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July 2015

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Big Data

Interview
Björn Rosengren,
President & CEO, Wärtsilä

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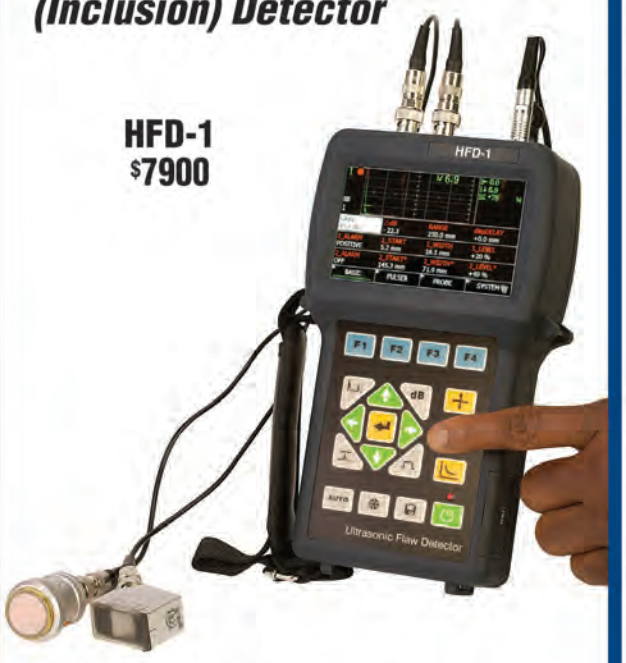

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(Photo: Rolls-Royce/Finnish VTT)

Graham Morrison

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... *Big data* *in the driver's seat* ...

GREG TRAUTHWEIN, EDITOR & ASSOCIATE PUBLISHER

It would be foolhardy to call the advent of "Big Data" new. After all, the move toward closer connection between ship and shore has been alive and well for all of my 22 years in this seat. But following in step (or more accurately, a few dozen steps behind) with shore side communication capability, advances in the speed, availability and reliability of communication channels to vessels at sea – in tandem with a leveling of pricing – is starting to have a mega impact on the design and operation of ships at sea. "Big Data" impacts will be felt all around, from remote control and diagnostics, to analytics and efficiency in port operations, and on to what many consider the holy grail – unmanned ships.

"Big Data" and all that it entails was the topic du jour at the recent NorShipping Exhibition in Oslo, as major players from the supply and consumption sides of the equation weighed in regarding the immediate and long-term impact on the marine industry. Remi Ericksen, DNV GL's new boss come August 1, 2015, when Henrik O. Madsen steps down, said that while overall he foresees a period of slower growth in maritime, he believes that the future of the industry lies squarely within "digitalization, connectivity and the internet of things." (See story page 10).

While not a direct correlation, the evolving role of information had a big hand in the design and development of the new Wärtsilä 31 engine, which was conferred the lofty status of the "Most Efficient 4-Stroke Diesel Engine in the World" by Guinness World Records, a status confirmed with the engine's sipping fuel at a rate as low as 165 g/kWh. Björn Rosengren, President & CEO of Wärtsilä Corporation, discusses how "the whole development process for this engine was different than any that we have done before" in a story starting on page 22.

Our Oslo-based editor William Stoichevski attacks the "Big Data" angle through the eyes of the companies that provide the service, starting on page 26.

Finally, we conclude our Maritime Communication "Big Data" splurge with a story on Navico, and specifically how the marine electronics group is "Building Out on Big Data," aiming for a top three position in the world in the commercial maritime sector in the coming three to five years. Our story with Navico MD Jose Herrero starts on page 30.

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Foreign Aid Done Right

Joseph Keefe is the lead commentator of MaritimeProfessional.com.

Recently the U.S. Trade and Development Agency (USTDA) awarded a grant to the Panama Canal Authority (ACP) to support the planning of a liquefied natural gas (LNG) import terminal. According to both ACP and USTDA, when the Panama Canal expansion project is completed next year, the Canal is expected to handle significant LNG tanker traffic. Naturally, ACP is interested in developing LNG-related infrastructure projects to support that possibility, including an import terminal.

I viewed the news of this "grant" partnership (initially) with some suspicion and wondered why the United States government would spend money – $878,000 in this case – in a foreign country that is perfectly well supported to do something of this magnitude on its own. After all, we've got a nascent LNG economy on our side of the pond that could probably use a kick in the pants, as well. It turns out that there are very good reasons for the partnership and that, for once, the funds come with requirements that benefit all parties – especially U.S. maritime and energy interests. To be sure, it hasn't always been that way. Let me explain:

Foreign Aid 101:

In the Fall of 1993, my wife and I traveled to Africa for vacation, one which came complete with a canoe safari down the Zambezi River and a much rougher walking adventure in the back country of Zambia. The three-week trip included a brief stop in South Africa and longer visits to Botswana, Zimbabwe and Zambia. Midway through the trip, we stopped in Victoria Falls, where we spent the night and awaited transport to Lusaka, Zambia. Victoria Falls is simply spectacular. I'm also sad to report that it is the mother-of-all-tourist-traps. In 1993, flights in and out came at roughly two day intervals to key destinations and we were told that the local economy demanded it. And, having been warned by our travel agent, we had no intention of spending any more time there than was humanly necessary. Our leisurely peek at the Falls completed, we hustled back to our hotel to await auto transport out on the next day.

It's about 300 miles to Lusaka from Victoria Falls; that is, once you escape the throngs of humanity assaulting you at the border checkpoint. Safely in the car, departure graft paid, finally, we set off in our modest little van with our driver. The road soon turned to gravel, then dirt and then; a full scale construction project. Something the current U.S. Administration would probably deem "shovel ready."

This did not prevent our driver from revving it up to 105 KPH at odd intervals. The pounding and the dust were relentless. You had to choose between the oppressive heat, and an open window that came with a good meal of African dust. The entire trip took more than 10 hours, complete with a black market exchange of currency along the way (so that we could purchase warm soft drinks) and of course, there was the collision with the chicken who, sadly, "crossed the road" to get to the other side, at precisely the wrong moment.

Intended to be a dual carriage, divided super highway, the project was mired in red tape, bad planning and just about every crooked thing that can and does happen on the dark Continent. Mercifully and finally just outside of Lusaka, on the escarpment to the right of the vehicle, it all finally came into clear focus. The billboard proclaimed proudly, "This road has been paid for, and is made possible through the benevolence of the people of the United States of America." I couldn't possibly make this up. And, upon reading the text for the third time, I was steaming.

The Lodge in Lusaka was heaven. Once checked in, I spent a good half hour rinsing off all the dust with gobs of hot water and then wandered down to the bar to wash the dust out of something else. The host greeted me warmly, poured me a cold one, and made the mistake of asking me how our trip had gone.

I immediately gave him my unvarnished opinion. He just shook his head and replied, "You Americans just don't know how to do 'foreign aid,' do you?" I stewed, but for once in my life, said nothing. He then brought out some appetizers and proceeded to tell me why. It was a long story – we poured another glass of wine.

The U.S. funding for the project, he said, ran into the tens of millions of dollars. It was, after all, a four lane highway stretching more than 300 miles across the African plain. And, the money came with no strings attached. The Zambians then promptly awarded the construction contract to others, and after hemming and hawing for a bit, they began playing in the dirt. I honestly don't know how long they had been at it before we got there or if it has ever been finished, but it was, without a doubt, the definition of the proverbial train wreck. The locals even had a slang word for the contractor which became common lexicon (read: profanity) in the region, closely approximating anything which wasn't quite right. Circling back to the U.S. Embassy, they apparently got tired of not getting credit for having sponsored the project. Hence; the billboard. I told my wife later, "I think I would've just kept quiet about it."

It didn't have to be that way, our host explained further. Another project, this one sponsored by the Japanese government, had been an overwhelming success. It involved drilling wells for the small hamlets that dotted the countryside in this sometimes water-parched country.

The Japanese arrived in country with a full complement of their people, some very expensive mobile drilling equipment, and simply set to work. And in no time at all, traveling town to town, they had drilled myriad wells and literally changed the lives of thousands of people. No longer did local residents have to walk twenty miles to find water, or worse, wait for the truck to arrive for a handout. But, no good deed goes unpunished. Local Chieftains wanted a piece of the action and besides, the well folks were making them look bad. They demanded a fee from the well drillers. The Japanese government got wind of it and said "no." The local leaders in turn barred them from going any further with the good will. The Japanese then simply smiled, donated the equipment (no small loss), got on the next plane and went home. The local Chieftains? They had broken the drill within two weeks. It never worked again. All of which brings us back full circle to our LNG grant down in Panama.

Fast Forward: Getting it Right

I spoke with USTDA's Keith Eischeid and his Director of Congressional and Public Affairs, Thomas Hardy. They explained the 'ins' and 'outs' of the grant, why it was a good thing, and beyond that, the protections built into the system to ensure that the money does the maximum amount of good, to the ultimate benefit of the U.S. taxpayer.

In a nutshell, the USTDA-funded feasibility study will help the ACP set strategic priorities and plan projects related to LNG infrastructure and natural gas utilization at the Panama Canal. The LNG terminal is anticipated to support the implementation of maritime- and energy-related projects that will accommodate increased shipping traffic through the expanded Canal. At some point, that's expected to include LNG emanating from myriad U.S. ports. And, here's the good part: the money has to be spent on a U.S.-based company – who will win the bid through a competitive process.

The opportunity to conduct the USTDA-funded feasibility study will be competed through Federal Business Opportunities (FBO). A link to the FBO announcement will be posted to USTDA's website at www.ustda.gov. Interested U.S. firms can submit proposals according the instructions in the FBO announcement.

The U.S. Trade and Development Agency helps companies create U.S. jobs through the export of U.S. goods and services for priority development projects in emerging economies. USTDA links U.S. businesses to export opportunities by funding project planning activities, pilot projects, and reverse trade missions while creating sustainable infrastructure and economic growth in partner countries. And, this project – unlike (for example) the wholesale export of U.S. dollars to build a road somewhere else with no guarantee of any of the money benefiting the U.S. economy – makes perfect sense. Bravo Zulu.

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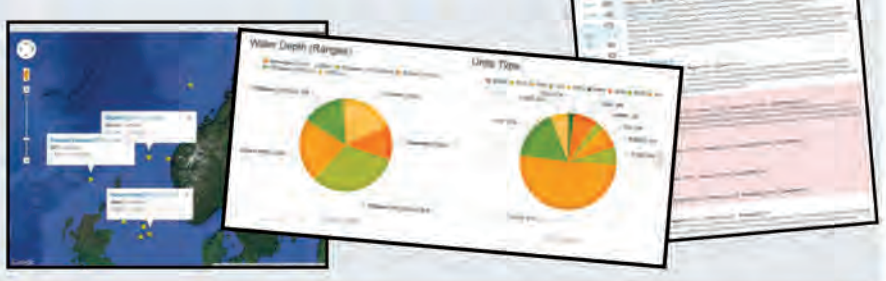

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DNV GL: 'Big Data' Evolving Fast; LNG Slower than Expected

By Henrik Segercrantz

In connection with the Nor-Shipping Conference and Exhibition held last month in Oslo, Remi Eriksen, the newly appointed Group President & CEO of DNV GL, took the opportunity to present himself to the international maritime media. Eriksen will take over on August 1, 2015, from retiring Henrik O. Madsen.

Eriksen has a solid 22 years track-record in leading positions within the group, gaining extensive international experience in the oil & gas, maritime, and renewable energy industries, and has led the operations in Asia, Europe and the Americas, based in Oslo, Houston and Singapore. In 2012 he became CEO of Maritime Oil & Gas. In his current role as DNV GL Group Chief Operating Officer he has lead the post-merger integration work and to create modern state-of-the-art risk-based rule sets combining the rule sets of GL and DNV.

"This is a key market deliverable which will become available during the year, and to come into force early next year." Eriksen believes the future will be characterized by a complex and fast changing world. "We will see lower growth compared to what we have seen in the past four years. But I think the world economy is still on track to more than double in size over the next forty years. I also see a future in which digitalization, connectivity and internet of things," he said. "We will see an update of more low carbon fuels in combination with battery hybrid technologies, which will offer reduced emissions, reduced operating costs and of course enhanced functionality. With the exception of a few segments like the tanker segment, some niche segments like cruise, partly the container segment and the mid-size LPG segment, we will probably see 2017 before we will see an upswing in newbuilding ordering again, but it will not be to the levels, we think, that we have seen during the past 10 years. Regarding the low oil prices, he noted that "for many parties within the oil and gas industry it will become worse before things are getting better and we think it will be later part of 2016 before things are trending in the right direction again. And when it comes to rigs, well, I think it will take even longer time, probably until 2018 at the earliest." He has set his main priorities as CEO to promote a continued commitment to quality and maritime safety, continued investments in research, development and innovation, and a customer responsiveness and service level 'second to none'.

'Shipping 2020' Report Update

Tor E. Svensen, CEO DNV GL Maritime, gave an update on DNV GL's view on maritime developments, comparing with the predictions made in the 'Shipping 2020' report, published in 2012. "There are some trends that are coming stronger than we had expected when we did the work in 2012. In particular there is the whole issue on connectivity, big data. That is evolving much quicker than we thought three years ago. The other area is hybrid designs, the combined conventional engine technology and batteries, and the potential to run ships more efficiently and more economically. This has happened much faster and is really a direction of the future. He noted that pure electric ships seems not to catch the mass market in the same rate as hybrid solutions. "We believe that the battery technology will develop even more. During the last four five years the price has come down by 60-70%. Within the next four, five years it will probably half again. The energy density will increase maybe by 50%-100% over the next five, ten years. He admits that the development in the LNG development has been slower than they predicted. "We made a prediction of 1,000 ships by 2020. It will probably be more like 500-600." Regarding scrubbers, they had predicted that scrubbers will come after 2020 with the global cap on sulfur emissions. "I think we have seen that the scrubber technology development is happening faster. There are a lot of projects, retrofits and newbuilding installations at the moment. "Costs are coming down for high-speed ship to shore data communication, and this type of communication is today taken for granted. This has given the opportunity to combine different types of data, and to start optimizing the ship and voyage in a quite sophisticated way." He noted that this will offer the opportunity for malicious attacks, and attempts to actually control or damage ships or property. The area of cyber security will see a lot more attention in the years to come, addressed in the rules rules and procedures. There are work ongoing. He also told the maritime media that DNV GL does not anticipate the oil price to hit the $100-120/bbl within the year 2020 horizon.

Caterpillar Adds Azimuth Thrusters to Tug Package

At Norshipping in Oslo Caterpillar introduced a new range of azimuth thrusters featured in a newly integrated propulsion package from Caterpillar Propulsion targeting the tug market.

The 60 metric ton bollard pull Cat Propulsion Marine Thruster Azimuth (MTA) is the first model in whatis planned to be a new family of rotatable units optimized for tug operations, with an initial unit expected to be delivered into a commercial trial by the end of 2015.

The new MTA range was designed to optimize performance when working as part of an integrated propulsion train and will be made available through the Cat dealer network. The complete package for tugs will include engines, high speed shafting, controls and clutches. The MTA's consoles will display and control engine and thruster functionality

"The harbor tug sector is intensely competitive, but it is also a market that will benefit in terms of bollard pull and reliability from a consolidated control-engine-thruster package where component parts are optimized to work together," said Jim Johnson Caterpillar Propulsion general manager.

"With its 60 [metric ton] bollard pull capability, our first MTA is aimed at the volume end of the tug market, reflecting the strong share achieved by Cat marine engines in this segment," Johnson said. "Ultimately, up to six different MTA sizes will be available to cover a wide range of tugs, all of which will be supported by the Cat dealer network worldwide."

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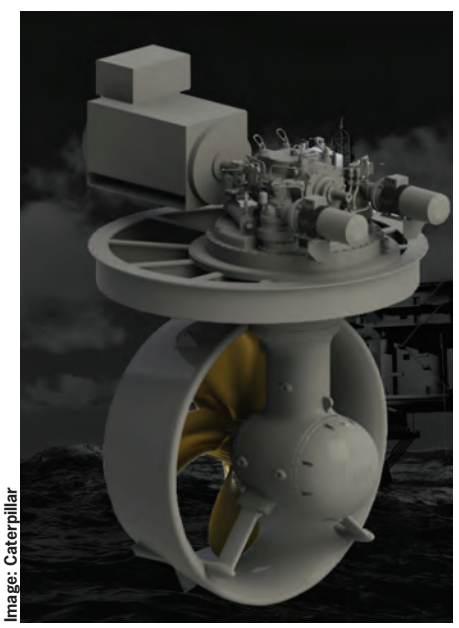


Image: Caterpillar

Fuel Efficiency: The Way Forward

NorShipping debate centers on the matter of ship fuel efficiency

By Henrik Segercrantz

The Immediasea Shipping Debate Forum 'Fuel Efficiency - The Way Forward' was held in connection with the NorShipping event in Oslo, Norway, in June. Leading the panel was Mark Fuhrmann from Blue-C who invited leading maritime executives to share their views on the future of shipping fuel-efficiency. Below are select quotes.

Roger Strevens, Vice President, Global Head of Environment, Wallenius Wilhelmsen Logistics, with 65 car carrier RoRo ships operating worldwide:

"Our goal is clear, zero emissions. It will though take a while getting there." He reminded the audience that "by 2050 we have to cut off CO2 production completely," and pointed out that when it comes to relative CO2 consumption there is definitely nothing that beats shipping. "What is a little unsettling for us is that there is a debate underway at IMO around operational fuel efficiency, starting with measuring, reporting and verification of your greenhouse gases, specifically CO2." He said they were wondering what one actually is going to achieve with that. At the last MEPC meeting there was a lack of policy discussion around this. He also noted the enforcement of low sulfur regulations is starting from a very low point, particularly on the high seas. The industry is concerned, because due to these high potential cost savings there is a temptation for some not to comply.

Alexandre Eykerman, Director, Engines Sales, Wärtsilä Ship Power:

He pointed out the huge importance on total efficiency of optimizing operations, such as running the engines optimally, as well as ship design, by designing the ship for the speed it uses. "For an LNG carrier we talk about (a design speed of) 19.5 knots. But actually 70 percent of the time they run at 16 or 17 knots. Summarizing the situation with upcoming regulations he noted that to meet the requirement in 2016 and onwards in many areas, and you need to run on HFO you will have to use a SCR to remove the NOx and a scrubber to remove the sulfur. "Then you can go a little bit more expensive and burn light fuel. Then again you need after treatment with a SCR. Or you can go for gas, seen more and more in Europe, with U.S. coming on line." He though pointed out that after Tier III and Tier IV one would have to meet the regulations in both diesel mode and in gas mode. This is challenging. "Today we have delivered 1,300 dual-fuel engines, and soon we are going to reveal what fuel efficiency really means," he noted, referring to the 'world's most fuel efficient dual-fuel engine' Wärtsilä was to launch the following day, at NorShipping.

Stein Kjølberg, Global Director, Hull Performance Solutions, Jotun:

He talked about their Hull Performance Solutions, and on Jotun's performance guarantee cash-back arrangement for some anti-fouling paint, which have an average payback time of between 9 to 12 months. "Good hull paint is also vital as banks and charterers look at energy efficiency in their decision making." He noted one can isolate the effect on anti-fouling on hull and propeller performance. "Work on a standard methodology on hull performance monitoring is currently taking place, "to be out as an ISO standard (ISO 19030) most likely by June next year. This standard cannot be mandatory. It has to be voluntary. If you want to measure performance, this is how you do it."

Albrecht Grell, Director Maritime Advisory, DNV GL Maritime:

"What we see coming now, is a much stronger focus on managing operations. "Here we see huge potential still lying uncaptured. How can you put advanced analytics into this picture to really understand what the data tells you," he asked, and noted they believe in the management of benchmarks, both internally and with the world fleet. "This data gathering task is a multimillion dollar investment and expenditure. He believed most of this work had to be outsourced, and that third part players will have to consolidate in order to be able to sustain the investments required with this type of technology. In the discussion that followed Grell noted the biggest gains in efficiency will be achieved in improving the efficiency of the entire transport chain. "Twenty-two percent of the global bulk carrier fleet is sitting in anchorage waiting to get into port. That is hugely inefficient."

