvo Penta, it's not like we're new in this space," said Huibers, explaining his company's presence in the North American workboat sector. "But we've building one brick at a time. It is a million details; it's belly button to belly button; people have to trust you."

Huibers is "responsible from the North Pole to the South Pole in the Americas, and worldwide for the gas products." He spent much of his career on the automotive side of the business, but he has a clear passion for the marine business, spearheading the company's commercial maritime sector drive to build brand awareness amongst a clientele that tends to be fiercely brand loyal.

To this, Huibers leans on the company's strong global reputation. "If you look at Volvo Group our R&D investment is running north of 7% of sales; and we've been doing that through the downturn, simply to stay in the game. You have to keep investing overtime, year after year."

Huibers understands that prosperity and growth in the maritime sector means investment of dollars and people, and he has spent the last couple of years fully engaged in the effort.

- **Distribution:** "Two years ago we had some good distributors, but what we didn't have the depth and capability needed on the marine commercial side," Huibers said. The solution: strengthen the dealer network with well-known and proven entities. In early December Volvo Penta of the Americas announced the appointment of Stewart & Stevenson FDDA LLC (FDDA) and Pacific Power Group as new Volvo Penta Authorized Power Centers.
- **Parts:** Any manufacturer is only as good as its ability to rapidly supply quality repair parts for maintenance and repair. The solution: The opening of a new one million square foot central parts distribution center in Byhalia, Miss. "The new facility in Byhalia is the keystone of a comprehensive optimization of the North American aftermarket parts distribution network for Volvo Penta," said Huibers.
- **Customer Service:** Though it may sound trite, customer service is the core of Volvo Penta's commercial maritime push in the Americas. To that end, the company opened Volvo Penta 24/7/365 Technical Support, where dealers, distributors and OEMs have access to the technical services department. "When you have a problem you are talking to a real, live person for technical support – this is not a switchboard."

While solid performance on distribution, parts and customer service is critical, Huibers knows that bringing to the market a solid and reliable product line trumps all. Enter the Volvo Penta IPS Propulsion.

The Integrated System Approach

Volvo Penta's IPS Propulsion is the company's 'systems approach,' as Huibers explains; "There is only so much efficiency you can squeeze out of the power plant itself. But when you take a 'systems approach,' that's how you get 30% fuel savings."

The first commercial vessel to be deployed in North America with Volvo Penta IPS is the Thomas Paine, the new 50-ft. aluminum patrol boat for the Massachusetts Environmental Police fleet delivered in July. Built by Metal Craft Marine it is equipped with twin Volvo Penta D11 510hp marine diesel engines driving IPS650 steerable drive units. Power Products, the Volvo Penta Power Center in New England, supplied the system and oversaw installation. According to Huibers, the advantages are obvious: "Volvo Penta IPS drives provide 40 percent higher cruising range, 20 percent higher top speed, 30 percent better fuel economy, 30 percent reduction in CO2 emissions and 50 percent reduction in noise levels compared with traditional

inboard shaft drives," said Huibers. "The individually steerable drive units with joystick docking provide a dramatic difference in maneuverability, and the dynamic positioning system (DPS) automatically holds the boat's position and heading steady on station regardless of winds and currents."

M/V Fort Ripley is another high profile reference for the Volvo Penta IPS drive, as it was the first dual purpose, rapid response vessel and pilot launch, designed

According to Lindner, the success of the company in North America starts and ends with the quality of its engine family. “We have a very solid line-up of products, a very solid platform, that we continuously work on developing further in terms of power and performance,” said Lindner. We concluded the introduction of the current platform two to three years ago with the addition of the new 16 and we introduced our Tier III engine line-up last year. Many customers have installed this platform now, and they are proving themselves: that’s a big driver, the product is installed and proven. “With our 16 you get power, performance and durability in a comparatively smaller and lighter package,” said Lindner. “The challenge is convincing the customer that they don’t need that much iron to power their vessel.”

This year was significant for Scania in North America as it continued to strengthen its dealership network and entered some new markets in Canada. “Canada, thanks to our distribution, is working well for us,” said Lindner.

Looking forward Lindner said a main focus now is the emission standards coming for ECA areas and IMO III. “After that, Tier 4 is the next big challenge,” said Lindner. “Without saying too much, the IMO III solution most likely will be a solution for Tier 4.”

Greg Trauthwein

for offshore salvage and firefighting requirements. Built for the Southeast Ocean Response Services Inc., M/V Fort Ripley courtesy of its Tier III compliant propulsion arrangement burns 30 percent less fuel than any of the other three vessels in the Charleston Pilot fleet. The vessel’s long range endurance will eventually allow it to respond to maritime casualties all along the mid-Atlantic coastline, and it is diver and hotel ready, capable of pumping 3,500 gpm in FiFi mode. Designed by C. Raymond Hunt and built by Gladding-Hearn Shipyard, Fort Ripley is a U.S. Coast Guard-certificated 64-ft. aluminum boat powered by triple Volvo Penta IPS drives. The boat’s primary mission will be to allow ships to meet federal requirements for rapid offshore firefighting, salvage and emergency response, providing coverage between Morehead City, N.C., and St. Augustine, Fla. It will also serve as a fireboat in Charleston Harbor, a supply boat for ships at anchor and an additional launch for the Charleston Pilots and other marine operators in the region.

The three IPS drives, each powered by a commercially rated Volvo Penta D13-700 diesel engine, are independently steerable, with dual counter-rotating forward-facing propellers to maximize efficiency and increase maneuverability. The IPS can be controlled from the wheelhouse or either of the two aft docking stations using a three-axis joystick.

NOTICE OF PROPOSED AMENDING SCHEME OF ARRANGEMENT

IN THE MATTERS OF OIC RUN-OFF LIMITED

(formerly Ralli Brothers Insurance Company Limited and The Orion Insurance Company plc)

AND THE LONDON AND OVERSEAS INSURANCE COMPANY LIMITED

(formerly Hull Underwriters' Association Limited and The London and Overseas Insurance Company plc)

(BOTH SUBJECT TO A SCHEME OF ARRANGEMENT) (TOGETHER THE “COMPANIES”)

On 7 March 1997 the Companies, which are insolvent, became subject to a scheme of arrangement (the "**Original Scheme**"). The current Scheme Administrators are Dan Schwarzmann and Paul Evans, both of PricewaterhouseCoopers LLP. The Companies have been developing an amending scheme of arrangement under Part 26 of the Companies Act 2006 (the “**Amending Scheme**”). If you believe that you are, or may be, a creditor of one or more of the Companies (a “**Scheme Creditor**”) you may be affected by the proposed Amending Scheme.

The Original Scheme is a reserving scheme of arrangement under which the Companies continue to agree Scheme Creditors' claims in the ordinary course of business. The Amending Scheme would convert the Original Scheme to a crystallisation scheme of arrangement under which Scheme Creditors' claims, including notified outstanding liabilities and incurred but not reported claims, would need to be submitted to the Companies by a specified bar date. The primary objective of the Amending Scheme is to enable Scheme Creditors' claims to be valued and the Companies' assets to be distributed to Scheme Creditors earlier than would be the case under the Original Scheme.

