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Something Old, Something New ...

To kick-off the "Design Edition" we could find no finer photo than this, an ultra-modern Damen water taxi design for Dubai, with the classic lines of the Rotterdam in the background.

(Image: Damen)

ON THE COVER

Pictured is a Damen Fast Crew / Supply boat of the Axe Bow design. MR's Eric Haun recently toured the company's Dutch shipbuilding and repair operatins, and reports starting on page 48.

(Image: Damen)

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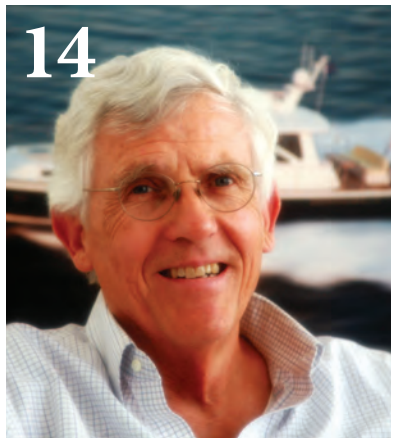

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NEW YORK
118 E. 25th St., New York, NY 10010
Tel: (212) 477-6700 • Fax: (212) 254-6271
e-mail: mren@marinelink.com
Web: www.marinelink.com

FLORIDA
215 NW 3rd St., Boynton Beach, FL 33435
Tel: (561) 732-4368; Fax: (561) 732-6984

PUBLISHERS
John E. O'Malley
John C. O'Malley • *jomalley@marinelink.com*

Associate Publisher & Editor
Gregory R Trauthwein • *trauthwein@marinelink.com*

Contributing Editors Dennis L. Bryant, Edward Lundquist
Correspondents Joseph Fonseca, India; Greg Knowler, China; Claudio Pashoa, Brazil; Peter Pospiech, Germany
Editorial Consultant **James R. McCaul**, President, International Maritime Assoc.

Web Editor
Eric Haun • *haun@marinelink.com*

PRODUCTION
Production Manager **Irina Tabakina** • *tabakina@marinelink.com*

CORPORATE STAFF
Manager, Accounting **Esther Rothenberger** • *rothenberger@marinelink.com*
Manager, Public Relations **Mark O'Malley** • *momalley@marinelink.com*
Manager, Marketing **Jocelyn Redfern** • *jredfern@marinelink.com*
Manager, Information Technology Services **Vladimir Bibik** • *bibik@marinelink.com*

CIRCULATION
Circulation Manager **Kathleen Hickey** • *mrcirc@marinelink.com*

SALES
Vice President of Sales & Marketing
Rob Howard • howard@marinelink.com

National Sales Manager
Terry Breese • *breese@marinelink.com* - Tel: (561) 732-1185; Fax: (561) 732-8414

Sales Representatives
Lucia Annunziata • *annunziata@marinelink.com* - Tel: (212) 477-6700; Fax: (212) 254-6271
Frank Covella • *covella@marinelink.com* - Tel: (561) 732-1659; Fax: (561) 732-8063
Mitch Engel • *engel@marinelink.com* - Tel: (561) 732-0312; Fax: (561) 732-8063
Mike Kozlowski • *kozlowski@marinelink.com* - Tel: (561) 733-2477; Fax: (561) 732-9670
Dawn Trauthwein • d*trauthwein@marinelink.com* - Tel: (631) 472-2715; Fax: (631) 868-3575
Jean Vertucci • *vertucci@marinelink.com* - Tel: (212) 477-6700; Fax: (212) 254-6271

Sales Administration & Office Manager **Rhoda Morgan** • *morgan@marinelink.com*
Sales & Event Coordinator **Michelle Howard** • *mhoward@marinelink.com*
Classified Sales Tel: (212) 477-6700

Scandinavia Roland Persson • *roland@orn.nu*
Orn Marketing AB, Box 184 , S-271 24 Ystad, Sweden
Tel: +46 411-184 00 ; Fax: +46 411 105 31

Western Europe Uwe Riemeyer • *riemeyer@intermediapartners.de*
Tel: +49 202 27169 0 ; Fax: +49 202 27169 20

United Kingdom Paul Barrett • *ieaco@aol.com*
Hallmark House, 25 Downham Road, Ramsden Health, Essex CM11 1PU UK Tel: +44 1268 711560
M: +44 7778 357722 ; Fax: +44 1268 711567

Japan Katsuhiro Ishii • *amskatsu@dream.com*
Ace Media Service Inc., 12-6, 4-chome, Nishiike, Adachi-ku, Tokyo 121, Japan
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Soft Solutions for Hard Problems

Massive trade events such as Norshipping, held earlier this year in Oslo, usually entail a full week of running around, conducting interviews with as many leading executives that we can collar. To say that the week, and a good many of the conversations, are a blur by week's end is putting it mildly. I guess that's why I placed so much stock in one particular meeting that included a discussion with three top executives from a ship owner (Bore), a classification society (ClassNK) and a software solutions provider (Napa). The conversation centered on Bore's at-sea trial of the new ClassNK-Napa Green ship efficiency software, a package that is designed to directly identify energy waste on ships, and it is significant in that more than three months later, the conversation is as fresh as if it was held yesterday.

While we often write on the relatively conservative nature of the marine industry, this conversation worked effectively to disprove that, at least in my mind. Bore is a 110-year-old shipping company with a fleet of 18, so in relative terms, older and smaller. But it, like an increasing number of their brethren near and far, are increasingly adopting advanced technology, particularly software solutions, that are proving to provide real savings now. Simply put, with the never-ending spiral of new regulation, particularly on the environmental front, and the parallel track of escalating fuel prices which continue to heavily dent shipowner's bottom lines, you cannot afford today to sit idle, to conduct business as you did 20 years ago, while the world around you becomes increasingly efficient and cost-effective at delivering goods and services via the world's waterways. Full details on the Bore story start on page 60, but essentially Bore put the challenge to NAPA to prove to them without a shadow of a doubt that the Class NK-Napa Green system savings was not simply brochure fodder, rather a useful tool to help save money. To make the challenge tougher: the subject matter for the elongated at-sea test was an ultra-modern, 2011-built RoRo ship that was already deemed efficient. Turn to page 60 to read up on the test and the result.

The proliferation of increased use of software systems in the maritime sector has long been speculation, because quite frankly the market niche was too young and too small to warrant close coverage. But a new report from Germany's Fraunhofer CML, *"Fleet Management Systems 2013,"* seeks to add some meat to the bones, putting shape and form to the global FMS market.

While an excerpt of the report can be found on page 12, it is fascinating to note that, in surveying 46 providers of FMS solutions, it found that the average cost per vessel, per year, for an FMS application is between $5,400 and $10,800, meaning that the industry altogether is estimated to be between $408 and $545 million. While it is still small and scattered, it like others is starting to consolidate, and the high line estimate for growth of the market in 2013 is 17%.

The main driver, today, tomorrow and always will be the efficient operation of ships, ie. every means and method to keep fuel costs in check. However there are numerous simultaneous emerging trends, from crew attraction and retention (including the stipulations of MLC 2006) to real-time shore to ship access and control that will conspire to drive the market further faster in the future.

Gregory R. Trauthwein, Editor & Associate Publisher
trauthwein@marinelink.com

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118 East 25th Street, New York, NY 10010
tel: (212) 477-6700; fax: (212) 254-6271

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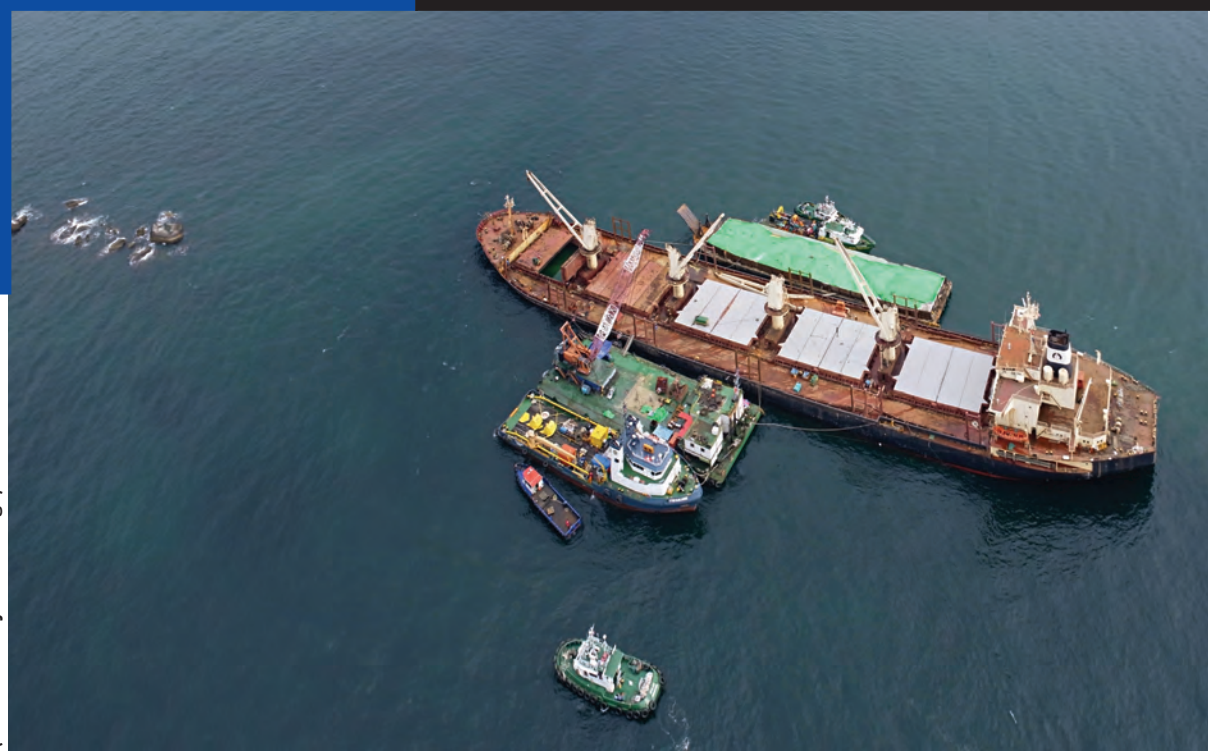


(Photo courtesy T&T Salvage)

The good news is that the final rule more closely resembles the January 2006 guidance than it does the 2009 proposed rule.

Nontank Vessel Response Plans

By Dennis L. Bryant

After an extended gestation period, the U.S. Coast Guard promulgated its final rule regarding non-tank vessel response plans (NTVRPs) on 30 September 2013, with an effective date of 30 October 2013. In many ways, this has not been a typical rulemaking. Because of the recent publication of the rule, there has been insufficient time to prepare a thorough analysis for this edition of *Maritime Reporter & Engineering News.* That will appear in the November edition. For now, we will touch on a few highlights.

The statute on which the rulemaking is based was enacted by Congress in 2004 and slightly amended in 2006. The statute mandated that the owner or operator of a non-tank vessel operating in the navigable waters of the United States prepare and submit a plan for responding, to the maximum extent practicable, to a worse case discharge, and to the substantial threat of such a discharge, of oil.

In February 2005, the Coast Guard published guidance for owners and operators of non-tank vessels regarding compliance with the statutory mandate. This guidance was expanded in January 2006. The vast majority of owners and operators of non-tank vessels took these recommendations to heart and prepared and implemented oil spill response plans conforming to the guidance.

On 31 August 2009, the Coast Guard published its proposed rule regarding NTVRPs. The final rule reflects the comments received on its proposal, although not all suggestions were adopted.

The good news is that the final rule more closely resembles the January 2006 guidance than it does the 2009 proposed rule.

Therefore, the owners and operators who have been operating in compliance with the guidance should have few changes to make in order to conform to the new requirements.

The bad news is twofold. First, those few owners and operators who have been avoiding compliance with the guidance have some serious catching up to do. The second piece of bad news is that compliance must now be taken seriously. The Coast Guard has devoted few resources over the past few years to checking on compliance when boarding non-tank vessels and, even then, has mostly issued warnings. Such forbearance will cease on 30 October 2013.

In this regard, non-tank vessels will be treated the same as tank vessels have been treated since 1993. Prepare accordingly!

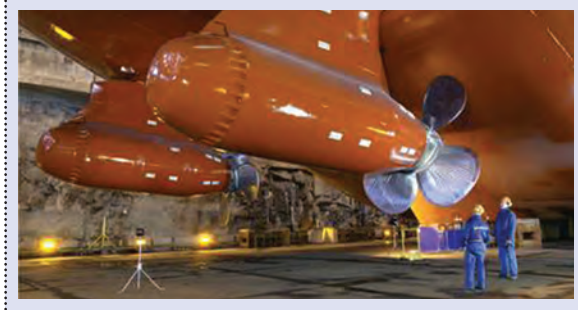
News in Brief

ABB Wins $25m Order for Two Russian Icebreakers

ABB won an order worth around $25m to supply its marine propulsion system, Azipod, and complete electric power plants for two new rescue and salvage icebreakers that are under construction at Nordic Yards GmbH in Germany.

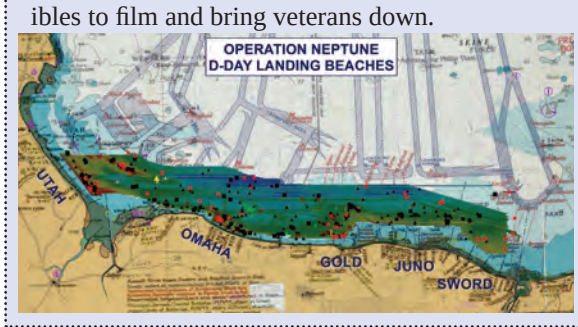
The new vessels, owned by Russia's State Maritime Rescue Coordination Centre (SMRCC), will be used for patrols and rescue operations in offshore oil-and-gas fields. They will be fitted with equipment for search and rescue tasks and oil-spill response. The vessels are designed for Arctic conditions and will receive Russian Maritime Register of Shipping (RMRS) Icebreaker 6 class notations to perform rescue operations in waters covered by ice of up to one meter thick.

ABB's scope of supply will include 3.5 megawatt (MW) Azipod VI units, main switchboards, drives, bow thrusters and generators. Total power per vessel will be 7 MW.



Largest Historical D-Day Mapping Completed

June 6, 2014 represents the 70th anniversary of the WWII D-Day invasion. To commemorate, an expedition took on the task of creating the largest and most accurate continuous archeological map offshore of the five D-Day invasion beaches. In all 511 sq. km was surveyed using an Edgetech combined bathymetric and Sidescan Sonar with more than 300 wrecks and obstructions identified. An R2Sonic Ultra High Resolution Multibeam Sonar was used to highlight more than 50 sites. A SeaBotix ROV and the new Deep Sea Power and Light camera system were used to investigate and identify targets. The R2Sonic, a second SeaBotix ROV, Tritech gear, and precise positioning equipment was supplied by Measutronics that consisted of Trimble, Applanix, Marinestar, and CODA equipment. Data collection was done and post processing continues using HYPACK's HYSWEEP software. The seven week operation culminated with two Nuytco manned submersibles to film and bring veterans down.



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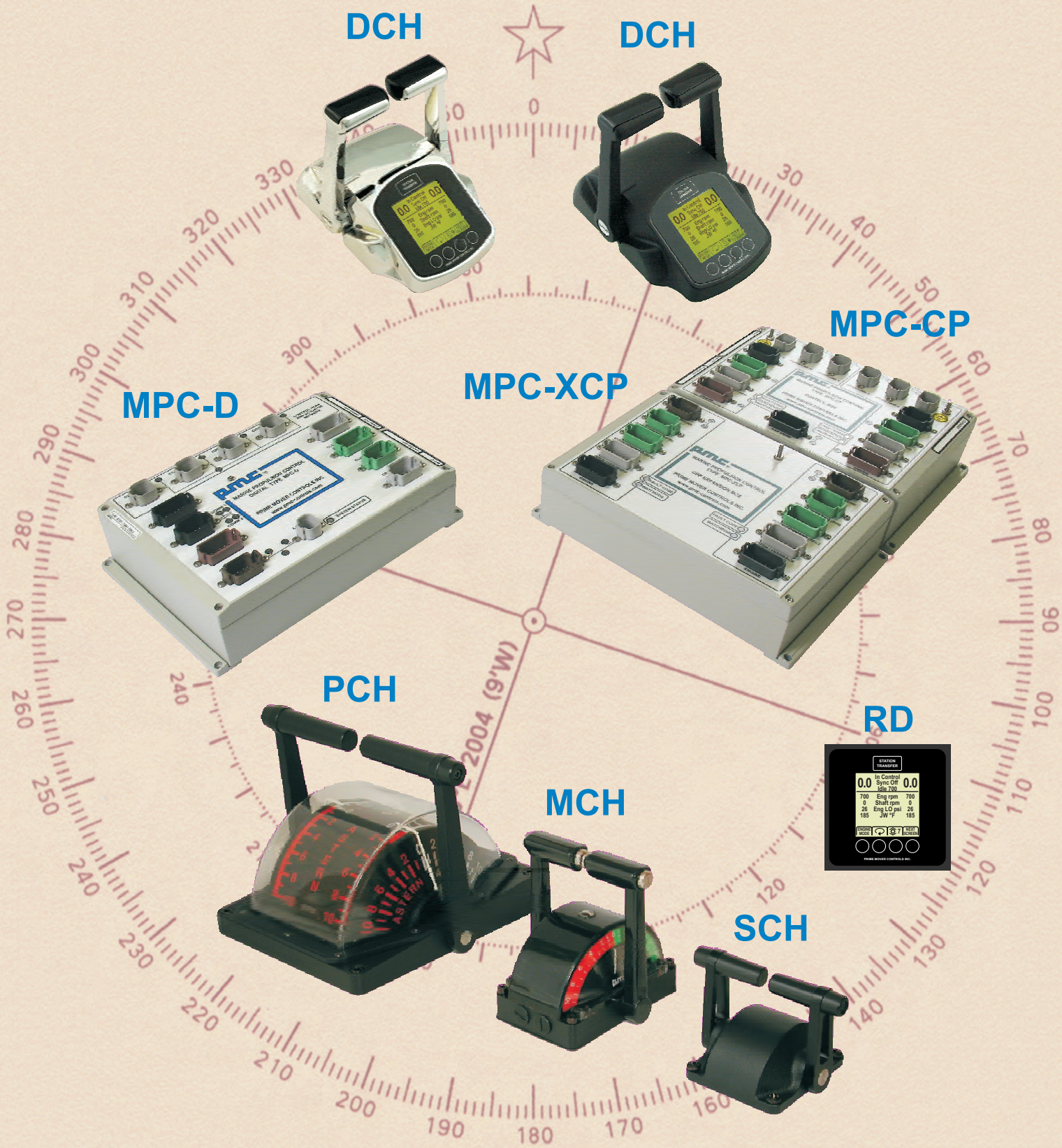

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(Photo Greg Trauthwein)

Left: Jon Gonsoulin hosted a festive double christening in Houma, La. Right: The traditional breaking of the champagne on the MV Karl Senner.

LeBeouf Celebrates

Double Christening

Last month a special pair of towboats were celebrated, as LeBouef Bros. Towing of Houma, La., welcomed to its fleet the MV Karl Senner and MV Dickie Gonsoulin in a festive ceremony at the home of Jon Gonsoulin, President, Lebeouf Bros. Towing. While the boat represent many things – a continued boom in the U.S. energy transport business; a nod to the modern mariner as both are seamlessly outfitted for crew comfort – first and foremost they represent a long-standing and still strong bond between Gonsoulin and Karl Senner LLC.

LeBeouf Bros. Towing and Karl Senner LLC forged a bond more than 45 years ago when Karl Senner sold the first Reintjes gearbox ever sold in the U.S. for installation in the United States to LeBeouf Brothers towing, aboard the M/V Mary R, which was a single screw tugboat purchased by LeBeouf Brothers. The Mary R served LeBeouf Bros. well until it was taken out of service in 1981, and is indicative of the company's strategy to invest in its boats and barges with an eye to the long term: invest a little more up front for more rugged gear and material where it makes sense, and invest in the boat's interior comfort and amenity to help attract and retain high-value mariners.

To that end, the two new boats are the product of Bourg Dry Dock, LeBeouf's own newbuild and repair facility conceived by Gonsoulin in 2005, and today able to build four or five boats and about 10 barges per year. The M/V Karl Senner and the M/V Dickie Gonsoulin are Entech & Associates Inc.-designed boats, the second and third of a five boat series, all measuring 95 x 34 feet. MV Karl Senner has Mitsubishi S12-RY2MPTK-3 power and the MV Dickie Gonsoulin is powered by Caterpillar 3512s. All, naturally, will have Reintjes gears. Start to finish, each boat took about 11 months to build, Bartel said, with the Karl delivered in July 2013 and the Dickie, in September 2013. Bartel said there weren't any unique challenges to building the boats, other than ensuring that they were nice, live-on friendly vessels. ***- G. Trauthwein***

	MV Karl Senner	MV Dickie Gonsoulin
Builder	Bourg Dry Dock	Bourg Dry Dock
Designer	Entech & Associates Inc.	Entech & Associates Inc.
Owner	LeBeouf Bros. Towing	LeBeouf Bros. Towing
Delivery	July 2013	September 2013
Length	95 x 34 x 10.6 ft.	95 x 34 x 10.6 ft.
Draft, Max.	9 ft.	9 ft.
Speed	6 knots	6 knots
Main Engine	Mitsubishi	Caterpillar
Gears	Reintjes WF 665	Reintjes WF 665
Propellers	Kahlenberg 80 x 65"	Hung Shen 84 x 65"
Classification	ABS	ABS
Fuel	37,006 gal.	37,006 gal.
Water	22,472 gal.	22,472 gal.
VHF Radio	Icom	Icom
Radars	Koden	Koden
GPS Nav	Furuno	Furuno
Alarm, fire panels	Siemens	Siemens

News in Brief

GE Chosen to Power Maran LNG Carriers

Induction-based electric propulsion motor technology from GE's Power Conversion business will be used to power four new LNG carriers that Korean shipbuilder Hyundai Heavy Industries will build for Maran Gas Maritime, the gas shipping unit of the Angelicoussis Shipping Group. Hyundai Heavy Industries will deliver the vessels over a 15-month period beginning in July 2015.

GE's induction-based propulsion motor technology with PWM variable-speed drives is powered by tri-fuel engines that run on natural gas, marine diesel gas or heavy fuel oil. GE will supply two propulsion systems for each of the four new LNG carriers, comprising generators, main and cargo switchboards, transformers, MV7000 converters, motors and remote control. GE is responsible for design, engineering, commissioning, training and assistance for sea and gas trials.

Courtesy Maran Gas

Blue North Fleet Selects Siemens

Based in Seattle, Blue North Fisheries (BNF) operates freezer long liners in the Bering Sea and Gulf of Alaska and one smaller seiner in Alaska, Washington and Oregon. BNF's largest vessel is 180-ft. long with a crew of 23, while its smaller seiner is 58-ft. long with a crew of six. With maintenance and fuel costs rising, BNF decided to modernize its fleet. Even more, it decided to build what it determined would be one of the most environmentally friendly and technologically advanced fishing vessels in the world. For its first new vessel, "Blue North," BNF chose the 58.35 meter (191 feet) ST-155, a new long liner designed by Skipsteknisk AS of Norway. BNF elected to power its vessel with a twin-bladed, dual-azimuth, diesel-electric propulsion (DEP) system, making it the first fishing vessel in North America to incorporate Siemens BLUEDRIVE DEP technology.

Thanks in part to the Siemens and Caterpillar engines, Blue North will be one of the first fishing vessels to meet new Tier III emissions standards. While it is environmentally sound, the combined design and propulsion solution also makes business sense, as it will help to save an estimated 30% in fuel consumption.

Sofware Solutions
Picking up Steam

A new study from Germany show rapid expansion in the maritime fleet management software sector.

By Greg Trauthwein

While shipowners are generally classified conservative in the uptake of new technology, the advent of increasingly sophisticated software solutions which manage everything from fuel to cargo to crew make a compelling financial case to modernize quickly.

Earlier this summer Germany's Fraunhofer CML issued what is arguably the most thorough study to date which analyzes the software market as applied to shipping companies. Entitled "Fleet Management Systems 2013," the 60-plus page report provides exhaustive detail and insightful research on software solutions from 46 providers globally, with many pages of product overview helping to measure how one system stacks up versus another. In short, the study seeks to provide clarity to what many see as a confusing technology sector, one born of in-house solutions and evolving with the shipping industry to that of a more corporate and unified approach.

The umbrella term Fleet Management Systems (FMS) covers software solutions that support specific business processes in ship management.

In analyzing the shipping software market, it is important to keep in perspective that it is still in its infancy compared to the industry as a whole, as the study found that providers have been in the market for an average of 18 years, while nearly 30% of the companies have entered the market in the past decade.

Maritime Reporter editorial staff have noted a palpable uptick in the appetite for advanced software systems in recent years, and the report helps to support this notion. While difficult to pinpoint the total value of the market given that many of the software providers and their clients are private, the Fraunhofer CML studies estimates the size of the global FMS market to be $408-$545m and growing rapidly. The wide chasm in determining market size is due too to the disparity in company size, as larger companies offering more comprehensive solutions value the market higher. In general terms, researchers at Fraunhofer found the average cost of an FMS application was between $5,400 and $10,800 per year, per vessel.

Despite a generally horrible year for shipping in 2011, the FMS market grew about 7.5%, and the market is expected to grow between 8 and 17% in 2013.

While drivers for the growth are numerous, reduced fuel consumption and cost is the overriding reason ship owners are venturing into more sophisticated programming, as solid data is emerging which correlates efficient route and weather planning, for example, and its direct effect on saving fuel and money. Less tangible but still important factors in software solution growth in the sector centers on rapid communication capabilities connecting ship to short. Put simply, ship owners today are able to access faster, more reliable communications cheaper, and while the trend does not exactly mirror shore-based capabilities, the gap is narrowing.

Faster, cheaper communication are opening a plethora of new areas for onboard software development, as efficiency measures such as real-time machinery monitoring and maintenance assist, as well as crew welfare initiatives such as real-time medical assistance emerge from concept to reality.

In assessing the 46 companies, the study found an average operating revenue of $5.2m, meaning that the majority of the companies are relatively small, and given the overall size of market, it is still a highly fragmented sector with fierce competition, meaning future consolidation to fewer, larger players is a distinct reality.

Finally, the industry-wide trend toward cloud solutions is noticeable in the FMS market, as nearly half (48%)of the providers currently provide cloud-enabled software solutions. While the other half does not, the study found that the majority of them plan to do so in the future.

$5400 to $10,800

Average cost, per vessel per year, of an FMS application

$5.2m

Average operating revenue of software companies in the study

18

Average age of software companies in the study

48

% of companies that offer Cloud-based solutions

$408-$545m

Estimated size of the global market for Fleet Management Systems

For additional information on "Fleet Management Systems 2013," contact Fraunhofer CML:
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Winn Willard

The Director of Hunt Yachts and VP of Hunt Associates, has been with the company since 1970 and is responsible for some of Hunt's most influential designs.

Hunt Yachts, founded by Raymond C. Hunt in the mid 20th century, is probably best known for its "deep-V" hull, a feature long revered as its signature. The business originated with the design of speedcruisers and motor yachts, evolving into military and commercial markets. Winn Willard, Director of Hunt Yachts and Vice President of Hunt Associates, spoke with Maritime Reporter on Hunt's tradition, industry presence and outlook on future building markets.

By Eric Haun

What advantages do you reap from having three companies under the Hunt name?

We've worked hard to expand the Hunt brand while continuing to carry out Ray's life mission to always be innovative. Ray was never afraid to try a design just because it was different. To Ray, that was all the more reason to give it a shot.