Shipping, Carbon War Room:

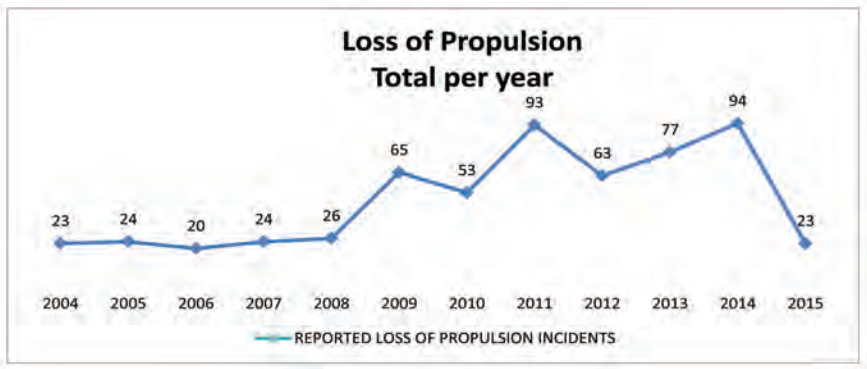
With a mission to focusing on accelerating the adoption of business solutions that reduce carbon emissions at gigaton-scale and advance the low-carbon economy, she talked about the three developments as future trends describing the focus on efficiency. Charterers had announced the week before that 20% of global shipped tonnage, represented by 25 companies, are preferring more efficient vessels, thus excluding inefficient vessels from their supply chain. A month ago two leading shipping banks (HSH Nordbank and KfW IPEX) said they use efficiency information in their investment decision making, using a tool worked on jointly with DNV GL. Carbon War Room works also with two Canadian ports which are offering discounts for more efficient vessels. Another current development is on retrofitting technologies for ships. An example is wind propulsion technology, where Norsepower's now have verified Flettner rotor data.

Fuel Switching

Preventing Loss of Propulsion After Fuel Switch to Low Sulfur Distillate Fuel

BY CAPT. JEFF COWAN

The International Convention for the Prevention of Pollution from Ships (MARPOL) ANNEX VI Regulation 14 requires ships with Marine Compression-Ignition Engines at or Above 30 Liters per Cylinder use fuel with sulfur content less than 0.1%, after 01 January 2015 within the Baltic Sea area – as defined in Annex I of MARPOL, North Sea area – as defined in Annex V of MARPOL; within 200 miles of the North American area and when operating in the United States Caribbean Sea area – as defined in Appendix VII of Annex VI of MARPOL. As background the California Air Resources Board (CARB) created regulations for vessel emissions reductions for California's ports as part of its continued mission to improve air quality around the state. The requirements came into effect in July 2009, under Title 13 California Code of Regulations (CCR), Section 2299.2, Fuel Sulfur and Other Operational Requirements for Ocean Going Vessels within California Waters and 24 Nautical Miles of the California Baseline. The regulations require vessels use distillate fuel, either marine gas oil with maximum 0.1% sulfur, or marine diesel oil with maximum 0.1% sulfur, in their main and auxiliary engines. These regulations are still in effect pending results from sunset review in April 2015. Following the implementation of the regulations, California continued to experience Loss of Propulsion (LOP) incidents within state waters at a much higher rate than was seen prior to July 2009. The LOPs can be loosely categorized into six groups for ease of discussion.



GROUP 1

Engine failures resulting in the LOP are due to the inability of the main engine, operating with MGO/MDO, to overcome the forces on the propeller from the forward momentum of the ship. The engine may turn over at higher RPM and initiate combustion; however, as the engine reduces speed to come to dead slow or slow astern there is not enough BTUs in the fuel to maintain engine inertia. The engine stalls with the subsequent loss of propulsion. Similarly, ships not getting engine starts while anchoring when an astern bell is given, typically initiates a "Failure to Start" scenario. The remedy due to the lack of BTUs is to adjust the fuel rack to allow more fuel into the cylinder. This procedure cannot be done from most ship bridges but only from the Engine Control Room or from the Engine Side (manual).

GROUP 2

Failures resulting in the LOP are due to problems with controlling the temperature of the MGO/MDO. Each engine has specifications as to the temperature range required to operate using either heavy fuels or lighter fuels. For example, the optimal temperature range for an engine might be 1350C for a heavy fuel oil (HFO) and 400C for the MGO. Because heavy fuels must be heated (for the right viscosity to burn) and lighter fuels may not need to be heated, there are problems associated during the fuel oil switch over in both heating and cooling the different fuel oil systems (since the fuel oil is supplied through the same auxiliary systems). Heating an MGO/MDO may cause "flashing" of the lighter fuel oil to vapor. The fuel injectors would not work when the fuel flashes causing a loss of power in that cylinder. Multiple cylinder flashes could result in LOP.

GROUP 3

Failures resulting in a LOP are associated with the loss of fuel oil pressure to either the fuel pumps or fuel injectors. The loss of pressure could be a result of many factors including wrong control set points, use of bypass valves, in-operable equipment, inattention to operating conditions, or excessive leakage through "O" rings and seals. The problem lies with physics. Metal expands when heated and contracts when cooled. Ships evolved to burn the heaviest and cheapest fuel available, HFO. To utilize the HFO on ships, the fuel is heated to as much as 1500C to get it to flow. In comparison, MGO/MDO fuel is burned at ambient engine room temperature or 400C and no heating is required. Once the cooler MGO is introduced into the fuel pumps and injectors, they contract causing a loss of fuel pressure at the pump with marginal spray pattern and leaks at the injector.

One of the other issues using MGO in an engine that has successfully run HFO for some time is viscosity. Typically the engine manufacturer's recommended minimum viscosity is 2 centistokes (cst). Fuel viscosity specifications at 400C temperature for MGO/MDO range from 1.5 cst to 6.5 cst. The MGO loaded in California has a viscosity of 2cst to 3cst at 400C. When the temperature of the MGO is increased into an already warm engine that just ran on HFO, the heat lowers the viscosity causing the fuel machinery parts to bind or break. Keep in mind that the cylinder temperature is usually maintained at 800C and this heat migrates into the fuel lines as well.

Unsurprisingly, the introduction of distillate fuel into the fuel system causes leaks, sometimes excessive leaks. With MGO/MDO there is a very real risk of external combustion or fire. Replacing "O" rings at the manufacturer's recommended intervals has proven not to be adequate. For example, in the case of injector "O" rings on a ship, the manufacturer suggested interval for replacing fuel injector "O" rings is 10,000 hours. The engineers on this ship found an interval of 2,000 hours was more appropriate to change injector "O" rings to prevent potential fire hazards. These fuel leaks tend to disappear when engines are switched back to the heavier fuel oil.

GROUP 4

Failures resulting in LOP are associated with the loss of fuel oil pressure or the loss of flow in sufficient quantities to maintain operation. Strainers and filters or the lack of a strainer and filter contribute to clogging or restrictions in the fuel oil supply system. The MGO/MDO acts as a solvent causing a de-coking effect, clogging fuel filters. This is due to burning a lower grade of HFO that has excessive amounts of asphaltenes. These asphaltenes adhere to the inside of the fuel lines and assorted other fuel components. When MGO is introduced the asphaltenes are released, collecting in the fuel filters/strainers.

In recent years due increased demand for Marine Gas Oil(MGO), refiners have

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been squeezing more MGO out of the raw crude per barrel than ever before. While blenders/suppliers are wresting every dollar from product, there is a downside.

Within the last 18 months the issue is the difference between pour point and the cloud point of fuels which was fairly close, +/- 3°C; however, since the implementation of the ECA's globally, this difference has expanded and can now be 20°C to 30°C higher than the pour point. This leads to waxy formations in fuel system strainers/filters, resulting in loss of power and propulsion. Heating the fuel past its cloud point could reduce viscosity which is addressed in Group 3.

GROUP 5

Failures resulting in the Loss of Propulsion appear to be associated with problems in either the starting air system or the control air systems. Problems with starting air systems are not fuel related and only need to be mentioned as a cause of LOPs.

GROUP 6

Failures resulting in the Loss of Propulsion appear to be associated with mechanical failure not associated with other groups. Since implementation in 2009 there have been many and varied reasons for ships suffering a Loss of Propulsion incident. Three scenarios stand out as most prevalent for determining risk:

1. 70% experienced during inbound Transit.
2. Most occur during slow speed maneuvering.
3. Duration of transit/complexity of maneuvering.

Having defined the groups of LOPs, the intent of this guide was to reduce the LOP incidents occurring within the state of California boundaries. For California, many of the LOP incidents that occurred since 2009 involved "First Timers" (ships making first entry into California waters since July 2009). Since California sees between one to two first timers per week, a guide was created to provide suggestions for ships working with low sulfur distillate fuel oil (LSDFO), while trying to comply with the assorted ECA's.

(See Box below)

OPERATIONAL GUIDELINES

Initial Entry: For vessels intending to enter the North American, North Sea or Baltic Emissions Control Area for the first time, it is advised the crew should conduct a "TRIAL" (actual) fuel switching within 45 days prior to entering Emission Control Area waters. Run main and auxiliary engines no less than four (4) hours on LSDFO if the ship intends to use distillate fuel to comply with MARPOL ECA regulations. This will help identify any specific change over or operational issues or problems.

Repeat and Initial Entry

Part One-TRAINING:

- Within 45 days prior to entering the Ports located within the ECA it is strongly advised ship engineers should exercise:

A. Operating main engine from the engine control room.
B. Operating main engine from engine side (local).

- Crew should become familiar with "Failure to Start" procedures while maneuvering and establish corrective protocols for "Failure to Start" incidents.

Part Two-While Underway after Fuel Switching Completed (HFO to Low Sulfur Distillate):

- Ships should ensure one of the senior* engineering officers is in the engine control room while the vessel is in pilotage waters and be:

A. able to operate the ship main engine from the engine control room.
B. able to operate the ship main engine from engine Side (Local).

*Special Attention to the MLC 2006 Regulation 2.3- Hours of Work and Hours of Rest, shipboard Chief Engineers and Masters are considered seafarers and not exempt from minimum rest requirements.

The following Engine Advisory Guidelines were taken from the US Coast Guard MSA 02-15 with additions and clarifications from industry partners.

Part Three-Engine Guidelines:

- Consult engine and boiler manufacturers for distillate fuel switching guidance.
- Consult fuel suppliers for proper fuel selection.
- Exercise strict control when possible over the quality of the fuel oils received.
- Consult manufacturers to determine if system modifications or additional safeguards are necessary for intended fuels.
- Develop detailed fuel switching procedures.
- Establish a fuel system inspection and maintenance schedule.
- Ensure system pressure and temperature alarms, flow indicators, filter differential pressure transmitters, etc.., are all operational.
- Ensure system purifiers, filters and strainers are maintained.
- Ensure system seals, gaskets, flanges, fittings, brackets and supports are maintained.
- Ensure that the steam isolation valves on fuel lines, filters, heaters etc. are fully tight in closed position while running on Low Sulfur Distillate Fuel Oil.
- Ensure that the fuel oil viscosity and temperature control equipment is accurate and operational.
- Ensure detailed system diagrams are available and engineers are familiar with systems and troubleshooting techniques. Senior engineering officers should know the location and function of all automation components associated with starting the main engine.

Ships choosing to use these guidelines will alleviate some of the LOP incidents occurring. It is a shared belief that it will only take one LOP incident to change lawful maritime trade internationally. Any reduction of a Loss of Propulsion incident is one less chance of catastrophe.

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Patent Trolls

How to Defend against Patent Trolls without Breaking the Bank

Patent trolls—those who seek to enforce patent rights, but do not actually manufacture or supply services based on the patents—are a problem in all industries, including the shipping industry. And as the pace of innovation in shipping continues to accelerate in areas such as environmental compliance, electronic navigation, vessel design, construction and operation, offshore construction and exploration, and cargo logistics management, claims by patent trolls are sure to rise.

It is not just companies who design and sell products in the maritime sector who are at risk. Your company can be sued by a troll (or by a "legitimate" patent owner) if it makes, uses, sells, offers to sell, or imports an item, or practices a method for conducting business (for instance, a method for managing the routing and stowage of containers on a liner service) that is covered by a U.S. patent. Your company can be sued for patent infringement even if it does not directly infringe, but rather induces others to infringe or contributes to their infringement. Retailers, manufacturers, financial services companies, investment funds, and companies at every step of the supply or service chain are exposed.

Defending a patent case against trolls is expensive and, depending on where the suit is pending, the median time to trial is 2.3 years, though in some instances a patent case can take 10 years or more from start to finish. Damages for patent infringement usually take the form of a reasonable royalty—what you would pay for a license to the patent knowing that the patent is valid and infringed. One study of royalty rates awarded in litigation over a 23-year period concluded that the average rate was about 13 percent of the price of the infringing product. Another study reveals that, inexplicably, the median damages awarded to trolls are twice the median award for practicing entities. In addition, increased damages (up to three times the award) are available if the infringement is "willful," and attorney's fees can be awarded in "exceptional cases."

How to Deal with a Troll

A troll's business model is simply to get as much money as possible, as quickly as possible. Since trolls do not produce anything (they cannot be counter-sued for patent infringement as competitors often can be), and are often bank-rolled by investors whose sole purpose is to engage in litigation or by law firms that work on a contingency, trolls do not have the business motives of a competitor. Conventional wisdom of how best to defend a patent case therefore does not always apply, as it is often the most conservative, expensive, and time-consuming approach. Winning a case means little if your company does not survive.

While many claims of patent infringement brought by trolls are frivolous and may even be made with the hope that the target will settle quickly for the sole purpose of avoiding the costs associated with defending the claim—a classic strike suit—that does not mean that a claim made by a troll always lacks merit. It is important to keep in mind that a patent asserted by a troll has gone through the same examination procedure in the U.S. Patent Office as patents owned by non-trolls. Moreover, patents asserted by trolls are often acquired from reputable, multinational corporations that sell patents they no longer need to the highest bidder.

While settling a frivolous case presents philosophical issues—Do I want to pay off extortion?—quickly settling a non-frivolous claim may be a sensible exercise of business judgment to avoid disruption, uncertainty, and the risk of a significant damages award. Critical to this decision is making a prompt and candid assessment of the validity and scope of the patent claim, so that management can make a sound judgment about how best to respond.

A. Dealing with Frivolous or Defective Claims

a. Motion Practice

Where the troll's claim is frivolous or its complaint is procedurally or jurisdictionally defective, a motion to dismiss may allow a defendant to dispose of a case before engaging in expensive discovery. If the frivolity of the claim is more serious, various types of sanctions can be sought. While these sanctions are not unique to patent suits, they can be particularly useful against trolls that file suits without adequately investigating the legitimacy of their claims, or maintain suits after being apprised of why there is no infringement.

Another pre-trial procedure that can help bring a troll's claim to an early conclusion is a motion for summary judgment, which is available where there is no dispute as to the material facts and the only issue is whether the moving party is entitled to judgment as a matter of law. Summary judgment may be appropriate when there is prior art that invalidates the patent or where the facts clearly establish that the patent is not actually being infringed.

b. Challenge the Validity of the Patent

If there are arguments that the patent at issue is invalid, it may be better to challenge the validity of the patent before the U.S. Patent Office. This option was made more attractive when the America Invents Act ("AIA") was signed into law in 2011.

In general, the Patent Office procedures provide a cheaper way to challenge patent validity than having to proceed in court litigation. As courts will often stay an infringement action in deference to the Patent Office, these proce-

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dures can be an attractive alternative to litigation. The procedures can result in patent claims being invalidated, modified, or affirmed. If invalidated, then you cannot, of course, be an infringer. If the claims are substantively modified, as they often are, then infringement—and damages—do not start until the modification takes effect. And in some circumstances, you may even have intervening rights, i.e., your right to continue with your product or method may be superior to that of the patent owner's.

The procedures can take 18 months to three years to complete, but even if the patent is ultimately upheld, the process can often result in clarity as to the scope of the patent claims. This will not only give you time to grow your business without the cost and disruption associated with litigation, but it will also give you an opportunity to pin down the troll on its interpretation of the scope of the patent, allowing you to more effectively respond to the claims.

B. Dealing with Valid Patent Infringement Claims

If a candid assessment of the troll's claim leads to the conclusion that the patent claim has some merit—or if a challenge to the Patent Office proves unsuccessful—a product or business method that is accused of infringing a patent can often be modified to avoid infringement. While this will not absolve your company for past infringement, depending on the length of time remaining before the patent expires and the amount of potentially infringing activity that already took place, cutting off infringement by discontinuing the supposedly infringing activity may lead the troll to reevaluate the value of the case.

C. Cost-Saving Strategies

Patent litigation often involves "bet the farm" issues, as damages for past infringement can be crippling and the threat of being prevented from selling your product daunting. With so much to lose, defendants often take a "no holds barred" approach, spending whatever it takes to win, but such an approach may not be feasible. Following are a few cost-saving strategies that must generally be considered:

• **Indemnification.** If you are sued based on a product or component that is made by someone else, then the party that provided the product to you may have a contractual obligation to defend and indemnify you in the case.

• **Insurance.** While not the norm, some insurance policies cover claims for patent infringement. You should check your policy and consult with appropriate advisors. If you do not have insurance that covers patent infringement, it may be worthwhile to look into its availability.

• **Team up with other defendants.** Trolls often sue multiple defendants at the same time. While separate cases may be filed, they are often consolidated for discovery purposes. Having your law firm work closely with the other defendants' law firms, or hiring one law firm to represent multiple defendants, can substantially reduce your legal fees.

• **Compel the troll to identify its infringement contentions.** A troll should be forced to identify its infringement theories with as much specificity as possible, as early as possible. Compelling a troll to provide specific infringement contentions can help streamline the case and/or limit the exposure and puts pressure on the troll by constraining its ability to change its contentions or, more importantly, by exposing a possible lack of a credible infringement theory.

D. Avoiding Patent Infringement Claims

Patent lawyers can conduct "freedom to operate" ("FTO") searches. An FTO search compares your product or process to patents located through a search of the U.S. Patent Office files, in which patents are categorized by subject matter into classes and subclasses. If there are no patent claims that appear to cover your product or process, then you may be able to develop some level of comfort that you are free to proceed without infringing a patent. Similarly, if it appears that a potentially conflicting patent is invalid, then it may be possible to establish that fact before proceeding with the proposed business. Conversely, if the FTO reveals a problem, your company can forego the activity or design around the patent.

Conclusion

Patent trolls are an unavoidable business hazard, but with some advance precautions and a nimble response, the damage can often be minimized. As with many problems, advance preparation can often be the key to success.

BY DENNIS BRYANT

Shore Leave

Re-think on Balancing Security, Seafarer Rights

(Photo: Alex Sergienko)

Before port states became hyper-sensitive to security issues, shore leave was natural part of a seafarer's life. You worked long and hard hours at sea, often for extended periods of time on long voyages. When the ship reached port, you went ashore and decompressed, connecting with family and friends.

That and much more changed after the terrorist attacks of 11 September 2001. The IMO adopted the International Ship and Port Facility Security (ISPS) Code mandating enhanced security onboard vessels subject to the SOLAS Convention. The United States adopted the Maritime Transportation Security Act (MTSA), which superficially resembles the ISPS Code, but is significantly more rigorous. Other nations have adopted domestic legislation implementing and enhancing the ISPS Code provisions. The end result is that shore leave for mariners is no longer something that can be taken for granted.

With regard to access to a port facility, the ISPS Code is quite general. It provides that the Port Facility Security Plan should establish the security measures covering all means of access to the facility. For each of these means of access, the plan should identify the appropriate locations where access restrictions or prohibitions should be applied for each of the three security levels.

The MTSA, as promulgated, is significantly more specific. It provides for the issuance of biometric transportation worker identification credentials (TWICs) to individuals with valid business reasons for requiring unescorted access to a US-flag vessel or secure areas of a US port facility. Only individuals who have undergone a security clearance are eligible for a TWIC. All other individuals, including seafarers on foreign-flag vessels, must be escorted when on a US-flag vessel or in secure areas of a US port facility.