This Notice informs you that:

(a) the Scheme Administrators have, in accordance with an order of the High Court of Justice of England and Wales (the “**High Court**”), convened and held the necessary meetings of Scheme Creditors to consider and, if thought appropriate, approve (with or without modification) the Amending Scheme on December 11, 2014;

(b) assuming that the Companies have obtained the requisite number and value of votes of Scheme Creditors approving the Amending Scheme, the Scheme Administrators will (i) submit the Amending Scheme to the High Court for sanction and (ii) file petitions under Chapter 15 of the United States Bankruptcy Code and request an order from a United States bankruptcy court enforcing the Amending Scheme in the United States; and

(c) additional information regarding the Amending Scheme, including the date, time and location of any court hearings, can be found on the Companies' website at www.oicrun-offltd.com.

If you are a broker, agent or other intermediary who has acted on behalf of Scheme Creditors in placing business with one or more of the Companies and you have not provided detailed policyholder contact information to them, please forward this notice to your clients. Alternatively, please provide us with your clients' names and addresses so we can write to them directly.

Certain policyholders may have a policy written through a broker facility (which includes brokers covers, broker lineslips and binding authorities) and may not know the identity of the insurance company. A full list of known broker facilities is available on the Companies' website. These include, among others, the following: A.B.C. Excess (Aircraft Builders Council); A.B.C. Master Agreement (Aircraft Builders Council); A.I.A.A. Aviation Excess of Loss Reinsurance Agreement (American International Aviation Agency Inc); Alexander Howden Reinsurance Brokers Limited Marine Excess of Loss Pool; C.T. Bowring & Co Aviation Liability Line Slip (B500 Contract); C.T. Bowring General Non Marine Master Cover; C.T. Bowring Marine Master Cover; Hull & Co (UK) Ltd Line Slip HC.013; London Special Risks Liability Line Slip No. LSR056; Price Forbes Brokers Cover; Price Forbes Line Slip; Sedgwick Collins Lloyds Brokers Line Slip; Sedgwick Offshore Resources Master Drilling Rig Line Slip (M.D.R.C); Steel Burrill Jones Oil & Gas Line Slip; Willis Faber & Dumas Brokers Line Slip.

FURTHER INFORMATION CAN BE OBTAINED BY CONTACTING THE COMPANIES AS FOLLOWS:

By Post: Armour Risk Management Limited, 4th Floor, 20 Old Broad Street, London EC2N 1DP, United Kingdom, marked for the attention of Andrew Jones; **By e-mail:** OICClosureHelpdesk@armourrisk.com; **By phone:** +44 (0) 20 7382 2020; **By fax:** +44 (0) 20 7382 2001.

Beyond the Black Box

Using the VDR as the Ship's Data Clearing House provides budget-minded operators with the means, the bandwidth and the economy to monitor critical systems. Go on: dip your toes in the big data water.

By Joseph Keefe

Big Data. It's all the rage across the full spectrum of the maritime world. Thousands of data points on 70,000 vessels literally scream out to be harvested and sent back to the home office, all with the intent of making your vessel more efficient, your operation more profitable, the environment cleaner and perhaps, your bunker and maintenance bills lower. The only left to ask is: what's it going to cost me? Actually, not as much as you might think.

Industry estimates of those owner/operators actually performing remote monitoring of critical equipment on a meaningful level amount to less than one-half of today's commercial merchant fleets. In reality, it's probably less than that. And many shipowners don't even know that the means to accomplish such tasks is already on board, in the form of the vessel's (IMO required) Voyage Data Recorder (VDR).

The VDR's true function is a "black box" for retrieving vital data after an accident at sea. A new IMO VDR standard, which came into force July 1 of this year, requires all new VDR installations on vessels over 3,000 gross tons to be type approved to comply with the new standard. Existing VDRs are grandfathered, but when replaced they must be replaced by a product meeting the new standard. In response, the Danelec DM100 VDR was introduced earlier this year to meet this new requirement. The Denelec device also introduces a new twist – VDRConnect – designed to exploit the ubiquitous, very efficient data collection device already gathering and storing valuable data aboard the ship.

VDRConnect

VDRConnect is a Web-based value-added remote access service available with the new Danelec DM100 Voyage Data Recorder (VDR). VDRConnect is a interface module that provides selective transmission of data from the Danelec DM100 via satellite to the home office. The VDRConnect module connects directly to the ship's IT and satellite communication systems without the need for a separate PC. With VDRConnect, the ship manager ashore can log into an IP-based Web portal using a convenient dashboard on a computer or tablet to request specific data files to be downloaded from the Danelec VDR and select intervals for automatic transmission.

There is growing demand among ship management companies to get more data from their ships to improve ship performance, optimize weather routing and enhance efficiency, as well as safety at sea. The first prerequisite is accessing good data in a timely fashion. That's not as easy as one might think. Installing a ship-wide data network with cable or wi-fi connections with hundreds of data sources is difficult and expensive. And once all that hardware and software is installed, it must be serviced and maintained at ports all over the world. And then, there is the cost of all that bandwidth to get the data from point A to point B. how much of it do you really need, and how often do you need it?

The shipboard VDR represents an attractive alternative to an expensive custom ship IT network when it comes to data collection for transmission to shore offices. VDRs store data is stored until needed for an accident investigation (48 hours in the storage capsules and 30 days in the VDR). This data – position, speed, heading, depth, rudder order and response, engine order and response, wind speed and direction and main alarms – if made available in near real-time, could have commercial value to help optimize ship efficiency and performance, when combined with KPIs from other non-mandated sources such as fuel flow meters, engine RPMs, engine temperatures, emission measuring devices and other data points.

VDRConnect is a value added, external add-on function that is not required under the IMO standard, but at the same time, does not affect the primary function of the VDR, which is to collect and securely store data from mandated sources. Beyond this, the VDRConnect module can be easily connected to legacy Danelec VDRs as well as the newer DM100 for an expensive upgrade retrofit solution. In practice, there is no practical limit to the number of systems and sensors that can be connected.

Bandwidth – A Non-Issue

The VDRConnect module connects directly to the ship's satellite communication terminal. The selective data transmission function is optimized for narrowband satellite channels, allowing the ship manager to download only those data sets that are desired. While the next generation of maritime communication satellites will have substantially more bandwidth, the great majority of ships are currently fitted with Fleet Broadband. But, how much bandwidth is really needed?

Hans Ottosen, CEO of Danelec Marine, explains, "It's not really a 'bandwidth' issue. There is plenty of capacity for storage of huge volumes of data in a VDR. Under the new IMO standard, the VDR must store a complete record of data including voice and radio audio and video outputs from two radars and ECDIS. These are enormous files."

Bandwidth becomes a limitation when it comes to transferring the data from the VDR through maritime satellite channels. It would be impractical and prohibitively expensive to stream entire data files from the VDR. Thus, the VDR must be able to transmit smaller blocks of data without doing a full data dump. Ottosen adds, "That's why the critical element in VDRConnect is selective remote access. The process works in a 'push-through' or 'pull-through' mode. The shore office can request data from specific sensors on demand, or can program the system to provide automatic downloads of desired data sets at intervals. This can be dynamically con-

"The VDR can provide a very economical and efficient platform for gathering and storing data from a wide range of ship systems and sensors, making it available for selective extraction by shore offices. Since you already have to buy the VDR anyway, why not use it for something more than just storing data for accident investigators?"