When we decided to start Hunt Yachts, we had a beautifully designed Surfhunter. Still, some thought a design firm would never succeed at also building yachts. It was a risk. Today, Hunt Yachts offers 18 highly-customizable models, including day cruisers, coastal cruisers and express motoryachts. It broadened our customer-base, created a new line of business, and more importantly, offered additional revenue. The same is true for Hunt Marine Services. We saw a gap in the market to bring the same elite customer experience offered in our design and boat building process to the service sector. Creating a new business is a risk, but ironically, those risks have now diversified our business, allow the Hunt brand to grow in a time other brands were forced to fold.

What benefits do you gain from designing in both commercial and consumer markets? Are there drawbacks?

From a business perspective, a major benefit is having a diversified client base allowing us continuity. We have never had a layoff. Quite often the commercial and the pleasure sides are on different business cycles. Then there are concepts, details and practices that one sees in each market that can be applied in the other. For example, a major draw for our larger pleasure craft customers, such as the Hunt 44, 52 or 68 Express Motoryacht, is knowing that the hull on their yacht is virtually identical to the hull on the Hunt-designed pilot boats servicing our ports. Pilot boats must perform at a high level, regardless of the weather conditions, which provides our consumer customers with peace of mind to tackle foul weather conditions. On the downside I see a lot of opportunities worldwide that we can't always chase or concentrate on. There are only so many hours in a day.

What portion of your business is commercial?

Right now, about 65-75%. There are signs of a comeback in the consumer markets, but it is very spotty and not strong yet. The commercial side is also slowing, in particular the military and quasi-military segment. We've been very fortunate to develop a reputation for reliability and dependability in the safety and security and pilot boat communities, in particular. Hunt pilot boats are used in more than two dozen

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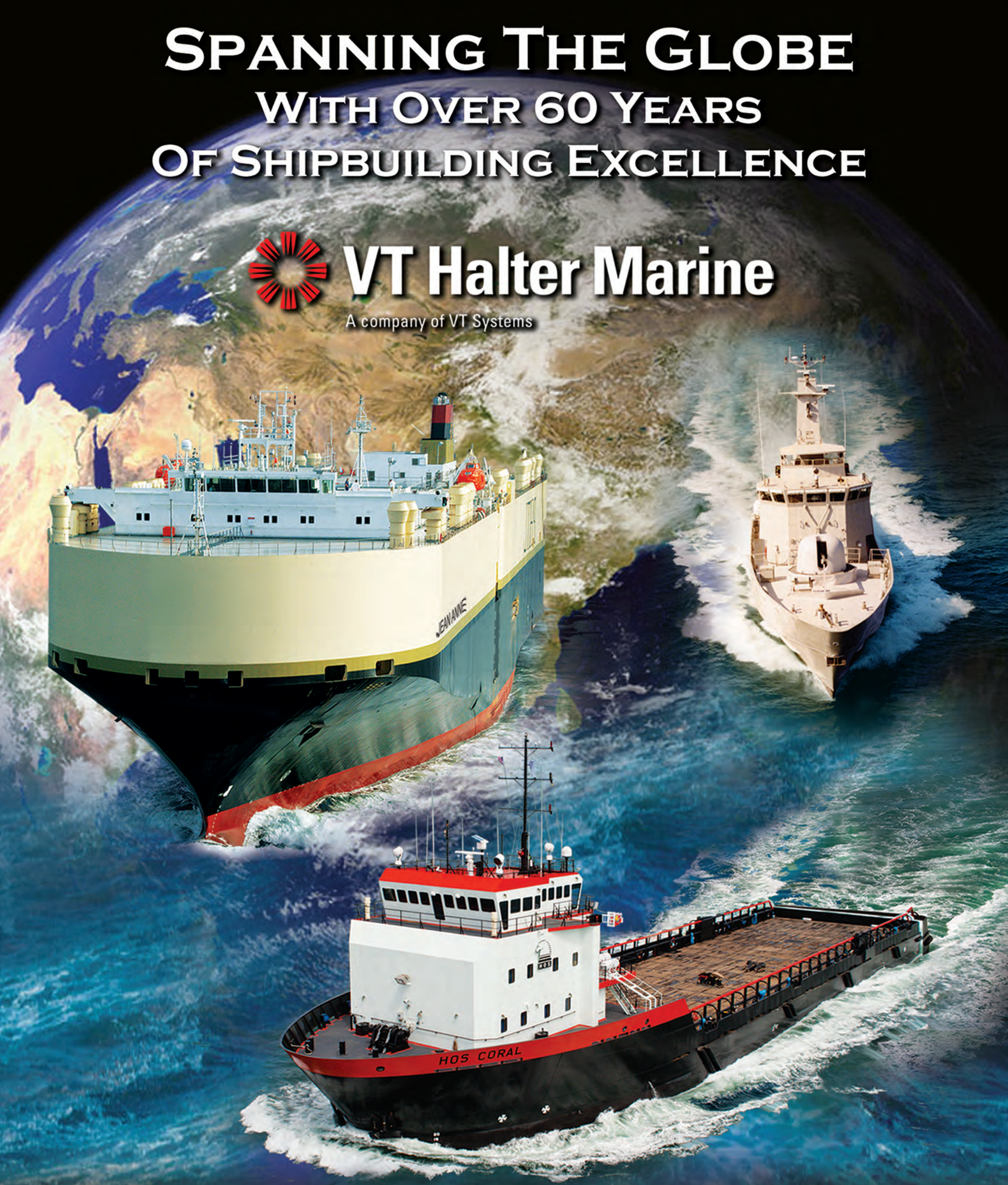

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of the busiest ports throughout the nation. Law enforcement agencies, the Coast Guard and Navy also use many Hunt designed boats to patrol oceans, rivers, lakes and even war zones.

What do you consider to be the most interesting commercial project you've recently worked on?

Probably the two sizes of new, very fast and multifunctional patrol response boats for the NYPD. The first of them will be launched later this year. They will be capable of 40 knots, use waterjet propulsion and carry all the latest high-tech gear for disaster and terrorism response. Although we are unable to talk about it in detail (for obvious reasons) our extensive work in the homeland defense sector over the years is quite exciting.

Briefly discuss your business since the global economic trouble of 2008. How do the coming 12-24 months look?

The pleasure boat market ground to a standstill in 2008-2009. Many companies are gone. Survivors are half their former size, and there is still too much capacity, so more may go yet. However, Hunt Yachts has actually tripled its business since 2009. We've used a zero-debt business model and an investor-backed system for rolling out new models to escape the crippling overhead which doomed other boat builders. At Hunt Design, we survived being small and flexible, the benefit of being in both the consumer and commercial markets. We had a big surge in the patrol boat market when the Navy, Coast Guard and local law enforcement geared up with new boats filling a long neglected void. Now that market is well satiated, so it will be mostly replacements and service going forward. We believe this will be an opportunity for Hunt Marine Services which further demonstrates the advantage of being such a diversified business.

Economic, legislative, competitive – looking ahead, what do you consider to be the biggest challenges to your business, and why?

The worldwide general economic malaise has left little enthusiasm for fun of new business. To overcome this, Hunt must continue to innovate across all three business entities. Whether it be maximizing our commercial opportunities at Hunt Design, offering unique, owner-centric programs such as our two-year Carefree Purchase Program at Hunt Yachts, or finding new ways to add value for our customers at Hunt Marine Services, the most successful companies always tend to be ones where "innovation" is more than just a buzzword. Ray Hunt was always up for a challenge, designing and racing sailboats and powerboats in a style that no one could ever imagine at the time. Hunt will continue to look for new ways to carry on this tradition.

Winn Willard, Director of Hunt Yachts and Vice President of Hunt Associates, graduated from Babson College with a degree in Business Administration and Economics. He studied naval architecture at the University of Michigan, is a member of the Society of Naval Architects and Marine Engineers (SNAME) and has been with Hunt Associates since 1970.

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The looming threat of small boats to national security calls into play some innovative options.

(U.S. Air Force photo/Airman 1st Class Corey Hook)

Pictured is a B-1B Lancer on a training mission. The US Air Force recently conducted a successful test of its ability to neutralize and eliminate the threat of small boats in acts of terror. During that testing period, a B-1B Lancer supersonic variable-sweep-wing bomber launched a GBU-10 laser-guided bomb to take out a remotely-controlled mobile surface vehicle. The GBU-10 has a published accuracy of 3.6 feet, making it a good weapon against a small target like a boat. **Although its 945 pound warhead may be more than needed in this scenario.**

Since the horrific terrorist attacks of September 11, 2001 revealed a series of national security vulnerabilities, the U.S. Departments of Defense and Homeland Security have been exploring options to reduce these risks. One vulnerability that has proven difficult to address is that of an attack on US assets and interests by small boats. The US Air Force has recently conducted a successful test of its ability to neutralize and eliminate such a threat.

Small boats can carry a variety of weapons, including anti-ship missiles, unguided rockets, guns and suicide charges. Because of their low costs, small boats can be employed in large or small numbers by any nation or by non-governmental actors, including terrorists. Small boats are difficult to locate and track and successful engagement in the marine environment in all weather conditions presents unique challenges.

The Department of Homeland Security (DHS) developed the Small Vessel Security Strategy (SVSS) in April 2008 to address, from its standpoint, the potential exploitation of small vessels by terrorists and smugglers of weapons of mass destruction, narcotics, illegal aliens and contraband. Small vessels have also been employed by terrorists to deliver waterborne improvised explosive devices (basically the maritime version of a car bomb). The SVSS also recognizes the possible use of a small vessel as a waterborne platform for conducting a stand-off attack (e.g., Man-Portable Air-Defense System [MANPADS] attack).

Following are some incidents that raise concern about future small boat attacks:

- **Late on the night of July 27 2010,** as the supertanker M Star was transiting the Strait of Hormuz en route Japan, it was attacked by a small boat carrying a suicide bomber and explosives. The explosives detonated sufficiently close to the starboard quarter of the tanker to create a large dent in the hull, but the crew suffered no injuries. The al-Qaeda affiliated group Abdullah Azzam Brigades claimed responsibility for the attack.

- **On August 4, 2005,** Turkish authorities arrested Louai Sakka, a senior al-Qaeda operative, when a one-ton bomb he designed detonated prematurely. He had intended to place the bomb on a yacht and ram a cruise ship carrying U.S. military personnel stationed in Turkey on rest and recreation out of Antalya, Turkey.

- **On April 24, 2004,** terrorists using two fishing dhows packed with explosives attacked the Iraqi Khor al-Amaya offshore terminal in the Arabian Gulf, killing one U.S. Coast Guardsman and two U.S. Navy sailors protecting the terminal after they stopped and were preparing to search one of the dhows.

• **On October 5, 2002,** an explosive-laded small boat was rammed into the side of the French tanker Limburg off the coast of Yemen. The hull was penetrated, causing an oil spill and fire. One crew member was killed and 12 were injured. The terrorists were affiliated with al-Qaeda.

• **On October 12, 2000,** al Qaeda terrorists rammed an explosive-laded small boat into the USS Cole (DDG-67) in the port of Aden, Yemen, causing the deaths of 17 U.S. Navy sailors, injuring another 39, and doing significant damage to the destroyer.

While U.S. Coast Guard and other law enforcement agencies are responsible for deterring small boat attacks by terrorists in the navigable waters of the United States, attacks against U.S. assets and interests on the high seas or overseas may call for a military response. The U.S. Navy has a variety of capabilities for this possibility, but it can't be everywhere. Thus, the U.S. Air Force is also developing the capacity to conduct maritime strike operations against small boats.The test and evaluation phase of the development involves the use of multiple types of live munitions against small boat targets in waters of the Gulf of Mexico for various surface and depth scenarios, to a maximum depth of ten feet. Management actions are taken to decrease the potential adverse effects on human safety and the environment, including use of safety boats, aircraft and high-definition video cameras to ensure the test area is clear.

Tests are necessary because current weaponeering systems do not accurately model the impact of air-launched weapon detonations on or under water on small boats. Damage effects of these conditions must be known in order to generate the tactics, techniques, and procedures (TTPs) for USAF strike aircraft to counter small maneuvering maritime targets. The test objectives are to: (1) generate usable weaponeering data against small boats; (2) develop TTPs to engage small boats in all weather and (3) determine the impact of the TTPs on Combat Air Force (CAF) training.

Maritime strike testing has been identified as a high national defense priority. The project has been categorized as a Joint Urgent Operational Need (JUON), meaning that, if not addressed immediately, it will seriously endanger personnel or pose a major threat to ongoing operations.

The weapons being tested range from 20-mm and 30-mm machine guns to Hellfire and Maverick missiles to laser-guided Paveway bombs with an explosive weight of up to 945 pounds.

During that testing period, a B-1B Lancer supersonic variable-sweep-wing bomber launched a GBU-10 laser-guided bomb to take out a remotely-controlled mobile surface vehicle. The GBU-10 has a published accuracy ("circular error probable" in USAF-speak) of 3.6 feet, making it a good weapon against a small target like a boat, although its 945 pound warhead may be more than needed in this scenario.

The Paveway bombs are now available to the military in a GPS-guided version in addition to the laser-guided model, providing increased flexibility for combat commanders.

Like all military weapons systems, one hopes that they will never have to be used in combat, but it is good to know that they are available when and if needed.

A Shift in Culture

"A quality safety culture means doing things safely even when no one is looking"

Murray Goldberg
is CEO of Marine Learning Systems. An eLearning researcher and LMS developer, his software has been used by 14 million people worldwide.

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"Safety Culture"

is one of those terms that is used a lot in the maritime industry. We all think it is important, and every operator wants a "good" safety culture. But how does one get it, and then keep it once it is there? This is the first of a pair of articles looking at safety culture in the maritime industry.

What is Safety Culture?

The IMO tells us "An organization with a 'safety culture' is one that gives appropriate priority to safety ... The key to achieving that safety culture is in:

- Recognizing that accidents are preventable through following correct procedure and established best practice,
- Constantly thinking about safety; and
- Seeking continuous improvement."

This is a fair, but arguably limited description. Safety culture is not something that a vessel operator either has or does not have. All operators have a company culture, and their culture (whatever form it takes) impacts safety of operations. All aspects of a company's culture are related. It is very difficult, if not impossible, to have an excellent and effective safety culture but a poor culture (for example) in terms of workplace cleanliness, employee communication or employee engagement. The question therefore is whether the company culture enables, promotes and rewards safe acts.

Safety Culture Basics

The necessary components of a quality safety culture include the following.

• Management Leadership

It is generally agreed that safety must start at the top. In fact, some organizational culture experts go so far as to say that "... the only real thing of importance that leaders do is to create and manage culture" (Organizational Culture and Leadership, Schien, 2004). Management must view safety as a long-term investment in their company, not a cost. It is their role to consistently and visibly inspire and enable a culture of safety. It is also their role to be safety culture champions, to identify other champions, and to steward the process of cultural transformation. This usually means going well beyond compliance and always means considering safety as a part of all decisions while allocating sufficient resources to safety considerations. Building an effective safety culture is not a switch that can be "turned on," but rather a sea change, or broad transformation that takes time to nurture. It takes time to implement the necessary changes, and even more time for employees to be convinced that this is a real, lasting change and not a fad soon to be abandoned. This management commitment takes real effort, but pays incredible dividends. Without strong, consistent and long-term leadership from the top, it is not possible to improve the quality of an organization's safety culture.

• Training

Clearly, safe operations require that all operational personnel are competent, understand and are skilled in safe procedures, and are aware of potential hazards AND how to avoid them. This is the job of initial and ongoing training. Attention to training not only guarantees the above, but it also sends a strong message that management values safety and, consequently, values its employees. An employee who feels valued and values him or herself is one who will do the right thing - even when no one is looking.

Fortunately, we are in a time of great opportunity for implementation of new, effective and visible training programs. If training is not already top-notch at an organization then it can be made so using a breadth of new educational content and techniques. And while a large budget never hurts, it does not have to be expensive. Given the importance of training, the benefits of investing in it, and the visible nature of its effects, attention to training is almost universally considered to be a necessary component of safety culture transformation.

• Measurement and Continuous Improvement

As I have written several times in earlier articles, "If you don't measure it, you can't manage it". A high quality safety culture is one that requires measurement of safety performance. It uses those measurements as markers (key performance indicators or KPIs) to inform a process of continuous improvement. Without a system of measurement there is no way to learn from mistakes, nor any way to celebrate or build on successes. Measurements (and ongoing communication of those measurements) are a key form of employee communication and a powerful demonstration of management leadership in the area of safety.

• A Focus on Learning, Not Blame

Every day there are "close calls" or "near misses" that represent incredible learning opportunities. An accident is a very expensive way to learn a lesson. A close call is a practically free way - but only if the close call is reported, analyzed, turned into a learning opportunity, and made public. The problem, of course, is that near-misses are almost never reported, especially in the absence of more than a few witnesses, because those at fault fear repercussions. The way around this problem is to have a policy ensuring that employees are not punished for an honest mistake or error in judgement resulting in an accident or near miss. At British Columbia Ferries Inc. (BC Ferries) this policy, as part of their huge cultural shift, has created an environment where an employee has no reason to conceal a near miss. This has yielded thousands of documented learning opportunities through their so-called "A.L.E.R.T" (All Learning Events Reported Today) incident reporting process. At the same time serious injuries have been reduced by two-thirds and continue to decrease. After speaking with front-line BC Ferries employees, it is fair to say that many view documenting their own near-misses as a point of pride; knowing the report will help avoid a future accident, injury or even fatality. The key to this success is that employees trust (highlighted because this is a very important word here) that the company is going to adhere to the "just" culture they have set up in terms of blame. This trust is powerful and takes time to build - but it is ultimately possible for any company.

• Continuous Reflection and Focus on Safety Culture

Although somewhat covered above, this is worthy of its own mention. Safety and safe procedures must always top of mind for the entire organization. This means measurement and continuous improvement, as well as a focus on learning - both mentioned above. But it also means highly visible, meaningful and continuous evidence of commitment.

One example that helps demonstrate company commitment to safety is regular visitation from top-level management (preferably the CEO) discussing the company's actions around safety, providing evidence on safety KPIs and

listening to feedback. I have seen the effect of this kind of top-to-bottom transparency at BC Ferries and it is nothing short of impressive. Other examples include employee safety focus groups, consistent safety messaging in the workplace, the celebration of "jobs done right" alongside the dissemination of near-miss information, and more. For safety to be top of mind, it must be continuously communicated and reflected upon in meaningful ways - and I stress the "meaningful" part of that. A sign on the wall reminding people of their role in safe operations will be respected if employees believe in management's commitment to safety, but will be a sad joke otherwise.

Talking with the Expert

One person who has not only seen safety culture shifts, but has also been the architect of the same, is Captain John Wright of WrightWay Training Services in the U.K. He is a master mariner and the recent recipient of an IHS Safety at Sea training award. I had the very good fortune of meeting Captain Wright because of his involvement with the BC Ferries SailSafe project - a multi-phased project aimed at improving safety (and one that the company I work for, Marine Learning Systems, is fortunate and proud to be a part of). Under SailSafe, time loss injuries have been cut in half, serious injuries have been reduced by two-thirds, and annual insurance claims costs have been reduced by over three-quarters. This is possible for every vessel operator.

I recently interviewed Capt. Wright and asked him what was the secret to safety and loss avoidance. Here is what Capt. Wright (below) had to say:

John: *Put simply it's real workforce involvement. It is necessary to close the 'chasm' that often exists between the front line workers and their managers and directors and create a 'one team' environment. This is achieved by running the business such that the health, safety and welfare of the employees are put first, second and last by the leadership team – genuinely and transparently. Inhabiting this morally invulnerable high ground satisfies the hugely important human need in the employees of being valued and listened to. When this trust is built there is absolutely nothing better an organisation can do to improve all aspects of its business.*

Next month's edition of Maritime Reporter and Engineering News will present the remainder of the interview with Capt. Wright looking at how an organization can establish a healthy and effective safety culture.

How Well Do You Listen?

A predictive / preventative maintenance program that includes vibration analysis can help save time and money.

Rich Merhige
has more than 31 years of condition monitoring experience. He founded/is President of AME, which is recognized as an external specialist for condition monitoring by ABS.
E: rich@amesolutions.com

Teresa Drugatz
joined AME in 2010 as Marketing Manager. She holds a bachelor of science in communication from the University of Miami.
E: teresa@amesolutions.com

Are you one of those people who "listen to your gut?" If you are in charge of a vessel's maintenance program – listening to your machinery is vital to its livelihood. And, if it's in high demand, or on a tight schedule, chances are your livelihood, and that of your crew, is at stake too.

Vibration is annoying and uncomfortable – easy to notice on a pleasure craft – not so much on a commercial vessel. Chances are, if you wait until it's obvious on a ship, you've waited too long and you're in for some major downtime and repairs.

So how do you prevent outages and costly corrective maintenance? What can you do to be proactive about maintenance? Your best bet is to be ahead of the game by implementing a comprehensive predictive/preventative maintenance program that includes condition monitoring by means of vibration analysis.

If you were to look up the definition of vibration, you'd see that it refers to mechanical oscillations in relation to a set point of equilibrium. It's usually referenced as aggravating/agitating and is associated with being wasteful of energy. When spoken of in relation to marine vessels, vibration is usually a symptom of mechanical misalignment, worn rubber elements, imbalances or insufficient support of the main propulsion units – to name a few.

When deficiencies such as these come into play, you are by no means running efficiently. Vibration Analysis can pinpoint what mechanical issues your vessel is having and leaves out the guesswork of choosing what repairs should be made. It is important to remember that all rotating machinery vibrates to some degree, but vibration that deviates from the norm indicates serious issues. Problems and deficiencies show themselves with more dramatic vibrations, and in other distinct ways. "In a perfect world, every vessel would get a baseline survey at launch," said Rich Merhige, President, Advanced Mechanical Enterprises. "This initial survey can provide baseline data for acceptance testing and provide quick and easy diagnosis of future problems. Even periodic vibration monitoring provides trending that can forecast unplanned downtime and catastrophic failures – a huge deal if you lose the charter on an out of service vessel."

Data collection is best done while the vessel is at sea in accordance with guidelines set forth by the Society of Naval Architects and Marine Engineers, as well as class societies. These guidelines dictate that measurements should be taken with the ship proceeding ahead, at a constant speed and course, in a depth of water not less than five times the draft of the ship with sea conditions not greater than sea state 3 on the WMO sea state code. A computer database of vibration measurement points is set up of the vessel's machinery arrangement and hull in the vibration analysis software. Accelerometers are placed on key pieces of equipment so data can then be collected. The vibration data is then uploaded and analyzed by examining the frequency, amplitude, location and direction of each measurement point. This data provides a thorough machine condition evaluation and can detect a multitude of problems using known frequencies specific to the vessel, such as:

- Misalignment of shaft couplings, flexible machine couplings
- Misalignment of underwater running gear such as propeller struts
- Propeller defects

- Bent shafts
- Unbalance of rotating components
- Main engine misfire problems
- Mechanical looseness
- Deterioration of rolling-element bearings within transmissions and thrust bearings
- Gear wear
- Rubbing
- Structural resonance
- Machinery soft-foot conditions

The vibration analyst will then create a report with findings and recommendations. The data collected can pinpoint the cause of faults way before expensive stays at a shipyard are scheduled. Experienced analysts, such as those with Advanced Mechanical Enterprises/AME, use three key criteria to assess vibration on vessels:

1. Crew Comfort Level

Vibration levels are within the guidelines established for human comfort and well-being (habitability). In analyzing Passenger Comfort Level vibration; AME uses the applicable "Comfort Class" guidelines established by the major marine classification societies.

2. Machinery Condition

Vibration that does not cause any reduction in the life of the machine or any damage to nearby equipment and surroundings. In analyzing Machinery Condition; AME uses a combination of the following methods when performing data analysis:

a. Trend recorded vibration data on critical points on the machine periodically over the years.

b. Compare vibration levels of identical machines. If three machines have similar vibration spectra and the fourth machine exhibits higher levels at the same conditions, it is an easy matter to determine which machine is having problems.

c. Have the manufacturer evaluate vibration data.

d. Use a vibration severity monograph based on the accumulated experience of similar machines. In this regard; ISO Standard 10816 "Mechanical vibration – Evaluation of machine vibration by measurements on non-rotating parts" is referenced.

3. Structural Vibrations

Vibration that can appear in other areas of the vessel which are not in the accommodation areas which may be in resonance or near-resonance. In this case, considerable dynamic magnification can result in inadequate fatigue strength. Many factors can influence fatigue strength such as:

a. Material.

b. Structural details (stress concentrations).

c. Vibration mode.

d. Welding processes applied.

e. Production methods.

f. Environment (corrosion).

Mechanical issues can burn a hole in your wallet, but what other harm can it cause? Even a minor misalignment (often a cause of vibration), can cause extra load and added stress on components, which increases the heat output from prime movers, making the machine with misalignment draw more current. This causes increased fuel consumption, thus increasing your carbon emissions. If aligned correctly, a noted 1-3% reduction in energy usage can be attained, not to mention a reduction in your vibration.

"When it comes to machinery health, consistency is what counts with any maintenance plan," said Merhige. "Vibration analysis is a cost effective service that can be scheduled on a regular basis. And, most importantly, it increases your bottom line."

Ship Repairers and Marine Equipment Installers

Protect vs. Hidden Exposures that Can Sink a Business

By Charlie Pugliese, Travelers Ocean Marine, Hull & Liabilities Practice Leader

Operating on both land and water, ship repairers and marine equipment installers tackle a variety of tasks from general maintenance and repair, to upgrading electrical systems, to installing state-of-the-art navigational systems. Along with these tasks comes a wide array of maritime risk exposures, both large and small, for which the business owner needs to be adequately protected.

The tasks of an electrician or welder are challenging enough on their own, but try to do this work on a vessel at sea or in a shipyard, and the technician will find that the hazard level rises dramatically – from making sure that all facets of the systems work together as they should, to the increased fire risk hot welding presents to the safety of the vessel. As a result, only professional installers with a maritime background should be considered for such work. Vessel owners and shipyards should be sure to contract only with ship repairers and installers who have comprehensive insurance that will not only protect that business, but also provide coverage for the vessel or shipyard if the installer is found responsible for any damage. The exposure for vessels in their care, custody, and control, along with any other potential third-party property damage must be addressed.

While most ship repairers and installers recognize these exposures, good coverage is not always easy to find for high-hazard businesses like these. Some insurers shy away from underwriting these businesses due to the high-risk nature of their work. Others may be willing to insure these maritime service companies, but may not have the marine expertise – or the appetite – to understand and provide coverage for some of the "hidden" exposures of the business. By understanding how underwriters assess risk, and by implementing proper risk control measures, marine businesses will have more options when it comes to choosing an insurer that has the expertise to uncover the hidden exposures threatening their business.

The Underwriting Process

An insurer with extensive ocean marine experience will closely examine risk exposures facing the business and place particular emphasis on five key criteria:

1 Work Performed

Some companies may choose not to insure repair businesses that undertake welding jobs because the "hot" work carries too much fire risk, or the technical repairs and installation of critical systems on a vessel may be too great. When assessing the work performed, underwriters will examine a number of factors, including how they approach these complex tasks, how they document their work, and what safety programs they employ.

2 Location

On shore, marine repairers and installers may have to be concerned not only with the vessel on which they are operating, but also with any surrounding property that could present liability exposures. In water, underwriters will look at the parts of the vessel where the work is being performed – whether it is a control room, high atop the vessel, or underwater beneath the vessel – and assess the risk there along with the potential risk of damaging any adjacent vessels or property.