The MTSA Port Facility Security Plan must include provisions for establishing and maintaining physical security, passenger and cargo security, and personnel security. The current regulations for facility security plans are largely silent, though, with regard to seafarer access to the shore.

Soon after implementation of the MTSA, complaints were made by seafarers and by ship owners about the inability, at some port facilities, of seafarers to get ashore and for vendors and other maritime representatives to reach a moored vessel. In some cases, vessels resorted to waterside means for embarkation and disembarkation, using tugs and other small watercraft to ferry persons and goods between the moored vessel and the shore. Some port facilities prohibited transit through facility, even prohibiting seafarers from stepping onto the pier to obtain draft readings. Others would only allow transit if scheduled well in advance, and then charged seafarers and others high fees for the required escort service.

The Coast Guard Authorization Act of 2010 added a note following the Maritime Transportation Security Plans provision of the MTSA providing that each facility security plan approved by the Coast Guard "shall provide a system for seamen assigned to a vessel at that facility, pilots, and representatives of seamen's welfare and labor organizations to board and depart the vessel through the facility in a timely manner at no cost to the individual."

The US Coast Guard is in the process of preparing regulations to officially implement this statutory provision. Under the USCG proposal, each owner or operator of a facility regulated by the MTSA would be required, within one year of promulgation of the final rule, to implement a system for providing access through the facility that enables individuals to transit to and from a vessel moored at the facility and the facility gate in a timely manner and at no cost to the individuals. The system must comply with the Transportation Worker Identification Credential (TWIC) regulations, meaning that persons without a TWIC would have to be escorted by someone with a TWIC. Individuals entitled to such access would include: (1) seafarers assigned to a vessel moored at the facility; (2) pilots and other authorized personnel performing work for a vessel moored at the facility; (3) representatives of seafarers' welfare and labor organizations; and (4) other authorized individuals in accordance with the Declaration of Security (DoS) or other arrangement between the vessel and the facility. Among the means of access that a facility may provide is escorted access or monitored pedestrian access routes between the vessel and the facility gate.

The categories of "other authorized personnel" and "other authorized individuals" would include persons such as port engineers and superintendents, technicians, port agents, new crew (not yet technically assigned to the vessel), marine insurance agents, cargo surveyors, and family members of the seafarers. While not specifically stated, it is assumed that vendors and maritime attorneys would be included in these broad groups.

The term "timely access" is intentionally left vague due to the wide variety of facility types, sizes, and the nature of their operations. When the facility security plan is reviewed by the USCG Captain of the Port (COTP), the access proposal in the plan will be analyzed to determine if it appears timely under the circumstances. Among the factors to be considered are: (a) the length of time the vessel is scheduled to be moored at the facility; (b) the distance of egress/ingress between the vessel and the facility gate; (c) the vessel's watch schedule while at the facility; (d) the facility's safety and security procedures; and (e) any other factors considered relevant. Individuals who believe that they are not being provided timely access may communicate that to the facility security officer or to the Coast Guard.

The Coast Guard is seeking, through 31 July, comments on its proposed regulations. Numerous comments have been

submitted to date. Seafarers and seafarer representatives are strongly supportive. Facility representatives have raised a variety of concerns that deserve consideration. First, they contend that the one-year time frame for implementation of security plan changes is insufficient. Since a significant portion of the time would be consumed by USCG review of the changes, their point is valid. Secondly, they argue that transit of persons through the facility raises security and safety issues. This point is less valid. Everyone knows of the increased security and safety issues. Congress made the decision to move ahead regardless. Thirdly, there is the issue of whether a person seeking to transit the facility to visit a vessel will be permitted onboard by the vessel.

This is a good point, but one that must be worked out by the facility and the vessel, not by regulation. Fourthly, facility representatives note that the list of "authorized personnel" and "authorized individuals" in the regulation is more expansive than the group identified in the statute. The Coast Guard has broad authority to broad authority to interpret and make more specific various statutory provisions, including this one, but it should consider whether these terms need modification.

The major point raised by the facility representatives relates to the costs that will be incurred due to the regulation. They contend, probably correctly, that the costs estimated by the Coast Guard, are understated. More importantly, they contend that facilities should not be required to bear the costs. Careful reading of both the statute and the proposed regulation reveal that there is nothing to prevent the facility from passing the costs on to the vessel moored at the facility. It is recommended that facilities work with vessel owners and operators to allocate these added costs in an agreeable manner. In this regard, it should be noted that these transits of the facility are for the ultimate benefit the vessel, not the facility. For those facilities with official tariffs, changes to those tariffs may be necessary.

The bottom line here is that vessels moored at facilities in the United States should not be held in the equivalent of solitary confinement. Reasonable access of crew members to well-deserved shore leave must be guaranteed. Likewise, reasonable access of third parties to the vessel is also important. Providing such reasonable access is a component of the services expected of the facilities, just like their provision of services related to the cargo carried by the vessels. These regulations are long overdue and, with minor modifications, should be promulgated as soon as possible.

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"FS3" Motion-based Simulator for Dutch Navy

BY NOEL BOVENS

A two-year project is underway which will lead to the development of a Fast Small Ship Simulator.

Driving a small, fast navy boat in heavy seas can be a real challenge. Effects of broaching, surfing, capsizing risk, slamming and planing put severe demands on the crew and the boat handling. It requires a well developed skillset to safely navigate under various operational circumstances.

With these challenges in mind, a two-year project has just started to develop a dedicated training tool, which is currently known as the Fast Small Ship Simulator (FSSS) or FS3. MARIN is working with the Defense Materiel Organization (DMO), Cruden and TreeC.

The FSSS is equipped with a heavy-duty hexapod motion base. There is space for two operators and possibly one more for monitoring and instructional tasks. The design of the mock-up will fit a steering wheel, throttle and navigating equipment and the unit is equipped with a 3D visual display system providing realistic visualization of the scenery.

Under Phase 1, learning objectives have been developed directly from the Training Needs Analysis (TNA) conducted by the Royal Netherlands Navy, particularly the Surface Assault Training Group and the 'Defensievaarschool'.

During Phase 2 all new functionality is developed and design decisions are taken concerning the exact controls, console and display system. One interesting aspect of the functionality aspects concerns the development of a 6 DOF hydrodynamic model of the small ship, which has the capability to navigate in displacement and planing mode. This task closely relates to existing research programs of both DMO and MARIN. And for the purpose of the FS3 the new mathematical model will need to meet the constraints that apply in real-time simulations.Other anticipated new developments relate to cues for the human operators to improve the experience and enhance realism such as extra visual, motion and audio cues. Phase 3 will address all testing activities and there are a specific number of case-based scenarios that form part of this phase.

Navy personnel are involved throughout the project, which will conclude with the development of a fully operational prototype of the FS3.

The Author

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Big Data: Big Value? Big Risk? Both?

We wish we had a dollar for every time we heard or read the words Big Data at the Nor-Shipping exhibition last month. We might even have collected enough cash to buy a round of expensive Norwegian beers for the gang at the Fridtjof bar.

Seriously, Big Data is one of the most talked-about subjects at maritime industry gatherings. At Nor-Shipping there were no fewer than half a dozen panels and conference sessions focusing on the role of Big Data and analytics in commercial shipping.

Consider, for example, this statement by the CEO of KVH Industries, at the Nor-Shipping Maritime CIO Forum: "Probably the most important thing for maritime managers to do is make big data a priority. It's important to adopt a big data mindset, even if you don't think of yourself as a data company. Data is becoming a resource in its own right and offers incredible possibilities for understanding every aspect of your business better." Or this comment from Roger Adamson of FutureNautics at the Nor-Shipping Big Data Ocean Industry Podium: "In digital operations data is the new currency. As evidence-based decision making replaces gut-feel and technology deployment drives competitive advantage, how ready is shipping to capitalize on this new paradigm?"

Transformative Technology

The transportation industry – and indeed virtually every other business sector worldwide -- is being transformed dramatically by what is often referred to as the Internet of Things (IoT) in which IP connections are used to transmit datasets directly between devices without human intervention. This revolution has primarily been driven by the convergence of two factors. One of them is the ubiquity of GPS locating technology. The second is the proliferation of high-speed wireless Internet connectivity.

How big is this revolution? Connected wireless smart devices are already everywhere – home appliances, utilities, automated public transport, remote health monitoring, digital signage, connected vehicles, intelligent highways and wearable technology, to name a few. Gartner estimates the number of connected devices will reach 25 billion by 2020. TechNavio projects the IoT marketplace will grow at a CAGR of 31.72 percent through 2019. Last year, CISCO predicted the IoT will be a $14.4 trillion industry in ten years. (Yes, that's trillion with a "t".) Matt Webb, CEO of BERG Cloud, claims, "Connecting products to the web will be the 21st century electrification."

Connectivity

Until now, the maritime industry has not kept pace with the growth of IoT in other transportation sectors. That's largely because of the difficulty and expense of collecting, extracting and transmitting data from ships. Satellite bandwidth has been very limited – when compared to the 4G terrestrial wireless networks – and airtime expensive.

Happily, we're about to see an explosion in satellite bandwidth, with Inmarsat's Ka-band GlobalXpress, Iridium NEXT and Intelsat EpicNG poised to come into service over the next three years. There are other interesting options on the horizon. Last month, for instance, OneWeb contracted with Airbus Defense and Space to build 900 microsatellites to deliver global broadband service. If the Law of Supply and Demand still operates in the New Economy, competition will drive down airtime prices.

Interestingly, all that additional bandwidth may be overkill. Danelec Marine claims in a White Paper that ship managers could extract sufficient useful data from ship sensors and systems using the VDR as a collection hub – at preprogrammed ten-minute intervals - for as little as one US dollar per day.

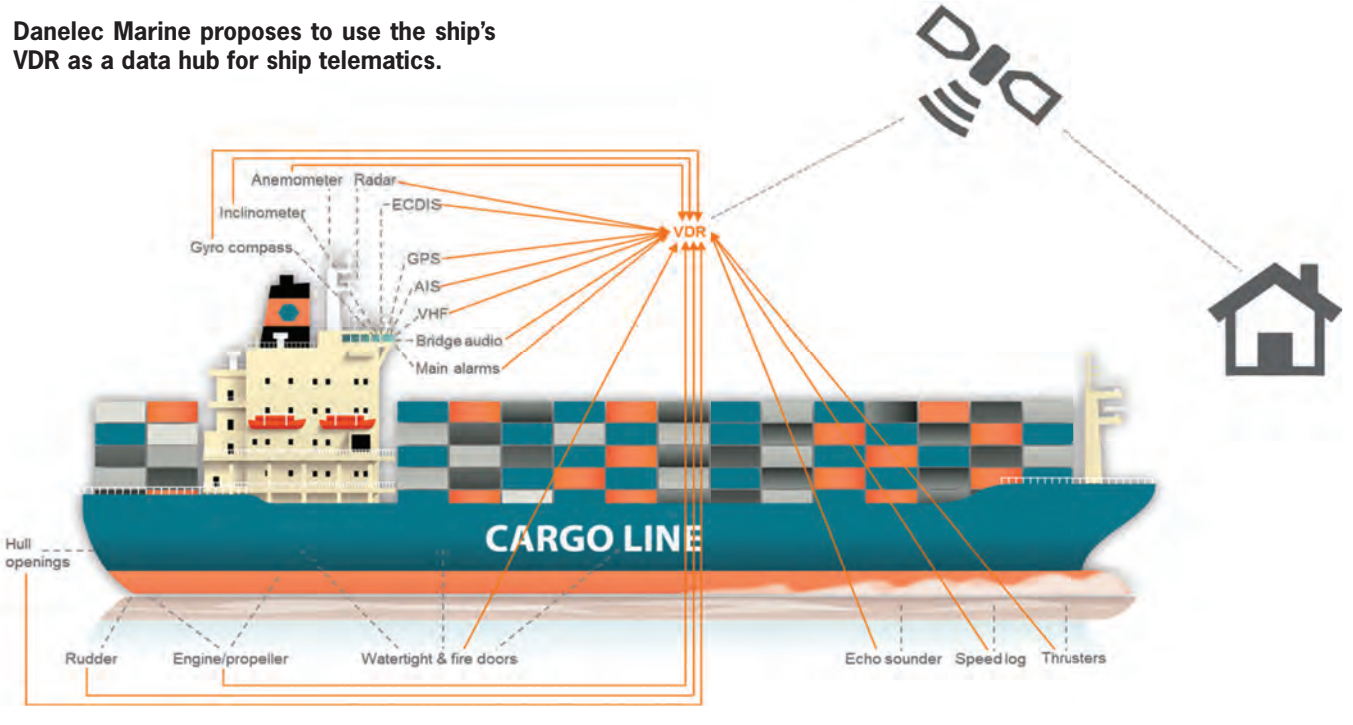
Analytics

All this data is great, but how do you convert information into intelligence? That's the real question. Companies who do that successfully gain an important competitive advantage. Bain & Company surveyed executives at more than 400 companies around the world, most of them with annual revenues over $1 billion. They found that while nearly half the companies are collecting, storing and accessing good data, only about four percent of them are really good at analytics. But these companies are twice as likely to be in the top quartile of financial performance within their industries and five times more likely to make decisions faster. "Leading companies embed analytics into their organizations by resolving to be data driven and defining what they hope to accomplish through their use of Big Data," said the report's writers.

Danger Ahead

Of course, Big Data may bring Big Risk in its wake. Marine IT and telecommunication infrastructures are at high risk of penetration from cyber criminals, terrorists or other malevolent interests. The threat is bigger than you may think. The Danish cyber security firm CyberKeel reports that more than 90 percent of the largest container lines are extremely vulnerable to hackers, and documents an appalling number of real-world vulnerabilities in a recent White Paper, including a test that revealed how easy it would be to take over a ship's ECDIS and autopilot.

Danelec Marine proposes to use the ship's VDR as a data hub for ship telematics.



(Credit: Danelec Marine).

ShippingInsight '15

Fleet Optimization Conf. & Exhibition
October 13-14, 2015
Stamford Marriott Hotel

Entering its fourth year, SHIPPINGInsight has become established as a premier maritime technology forum in North America. Held in Stamford, Conn., SHIPPINGInsight brings together ship managers and technology suppliers to address solutions to the challenges of ship efficiency and fleet optimization. The 2015 agenda includes three themed sessions – Fuel & Propulsion, Efficient Ships and ShipTelematics – each with a mix of panels and roundtables. There will also be ample networking opportunities for face-to-face informal discussions. Complete details at

www.shippinginsight.com

The Authors

Jim Rhodes is president of Rhodes Communications, a PR and marketing company specializing in the maritime industry. Frank Soccoli is president of Soccoli Associates LLC, a maritime industry consultancy. The two companies are joint owners and producers of the SHIPPINGInsight conference series.

"When we talk about gas at Wärtsilä, we become a little bit excited. **... We love gas. We think this is the fuel of the future."**

Björn Rosengren
Power Boss
(Part II)

At Norshipping in Oslo, Wärtsilä introduced the Wärtsilä 31, self-described by the company as a transcendent power plant in terms of fuel efficiency and economy, a claim validated by the Guinness World Records which has stamped it as the most efficient four-stroke diesel engine in the world. Björn Rosengren, President and CEO of Wärtsilä, sat with Maritime Reporter to lend perspective and insight to this development and the maritime market as a whole.

by Greg Trauthwein

Wärtsilä President & CEO Björn Rosengren was beaming at the introduction of the Wärtsilä 31 to the world at last month's Norshipping, but in a one-on-one on the sidelines with *Maritime Reporter & Engineering News* he had more sobering yet pragmatic view regarding current market conditions and the path forward to this marine power conglomerate.

"It is clear that Asia has been a driving force for some time, though we are now starting to see a slowdown in China, which affects global industry," said Rosengren. "We have seen a lot of improvement in the United States, with the GDP and the impact of the Shale Gas revolution. Europe has been very tough for some time,and market has been tough since 2008, but I think the market has adapted, with a focus on efficiency and lowering operational costs."

The lingering low price of oil is having a greater impact on Wärtsilä business than a China slowdown, as the company is heavily involved in the offshore sector. According to Rosengren, only two years ago roughly 40% of its ship power business came from the offshore sector, shrinking last year to 28%; shrinking further to 11% during the first quarter of 2015.

"It is definitely affecting our business, because offshore is an important part of our business," said Rosengren, noting that Wärtsilä counts business in the offshore sector not just from the offshore operators but all of the surrounding and supporting industries. "Too low oil pricing will stop a lot of projects, and the investment climate becomes less attractive."

He notes that the low oil price has provided a modicum of relief on shipping companies that have struggled in recovering from the world economic collapse of 2008 – particularly with required investment to run cleaner operations – but that the contracting activity for new commercial vessels is low at the moment.

"Today we talk a lot about efficiency, where as before 2008 we talked about capacity."Many positive things have happened since 2008 as companies have laser focused on efficiencies and cost management, while cutting environmental impact. "Many successful shipping companies have managed to lower their operating costs significantly, helping not only the companies but the environment, as fuel efficiency equates to lower CO2 in the atmosphere.

Balance

When looking at Wärtsilä in total, approximately two-thirds of its business is maritime related, a high percentage exposure to a notoriously cyclical market. But Rosengren credits the global economic meltdown of 2008 with the silver lining of learning to do more with less.

When addressing the realities of the new marketplace, Rosengren is blunt: "I don't believe in miracles. We learned from 2008 that surviving in tough times means adapting your organization, ensuring that you are strong in niches where things are happening … you have to bet on the right horses. I think where we are now, since 2008 is the new normal. You have to learn to survive and develop in the business climate that we have today."

Part of this adjustment for Wärtsilä was the broadening of its base, a products and services growth both organically and via acquisition that has fast-tracked its evolution from an engine builder to a complete maritime and offshore systems solutions provider. In step with this strategy was a major emphasis of focus on aftermarket sales and service, which today accounts for approximately 50% of its annual business.

"The service business gives us stability; it gives us daily contact with all of the customers; and it is also the most profitable part of the business," said Rosengren. "There are still areas in the marine industry that are doing quite well. Gas, the LNG side has been fantastic. A huge number of vessels have been contracted with many more on the way. When we talk about gas at Wärtsilä, we become a little bit excited. We love gas. We think this is the fuel of the future."

Ultimately though, the positioning of Wärtsilä as a one-stop-shop, life-cycle sales and service solutions company to its power hungry clients is the key to long-term survival and prosperity in fickle markets.

"We are a solution company, to help our customers enhance their businesses," said Rosengren. "We take a life-cycle approach, meaning that the service business comes into everything that we do. It means we want to work with equipment to make sure it is running efficiently."

Steady Investment

For technology companies such as Wärtsilä, taking the long-range view is necessary particularly when times are tough, because when the market slows its is not prudent to stop investing on new technology.

"We are investing as much as we did before the crisis; 3% of our turnover today goes to R&D, and we make sure that we do not cut from R&D when we are cost-conscious. Innovation and new

GUINNESS WORLD RECORDS®

RECORD HOLDER

MOST EFFICIENT 4-STROKE DIESEL ENGINE

Wärtsilä 31

Cylinder bore	310 mm
Piston stroke	430 mm
Cylinder output Diesel	610 kW/cyl
Cylinder output Dual-Fuel, Pure Gas	550 kW/cyl
Mean effective pressure Diesel	30.1 bar
Mean effective pressure Diesel	30.1 bar
Mean effective pressure Dual-Fuel, Pure Gas	27.2 bar
Piston speed	10.75 m/s

IMO Tier II or III

Fuel specification: Fuel oil
700 cSt/50°C 7200 sR1/100°F
ISO 8217, category ISO-F-RMK700
ISO-F-DMA, ISO-F-DMB, ISO-F-DMZ, ULSF
Gas: Methane number ≥ 80

SFOC 165 g/kWh at ISO conditions

Engine Platform	A*	A	B	C	F	Weight (tons)
Wärtsilä 8V31	6180	5585	3205	3100	1500	56
Wärtsilä 10V31	6820	6225	3205	3100	1500	62
Wärtsilä 12V31	7500	6905	2550	3400	1500	71
Wärtsilä 14V31	8140	7545	2550	3400	1500	77
Wärtsilä 16V31	8780	8185	2550	3400	1500	85

product development drives growth," said Rosengren. "If you look at Wartsila today, we would not be where we are today without a lot of good innovations which were done a number of years ago."