Hans Ottosen
CEO, Danelec Marine

trolled by the computer. For instance, when open-ocean steaming, they might specify reports every four hours, or even once a day for the noon report. When the depth sounder shows shallower water readings or the ECDIS shows the ship entering restricted waters, the system could be programmed to increase the reporting interval automatically."

At the end of the day, however, 'data is just data' when it comes to transmission costs. The more you send, the more it costs. Ottosen calls the selective remote access just 'smart business,' adding, "Instead of 'all you can eat' bandwidth, VDRConnect allows 'just what you need' consumption." It's here, he says, where operators can really save money.

The Poor Man's Remote Monitoring

It all sounds good, but in age when many operators are struggling to make money and others are drowning in red ink, the remote monitoring of critical equipment remains out of reach. Or, maybe not. The VDR is an unavoidable capital expense – part of the cost of doing business. But with selective remote access, operators can actually get a return on that investment, using the VDR as the central 'clearing house' for data from mandated and non-mandated systems and sensors.

The cost of installing and maintaining a custom data network on the ship with a combination of hard-wired and wi-fi connections to hundreds of data points is very high. Denelec's Ottosen continues, "The VDR can provide a very economical and efficient platform for gathering and storing data from a wide range of ship systems and sensors, making it available for selective extraction by shore offices. Since you already have to buy the VDR anyway, why not use it for something more than just storing data for accident investigators?"

According to Denelec, adding a function like VDRConnect to the VDR is a relatively small incremental increase in the cost of the VDR itself, and a small fraction of the cost of installing and maintaining a custom ship-wide data network, with cables, wi-fi connections, data acquisition units and computers.

Separately, the Oil Companies International Marine Forum (OCIMF) has called for proactive use of VDRs to enhance safety at sea. OCIMF believes that the VDR can be a useful tool for detecting unsafe practices, analyzing incidents and correcting navigational mistakes. Using data from the VDR, the ship manager can set up remedial crew training, correct poor practices and create event-driven roles for parameters such as depth beneath the keel at speed, traffic separation scheme adherence or voyage plans with automatic warnings for deviations detected. And since this function wouldn't require new cabling or links with non-mandatory ship systems or sensors, the practice can be implemented immediately. Existing clients already use VDRConnect to provide a portal for remote configuration of the VDR and reviewing data for the mandatory VDR annual performance test before the service personnel board the vessel. It can also provide an immediate warning if any of the devices sending data to the VDR, such as GPS, gyrocompass, speed log or depth sounder, should malfunction.

Beyond the obvious utility of the system itself, VDRConnect has been designed to accept connections with other systems not mandated by the IMO VDR standard, such as fuel meters, main engine, generators, emission monitors and auxiliary machinery. The VDR can thus become the centerpiece of a ship-wide IT data network, serving as a clearing house for collection of data from all the ship's systems and sensors and making it available for selective ship-to-shore download in an economical way, to enhance fuel efficiency and voyage optimization.

Big Data / Small Package

Remote monitoring is here to stay. So, too, is Big Data. Both will cost you money. On the other hand, since various VDR manufacturers already have global sales and service distributors fully trained and equipped to maintain and repair the VDRs, that cost can be minimized. Go ahead: stick your toes in the water. What are you waiting for? Big Data is here.


(Photo: Bollinger Shipbuilding)

Bordelon


(Photo: BSM)

Aschmann


(Photo: NBBB)

Higgins


(Photo: WSC)

Koch


(Photo: Tesla Offshore)

Bergeron


(Photo: Tesla Offshore)

Schempf

Chouest Family Buys Bollinger

Bollinger Shipyards announced that Ben Bordelon will assume the duties of Chairman, President and CEO, and that Ben Bordelon, along with the Chouest family from Galliano, LA, has acquired all assets and stock of Bollinger Shipyards, Inc. Bordelon has served in many capacities during his career at Bollinger, and has been a member of the Board of Directors since 2002. Donald G. Bollinger founded the shipyard in 1946 as Bollinger Machine Shop & Shipyard, Inc. and he served as Chairman until 1985. Donald's son Boysie Bollinger served as Chairman from 1985. Boysie Bollinger's son, Chris Bollinger, also served on the Board of Directors during his employment at Bollinger. As the founder's grandson, Ben Bordelon transitions Bollinger Shipyards to its third generation, as the new leadership of Bollinger Shipyards.

Leadership Change at BSM

Rajaish Bajpaee handed over CEO responsibility of Bernhard Schulte Shipmanagement (BSM) to his current deputy, Capt. Norbert Aschmann, at the end of 2014 after more than 27 years of service. He took the position of Chairman in a non-executive capacity effective January 1, 2015.

Higgins CEO of NBBB

Gavin Higgins has been appointed CEO of Ice Floe LLC dba Nichols Brothers Boat Builders (NBBB). Higgins replaces Matt Nichols, one of the company's founders who served as CEO of NBBB since February 2012, also serving as CEO for more than 35 years prior to the company's sale in 2008. Nichols will remain with the company as its EVP, Sales and Marketing, and as a member of the board of directors. Higgins served as COO of NBBB since September 2012.

WSC CEO Koch to Retire

Chris Koch, current president and CEO of the World Shipping Council (WSC), will retire from his position on July 31, 2015, and WSC Senior Vice-President and General Counsel, John Butler, will assume that position on August 1 of next year. Following his retirement as president, Koch will continue to support the council in a senior advisory capacity.

Tesla Executives on the Move

Tesla Offshore LLC announced the retirement of Randall P. Bergeron as President and CEO of the company effective December 15, 2014. It was also announced that Tesla Offshore cofounder and current Senior Vice President of Sales & Marketing, C. D. Schempf, Jr., will assume the leadership role as President of Tesla Offshore.

RCCL: Bayley, Lutoff-Perlo Take CEO Posts

Royal Caribbean Cruises Ltd. named two senior company executives to lead the company's two largest brands.

Michael Bayley, who worked his way up from an assistant purser's position aboard the Nordic Prince, will serve as President and CEO of Royal Caribbean International. Lisa Lutoff-Perlo, whose career at the company began in the New England sales office, will serve as President and CEO of Celebrity Cruises.

Duffy Named President of CCL

Christine Duffy has been named president of Carnival Cruise Line. Duffy, currently president and CEO of Cruise Lines International Association (CLIA), will assume the new role on February 1, reporting to Arnold Donald, CEO of Carnival Corporation & plc.

Wärtsilä Acquires L-3 MSI

Wärtsilä Corporation will acquire L-3 Marine Systems International from NYSE-listed L-3 Communications Holdings Inc. L-3 Marine Systems International (L-3 MSI) is a business sector within L-3's Electronic Systems business segment primarily focused on the commercial ship industry. The transaction is valued at $342 million. L-3 MSI is expected to generate approximately $480 million of sales for the year ending 31 December 2014.

Crowley Wins MSC Contract

Crowley Maritime Corp.'s global ship management group won the contract for the operation and maintenance of the T-AGOS/T-AGM fleet for the Military Sealift Command. This fleet of seven ships supports the Navy's Surveillance Towed Array Sensor Systems (SURTASS) operations; the U.S. Air Force's dual-band, phased array and parabolic dish radars; and other government research missions. The contract covers the operation and maintenance of five T-AGOS and up to two T-AGM ocean surveillance ships.