3 Experience

Experience should always be a critical factor in hiring someone for any job, and the same holds true when it comes to insuring marine repair businesses. Underwriters will consider whether the technicians are skilled and knowledgeable and what level of experience they have on similar projects. While proper training is key for a good ship repairer, often the time spent on the job can build his or her level of expertise and reduce his likelihood of an accident. Considerable experience in more hazardous marine repair work like welding or heavy engine or system repair may

lead an underwriter to consider writing a policy for a high-risk business that otherwise may have been declined.

4 Contractual Issues

When working on someone else's vessel, a contract must be involved. Underwriters will look at not only whether a contract is in place to manage third party exposures, but how the repair business executes that contract, how they communicate that contract to the team, and how they incorporate changes to each project into the contract. Evidence of proper contractual risk transfer will be closely evaluated. Finally, insurers will look to cover contractual obligations that pertain only to the operations of their Insured.

5 Product Liability Exposures

The installation of a piece of equipment a ship repairer or installer did not manufacture themself carries its own set of risks. If a ship repairer were to install a new radar device – manufactured elsewhere – on a vessel that shorts out and causes damage to the vessel, the installer could be held liable. An experienced marine underwriter will examine this risk exposure, and make sure the ship repairer has the proper controls in place.

Risk Control Measures to Shore up a Ship Repairer's Business

Underwriters understand there is risk involved in any ship repair business, but those businesses that can demonstrate the quality of their operations through solid risk control practices will likely qualify for extensive coverage at a reasonable premium. A ship repairer can prepare the business for evaluation by implementing proven risk control measures, including the following:

- **A Solid Contract.** A good contract should accurately reflect the job description and appropriately manage third party exposures. A smaller business, often anxious for a paycheck, may be quick to accept too much (and improper) liability. Ship repair companies should work with qualified legal counsel and their agent or broker to ensure they are taking on an appropriate share of the risk. Any changes to the scope of work must be immediately added to the contract to protect the business.
- **Fire Protection.** Fire is one of the most dangerous and likely risks a ship repairer can face. Proper fire watch and training programs can help to greatly reduce accident potential.
- **Understanding Vessel Idiosyncrasies.** Training programs can help workers better understand the idiosyncrasies of the vessels on which they may be performing job functions. Such knowledge could play a key role in reducing the potential risk for dangerous and costly accidents.
- **Avoiding Product Modifications.** Evaluating products used and whether workers are "customizing" the equipment to fit certain jobs can be key to managing risk. Ship repairers should assess these risks and consider alternatives.

Finding the Right Partner

When looking for a marine insurer, the insurance agent should understand the ocean marine business and work with carriers who have extensive experience in developing proper coverage and risk management solutions for ocean marine policyholders.

It is key to find an insurer with expertise in managing third party risk exposure, coordinating both marine and onshore coverage, and using risk control and claim teams that specialize in ocean marine. Finding the right insurance partner can mean added protection – and less risk – for ship repairers, enabling them to focus on their business and their customers' needs.

MARIN Debuts Tug Simulators

Dimitri van Heel
is project manager at the Nautical Center of MARIN, which offers simulation, model testing, full-scale measurements and training programs, to the shipbuilding and offshore industry and governments.
E: d.v.heel@marin.nl
www.marin.nl.

MARIN has upgraded two part task simulators into full tug simulators, which have been used in training & studies for TOTAL, Port of Rotterdam, Meyer Werft and OLT Toscana, amongst others.

For years MARIN's Nautical Center has made extensive use of full mission bridge simulators for nautical studies and training and for many of these simulations tugs play an important role. Although it is possible to use computer (or autopilot) controlled tugs, it is preferable to have the tug masters themselves control the tugs. This brings a high degree of realism to simulations and also importantly, the vast experience of the tug masters provides valuable input. Previously, MARIN had often used part task simulators but it took the decision to upgrade these to make the training as realistic as possible. The new tug simulators are a great step forward. Instead of sitting in a room with a 'one-screen visual image', the tug captain now steps onboard a real vessel. With 270 degrees of projected visual scenery and a large TV screen for the view astern, the tug captain is provided with the same view as he has from his own tugboat. This includes a good view abeam, which is a great help in estimating the tug speed.

More Realistic

To make it feel even more realistic, much attention was paid to the consoles and the simulators are equipped with professional helmsmen NorSap chairs. The newly developed hi-tech consoles, which have flexible controls, allow the tug stations to be converted from ASD tugs to a conventional or Voith Schneider configuration within minutes. The controls and read-outs are generic and self-explanatory, making them ideal to simulate different ship types. As well as tugs, they can also be used to simulate inland waterway vessels or coasters for example.

The first feedback MARIN has received from the tug masters using the new stations was highly enthusiastic. As well as improving the experience of the tug masters, this upgrade makes dedicated tug training possible and MARIN can now improve the realism of other simulations as well.

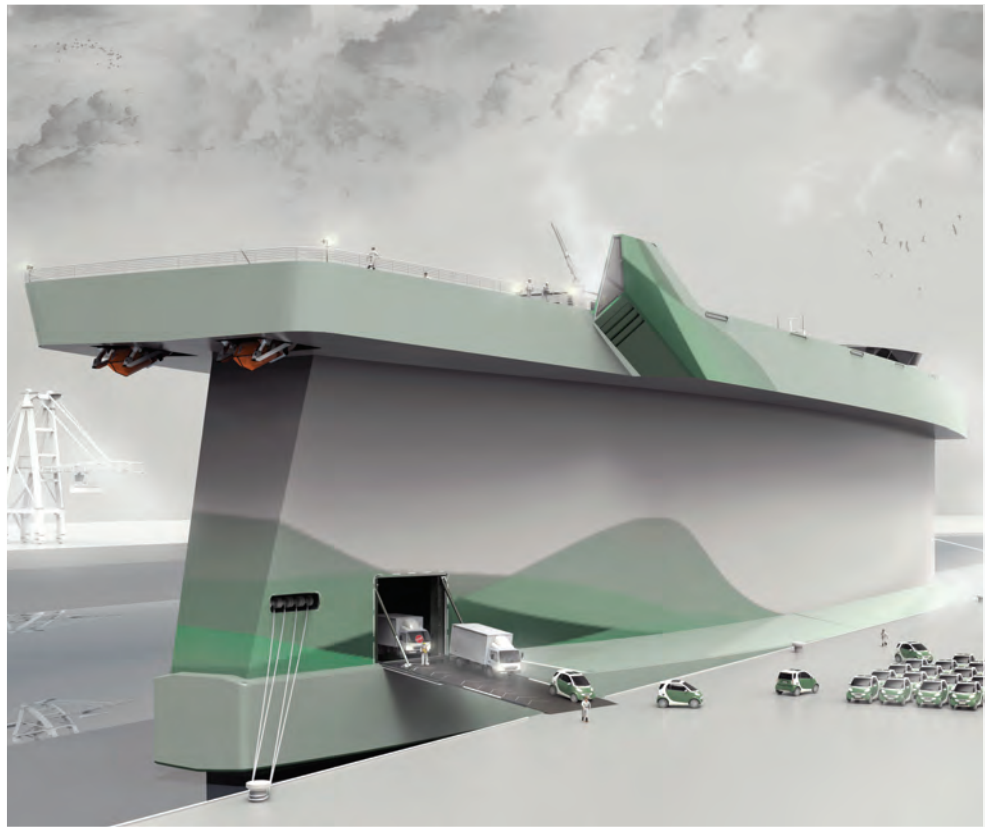
Blowing in the "Vind"

(Images courtesy LADE AS)

Vindskip that is, a new ship shape claiming 60% Fuel Savings

Norway is no stranger to maritime innovation, as the small Scandinavian country with a population just north of five million (according to most recent statistics from the World Bank) has a strong historical and current affinity towards anything to do with the sea. In addition, Norwegians are traditionally a population that considers environmental matters a top concern, so it's little surprise to see continued commercial maritime innovation emanating from Norway.

Project Vindskip is a hybrid merchant vessel for sustainable sea transport. Vindskip from Lade AS is a patented hybrid merchant vessel designed for sustainable sea transport. The designer claims potential fuel and emission savings of 60% and 80% respectively, courtesy of the highly unusual hull shape that is designed to essentially act as an air foil, propulsion power augmented with LNG fuelled electric generators.



Lade AS

Lade AS (Alesund,Norway) was established in 2010 to develop the project Vindskip. A state-of-the-art design as per 2012 is holding both a Norwegian Patent and a WIPO PCT International Patent on the concept. Project Vindskip is a hybrid merchant vessel for sustainable sea transport. Through an innovative concept, it is meeting tomorrow's demands for fuel economy and emission control with today's technology. Fuel savings is estimated to 60%, reduction in emission 80%. Now offering this revolutionary innovative design to consultancies, ship owners and ship yards for licensing.

E: terje@ladeas.no
www.ladeas.no

Ship types that are particularly relevant to the Vindskip design are the so-called dry cargo ships type such as RoRo, RoPax, PCTC, passenger and container ships, according to Terje Lade, Manager, Lade AS. It's designer claims that the new design meets all MARPOL Annex VI regulation requirements, as well as the new chapter 4 to Annex VI on regulations pertaining to energy efficiency.

The Idea

The relative wind is a crucial factor in designing aircrafts, trains, propellers and sailing boats. But for the design of commercial vessels, the designer claims that this is a revolutionary way of thinking. Inspired by the aerospace industry and the sailboat environment, the Vindskip is designed to utilize wind for propulsion, with a unique shape of the hull, both above and below the water line.

Through a computerized weighting of a steady flow of meteorological information, a computer program can calculate the best route taking advantage of the available wind energy. This makes it easy for the captain of Vindskip selecting the best course to propel the ship.

The Vindskip hybrid merchant vessel concept is designed to generate an aerodynamic lift giving a pull in the ships direction, within an angular sector of the course. This is Vindskip's Wind Power System. The relative wind, measured on board a ship, is given by the ships course and speed and the direction and strength of the True Wind, according to Lade. With an LNG-electric propulsion system as well, starting the ship from zero up to the desired speed, the aerodynamic lift now generated can be exploited to generate pull and thus saving fuel, forming a dynamic system that maintains a constant speed of the ship.

The Dynamic Propulsion System of Vindskip comprises:

- **The Wind Power System.** The Wind Power System will give a varying positive contribution to the propulsion of the ship in period of time.
- **Computer program calculating the available wind energy.** Using computerized weighting of meteorological data, a computer program calculates the best sailing route to exploit the available wind energy potential. Thus making it easy for the captain of the Vindskip to harness this energy to propel the ship.
- **Cruise Control.** Over time, the contribution of the ship's Wind Power System to the actual propulsion of the ship will vary. However, the Cruise Control will balance the LNG-electric propulsion system so that it works as a dynamic entity together with the Wind Power System keeping a constant speed of the ship. By firstly adjust the pitch on propeller and then the rpm, it will make it possible to obtain a lower fuel consumption.
- **Relative wind (Apparent Wind) - true wind (True Wind).** True wind is the wind measured on board a stationary ship. When the ship starts moving, the so-called relative wind is being generated: The apparent wind measured on board a ship. The Wind Power System of Vindskip utilizes this Apparent Wind and generates a positive force in the longitudinal direction of the ship as a function of the angle of attack.

Canada's Largest Con/Ro Delivered

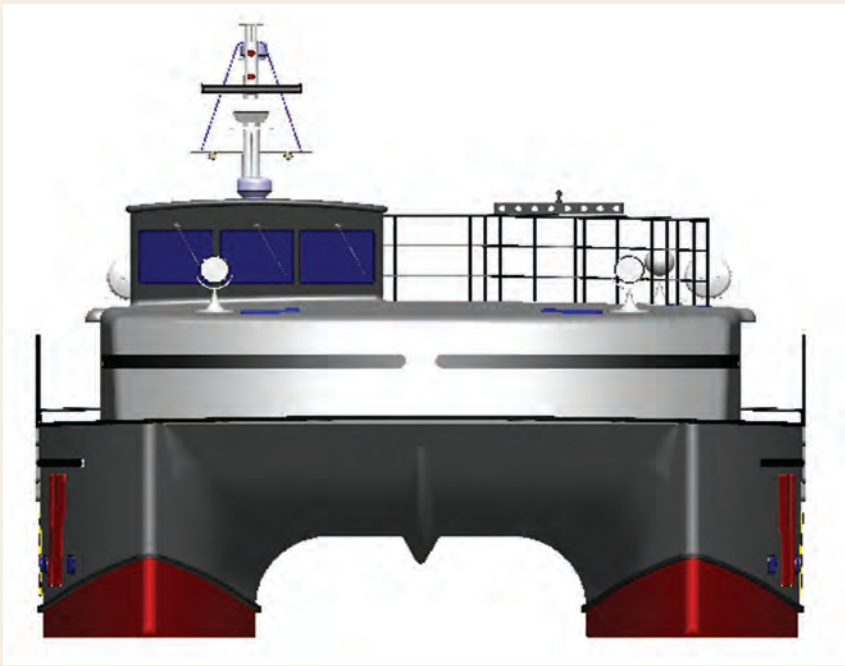
The largest Canadian Flag Con/Ro ship set sail last month from Flensburg, Germany destined for St. John's, Newfoundland and Labrador. Following sea trials, Oceanex Inc. accepted delivery of Oceanex Connaigra. After a short stint working in Halifax, the ship will move to Montreal, where it will provide a fixed weekly service between the ports of Montreal and St. John's. Captain Sid Hynes, Executive Chairman at Oceanex said, "Oceanex Connaigra has been custom designed to meet the many specific requirements of our trade and promises to provide optimum performance and reliability in the harsh weather conditions of east coast Canada." Oceanex Connaigra is designed to carry containers varying in size from 20-53-ft. as well as trucks, trailers, cars and over dimensional cargo with a total of 13,700 sq. m. of available space and a deadweight of 19,300 tons. Other custom features include movable vehicle decks and a wide, reinforced side ramp, thereby improving the versatility of the vessel. For crew comfort and cargo safety, the ice-class Oceanex Connaigra has been outfitted with anti-roll stability tanks and a gyro controlled active fin stabilizer system, which ensures a stable platform and performance reliability. Classed by DNV as a "clean ship," the Oceanex Connaigra already meets stricter environmental regulations set to take effect in 2015.

www.oceanex.com

"Pocket Patrol Boat"

Trawlercat Marine Designs (TMD) introduced its range of four carbon fiber High Speed Pocket Patrol Boats (HSPPB), designed to be a response vessel in dealing with piracy or any maritime criminal activities, available in 35 x 10.6m, 30 x 10.6m, 26 x 9m and 20 x 9m versions. HSPPBs sport a carbon fiber hull and a carbon fiber hydro-foil system which lifts two-thirds of the hull up out of the water. Together, according to the designer, it results in a 75% lower fuel burn and lower greenhouse gas emissions. A very shallow draft provides the ability to nose-up to sandy beaches and deploy fully armed marines down a carbon fiber bow ramp. The two larger models can deploy eight fully armed marines in four Quad all-terrain side-by-side vehicles driving down the bow ramp.

E: graham@trawlercatmarine.com



EBDG Offers New OSV Design: EB-210 CC

Elliott Bay Design Group's (EBDG) New Orleans office partnered with Gulf Island Marine Fabricators, LLC. on the class design and production engineering for the EB-210CC OSV (Offshore Support Vessel). The scope of the new design project included detail design, structural, mechanical, piping and outfitting design as well as 3D assembly drawings of the vessel structure using ShipConstructor software. The EB-210CC features a unique tank farm specific to the vessel's mission, which is confidential. "This is not a regular OSV design," said EBDG Gulf General Manager, Keith Keller. "It would be considered a Specialty Vessel."

RV for JAMSTEC

Conceptual drawing of wide-area seabed research vessel to be built in Japan.

Mitsubishi Heavy Industries, Ltd. (MHI) received an order for construction of a wide-area seabed research vessel from the Japan Agency for Marine-Earth Science and Technology (JAMSTEC). The vessel will be designed to advance wide-area research into seafloor resources, its comprehensive research capabilities to include elucidation of mineral and ore deposit origins and formation conditions, and will also enable contributions to disaster prevention research. Construction will start at MHI's Shimonoseki Shipyard & Machinery Works in Yamaguchi Prefecture this year, with completion scheduled for March 2016. The ship will measure 100 x 19 m with gross tonnage near 5,500 tons. To efficiently conduct survey research of ocean floor resources, it will be capable of operating such state-of-the-art equipment as a seismic research system for investigating crustal structure, large piston corers and a seafloor-mounted excavator for collecting seabed samples, a remotely operated vehicle (ROV) and an autonomous underwater vehicle (AUV). Sea speed will be approximately 12 knots, with a crew capacity of 65. The vessel on order will also be outfitted with a marine research laboratory enabling swift analysis of collected samples without any time-lag deterioration.

Pacific Radiance: Ulstein PSV Design

Pacific Radiance Group of Singapore – which currently manages more than 120 vessels – ordered a pair of platform supply vessels (PSV) from the Ulstein PX121 design for construction at a Chinese yard, estimated for delivery in Q2 and Q3 2015, repectively, with an option for two vessels.

"We found that the PX121 design suits our targeted markets in the best possible way," said James Pang in Pacific Radiance. "Our team is striving towards operating cleaner and more fuel efficient vessels that meets and exceeds all the latest regulatory requirements. In addition, the crews' and special charterer's personnel comfort and operability of a vessel in rough weather conditions and strong currents are of increasing importance to our clients. This design meets most of our clients' operational expectations in terms of e.g. deck space, capacities, speed, position holding capabilities and fuel efficiency. We believe this is achieved by the unique hull design and longer lines that allow for better transit speed and efficiency, saving time and cost."

www.ulstein.com

Illustration courtesy: Ulstein Group

NASSCO to Build Tanker Pair for Seabulk

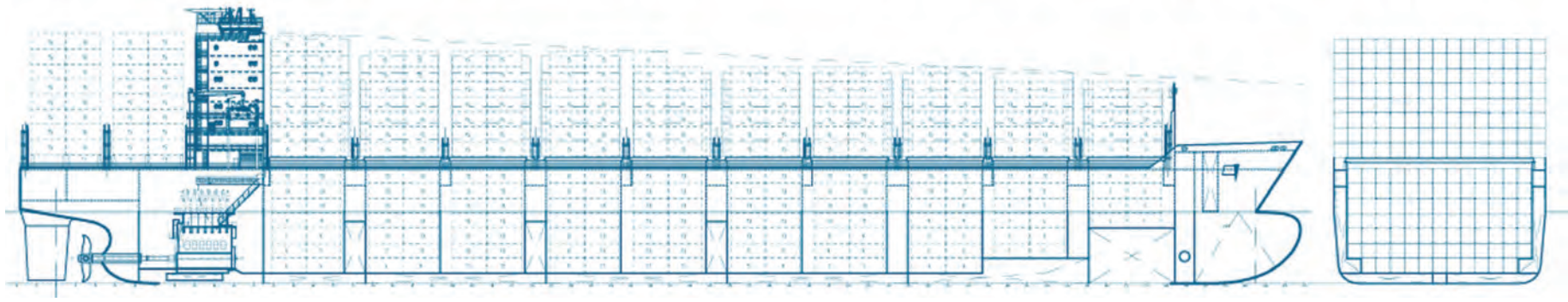
Photo: NASSCO

General Dynamics NASSCO entered into a contract with Seabulk Tankers for the design and construction in San Diego of two 50,000-dwt LNG-conversion-ready product carriers each with a 330,000 barrel cargo capacity. Construction of the first tanker is scheduled to begin in late 2014, with deliveries scheduled for the second quarter of 2016 and first quarter of 2017.

These 610-ft. tankers are a continuation of the ECO tanker design, which is purported to offer improved fuel efficiency and incorporate the latest environmental protection features, including a Ballast Water Treatment System. The ships will be designed by DSEC, a subsidiary of Daewoo Shipbuilding & Marine Engineering (DSME) of Busan, South Korea. DSEC's ECO design achieves improved fuel efficiency through several features, including a G-series MAN ME slow-speed main engine and an optimized hull form. The tankers will have conversion capable dual-fuel-capable auxiliary engines and the ability to accommodate the future installation of an LNG fuel-gas system and Type C LNG tanks. These additional tankers represent the continuation of NASSCO's successful partnership with DSEC. This contract will be the fourth commercial collaboration between NASSCO and DSEC.

www.nassco.com

MAIN DIMENSIONS: LBP = 211.9 m, B = 37.3 m, D = 19.9 m, Td = 11 m, **CAPACITIES:** 3,736 TEU, of which 2,364 TEU on deck and 1,372 TEU in hold, DWT = 43,150 t, 2,920 TEU at 14 t, **ENGINES:** MAN G60ME-C9 with 15,100 kW, four gensets of 1,750 kW each



Year of the C-Dragon

With an eye on the growing Intra-Asian trade routes Germanischer Lloyd (GL) developed a novel container vessel design concept: the C-Dragon. C-Dragon measures 211.9m in length between perpendiculars and 37.3m wide, with a loading capacity of 3,736 TEU. The concept targets the actual condition with short roundtrips and many port calls and is designed to outperform cascading older tonnage in terms of fuel efficiency, port turnaround and cargo intake. "Intra-Asian container traffic is set to surge and vessels in this trade typically sail beneath their design speed and make frequent port calls - 13 on a typical north south trading route," said Dr. Pierre C Sames, Senior Vice President, GL Research and Rule Development. C-Dragon has a high ratio of on-deck to total container TEU capacity (2,376 TEU vs. 3,736 TEU) and less number of bays, compared to reference vessels studied for the design.

This particular vessel layout is instrumental in reducing port stay duration because the greater number of containers on deck reduces the need to remove hatch covers, while fewer bays result in fewer crane movements. Port efficiency simulations conducted using prototype software from GL, demonstrated that the average port stay was reduced from 15 to 14 hours for C-Dragon for each harbor stay.

"C-Dragon's faster port turnaround allows speed reductions in transit and therefore related fuel cost savings, without compromising any cargo transport capacity, in comparison to competing vessels," Dr. Sames explained. "The effect is more pronounced for vessels on short routes with many port calls." For C-Dragon, average transit speed is reduced from 15.5 knots to 15 knots.

To lower steaming speeds and fuel costs, C-Dragon's hull form has been optimized by FutureShip, GL's consulting subsidiary. This optimization and a reduced design speed delivers an EEDI value, lower than the IMO reference line for 2025, and fuel consumption 30% lower than that of the slow-streaming 4,250 Panamax existing reference vessel. Furthermore, the wide beam hull adopted enables lower speeds and in most operating conditions eliminates the need for ballast water.

With zero ballast water usage, C-Dragon offers best-in-class deadweight tonnage (DWT) utilization and outstanding cargo intake. For each TEU at 14 tons, it only needs 14.8 tons deadweight, almost four tons less than the current 4,250 TEU Panamax design, an additional potential for greater earnings.

www.gl-group.com

Arctic Prowler Arrives

Alaska Longline, LLC, and Alaska Ship & Drydock (ASD) were scheduled to christen the 136 ft. freezer longliner F/V Arctic Prowler on Oct. 5, 2013 at the Ketchikan Shipyard in Ketchikan, Alaska. It is reportedly the first large commercial fishing vessel to be built in Alaska, an ocean going Factory Longliner capable of processing and storing catch aboard. It is to be Load Lined and classed by DNV, and will be U.S. flagged. It will comply with all applicable USCG and class stability requirements. The intended area of operation will have a range of operational temperature conditions as follows: Sea Water Range 35 – 85°F; Ambient Air Range -20 – 85°F.

www.vigorindustrial.com

Length, molded	136 ft.
Beam, molded	40 ft.
Hull Depth	16.5 ft. above rabbet line
Design Load Draft	15 ft. above baseline approx.
Lightship	661.35 long tons (approx.)
Cruising speed	12 knots
Diesel fuel capacity	63,496 gallons approx (at 95% volume)
Freezer hold capacity	14,655 cu. ft. net volume 735,000 lbs.
Potable water storage	11,200 gallons approx. (at 100% volume)
Engines	2 x MTU 8V4000 M53R
Continuous Rating	1,000 bhp at 1600 rpm, Tier 2
Generators	3 x MTU, Series 60 (333 kW at 1,800 RPM, 60HZ, 480 VAC, Tier 2)
Emergency Generator	1 x Northern Lights (36 kW at 1800 RPM, air cooled)
Accommodations	22 berths in eight staterooms
GRT	under 200 (U.S. Registered Tonnage)
Gross Tonnage	under 1,000 (International Tonnage)

Photo: Vigor

(Images courtesy Maersk)

Maersk & New Containership

Capacity management is firmly on the minds of Maersk executives as the largest container ships in the world steam into service.

By Greg Knowler, Hong Kong

Photographs of Maersk Line's 18,000 TEU ships are flooding in from ports around the world as the carrier phases its giant new vessels phase into the AE10 string between Asia and North Europe.

It's a "Where's Waldo" with maritime characteristics. Shanghai, Ningbo, Yantian, Hong Kong, Tanjung Pelepas, Rotterdam, Aarhus, Gdansk – the giant Triple-E Class ships are making history with each port call and tugboats with water cannons firing have been rolling out the aquatic red carpet.

Maersk Mc-Kinney Moller was the first of 20 Triple-Es ordered by the carrier and it sailed into service with plenty of fanfare on June 28. In August she was followed by Majestic Maersk, and Mary Maersk was scheduled to join the fleet in mid-September.

Five of the giant vessels will be in service before New Year celebrations begin and by 2015 all 20 will be in business, an incredible 360,000 TEU of capacity shuttling between Asia and North Europe.

It is this enormous amount of container space that has alarmed the industry. The Asia-Europe trade is already reeling under a glut of capacity and weak freight rates with few expecting a European economic recovery anytime soon.

Market watcher Drewry believes that even when the industry's most recently ordered ships are delivered in 2016, Europe and the U.S. are still likely to be climbing out of recession, which means that capacity in the east-west trades will continue to outstrip demand.

Maersk Line, however, insists that the introduction of the Triple-Es will be managed carefully to avoid flooding the market with capacity.

"In the volatile global economy and shipping environment, it is very important that we find a balanced way of introducing new and efficient tonnage without increasing the total capacity of the market unnecessarily," said David Skov, head of South China for Maersk Line.

"We took out the AE9 string on the Asia-Europe, and even with the five Triple Es by the end of the year the total capacity will not have grown. It is a responsible way of introducing new capacity while not making a difficult situation in the trade even worse."