Part of this innovation is, of course, the introduction last month of the world record breaking Wärtsilä 31.

"The whole development process for this engine was different than any that we have done before. It is building on the digitalization in the design phase. You can design an engine today, digitally, before you build it," said Rosengren. "What we have done in this phase is we tested components and single cylinder modules for thousands of hours before we built the engine. This is totally new for us. When we were confident, we put the engine together and then for the last two years we've been testing it more than ever before. It's a new way to design and build and engine. Reliability

and efficiency were the drivers for this."

While planning to maintain spending is easily said, when the market turns sour it can be a tough path to maintain. "The world is moving increasingly toward environmental awareness and caution, but nothing will happen without regulation," said Rosengren. "For us, this is a business opportunity; helping our clients to become more sustainable, but we don't do it for charity. (But make no mistake), it is pure business. As we invest millions to develop the products needed, we need to realize a return on this investment."

To that end he said that market conditions are the biggest challenge he sees to his business' efficiency and cost effectiveness."We have a good crew and innovation, but in the end you need to have a successful and profitable industry to drive innovation. If the industry is successful, if our customers are making money, they are investing."

Wärtsilä 31 Bags Guinness World Record

The recently launched Wärtsilä 31 engine has achieved a Guinness World Records title for the most efficient four-stroke diesel engine. Guinness World Records is a universally recognized authority on record breaking achievement. This achievement was verified on May 26, 2015. The listing is based on the Wärtsilä 31 engine's highest fuel efficiency levels, with its diesel fuel consumption being as low as 165 g/kWh.

The engine is designed to serve various types of vessels in the offshore, cruise and ferry, and other marine segments where the power range requirement is from 4.2 to 9.8 MW. It can be operated using a range of different fuels, and comes in three alternative versions; Diesel, Dual-Fuel (DF) and Spark-Ignited Gas (SG). The multi-fuel capabilities that the Wärtsilä 31 brings to the market extend the possibilities for operators to utilize different qualities of fuels, from very light to very heavy diesel, and a range of different qualities of gas.

In the offshore sector, the Wärtsilä 31 is suited for AHTS´s, OSV´s, drilling and semi-submersible vessels, where the requirements are for operational flexibility, high power density, long intervals between overhauls, and high levels of safety. Similarly, in the cruise and ferry sector the Wärtsilä 31 enables owners and operators to trim fuel expenses while maintaining high standards in environmental performance. Within the merchant fleet, the Wärtsilä 31 is designed for applications as a main engine for small to medium tankers, bulk carriers and container vessels.

The Wärtsilä 31 engine comes in three alternative versions; Diesel, Dual-Fuel (DF) and Spark-Igdnited Gas (SG). The multi-fuel capabilities that the Wärtsilä 31 brings to the market extend the possibilities for operators to utilise different qualities of fuels, from very light to very heavy diesel, and a range of different qualities of gas.

The engine is designed for long periods of maintenance-free operation. The first major overhaul is scheduled at 32000 hours or 5 years of operations, and its first maintenance interval is after 8000 hours.

The Wärtsilä 31 is available in 8V, 10V, 12V, 14V and 16V cylinder configurations. Among the many features of this engine are the latest developments in fuel injection systems, engine control systems, and charge air technologies. It is available for applications in mechanical drive installations, for producing electricity when coupled with a generator, for hybrid installations, as well as heavy duty installations or as an auxiliary engine

www.wartsila.com

December 2011

The December 2011 edition of Maritime Reporter & Engineering News was the last time we had a one-on-one with Björn Rosengren, President & CEO of Wärtsilä Corporation. As evidenced by the cover tag above and headline on page 22, our headline writing evidently has not evolved!

The Maritime Launch of Big Data

It's no coincidence that Class standard bearer DNV GL's incoming group chief exec, Remi Eriksen, is a former telecoms engineer who knows his way around Houston (IT) and Singapore (yards). After all, the satellite communications industry understands shipping. The reverse should also be true. Speaking ahead of his first day as CEO, Eriksen describes a future of "fast ships and slow growth" — not bandwidth growth, mind you. Satellite operators, network providers and other vendors are eying broadband for Big Data transfers.

By William Stoichevski

(Image courtesy of ILS)

(Photo: Nina Rangøy)

"Everything became software-driven, from the chips on equipment to networks of equipment sharing with each other. It's now taken for granted that we have onboard coms and massive data, where recently there was little."

Tor Svensen (the new Group Executive VP), DNV GL, admitting the society erred in a 2012 survey when it underestimated the impact of Big Data on ships. *Technology developed much faster than expected.*

"I also see a future for the connected ship," Eriksen adds, a nod to the coming battles to "define shipping." The incoming Class boss, his counterparts in the world, and the rest of the supply chain face an oceangoing industry eager to define the benefits of broadband in operations. Bandwidth for crew communications and morale is already cheap, plentiful and accepted.

Eriksen steps back from the podium, and DNV GL's outgoing Maritime CEO, Tor Svensen (the new Group Executive VP), admits the society erred in a 2012 survey, when it underestimated the impact of Big Data on ships. Technology developed much faster than expected, said Svensen.

"Everything became software-driven, from the chips on equipment to networks of equipment sharing with each other. It's now taken for granted that we have onboard coms and massive data, where recently there was little."

Svensen refers obliquely to the newly pervasive satellite-enabled shore monitoring of vessel manifest, performance and location data making maritime management for everyone a little less laisse-fair. Yet, while better broadband access via always-on Ku- or Ka-band have grown channels for Big Data, the jury seems hung on where the most value is in the "constant coms" used and generated by a ship (and its Internet of Things). Bandwidth to monitor motors and men isn't loved by all, yet it's the reality in some fleets. Numbers are clearer for crew-use Sat-Coms, but operational data-transfer demand is on the march.

"Today, you need a big IT unit just to filter out the junk," said Svensen of bandwidth shared by crew and ship.

Price Patterns

The standard setters enabling the transfer of operational data are the Sat-Coms supply chain, not Class: satellite operators Inmarsat, Intelsat, Speedcast and others; network service providers KVH, Marlink, Cisco and equipment vendors (Kymeta, Shakespeare, Intellian). It's been 30 years since the first Ku-band VSAT (receiver) was built to connect offshore units by network. Now there are 13,000 installed VSAT terminals and 70 VSAT service providers: They can do much more than "separate the junk" from Big Data generation.

Yet, for ship owners, the industry presents "an IT unit" and its cost, and they already feel pressed by the "80 percent" hike in fuels costs wrought by cap rules on emissions. A superior engine might bring savings, but measuring its voyage performance from shore ought not to be something the ship owner pays for. The future of maritime Sat-Coms, both Big Data and crew, is about sparing the ship owner. Inmarsat Maritime president, Ronald Spithout, says he sees a future where the costs of satellite comms is packaged off into the offerings of service providers. After years of falling bit-per-hour prices for VSAT Ku and Ka bands and rising satellite operator fortunes ($750 million in 2014, says Euroconsult), the ship owner is, henceforth, to be spared. That's the budding consensus we detect.

"I see massive change coming," said Spithout. "You see it every year, that the ones relying on the service most are application providers (app designers) with embedded air time in (their app). You don't worry about the satellite time because you don't see it."

So, those wanting to sell mobility packages (with content) to the ship owners will pick up the background satellite stream costs. This, Spithout suggests, may free ship owner capital to focus on the fleet data issues of performance and management.

Satellite Spreads

Meanwhile, the count of vessels using a VSAT network have shot up to 20,000 from 8,000 eight years ago, according to IntelSat. Chris Insall of Intelsat offers a detailed picture of VSAT's recent "remarkable growth."

"We have seen a doubling of revenues recently," he says. By 2023, Insall sees revenues tripling and the core business of Ku-band continuing to grow. While L-band, the staple of voice and email, has its share of offshore supply vessels (and "the conservative Greeks"), VSAT remains 80 percent of the business. Insall says VSAT took off because it marked a 40 percent cost reduction. Paradoxically, just 10 percent of it was "crew welfare." Insall admits "The Maritime Convention became a key driver." Gearing up for a future wave of bandwidth demand, IntelSat is building and launching a new, conventional satellite (not the EPICNG high-throughput satellite set to launch in 2016) for better capacity over the North

"I see massive change coming. You see it every year, that the ones relying on the service most are application providers (app designers) with embedded air time in (their app). You don't worry about the satellite time because you don't see it."

Ronald Spithout, Inmarsat Maritime President

(Photo: Inmarsat)

Atlantic, the Mediterranean and Panama.

Network Upgrades

A next driver of sales for the IntelSats, Inmarsats and other satellite operators is Big Data. The vendors of VSAT (Ku, Ka and C-bands) — with its 1 megabit per second network speeds (versus 256 kilobit-per second L-Band) — are part of a slew of service providers the shipping industry will have to trust.

Flush with crew coms sales but needing to be in on Big Data, IntelSat is helping those service suppliers make the most of its greater satellite throughput by offering a shared broadband infrastructure package called IntelsatOne FLEX. Few bandy about the amounts of data a modern vessel might soon generate, transmit or become dependent on, but speaking to yard and legal types, another DNG GL man, Albrecht Grell, says he doesn't see that vendor systems will have to be classed to handle it all. His main concern is with security, as Big Data ratchets up the terabits.

"In shipping we're not used to managing and studying these high volumes of data," he says, adding that the data isn't structured and still isn't reliable. "It says it's in Africa, but it's not."

The Hamburg-based industry veteran says "volume, speed, type and reliability" need to be worked on. "Fleet data we're used to. What we see coming now is a focus on managing operations. That's where we see improvement (in Sat-Coms)."

While, satellite-transfers of fuel-quality, weather or performance data are relatively new ideas, "Beyond this, its analysis, consumption and the ability to benchmark" where Big Data might pay dividends. "There's no one-size fits all. Integration and quality assurance are needed for a 24/7 customizable Web. It's a very expensive proposition," said Grell.

Meanwhile, IntelSat is launching six satellites to 2019, and they'll have "multiple layers of high-use bandwidth." Getting service providers on the network is a company priority.

"Each (satellite) delivers 25 gigabits per second (of bandwidth)," said Insall.

That's 25-times the current standard and "future-proof" for shipping's Internet of Things.

Still, getting a vessel's network of digitized equipment tags online requires more vendors — more CAPEX. One by one, SatComs leaders seated along a row of salon chairs admit they can't just tell owners what they need anymore and then charge them for it. "Data-ownership billing", one executive says, looks to be the way forward. "We can send the bill to the terminal owner."

Heavyweight Comms

While 31,500 vessels are said to comprise the maritime VSAT market, Euroconsult Senior Manager Wei Li puts the number of total mobility "addressable vessels" at 121,000, with just 10 percent already using VSAT Ku-band or Ka-band antennas. He sees 65 GBps satellite services by the end of next year, enough for "sensors, crew, cloud, content", but his audience is made of realists. Just out-of-sight on a stage sunken below the flat floor, Sat-Coms CEOs pass the mic around. Echoing Grell of DNV GL, Inmarsat president Ronald Spithout says, "There's plenty of (bandwidth) capacity. The key word in future is seamless mobility." Another we can't see, disagrees: "There'll never be enough bandwidth if it's 500 GBps for every single vessel just for video." Another SatComs heavyweight weighs in.

"Ku- or Ka-band, I don't think the ship owners care. It's what can we do for them." Another takes the microphone: "It's good we're moving from frequency band to increased throughput as our focus."

Finally, Yale grad and KVH Industries founder and chief exec, Martin Kits van Heyningen, shows he's bullish on the future of Big Data for shipping. He calls "data capture and send" an "actionable business model" but warns that "operations" means "no SQL databases".

"Big Data is unstructured and analytical," he says. "It's not the daily report." He points to Formula 1 teams that transfer "and analyze" in real-time 200 terabytes of car sensor data from a given race: "2,000 sensors equals 2.5 gigabits per day," he says, allaying whatever fear his audience might have of unfathomable amounts of traffic. Much of those listening are already masters of crew-comfort coms.

Van Heningen adds that no onboard IT staff will be needed for shipping's Big Data revolution — just an onboard server. His KVH multicasting of data from sensors eliminates sending manually.

Building Out on Big Data

Navico Builds to Broaden its Commercial Case

Marine electronics group Navico is aiming for a top three position in the commercial maritime sector within 3-5 years. Maritime Reporter & Engineering News seeks to find out from Jose Herrero, MD, the plans to accomplish the feat.

Navico is a strong player in the recreational boating sector, claiming a 32% market share and well versed in investing in growth both organically and through acquisition, including a commitment to product development. Its ambitions in a crowded commercial sector will have to be backed by a continuation of this successful formula.

There are obvious, inherent differences in the recreational and professional markets, and Navico's pace of progress on the recreational side, where it introduces some kind of new or upgraded product at a rate roughly equivalent to once every 23 days, does not necessarily translate as appropriate for commercial market, where replacement cycles are longer.

However, Navico believes this pace of progress is indicative of its ability to challenge on both performance and cost. It also believes the pace of technological development will accelerate, and that improved vessel safety and efficiency will be the result, said Jose Herrero, Managing Director Commercial Marine Division, Navico.

"The commercial market does not need a new product every 20 days. The point is that Navico's strategy is based on our ability to quickly acquire and use customer insight, apply our design-to-value competencies, test, and introduce products into serial production. We aim to break the status quo and deliver higher performance and lower cost than anybody else."

Herrero likens the commercial ships of today to "factories that do not have a connection, or a very narrow one, to the internet. As communication costs onboard ships decrease, we see a revolution coming in how ships and fleet owners will use data and information. There will be demand for new equipment, applications, and integrated solutions for fleet owners to ensure safety and maximize the value of their assets. We are working hard to develop new telematics services to enable that."

Navico Today

Navico currently conducts 60-70% of its business in the retrofit/repair market, operating as a fully integrated supplier, using its own design, production, and global supply chain via five logistics centers to drive down overhead across an industrial platform. The company believes the commercial marine electronics sector is heading for consolidation and "Navico's operational excellence gives us an opportunity to become one of the industry's leading players," Herrero said.

Navico's commercial product portfolio is offered under the 60-year old SIMRAD brand – itself born of a union of pioneering marine technology businesses. This portfolio, which includes IMO radars, ECDIS, autopilots, gyrocompasses, AIS, GPS, echo-sounders, and other navigational instrumentation, recently expanded with the acquisition of Norwegian navigational pioneer MARIS (Maritime Information Systems A/S). With more than 10,000 navigation systems delivered and as one of the leading suppliers of ECDIS worldwide, MARIS brings a portfolio of data solutions to the commercial maritime sector related to navigation, voyage optimisation, and voyage monitoring. MARIS solutions have been integrated into the SIMRAD brand.

"An acquisition in this area was strategic for us," said Herrero. "We considered other options but MARIS was the best fit. Its solutions have been developed by a Norwegian company with one of the most reputable names in high seas navigation, and a long history of 'world-first' developments. All these fit well with Navico's strategy and culture.

"Our ambitions in commercial market are based on organic growth. When we consider acquisitions, it is because they can accelerate our execution, be it by bringing complementary technical capabilities or assets such as an installed customer base and service network. Our investments in radar and ECDIS are critical to our ambitions to evolve into a supplier of integrated navigational systems. To be a top three supplier we need to offer a complete portfolio from fishing boats to large containerships.

"Our strategy is to integrate the companies we acquire and strengthen their offering to their customers by bringing them our technical competencies, supply chain capabilities, support network, product portfolio, and sales channels."

Fresh ECDIS

In April this year, Navico launched the Simrad E5024 ECDIS system, an IMO compliant ECDIS. The modular E5024 ECDIS system offers an extremely intuitive and easy to use and to train ECDIS,

Herrero likens the commercial ships of today to **"factories that do not have a connection, or a very narrow one, to the internet. As communication costs onboard ships decrease, we see a revolution coming in how ships and fleet owners will use data and information. There will be demand for new equipment, applications, and integrated solutions for fleet owners to ensure safety and maximize the value of their assets. We are working hard to develop new telematics services to enable that."**

with simple installation in either single, dual, or triple ECDIS configurations. Designed for NAVTOR ENCs including UKHO (for AVCS), Primar, IC-ENC, and NOAA, additional benefits of the E5024 include its compatibility with Radar, AIS & ARPA overlay (Simrad Argus Radar). The E5024 ECDIS system also includes support for an optional secondary display station, delivering complete control of Ethernet-connected Simrad performance modules including radar, conventional echosounders,

ForwardScan sonar, and StructureScan Imaging. It also enables connectivity to third-party accessories such as FLIR cameras, CCTV, and engine sensors. This solution is so cost effective that it offers the "benefit from paperless navigation even to vessels that are not mandated."

In May, Navico is upgrading the now SIMRAD MARIS ECDIS900 to an entirely new high-performance hardware platform with updated software. This ECDIS system offers a feature rich solution that includes universal Radar overlay, multiple layers display (including paper T&P, Navtex, weather forecasts, Total Tide, and user defined objects), additional route planning functions (including navigation editor, parallel index, SAR, Voyage Plan with UKC calculation, and linking of route and objects/alarms), precise navigation tools (including predictor, Docking mode, and Active Leg panel) and multiples add-on functions (including Route optimization, Dead man alarm, BNWAS interface, approved TCS, and Conning Display). The system has its own integrated chart management solution which includes PAYS and is distributed and managed via email or Internet, through MBA (MARIS Bridge Assistant) for ship chart management, and MCP, Maris Customer Portal, for ship and fleet monitoring.

Both systems arrivals are timely, as they anticipate the upcoming deadlines for the mandatory ECDIS carriage requirements affecting up to 13,000 existing tankers of above 3,000gt by July 1, 2015, and existing cargo ships of above 5,000gt to follow in July 2016.

In fact, Navico's ECDIS sales to April 2015 exceed the whole of 2014 for the combined two companies, Herrero said.

Training on the technology formerly offered through MARIS is available online, via computer-based training and at 127 certified learning institutes, in line with IMO requirements for equipment-specific coaching to be made available as part of mandatory ECDIS. Now, "priority is being given to training in-house technicians and service partners to strengthen the support network for all our ECDIS solutions through the SIMRAD commercial dealer network".

At the heart of the Navico proposition for growing market share overall, will be the power of offering the customer the power of choice the best ECDIS solution for their fleets, Herrero said. "We have covered the market, from the feature rich high-performance ECDIS solution of the ECDIS900, to the E5024, the lowest total cost of ownership ECDIS solution in the market."

Integrated Thinking

Choice and platform commonality will underpin Navico's ability to reap the benefits of scale, he said. "The pace of change is going to accelerate in the commercial sector in the same way that we have seen it quicken in the recreational sector over the last 10 years. Only those companies which are truly committed to innovation will remain successful."

In line with a company present in 100 countries, Navico is targeting growth from all regions for its commercial marine business, Herrero said. Supported by a global distribution and support organisation, and a strong network of over 150 technical dealers globally, the company is "investing heavily in all regions," although the fastest growth is being witnessed in the Asia Pacific and Americas markets.

"During the past two years, we have brought our channel partners commercial products that include a high-quality SOLAS radar family (Argus), three new ECDIS systems (CS68, MARIS900, and E5000), a new range of type approved marine monitors, PAY-AS-YOU SAIL maps and voyage optimization solutions, and a new family of GPS/D-GPS/AIS products.

"Going forward we will drive towards more integration. Users familiar with the recreational market will know how superior the integration capabilities are. For years, users have been able to configure, display, and operate equipment in the network as a matter of course. Making commercial equipment modular, multifunctional, intuitive, and easy to use while still being compliant and offering maximum reliability will bring significant value to the customer and improve safety for all at sea."