Fenwal Protection Systems, Chemetron Fire Systems Unite

Kidde Fire Systems announced the unification of Fenwal Protection Systems and Chemetron Fire Systems into one brand, the newly expanded Kidde Fire Systems. This transition is designed to strengthen customer focus, increase service and training efficiency, emphasize expertise in an array of vertical segments, and accelerate product and technology development.

N-KOM wins Award

Nakilat-Keppel Offshore & Marine (N-KOM) received the Safety & Security Award at the inaugural edition of The Maritime Standard (TMS) Middle East & Indian Subcontinent Awards, held at Atlantis The Palm, Dubai. Sponsored by ADNATCO-NGSCO, this is the first award the shipyard has received in the Safety category.

Hatteland Display Celebrates 25 Years

On November 1, 2014, Hatteland Display celebrated its 25th anniversary as a supplier of maritime displays and computers. From the early days in 1989 and up until today, the company has delivered more than 200,000 products to system integrators worldwide. Hatteland Display reports that 2014 will be a record year with more than 21,000 new products to be delivered to the market from its production facility in Nedre Vats outside of Haugesund in Norway. The company's type-approved displays, computers and panel computers are used on board commercial ships, offshore vessels, workboats, naval vessels and leisure craft around the globe. Main application areas are navigation systems such as radar and ECDIS, automation systems and monitoring systems. The most recent addition to Hatteland Display's product series range is the Series X, featuring glass front, multitouch functionality and panel computer options.

NRC Acquires Emerald Alaska

National Response Corporation (NRC), a portfolio company of J.F. Lehman & Company, announced the completion of the acquisition of Emerald Alaska, LLC from Emerald Services, Inc.

Willard Wins US Navy RIB Contract

The U.S. Navy awarded Willard Marine, Inc. (WMI), a five-year contract to provide two types of 7-m rigid inflatable boats (RIBs) that will serve as ready service lifeboats for search-and-rescue missions. The contract includes a standard craft based on the 7-meter RIB WMI has been producing for the Navy for 25 years, and a separate version specifically for LPD-17 class ships, which WMI has also been supplying for a number of years. Twenty-four vessels have already been ordered under the contract and the first scheduled delivery begins in March 2015.

Samson Completes Expansion

Samson completed its 15,000 sq. ft. expansion at its Ferndale Washington facility. The expansion includes a new Innovation and Training Center (ITC) and several enhancements to the manufacturing area. According to Samson, the ITC was designed to create an environment of collaboration and innovation, now housing the research and development and quality functions, as well as an expanded test lab. The office space accommodates 16 engineers and field service technicians, nine quality assurance technical professionals, a large-capacity training room and a full testing facil-

(Photo: RCL)

Bayley

(Photo: RCL)

Lutoff-Perlo

(Photo: Dave Cross)

Duffy

(Photo: Crowley Maritime)

Busch

ity. The testing facility contains test beds that accommodate up to 1.1 million pounds break strength, a cyclic bend over sheave (CBOS) test bed, drop towers, yarn and creep testers, a chemical laboratory and dedicated splicing benches to support product testing and customer/employee training.

Optimarin ,Goltens Ink BWT Retrofit Agreement

Ballast Water Treatment (BWT) specialist Optimarin and Goltens, a provider of engineering and installation solutions for the shipping industry, have signed a nonexclusive worldwide agreement for retrofitting Optimarin's Ballast System (OBS). The deal provides shipowners with a complete BWT package, offering them BWT technology alongside engineering and installation services across the globe.

USCG Approvals for PYPLOK

W&O announced that the USCG issued an acceptance letter for PYPLOK mechanical fittings, a Tube-Mac Piping Technologies Ltd., product line, approving its use in a wide range of applications onboard vessels. PYPLOK has passed national and international pressure and fire test standards. The Tube-Mac PYPLOK Mechanically Attached Fitting System is an alternative to threaded, welded, or brazed joints. The PYPLOK system features an external 360-degree radial swaging process that compresses the fitting onto the pipe or tube, which results in a permanent, leak-tight joint.

Kraft Power: Scania USA Distributor

Scania expended its service network in N. America with the addition of Kraft Power (www.kraftpower.com) as its newest marine distributor. Kraft Power is now a Scania marine distributor for Florida, Georgia, Bermuda and the Bahamas.

Partnership on Seawater Lubrication

Thordon Bearings Inc. signed a letter of intent (LOI) under which it will cooperate with MSR Gryfia of Poland to promote the conversion of ships to an open seawater lubricated propeller shaft Thordon bearing system from a sealed oil lubricated propeller shaft bearing system. The LOI will create an action plan in which a ship conversion team, comprised of MSR Gryfia and Thordon Bearings representatives, that promotes this initiative to the marine community.

BICERA Explosion Relief Valve

Sometimes it seems cliché to repeat that a product or system "protects equipment and saves lives," but in the case of valve manufacturer Penn-Troy, which recently unveiled a new crankcase explosion relief valve that boasts lower exhaust temperatures, more engine internal clearance and a lighter weight design, the claim is accurate. To get further insights on the BICERA Revolution Explosion Relief Valve, we spoke to **Mark Powers**, president of the company, for his insights on the product and its value.

The BICERA Revolution Explosion Relief Valve is the second-generation model of the original crankcase explosion relief valve proposed by the British Internal Combustion Engine Research Association (BICERA) after the Reina del Pacifico explosion in 1947. In the spotlight of this new product is the patent-pending flame arrester technology. Made of a strong, porous material, the external arrestor acts as an aggressive heat sink, dispersing lower exhaust temperatures radially, away from engine personnel, in the event of a crankcase explosion. The external flame arresting process also allows for better internal engine clearance. The BICERA Revolution Valve comes in four models: Bolt-on, Weld-on, Integrated Door Unit and Quick Detachable; certified to the IACS UR M66 specification by ABS, BV, DNV and RINA.

We understand that you recently unveiled a new crankcase explosion relief valve. Why was an investment in a new technology solution required at this time?

This valve was developed from customer requests to make the smallest crankcase explosion relief valve possible and save space on the engines. To do this, we used the technology of porous 316 stainless steel. Existing flame arresting technologies proved to either be too weak, or too bulky. With porous metal, we knew we could keep the compact size of the flame trap, and alter the powder or sintering process to get the results we wanted. The new BICERA Revolution Valve is designed with a smaller diameter to allow for closer installations between valve centers and on doors with smaller surface areas. The new valve also features a 115 sq. cm/1 cu. m. relief area to crankcase volume ratio that can provide the same level of explosion protection with fewer number of valves.

Specifically, you mentioned new Standards: Can you explain how these played a role in the decision to introduce a new product?

In 2008 the IACS came out with a new specification detailing the test criteria for crankcase explosion relief valves. In the specification, they specified an explosion in a 700L tank as the largest explosion one valve could be certified to handle. We knew that valves on the market that could handle that size explosion were quite large, and we saw an opportunity for improvement. With our new valve, there is no compromise between handling the largest explosion, and using the smallest valve.