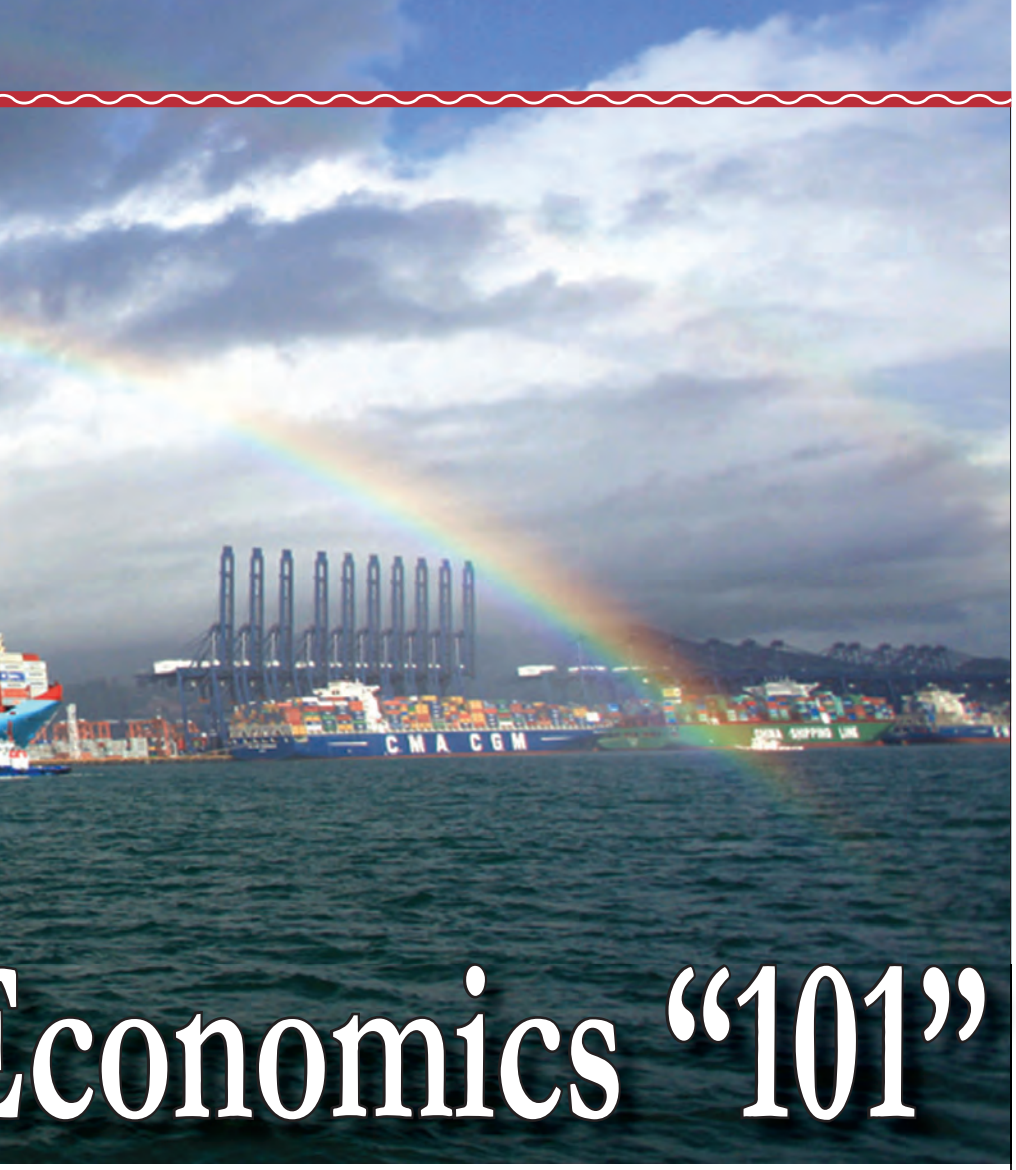
Since the global financial crisis in 2008, the trade has struggled to balance demand and supply. The European recession and falling exports from China have put the brakes on container trade and, when combined with a trend towards ordering smaller volumes more frequently, has reduced peak season spikes and flattened out exports.

The impact of the excess capacity on Asia-Europe freight rates has been brutal, with rates falling to their lowest level ever earlier this year and shippers resisting general rate increases. As it phases in the Triple-Es, Maersk Line is working hard to avoid placing any additional downward pressure on rates.

"Until we have a full string of Triple-Es we will only load the new ships to 14,200 TEUs, which is the capacity of the Emma Class vessels, the next biggest we have employed on the string," Skov said.

But surely the lower unit costs will be lost if the vessels are sailing with a utilization of 78%?

Not so, said Skov. It turns out that the Triple-Es breakeven point is below even 70% utilization before the unit costs reach uncompetitive levels.



Economics “101”

Biggest and best comes at a price, as **the first 10 ships cost Maersk Line $190 million each**. Raw materials comprise most of the cost with each vessel requiring 55,000 tons of steel.

“We have reduced the capacity by almost 10% compared to last year and are running with a much higher utilization, up in the 90s, on average. That is very high and will have to fall to unrealistically low levels before it will become a problem.”

Maersk Line may be managing its capacity, but the Danish carrier is not the only line introducing ultra large container ships. In fact, by the end of next year Maersk won’t even have the biggest box carriers in service. China Shipping Container Line has ordered five 18,400 TEU vessels, the first of which will be delivered in the fourth quarter of 2014.

This trend towards bigger ships will continue to grow, predicted analysts. Alphaliner expected 18% of the global fleet to comprise ships capable of carrying 10,000 TEU and more by 2015, and Drewry warned that China Shipping’s decision to “follow Maersk Line down the 18,000 TEU road” was likely to be followed by most of the other carriers.

Mediterranean Shipping Co. is leading the way, but has decided to take the charter route. The world’s number two carrier will charter three 18,400 TEU ships ordered by Hong Kong Asset Management for delivery from early 2015, and it will take another three 18,400-box boats on long-term bareboat charter from the Bank of China Financial Leasing, also from 2015.

United Arab Shipping Co. has five 18,000 TEU vessels that will be delivered from late 2014. China Shipping and UASC will use their vessels in a joint service.

But biggest and best comes at a price, and the first 10 ships cost Maersk Line $190 million each. The carrier expects optimization and energy improvements

(Images courtesy Maersk)

to the second 10 should see the price dropping to an average of $185 million per ship. Raw materials comprise most of the cost with each vessel requiring 55,000 tons of steel.

China Shipping paid $136.5 million for its 18,400 TEU ships, although the single engine design has been described as "fairly basic." Hong Kong Asset Management is believed to have paid $140 million per ship, Bank of China $140.5 million and UASC is understood to have paid $150 million each.

The ripple effects of these mega vessels will be felt throughout the shipping business. Introducing large new tonnage to a trade without increasing total capacity means smaller ships have to essentially ship out. The preferred option is to cascade the excess vessels down to other trades, which often means merely transferring an overcapacity situation from one trade to another.

The transpacific and north-south trades have borne the brunt of cascading, as mega ships were inserted into Asia-North Europe services, the world's busiest container route. To absorb as much capacity as possible, lines have employed super slow steaming, accelerated scrapping, handed back chartered tonnage and pulled in orderbooks.

Despite initial resistance to slow steaming, shippers have grown accustomed to longer voyage times and have adapted their supply chains accordingly. Guaranteed times have replaced speed, even though it now takes six days longer than in 2008 to ship containers from Shanghai to North Europe.

The two-propeller engine that can push the Triple-Es to 23 knots while operating at slower speeds gives the ship an operational sweet spot lower than the Emma Maersk. Design improvements see the engines in the second batch of 10 vessels reduced from eight cylinders to seven cylinders.

The more efficient engines make low fuel consumption one of the Triple-Es greatest advantages. Compared to the 13,000 TEU ships of competitors, vessels of 18,000 TEU are believed to burn around 35% less fuel per container. In fact, Maersk said the vessels will burn 30,000-35,000 tons of fuel a year, which over their lifetime will be close to three times the price of the ship. As fuel accounts for well over half of all voyage costs, this kind of fuel economy is a powerful incentive for ordering the new generation of container ships.

Why Size Matters

Container Ship Economies of Scale

Maersk Line's first 18,000 teu vessel has prompted much speculation on her economies of scale, particularly as HHI has just confirmed that it is negotiating an order for five slightly larger ships with UASC, said Drewry Maritime Research in a recent paper. The economies of scale offered by Maersk Line's 18,000 teu vessels are so great that few can ignore them. Assuming the Triple E's consume 164 tons of fuel a day (excluding diesel), the estimated IFO bunker cost of the Maersk Mc-Kinney Moller (18,270 teu) would already be 35% lower than a typical 13,100 teu vessel on a per teu carried basis – $218/teu versus $333/teu. Apart from the fact that the ships are bigger, their hulls are reported to be designed around an average ship speed of only 23 knots, compared to over 24 knots for the first 13,000 teu vessels, enabling them to glide through the water more efficiently.

The unit cost comparison is based on an average westbound ship speed of 20 knots for both sizes of vessel, and an eastbound ship speed of 14.6 knots which is the average of Maersk's services between Asia and Europe according to Drewry's Carrier Performance Insight. The ships are also assumed to be 85% full westbound, and 55% full eastbound, which may only be achieved in steady state conditions, when all of the vessels deployed in the AE10 service are Triple Es.

As bunker consumption tables for 18,000 teu vessels are not readily available, and Maersk does not disclose such information, the daily consumption has had to be extrapolated from those of vessels ranging between 10,000 teu and 16,000 teu, but they do more-or-less tie in with public announcements from Maersk and national press reports. Maersk claims the vessels to be 35% more fuel efficient per container carried than the first 13,100 teu ships, and the Daily Telegraph has reported that their westbound fuel consumption is approximately 150 tons/day, compared to normal consumption of over 214 tons/day.

Ship operating costs, including manning, insurance, stores/lubes, R&M and Admin, are also an impressive 11% cheaper – $76/teu carried versus $85/teu carried, although here again, the result has had to be extrapolated from Drewry's analysis of vessel sizes ranging between 3,000 teu and 12,000 teu in its report entitled 'Ship Operating Costs 2012-2013 '. It is based on 2011 costs, which are currently being updated.
The Maersk McKinney Moller is manned with a crew of just 21, which is not unusual these days, but it is possible to run her with just 13.
Putting both IFO bunker and ship operating cost savings together reveals that Maerk's 18,000 teu ships are a massive 30% cheaper than 13,100 teu ships on a round voyage basis – $294/teu carried versus $418/teu carried. This does not include Suez Canal and port costs, however, so is not a total slot cost, but the differential in ship operating cost is clear.

Other savings include faster cargo handling. According to APM Terminals, berth and crane productivity of the Maersk Mc-Kinney Moller (18,270 teu) last week already reached a record 215 and 37.1 gross moves per hour respectively in Rotterdam. This compares with a 'normal' berth productivity average of between 140 and 150 moves per hour and a crane productivity average of between 32 and 33 moves per hour for a well stowed 14,000 teu vessel. Because of its greater size, an average of seven cranes could be worked on the Maersk Mc-Kinney Moller, with the maximum going up to eight, whereas only six can usually be worked on a 14,000 teu size vessel.

Source: Drewry Maritime Research

(Images courtesy Maersk)

"In the volatile global economy and shipping environment, it is very important that we find a balanced way of introducing new and efficient tonnage without increasing the total capacity of the market unnecessarily. We took out the AE9 string on the Asia-Europe, and even with the five Triple Es by the end of the year the total capacity will not have grown. It is a responsible way of introducing new capacity while not making a difficult situation in the trade even worse."

David Skov, Head of South China for Maersk Line

Then there are the much vaunted per slot costs, which on an 18,000 TEU ship are $10.96 per TEU per day at sea, almost the same cost as a vessel half its size.

The main drivers behind building the Triple-E in the first place were to achieve greater container capacity and better fuel efficiency. Its "Triple-E" moniker refers to economy of scale, energy efficiency and environmental improvements made possible through advances in ship design and technology.

At 400 m, the ships are just four m longer than E-class vessels (Emma Maersk) yet can carry 2,500 more containers. An expanded inside cavity in a wider hull with a more bulbous bow allows the additional 16% of boxes to be piled in without significantly increasing the draft. Moving the navigation bridge and accommodation five bays forward and the engine room and chimney six rows back created more space.

"There is incremental change going on all the time during the building of the Triple-Es," said Skov.

Carrying capacity and environmental efficiencies aside, the new Triple-E class simply make a striking impression, in port and at sea.

Change is also being driven at ports around the world that will handle the giant vessels. Ports are under pressure to improve gate and yard efficiency, beef up feeder and barge services and intermodal connections. Skov, however, did not believe the ports would have problems with the larger vessels.

"Compared to the Emma Class ships, the Triple-Es bring a big jump in total numbers but percentage-wise it is not that big and nothing our terminal partners can't handle," he said.

"In Asia and Europe ports they are already very efficient and ships of this size will not stretch terminals beyond what they can handle."

Despite the increase in container capacity, the Triple-Es will only be one row wider than the E-class ships, 23 rows as opposed to 22. This means the ships can be handled with cranes currently in use in the hub ports.

Skov also pointed out that Asia-Europe trade has been flat for a few years and will be flat again this year.

"So it is not like in the old days with double-digit growth that led to bottlenecks at terminals. In South China there is decent spare capacity at the major terminals. Berth and yard utilization is good but nowhere close to maximum operating levels."

Maersk believes its 20 Triple-Es will be enough new capacity for the next few years and has long since declined to exercise an option for a third round of 10 Triple-Es.

Still, the trend towards deploying bigger ships will continue and all other areas of the container shipping business will simply have to fall in line. So far China Shipping has had the last word with its 18,400 box ships, but as soon as a recovery in global trade brings improved profitability, liner executives will reach for their orderbooks and before long, the industry will tumble into a new cycle of over supply.

(Images courtesy GOL Salvage)

GOL SALVAGE

Taking on the Global Giants

In the three years since its launch GOL Salvage Services Ltd, having forayed into a domain traditionally commanded by global players has today become a force to reckon with. GOL Salvage's Executive Director,Capt. Sandeep Kalia, gives a rare insight into the Indian salvaging scenario.

By Joseph Fonseca, Mumbai

'Fools rush in where angels fear to tread' had been the deciding factor for most salvors in India, holding them back from entering the salvage business in earnest. But when GOL Salvage Services Ltd. entered the field in 2011, it became a game changer as it was the first fully indigenous salvage company making an entry into the field that was traditionally dominated by overseas salvaging giants.

Not only has it made it big in a short span of time, but it has also added several milestones to its credit including the acquisition of full membership of the International Salvage Union (ISU) in just over a year of existence.

GOL Salvage Services Limited is a wholly owned subsidiary of GOL Offshore Limited (GOL). The GOL Offshore Group, the largest offshore service provider in India, enjoys three decades of continuous diversified experience, a workforce of nearly 1,700, a fleet of 61 multifunctional offshore assets and operations spread worldwide.

The group's business verticals range from drilling, engineering services, marine and aviation logistics, IMR, ship repairs, port and terminal support to encompass the entire gamut of E&P activities. Having the backing of its global expertise, massive offshore assets and operations spread worldwide, GOL Offshore thus made a remarkable foray into the salvage business in India.

"In most industries investment decisions are based on analysis of the return on capital employed," said Capt. Sandeep Kalia, Executive Director of GOL Salvage. "Salvaging being a casualty related business does not encourage capital investment based on five-year projections. But high capital intensive investment is imperative. In this respect GOL Salvage has a range of diversified offshore assets owned by the parent company that is made available to it exclusively. These include anchor handlers, tugs, support crafts, cranes and hook up accommodation barges, highly skilled and qualified salvage personnel, offices in both the East and West coasts of India, U.K., Dubai and Malaysia, warehouses, repair facilities, salvage an diving equipment, for example. As a result GOL Salvage is ideally suited for this activity."

What is remarkable is that the company has within a short period successfully completed several complex and challenging salvage operations. Major jobs include the refloating and delivery of a

"Fools rush in where angels fear to tread" had been the deciding factor for most salvors in India, holding them back from entering the salvage business in earnest. GOL Salvage Services helped to change that.

Though new, within a short period GOL has successfully completed several complex and challenging salvage operations, including the refloating of the broadly beached oil tanker MT Pavit from Juhu Beach Mumbai.

sunken Indian Naval warship INS Vindhyagiri (as technical partners to Titan Salvage); the refloating of the broadly beached oil tanker MT Pavit from Juhu Beach Mumbai. Another was the high-sea rescue / towing operation of the disabled M. V. Socol 6, carrying Class 1 IMO project cargo, in very rough seas off Marmugao port, in Goa on the Indian west coast. For this operation it mobilized GOL'semergency towing vessel Gal Ross Sea. The company also refloated MT Pratibha Cauvery a tanker stranded at Chennai on the East coast of India, by mobilizing the 120 T bollard pull AHTSV Malaviya Twenty One chartered to another salvor. All these operations according to Capt Kalia achieved a 100% success rate.

GOL Salvage is already a recipient of some coveted awards. For instance, it was conferred with the "Salvage Company of the Year" award at the Samudra Manthan Awards at Mumbai in December 2011. It was also bestowed with Leadership & Excellence Award for "Outstanding Achievement and Innovation in Salvage" during Shipping Marine & Ports Conference February 2012.

"As newcomers we face several challenges," said Capt Kalia.

"The salvage industry in India is still at a nascent stage. International salvors dominate this niche sector and entry of Indian companies is therefore limited. The economics of this industry has changed over time. Improvements in PSC regimes have reduced the number of casualties. The lack of support or encouragement from the government to promote national companies, outdated Indian laws with respect to salvage and wreck removal and cut-throat competition are still deterrents for prospective players envisaging to enter this business."

Describing the prevailing unfavorable laws and regulations, he points out that the Indian laws with respect to wreck removal are laid down in Part XIII of the Merchant Shipping Act, 1958 and in the Indian Ports Act, 1908. These make shipowners legally liable to remove wrecks from the territorial waters only, and then too only if they pose a hazard in the shipping lanes or lie close to a navigation channel.

Hence, he affirms shipowners, managers and underwriters abandon their property as the provisions of our law do not bind them to get rid of the nuisance, posing a hazard not only to marine life but to the earth's ecosystem as well.

"As newcomers we face several challenges. **The salvage industry in India is still at a nascent stage. International salvors dominate this niche sector and entry of Indian companies is therefore limited.** The economics of this industry has changed over time. Improvements in PSC regimes have reduced the number of casualties. The lack of support or encouragement from the government to promote national companies, outdated Indian laws with respect to salvage and wreck removal and cut-throat competition are still deterrents for prospective players envisaging to enter this business."

Capt. Sandeep Kalia

He draws attention to the fact that Indian salvage operators are at a disadvantage compared to many maritime countries. As in the U.S., where the Jones Act is in force, there is not much encouragement or reforms brought into place by the government of India to promote or support Indian players. "A lack of recognition of national competence is purely driven by ignorance and this has to change," he said. "There is an imperative need to reform our cabotage law and to promote capacity building as there is enough talent and capacity in the country to be self sufficient."

Capt. Kalia looks forward to the International Maritime Organization's (IMO) Nairobi Wreck Removal Convention of 2007 coming into force as this he contends will empower states to order the removal of wrecks from the waters that extend from their territorial waters to the 200-mile exclusive economic zone (EEZ). He explains that instances of owners and underwriters abandoning their ships' wrecks outside Indian territorial waters, for example, M/V Rak Carrier, M/T Pavit and many more, will witness a sharp decline, providing a relief to the country's coastal states and generate business opportunities for salvors.

Capt. Kalia rightly points out that while unpredictable, there will always be a need for salvage, as no matter how sophisticated the technology and the build, human mistakes – as well as technical failure – invariably happen, particularly in the demanding marine environment.

"More than 400 shipping casualties occur globally each year," said Capt Kalia. "The complexity and cost of these operations are increasing. Though there are around 60 members currently enrolled with International Salvage Union, there is enough business for established players and newcomers. Financial strength, endurance, diversification and appetite for risk are some of the governing factors."

GOL Salvage is unique in that all of its assets are registered under Indian Flag, many of which are operating in Indian waters, helping to effectively reduce delays and costs. Capt Kalia said that since their offices, warehouses and assets were strategically located on both the east and west coasts of India, it is naturally in a better position to provide a quick response and cost effective quality service to clients without any delays arising due to logistics, mobilization of assets, equipment and clearances from various Indian authorities.

In addition to marine salvage, wreck removal services and protection of marine environment, GOL Salvage also offers a raft of other services, including lightering services, marine firefighting, shallow and deep water towing and anchor handling, search and rescue services, oil spill consultancy, barge and heavy crane lift operations, air and saturation diving and other emergency marine response.

"Using our unique in house, custom built world class DNV-approved offshore ship/anchor handling, towing and crane handling simulator, we are able to simulate complex operations, carry out deployment in various weather / sea conditions / night / day operations and build the team's experience ashore as well as at sea," said Capt Kalia. "Our simulators are integrated for complete salvage, OSR training, including creation of a variety of scenarios; provide team training across divergent groups between bridge, engineering and crane teams. The presence of our group in the industry for three decades has not only enriched our combined experience and expertise, but has also benefitted our team's understanding of local topographical conditions vide our extensive operations. No other national or international agency can claim to posses this edge."

Speaking about the transformation taking place in the business, he said that salvaging has undergone a kind of metamorphosis. The scenario is quite different today from what it was in the early 80s. Environmental concerns are more significant today and play a far greater part in operations. For instance the bunker fuel capacity of modern day shipping is massive, with bulkers, box ships, tankers and cruise liners having fuel carrying capacities well in excess of 5,000 tons.

On another front the protection of the marine environment has gained dominance while undertaking salvage operations. The mission is to "keep the pollutants in the ship". The next generation container ships with 18,000 TEU capacity present equally big challenges to the salvage community. With the shipping industry experiencing the worst recession ever, how the industry matches the demands of heavy capital investment to cater to the ever growing tonnage will determine how prolific the salvage business will be in the next generation.

Monitoring Performance

Advancing tech requires advanced oversight

Recent severe storms in the UK North Sea have resulted in a number of floating production, storage and offloading vessels (FPSOs) being shut down in order to assess and repair the damage caused. Notwithstanding the possible safety implications for operations crew, oil and gas majors are facing weeks, if not months without a critical asset which in turn, is having a significant impact on future production.

By Louise Ledgard

The design and operation of an FPSO in remote locations requires detailed information on the structural response of the vessel within the local environment offshore. Monitoring of critical components including the risers, hull and mooring lines simultaneously with the local environmental forcing of waves, wind and currents at the site location, provides a valuable insight into the performance and possible extension of the integrity life of the asset. As new technology is introduced, riser design becomes more sophisticated and extension of design life is required. Also, it becomes increasingly important to monitor an asset's performance to assist with operational decisions, forensic investigation of marine incidents and the evaluation of design codes.

Over the last few years, an increase in the number of offshore incidents related to FPSOs in the North Sea during extreme storm conditions has resulted in focused attention on the verification of design codes and a review of inspection procedures. With an average mooring failure projected at 8.8 years for an FPSO in the North Sea and the consequential damage this could have on the riser, a number of Joint Industry Partnership (JIP) initiatives have concluded that the management and audit of the FPSO integrity is required. Furthermore, indicative costs resulting in the remediation activities required for a single mooring line alone have been estimated at $3.2m for a North Sea FPSO and many companies believe that insurance premiums are likely to rise due to the number of claims now being made.

As an attractive and flexible option which eliminates the need to lay expensive long-distance pipelines, the number of FPSOs being put into service in remote locations is rising. As such, the complexities of understanding the performance of the vessel in given sea-states and the interaction of the FPSO with the subsea infrastructure, becomes imperative.

Marine monitoring systems have primarily been used to provide real-time information for operational support during production with typical examples of its use being: vessel position (particularly in storm conditions); information on the metocean conditions during operation; production riser tension, buoyancy and stroke and mooring line tension for failure detection.

Furthermore, monitoring systems provide infor-

mation to verify the design of the asset and provide input into fatigue calculations for mooring lines and risers. Currently, finite mathematical modeling is carried out when designing the riser configuration for the FPSO, but what is often lacking is the robust data to validate the actual local environmental conditions. Feeding this data into the design process can help to validate the accuracy of the modeling tools being used and reduce uncertainty.

The standard sensors and parameters that should be measured within the system include:

- **Meteorological** – the monitoring of the meteorological conditions offshore is critical to ensuring the safe operation of the asset. In 1981, the Civil Aviation Authority (CAA) and the Helideck Certification Agency (HCA) introduced the CAP 437 standard for the U.K. Continental Shelf and currently recommends that meteorological parameters and motion of the helideck are measured for an FPSO. Such parameters provide critical operational information which is sent back to shore so that companies planning any crew changes or helicopter operations are fully aware of the weather status on the vessel before dispatch. Safety of employees is of the upmost importance, therefore companies want to ensure safe take-off and landing conditions

- **Wave monitoring** – wave induced loads are the main source of fatigue for FPSO design and wave height is a significant factor to consider for the design of the risers, as well as assessment of mooring fatigue life and hull integrity. Recording the extreme events in storm conditions also provides valuable input to the marine forensic investigation of any offshore incident

- **Ocean current** – Surface currents can impact any offloading operations from the FPSO to the shuttle tankers and influence the response of the risers and moorings, resulting in fatigue loads

- **Position and attitude** – measurement of the position of the FPSO is essential in storm periods to understand the vessel response to environmental forcing and the coupling of the resultant fatigue on risers and mooring lines. The position of the vessel is also critical in the assessment of any marine incident

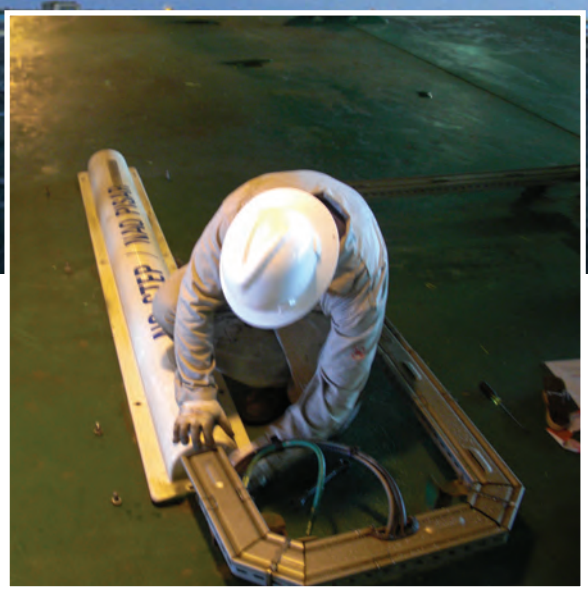
- **Riser monitoring** - a detailed understanding of the environmental forcing to the FPSO combined with the riser response can aid the design process and provide the input to fatigue calculations

- **Hull monitoring** – stress induced in the deck and hull of an FPSO can be monitored using a series of long base strain gauges positioned in strategic locations on the deck and flare tower. In addition, pressure sensors installed in the hull provide information on the vertical acceleration of the FPSO

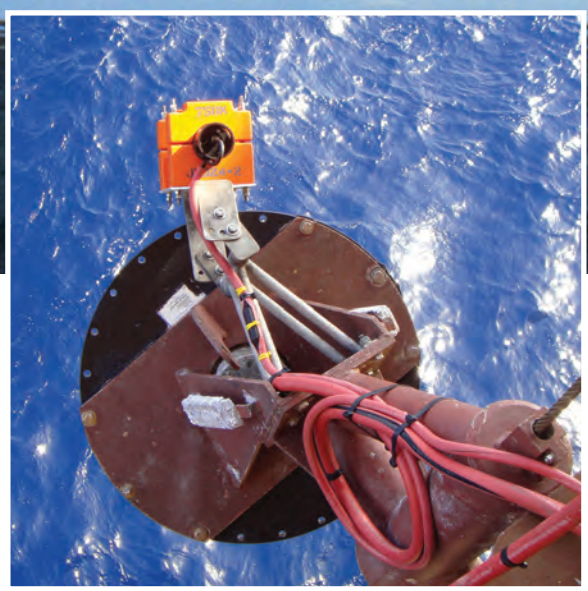
- **Mooring line** – monitoring the mooring line is challenging and there is a scarcity of long term in-situ observed data sets for mooring line tension. For forensic engineering and validation of design codes, it is essential that mooring line tension is collected simultaneously with metocean parameters on a common time base.