Maritime & Shipbuilding

Italian Style

By Joseph R. Fonseca

With its coastline of 7,800 km, Italy is expediently nestled in the heart of the Mediterranean Sea with the surrounding waters creating a tremendous resource for Italian economy. Businesses linked to the sea, including ocean technology firms, contribute significantly to Italy's gross domestic product totaling more than $40 billion and representing 2.6% of total GDP. The ocean technology industry of Italy significantly comprises of:

- Ship and Boat Building
- Technological Equipment
- Maritime Defense and Security
- Marine Science and Observation
- Offshore Renewable Energy
- Marine Technologies

The Italian shipyard industry ranks among the top 20 in the world with ship building and boat-building accounting for 64% of the industry turnover, totaling 6.3 billion Euro in 2012, and Technological Equipment placed at 2.2 billion Euro. Italy is also a world leader in yacht production with more than 49% of the market share.

There is a high level of investments (of around 550 million Euro) in projects and strong links between manufacturers, research bodies and institutions together with high quality research in marine science, new materials, systems and defence and security which is one reason for the country continuing to maintain its leading position as a ship builder. Fincantieri Spa, D'Apollonia, Rodriguez Spa, Ferretti Yachts, Azimut-Benetti, Leopard Yachts and FIPA Group are some builders who are established undisputed leaders in the world of shipping and marine defense.

Italy's worldwide trade touched 14.4 billion Euro in 2012 backed by approximately 8,700 Italian companies with a workforce of 55,000 employees operating in this marine technology sector. Of this around 10% is said to be dedicated to R&D of new technologies.

Most Italian companies that operate in the ocean technology field are involved in developing specific technologies and undertake numerous research projects. R&D in marine technology is said to have generated 2,148 patents and industrial designs since 1989; 46% of which are related to ships and/or other vessels and navigation devices, 27% on propulsion or guides for boats, and 22% on launching, hauling dry, floating docks or ships, rescue at sea, equipment to sit on or work under water and to retrieve or search for submerged objects. R&D continues to register high performance securing a 6% growth rate in the number of industry patents.

Italian companies have created a name for themselves in the field of Maritime Defense and Security, having made significant progress in radar systems and in the development of new technologies for remote-controlled boats-drones, deep water hulls and submarine drones. In the area of marine sciences, research is focused on sustainable fishery and deep sea floor investigation to study earthquakes and exploit the subsoil (OGS).

The fact that there are few large companies as is evident in several other sectors in Italy, many SME's have joined forces to create clusters and make better use of their expertise and capacity in the field of ocean technologies.

The eleven outstanding clusters that represent the core of national production have to a large extent received support and assistance by a body/agency recognized by the Italian Government to coordinate activities.

Currently, Italy has no active offshore wind farms even though there is a compelling need of finding power supplies other than oil imported from abroad. Having rejected the nuclear solution after the Fukushima accident and the 2010

Left:
Genoa Port

Right:
Shipyard of Ferretti Group,
Sarnico, Italy

Italy Facts

Population:	*61,680,122*
GDP:	*$2.129 trillion*
GDP - Real Growth Rate:	*-0.2%*

Waterways: 2,400 km (used for commercial traffic; of limited overall value compared to road and rail) (2012)

Merchant Marine, total:	*681*
Bulk carrier:	*105*
Cargo:	*42*
Carrier:	*1*
Chemical tanker:	*164*
Container:	*21*
Liquefied gas:	*28*
Passenger:	*25*
Passenger/cargo:	*154*
Petroleum tanker:	*59*
Refrigerated cargo:	*4*
RoRo:	*39*
Specialized tanker:	*9*
Vehicle carrier:	*30*

Foreign-owned: *90*
(Denmark 4, France 2, Greece 7, Luxembourg 14, Netherlands 2, Nigeria 1, Norway 6, Singapore 1, Sweden 1, Switzerland 13, Taiwan 10, Turkey 4, UK 2, US 23)

Registered in other countries: *201*
(Bahamas 1, Belize 3, Cayman Islands 7, Cyprus 6, Georgia 2, Gibraltar 4, Greece 5, Liberia 47, Malta 45, Marshall Islands 1, Morocco 1, Netherlands 6, Panama 25, Portugal 12, Russia 14, Saint Vincent and the Grenadines 4, Singapore 5, Slovakia 2, Spain 1, Sweden 5, Turkey 1, UK 3, unknown 1) (2010)

Ports and Terminals:
Major seaport(s): Augusta, Cagliari, Genoa, Livorno, Taranto, Trieste, Venice
Oil terminals: Melilli (Santa Panagia) oil terminal, Sarroch oil terminal

Container port(s) (TEUs):
Genoa (1,847,648), Gioia Tauro (2,264,798), La Spezia (1,307,274)
LNG terminal(s) (import): Adriatic (Rovigo), La Spezia

Source: The World Factbook 2013-14. Washington, DC: Central Intelligence Agency, 2013

ban on offshore drilling following the Deepwater Horizon disaster in the Gulf of Mexico, the LNG facilities are heavily pushed forward by the national government. Italy is currently being connected to Greece via the IGI project (Interconnection Greece – Italy) for the import of natural gas in Italy through Greece. In the final analysis the country remains heavily dependent on foreign reserves for about 90 percent of its energy needs.

Italy boasts of a strong merchant fleet (around 600 vessels) which is the fourth largest in the EU in terms of vessels. Italian ports offer more than 1,100 places of boarding and 282 km of quays. In 2008, Italy accounted for the second largest weight of Short Sea Shipping (SSS) of goods in the EU-257. Six Italian ports appear in the top-20 port list: Trieste, Genova, Augusta, Taranto, Venezia and Gioia Tauro. In all six ports SSS prevails over ocean shipping (whereby SSS represents more than 90% of Italy's total seaborne transport of goods). The port of Gioia Tauro specializes in SSS of containers, with only 14% of containers being 'ocean bound.'

Italy's geography provides abundant access to marine fishing. The country's fishing fleet consists of around 14,000 vessels with catches of nearly 300,000 tons in 2012. Except for around 30 oceanic vessels, the Italian fishing fleet operates in the Mediterranean Sea basin: more specifically, the majority of these vessels operate in waters around the Italian peninsula. Moreover, Italy is by far the largest player in the Adriatic Sea. In total, around 50,000 people work in the fisheries industry. The current trend in aquaculture is to reduce plants on land or along the coast and develop deep-sea activities, like offshore cages to be used for sea farming. Total aquaculture production in 2008 was approximately 181,000 tons. The country's maritime sector is likely to see bright days ahead. The government appears to be ready to take on the country's energy deficit, starting with new calls for investment and a reversal of the offshore ban. There are clear opportunities for increased cooperation and networking both on a political and industry level. The industry is hopeful and expects to see more aggressive development in time to come.

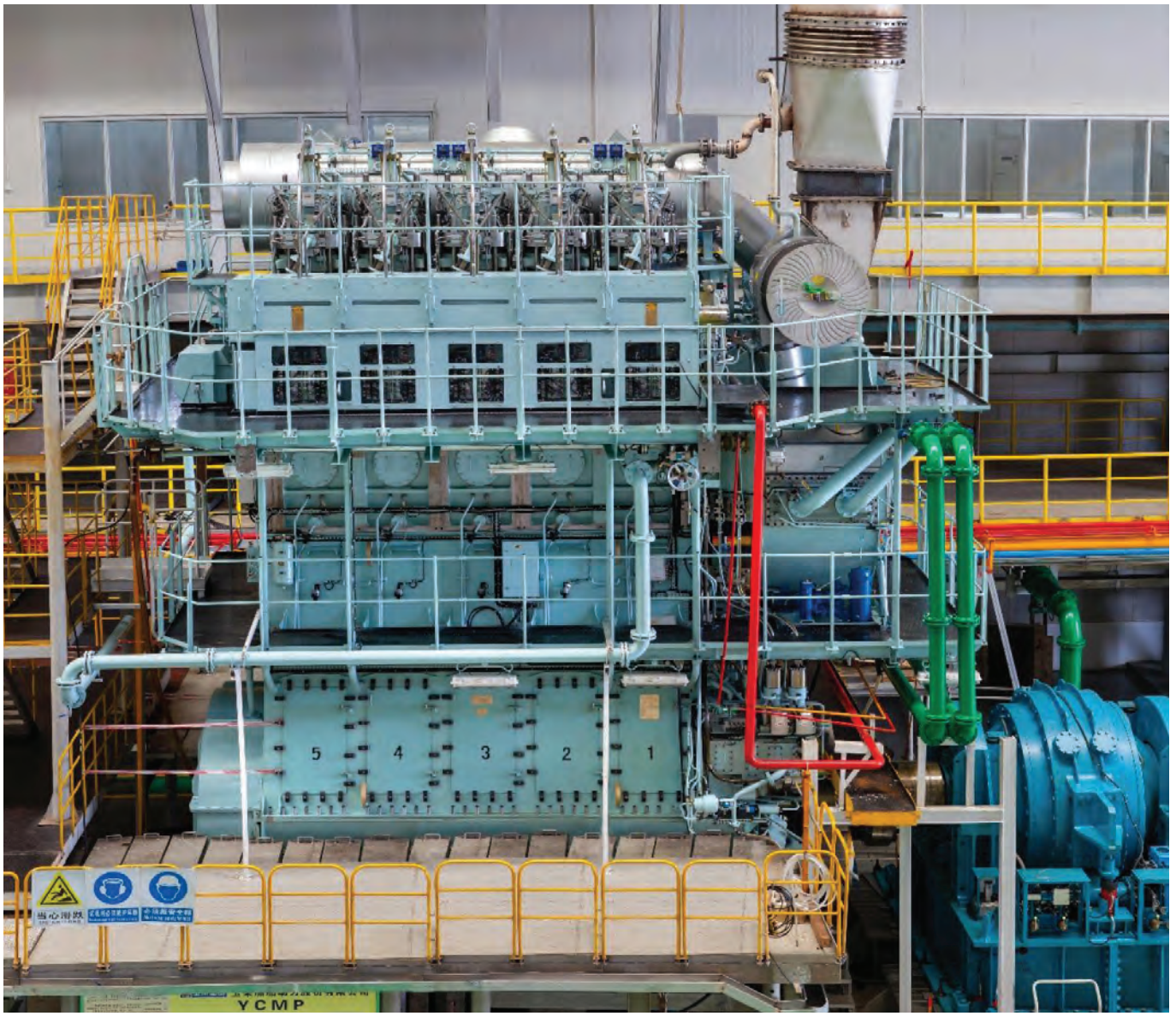
Two-Stroke DF Engine Passes Critical Test

The first Wärtsilä low-speed two-stroke dual-fuel (DF) engine destined for a commercial application has reportedly completed its Factory Acceptance Test (FAT) at a Chinese licensee of Winterthur Gas & Diesel (WinGD), the Switzerland-based designer, developer and licensor of Wärtsilä brand low-speed two-stroke engines.

The engine is a five cylinder, 50 cm bore 5RT-flex50DF built by Yuchai Marine Power Co., Ltd. (YCMP) at its factory in Doumen, Zhuhai City, Guangdong Province, in the South of the People's Republic of China.

It will power a new "handy-size" LNG carrier, designed by MARIC, in the fleet of Chinese ship-owner and operator Zhejiang Huaxiang Shipping CO., Ltd. The new vessel is under construction at the shipyard of Qidong Fengshun Ship Heavy Industry Co., Ltd., also in the People's Republic of China. While designed to ocean-going standards, in service the LNG carrier will operate principally in Chinese coastal waters and deliver LNG to terminals in the estuaries of major Chinese rivers. WinGD's scope-of-supply for this project also includes a gas valve unit (GVU), some ancillary equipment and the commissioning of both the engine and GVU aboard the LNG carrier.

The 125.8 x 22.7 x 7.2 m LNG Carrier will have a rated power of 6000kW at 124 rpm, with a capacity to carry 14,300 cu. m. of LNG. With its Wärtsilä 5RT-flex50DF two-stroke dual-fuel engine burning the "natural boil off gas" (NBOG) which arises through vaporization of a small part of an LNG carrier's cargo due to the ambient air and sea temperatures and the motion of the ship, the vessel will comply with both the NOx and SOx requirements of the strictest IMO emissions regulations without exhaust after-treatment. The FAT took place on June 2-3, 2015, in the presence of representatives from the classification societies, the ship owners, the shipyard, YCMP and WinGD. Inspection of the engine and selected components according to classification society requirements took place on June 4, 2015. "The system is based on the low-pressure gas admission system proven over more than two decades on Wärtsilä four-stroke DF engines," said Martin Wernli, CEO Winterthur Gas & Diesel Ltd. (WinGD). "Our product objectives were to reduce both first and operating costs. The 5RT-flex-50DF does not require the high-pressure electrically-driven compressor needed by two-stroke engines in which gas is injected under high pressure. Thus, not only can our fuel system be simpler and less expensive, it saves a considerable amount of onboard electrical power, which means that a vessel's auxiliary generators can be dimensioned smaller. Such savings are, of course, of special interest on smaller LNG carriers such as the 14000 cu. m. vessel which this engine will power."



WinGD Dual-Fuel Tech

Pioneered by Wärtsilä on medium-speed four-stroke engines in the mid-1990s, WinGD's low-speed DF marine engines employ the lean burn Otto cycle – i.e. ignition of a lean air-gas mixture by injection of a small amount of liquid fuel – with the gaseous fuel admitted to the cylinders at low pressure via electronically-controlled valves.

The lean burn combustion of gaseous fuels is an enabler of both the low emissions and high efficiencies of WinGD low-speed DF engines. Even without aftertreatment their NOx emissions in gas operation mode are within the limits set by IMO TIER III for vessels operating in Emissions Control Areas (ECAs), while natural gas is virtually sulfur-free, also ensuring compliance with IMO limits for SOx emissions in ECAs.

Moreover, since methane is the major constituent of natural gas and the simplest combination of hydrogen and carbon in the hydrocarbon series, in their gaseous fuel mode, the CO2 emissions of WinGD DF engines are lower than from diesel engines of comparable performance. The lean burn combustion process is also an enabler of the excellent efficiencies attained by modern gas engines. To provide back-up operation for emergencies and voyages where arisings of NBOG are insufficient, the 5RT-flex50DF is equipped with a fully dimensioned liquid fuel system capable of injecting either HFO or distillate fuels (e.g. MDO or MGO). In its 100% liquid fuel mode the 5RT-flex50DF is compliant with IMO TIER II exhaust emissions regulations.

www.wingd.com

The "Hour of Power"

Hybrid Marine Technology & Green Ports

The 19 m research vessel 'Spirit of the Sound' runs virtually silently on hybrid electric power for two-hour study cruises on Long Island Sound.

In 2015 two significant developments are going to make many operators, owners and builders of professional vessels consider hybrid marine power. Firstly the new emissions laws in ports and secondly there is now an incentive for high technology manufacturers to invest in developing highly efficient batteries.

Hybrid is 'here and now' technology that is being used by many industries globally. The marine industry is now recognizing the potential of utilizing hybrid power and innovative propulsion systems for vessels in the sub IMO / sub 24 meter professional sector.

'The Hour Of Power' has been well received by the marine industry worldwide. This simple concept enables vessels to run in and out of port for an hour on electric with battery power - then carry out their open sea work on diesel power. The aim of this innovative hybrid solution is to enhance conventional propulsion systems. Vessels can reduce emissions and improve fuel consumption whilst extending engine maintenance periods and engine life.

This is not just green energy for the sake of it - 'The Hour Of Power' focuses on hybrid solutions linked to viable business cases. For commercial and professional organisations the concept of running vessels with zero emissions at up to 10 knots for one hour will shape decisions that lead to improvements of in-service systems and procurement of next generation vessels. The overall objective is fuel saving and improved efficiency by all means.

For the marine industry to move forward it needs to use expertise from aviation and other sectors to drive this innovation and support relevant safety standards. Automotive manufacturers in Europe, the Far East and the U.S. have recognised that hybrid technologies such as PHEV (Plug-in Hybrid Electric Vehicle) using lithium ion batteries will be dominant for the next decade. Reducing emissions from busses and trucks in the world's major cities has been a major driver for lithium ion battery power storage. The need for self sufficient land based grid applications has further extended the capabilities of next generation battery and hybrid technology.

There are two main types of hybrid system. A serial hybrid is where the engine only powers a generator, and is not mechanically connected to the propeller shaft. A parallel hybrid is where the engine is mechanically connected along with an electric 'machine' that can operate as both propulsion motor and generator.

Certain sectors are potentially well suited to hybrid diesel / electric systems. These include wind farm service vessels and pilot boats that have relatively consistent duty cycles. We are entering a period of rapid change and commercial opportunity in the hybrid marine market. End-user organizations, boat builders, engine manufacturers and naval architects are now investigating systems for survey vessels, superyacht tenders, patrol vessels and unmanned craft.

The Author

John Haynes is an Associate Fellow of The Nautical Institute, Yachtmaster Ocean and Advanced Powerboat Instructor. Subject matter expertise includes high speed craft consultancy, product development and specialist training. He is managing director of Shock Mitigation.

www.shockmitigation.com

Specialty Motors Keep Shipping Afloat

When large specialty motors fail at sea, finding a suitable replacement within days – not months – is critical to bring production back online and minimize loss of revenue

Whether for sophisticated thrusters or naval weaponry, or equipment such as compressors, winches or pumps, large specialty motors are used throughout the marine industry. So when one of these motors fails at sea, the ramifications can range from minor annoyance to complete shutdown, which can prove costly in time and money.

This was the scenario that Sealion Shipping Ltd. faced when its aft starboard azimuth thruster failed in the waters off Mexico, rendering the vessel's dynamic positioning (DP) system inoperable.

As a provider of onshore, offshore and subsea support to the oil and gas industry, each support vessel in the fleet uses DP to carry a diverse range of equipment, cargoes and personnel to offshore drilling rigs and platforms. DP requires the use of the azimuth thrusters along with sophisticated GPS reference and other sensors.

So when the aft starboard motor failed, the support vessel could no longer operate in DP. This threatened to take the vessel offline, potentially at significant loss of revenue, and would require an expensive and lengthy repair before the ship was fully operational again.

For Sealion Shipping, the first priority was to keep the ship in operation – and earning revenue – until the motor was repaired. As an interim measure, a tug was employed at some cost to help maintain the vessel's position.

Sealion Shipping then contacted the motor manufacturer and was told it would have to be removed and sent to a central repair facility in Europe, with an estimated 'out of service' timeframe from four to five months.

"That was not a situation that we could live with," says a spokesperson for Sealion Shipping. "Meanwhile, we turned our attention to finding a company that could supply us with an alternative motor very quickly."

During the search for a solution, Sealion contacted the Louis Allis Company, which for more than 110 years has manufactured and repaired this type of motor.

Founded in 1901 as a DC motor manufacturing firm by Milwaukee businessman Louis Allis, the company soon shifted to AC motors. Facing stiff competition from early motor giants such as GE and Westinghouse, the company decided to focus on specialty motors instead of mass-produced offerings.

Today, Louis Allis manufactures specialty motors up to 20,000 hp, along with standard NEMA motors, in-stock recertified units, and motor repair services.

Fortunately for Sealion, Louis Allis had a 3,500 hp motor in its inventory that could be delivered within the 10 days it would take the vessel to return to port. Although the main propulsion motors were two-speed, the replacement was single-speed. Fortunately, it was adequate for the DP and the ship's maneuvering capabilities.

To facilitate speed of delivery, Louis Allis stocks used and surplus specialty motors it has purchased and refurbished. This includes taking the motor completely apart, cleaning it, replacing the bearings, varnish coating the windings, rebalancing, reassembling and conducting sophisticated testing. These units are ready for delivery at a moment's notice. Before it could be shipped and put into use, however, the motor required a number of modifications.

The motor was air-cooled, an issue that would increase the temperature within the engine room. Sealion Shipping preferred a water-cooled unit, but that was not possible within the time requirement. The temperature problem was manageable, however, and plans were made to convert to water cooling at a future date. Perhaps the most difficult modifications involved converting the standard NEMA (American) motor to fit the metric specifications and footprint of the motor being replaced. Sealion Shipping did not have construction drawings of the motor on hand, so instead videotaped a series of measurements of various aspects of the motor, as well as the mounting details.

With this information, Louis Allis custom remanufactured the motor so it could be a drop-in replacement. This included ensuring that it would physically fit through a hole cut into the deck of the ship.

The replacement motor was shipped by Louis Allis and arrived within the 10 days.