In general, can you discuss how your company invests to ensure that its products and manufacturing processes are kept up to date and efficient?

Penn-Troy put in years of R&D for the original BICERA relief valve, and we knew for this new design we needed to be prepared to do the same again. With this in mind, we've invested in our own in-house explosion test facility. We are able to test prototypes rapidly and capture all sorts of data from back pressure to exhaust temperatures. To our knowledge, we are the only crankcase explosion relief valve manufacturer with our own in house test facility. In addition to all this, we've invested in our shop and became ISO 9001:2008 certified by the American Bureau of Shipping last year.

In addition to the new 4-in. product we discussed, are there any additional product variations in the pipeline? If so, explain their particular niche and when they will be available.

The plan is to continue development of a 2-in. and 6-in. valve, which we plan to unveil in 2016. We believe this will cover our niche for small compact engines where space is a concern.

Transas: The Bridge to Tomorrow

"With each day that passes, we learn more about the power of simulation technology. We are making significant strides in the areas of visualization and modeling development that go far beyond the use of standard and typical 'texturing' and 'mathematical' tools.

George Toma, President & GM, Transas Americas Inc.

Transas was founded in 1990, by a group of former navigators and engineers, who at that time envisioned ways in which computers could revolutionize maritime safety, communications and security. In the ensuing 25 years Transas has pioneered navigational technology across a wide sector, developing into a true "household name" in the global maritime industry.

In 1995, Transas also entered the highly competitive simulation market, and today there are more than 13,000 vessels sailing with Transas navigation systems, and more than 5,500 simulators installed, globally.

Welcome the "T-Bridge"

A major highlight in 2014 for Transas was the launch of the T-Bridge (**pictured below**). The concept for the project was to produce an integrated bridge system with a key focus on safety achieved through improved awareness, while providing cutting-edge, professional navigation tools. The result is T-Bridge, a unified and consistent user interface with a flexible layout and configuration, geared to making the decision making process on the bridge more efficient and safe.

The Augmented Reality technology within the T-Bridge provides an enhanced awareness experience; sensor input from the forward looking sonar, chart data as well as position and routing data are integrated with live video of the vessel surroundings. As the navigator views the actual surroundings, combined with all relevant information on one display, the decision making process is designed to be shortened and more efficient, and ultimately safer. In tandem Transas developed an iPad application which is directly linked to the navigation system, allowing for access to the highly accurate navigational information related to the vessel, including, for example, position data, AIS targets, speed, course, water depth and a host of other navigational data.

Photo: Transas

Simulation Systems

In the simulation market, Transas strives to bring as much reality to the overall simulation and training process as possible. "With each day that passes, we learn more about the power of simulation technology," said George Toma, President and General Manager of Transas Americas Inc. "We are making significant strides in the areas of visualization and modeling development that go far beyond the use of standard and typical 'texturing' and 'mathematical' tools. Our developmental approach is to provide our simulation customers, from training institutions to research and development laboratories, with finished products and application tools, that ultimately allow them to bring as much reality to any scenario. This allows them to create their own unique approach to training or studying, and to better understand any situation that may arise at sea, or alongside." One of the latest Transas simulation developments is a cloud based application that will deliver simulation solutions as a service (SaaS) via the Internet, to users who can be potentially equipped with a variety of internet ready devices, using standard browsers, without the need for specific Transas software to be loaded on the client device.

Transas Cloud Simulation is designed to be efficient and flexible, as it is able to use the same interfaces and exercises (including e-Tutor integration) as their deployed simulators. Instructors can access the simulator from their personal devices and collaborate with others remotely.

MONA LISA 2.0

Ship owners and operators today – more so than any other period in the history of shipping – are pressed to run cleaner and more efficient ships to survive. Simultaneously, they are faced with a growing mountain of information; data traffic to send, receive, sort and analyze. Total cost of ownership is at the forefront of every ship owner's mind, from the efficiencies built into route planning, to vessel hull and engine room optimization. To that end Transas reverts to its root mandate of using computing power to make ship operations safer and more efficient, and in kind supports projects such as Mona Lisa and the maritime highway. MONA LISA 2.0 is the EU sponsored project with a vision to shake and sharpen the whole transport chain by making real-time information available to all interested and authorized partners for improved safety and efficiency. It is called Sea Traffic Management (STM) and it will change the maritime world. Recently for the first time ever, different brands of simulators, one in Spain and the other in Sweden, were interconnected. The technical solution was developed as part of the MONA LISA 2.0 project and a precursor to The European Maritime Simulator Network (EMSN) launched on November 5 in Barcelona at the project's Mid-term Conference, when many more simulator centers were added to the network and demonstrated. EMSN was conceived in order to test the Sea Traffic Management (STM) concept and solutions under development within the MONA LISA 2.0 project.

"Transas primary strength is our ability to remain creative as a developer, but at the same time, remain flexible enough to suit the needs of our customers, our partners," said Toma. "We do this through regular customer feedback, workshops, and user conferences. In this respect, our customers help us to develop the products they plan to use."