Each of the components mentioned

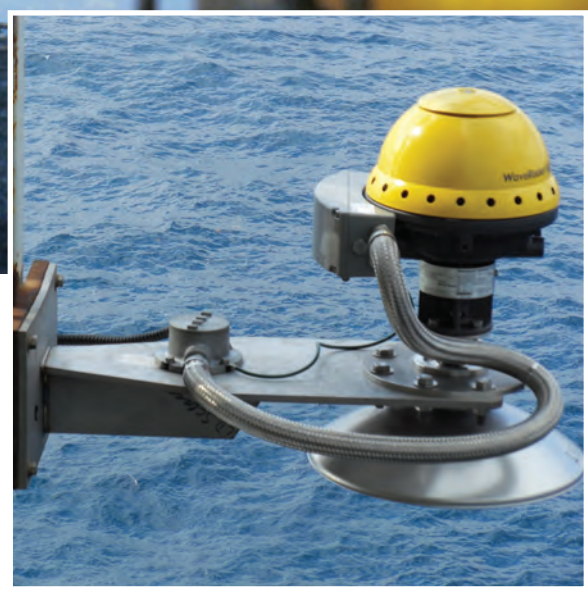
Image courtesy of Bristow Helicopter.



BMT service technician performs maintenance on long-term strain gages



ADCP Deployment



Measurement of wave height from FPSO using air gap sensor.

above are likely to involve a number of third party suppliers, therefore the challenge that oil and gas majors are faced with is ensuring they all integrate into one effective monitoring system, to provide a holistic approach and support the assets' integrity management program. Correct placement of the sensors on board the FPSO and full integration of the data within a common time base is vital. By carefully setting up the sensor clocks and sampling frequency during the installation of sensors at strategic locations on the FPSO, companies can use the resultant data set to effectively study the coupled response of the vessel with the environmental and resultant dynamic loading on the risers and mooring lines to study fatigue.

Monitoring of all the different parameters within this common time base can also assist with forensic investigations of marine incidents. For example, companies want to be able to match the time the mooring line broke with the highest wave that hit the FPSO. If the clocks on the mooring sensor are different to that of the wave sensor, forensic engineers will not necessarily marry the two together. Instead of working in isolation, the different parameters must be fully integrated to allow the root cause of the incident to be clearly identified.

Significant advances in technology over the last decade have meant that oil and gas majors can monitor the effect the local environmental conditions have on their critical infrastructure offshore. Sophisticated sensors on board an FPSO can provide real time information for operational support and provide valuable input into studies on the performance of the FPSO in varying sea states. However, to be fully effective, oil and gas companies must look at the monitoring of their critical assets holistically with the end user taking an active role in the planning and implementation of an integrated marine monitoring system. It is vital that data is archived and stored in a common portal to allow engineers and operational teams to make the most of this valuable information.

Only then can they feel confident that the system is indeed fit for purpose and the risks of lost production due to repair or worse, a lengthy shut-down, are minimised.

About the Author

Louise Ledgard has a P hD in Materials Engineering and Design, a Bachelor's Degree in Applied Physics and a Masters in Business Administration. With over 15 years' experience working within the offshore oil and gas sector, Louise helps clients to identify an optimum solution for their offshore operational and marine engineering requirements.

Photo: Port of Rotterdam

The Netherlands

A strong maritime nation thrives despite downturn.

by Eric Haun

The Netherlands maritime sector has fared relatively well despite the turbulent conditions brought about globally by 2008's financial crisis. The country's marine businesses combine for an annual turnover near $25 billion, compiling upwards of 2.5% of Dutch earnings. Maritime Reporter explores the Holland maritime cluster, its businesses, trends and outlook.

A seafaring nation for more than five centuries, the Netherlands has a deep-rooted nautical history with a strong commercial connection to the seas. Dubbed "the gateway to Europe," Holland's location is highly favorable for marine transport, transshipment, trade and service.

A major maritime cluster prospers throughout the nation, primarily along its rivers and shores.

Today the Dutch maritime industry is broad and diverse, ranging from water sports and electronics to shipbuilders and naval architects. Roughly 2.2% of the Netherlands' population works in the maritime sector, amounting to more than 185,000 workers domestically, with an additional 60,000 workers employed abroad. According to the nation's Ministry of Infrastructure and the Environment, the Netherlands has seen continuously favorable economic growth over recent years, and the World Economic Forum ranks it among the world's most commercially competitive countries, making Holland a desirable place for conducting business.

The total fleet operating in merchant shipping and seagoing towage under the flag of the Netherlands in 2012 was 1,033 (roughly 750 merchant ships and more than 200 seagoing towage, offshore and pontoons), marking continued growth since the 2008 crisis. Growth is expected to slow over coming years as newbuildings generally create fewer profits due to the global overcapacity within cargo market.

Like in most countries, shipbuilding output was down in Holland for 2012. According to figures compiled by the Holland Shipbuilding Association, deliveries from Dutch shipyards amounted to 95 seagoing vessels, a total of nearly 335,046 CGT with a value in excess of $1.4 billion. Approximately 58% of the seagoing ships produced in the Netherlands are for export.

The amount of new orders placed during 2012 also reflected the depressed global market. Values decreased 35% compared to 2011. New seagoing orders in 2012 reached 61, totaling 166,471 CGT. The order book at the end of 2012 contained orders for 129 seagoing vessels, totaling approximately 593,893 CGT. The order book represented a value of more than $2.7 billion.

Holland's approach to shipbuilding recovery includes building high quality, complex and technically innovative ships for export: specialized vessels, offshore supply vessels, megayachts, etc.

The nation's shipbuilders, including two of Europe's largest and most commercially productive (Damen and IHC Merwede) are on the forefront of vessel innovation. In 2012, approximately 90 inland ships were delivered from the Netherlands, including a large number of non-cargo carrying vessels such as river cruisers, dredgers and patrol ships. Combined, the Dutch total output in the specialized inland sector reached nearly 296,699 GT.

And though inland shipping is experiencing global overcapacity, the Holland Shipbuilding Association predicts an upturn in business outlook due to impending infrastructure and maritime regulations that will likely boost inland shipping as an environmentally-friendly means of transporting goods within Holland and Europe.

The luxury yacht industry has also fared well in Holland as the nation has seen increases in average size and value of orders. Last year 18 superyachts were launched by Dutch builders, and the country's orderbook lists 59 additional yachts worth more than $2.9 billion to be delivered over the next few years.

Working closely with Holland's shipbuilders, the country also possesses more than 670 companies that supply services and marine equipment. This market is mostly composed of small enterprise companies but also includes a number of international subsidiaries and companies affiliated to larger Dutch shipbuilding groups. With exports as the sectors main driver (accounting for 61% of turnover), together Dutch maritime suppliers neared a collective turnover of $4.6 billion for 2012, an increase from 2011's $4.48 billion.

Maintenance and repair in the Netherlands focuses largely on complex conversions and refits in most vessel ranges. The Holland Shipbuilders Association reported growth in the division over 13% from 2011 to 2012. This increase in activity is in large part due to larger scale refit and conversion projects as well as increased traffic in the nation's major ports.

In terms of annual tonnage, the Port of Rotterdam ranks first in Europe, and third globally. Its gross tonnage has steadily risen in recent years, from 430.2 million metric tons in 2011 to 441.5 million in 2012, placing it 257.4 million metric tons ahead of Europe's second largest port Antwerp (184.1 million in 2012). In 2012, Rotterdam recorded 32,057 seagoing ship arrivals, 79,487 ship movements of seagoing vessels and roughly 87,000 inland vessels.

Anything but Standard

Damen newbuild and repair group targets global growth

From a single newbuild and repair yard near Rotterdam in 1927, the family-owned Damen Shipbuilding group has expanded to 38 shipyards and related companies involved in new construction as well as repair and maintenance activities. Now with more than 8,000 employees and a presence in 34 countries, the Netherlands-based Damen group has become one of the world's most successful shipbuilding businesses, thanks largely to its production methods and ever-expanding design portfolio.

By Eric Haun

When Kommer Damen began running the Damen company in 1969, he made changes to the company's operations instantaneously. One of his first initiatives involved standardizing the construction of vessels based on modular building principles, a bedrock business principle that has driven the company's growth for the last 40 years. Continuing its standardized mode of building today, Damen builds on spec and keeps stock of its most popular vessels, enabling buyers to obtain vessels in a matter of weeks, rather than months or years, with a competitive price tag, too.

Damen's newbuilding activities presently includes a range of vessels in each of its niche markets, of which it delivers between 120-150 annually (more than 5,000 since 1969), including tugs, workboats, offshore support vessels, dredgers, navy and patrol craft, cargo ships, fast ferries, fishing vessels, barges and luxury yachts. Of Damen's newbuilds, 22% are harbor services and shipping, 20% offshore and support, 20% security and patrol, 20% naval, 5% public transport, 8% yachts and 5% dredging.

The group's annual turnover in 2012 was $2.3 billion, and the company projects between $2.4-2.6 billion for 2013. Newbuild commands the lion's share (70%), with repair smaller (14%) but growing fast. By region, Damen deliveries include 24% for the Netherlands, 33% for the rest of Europe, 11% the Americas, 13% Asia, 12% Africa and 7% Middle East.

Design Spotlight - The Axe Bow

A recent market changer is Damen's Axe Bow concept. Attempting to improve seakeeping abilities and comfort of high-speed vessels, Damen's Axe Bow has been in the works since the 1980s. Starting with the long-hulled "Enlarged Ship Concept," Damen initially produced the Stan Patrol 4207 and 4708 in the 1990s. It wasn't until the 2000s that the Axe Bow hull form was fully developed with the debut of "Sea Axe" patrol vessels and fast crew suppliers. Literally shaped like the head of an axe, the slender Axe Bow is designed to cut through seas at high speeds with reduced wave resistance. In addition to improving vessel operability, comfort and safety, Damen says the dramatic drag reduction cuts fuel usage by 20% and as a result also significantly reduces emissions.

Damen quickly incorporated the Sea Axe design into several of its market areas, producing builds from 19-67 meters in areas ranging from patrol vessels fast crew suppliers, even building a "Twin Axe" catamaran. More than 100 vessels with the Sea Axe design have been sold since 2005, mostly for use offshore, with nearly 60 under construction at Damen yards globally.

Looking ahead, Damen plans to scale up in the following areas: offshore, harbor terminal and tugs, naval and patrol, dredging, defense and security, public transportation, government and naval, yachts and offshore energy.

Offshore

Damen admits the offshore newbuild sector is not a major contributor to its bottom line – for now. Damen's offshore division has an annual turnover between $200-270 million, accounting for approximately 10% of its $2.3 billion total for the group in 2012. Damen's first offshore vessel was a one-off supplier built in 1987, but the company's offshore builds didn't pick up until after the start of the new millennium when the company's Brazilian partner Wilson Sons (see related story, page 54) inquired for the design of a platform supplier, which was built in 2007. This served as a turning point for the company, and Damen decided to increase its offshore building activity, keeping its basis in the Brazillian market. In 2010, Worldwide Supply placed an order for six new platform suppliers (two have already been delivered, while the remaining four are expected by the end of 2013, and an additional

Innovative and efficient ship shapes are one hallmark of the Damen brand. From the left: the Twin Axe; The Axe Bow; and the signature Damen ASD Tug. On the previous page is Damen's repair and conversion yard in Schiedam.

two are in production). Since 2007, Damen has received 50 orders in the offshore segment, including PSVs, cable layers, anchor handlers, seismic research vessels and oil spill response vessels.

Damen has capabilities for building offshore vessels in Holland, Vietnam, Romania, China and Brazil, with plans to expand, both in physical facilities and new design concepts.

"We are a big company, and we think the Offshore market is one of the niches where we can grow," said Jan Van Os, Damen's Offshore Director. "One of our goals is to become a key player in the offshore market." He added, Damen is presently looking into other innovative offshore options that fit into the design capabilities and capacities of its yards for both short and long term, such as construction vessels, platform repair and maintenance vessels, arctic platform suppliers and cable laying vessels.

Harbor and Terminal Tugs

Damen is a leader in the design and build of harbor and terminal vessels, particularly its range of standard harbor tugs with bollard pull of up to 100 metric tons. Stock Damen terminal service vessels and tugs are available for operation nearly immediately upon order, perfectly epitomizing the benefits of Damen's standardized building method and making the harbor and terminal sector Damen's busiest. More than 80 Damen ASD tugs (Damen's top harbor product) have been built since 2002. The Damen harbor portfolio includes a range of workboats for various tasks in ports and harbors. Work barges, skimmers, dregders, pilot boats, fire-fighting vessels, multi cats, survey vessels buoy tenders and security vessels are all offered by Damen, demonstrating the builder's wide design and build capabilities.

Luxury Craft

Yachts make up 8% of Damen's newbuild orders. It acquired Amels in the early 1990s and has expanded its yacht building capacities. In 2005, Damen introduced the Limited Editions concept, which comprises four models that allow customers to choose from stock builds and then choose paint, interior options and other features to create customized luxury vessels. Damen said its semicustom designs based on standardized building methods allow faster deliveries, top quality and higher resale values.

Naval and Patrol

Damen's navy roots are deeply seeded in the company's defense and security traditions. Damen has been the dedicated shipbuilder of the Royal Netherlands Navy for more than 50 years, having involvement in the design, engineering and construction of eight generations of combat and auxiliary vessels. Roughly 20% of Damen's builds fall into the naval and security segment including inland, coastal and offshore patrol vessels; air defense and command frigates; landing personnel and vehicle craft; coast guard emergency rescue and multipurpose ships.

Repair

Damen Shiprepair and Conversion is a successful venture in its own right, contributing roughly $475 million of the group's annual turnover. The business sector performs more than 1,500 repair jobs per year at its 16 repair yards throughout the world, approximately 50% of which comes from the offshore sector. The repair group has a focus on niche markets such as LNG, cruise and dredging for complex long-term projects, while many shorter-term general repair projects are completed as well to help keep the repair yards busy and profitable. Damen's shiprepair services range from collision repair and engine damages to fire/water damages and rudder/tailshaft repair.

Barge Master

Providing a stable platform for Crane, Offshore Ops

By Eric Haun

Innovation is a theme rippling through Holland's robust maritime industry. From ropes and winches to hull and crane design, Dutch marine engineers repeatedly answer the call for safe, efficient marine operations. An exemplary display of genuine Dutch innovation can be found at Barge Master, a company that develops and produces motion compensation platforms designed primarily for cranes and supply barges in the marine offshore and nearshore construction sectors.

When a barge is operating on open water, rotations as small as 2-3 degrees of the barge's platform on which a crane is placed results in larger movements (4-5 meters) of the crane's boom tip, therefore causing the hook and load to sway uncontrollably. These crane movements create unpredictable and unsafe working conditions, sometimes forcing lifting operations to cease altogether.

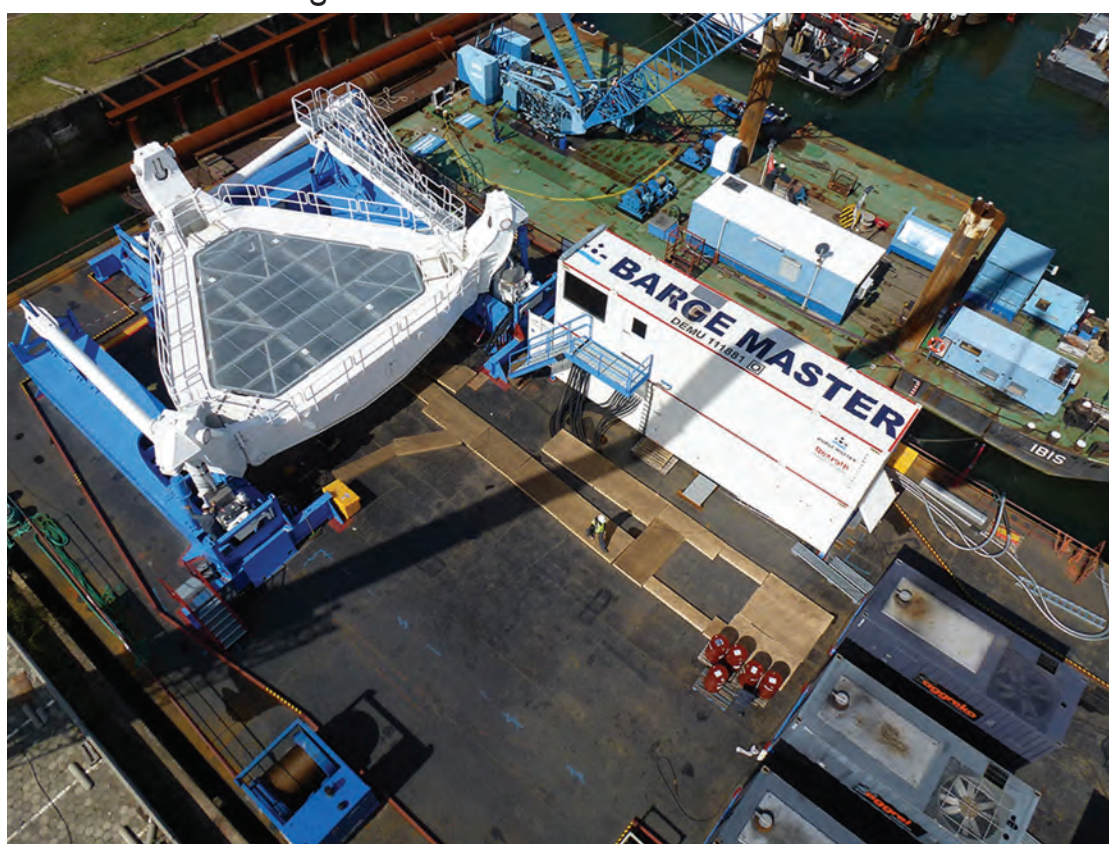
Dutch innovator and entrepreneur Martijn Koppert sought a way to counteract these crane movements so that offshore work could continue despite sea states that would normally inhibit safe operations. His idea was the Barge Master T700 motion compensation platform. The platform uses dynamic positioning to restrain surge, sway and yaw while its three hydraulic actuators compensate heave, roll and pitch. As the barge moves, the platform remains steady in a fixed position.

Full scale tests of its T700 platform have shown compensation percentages upward of 95%, and the platform is effective in wave heights up to two meters and stroke up to 2.5 meters, helping to make operations safer and more efficient.

Manufactured in Holland, Lloyd's Register certified and DNV reviewed, the T700 Barge Master can carry a 400mT crane (plus the crane's load), or compensate loads up to 700mT when used as a supply platform.

For customer convenience and cost effectiveness, the complete Barge Master can be shipped worldwide in ISO container units. Standard Barge Masters are available for rental or purchase as standalone units flexibly combinable with standard flat top barges, standard crawler cranes and standard supply vessels. Customers can also custom order Barge Master units with modified foundations and ship interfaces based on particular

Aerial view of the Barge Master T700



Barge Master T700

General
Supply capacity: ..... 700 mT
Maximum normal force: 9,000kNm
Max overturning moment: 13,300kNm
Platform working area: ..... 12 x 12 m

Compensation
Wave height: ..... 0-2.5 m
Wave period: ..... 4-18 seconds
Heave, roll and pitch motions: 95%

Dimensions / Weight
Platform and foundation: ..... 3 x 15.2 m / 270 mT
Control room and HPU: ..... 12 x 2.5 m / 63 mT

Barge Master T40

General
Crane capacity: ..... 15 mT at 9 m, 5mT at 20 m
Crane lifting height (from deck): ..... 25 m

Compensation
Wave height: ..... Hs 0-3 m
Heave, roll and pitch motions: 95%

Dimensions
Diameter: ..... 3.5 m
Platform height (retracted): ..... 6.5 m

Weight
Barge Master: ..... 36 mT
HPU: 11mT
Crane (typical weight): ..... 33 mT

Barge Master T700 supporting crane operations in the North Sea

Barge Master T40

Jan Paul van den Bos

Barge Master co-founder and co-director

specifications or requirements.

In addition to its T700 platform, Barge Master has also developed the Barge Master T40 compensation crane. Developed in partnership with Bosch Rexroth, the system is based on the same principle as the Barge Master T700: roll, pitch and heave are compensated, while surge, sway and yaw are fixated.

T40 is capable of compensating an offshore knuckle boom/telescopic boom crane with a capacity of 15mT this makes the crane suitable for applications including the servicing of wind turbines or unmanned oil rigs. The T40 can be integrated into a newbuild or retrofitted to an existing vessel.

The Company

In March 2009, Koppert teamed up with Jan-Paul van den Bos to launch the Barge Master company. Now the company's sole directors sharing general management responsibilities, Koppert and van den Bos each contribute in their respective areas of expertise. Koppert, formerly CEO at Mammoet, holds years of experience in managing installation and construction projects for SMIT and BAM International and oversees technical aspects, while van den Bos utilizes his financial background from having worked for ExxonMobil and Ernst and Young to manage financial, organizational and legal operations.

Netherlands-based Barge Master, a relatively small company with 15 employees, has its own team of engineers, drafters, commercial and sales staff.

Despite its youth and size, the company is poised for expansion: Barge Master has already secured one contract for each of its systems.

Boskalis to Use Barge Master System in Phase 3 of the Malampaya Project

In July 2013, Boskalis International awarded Barge Master a contract for employment of the T700 motion compensated platform during phase 3 of the Malampaya project where the system will be used during the second half of 2014 for the installation of a permanent bridge between a newly installed depletion compression platform (DCP) and an existing shallow water

Matjin Koppert
Barge Master cofounder and codirector

gas production platform (SWP).

The Malampaya project will be executed by Boskalis for Shell Philippines Exploration B.V. and comprises the installation of an offshore depletion compression platform at the Malampaya gas field, in the Republic of the Philippines. The new multipurpose construction DP2 vessel Ndeavor plays a pivotal role in this project. During phase 3 the Barge Master system will be placed on the Ndeavor.

The permanent bridge, to be installed between the two platforms, will be loaded onto the Barge Master platform and sailed out to the project location. Once on site, the bridge will be held still by the Barge Master so it can be lifted off safely by two temporarily installed lifting arrangements.

Barge Master T40 Purchased for Use in the North Sea

Barge Master announced its second contract in September. The company was awarded a contract from Niestern Sander for employment of its T40 crane to service and maintain gas production platforms in the North Sea from the company's new walk-to-work vessel. The vessel, which includes the Barge Master system, is to be built for Wagenborg and is scheduled to be ready in the first half of 2015.

Oil and gas platforms have become smaller and more flexible during the last forty years, and they no longer have a resident crew or helicopter pads which means frequent journeys to and from the platform by ship in order to perform maintenance work.

With the new walk-to-work vessel, these operations can be executed in a safer, more efficient and effective manner. The Vessel is unique because multiple functions are combined for the first time. The vessel can accommodate 20 crewmembers and 40 service technicians, chemicals can be stored and transferred safely, and thanks to the T40 Barge Master system materials can be transferred during wave heights of up to three meters. Through the utilization of new technology, NAM is able to safely continue harvesting gas on the North Sea with an extended weather window and less down time.

www.barge-master.com

Offshore Logistics

Wilson, Sons Group & Brasco Offshore Logistics

As the Brazil's O&G market continues to grow, growth in tandem of the offshore logistics solutions component becomes equally important. Brasco Offshore Logistics is a Wilson, Sons Group company dedicated to offering efficient solutions to oil and gas players operating in Brazil. Maritime Reporter's Contributing Editor ***Claudio Paschoa*** *interviewed Renata Pereira, Executive Director of Brasco, a wholly Brazilian company specialized in complex logistics services.*

(Photo: Claudio Paschoa)

According to Pereira, the Wilson, Sons Group is 176 years old, having been founded in 1837 in the city of Salvador, in the northeast state of Bahia by Edward Pellew Wilson. "The Wilson, Sons Group today, is a diversified group focusing on container terminals, maritime towing, shipbuilding and offshore logistic. The group has two important container terminals, Tecon Rio Grande and Tecon Salvador. In Brazil it is the leader of the maritime towing market and builds PSVs in its own shipyards located in Guarujá, in the state of São Paulo," said Pereira.

"As part of Wilson, Sons, Brasco Offshore Logistics is an integrated port and logistics service provider to the oil & gas industry in Brazil, it specializes in setting up and operating support bases along the whole Brazilian coast," said Pereira. "We offer a complete suite of services, including materials management, purchasing, storage, transport and supply of fresh water, drilling and well completion fluids, heavy cargo handling, casing/pipe inspection, container rental, vessel fueling, waste management and administrative support. Our clients include some of the world's major oil and gas operators currently in Brazil."

Although Brasco's title is "Offshore Logistics," the company also offers onshore logistics solutions for its clients through its support bases in the at Conceição island the city of Niterói, in Guaxindiba in the city of São Gonçalo in Rio de Janeiro, in the city of São Luis in the northern state of Maranhão, Salvador in Bahia and Vitória in the state of Espírito Santo. Brasco also claims that is also capable of installing operation bases along the entire Brazilian coast.

"In our secure location in Niteroi, we concentrate our warehouses where equipment from different companies are stored and we also have silos where drilling and completion materials, such as drilling fluid and completion mud is stored and also other silos specifically for fresh water storage, in preparation for transport by our PSVs to their final destination aboard platforms. In the same location we also have a quay for loading and fueling the PSVs, and storage facilities for perishable items such as fresh food. From here we are able to analyze our client's needs and develop flexible, custom solutions for each of our clients," said Pereira. With around 60,000 tons of materials transported in the last year, Brasco is a leading force in the Brazilian offshore support segment. The strategic location of Brasco's logistics centers allows it to serve clients operating in the Campos, Santos and Espírito Santo Basin, and it also facilitates logistics for companies seeking to explore new frontiers in the equatorial margin and northeast coast of the Brazil.

Brasco's portfolio of logistics services includes:

- Port operation
- Loading and offloading of cargos
- Storage (open/closed), including chemical products and perishables
- Loading of water, fuel and any other type of bulk product
- Material management
- Automated inventory control
- Equipment inspection
- Land transportation logistics
- Support for emergency response
- Procurement
- Supplying of containers

"Along with Brasco, there is the joint venture Wilson Sons Ultratug Offshore, where Wilson Sons has a 50% participation, which offers offshore support services to oil and gas exploration and production platforms by transporting equipment, drilling fluids, cement and food, and other materials necessary to platforms located on the Brazilian coast, through its fleet of PSVs built in the company's shipyard and flying the Brazilian flag," said Pereira..

The Wilson Sons shipyard, located in Guarujá, occupies an area of 20,000 sq. m. and has the capacity for simultaneous building and maintenance of small and medium vessels. Wilson Sons ship-

Left:
Wilson, Sons PSV

Right:
Damen design PSV delivered to Wilson Sons Ultratug Offshore.

Inset:
Aerial view of WS Guarujá shipyard.

(Photo Wilson, Sons)

yard was the first shipyard in the shipbuilding industry in Brazil to receive the quality certificate ISO 9000 certified by Lloyd's Register Quality Assurance. Currently they are also certified according to ISO 9001:2000. Over the years, the shipyard has delivered vessels equipped with the best available technologies, including DP capabilities. The Guarujá shipyard adopts an assembly line system, which maximizes productivity.

"As we considered the growth of the business and given the strategic importance of shipyard for some of the activities of Wilson, Sons, an expansion project for our shipyard began in 2010. The project doubled the built area of the facility and added a new dry dock. With this expansion, the Guarujá shipyard will also be capable of building midsize vessels," said Pereira.

The Guarujá 2 shipyard was launched in May 2013 and has already secured contracts for the construction of three vessels for a Brazilian company called Geonavegação. Two of these vessels will be oil spill recovery vessels (OSRV) with a load capacity of 1.080 cu. m. and one 5,000 ton PSV. These vessels are slated for delivery in 2015 with a total contract value of $133 million. The company also has a project to create a new shipyard in the port of Rio Grande in the southern state of Rio Grande do Sul. This shipyard will focus on building vessels to support offshore platforms, such as PSVs, AHTSs, along with port and offshore tugs. The first work on the site will be to build a technical center for training of welders, fitters and painters, along the lines of what already exists at the existing shipyard.