"They managed to locate a suitable replacement motor very quickly, within a few days," says Sealion Shipping's spokesperson. In addition, Sealion tapped Louis Allis to repair the failed motor. Once the repairs were complete, the installation would occur during future scheduled maintenance or dry dock.

www.louisallis.com

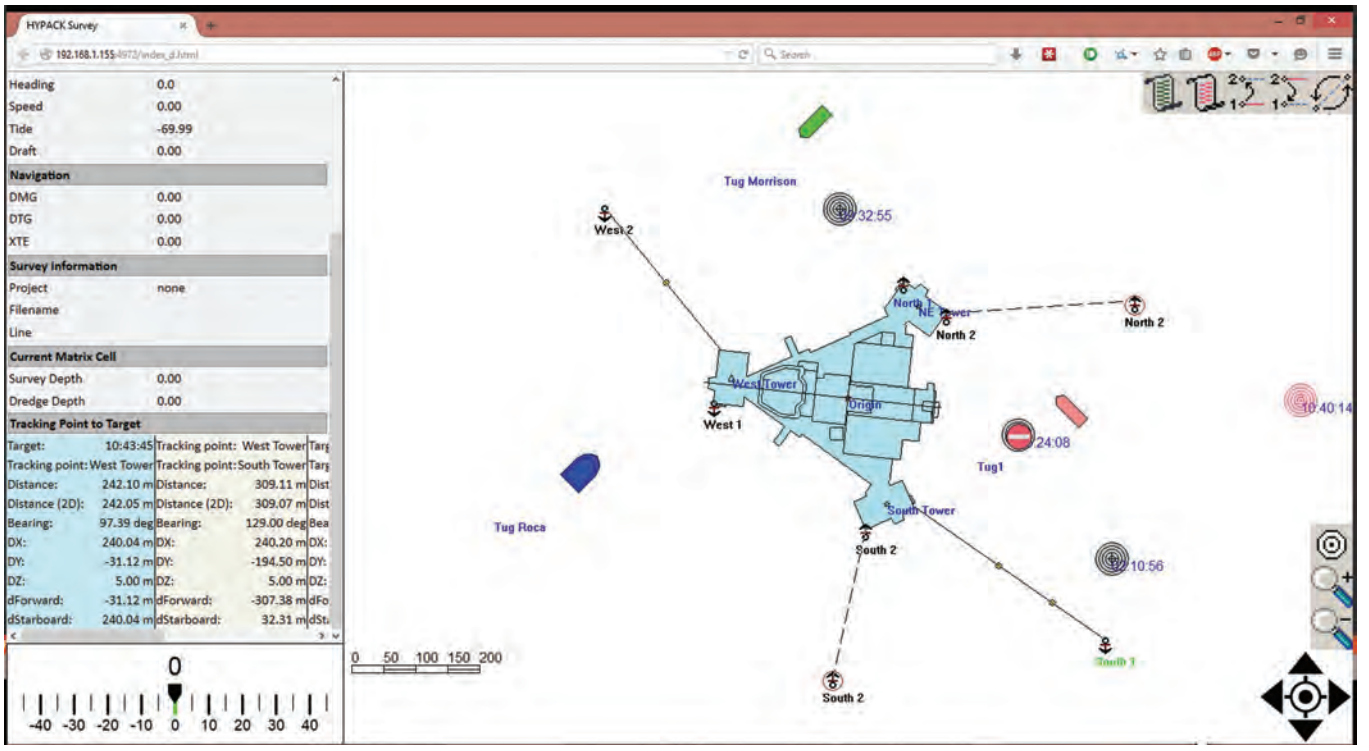
HYPACK Barge Management System

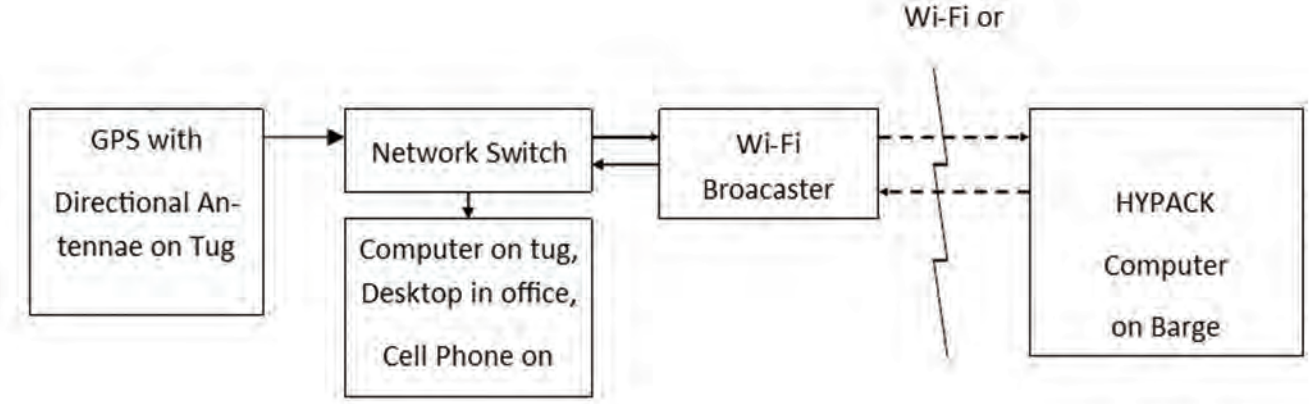
HYPACK offers a solution to track multiple vessels and share the information across vessels. It also allows any remote viewer with a web browser to observe the survey or construction operations on their PC, tablet or cell phone. Secondary vessels (tugs) are equipped with a Wi-Fi broadcaster which takes their network GPS feed and sends the messages to the Primary vessel (barge). Optional antennas can increase the range from 2km to over 10km.

Tugs can then receive their own Area Map showing all vessels using a Web Browser, or have additional controls for anchor handling and targeting by having their own HYPACK SURVEY license.

Using the HYPACK-supplied hardware, the GPS position from each secondary vessel is broadcast via a Wi-Fi network, making their position and heading data available to the barge computer. Long range antennae options allow for connections up to 2 miles between vessels. The HYPACK SURVEY computer on the barge positions all vessels on the user-defined projection with S-57 maps, GeoTIFs and construction drawings in the background. Tugs and remote viewers can then view their own survey screen, using either a web browser or their own copy of HYPACK. Users also get access to HYPACK's support staff. Using TeamViewer they can log onto your remote computer, check the configuration and offsets and get back to operation.

www.hypack.com





Simrad Launches New Pro Line Products

HS60 GPS Compass

V5035 Class-A AIS

E5024

ARGUS 250WS P

Simrad launched three new products in its professional line: the HS60 GPS Compass, V5035 Class-A AIS, and M5000 Series Monitors.

Simrad HS60 GPS Compass

The new GPS compass, the HS60, brings expanded functionality to traditional heading sensors such as rate-of-turn and pitch-and-roll output. With these features, the HS60 provides a low-cost, effective smart antenna option. Using SimNet and NMEA 2000 data communication, the new Simrad HS60 provides accurate heading, pitch, roll and position data. With out-of-band interference rejection and two-degree RMS heading accuracy, the HS60 is designed to deliver unprecedented precision in a compact unit. Designed with quick time-to-first-fix, the HS60's integrated rate gyro and tilt sensors deliver fast start-up times for almost instantaneous responsiveness and provide heading updates during temporary loss of GPS satellite signal. The differential positioning accuracy of 1 meter – 95 percent of the time – can be achieved with a Satellite-Based Augmentation System (SBAS) including WAAS, EGNOS, MSAS, as well as other similar systems.

V5035 Class-A AIS

The full-featured Class-A Automatic Identification System (AIS), the Simrad V5035 Class-A AIS for SOLAS and INLAND applications, offers meets the latest compliance standards and provides a complete Class-A AIS solution for any commercial vessel. Supplied as a standalone system with junction-box, GPS antenna and Pilot Plug, V5035 Class-A AIS integrates with Simrad GPS and Charting systems via NMEA 2000, NMEA0183 or USB interface, and meets all the latest IMO compliance standards. With its color 3.5-inch LCD display, it is a complement to the Simrad IMO GPS/GNSS systems including the GN70, MX610 and MX612. Multiple input port sensors and bi-directional data ports ensure that information flows quickly, and the control knob and keypad allow for easy operation in any conditions. V5035 Class-A AIS is also type approved for Inland AIS application.

M5000 Series

A new lineup of professional-grade monitors, the Simrad M5000 Series, is now available in 16-, 19-, and 24-inch widescreen sizes with IEC60945 Ed.4 and IEC62288 Ed.1 compliance for connectivity with type-approved Simrad systems. Featuring a seamless glass front panel incorporating capacitive touch-sensitive menu keys, the Simrad M5000 Series offers a clean and distraction-free look, and is suitable for side-by-side mounting of multiple displays without the interruption of raised bezels or controls. The M5000 Series' LCD panels are optically bonded to the displays' glass surface to eliminate fogging, and Anti-Reflective and Anti-Fingerprint coatings help to deliver optimal visibility in all conditions. The M5016 (16-inch) and M5019 (19-inch) monitors have a native resolution of 1366 x 768 pixels, in 16:9 widescreen format suitable for use with widescreen-optimized Simrad ARGUS CAT 3 radar systems. The M5024 monitor has a 'Full HD' native resolution of 1920 x 1080, in the same 16:9 format. The 24-inch M5024 is for use with widescreen-optimized SIMRAD ARGUS CAT 2 radar systems and is also IHO S-52 color monitor calibrated for Electronic Chart Display and Information System (ECDIS) use, forming part of the type-approved Simrad E5024 ECDIS system.

www.simrad.com

Every day, industry executives turn to MarineLink.com for late breaking news and editorial. You should too.

MarineLink.com

The online home of *Maritime Reporter*

www.marinelink.com

PYPLOK: Alternative to Welding

W&O, in partnership with Tube-Mac Industries, offers the maritime industry an alternative to threaded, welded or brazed joints for high pressure piping systems. PYPLOK system is designed to eliminate the costs associated with hot work, flushing and purging, NDT requirements, re-work and more. Repairs and installations using PYPLOK are designed to be quick, safe and easy.

www.wosupply.com

Pneumatic Band Saw

CS Unitec's Pneumatic Band Saw Model 5 6062 0010 Wide Mouth AirBand with planetary gearbox, is engineered to quickly and cleanly cut a wide variety of metals. It is suited for cutting pipe, conduit, bolts, cable, angle iron, I-beams and structural steel. This Band Saw is ATEX certified for use in hazardous environments (Ex Zone 2), reducing the need for obtaining "hot zone work permits" required for other tools and assisting in meeting tight schedules during process shutdowns and plant turnarounds.

www.csunitec.com

Portable Hydraulic Drills

The new Dayton Lamina hydraulic drills are compact enough to fit into narrow openings, yet they have the power for heavy duty drilling and tapping operations, making them ideal for various shipbuilding and workboat applications. Designed to fit openings as narrow as 9.25-in., they are ideal for work in tight quarters.

www.DaytonLamina.com

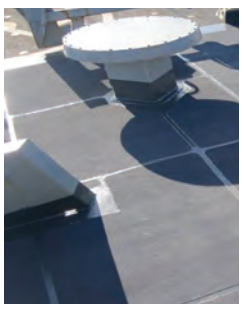
Verotec's VMEbus Systems

Verotec has supplied suites of five different VMEbus-based systems to a global U.S-based naval and marine systems integrator. The systems will be used in military shipboard applications, so meeting exacting shock and vibration requirements was a critical requirement. Each system consist of a VMEbus backplane and two military grade power converters mounted in custom plug-in modules in special subracks based on Verotec's KM6-HD family.

www.verotec.co.uk

Silvagrip

Silvagrip is fabricated with sophisticated technical alloys, holding a matrix of sharp ceramic abrasives. Silvagrip is ductile and capable of being shaped or bent, but at the same time giving a strong and hard non-skid wear surface. The non skid material is an aluminum/ceramic blend of molten metal and ceramic, applied to a backing with adhesive and a protective plastic liner. Silvagrip is replacing the traditional epoxy non skid coatings, and is used by the U.S. Navy and workboats alike.



Email: schuck@silvanonskidsolutions.com

Protea Heavy Lift Cranes

Protea lanched two types of heavy lift cranes at Nor-Shipping 2015 in Oslo. **Heavy Lift Floating Crane:** A 1600mT SWL floating crane targeted at the offshore wind market for the installation of offshore wind turbines. **Heavy Lift Cargo Crane:** (pictured) a 450mT SWL versatile cargo lift crane that can be used for handling both shipping containers and bulky items of hardware.

www.protea.pl

Senesco Invests in New Welding System

Senesco Marine Shipyard invested in a welding system, concluding a deal with Pemamek to deliver a PEMA Welding Portal for the welding of double bottoms and subassemblies.

Senesco Marine, a Reinauer Transportation Company, is a shipyard for new construction and vessel repair in the Northeast, consisting of 26 acres of Narragansett Bay waterfront property. To boost its fabrication capability, Senesco chose PEMA's welding automation technology and made a deal of a twin robot welding gantry. Senesco needed more capacity, so to increase the throughput, the yard got a flexible, yet capable gantry that improves productivity and reduces man hours per vessel.

"The next step for Senesco Marine is to produce not only quality built vessels but at an increased pace to meet the needs of our customers," said Michael J. Foster, Vice President and General Manager of Senesco. "We currently are in a continuing build program for our current customers and at the same time are looking at new work for potential new customers. To be able to do this we are making the investment with PEMA to increase the throughput thus reducing the timeframe required to complete these vessels, which leaves room for even more opportunities."

Senesco Marine has built and delivered nearly two dozen 60k, 80K and 100K barrel double-hulled fuel and chemical barges with accompanying ATB Tugs for clients, and is constructing a current line of 100K barrel double-hulled fuel and chemical barges with accompanying ATB Tugs.

www.pemamek.com

PEMA WeldControl 200 Create (Image courtesy of PEMA)

Ballast Water Compliance Tools

The United States Coast Guard Research Development Center (USCG RDC) and the U.S. Maritime Administration (MARAD) co-sponsored a validation study of the effectiveness of variable fluorescence-based instruments as compliance tools for ballast water checks. The study began June 1 in Key West, Fla. Blind testing of field and lab samples were to be conducted through September, 2015, at three different sites in the US. Pam Mayerfeld, Turner Designs Vice President of Marketing and Sales, provided initial training on their Ballast-Check 2 Handheld PAM Fluorometer and then stepped back to observe as the scientists proceeded to do the testing. "I am very impressed with their detailed preparation for the study. They fully defined all sampling protocols and cell-counting methods. They're looking at several different natural waters as well as algal monocultures with known interferences. They have an array of forms in place so data will be collected consistently across the three sites. We are very excited to be part of this validation and anxious to see the results."

The Turner Designs Ballast-Check 2 is one of three fluorometers included in the validation study. Ballast-Check 2 is a small, lightweight, highly durable, battery-operated PAM fluorometer. It is ideal for quick indicative compliance checks of the ballast water regulation for living algal organisms in the 10-50µm size class. Factory set, the Ballast-Check 2 is ready for use right out of the box, no calibration is necessary, though a calibration check standard is included for confirmation. Simple one-button measurements display estimates of both algal abundance and algal activity, providing a quick indication of risk for gross exceedance of the regulation. Results are displayed in less than one minute as well as logged internally for future downloading.

email: sales@turnerdesigns.com

Tero Marine Wins Boa Contract

Tero Marine secured a contract for delivery of fleet management software to Norwegian shipping company Boa Offshore. Tero will install its TM Master suite on 14 vessels.

"We have been reviewing TM Master for a while now, and are impressed by the vast possibilities in this system. The software is easy to use, easily scalable to fit our specific workflow, with a seamless information flow between the different work areas and locations," said Helge Kvalvik, CEO in Boa Offshore.

www.teromarine.com

MarineNav Rack Mount Computers Range

MarineNav launched a new range of rack mounted computers, available now in Europe through distributor Eurotask. The X1 Standard and X1 Fanless rack mounted computers are designed for use in commercial vessels, workboats, superyachts and specialist hydrographic and research vessels. MarineNav said its rack mounted computers use commercial processors, increasing speed and reliability.

www.eurotaskltd.com

SKF Taconite Seal for Bearings

A new SKF Taconite Seal for bearings in split block housings is designed to protect against contaminated or wet operating conditions. According to the manufacturer, benefits of this multi-stage labyrinth cartridge seal include exclusion of contaminants, improved prevention of water ingress (even during high-pressure washing), maximized bearing and seal service life, reduced grease consumption, reduced environmental impact and optimized machine performance and uptime.

www.skfusa.com

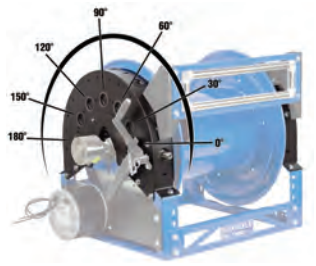
Transas Pilot PRO

Transas released a new version of Transas Pilot PRO, iPad-based chart plotter for professional pilots and mariners. It is designed to make the job easier for pilots and other marine professionals in their daily routine. Version 2.0.5 includes Vessel Parking System (VPS), which ensures high precision docking thanks to real time audio/visual information on external objects and manual Parking Safe Distance limits.

www.transas.com

Coxreels 1600 Series

Coxreels 1600 Series features a versatile symmetric reel design. According to the manufacture, this feature-rich reel has an array of components and configurations, including the Universal Bracket Kit, providing a robust reeling platform for any application. The Universal Bracket, made from 12 gauge, heavy-duty, powder-coated steel, functions as a chain/gear guard and allows for four versatile payout degrees (0°, 30°, 60°, and 90°) for mounting rewind crank, three or four way roller guide, and a three-way pin.



www.coxreels.com

Lowrance

Lowrance released new software updates for its Lowrance High Definition System (HDS) Gen2 Touch and HDS Gen3 multifunction displays. The newest releases are version 4.5 for HDS Gen2 Touch and version 2.0 for the HDS Gen3. They provide users with features including Outboard Pilot control, C-MAP MAX-N+ 2015 compatibility and Power-Pole integration.

Bringing new functionality to HDS Gen3 users, the updated software leverages built-in Bluetooth wireless technology.

www.lowrance.com

NASSCO Delivers USNS Lewis B. Puller

(Photo: NASSCO)

NASSCO Program Manager William McKay and Area Manager Aaron Rockwell present the ship's captain, Jonathan Olmsted, a photo of the MLP 3 AFSB, USNS Lewis B. Puller.

General Dynamics NASSCO delivered the U.S. Navy's newest ship, the USNS Lewis B. Puller (MLP 3 AFSB) in June. The ship is named in honor of the late U.S. Marine Corps Lieutenant General Lewis "Chesty" Puller, the most decorated Marine and the only one to be awarded five Navy Crosses.

The AFSB modifications add a 52,000 sq. ft. flight deck, fuel and equipment storage, repair spaces, magazines, mission planning spaces and accommodations for up to 250 personnel. The ship is capable of supporting multiple missions including Air Mine Counter Measures (AMCM), counter-piracy operations, maritime security operations, humanitarian aid and disaster relief missions and Marine Corps crisis response. The ship is designed to support MH-53 and MH-60 helicopters, and will be upgraded to support MV-22 tilt rotor aircraft.

Construction on the USNS Lewis B. Puller began in 2013. Earlier this year, NASSCO shipbuilders christened the ship with a ceremony at the company's shipyard in San Diego. The commandant of the Marine Corps, General Joseph F. Dunford, Jr., was the ceremony's principal speaker. Martha Puller Downs, daughter of General Puller, served as the ship's sponsor.

"The delivery of the USNS Lewis B. Puller to the U.S. Navy symbolizes an immense culmination of efforts made by the hard-working men and women of the General Dynamics NASSCO shipbuilding team," said Kevin Mooney, vice president of operations at the General Dynamics NASSCO shipyard.

StingRay Adapting to the Market

There is no question that these are challenging times for offshore oil in the Gulf of Mexico. However, while some vessel operators are tying up boats, Bordelon Marine is continuing with its aggressive build program. Designed for flexibility, the firm's Stingray 260 Class DP 2 platform supply vessels are proving their design concept.