MARITIME REPORTER AND ENGINEERING NEWS

2015 EDITORIAL CALENDAR

ISSUE	EDITORIAL	BONUS DISTRIBUTION
JANUARY **Ad Close:** Dec 19	**Ship Repair & Conversion Edition** **Market:** Maritime Propulsion: Gears, Thrusters, Waterjets & Propellers **Technical:** Marine Salvage & Recovery **Product:** Marine Electronics Equipment & Supplier Guide **Country Report:** France & Poland	**PVA MariTrends 2015** January 31 - February 3 Long Beach, CA **EuroMaritime** February 3 - 5 Paris , France
FEBRUARY **Ad Close:** Jan 21	**Cruise Shipping Edition** **Market:** Ships of War: Evolution and Future of U.S. Navy Technology **Technical:** Marine Telematics: Data, Tracking and Communications **Product:** Marine Coatings & Corrosion Control **Country Report:** Denmark, Finland & Sweden	**Cruise Shipping Miami** - Mar 16-19, Miami, FL **ASNE DAY** - March 4 - 5, Crystal City, VA **NACE Corrosion** - March 15 - 19, Dallas, TX **Arctic Technology Conference** - March 23-25 Copenhagen, Denmark
MARCH **Ad Close:** Feb 20	**U.S. Coast Guard Annual** **Market:** Training & Education: From Simulation to Distance Learning **Technical:** Oil Spill Response & Recovery **Product:** Marine Propulsion: Green Marine Fuels & lubricants and Emission Technologies **Country Report:** Greece & Turkey	**CMA Shipping 2014** March 23-25, Stamford, CT **Sea-Air-Space** April 13-15, National Harbor, MD
APRIL **Ad Close:** Mar 20	**Offshore Edition** **Market:** Modern OSV Design & Technology **Technical:** Workboat Fleet Maintenance & Repair **Product:** Deck Machinery, Winches and Ropes **Country Report:** The German Maritime Cluster	**Offshore Technology Conference (OTC)** May 4-7, Houston, TX **Workboat Maintenance & Repair** April 14 - 16, New Orleans, LA **Marine Money Houston** Houston, TX
MAY **Ad Close:** Apr 21	**The Marine Propulsion Edition** **Market:** RIB & Patrol Boat Report **Technical:** Workboat Design & Construction **Product:** Satellite Communication Technologies **Country Report:** The Norwegian Maritime Cluster	**Norshipping** - June 2 - 5, Oslo, Norway **Inland Marine Expo** - June 15 - 17, St. Louis, MO **MACC 2015** - May/June, USA **Seawork** - June 16-18, Southampton, UK
JUNE **Ad Close:** May 22	**Annual World Yearbook** **Market:** Maritime Simulation & Training Centers **Technical:** Dredging: Deepening the Channels of Trade **Product:** Pumps, Valves, Pipes & Insulation **Country Report:** U.K. & Ireland	**Marine Money Week** June 16-18, New York, NY
JULY **Ad Close:** Jun 21	**Marine Communications Edition** **Market:** Classification & Ship Registry **Technical:** ECDIS System Review & Report **Product:** Maritime Tools: Welding & Cutting **Country Report:** Italy	
AUGUST **Ad Close:** Jul 21	**Shipyard Edition** **Market:** Offshore Deepwater: Structures and Systems **Technical:** Heavy Lifting Solutions: Maritime Cranes **Product:** Ballast Water Technology **Country Report:** Russia, Lithuania, Latvia & Estonia	**Offshore Europe** September 8 -11, Aberdeen, UK **NEVA** September 22 - 25, St. Petersburg, Russia
SEPTEMBER **Ad Close:** Aug 21	**Offshore Energy Technologies** **Market:** Maritime Security Technology & Technique **Technical:** Maritime Propulsion: Efficient Drivers **Product:** Clean Water Technologies **Country Report:** Spain, Portugal & Brazil	**OTC Brazil** October 26 -29, Rio de Janeiro **GasTech** October 27 - 30, Singapore
OCTOBER **Ad Close:** Sep 21	**Marine Design Annual** **Market:** Ship Classification Societies **Technical:** Marine Firefighting, Safety & Salvage **Product:** CAD/CAM **Country Report:** The Netherlands & Belgium	**SNAME** November 4-6, Providence, RI **Europort** November 3-6, Rotterdam, Holland **Clean Gulf** November 10-12, New Orleans, LA
NOVEMBER **Ad Close:** Oct 20	**Workboat Edition** **Market:** LNG Handling and Transportation **Technical:** Deck Machinery, Winches & Ropes **Product:** Fuels, Lubricants & Additives **Special Report:** Gulf of Mexico Builder & Supplier Guide	**International Workboat Show** December 2-4, New Orleans, LA **Marintec China** December 1-4 Shanghai, China
DECEMBER **Ad Close:** Nov 20	**Great Ships of 2015** **Market:** The Automated Ship: Command & Control **Technical:** Shipyard Automation **Product:** Marine Engine Guide **Special Report:** Korea/Singapore/Vietnam	**Surface Navy Association 2016** January, Crystal City, VA

(Image: Volvo Penta)

Volvo Penta Debuts New Marine Engines

Volvo Penta introduced the first two models of its next-generation sterndrive marine gasoline engines. The new 4.3-liter catalyzed V6 engines, rated at 200 and 240 hp, will supplement Volvo Penta's current V6 product line. Volvo Penta will roll out the complete new family of next-generation V6 and V8 gasoline sterndrive engines during 2015 and 2016, expanding on the V8-380 introduced by Volvo Penta in 2012.

"These next-generation gasoline engines are true thoroughbreds incorporating innovations that yield dramatic improvements in torque, acceleration, fuel efficiency, emissions and durability at a competitive cost," said Ron Huibers, president of Volvo Penta of the Americas.

Current and new engines are available with DPS, OceanX and SX drives as well as Electronic Vessel Control (EVC) options. The engines also come with constant RPM in turns as a standard feature.

wwwvolvopenta.com

VapCor Inc.

VapCor Inc. distributor of unique products for the marine industry introduced the Lindemann Marine Products. Lindemann provides over 30 years of experience in research and development of quality stop leak, repair and preventive maintenance products. Designed for use in the marine, offshore, cruise and shipping industries in stern tubes, bow thrusters, CPP's, Azipod's, engines and general hydraulics.

www.vapcor.com

New YANMAR Engine

YANMAR America introduced its new EPA Tier III compliant commercial marine diesel engine. Rated at 755 mHP and 1,900 rpm, the new 20.38-liter 6AYAM-ET uses a full mechanical control system. The class-approved four-cycle, in-line six-cylinder 6AYAM-ET offers low fuel consumption and a continuous rating suitable for river push boats, tugboats, trawlers and other applications with uninterrupted operations or load cycles.

www.us.yanma.com

(Image: Yanmar)

New Victaulic Gasket

Victaulic developed a new nitrile gasket for the maritime industry: the Grade T "Type A" gasket, designed for use with specific Victaulic couplings and flange adapters, and designed to simplify gasket specification and offers superior fire-resistant performance. The nitrile Grade T Type A gasket can be specified for a wide range of services, eliminating the need to use multiple types of gaskets for different applications and simplifying gasket selection. The gaskets may be used in Class I, II and III piping systems outside boiler rooms in accordance with Table 7 IACS UR P2. The gasket is DNV GL Type Approved as fire-resistant type when used with Style 07 ZeroFlex rigid couplings, Styles 75 and 77 flexible couplings and Style 741 VicFlange adapters.

www.victaulic.com/shipbuilding

Clean Seal Molded Specialties

Clean Seal, Inc. launched a new division, Clean Seal Molded Specialties, a division consisting of stock and custom designed molded rubber products. Clean Seal's molded rubber products are designed for a broad range of industries and products, leveraging the company's 35+ years of experience serving OEM's. Clean Seals' product line includes rubber grommets, dock bumpers, suction cups, crutch tips, trailer ramp door bumpers, extruded shapes, bushings, o-rings and more.

www.cleanseal.com

Dometic Debuts New Product Line

Dometic Marine, a division of Dometic Group, launched a range of new equipment at the Workboat Show. Among the new products on display were the Dometic Cup Cooler, the marine industry's first thermoelectric cup holder; the Smart Touch Integrated Intelligence Control (STIIC) software for remote monitoring; and the Dometic Sea Xchange line of watermakers.

STIIC Home Screen On Smart Phone

Container for LNG Hybrid Barge

In 2015 the HUMMEL (bumblebee) LNG Hybrid Barge will enable Becker Marine Systems to supply low-emission power to cruise ships lying at port in Hamburg. The first container with LNG fuel has arrived in the Hanseatic City. The barge works like a floating power plant and uses LNG to supply environmentally-friendly energy to cruise ships. Compared to conventional marine diesel with 0.1% sulfur content, sulfur dioxides and soot are no longer emitted. The LNG Hybrid Barge, developed by Becker Marine Systems and recently christened the HUMMEL (bumblebee).

Ship Intelligence for PSVs: Rolls-Royce created this concept under FIMECC (Finnish Metals and Engineering Competence Cluster) user experience and usability program, UXUS. This future bridge operation experience concept (oX) for platform support vessels is envisioned together with VTT Technical Research Center of Finland in 2012-2014.