Renata Pereira

Executive Director, Brasco (Wilson, Sons Group)

Renata Pereira has an extensive experience in the Oil & Gas industry, having worked for Shell for 10 years where she held management positions in the areas of Upstream and Downstream, and later in partnership with a consulting firm specializing in energy and logistics. She is currently Executive Director of Brasco, a company of Wilson Sons Group, where she served before as Oil & Gas Manager, responsible for new business development and integration between the areas of the group's activities related to the oil sector.

Subsea Vessel Operations Market Poised For Increasing Demand Globally

By Calvin Ling, Douglas-Westwood, Singapore

In its latest subsea vessels report Douglas-Westwood (DW) forecast more than $100b of expenditure on subsea vessel operations over the next five years – with global demand is expected to increase by 23%. The increase in expenditure is expected to be higher than the growth in vessel days, due to the move towards higher specification vessels to cater for deeper and more complicated field development programs. Dayrates for high specification dive support vessels (DSV) and multi-purpose support vessels (MSV) are expected to increase by over 40% by 2017. High spec flexlay dayrates are expected to remain similar and low spec decrease marginally. Pipelay vessel rates are expected to increase by up to 8% for high spec, whilst light well intervention vessel (LWIV) rates are anticipated to increase slightly.

The deepwater Golden Triangle (Africa, GoM and Brazilian areas), is expected to account for the majority of global expenditure on vessel operations over the forecast period. North America is forecast to be the largest market followed by Latin America and Africa.

Drivers and Indicators

Global energy demand has grown significantly over the past 50 years and is forecast to continue, driven by developing economies. Oil is a fuel of huge importance mainly due to its role in transportation, where it cannot be readily substituted by alternative energy sources. Oil consumption is forecast to grow from today's 90 million barrels per day to 107mbpd by 2035. Production will increasingly have to come from unconventional sources and also deeper water. This will cause all sectors of the subsea market to increase in tandem. With the anticipated growth in offshore developments, there are more opportunities for subsea vessels to be used and due to the move towards deep and ultra-deep waters, the need for higher specification vessels is looking particularly positive.

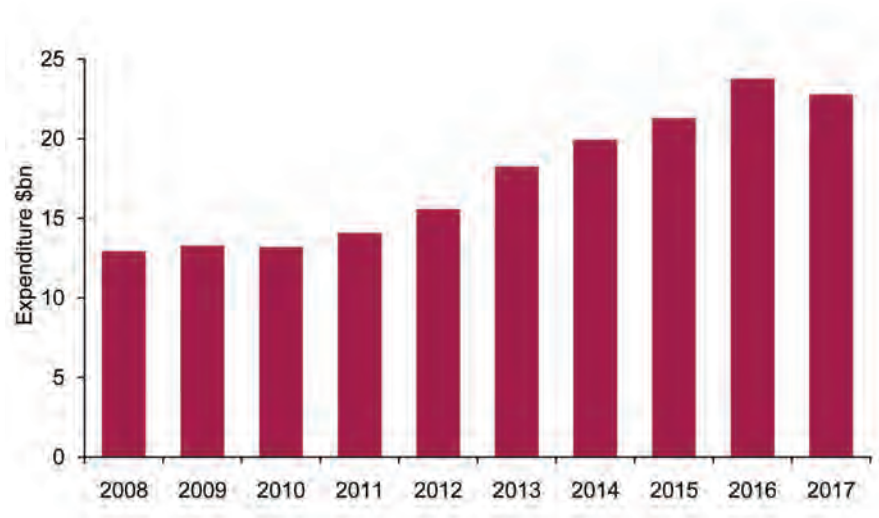
The move towards deeper water activities has rendered some older vessels inadequate. Saturation of sections of the market, particularly for some DSV/MSV types is now evident, with some retention of high demand for flexlay/pipelay vessels. DW expects an upside trend of activity in vessels supply. This is largely due to the move towards building higher capability vessels to cater for deeper water activities, but also the retiring of less capable vessels and meeting increasing demand in Latin America, Africa and Asia.

Market Demand by Region

Africa

Africa will remain one of the world's most significant regions for subsea developments. A large number are currently onstream and more are planned for the forecast period. Projects such as Total's Kizomba field in Angola (2014), Shell's Bonga South in West Nigeria, (2015) and Total's Egina field in Nigeria, (2014), will increase the demand for subsea vessels. Total vessel operations expenditure over the 2013-2017 period is in the $16bn region, a significant increase from the preceding five years, and is anticipated to be largely driven by the deepwater region requiring higher specification vessels.

Global Subsea Vessel Operations Expenditure 2008-2017



Source: Douglas-Westwood

Asia

Over the next five years, field development activities in the Asian region will also increasingly require vessels with deepwater capabilities. Production has, until recently, been restricted to shallow water fields, but there are now a number of deepwater projects producing or underway. Vessel demand is expected to see strong growth with developments such as Shell's Gumusut (Malaysia), Chevron's Gehem and Gendalo (Indonesia), Salamander's Bualuang (Thailand), Reliance Industries' MA-D6 (India) and CNOOC's Xijiang 32-1 (China). Expenditure is expected to increase by a CAGR of 11% over the next five years.

Australasia

Australia's offshore oil & gas reserves are found in the Bonaparte, Browse and Canarvon Basins off the west coast, as well as in the Otway, Bass and Gippsland Basins off the southern coast. Large shallow water gas developments will continue to dominate subsea activities off the west coast of Australia until 2016. There are no visible projects in 2017 but major projects are due to come onstream beyond the forecast period. Field development will account for the largest demand in the region followed by IRM.

Eastern Europe & FSU

Vessel demand is expected to be driven by on-going pipeline projects in the region, while field development activity is expected to remain sporadic over the next five years. The subsea sector is relatively small in the EE and FSU region with lower demand for vessels that carry out field construction, IRM and subsea intervention tasks than other regions. Vessel demand is expected to exceed 20,000 days over the next five years.

Latin America

High specification vessels are required as this region continues to develop deepwater assets and move towards ultra deepwater (>2,000m) such as Petrobras'

pre-salt basins. A large amount of deepwater production has already occurred in Latin America with the vast majority off Brazil. Companies active include BG, BP, Chevron, Devon Energy, Petrogal/Galp, El Paso, Pemex (Mexico NOC), PDVSA (Venezuela NOC), Petrobras (Brazil NOC), Repsol, Shell, Statoil and Total. Expenditure in Latin America was left relatively unscathed by the economic downturn.

The region is expected to have the largest vessel spend led primarily by Brazil, and is forecast to grow strongly, accelerating from 2014 due to an increase in field development activity. Vessel day demand from 2013-2017 is expected to increase by more than 65% from the prevailing five year period.

Middle East

Subsea expenditure in the region will continue to be driven by shallow pipelines and fixed platforms, with just one subsea tree is slated to be installed from 2013-2017. Beyond that time, spend is expected to be driven by the three deepwater fields all of which are located off Israel. Meanwhile the Middle East has a relatively small base of subsea infrastructure and there are no visible field development projects over the forecast period with vessel demand mainly coming from pipeline projects. The region is expected to have a relatively low spend, some 4% of the global total.

North America

Over the next five years subsea expenditure in the region is expected to be dominated by deepwater developments, predominately in the U.S. Gulf of Mexico (GoM). North America will also remain one of the world's most significant regions for subsea vessel demand and expenditure due to the IRM needs of the massive installed base of offshore infrastructure. Total expenditure from 2013-2017 is expected to be the largest of all the regions.

Norway

Norway is a mature region, with much shallow water production but little deepwater activity to date and expenditure will therefore arise from projects in water depths of 250-500m. In total, vessel spend is set to decrease by a CAGR of 2% over the forecast period. This is due to the lack of visibility of pipeline construction projects in 2017. Vessel demand is forecast to peak in 2016 due to an anticipated increase in pipeline activity that year. Overall activity in the next five years is expected to be driven by IRM as field developments and pipeline activity fluctuate.

UK

The U.K. is a mature region, with much shallow water production and field developments that utilize subsea trees are typically tied back to existing infrastructure. Shallow water developments will continue to dominate U.K. subsea expenditure. Being a mature market, vessel demand is greatly driven by IRM activities on existing infrastructure. Over the forecast five-year period, expenditure and vessel demand for both IRM and field development will account for over 45% of the total.

RoWE

The Rest of Western Europe is also a mature region, with shallow water production and little deepwater activity to date. However, there are potential deepwater gas developments in the waters of the eastern Mediterranean.

Apart from those, the maturity of the infrastructure in the region means that IRM plays a significant role in vessel demand.

Conclusions

Global demand for subsea vessel operations is expected to grow over the forecast period particularly for the higher spec vessels. With the move to deeper waters, the requirements for vessels with a longer duration on site and with higher technical and operational capabilities are increasing, giving rise to higher expenditure forecasts. The outlook for the subsea vessel operations market shows good long-term growth potential, particularly in North America, Latin America, Africa and Asia-Pacific.

The Author

Calvin Ling, Douglas-Westwood, Singapore

Ling is involved with the day to day execution of strategic consulting and transaction support services for a range of corporate and financial clients within the energy and oil & gas industry. Calvin holds a Bachelors in Engineering (Hons) (Civil) and a Master of Science (MSc) (Geotechnical Engineering and Management) from the University of Birmingham, U.K.

The Report

The World Subsea Vessel Operations Market Forecast 2013-2017 analyzes the main factors driving demand for MSV, DSV, Flexlay, LWIV and Pipelay Vessels. Results analyse vessel demand for key subsea markets, with historic data covering the period 2008-2012 and forecast data for 2013-2017. Read more:

www.douglas-westwood.com/shop/shop-infopage.php?longref=1188

Hydrodynamic Hull Optimization

Saves APL $30M / Year

by Cosmin Ciortan, DNV

In connection with an order of a series of 10 new 13,800 TEU container vessels from the world's largest shipbuilding company Hyundai Heavy Industries (HHI), the global container transportation company APL requested DNV Maritime Advisory to cooperate with the shipyard to ensure superior hull efficiency of the vessels.

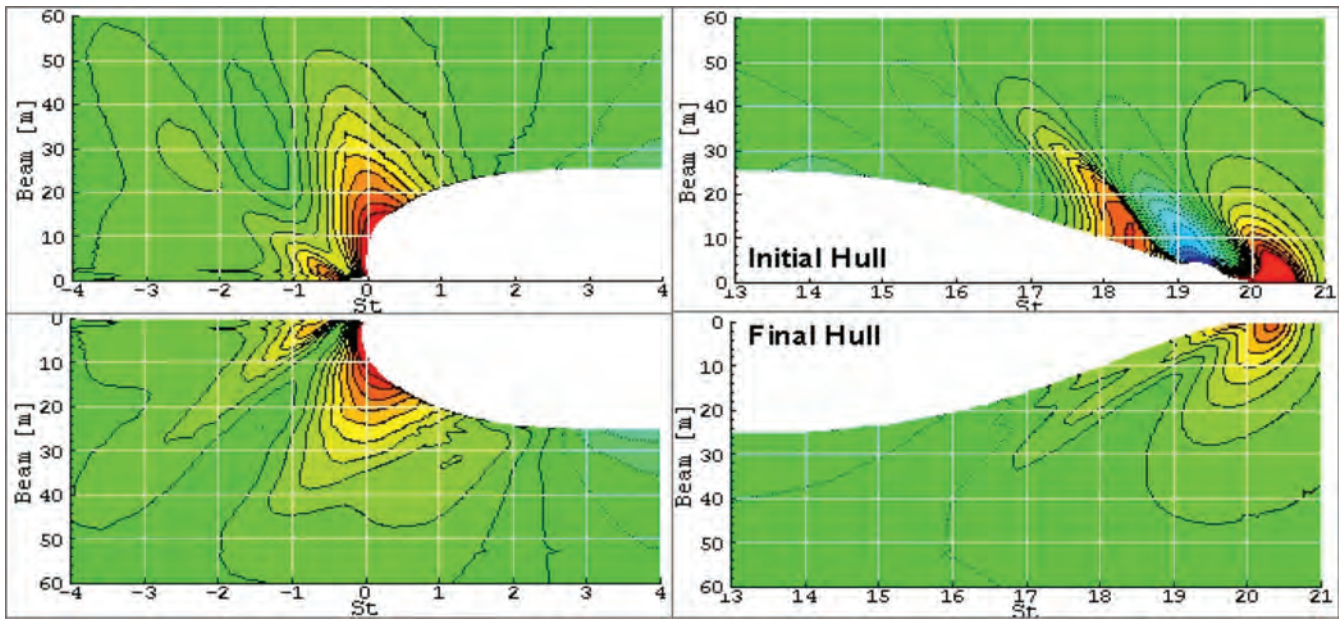
Optimizing the Hydrodynamic Performance of a Vessel

Ships used to be optimized for the design point (i.e. to give the best performance at the design draft and speed); however, the ship seldom sails in that condition. As a result, APL asked for a different kind of optimization to be performed, this time targeting various speed-draft combinations as described in the operating profile.

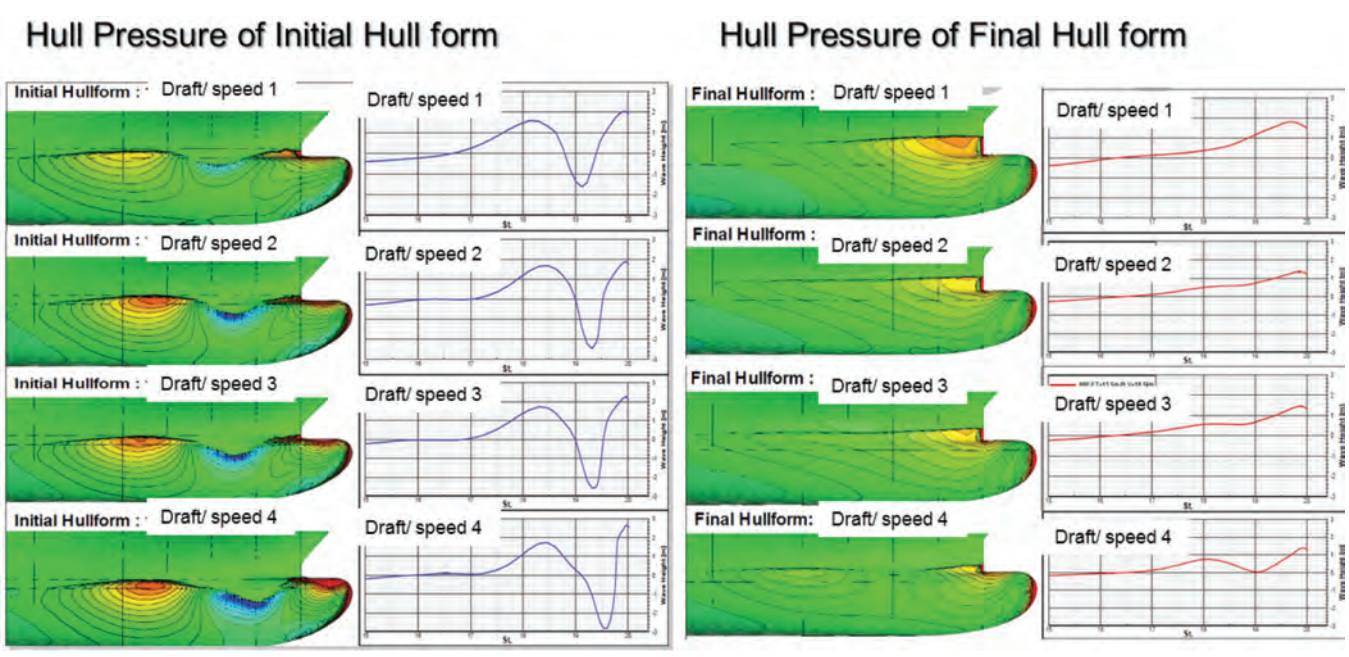
The overall hydrodynamic performance of a vessel is directly connected to the resistance and propulsive efficiency. The resistance is influenced by the hull shape, the wetted surface area and the configuration of appendages, while the propulsive efficiency is influenced by the propeller open water characteristics and the interaction between hull and propeller. The performance depends on the variation of operating conditions, i.e. vessel speed, draft and trim.

Vessels have traditionally been optimized for a single condition, normally the contract speed at design draft. With the help of state-of-the-art Computational Fluid Dynamics (CFD) tools and modern computers it is now possible to optimize a vessel for various conditions in which the vessel will be trading.

DNV Maritime Advisory has worked with hull optimization for several years, serving shipowners, shipyards and designers with valuable advice during the design process. DNV's experts have extensive relevant experience within ship hydrodynamics and energy efficiency, applied to numerous vessel types and sizes including the major segments: tankers, bulk carriers and container vessels.



Visualization of Calculated Wave Pattern



Distribution of hull pressure in the initial and final hull forms.

The Optimization Process

A typical project for hydrodynamic hull optimization may include:

- Establishing a close dialog between DNV, the shipowner and the shipyard
- Defining a realistic operating profile
- Discussing and combining DNV's design ideas with the yard's design philosophy to obtain an optimal hull in both a hydrodynamic and building perspective
- Optimizing the hull forebody based on the operating profile
- Optimizing the hull aftbody to improve the propulsive efficiency, including consideration on propeller and machinery configuration
- Assessing the Energy Efficient Design Index (EEDI)
- Supporting during preparation and attending the towing tank model tests

The delivered value for the ship owner and the shipyard is increased confidence in the hydrodynamic performance of the hull. Typically, considerably improved fuel efficiency and reduced gas emissions are achieved throughout the vessel's lifetime. In this specific case, the scope of work included:

- Establishing a weighing matrix for the vessel's relevant operating profile
- Optimizing the hull forebody and aftbody (shoulders, bulb, transom stern height, etc.) based on the operating profile
- Analyzing the wake and propulsion efficiency
- Predicting the speed – power and fuel oil consumption curves
- Assessing the preliminary EEDI
- Attending the towing tank model tests

All simulations of resistance and wake assessment were performed using STAR-CCM+. According to OlavRognebakke, head of ship hydrodynamics and stability at DNV, it is the availability of powerful CFD tools such as STAR-CCM+, combined with the expertise of highly qualified staff which made it possible to enhance Hyundai's already very

(image courtesy DNV).

New hull design

good design.

Outcome of the assessment

The hull was optimized for five different design points (different speed-draft combinations). The aft part was optimized for maximum propeller efficiency. In addition, the bulb was lowered to be efficient at lower drafts too. While this solution may result in a marginal penalty at the original design condition, the aim was to optimize the hull for a range of operating conditions. Instead of a design speed of 25 knots, the new vessels were optimized for lower speeds, with a top speed of 23 knots, following the "slow steaming" trend observed in the last years. The overall improvement in energy efficiency was 36%.

Conclusion

By working closely and keeping a continuous dialogue with APL and HHI, DNV ensured that the best ideas and results were combined into the final hull design. It was estimated that the optimized hull will result in annual fuel savings of about $3 million per ship, which amounts to annual savings of $30 million for the whole fleet. These achievements provided positive market attention and ensured improved market positions for both the ship owner and the shipyard. Finally, the cost of the service provided by DNV Maritime Advisory is negligible compared with the savings achievable through improved fuel efficiency. DNV, which is an independent foundation, has entrusted all commercial rights to Hyundai Heavy Industries.

Facts

DNV Maritime Advisory runs fully viscous and potential flow CFD simulations at full scale. STAR-CCM+ and Shipflow are used on a computational cluster with more than 600 CPUs. Several design applications are used, including MaxSurf, NAPA, Rhinoceros, HDef and ShipX. DNV has been carrying out hydrodynamics hull optimization projects in cooperation with major ship owners, world leading shipyards and design offices. Previous projects covered several container vessels ranging from 1,600 to 14,000 TEU, Aframax and Suezmax tankers, bulk carriers ranging from 38,000 to 206,000 dwt and offshore supply vessels.

Bore, NAPA & ClassNK Team for Study @ Sea to

Cut Energy Consumption

Saving energy on fleet operations is a top line concern for every vessel owner, large and small. 110-year-old Finnish shipowner Bore teamed with NAPA and ClassNK to help identify energy waste on not only its ships operating today, but those planned for tomorrow.

By Greg Trauthwein

As global environmental legislative mandates and rapidly escalating fuel prices cumulatively conspire to drive ship owners to find and eliminate energy waste on commercial marine vessels, there has been a plethora of energy saving solutions from all sectors of the industry. But while "solutions" are plentiful, concrete proof tying cause and energy savings effect is more scarce.

That is a factor which drove Bore, a Finnish ship owner with 18 vessels (RoRo and General cargo) and 110 years of experience to team with NAPA and ClassNK recently for an onboard trial of the new ClassNK-NAPA GREEN ship efficiency software to help identify, in real time, specific areas where its ship was wasting energy.

"We wanted to be sure to identify exactly where the savings were coming from," said Jörgen Mansnerus, VP, Marine Management, Bore Ltd., in a recent interview, explaining the company's rationale to participate in the test. "We wanted hard data."

The Ship

Perhaps the most interesting part of the ClassNK-NAPA GREEN ship efficiency software trial with Bore was the fact that the owner specifically chose its newest, most efficient vessel for the trial. To provide the most challenging environment, the software was installed aboard the 13,625 dwt highly efficient RoRo vessel M/V Bore Sea, delivered in 2011 from Flensburger.

"We challenged NAPA last year to see if they could deliver further improvements on ships that are already new and efficient," said Mansnerus.

M/V Bore Sea measures 195.4 x 26.2 m with a 7.4-m draft, powered by a single Wärtsilä 12V46F-CR 12,000 kW medium speed diesel engine, and classed by Lloyd's Register. In addition the ship sports a pair of auxiliary diesel engines (1,270 kW); a pair of diesel driven generators (1,500 kVA); a shaft generator (3,750 kVA); and an emergency generator (410 kVA). M/V Bore Sea has a service speed 19 knots (at design draft of 7.05 m, 81% Load, shaft generator load 300 kW), a maximum cruising range of about 9,500 sea miles and a consumption of about 43 t/day. When the trial was completed and the smoke had cleared, the shipowner found that the operational software had led to a 5.8% reduction in fuel consumption, a big factor in it extending the installation of the ClassNK-NAPA GREEN ship efficiency software aboard the 13,625 dwt highly RoRo vessel M/V Bore Song. "Last year's sea trial of operational software was a significant factor in our decision to choose ClassNK-NAPA GREEN," said Mansnerus. "We are confident that this software is a wise investment that will begin to offer fuel savings aboard this vessel from installation, and proud that we are able to offer this efficiency and lowered fuel spend to the charterers who will be reaping the benefits." And while the savings were impressive, the insight it provided was even more so. "With the Class NK / NAPA Green system you can accurately identify the areas where you are wasting energy, where before you had to guess," said Mansnerus.

MV Bore Sea

Type	Ro-Ro vessel
Flag / Port of Registry	Finnish / Helsingfors, FI
Call sign	OJOU
IMO-No	9443554
Built	2011 Flensburg, DE
Classification	LR+100A1, ICE 1A FS, Nav1, IBS, ICC+LMC, UMS LR GREEN PASS
Length, o.a.	195.4 m
Breadth molded	26,20 m
Draft, max.	7,40 m
Gross tonnage (GT)	25,586 t
Net tonnage (NT)	7 675 t
Deadweight (DWT)	13 625 t
Machinery	Wärtsilä 12V46F-CR, CSR 12,000kW, 600 rpm
Fuel	380 cSt at 50°C or MDO
Water ballast tanks	4,600 cu. m.
Fresh water tanks	130 cu. m.
Heavy fuel oil tanks	1,200 cu. m.
Diesel oil tanks	140 cu. m.
Heeling tanks	1,460 cu. m.
Service speed	19 knots (at design draft of 7.05 m, 81% Load, shaft generator load 300 kW).
Max. cruising range	abt. 9,500 sea miles
Consumption	about 43 t/day

"We challenged NAPA last year to see if they could deliver further improvements on ships that are already new and efficient." The Answer: ClassNK-NAPA GREEN helped reduce energy consumption 6% on a 2011-built RoRo vessel.

Jörgen Mansnerus, VP, Marine Management, Bore Ltd.

The Software

"This system provides an opportunity for the shipbuilder to understand how a ship operates efficiently in real world conditions. Once they know, they can improve their design to enhance the efficiency of the ships," said Yasushi Nakamura, Executive Vice President, ClassNK. The ClassNK-NAPA GREEN software system is a joint development between Nippon Kaiji Kyokai (ClassNK), the world's largest ship classification society, and NAPA, a company which offers software both for the design of ships as well as the operation of ships. In fact, it is this unique combination, according to Juha Heikinheimo, President, Napa Group, that makes NAPA stand out amongst a growing sea of software solution providers.

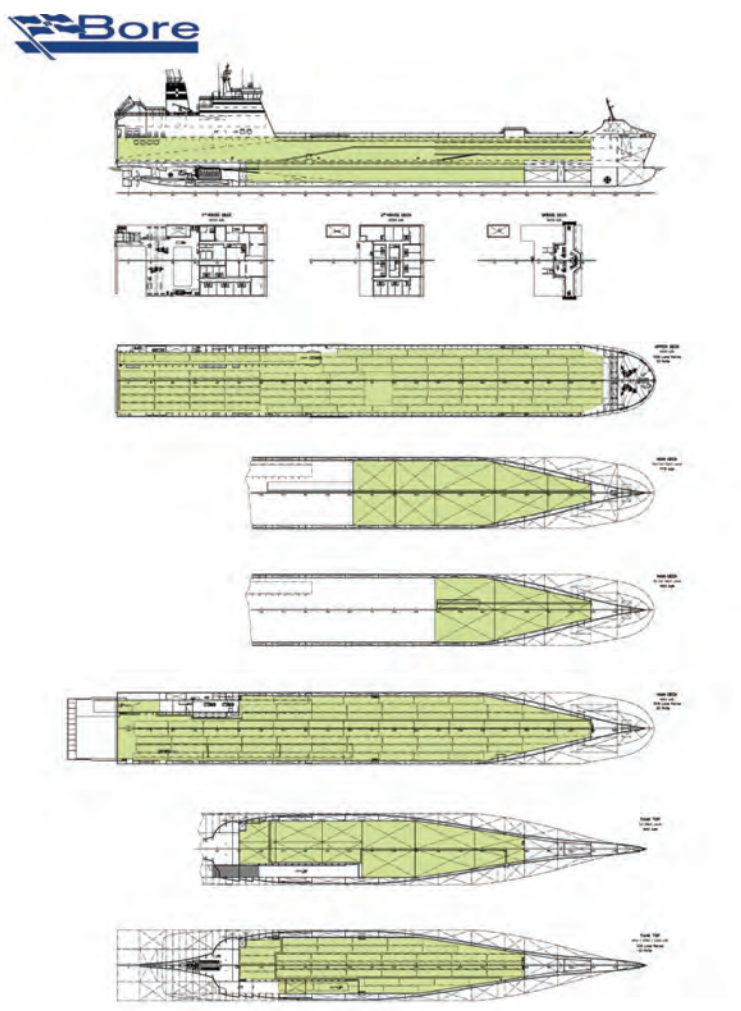
"Napa has the possibility now, with ClassNK to develop a dynamic performance model, developing a 3D model of the ship according to the different sea states and conditions, in order to predict accurately the coming voyage," Heikinheimo said. "Nobody provides a loading computer, with all of these operational devices, in real time, based on facts that you understand from the 3D model."

He claims this is a powerful combination, both in terms of helping existing ships to save energy, but more so in incorporating the date into future, more fuel efficient design. Feedback from the ship's real-world operational efficiency under a diversity of conditions can be fed back directly to the ship designer and builder, helping them to design and build ships based on real operational conditions and parameters, instead of designing for optimal conditions.

"It is not the fuel consumption savings, it is Normalized data based energy savings," said Heikinheimo, "and we see proven 6% absolute energy savings." The software solution was launched in 2012, and builds upon the shared experience of both organizations to provide a solution to reduce fuel spend and greenhouse gas emissions whilst also providing compliance with ship energy efficiency management plan (SEEMP) legislation. Bore has been working closely with NAPA around operational software for vessels for sometime.