Its most recently vessels are the M/V Shelia Bordelon, and M/V Brandon Bordelon, number two and three in the series, due for launch later this year. Working with the same hull and accommodation block, Bordelon have been able to modify the vessels to meet the requirements of charterers wanting an ultra-light-intervention vessel. These vessels will carry and deploy remotely operated vehicles (ROV), requiring the addition of a 50-ton AHC crane, with 3,000 meters of wire, mounted on a six-meter pedestal with a maximum lifting height of 90 ft.

"Typically when a charterer adds ROV systems to a vessel, they are required to install extra generators on the back deck, exposing this equipment and taking up valuable cargo space," said Wes Bordelon, Presidend & CEO of Bordelon Marine. "We've added all of these necessary power systems below deck, leaving the back deck open and clear, while also protecting the equipment from the environment. It's a very clean and safe plug-and-play set up."

To do this took some serious design work. The standard Stingray 260 PSV design has a pair of Cummins QSK60 Tier 3 main engines, two Cummins QSK38-DM1-powered 975 kW main generators, and a single Cummins QSK19-powered 535 kW genset for reduced consumption during port side service. Two additional Cummins QSK38s and two QSK19s were added below deck to provide fully redundant power to the ships's 50-ton crane, and up to two complete work class ROV systems.

Marine disconnects were positioned on deck for safe and efficient installation of ROVs.

As integral components of the vessel, the additional gensets are tied into the vessel software so that they can be controlled and monitored from the bridge. The flexible nature of the original Stingray design lends itself to these adaptations, and others, to allow the vessel to meet changing market demands. Total berths have been increased from 54 to 60 along with other modifications to the accommodations area for the ROV support crews.

By Alan Haig-Brown

ASRY to Build New Landing Craft

ASRY signed an agreement with the Bahrain Coast Guard to design and construct a new Landing Craft for the transport of vehicles, potable water, and fuel. The craft, potentially the first of two, will be delivered in 2016. The contract, worth approximately $2.8m, marks ASRY's first newbuild contract since launching the New Construction & Engineering division, which is tasked with growing the new construction program at the yard.

"This deal is significant for ASRY," said ASRY Chief Executive, Nils Kristian Berge, "as it marks the beginning of ASRY's new move into the new construction market. Our New Construction & Engineering division now boasts some of the most experienced naval architects and engineers in the Arabian Gulf and combines them with ASRY's years of know-how to make a first class newbuild team." Sauvir Sarkar, ASRY New Construction & Engineering Senior Manager, said, "The newbuild market in the Arabian Gulf still has significant room for growth. With ASRY's experience, we can build world-class vessels at prices competitive with international builders. We aim to put this region on the map in terms of vessel design and construction, especially small-to-medium sized vessels."

It will be approximately 34.5m in overall length, with two 600 hp engines, having a top speed of 10 knots and cargo deck capacity of 40 tons. Delivery is expected in the first half of 2016.

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- RADM David H. Lewis, USN; Commander, SPAWAR (*Confirmed*)
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1

Image: Vard

Teekay's new LNG Carrier from DSME

2

Image: Teekay

Triple-E

Maersk Orders 11 more massive containerships for $1.8B

3

Image: Tuco Marine

First generation Triple-E containership

4

Image: Maerrk Group

1 Kreuz Subsea Orders DSV from Vard

Vard Holdings won a contract for the design and construction of a diving support and construction vessel for Kreuz Subsea. It will be of VARD 3 17 design, and measure 91.2 x 21.5m. Designed by Vard Design in Ålesund, Norway, hull construction will be carried out at Vard Tulcea in Romania. The DP2 class vessel will have a 100-ton AHC offshore crane, and is prepared ROVs.

2 DSME Launches LNG Carrier for Teekay

Teekay's first M-type, EC, Gas Injection (MEGI)-powered 174,000 m3 LNG vessel, Creole Spirit, was floated out at the Daewoo Shipbuilding & Marine Engineering (DSME) shipyard in South Korea The two-stroke engine technology provided by MAN Diesel, the MEGI propulsion system, is driving a step change in global LNG vessel efficiency, with a consumption of 100 metric tons.

3 Tuco Workboat Delivered to Norwegian Owners

Tuco Marine delivered a ProZero 10.5m WBW Archipelago workboat to Norwegian owners. The vessel is to enter service in Bergen, Norway, for the local Archipelago services and has been sold through the Norwegian company, Provide Maritime, Florø, Norway.
The vessel is a fast and light multipurpose workboat that features a hydraulic bow gate and a deck crane for handling cargo over the vessels side.

3 Maersk Orders 11 Triple-E Containerships for $1.8 Billion

Maersk Line ordered 11 new ultra-large second generation Triple-E containerships from Daewoo Shipbuilding & Marine Engineering (DSME). Ordered to replace smaller ships in the Maersk Line fleet, the new vessels will be the shipper's largest and are intended to enter Asia - Europe service between April 2017 and May 2018. They will sail under Danish flag. The ships will measure 400 x 58.6 x 16.5 m with a capacity of 19,630 TEU.

5

Image: Burger Boat

Lucia
Burger Boat Launches 89-ft. PV Lucia

6 Debora Burke (left) with Karim Barajas (right) signs off start of construction.

(Photo: General Dynamics NASSCO

HHL Valparaiso lifting the 900 metric ton, 63.1m megayacht M/Y Irimari into the sea.

7

Image: Hansa Heavy Lift

John Warner (SSN 785) The first Virginia Class submarine to be named for a person.

8

Image: Chris Oxley/HII

5 Burger Boat Company Launches P/V Lucia
Burger Boat Company launched P/V Lucia, an 89-ft. steel passenger vessel for Wendella Sightseeing Company, Inc. Lucia was designed by Timothy Graul Marine Design, and is styled after other vessels in Wendella's fleet. It has a capacity of 340 guests, Lucia is certified USCG Subchapter K and is powered by two Caterpillar C12 main engines and has two Northern Lights generators.

6 NASSCO Starts Second SEA-Vista Tanker
General Dynamics NASSCO signaled the start of construction for the second of three 50,000 deadweight ton, 330,000 barrel cargo capacity product tankers for SEA-Vista Newbuild III LLC, a subsidiary of SEACOR Holding Inc. Each LNG-conversion ready product tanker will be constructed at the NASSCO shipyard in San Diego under Jones Act requirements and will continue to provide well-paying jobs in the local economy.

7 Megayacht Launched from Cargo Ship in Turkey
Hansa Heavy Lift usedd two of its on-board cranes, which have a combined lifting capacity of up to 1,400 metric tons to maneuver the 900 metric ton, 63.1m megayacht M/Y Irimari into the sea. HANSA HEAVY LIFT said its engineers had to carefully select the frames to carry the yacht in order to maintain its structural integrity. Furthermore, close attention was paid to suspension stability due to the difference in the shapes of the frames.

8 Submarine John Warner Delivered Ahead of Schedule
Huntington Ingalls Industries' (HII) Newport News Shipbuilding division delivered the submarine John Warner (SSN 785) to the U.S. Navy. The Virginia-class submarine, the first to be named for a person, was delivered two and a half months ahead of schedule. The submarine was named for John Warner, who served as Secretary of the Navy and represented Virginia in the Senate for 30 years.


VT Halter
Skinner


VT Halter
Prendergast


Seaspan
Hale


Oman Drydocks
Dr Ahmed Al Abri


Odfjell
Mørch


Bouchard Transportation
Bouchard

Industry Veteran Bill Skinner Retires

VT Halter Marine, Inc. (VTHM), a company of Vision Technologies Systems, Inc. (VT Systems), announced that after more than 46 years in the shipbuilding business, including nearly two decades at VT Halter Marine, President and CEO Bill Skinner has announced his retirement. Skinner previously served as President, CEO and Director of ADDSCO Industries (1985-1989), the parent company of Alabama Maritime Corporation, where he also served as President (1982-1984) and as President of Alabama Shipyard, Inc. (1989-1997) following its acquisition by Atlantic Marine.

Subsequent to Skinner's retirement announcement, Jack Prendergast was named as the new President and CEO by the VT Halter Marine Board of Directors. A retired U.S. Navy Rear Admiral, Prendergast joined VT Halter Marine as an outside director in 2011, and was subsequently appointed as Executive Vice President in late 2012.

Seaspan Appoints Hale

Brent Hale has joined Seaspan as vice president of human resources, providing leadership for strategic plans, and guide the development and implementation of human resources and labor relations initiatives and processes to achieve its corporate goals. Hale succeeds Lisa Bumbaco, who is retiring after more than 12 years with Seaspan.

Oman Drydock Deputy CEO

Oman Drydock Company (ODC) appointed , Dr. Ahmed Al Abri as deputy CEO. Dr. Ahmed Al Abri, draws on 17 years experience working as a naval architect overseeing major projects in shipyards around the world in the U.K., Holland, Romania and Singapore.

Odfjell: New CEO Start Date

Kristian Verner Mørch, will take up his new position as president and CEO of Odfjell SE from August 1, 2015, the company's board of directors announced. His appointment was announced in May 2015. Mørch is Danish citizen with more than 27 years' experience in the shipping industry, of which more than 10 years have been in senior management positions, previously holding posts as co-CEO of Clipper Group, COO of Maersk Tankers, and other management positions in A.P. Moller-Maersk.

MOL Inaugurates Ikeda as President

Mitsui O.S.K. Lines, Ltd. (MOL) inaugurated Junichiro Ikeda as its new president on June 23, 2015.

Twin Disc Elects Knutson

The board of directors of Twin Disc, Inc. elected Jeffrey S. Knutson to the position of chief financial officer and treasurer effective June 22, 2015 in addition to his current roles as vice president of finance, corporate controller and secretary.

New VP at Bouchard Transportation

Bouchard Transportation Co., Inc. appointed Brendan J. Bouchard as VP of Sales and Operations, establishing the fifth generation of the Bouchard family. Bouchard Transportation was started by Brendan J. Bouchard's great great grandfather, Capt. Fred Bouchard, and passed on down to his great grandfather, Morton S. Bouchard Sr., then to his grandfather Morton S. Bouchard Jr., and then to his father, Morton S. Bouchard III, to whom Brendan will report.

Brendan has worked in various capacities throughout the years at Bouchard Transportation. Most recently within the Operations and Vetting department as well as sailing as observer on the M/V Evening Star and Barge No. 250 on the East Coast, and the M/V Barbara Bouchard and Barge No. 240 on the Gulf Coast. Brendan J. Bouchard has a BS in Business Management & Economics from Ohio Wesleyan University.

Harvey Gulf Adds Shipbuilding

Harvey Gulf International Marine (HGIM) launched a new affiliate, Harvey Shipyard Group, a shipbuilding asset premised on its acquisition of Gulf Coast Shipyard (Gulfport, MS) and Trinity Yachts (New Orleans, LA). "These shipyard acquisitions will position Harvey Gulf as America's only builder, owner, and operator of dual-fuel (diesel/LNG) offshore supply vessels and allow

us to pass along the savings of lower operating costs and environmental protection to the Marine Transportation industry," said Shane J. Guidry, Chairman and CEO, HGIM.

The plan is for HGIM and its affiliates to catapult the Gulf Coast Shipyard into a state-of-the-art builder of world-class vessels. HGIM alone is investing $350 million to construct its dual-fuel fleet. This July, HGIM will be opening its first of its kind marine fueling station at Port Fourchon, LA to bring LNG as a marine fuel to the offshore and inshore industry. HGIM's $25 million Phase I construction will be capable of fueling Harvey Gulf's fleet of dual-fuel offshore supply vessels and will accommodate America's growing fleet of over-the-road vehicles operating on safe, efficient LNG.

Bizzarro Named President of WRI

Effective June 1, 2015, Stasu C. Bizzarro has been appointed President of Weather Routing, Inc. Bizzarro is an AMS certi-

Brew One for Wasted Sea Stars

A new beer has been brewed with the goal of raising awareness about sea star wasting syndrome, a pandemic killing millions of sea stars along the U.S. Pacific Coast. Reportedly the largest marine animal disease event in recorded history, sea star wasting syndrome describes a set of symptoms, including lesions and tissue decay on the arms and body of starfish that eventually cause parts of the creature to fall off and can lead to death. The disease is becoming increasingly prevalent and affects sea stars in coastal habitats and aquariums alike, heavily impacting West Coast populations in particular since summer 2013, states the Partnership for Interdisciplinary Studies of Coastal Oceans (PISCO), a large-scale, long-term monitoring and research program led by investigators at four Universities along the U.S. West Coast: OSU, UC Santa Cruz, Stanford University and UC Santa Barbara. According to PISCO, the effects of sea star wasting syndrome can be devastating on sea star populations, meaning collaborative research and citizen efforts are vital. Helping to raise awareness for the cause, the new beer, called Wasted Sea Star, is launching as part of a collaboration between PISCO, Oregon State University and Rogue Ales & Spirits, with a portion of proceeds from the beer's sale going toward PISCO's wasting syndrome research. Rogue Brewmaster John Maier crafted the beer using a new ingredient, purple corn nectar, to pay homage to a native species rapidly disappearing from the Oregon coastline, said Rogue Ales & Spirits. "Like these sea stars, the beer has a light reddish-purple hue. Like the beer, these sea stars call Newport, Ore. home." Wasted Sea Star is available at all Rogue locations and throughout the states of Oregon, Washington and California starting in June. It will be available nationwide throughout the summer.

A portion of Wasted Sea Star's proceeds will contribute to PISCO's sea star wasting syndrome research.

(Image: Rogue)

Almarin: 85 Years Strong

Your company is celebrating its 85th anniversary this year. Please provide an overview of your activities.

The Lindley group of companies began its activities in 1930 with the establishment of Ahlers, Lindley, Lda. as a distributor of harbour and industrial equipment in Lisbon, Portugal. Today the group activities evolved to manufacture, distribution and service of port infrastructure.

Ahlers Lindley and Almarin share engineering and production capabilities pooling design and manufacture of fixed and floating structures for the marine environment. Almovi is a market leader in industrial and port handling equipment with highly trained technicians that do maintenance and make repair to equipment in the most demanding conditions. Each company has a qualified staff capable of providing service to customers wherever it may be required. Based in Europe (Lisbon and Barcelona), the geographic presence of Grupo Lindley has been mainly in Europe and in the African and Latin American markets.

The organization sounds diverse. Can you "put some meat on the bone" as we say, describing the three companies of Grupo Lindley?

The three companies of Grupo Lindley are:

- **ALMARIN**, based in Barcelone, is a manufacturer of buoys and beacons for use in marine aids to navigation (AtoN). Specialized in the design, manufacture, supply and installation of AtoN to ensure safety navigation in ports, Almarin uses the Group experience in engineering as well as in-house R&D capabilities to provide custom solutions to each project. To complement its product line, Almarin is the distributor of the leading manufacturers of LED marine lights for use in lighthouses and beacons. The company also incorporates into its equipment other systems such as Racon, AIS, satellite monitoring.
- **AHLERS LINDLEY**, based in Cascais (Portugal), manufactures floating equipment for marinas, leisure harbours and fishing ports. Due to the nature of the business Ahlers Lindley engineering team work closely with customers to provide tailored turnkey solutions.
- **ALMOVI**, based in Cascais (Portugal), is a crane and harbor equipment distributor. Almovi's major strength is its service team leading to service contracts, spare parts and complete refurbishments as well as a complete service and technical maintenance all over the world. Almovi is distributor of the leading manufacturers of industrial and port equipment as Grove, Gottwald, Genie, Marine Travelift and Shuttlelift.

Looking back, what do you count as your company's biggest achievement ?

Eighty five years of business activity is the evidence that customer value our services. The majority of our customers are long term relationships and being a partner. The recent European crisis had a deep impact in all of our home markets. To have come out in strong financial health with a growing international business is without a doubt a source of satisfaction. Our need to solve the challenges given by the customers means we are constantly developing new solutions to suit project requirements in the most diverse and hazard environments, for example:

- We have recently installed navigation buoys in the very challenging Magdalena River in Colombia designed to withstand currents of up to 8 knots and islands of mangroves that float down river.
- We have also installed 11 river landings in the Kubango River, Angola for the locals to be able to safely access river transport. The landings included long aerial pedestrian access bridges to avoid the crocodile infested swamps.

Looking back on the past year, looking at the maritime industry as a whole, do you see positive or negative, and why?

Global trade is increasing driving bigger ships to bigger ports. We are ceaselessly looking for and finding new and greater reserves of resources in the sea. The marine industry is evermore becoming an item in the agenda of countries with a sea front as they understand the value of the natural resources in every sense, from fossil fuels to alternative energies all the way to tourism. This development, particularly in emerging countries, creates great opportunities for the future.

Looking ahead, what do you see as the defining trends that will drive your business forward in the year(s) ahead?

We will continue target growth in our activities abroad, primarily in Africa and Latin America, this is where we see the largest short term opportunities. For 2016 we also expect an improvement in our home markets where there has been little to no recent investment, although commercial ports in most cases have seen grown in overall volume, and should now be feeling more optimistic. This will hopefully lead to a recovery in expenditure in maintenance and further ahead in investment for capacity growth.

What is the overall importance of the maritime industry to the whole of your company?

Directly or indirectly represents 84% of our turnover on an average year.

As the business world grows increasingly complex and competitive, what do you count as the primary strengths of your company that make it stand out?

We will continue to work with our customers to help them reach their objectives. Naturally this depends on a professional team who can assist the customer anywhere they may need us providing the right level of service. Finally we will continue to invest in our R&D and engineering staff that are fundamental to driving innovation and providing customers with optimal solutions to their evolving requirements.

Meet the CEO

Patrick Lindley, CEO, Grupo Lindley

Patrick Lindley is Managing Director of Almarin and CEO of Grupo Lindley. Grupo Lindley is a group of companies that manufactures and distributes port and industrial equipment. The group has its head office in Cascais (Portugal) with offices in Oporto, Barcelona and Rio de Janeiro and comprises of three active businesses: Almarin, Marine Aids to Navigation; Lindley, floating equipment for marinas and harbors, and Almovi, cargo handling equipment for industrial and port applications.


WRI
Bizzarro


PPG
Holliday


The Swedish Club
Kromli


The Swedish Club
Lim Sim Keat


Survitec
Wilkinson


Renk
Hammel

fied maritime meteorologist with close to 20 years experience in the maritime industry.

PPG Appoints Holliday

PPG Protective & Marine Coatings (PMC) has appointed Richard Holliday as Global Director - Hydrocarbon PFP (HC-PFP) succeeding Paul Greigger who has retired after 36 years of service.

Swedish Club Names New CFO

The Swedish Club announced the appointment of a new Chief Financial Officer, Mikael Kromli, who will take up the position on June 15, 2015 and will be based in Gothenburg. The Swedish Clubalso welcomed the election of Lim Sim Keat, Managing Director of the Dry Transport Logistics Division of the Singapore-based IMC Shipping Co. Pte, onto the Swedish Club board.

Survitec Names Wilkinson MD

Survitec Group appointed Ross Wilkinson as Managing Director of the Group's U.K. Services and Distribution business.

Hammel Named to RENK Executive Board; Sauter Steps Down

RENK AG's supervisory board has appointed Christian Hammel as executive board member for production and administration. Hammel is currently a member of the executive board responsible for finance at MAN Truck & Bus Österreich AG. Hammel will succeed Ulrich Sauter on August 1, 2015, who will be leaving the company on July 31 for health reasons after almost 20 years on the executive board. Sauter will still assist RENK in an advisory capacity for a transition period.

Cargomatic Hires Whiteley as COO

Cargomatic announced that technology executive Sean Whiteley has joined the company as chief operating officer. Whiteley will be charged with overseeing operations, sales and marketing efforts for Cargomatic as it continues its mission to transform local trucking through its mobile technology.

RigNet Names VP Global Ops, TSI

RigNet, Inc. announced that Keith Stewart has been promoted to the new position of Vice President – Global Operations, RigNet TSI, based in Aberdeen, Scotland.

Bay Diesel Names Bratton GM

David Bratton has been promoted to general manager of diesel engine sales and repair specialist Bay Diesel & Generator in Richmond, Va.

DNV GL Presents Award for Young Professionals

DNV GL rewarded three engineers for their scientific research at Nor-Shipping, presenting them with the DNV GL Award for Young Professionals.