(Image: Rolls-Royce)

oX Bridge Concept

Rolls-Royce, VTT team on new Ship Intelligence Vison

For decades the maritime industry has long-theorized of emulating the "airline model" in uniformity and technical capability of its own ship and boat integrated bridge platform. But the term "integrated bridge" itself is somewhat of a question, as there are as many definitions as there are current 'solutions.'

Enter Rolls-Royce and the VTT Technical Research Center of Finland which together have launched a ship intelligence system that it believes could be the next major transition for the shipping, able to gather, process and reasonably present increasing amounts of complex and high-level data from onboard systems to manage propulsion, navigation and potentially lead .to autonomous vessels.

The latest vision of Ship Intelligence – a futuristic ship's bridge concept – could become reality by 2025.

Rolls-Royce worked with VTT's researchers and Aalto University to develop the new bridge, known as the Future Operator Experience Concept or 'oX' for short. It offers the crew smart workstations that automatically recognize individuals when they walk into the bridge, and adjust to their own preferences.

The windows of the bridge serve as augmented reality displays of the vessel's surroundings, including visualization of potential hazards that would otherwise be invisible to the human eye. The system can, for example, pinpoint sea ice or tug boats and other craft that may not be visible to the crew, especially given limited sight lines on the world's largest containerships, for example.

"We are entering a truly exciting period in the history of shipping, where technology, and in particular the smart use of Big Data is going to drive the next generation of ships," said Mikael Makinen, President of Rolls-Royce – Marine. "Over the next 10 to 20 years we believe ship intelligence is going to be the driving force that will determine the future of our industry, the type of ships at sea, and the competence levels required from tomorrow's seafarers."

"With the demands of environmental legislation and rising operating costs, ships are going to become more complex. Add to that the fact that skilled crews are already in short supply, then we see a distinct gap opening up between the complexity of ships and the competency of the people who will crew them. That will cause real problems for the industry, and we believe it is ship intelligence, that will fill that gap."

The oX concept, has been developed by studying user experience on ships today, and will transform the operating environment for crews on board large cargo ships and platform supply vessels. Using advanced 3D animation to illustrate just what could be achieved in the next decade, the new concept will use the latest digital techniques to create a safer and more energy efficient ship operations.

Rolls-Royce's Unified Bridge system recently entered service on the vessel Stril Luna, representing a new ergonomic approach to all the activity required on the bridge of a ship, coordinating the operation of on-board equipment ranging from engines to propulsion and cargo handling.

The remote monitoring of equipment on board ships is also advancing, and Rolls-Royce has control centers in Alesund, Norway, and Rauma, Finland, where many ships and thrusters are already monitored in real-time in operation around the world.

"Many of the technology building blocks that will control the ships of the future are already available today, but there is still work to be done to develop marine solutions from them," said Oskar Levander, Rolls-Royce, Vice President – Innovation – Marine. "We are investing in ship intelligence, which will be a major driver of the next transition era of shipping."

Image courtesy of Wärtsilä

Wärtsilä to Power LNG-fueled RoPax Ferry

A ferry being built for Sweden's Rederi AB Gotland will be fueled by LNG, featuring a Wärtsilä integrated solution which includes a complete LNG powered propulsion- and fuel storage and supply system, as well as comprehensive project services. It will be the first Swedish flagged LNG powered passenger vessel and the first LNG-fuelled high speed RoPax ferry in the world. The vessel will be built at the Guangzhou Shipyard International (GSI) yard in China and when delivered, will sail between the Swedish mainland and the island of Gotland. GSI placed the contract with Wärtsilä in November. In addition to the complete LNG-powered propulsion and fuel and storage system, the Wärtsilä integrated solution will include services relating to project management, integration engineering, on-site support and overall commissioning responsibility. Wärtsilä's scope of responsibility includes four Wärtsilä 50DF dual-fuel engines, two gearboxes, two controllable pitch propellers (CPPs) with remote control system, two Energopac rudders, two tunnel thrusters, four Wärtsilä 20DF dual-fuel auxiliary generating sets, two Wärtsilä LNGPac fuel gas handling systems, gas valve units, a compact silencer system (CSS), an IMO approved Wärtsilä Aquarius UV ballast water management system, an Oily Water Separator together with a Bilge Water Guard to monitor and prevent oily water being discharged to the sea, project management services, integration engineering services, commissioning services and on-site supervision during installation.

www.wartsila.com

Kidde Fire Systems: Multi-Language ARIES NETLink

Kidde Fire Systems offers a multi-language version of the ARIES NETLink Multi-Loop Intelligent Fire Alarm-Suppression Control Unit, which supports French, Spanish and Portuguese, in addition to English. Designed for a broader, non-English speaking audience and for use where UL/FM-listed products are accepted, the new ARIES NetLink enables Kidde channel partners to interact with and configure the control unit in the language of their region. This new functionality will help ensure event notifications are displayed with full clarity and no ambiguity or loss of understanding due to translation, which is of critical importance in emergencies. Users select their desired language on the user interface, a four-line by 40-character LCD display, and then the control unit's user interface menus, system status and summary displays (alarm, trouble and supervisory indications) will be displayed in the selected language. Overlay labels are used to superimpose French, Portuguese or Spanish characters on English text printed on areas of the user interface outside the LCD display. The technical documentation is also available in the three additional languages. The latest ARIES NETLink Multi-Loop Intelligent Fire Alarm-Suppression Control Unit also complies with the new Canadian code ULC S527-11, 3rd Edition, which takes effect June 17, 2015. The system meets the Display and Control Center requirements in the standard for networked applications, and provides the programming flexibility, new abort station and Release Service Signal Silence Station needed to meet the standard for all applications. Additional features, such as the ability to enable or disable point supervisory reporting for the Digital Alarm Communicator Transmitter (DACT), and the ability to access technical manuals using the configuration tool program, are also provided in this release.

www.kidde-fenwal.com

BCG Delivers Upgrades

Buffalo Computer Graphics delivered upgrades to Columbia Pacific Maritime in Portland and The River School in Memphis,. The River School ordered additional laptop computers preloaded with BCG's simulation software to assist with training courses. The laptop will be used in conjunction with BCG's PCS-250 Portable Radar Simulator and four Furuno Radars for portable radar training.

www.bcgeng.com

Image: BCG

Photo: K Line

K Line Expands Software Use

Three additional K Line vessels will install ClassNK-NAPA GREEN eco-efficiency software after reporting fuel savings during trials on an 8,600 TEU container vessel. NAPA and ClassNK announced a deal with Kawasaki Kisen Kaisha Ltd. (K Line) to install the ClassNK-NAPA GREEN solution on three additional vessels. The self-learning component of ClassNK-NAPA GREEN, the dynamic performance model was also found to be accurate during the same trial.

www.napa.fi

RescueME MOB1

Ocean Signal introduced a new AIS MOB device with integrated DSC: the rescueME MOB1, designed to attach to compact life jackets, ready for automatic activation in the event of a man overboard situation. The MOB1 device provides two methods of communicating the location of a person in the water back to the boat and other vessels in the vicinity. Once the rescueME MOB1 is activated, AIS transmissions will provide accurate position information on the vessel's chart plotter.