"It is heartening to see the industry embracing the financial and environmental benefits that software systems such as ClassNK-NAPA GREEN offer," said Nakamura. "We are aware of the increasing challenges being placed on shipping financially, environmentally and through increased regulation."

In the trial with Bore, according to the shipowner, speed optimization (and by natural default extensive route planning which helped to cut down on speed fluctuation) was hands-down the biggest factor in saving energy. And while all of the partner were remiss to put a price tag and ROI on the solution, (in part because, regarding ROI, results are dependent on the age of the vessel and the route it serves) Mansnerus did concede that the return on investment was less than one year, and in the test case, closer to six or seven months.



Virtual Design Center for Navantia

Sener won the bid for the turnkey project for the second Virtual Design Center (VDC) of Navantia, this time for its Factory in Ferrol. With capacity for 30, the new VDC has a fixed screen of 5 x 2.6 m, with overhead projector and a system of first reflection mirrors due to the dimensions of the room. The VDC allows a virtual navigation throughout ship 3D models generated in Foran by Navantia in Ferrol. The solution allows Navantia to visualize and navigate in 3D using stereoscope technology for models of ships previously generated with the CAD/CAM Foran system developed by Sener and used in Navantia for the design and production of any kind of vessel.

One of the most important advantages this provides to Navantia is the ability to examine virtual models of their ships, letting them move around in real time, inquire about their properties and attributes, to detect collisions and interferences, to make notes and measure margins and distances. It also provides dynamic analysis of modifications and changes in design and simulates disassembly tasks and other maintenance operations.

The software solution delivered to Navantia is a 3D navigation module called FVIEWER VR, which is part of the Foran system. Its most significant innovations include the ability to use it with a tracking system. FVIEWER VR can be used in 64-bit platforms, and it takes advantage of the properties of the latest generation of graphic cards, which can be used to manage enormous volumes of data. Sener is continuously improving this module to adapt it to the latest technological breakthroughs in audiovisuals.

www.sener.es

Tero Marine, RK Offshore Ink Deal

Jan Erik Hårvei, managing director, Tero Marine,

Norway IT company Tero Marine won a contract with RK Offshore Management to install its TM Master software on 26 offshore vessels. The leasing contract covers 26 RK Offshore supply ships, with the possibility of extending this to an additional 15 vessels. The five-year agreement enables RK Offshore to lease software from Tero Marine for a contractually fixed annual sum. Implementation of the Tero Marine software on RK Offshore ships is already in progress, and expected to be completed by the end of September. The lease agreement is a new concept now offered by Tero Marine.

www.teromarine.no

Herbert-ABS Releases New Load Management Software

Herbert-ABS Software Solutions LLC releases its latest version of CargoMax Load Management Program for ships. The new CargoMax 2.1 includes calculation enhancements for load discharge rate monitoring, advanced load/discharge/ballast water exchange sequencing and advanced bulk pile features. Additionally, a fully rendered 3-D graphical display shows tank and cargo fillings, vessel attitude and is fully interactive with pan, zoom, rotate and customizable cutting planes. A trim optimization tool also has been added and is integrated into CargoMax 2.1. CargoMax is available for use on board tankers, bulkers, RoRo's, containerships, barges and other vessel types and is just one of many innovative offerings from Herbert-ABS that fill an important role in safety efforts and energy efficiency for the marine and offshore industries.

www.herbert-abs.com

Hapag-Lloyd Uses GL HullManager

Hapag-Lloyd will implement GL HullManager as its central monitoring and reporting tool for hull maintenance activities. GL HullManager is a part of DNV GL's fleet management software portfolio and is designed to provide ship owners, managers and operators hull inspection and thickness measurement support. Ship owners can use the system to plan, track and implement the inspection strategies for their fleet. It provides significant benefits by reducing repair costs, demonstrating regulatory compliance and streamlining internal processes. GL HullManager helps owners to keep track of the condition of their vessels' hull, on a ship specific 3D model complete with all of a ship's structural details.

www.gl-group.com

MSL Converts Fleet with MakaiLay

Global Marine is in the process of converting six of its cable installation and repair vessels to begin using Makai software. Makai software products are now used by more than 80% of the world's cable installation fleet, the company claims. GMSL vessels will use the latest versions of three different Makai cable software products:

1. The MakaiLay cable installation software
2. The new MakaiRepair cable retrieval and repair software.
3. The MakaiLay Seismic module which will enhance the capabilities of GMSL in accurately installing and retrieving seismic arrays.

www.makai.com

FutureShip ECO-Assistant 4.0

The latest version of ECO-Assistant, the trim optimization tool from FutureShip, incorporates a number of new features, including a fuel consumption calculator, system usage monitoring, benefit reporting and an E-learning module to speed familiarity with the system. Trim optimization is one of the most effective tools for enhancing ship fuel efficiency as it offers benefits which have been verified in sea trials, can be easily implemented on existing tonnage and has a payback time which can be measured in months.

www.futureship.de

Interschalt's TROP Module

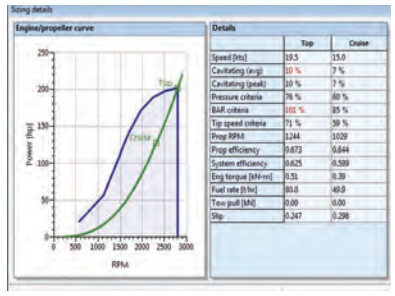
Hansa Shipping has been using Interschalt's MACS3 loading computer for its own container fleet for several years.

It recently opted for a system upgrade, placing an order for 30 TROP modules for the loading computer. Interschalt's TROP software optimizes trim with regards to the current loading condition and main engine power.

As an integrated module of the MACS3 loading computer, it ensures best possible ballast distribution, whereby extreme demands are made in terms of fuel efficiency and safety alongside vessel stability. The system will be used by Hansa Shipping on vessels ranging from 2,500 and 6,500 TEU.

www.interschalt.de

HydroComp PropExpert Update



HydroComp PropExpert is used for application sizing and performance assessment by manufacturers and distributors of marine propellers, engines and transmissions. The latest 2013 release of PropExpert leverages some of the interface framework recently established for HydroComp's flagship NavCad software, and includes new technical features that are critical to proper propeller sizing and analysis for high-power vessels. In addition to the technical improvements,, updates include features for high-efficiency cruising and support for new vessel types – Catamarans and Riverboats, electric motor propulsion, etc.

hydrocompinc.com

SENER Makes U.S. Market Inroads

From right: Verónica Alonso, SENER, Kenneth R. Munroe, Eastern Shipbuilding & Rodrigo Pérez, SENER

Eastern Shipbuilding Group, entered into an agreement with Spain's SENER for the license to use the FORAN CAD/CAM System. With this, Eastern has taken the steps to enlarge a ship design office at its shipyards in Panama City, Fla. The agreement includes the implementation of the complete FORAN System comprising: Forms Generation, General Arrangement & Naval Architecture, Hull Structure, Machinery & Outfitting, Electrical Design and Advanced Design & Drafting. Engineers and designers from Eastern have received on-site training.

www.sener.es

ABS Nautical Systems NS5 Enterprise

ABS Nautical Systems' Energy & Environmental Manager module within NS5 Enterprise supports regulatory compliance and operational efficiency while helping owners and operators meet the environmental and operational demands they face. As energy efficiency, emission controls and ballast water management regulations continue to impact the amount of information an organization is required to capture in their day-to-day operations, the Energy & Environmental Manager can assist by tracking and recording key voyage-related events. Improving efficiencies such as fuel and lube oil consumption, fuel oil switching and ballast activities helps owners and operators realize more environmentally sound voyage management.

E: ns-info@eagle.org

DNV Launches Synergi RBI Software

Managing onshore and offshore assets has demanded multiple risk-based inspection (RBI) software tools. DNV Software's Synergi Plant, which has integration with Synergi RBI, is designed to allow operators to use one complete quantitative risk assessment system, moving from subjective to objective decision making and from preventive to predictive maintenance. DNV Software is now launching the new Synergi Plant, bringing RBI software to a new level, where integrity management of process plants and offshore topsides can be achieved by one complete and integrated solution through integration with Synergi RBI Onshore and Synergi RBI Offshore. It includes semi or fully quantitative RBI, inspection planning and packaging, inspection and measurement execution, notification of maintenance and a key performance index (KPI) dashboard.

"Recent accidents demonstrate the need for stricter regulatory requirements and more practical systems regarding risk management of onshore plants and offshore processes," said DNV Software Managing Director **Are Føllesdal Tjønn**. "DNV Software's plant integrity management solution allows operators to take full control of operation assets and identify equipment that needs to be inspected, repaired or replaced."

To meet this demand, Synergi RBI Onshore and Synergi RBI Offshore deal with different damage mechanisms and risk calculation, and Synergi Plant aligns them to a common management and daily work process. The quantitative RBI software provides a flexible solution including different technical details for onshore and offshore damage mechanisms, seamless two-way integration with enterprise resource planning (ERP) and is integrated with a higher level all-asset risk dashboard.

Synergi Plant covers all stages of the integrity lifecycle. You can assess the equipment's risk, manage and analyze inspection data, plan mitigation actions and follow-ups and reassess risk based on inspection and measurement results. You can also take in operating data and compare with integrity operating windows using an enhanced web interface.

www.dnvsoftware.com


Jaenichen


Salerno


Madsen


Carpenter


Fabricius


Berge

Jaenichen Nominated to be Permanent Marad Chief

President Obama announced his intent to nominate Captain Paul Nathan Jaenichen, Sr., USN (Ret.) as Administrator of the Maritime Administration, Department of Transportation. Jaenichen has been Acting Administrator since David Matsuda's departure and currently serves as the Acting Administrator and as the Deputy Administrator of the Maritime Administration (MARAD) at the Department of Transportation. He was a career naval officer, retiring after serving 30 years as a nuclear trained Submarine Officer in the United States Navy. His final assignment was Deputy Chief of Legislative Affairs for the Department of the Navy from 2010 to 2012. He received a B.S. from the U.S. Naval Academy in Ocean Engineering and a M.S. from Old Dominion University in Engineering Management.

Salerno Sworn in at BSEE

Brian Salerno was sworn in on August 26 as the Director of the Bureau of Safety and Environmental Enforcement. Salerno retired as a Vice Admiral in the U.S. Coast Guard in 2012, after more than 36 years of active duty service. He is the third Director in BSEE's history, following James Watson and Michael Bromwich.

General Dynamics: Electric Boat, BIW Leadership Change

General Dynamics said that Jeffrey S. Geiger, president of General Dynamics Bath Iron Works, will become president of General Dynamics Electric Boat effective November 4, 2013, following the retirement of Kevin J. Poitras. Geiger will continue reporting to John P. Casey, executive vice president of Marine Systems for General Dynamics. In addition, Frederick J. Harris will remain as president of General Dynamics NASSCO and will also serve as president of Bath Iron Works. Bath Iron Works and NASSCO will remain as wholly owned and separate General Dynamics subsidiaries. Michael J. Mulligan, president of General Dynamics Armament and Technical Products, will remain a vice president of the corporation and will become vice president and general manager of Bath Iron Works; Kevin M. Graney, currently vice president of operations at NASSCO, will become vice president and general manager of NASSCO. Mulligan and Graney will report to Harris; Harris will continue reporting to Casey.

Competition Authorities Approve DNV GL Merger

The merger between DNV and GL is now approved. The new company - DNV GL - will be operational from September 12, 2013.

DNV GL will be the world's largest ship and offshore classification society to the maritime industry, a provider of technical assurance and risk management services to the oil and gas industry and a leading expert in wind and power transmission and distribution. The competition authorities in South Korea, the U.S., the EU and China have cleared the merger between the two companies, both of which will soon celebrate 150 years of independent operations. The new company, formally called DNV GL Group, will comprise 17,000 employees across 300 sites in more than 100 countries, and have revenues of $3.4b million per year.

Carpenter Departs SUNY Maritime

SUNY Maritime College President Rear Admiral Wendi B. Carpenter, USN (Ret.), announced in early September that she will step down shortly after the completion of the Fall semester. Admiral Carpenter has served as President since August 31, 2011, and has decided to step down in order to have more time for family and to pursue both personal and professional priorities and passions. SUNY Chancellor Nancy Zimpher will work with the College to form a search committee and will ensure leadership at the campus continues uninterrupted.

Topaz Names Fabricius CFO

Topaz Energy and Marine appointed Pernille Fabricius as CFO. Fabricius' career spans 25 years and she joins Topaz from her position as CFO of DAMCO, a global logistics division of the A.P. Moller-Maersk Group.

ASRY Appoints Berge Chief Executive

ASRY appointed Nils Kristian Berge, the current Commercial General Manager, as Acting Chief Executive, to succeed Chris Potter, who leaves the company in October 2013. The ASRY Board of Directors confirmed the transition has been planned for several months to ensure a smooth and seamless transfer of responsibilities. Berge said, "I am honored to be given the opportunity to continue Chris's excellent work positioning ASRY as one of the region's leading marine repair facility. I intend to streamline the yard's efficiency, lead it to greater stakeholder value, and consolidate its reputation so that it remains a source of pride for the Kingdom of Bahrain and Arabian Gulf"

www.asry.net

ASA Names New Officers for 2013-2015

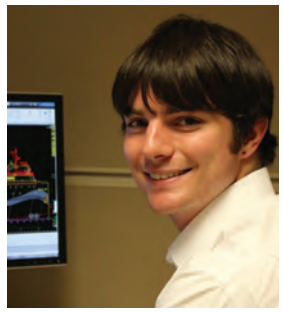
The American Salvage Association (ASA) elected a new slate of officers at its fall meeting. Paul Hankins, VP for Salvage Operations at Donjon Marine Co., Inc., was elected President, succeeding Tim Beaver, Global Diving & Salvage, Inc. Todd Schauer, Resolve Marine Group, was elected Vice President, and Jim Elliott, Teichman Group, was named Secretary/Treasurer.

Hapag-Lloyd Makes Management Changes

Hapag-Lloyd AG said that Rolf Habben-Jansen will succeed CEO Michael Behrendt, who is set to leave in the middle of next year. Habben-Jansen has been appointed to the Executive Board of the

Robertshaw

Waterhouse



LaRose

company with effect from April 1, 2014 and will assume the position of Chairman of the Executive Board on July 1, 2014. Ulrich Kranich will also leave the company as planned on June 30, 2014 after 38 years. Anthony J. Firmin, who has worked at Hapag-Lloyd for 18 years, has been appointed as Ulrich Kranich's successor with effect from July 1, 2014.

www.hapag-lloyd.com

NSA Seeks Nominations for Heyerdahl Award

The semiannual Thor Heyerdahl International Maritime Environmental Award was launched in 1999 by Thor Heyerdahl (1914-2002) and the Norwegian Shipowners' Association to recognizes candidates from the shipping industry that have made an outstanding contribution for the environment. **Since the first award in 2001, six winners have received the prize; Eidesvik AS (2011), Farstad Shipping (2009), Wallenius Wilhelmsen Logistics (2007), NYK Line (2005), the International Tanker Owners Pollution Federation Limited (ITOPF) (2003) and the Green Award Foundation (2001)**

Submit nominations online at www.rederi.no

Robertshaw Taks the Helm at Bibby

Bibby Ship Management Group Ltd announced the appointment of Mark Robertshaw as its new Commercial Director, joining the business on September 23, 2013. His responsibilities will also include the role of new Managing Director for Bibby Ship Management's Western Europe office, based in the Isle of Man.

EBDG Grows

Elliott Bay Design Group (EBDG) recently acquired new talent for both of its locations. Naval Architects Michael LaRose and Samuel Waterhouse hold Bachelor of Science degrees in Naval Architecture and Marine Engineering from the Webb Institute and completed internships with EBDG.

They will be working out of the company's Seattle headquarters. Marine Designer Joseph Dupont and Naval Architect Luisa Malabet are graduates of the University of New Orleans, and will be working out of EBDG's Gulf Coast office in New Orleans. EBDG has added approximately two new staff members per month since May, continuing a record of steady expansion.

Promotions at Thrustmaster

Thrustmaster of Texas, Inc. has announced promotions in its top level operations management. Jason Small, M.Sc.Mar.E., has been promoted to General Manager. Venkat Mudupu, PhD has been promoted to Engineering Manager. Marcela Pineda, BSME has been promoted to Projects Director. Greg Ault was advanced to Chief Financial Officer for the company.

Roell Joins RSC Bio Solutions

RSC Bio Solutions has added Bernie Roell as vice president of technology. He brings more than 25 years of experience, previously working at Lubrizol, Ciba Specialty Chemicals and Houghton and has experience with a wide range of industrial lubricant applications

Femenia Consultant at Utilivisor

Jose Femenia has been named a consultant at utiliVisor. Femenia will serve as a technical advisor for utiliVisor clients on shipboard propulsion and power systems. A professor of marine engineering at the U.S. Merchant Marine Academy almost 50 years, Femenia has conducted extensive research on marine engineering design and power plant analysis, as well as design and operations for marine vessels.

Hartzell Hires Cordonnier

Hartzell Air Movement has announced that Neil Cordonnier has joined as Vice President of Operations. Prior to joining Hartzell, Neil worked as President of Ernst Metal Technologies.

AWT Appoints Jones CEO

Applied Weather Technology, Inc. (AWT) announced the appointment of Haydn Jones as Chief Executive Officer. Most recently, Jones served as AWT's director of international operations, overseeing sales, marketing and business development. He is also a member of the parent company board of directors.

Rep. King Receives Champion of Maritime Award

Rep. Peter King (R-NY) has received the 2013 Champion of Maritime Award from the American Maritime Partnership (AMP), a group representing the domestic maritime industry in New York and across the United States. During his time in Congress, Rep. King has been an outspoken advocate for a robust domestic maritime industry.

Barker Joins Bollinger

Bollinger Shipyards added Brent Barker as Sales Representative for its ten shipyards and support services. Barker holds a Bachelor of Science degree from Nicholls State University in Agriculture Business.

Roell

Femenia

Ingram Barge Hires Nowell

Ingram Barge Company added Kim W. Nowell as the company's new Senior Vice President, Human Resources. Ms. Nowell will have direct responsibility for overall planning and administration of both shore side and marine human resources.

RINA Appoints King

RINA Services S.p.A., announced that Ches K. King joined RINA USA Inc. as Business Development Manager, based in the Seattle area.

Dr. Anne-Marie Warris: WISTA-UK Personality of the Year

Dr. Anne-Marie Warris, an internationally respected expert in the fields of sustainable shipping, climate change and environmental management, has been chosen as Personality of the Year 2013 by WISTA-UK, part of the Women's International Shipping & Trading Association.

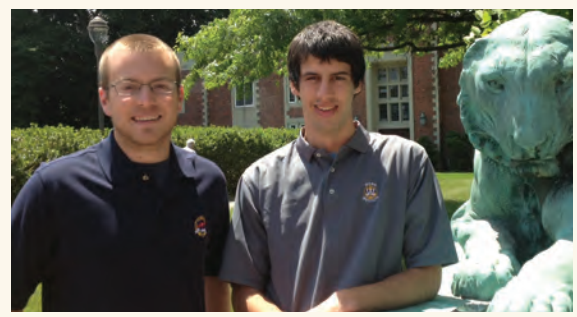
New Shipyard Opens in Azerbaijan

A new shipbuilding yard that is jointly developed by Keppel Offshore & Marine Ltd. (Keppel O&M), State Oil Company of Azerbaijan Republic (SOCAR) and Azerbaijan Investment Company (AIC) was officially opened by President of Azerbaijan, H.E. Ilham Aliyev. Named Baku Shipyard LLC (Baku Shipyard), the new 62-ha yard in Baku, Azerbaijan, is designed to undertake the construction of a wide range of specialized vessels and merchant ships.

Neste Oil to Exit Shipping Business

Neste Oil is planning to exit its shipping business. According to the plan, the company would sell all its own vessels and outsource the ship management functions currently covering them, with around 320 ship management person-

Webb Awards Crowley Scholarships



Weklar & Conway

Webb Institute announced the selection of Matt Weklar '15 and Nolan Conway '15 as Crowley Maritime Corp.'s 2013-2014 Thomas B. Crowley Memorial Scholarship recipients. The scholarships are awarded annually to one or two students who, in the eyes of the Scholarship Selection Committee at Webb Institute, have demonstrated leadership qualities, school and community involvement, commitment to the maritime industry and academic promise.


Cordonnier


Jones


Barker


Nowell


King


Warris

transferring to a new employer. Neste Shipping's chartering functions would be retained and integrated with Neste Oil's organization. Going forward, Neste Oil intends sourcing its marine transportation through contractual arrangements.

Harvey Gulf to Acquire 48 OSVs

Harvey Gulf International Marine's CEO Shane Guidry has executed a definitive agreement whereby Harvey Gulf is to purchase substantially all of ACO's assets and business. Purchase includes 48 offshore supply vessels (OSVs), of which four are currently under construction. The acquisition expands Harvey Gulf's vessel classes and allows Harvey Gulf to broaden its service offering to customers in the U.S. GOM. The transaction is expected to close in Q4 2013.

Hyde Names Cammell Laird U.K.

Hyde Marine, Inc., a wholly owned subsidiary of Calgon Carbon Corporation, announced today it has established a partnership agreement with Cammell Laird, the largest shipyard in the United Kingdom, for installation of the chemical free Hyde Guardian (HG) Ballast Water Treatment (BWT) System.

Bouchard Funds Sim Center

Bouchard Transportation Co., Inc. will donate $750,000 to the State university of New York (SUNY) Maritime College's Throgs Neck Campus to establish the Bouchard Transportation Company, Inc., Tug and Barge Simulation Center. The center will offer full mission bridge simulators, instruction stations and a debriefing area where instructors can meet with students to discuss navigation, seamanship and bridge resource management skills required in the operation of tug and barges. The simulation center is slated to open in 2014.

Winners of Ferry Design Competition

The results of the World Ferry Safety Association (WFSA) international student design competition for a Safe Affordable Ferry were announced. The goal of the design competition is to elicit new approaches for ferry design in the developing world as well as to encourage designers to enter this arena for which there is a need and an emerging market. The WFSA top prize of $5,000 is to be

awarded to the student team from the University of British Columbia, Canada.

Austal USA Earns AEU Safety Award

American Equity Underwriters, Inc. (AEU) has honored Austal USA, a member of the American Longshore Mutual Association (ALMA), with the presentation of their 2012 Safety and Health Award for a large shipyard.

Eni Targets Growth in North American Market

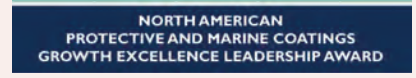
Eni USA R&M subsidiary of Eni S.p.A. (seventh largest integrated multinational oil and gas company headquartered in Italy present in 90 countries) plans to go beyond its historical business area of Quebec, Ontario, eastern Pennsylvania, New Jersey and New York boroughs where it has sold its lubricants since 1987. In the last two years, Eni USA R&M changed its business model by selling its products mostly through distributors instead of direct selling to its customers. For this reason Eni USA R&M signed marketing partnership agreements with PPC Lubricants for New Jersey and Eastern Ohio; Polsinello Fuels for the New York state and Southern Connecticut; Simon Giguere for Quebec province and J&R Young for Eastern Pennsylvania.

www.eni.com

VSRA to Celebrate 35th Anniversary

The Virginia Ship Repair Association (VSRA) is preparing to celebrate its 35th Anniversary and held a dedication of a new memorial to the private ship yard industry on the Portsmouth Path of History. This National Historical Landmark is a one mile walking timeline representing the birth of the industrialized U.S. Naval fleet. In his remarks to the more than 240 member companies of the Association, CAPT. Martin Staiger (Ret.) recalled the risks and challenges involved in preparing private yards for the advent of the new Aegis class cruisers.

Hempel Receives Growth Excellence Leadership Award



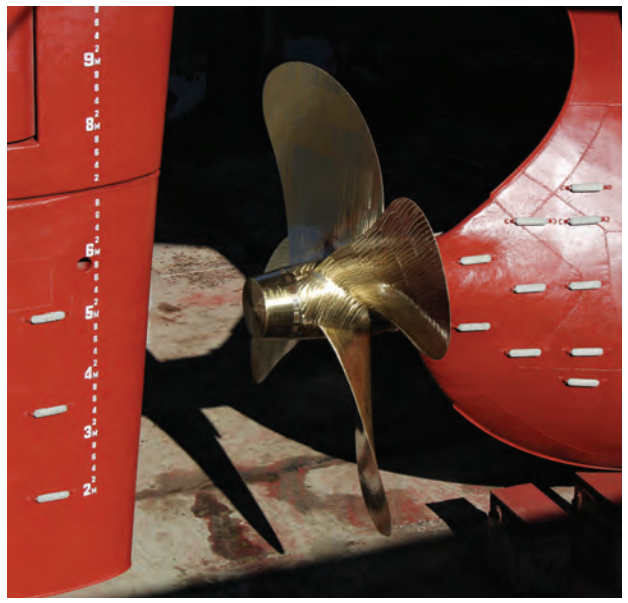
Based on its recent analysis of the North American protective and marine coatings market, Frost & Sullivan recognized Hempel with the 2013 Growth Excellence Leadership Award.

In 2012, Hempel exhibited double-digit revenue growth well in excess of 20% and increased its overall market share in North America to 9.5%. Frost & Sullivan noted that Hempel's competitors' revenue growth rates are more closely aligned with the base year total market growth rate of 2.1%.