The prize in the category "Safer" and 1,000 Euros went to Alexander Iley from the University of Southampton in England. Iley won the award for his third-year thesis "Embarkation Modeling for Improved Lifeboat Design", which demonstrates how modern simulation technology can make cruise ships safer by considering realistic variations of scenarios.

Eva Herradón de Grado's paper "Predicting Added Resistance in Wind and Waves employing Artificial Neural Nets" won the award in the category "Smarter" and 1,000 Euros. The master's student at the Polytechnic University of Madrid prepared her winning paper for an international conference. Wind and waves slow vessels down and increase their fuel consumption. Therefore, Herradón de Grado's approach holds great potential for improving methods to better quantify this effect during the early stages of ship design.

The award in the category "Greener" and 1,000 Euros went to Damien Ducasse, who won it for his master's thesis "Theoretical and Numerical Analysis of Oscillating Water Column Wave Energy Devices". His simulations show how a so-called attenuator-type wave energy converter, which is made of 40 water column (OWC) chambers, could be optimized to increase each chamber's energy absorption – making the device much more efficient.

Gladding-Hearn

Gladding-Hearn Delivers 400th Vessel

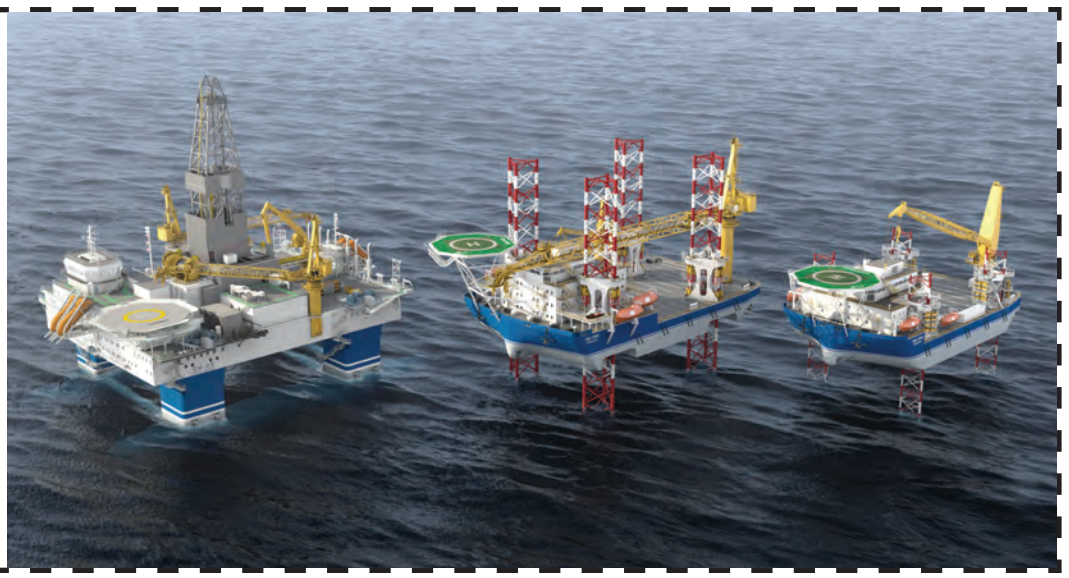
Cape Fear Pilots Association of Southport, N.C. has taken delivery of its second St. John's Class pilot boat from Gladding-Hearn Shipbuilding, Duclos Corporation. This vessel marks the Somerset, Mass. shipyard's 400th boat built since its founding 1955. The new all-aluminum launch, an updated version of the pilot's first St. John's Class delivered in 2001, features a deep-V hull designed by C. Raymond Hunt Associates. It measures 52 feet overall, with a 17-foot beam and a 4.8-foot draft. It is powered by twin Caterpillar C-18 diesel engines, each producing 479 Bhp at 1,800 rpm. Top speed is 23 knots. Each EPA Tier 3-rated engine turns a five-blade Ni-Br-Al propeller via a Twin Disc EC-300 Quick Shift gear box. A Northern Lights diesel generator provides 9kW of electrical output.

Stevens to Study Shipping Containers' Invasive Species

Stevens Institute of Technology research-

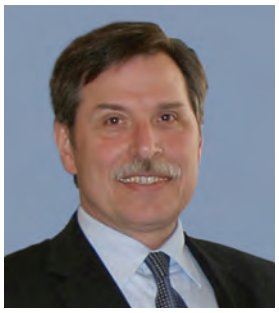
ABS to Class Baoham Offshore Newbuild Semisub

Baoham Offshore (HK) Ltd. has selected ABS to provide classification services for newbuilds in China. The GM-4E mid-water semisubmersible drilling unit will have both an eight-point mooring system and Class 3 dynamic positioning and will feature a variable deck load that exceeds 4,000 metric tons. The GM-J1450 has a water depth capability of 80 m (~260 ft) and will be equipped with a 400-metric-ton deck crane. Hydraquip Custom Systems Inc., which has produced more than 100 jacking systems over the past two decades, will provide the jacking system for the liftboat, while Gulf Offshore Pte Ltd. will provide detail engineering and production design.


Global Maritime

This artist's rendering shows the three units that will make up the Baoham fleet upon delivery of the newbuilds now on order.

Renk



Sauter

Cargomatic

Whiteley

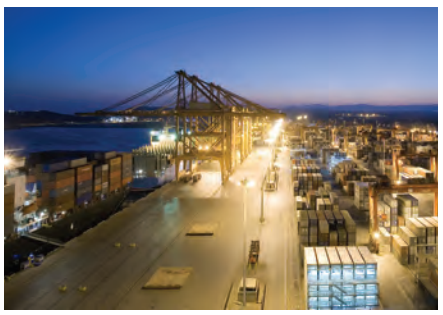
Bay Diesel

Bratton

DNV GL

DNV GL Young Professional Awards

APM Terminals



ers have received a $2-million contract from the Department of Homeland Security (DHS) Science and Technology Directorate (S&T) to improve detection of threats coming into the U.S. through container shipments. The research will be led by Stevens Associate Dean of Research in the School of Engineering & Science (SES) Dr. Hady Salloum, the principal investigator on the contract. David Masters from the DHS Science and Technology Directorate will manage the program, along with other border and maritime security programs.

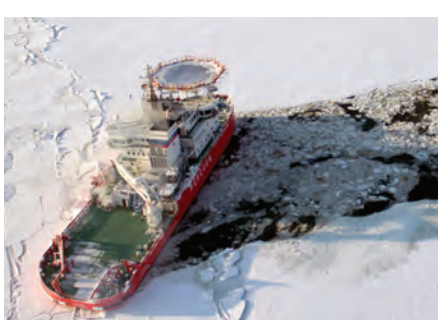
Global Diving & Salvage Opens California Office

Global Diving & Salvage, Inc. expanded its California regional operations with the addition of a new office in Southern California. Located in Signal Hill near Long Beach, the new office supports Global's core service lines: marine construction, casualty response and offshore support. Danny Broadhurst is Global's California Operations Manager and Manager of the new facility.

Aker Arctic Acquires Canada's Akac

Aker Arctic Technology Inc has acquired full ownership of Canadian based company Akac Inc, which is known in the oil and gas industry for its involvement in the Arctic Offshore projects and operations.

Aker Arctic



Wärtsilä, COSCO Ink BWMS License Agreement

Wärtsilä signed a manufacturing license agreement with COSCO (Weihai) Shipbuilding Marine Technology Company Limited (WECOSCO) based in Weihai, China. The two-way agreement provides COSCO with access to technology and the rights to manufacture the Wärtsilä Aquarius Electro Chlorination (EC) Ballast Water Management System (BWMS) under license for application in its global marine market. In return, Wärtsilä gains access to an additional manufacturing facility able to assist with supply and demand of the Wärtsilä BWMS direct to Wärtsilä customers. Wärtsilä retains ownership of the Aquarius EC technology and all associated Intellectual Property Rights, and will provide technical support to WECOSCO who will manufacture the system under license for applications on ships across the global marine market including COSCO.

Hatteland Expands in Singapore

Hatteland

Goetz Vogelmann, Sales Director Hatteland Display and Lawrence Low, Managing Director Allied eParts

Allied eParts Pte. Ltd. (AEP) with its premises in Ubi Avenue, Singapore joins the Hatteland Display service network after signing a contract with the marine display and computer manufacturer during Sea Asia in April 2015. Following the full training of AEP's Service engineers at the Norway premises of Hatteland Display and the set-up of the Service location including a variety of spare parts, AEP will be ready to perform warranty and non-warranty workshop repairs on behalf of Hatteland Display.

RECAB

From left: Bjørn Espen Aase, Country Manager RECAB; Andrés Lara, Project Department Manager, AKVA Group; Sigurd Larsen, Supply Chain Manager, AKVA Group; Michael Ullskog, CEO, RECAB; and Nils Gjørvad, Sr. Key Account Manager, RECAB

RECAB Inks Deal with AKVA Group

Embedded computer systems developer RECAB has entered into a contract with AKVA Group for the delivery of its solutions to the fish farming industry. The frame agreement signed during Norshipping 2015 will see AKVA group deliver RECAB's embedded computer systems to the global fish farming industry.

Ingalls Honored for Vet Hiring

Huntington Ingalls Industries' (HII) Ingalls Shipbuilding division was honored at the DirectEmployers Annual Meeting and Conference for its work hiring and promoting veterans. The shipyard's talent acquisition team won the overall award in the Vietnam Era Veterans' Readjustment Assistance Act (VEVRAA) compliance initiatives category.

DirectEmployers

Ingalls Shipbuilding employees (left to right) Carlos Lett, Angela Woodruff, Sidni Wafler and Fred Howell accept two awards on behalf of the shipyard's Talent Acquisitions team at this year's DirectEmployers Annual Meeting and Conference.

Topaz Selects Management Software

Topaz Energy and Marine selected ABS as its fleet management software provider. Topaz will install the ABS Nautical Systems Fleet Management Software suite on 58 of its core vessels to more efficiently plan for maintenance work, minimize downtime and reduce costs associated with drydocking.

New LNG Joint Venture

Stolt-Nielsen Limited and Golar LNG Limited have formed a 50/50 joint venture to pursue opportunities in small-scale LNG production and distribution.

New RoPax Design

Deltamarin launched its new RoPax vessel DeltaChallenger concept. To reduce fuel consumption the vessel has six rotor sails by Norsepower. Fuel economy and maneuverability are gained through

Deltamarin

the combination of dual-fuel electric machinery, four power plants (2 x 6 MW and 2 x 3 MW) and the new compact Azipod D pod propulsion system from ABB. The vessel will have GTT Mark III membrane LNG tanks of totally 1,200 m3. The tanks give layout advantages making new efficient loading and unloading configurations possible without decreasing passenger and cargo capacity, the designer noted. The air conditioning and ventilation has been optimized by Carrier.

Lilaas Controls to U.S. Market

IMTRA has partnered with Lilaas to bring the latest controls to the U.S. market. Lilaas recently introduced two products, the L01 is designed for azimuth, single/double thruster and propulsion control, and the L04 is a multi-axis joystick controller designed for onboard and shore-based applications.

BUYER'S DIRECTORY

This directory section is an editorial feature published in every issue for the convenience of the readers of MARITIME REPORTER. A quick-reference readers' guide, it includes the names and addresses of the world's leading manufacturers and suppliers of all types of marine machinery, equipment, supplies and services. A listing is provided, at no cost for one year in all issues, only to companies with continuing advertising programs in this publication, whether an advertisement appears in every issue or not. Because it is an editorial service, unpaid and not part of the advertisers contract, MR assumes no responsibility for errors. If you are interested in having your company listed in this Buyer's Directory Section, contact Mark O'Malley at momalley@marinelink.com

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Anchor Marine & Supply, INC., 6545 Lindbergh Houston, Texas 77087 , tel:(713) 644-1183, fax:(713) 644-1185, david@anchormarinehouston.com

ANTI-CONDENSATION COATINGS

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ATTORNEYS

Blank Rome LLP - Admiralty & Maritime Law, 600 New Hampshire Avenue, NW, Washington, DC , USA , tel:(202)772-5927, fax:(202) 772-5858, Grasso@BlankRome.com contact: Jeanne M. Grasso, www.BlankRomeMaritime.com

AUTOMATIC IDENTIFICATION SYSTEM

Saab TransponderTech AB, SE-589 41 Linkoping , tel:46 13 180000, fax:46 13 182377, Info.transpondertech@saabgroup.com

COATINGS/ CORROSION CONTROL/ PAINT

Hempel A/S, Lundtoftegårdsvej 91 2800 Kgs. Lyngby , tel:45 4593 3800, fax:45 4588 5518, marine@hempel.com , www.hempel.com

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

CORDAGE

Helkama Bica Oy, Lakimiehenkatu 4, KAARINA FI-20780, Finland , tel:+358-2-410 8700, sales@helkamabica.fi

FILTERS/FILTER SYSTEMS

UT 99 AG Oil Mist Separators, Schaubenstrasse 5 CH-8450 Andelfingen , Switzerland , tel:+41 52 397 11 99, fax:+41 52 397 11 90, info@ut99.ch , www.ut99.ch/en

INSURANCE SERVICES

WQIS (Marine Pollution Insurance Policies), 60 Broad Street, 33rd Floor, New York, NY , USA , tel:1-800-736-5750, fax:(212) 292-8716 , www.wqis.com

WQIS (Water Quality Insurance Syndicate), 60 Broad Street 33rd Floor, New York, NY 18974, USA , tel:1-800-736-5750, fax:212-292-8716

LIFESAVING EQUIPMENT

CM HAMMAR AB, CM Hammar AB, August Barks gata 15, 421 32 Västra Frölunda, Sweden, , tel:+46 31 7096550, info@cmhammar.com , www.cmhammar.com

LIFT EQUIPMENT

Lifting Gear Hire, 9925 Industrial Drive Bridgeview, IL 60455

MARINE AND PROTECTIVE COATINGS

Sherwin Williams, 101 W. Prospect Avenue, Cleveland, OH, 44115 , USA , tel:800.524.5979, klarmstrong@sherwin.com , sherwin-williams.com/protective

MARINE TRANSPORTATION

Central Boat Rentals, Inc., P.O. Box 2545, Morgan City, LA , USA , tel:985-384-8200, fax:985-384-8455, earl@centralboat.com or gary@centralboat.com

MECHANICALLY ATTACHED FITTINGS (MAFS)

Viega, 100 N. Broadway 6th Floor, Wichita, KS , USA , tel:904-315-3899, fax:888-782-6188, paul.switzer@viega.us contact: Paul Switzer, www.viega.us

MILITARY PATROL CRAFT MANUFACTURERS

Brunswick Commercial & Government Products, 420 Megan Z Avenue, Edgwater, FL 80204, USA , tel:(386) 423-2900, kelsey.nemeth@whaler.com , www.brunswickcgp.com

MOORING PRODUCTS AND SYSTEMS

DCL Mooring and Rigging, 4400 North Galvez Street, New Orleans, LA , tel:504 944-3366, fax:504 947 8557, codys@dci-usa.com

DCL Mooring and Rigging, 4400 North Galvez Street, New Orleans, LA , tel:504 944-3366, fax:504 947 8557, codys@dci-usa.com

NAVAL ARCHITECTS, MARINE ENGINEERS

Bristol Harbor Group, Inc., 99 Poppasquash Road Unit H, Bristol, RI 85714, USA , tel:(401) 253-4318, design@bristolharborgroup.com

Brunswick Commercial & Government Products, 420 Megan Z Avenue, Edgwater, FL 80204, USA , tel:(386) 423-2900, kelsey.nemeth@whaler.com

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The Shearer Group, Inc., 3101 NASA Parkway Suite I, Seabrook, TX , USA , tel:(281) 532-2080, info@shearer-group.com , www.shearer-group.com

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Air Product AS, Vige Havnevei 78, 4633 Kristiansand, Norway, P.O.Box 4103 Kongsgaard, 4689 Kristiansand, Norway , tel:+47 38 03 99 00, norway@airproducts.com , www.airproducts.no

PRESS FITTINGS

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Chesapeake Shipbuilding, Corp., 710 Fitzwater Street, Salisbury, MD , USA , tel:(203) 453-6800, fax:(203) 453-1877, cbrobertson@americancruiselines.com contact: Charles Robertson, www.chesapeakeshipbuilding.com

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SHIPYARDS

Bayonne Drydock & Repair Corp., Military Ocean Terminal Dock Yard, PO Box 240, Bayonne, NJ 07002 , USA , tel:201-823-9295, fax:201-823-9298, ksullivan@bayonnedrydock.com

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American Torch Tip, 6212 29th Street East Bradenton, FL 34203

Miller Electric Mfg. Company, 1635 W. Spencer Street, Appleton, WI , USA , tel:(920) 734-9821, info@millerwelds.com , www.millerwelds.com

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Patterson Company, 870 Riversea Road, Pittsburgh, PA , USA , tel:(412) 322-2012, fax:(412) 322-2785, russ.mayhew@pattersonmfg.com contact: Russ Mayhew, www.pattersonmfg.com

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Preferred Qualifications
- Preferred Education: - Bachelor's degree in a Maritime or related field. - Preferred Experience: - Ten years of teaching experience in either operational or management level of US - Coast Guard approved courses.

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GA 31401 USA
Phone: 912 233 7000
Email: rwigger@compliancesystemsinc.com

General Manager
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- A minimum of fifteen years of experience in Marine Operations Leadership and Business Development positions with progressive increases in the size and scope of responsibilities.
- Demonstrated track record of leading a Marine Services organization to grow, be profitable, and deliver expected or greater returns to shareholders in a safe and environmentally sound manner.
- Demonstrated knowledge of Marine laws, regulations, and protocols required.
- Positive working relationships with numerous key Alaska and lower 48 Marine Clients and service providers
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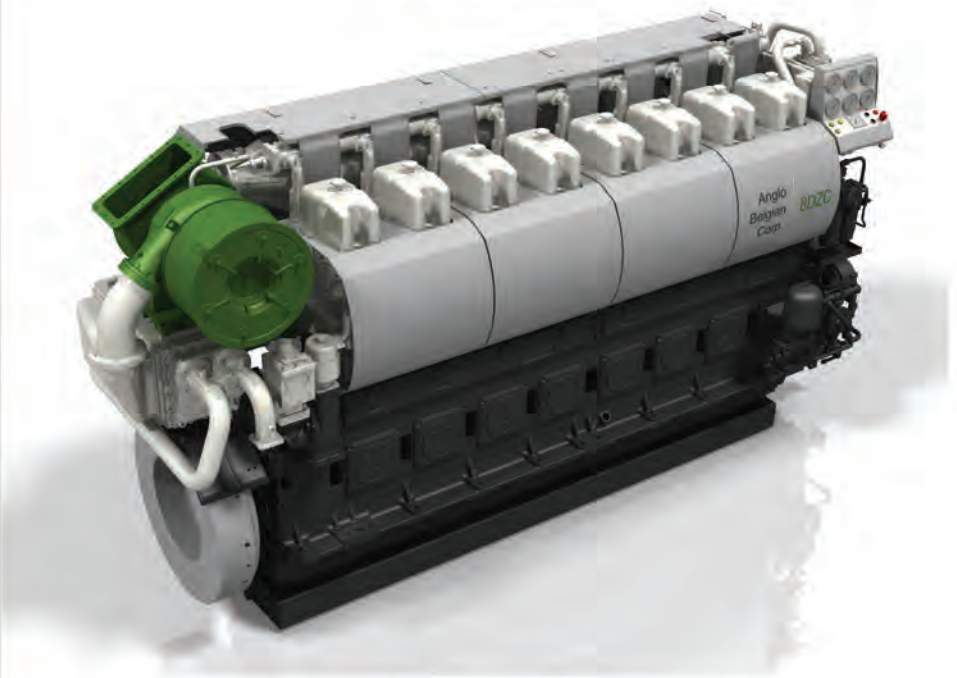

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Seattle, WA 98199, USA

Phone: (206) 282-9142
Fax: (206) 282-6514

For additional information: Chuck Kissee | chuck@transmarine.org | www.transmarine.org