oceansignal.com

ASA Electronics

The MS30BT (pictured) is a self-contained AM/FM/Bluetooth enabled compact 3.5-in. round waterproof stereo with UV resistant finishes and corrosion resistant materials to guarantee it withstands the aquatic environment. It features conformal-coated circuit boards along with being able to fit a 3-in. gauge hole. The 160-watt unit is perfect for boaters looking for a space saving, high performance system built specifically for the marine environment. It features Bluetooth enabled capabilities along with a USB input for MP3 devices to give users a wider array of music options while on the water.

www.asaelectronics.com

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Moose Boats, 274 Sears Point Road Port Sonoma Marina, Petaluma, CA , USA , tel:(707) 778-9828, fax:(707) 778-9827, abbie@mooseboats.com contact: Abbie Walther, www.mooseboats.com

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Tri-State Coating and Machine Co. Inc., 5610 McComas Road, PO Box 296, Salt Rock, WV V4W 3S8, USA , tel:1-800-477-4460, fax:304-736-7773, brichmond@tscminc.com contact: Beverly Richmond, www.tscminc.com

COMMUNICATIONS

David Clark Company (Wireless Headset Communication Systems), 360 Franklin Street, Worcester, MA 77060, USA , tel:(800) 298-6235 , www.davidclarkcompany.com/marine

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NAVAL ARCHITECTS, MARINE ENGINEERS

Aveva Solutions Ltd, High Cross, Madingley Rd, Cambridge CB3 0HB, UK , tel:Tel +44 1223 556655 , www.aveva.com

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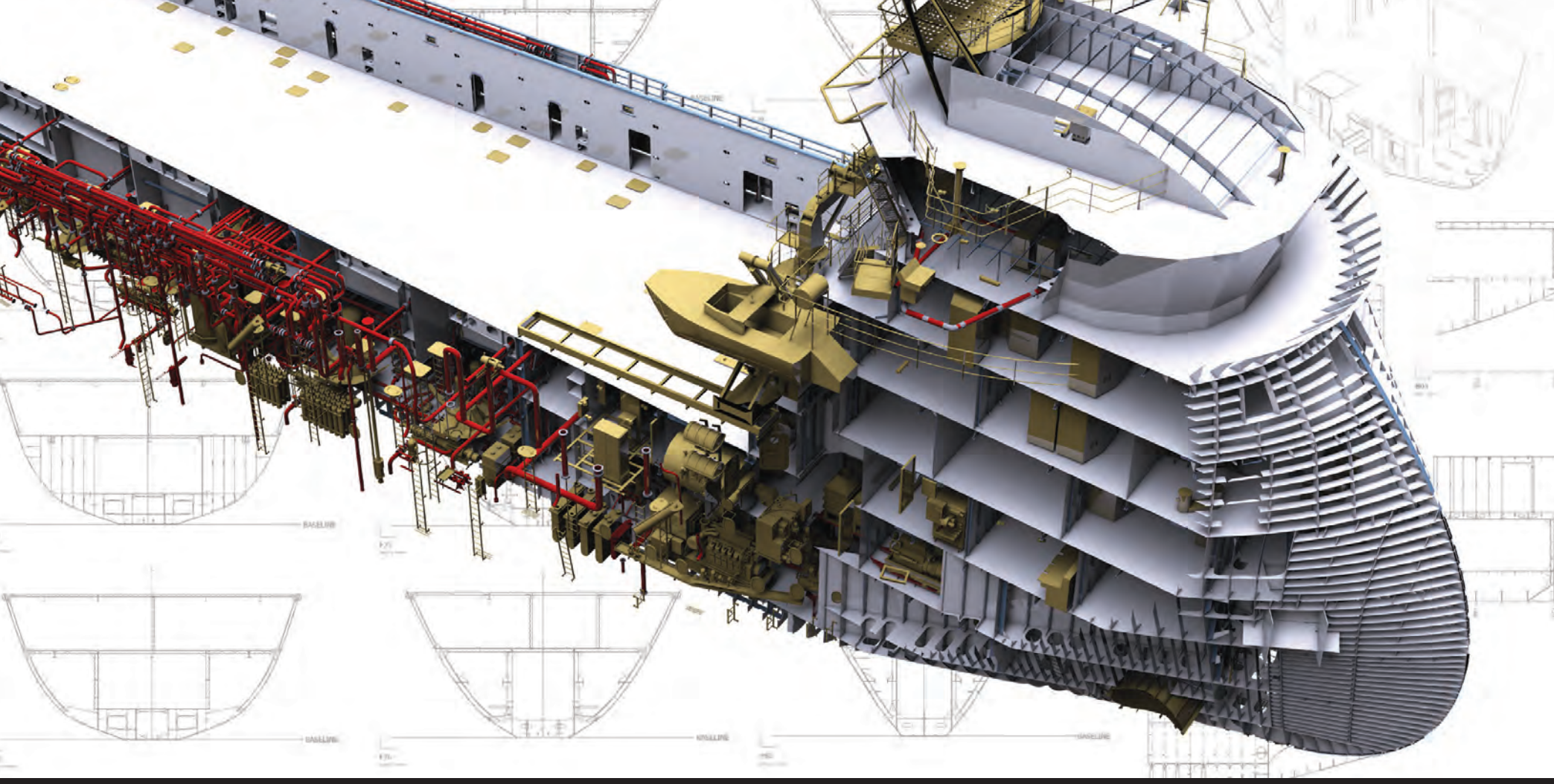

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• Create de-featured 3D models for FEA	• Expand shell plates including forming templates	• Generate 3D assembly drawings
• Generate 2D classification and general arrangement drawings from the 3D model	• Common environment for all disciplines	• Generate profile plots/sketches
• Automatically update drawings as changes happen	• Add intelligent penetrations through structure	• Generate 2D workshop drawings
• Allocate space for major systems	• Visually define the build sequence and other part breakdowns	• Generate system arrangement drawings
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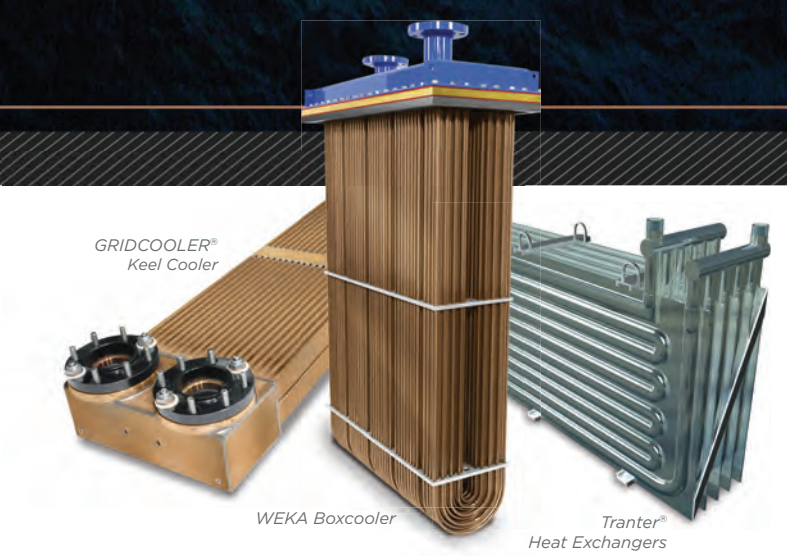

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