Hempel's acquisition of Blome International in 2012 complemented its existing product lines, especially for the oil and gas industry. Whereas smaller companies would have expanded their industry focus or become acquisition targets in a struggling economy, Hempel resisted the trend and became more aggressive to grow its market share. Its success stems from getting the sales force of both companies to sell the newly combined offering. The company also focused on fine-tuning operational synergies to promote faster delivery, improve research and development, and reinvent the company to overcome new market challenges.

www.hempel.us

Damen Quick Docking/Fuel Saving Package



Damen Shiprepair & Conversion developed a new product, the Quick Docking/Fuel Saving package, offering owners a fast and low-cost additional docking with the sole aim of reducing fuel consumption in between the five-year statutory survey period. The first vessel booked under the new concept has docked at Damen Shiprepair Brest (France). It is the capesize bulker Castillo De Catoira operated by Spanish company Empresa Naviera Elcano. Damen expects to bring more of its vessels to its shiprepair yards. Jos Goris, Managing Director of Damen Shiprepair Brest and initiator of the concept, said, "We know that hull resistance builds up during years of service and this can have a significant impact on performance and consequently, fuel costs. By introducing this product, we are thinking along with our customers and know that fuel costs are a major consideration for shipowners and charterers, especially in this economic climate."
Under the package, antifouling and fresh coatings are applied to improve hull performance, propellers are given a super high polish and the yard fine-tunes the main engine. "Inside and out, everything is optimized for efficient fuel consumption. By improving the engine and propulsion line and applying coatings, the vessel's performance is improved considerably," said Goris.
Damen expects the fuel saving docking – which can take as little as a few days – to pay for itself within six to eight months depending on the type and size of the vessel. The package is provided on a lumpsum basis.

www.damen.com

MTU Series 8000 Marine Engines

The MTU Series 8000 was awarded Naval Vessel Rules (NVR) certification by ABS. The new certification, a requirement for the U.S. Navy's Littoral Combat Ship (LCS) and Joint High Speed Vessel (JHSV) programs, was awarded to Tognum subsidiary MTU Friedrichshafen GmbH after 1,500 hours of testing of the 20V 8000 that included run times at 110% of the engine's rated power in a variety of extreme environmental conditions. Additional validation testing was also completed in a commercial marine application, further demonstrating the versatility of the Series 8000, which joins the 8V 396 in the MTU portfolio of engines with ABS NVR certification.

www.tognum.com

Air Products Nitrogen Membrane Generator

Norwegian-based Air Products was selected by Harvey Gulf International Marine to supply Nitrogen Membrane Generators for the six newly ordered LNG fueled PSVs to be built at Trinity Offshore. The NC 1.1 series cabinet model consists of a complete N2 Generator, a control panel and a feed air pretreatment with a PLC control. The Nitrogen Membrane System is approved by all international marine standards. This unique Nitrogen Membrane Generator has a reduced footprint and lowers the operational cost at the same time. Maintenance is kept to a minimum thanks to the robust design and carefully selected materials, which meet the stringent operational demands for PSVs.

damsgar@airproducts.com

FloScan: ABS Certification for New Flowmeters

FloScan Instrument Company said that the new Series K Stainless Steel Diesel Flow Sensor that has earned ABS Product Design Assessment Certification. FloScan is a manufacturer of fuel monitoring systems for permanent installation on diesel and gasoline engines. FloScan Systems are installed worldwide on commercial and recreational vessels, stationary industrial generators and general aviation aircraft. With the introduction of the new Stainless Steel Series K Flow Sensor, FloScan can now offer fuel computers to meet the standards required for ABS-classed vessels using all steel piping components for fuel delivery systems. (PDA Certificate Number 13-HS1050296-PDA)

www.floscan.com

Fitch Fuel Catalyst

"We have completed a series of experiments studying and measuring the ability of a novel catalyst to constructively modify commercial gasoline and diesel fuel. This catalyst has the ability to selectively remove hydrogen and/or add oxygen to hydrocarbon components of fuel. The catalyst demonstrated the ability to produce reformed fuel species at room temperature, which is novel and provides evidence these catalysts are broadly applicable in fuel applications," including marine. This catalytic effect "leads to enhanced combustion from the hydrocarbon fuel feedstock." This catalyst is marketed under the brand names Fitch Fuel Catalyst, GOSaver and Walker Fuel Sep. UConn research was funded by the U.S. Department of Energy.

www.pofusa.net

Portable Industrial Combustion Gas & Emissions Analyzer

The new E8500 combustion analyzer is a portable tool for EPA compliance level emissions monitoring and testing. The E8500 is ideal for regulatory and maintenance use in boiler, burner, engine, turbine, furnace and other combustion applications. The E8500 Also Includes: Electrochemical Sensors – O2, CO, NO, NO2, SO2, H2S; NDIR Sensors – CO2, CxHy, High CO; Low NOx and True NOx Capable; Real-Time PC Software Package; Wireless Remote Printer; Internal Thermoelectric Chiller with Automatic Condensate Removal; Stack Gas and Ambient Air Temperature Measurements; Draft and Differential Pressure Measurements; Efficiency, Excess Air, and CO2% Calculated Values.

www.E-Inst.com

Survitec: PFD Innovations

Survitec Group has implemented two improvements to USCG-approved, Type III vests for increased wearer vest visibility. These include adding SOLAS-compliant reflective tape and increasing day-glow tape coverage on collar and pockets. Prototypes for the Imperial 370ERV (Emergency Rescue Vest) and Imperial 2230 Admiral's Mesh Work Vest reflect these updates. Both the Imperial 370ERV and 2200 series of mesh work vest prototypes have incorporated ripstop fabric. For wearers of the vests working in high winds, this key improvement helps to deter tearing which can compromise the buoyancy and protection provided by the vest. Additionally, the fabric construction of the Imperial 370ERV is approved to withstand 100mph impact.

connie.schreifels@survitecgroup.com

Fire Detection from Fireboy-Xintex

Fireboy-Xintex Inc. offers a line of USCG Type Approved Fire Detection Systems for commercial vessels and recreational yachts. Marine Elite RSM Analog Addressable Fire Alarm Control Panels are available for hosting up to 256 fire detection devices on all Commercial and Recreational Marine applications. These control panels can also be expanded and networked to become part of larger systems. Elite RSM Control Panels are simple and easy to understand for installers, commissioning personnel and vessel owners and feature Apollo protocol smoke and heat detectors. Two full SLC loops and leading edge microprocessor based electronics are also standard.

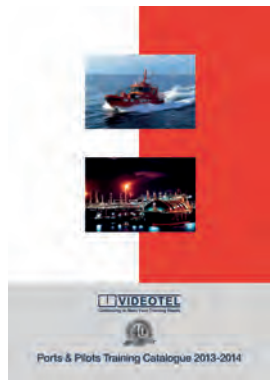
www.fireboy-xintex.com

Paint Gun Washers Maintenance Kit

Herkules Equipment new Paint Gun Washer Maintenance Kit was developed in response to many Herkules customers who have had their Paint Gun Washer for decades and have a need for replacing small components or updating their old Herkules Paint Gun Washer. The Kit is equipped with the most common components needed for tuning-up Herkules Paint Gun Washers that have been in the market up to 30 years. It also includes parts that can modify a Herkules Paint Gun Washer from a two gun/two cup washer to a four-gun washer, now that many shops are using disposable cup systems. A total of 36 parts are included in the kit.

www.herkules.us

Videotel Launches New Ports and Pilots Catalogue



A new catalogue from Videotel will be launched at the U.K. Marine Pilots Association (UKMPA) Conference in London. With its 40 year commitment to the maritime industry, Videotel provides the range of training materials demanded from those undertaking pilotage and port operations and has created a wide portfolio of specialist training which is covered in its new Ports and Pilots catalogue. Ports and Pilots courses are delivered through continuous training assessment using Videotel's cloud based Continuing Competency Manager (CCM).

www.videotel-inc.com

Bestobell FLIV for LNG Carrier

Bestobell Valves announced a new contract which brings the total of orders for its innovative patented Float Level Insulation Valves (FLIV) across the world to over 100. The new contract for FLIV is with Bestobell's Chinese partner, Valseal International Ltd. on behalf of Hudong Shipyard in Shanghai, China. The order is for the six China Shipping and Mitsui O.S.K Lines LNG carriers that will be built there. FLIV has proved to be a successful product for Bestobell and since the first FLIV was supplied to an LNG carrier back in 2007 then 6/10 of all LNG carriers that have been built have FLIV fitted.

bestobellvalves.com

Onboard Drinking Water: Martek Marine Advises

Martek Marine, manufacturer of the drinking water testing kit, Drinksafe, is advising owners to ensure that they are aware of the requirements of port state control and flag state water testing requirements in response to the Maritime Labor Convention 2006.

The introduction of MLC 2006 heralded a significant step forward for the quality of drinking water for ship's crew defining that "frequent documented inspections" be performed which is why Martek developed Drinksafe to have more tests than any other kit on the market. Martek's Sales Director, Steve Coulson, explains that "Drinksafe contains 1,800 tests, more than any other on the market providing a comparative cost per test that is approximately 50% lower than the closest comparative test kit.

Bacteria and pathogens that can grow in poorly maintained drinking water include E.coli, Norovirus, Salmonella and Legionella bacteria, which can lead to Legionnaires' disease, a pneumonia-like illness which can be fatal.

martek-marine.com

New Diesel Welder/Generators

The new Trailblazer 325 Diesel and Bobcat 250 Diesel welder/generators by Miller Electric Mfg. Co. — both fully compliant with all applicable EPA Tier 4 Final emissions regulations — deliver multi-process welding capabilities and smooth generator power, with innovative technologies designed for the professional welder. According to the manufacturer, the Trailblazer ***32***5 Diesel welder/generators are designed to extend runtimes by 55%, reduce fuel use by as much as 25%, and reduce noise by 40% for a safer, more productive jobsite. A redesigned case — now seven inches shorter and up to 80 pounds lighter — provides a smaller footprint, allowing a work truck to carry more equipment and heavier payloads.

www.millerwelds.com

Clean Marine's EGCS First to Operate Inside ECA

MV Balder, equipped with Exhaust Gas Cleaning System (EGCS) from Clean Marine, is reported to be the first vessel in the world to operate this type of system in the U.S. Emission Control Area (ECA). Upon arrival in Baltimore recently, the vessel's Master sought approval from the coast guard to enter and exit the ECA Zone using High Sulfur Fuel Oil with EGCS, rather than burning the more expensive Low Sulphur Fuel Oil (1% sulfur content). Clean Marine invited USCG and EPA to observe the EGCS in operation for compliance with the ECA. Officials from the U.S. Coast Guard, led by Lieutenant Commander Edgardo Cruz (Chief Inspection Division, Sector Baltimore), conducted a Port State Control exam on August 29 in Baltimore and confirmed that the Clean Marine EGCS installed onboard was operating satisfactory and found to be in full compliance with MARPOL Annex VI as an equivalency to utilizing low sulfur fuel oil as per the IAPP Certificate. Clean Marine CEO, Nils Høy-Petersen said, "Meeting the U.S. Coast Guard's stringent requirements proves that our unique and competitive multi-stream EGCS solution is a sound technology that enables vessels of all types to transit through a U.S. ECA." The Clean Marine EGCS on board the handymax bulk carrier bulk carrier is an integrated, multi-stream system which cleans the exhaust from one main engine, three auxiliary engines and one boiler. The system is also a hybrid type which can operate in both open and closed loop.

www.cleanmarine.no

Victaulic Unveils Press-To-Connect Pipe-Joining System

Victaulic, a manufacturer of mechanical pipe joining systems, introduces Vic-Press, an IACS-approved flame-free press system for joining small-diameter stainless steel pipe. With Type Approval certification from IACS member agency Germanischer Lloyd, Vic-Press offers a quick, simple, safe and reliable means of joining off-the-shelf Type 316 ASTM A-312 Schedule 10S stainless steel pipe in new-vessel construction, retrofit and repair operations. The system is type approved for class III piping systems.

According to Victaulic, the joints are quick and simple to complete with the Vic-Press system: Pipe is cut to length and deburred, marked for visual verification of full insertion, then inserted into a coupling or fitting. Reliability is built into the system with several unique features. An internal pipe stop within the couplings and fittings helps correctly position the pipe to ensure positive joining, while the seal pocket helps protect the gasket during assembly. Vic-Press gaskets are pre-lubricated to simplify the assembly process; no additional lubrication is required for installation. Once installed, patent-pending press detection technology enables the installer to identify unpressed joints as the system is filled and tested. The approved Vic-Press product range includes couplings, tees, elbows, reducers, end caps and adapters in sizes ranging from 0.5-2 inches (15-50 millimeters). Vic-Press couplings and fittings are pressure-rated up to a maximum of 232 psi (16 bar/1,600 kPa). They are fire resistant and recommended for use with fluids at temperatures up to 208 degrees Fahrenheit (98 degrees Celsius) for the standard HNBR gasket seal, and up to 250 degrees Fahrenheit (121 degrees Celsius) for the EPDM gasket seal.

www.victaulic.com

ExxonMobil Environmentally Acceptable Lubricants

ExxonMobil Marine Limited, an affiliate of Exxon Mobil Corporation, introduced Mobil SHC Aware, a new comprehensive series of synthetic, environmentally acceptable lubricants. Mobil SHC Aware synthetic lubricants are formulated to help marine operators enhance vessel reliability, minimize maintenance costs and reduce potential environmental impact. Developed through extensive laboratory and in-service testing, theMobil SHC Awarerange includes Mobil SHC Aware H hydraulic fluids, Mobil SHC Aware ST stern tube lubricants; Mobil SHC Aware Grease EP 2 multipurpose grease and Mobil SHC Aware Gear range of gear oils.

www.exxonmobil.com

MTNW Debuts LCI-90i-IS

Measurement Technology NW (MTNW) Launched its LCI-90i-IS Rugged Programmable Controller (RPC) has been awarded the globally recognized Underwriters Laboratories (UL) certification. UL quality approval allows customers to use the industry leading RPC in hazardous applications without additional testing or approvals. MTNW offers versions of its flagship display for winch, pump, crane, tank and torque applications. The LCI-90i-IS is a programmable controller that combines signal-processing capabilities with rugged reliability for new projects and retrofits of existing equipment, the manufacturer said. Sensor data, parameters, alarms, controls, and graphs are displayed on a bright electroluminescent display for unmatched readability in all light conditions.

www.mtnw-usa.com

Rolls-Royce Gas Turbine for Combat Ship

Rolls-Royce won a contract to design the gas turbine system for the U.K. Royal Navy's future Type 26 Global Combat Ship, which will, subject to contract, feature the marine gas turbine Rolls-Royce MT30. Rolls-Royce will work with prime contractor BAE Systems and Tognum, Rolls-Royce's collaboration with Daimler, to design the propulsion system. This system will combine the Rolls-Royce MT30 gas turbine with four of Tognum's MTU high-speed diesel generator sets. The MT30 is derived from Rolls-Royce aero engine technology. It produces 36-40 MW.

www.rolls-royce.com

Home Study For Mariners

Professional mariners learn in a variety of ways, times and places. They have to. After spending months at sea, that homeport time can be hard to fill up with training. Sorensen offers home study programs with various options to prepare deck officers and engineers. The 500/1600 Master/Mate Inland or Near Coastal program prepares mariners to earn their Master or Mate license on vessels not exceeding 500 or 1600 gross registered tons and operating within inland or near coastal waters. Students also receive one week of exam preparation at the Chesapeake Marine Training Institute campus.

www.chesapeakemarineinst.com

Anti Corrosion Technology Clamp

ACT Clamps from STAUFF protect against crevice corrosion in salt water. Designed for use with stainless steel tube and pipe, ACT clamps can be used for both underwater and top-side applications. Crevice corrosion is a problem when seawater is trapped in gaps between conventional clamps and the pipe or tube. ACT Clamps utilize anti-corrosion elastomer strips to firmly hold the tube while eliminating gaps seawater can penetrate. The clamp body provides UV stability and is resistant against seawater, rain and oil. STAUFF ACT clamps have been extensively field-tested in the Dutch North Sea.

www.stauffusa.com

New Engine and Steering Solution

Raymarine has launched a new ECI-100 Universal Engine and Control Interface. The ECI-100 bridges the gap between engine instrumentation, drive-by-wire propulsion systems, and Raymarine network navigation systems. The ECI-100 collects and connects engine information to give simple and immediate access to engine performance data, fuel consumption and alarms via customizable information screens on multifunction displays (MFDs). The ECI-100 is compatible with Volvo Penta, Yamaha Marine Command Link Plus, Caterpillar and Yanmar Marine engines and is a full-function autopilot interface for Volvo Penta IPS and Yamaha Helm Master propulsion systems.

www.raymarine.com

2014 Editorial Calendar

MARITIME REPORTER AND ENGINEERING NEWS

ISSUE	EDITORIAL		BONUS DISTRIBUTION
JANUARY **Ad Close:** Dec 20	**Ship Repair & Conversion Edition** **Market:** U.S. Navy: Ships of War **Technical:** Marine Drives: Gears, Thrusters, Waterjets & Propellers **Product:** Marine Electronics Equipment & Supplier Guide **Special Report:** Future Marine Fuels & Emission Scrubbing Technology	MaritimePropulsion.com MarineElectronics.com	**Arctic Technology Conference** Feb 10-12, Houston, TX
FEBRUARY **Ad Close:** Jan 24	**Cruise Shipping Edition** **Market:** Marine Accommodation & Interior Outfit **Technical:** Satellite Communication **Product:** Marine Coatings & Corrosion Control **Special Report:** Clean Water Solutions: Ballast Water Treatment, Black, Grey & Potable Water	MarineElectronics.com	**Cruise Shipping Miami** March 10-13, Miami, FL **ASNE DAY** Feb 20-21, Arlington, VA
MARCH **Ad Close:** Feb 21	**U.S. Coast Guard Annual** **Market:** RIB & Patrol Boat Report **Technical:** Marine Salvage & Recovery **Product:** Shipboard Fire Suppression Systems **Special Report:** Software Solutions: Remote Monitoring, Condition-based Maintenance & Control		**CMA Shipping 2014** March 17-19, Stamford, CT **Workboats Exchange** April 13-16, Bonita Springs, FL **Sea-Air-Space** April 7-9, National Harbor, MD
APRIL **Ad Close:** Mar 21	**Offshore Edition** **Market:** Making of the Modern OSV **Technical:** Marine Fuel Selection Guide **Product:** Specialty Cranes: Heavy Lift to Cargo **Special Report:** The World's Biggest: Floating Liquefied Natural Gas (FLNG)		**Offshore Technology Conference (OTC)** May 5-8, Houston, TX **Marine Money Houston** May 7, Houston, TX
MAY **Ad Close:** April 25	**Marine Electronics Edition** **Market:** Training & Education **Technical:** Marine Power Guide **Product:** Deck Machinery, Winches and Ropes **Special Report:** Oil Spill Response & Recovery	MarineElectronics.com MaritimePropulsion.com	**Posidonia** June 2-6, Athens, Greece **HiperCraft** June, Virginia Beach, VA
JUNE **Ad Close:** May 23	**Annual World Yearbook** **Market:** Maritime Simulation & Training Centers **Technical:** Marine Firefighting, Safety & Salvage **Product:** Marine Spare Parts Guide **Special Report:** 4th Annual Global Maritime Photo Contest	MarineElectronics.com	**Maritime Reporter Celebrates "75"** MR turns 75 in 2014. This special standard-size magazine supplement in the June edition traces the history, evolution & future of • shipbuilding & design • marine propulsion • marine electronics & more! 
JULY **Ad Close:** June 25	**Offshore Energy Structures & Systems** **Market:** Classification & Ship Registries **Technical:** ECDIS **Product:** Maritime Tools: Welding & Cutting **Special Report:** Emerging Marine Propulsion Tech	MarineElectronics.com MaritimePropulsion.com	
AUGUST **Ad Close:** July 24	**Shipyard Edition** **Market:** OSV Design & Construction **Technical:** Heavy Lifting Solutions **Product:** Clean Water Technology **Special Report:** Ship Maintenance & Retrofit		**SMM** Sept 9-12, Hamburg, Germany
SEPTEMBER **Ad Close:** Aug 22	**Marine Propulsion Edition** **Market:** Maritime Security Technology **Technical:** Condition Based Monitoring **Product:** Marine Anti-Fouling Coatings **Special Report:** The Arctic: Challenges & Opportunities	MaritimePropulsion.com MarineElectronics.com	
OCTOBER **Ad Close:** Sept 19	**Marine Design Edition** **Market:** Dredging **Technical:** Pumps, Pipes, Valves & HVAC **Product:** CAD/CAM **Special Report:** The Automated Ship: Command & Control	MarineElectronics.com	**SNAME** October 22-24, Houston **SHIPPINGInsight** Stamford, CT
NOVEMBER **Ad Close:** Oct 24	**Workboat Edition** **Market:** Tug, Tow and Pushboats: Brown Water Workboats **Technical:** Deck Machinery, Winches & Ropes **Product:** Vessel & Crew Safety Systems **Special Report:** Gulf of Mexico Builder & Supplier Guide		**International Workboat Show** Dec 3-5, New Orleans, LA
DECEMBER **Ad Close:** Nov 21	**Great Ships of 2014** **Market:** U.S. Navy **Technical:** Shipyard Automation **Product:** Maritime, Port & Harbor Infrastructure & Security **Special Report:** Marine Power Provider's Guide	MaritimePropulsion.com	**Surface Navy Association** January, Crystal City, VA

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

ALUMINUM BOATS

Metal Craft, 347 Wellington Street, Kingston, Ontario, 77552, Canada , tel:(800) 410-8464, fax:(613) 542-6515, laurence.b@metalcraftmarine.com

AUTOMATIC IDENTIFICATION SYSTEM

Saab TransponderTech AB, SE-589 41 Linkoping , tel:46 13 180000, fax:46 13 180011, Info.transpondertech@saabgroup.com

AUTOPILOT SYSTEMS

AG Marine, 5711 34th Ave NW 2nd floor Gig Harbor, Wa. 98335

BOAT BUILDING AND DESIGN

Metal Craft, 347 Wellington Street, Kingston, Ontario, 77552, Canada , tel:(800) 410-8464, fax:(613) 542-6515, laurence.b@metalcraftmarine.com contact: Laurence Bishop, www.metalcraftmarine.com

BOW AND STERN THRUSTERS

Omnithruster, 2201 Pinnacle Parkway Twinsburg,Ohio 44087 , tel:330 963-6310, fax:330 963-6325, widmer@omnithruster.com

CAMERAS

Kongsberg Maritime LTD, Campus 1 Innovation Pk.Balgownie Rd.Bridge of Don Aberdeen AB22 8GT , UK , tel:011 44 1224 226500, Bill.Stuart@kongsberg.com contact: Bill Stuart, www.kongsberg.com/cameras

CAPSTANS

Superior-Lidgerwood-Mundy, Corp., 302 Grand Ave., Superior, WI 75024, USA , tel:(715) 394-2383, stenerelli@lidgerwood.com contact: Sean Tenerelli, www.lidgerwood.com

COATINGS/ CORROSION CONTROL/ PAINT

Hempel A/S, Lundtoftevej 150 DK-2800 Kgs, Lyngby , tel:45 4593 3800, fax:45 4588 5518, marine@hempel.com

Jotun Paints, 9203 Highway 23, Belle Chasse, LA , USA , tel:(800) 229-3538, milton.campo@jotun.com contact: Milton Campo, www.jotun.com

CONTROL SYSTEM-MONITORING/STEERING

Prime Mover Controls, 3600 Gilmore Way, Burnaby BC

CORDAGE

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

CORROSION CONTROL

CS Unitec, 22 Harbor Avenue, Norwalk, CT 11758, USA , tel:(203) 853-9522, fax:(203) 853-9921, tcarroll@csunitec.com contact: Tom Carroll, www.csunitec.com

Rustibus, 2901 West Sam Houston Pkwy, North Suite E-325, Houston, TX , USA , tel:(832) 203-7170, fax:(832) 203-7171, houston@rustibus.com , www.rustibus.com

COUPLINGS

Centa Corporation, 2570 Beverly Drive #128, Aurora, IL , tel:(630) 236-3500, fax:(630) 236-3565, bobl@centacorp.com contact: Bob Lennon, www.centa.info

CRANE - HOIST - DERRICK - WHIRLEYS

DMW Marine Group, 1123 St Matthews Rd Chester Springs PA 19425

DECK MACHINERY- CARGO HANDLING EQUIPMENT

NABRICO, 1250 Gateway Dr, Gallatin, TN , tel:615-442-1300, brian.corbin@trin.net contact: Brian Corbin, www.nabrico-marine.com

NABRICO, 1250 Gateway Drive, Gallatin, TN 70002-4989, USA , tel:(615) 442-1300, brian.corbin@trin.net contact: Brian Corbin, www.nabrico-marine.com

Superior-Lidgerwood-Mundy, Corp., 302 Grand Ave., Superior, WI B0W 2L0, USA , tel:(715) 394-2383, stenerelli@lidgerwood.com contact: Sean Tenerelli, www.lidgerwood.com

DIESEL ENGINE- SPARE PARTS & REPAIR

Motor Services Hugo Stamp, 3190 SW 4th Avenue Ft. Lauderdale, Fla.33315

DRILLS

Hougen Inc., 3001 Hougen Drive Swartz Creek, MI 48473

DRIVESHAFTS

Centa Corporation, 2570 Beverly Drive #128, Aurora, IL , USA , tel:(630) 236-3500, fax:(630) 236-3565, info@centacorp.com contact: Bob Lennon, www.centa.info

ELECTRIC & CONTROL SYSTEMS

Jamestown Metal Marine Services, Inc., 4710 Northwest 2nd. Ave. Boca Raton, FL 33431

ELECTRIC DRIVE SYSTEMS

Avtron, 7555 E Pleasant Valley Rd. Ste100, Independence, OH , USA , tel:216 642-1230, gabrielle.gillota@nidec-avtron.com

ENGINES

Wartsila, Ranta 2, Helsinki , tel:011 358 10 709 0000, fax:011 358 10 709 5700 contact: John Stenbergin, www.wartsila.com

FANS

Schaefer Ventilation, 1 Industrial Blvd. Suite 101, Sauk Rapids, MN

FILTERS/FILTER SYSTEMS

Yankee Wire Cloth Products, 221 W. Main Street, West Lafayette, OH , tel:866-265-0502, fax:(740) 545-6016, yk@yankeewire.com contact: Bill Timmons, www.yankeewire.com

GALLEY EQUIPMENT

Jamestown Metal Marine Services, Inc., 4710 Northwest 2nd. Ave. Boca Raton, FL 33431

LOIPART AB, P.O.Box 694/Metallgatan 2-4, ALINGSAS , tel:+46 322 668 360, fax:+46 322 637 747, loipart@loipart.se

HVAC

Jamestown Metal Marine Services, Inc., 4710 Northwest 2nd. Ave., Boca Raton, FL , USA

INTERIORS

Jamestown Metal Marine Services, Inc., 4710 Northwest 2nd. Ave. Boca Raton, FL 33431

LAUNDRY EQUIPMENT

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LIFESAVING EQUIPMENT

CM HAMMAR AB, CM Hammar AB August Barks Gata 15 421 32 Västra, Frölunda, Sweden , tel:+46 31 70965 50, fax:+46 31 497023, info@cmhammar.com , www.cmhammar.com

LIFT EQUIPMENT

DMW Marine Group, 1123 St Matthews Rd, Chester Springs, PA

MAGNETIC LIFTING SYSTEMS

Walker Magnetics, 2195 Wright Brothers Avenue, Columbus, OH , tel:603.303.0508, kknights@walkermagnet.com

MARINE CONSTRUCTION/REPAIR

Metal Craft, 347 Wellington Street, Kingston, Ontario, 77552, Canada , tel:(800) 410-8464, fax:(613) 542-6515, laurence.b@metalcraftmarine.com

MARITIME TRAINING & SCHOOLS

Freelance Software, 39 Peckham Place, Bristol, RI 40223, USA , tel:(401) 556-1955, fax:(401) 396-9717, chris@hawsepipe.com contact: Christopher Dady, www.hawsepipe.net

MEASURMENT & CONTROL PRODUCTS

Omega Engineering, 1 Omega Drive, Stamford, CT

METEOROLOGICAL INSTRUMENTS

R.M. Young Company, 2801 Aero Park Dr., Traverse City, MI , tel:231-946-3980, fax:231-946-4772, vsherman@youngusa.com

NAV/COMM EQUIPMENT

Marlink, Offices in: Oslo, London, Hamburg, Brussels, Athens, Dubai, Mumbai, Singapore, Tokyo, Washington DC and Houston , tel:+32 70 233 220, fax:+32 2 332 3327, customer.service@marlink.com

PAINTS AND ANTI FOULANTS

HOLDTIGHT SOLUTIONS INC., PO BOX 27907 HOUSTON, TX 77227-7907 , tel:713-266-9339, sales@holdtight.com

PARTS LOCATOR SERVICE

Inventory Locator Service, 8001 Centerview Pkwy Ste 400, Cordova, TN , tel:901 794-5000 contact: Pamela Pugh, www.ILSMART.com

PIPE FITTINGS/CUTTINGS/CONNECTING/ SYSTEMS

Jamestown Metal Marine Services, Inc., 4710 Northwest 2nd. Ave. Boca Raton, FL 33431

PROPULSION EQUIPMENT

VOLVO PENTA OF THE AMERICAS INC, 1300 Volvo Penta Drive, Chesapeake, VA , tel:+1 757 3824010, lindsy.shrewsberry@volvo.com contact: Customer Relations Support, www.volvopenta.com

RIGID INFLATABLE BOATS

Pennel & Flipo USA, P.O. Box 1695, Mount Pleasant, SC , USA , tel:843-881-9026, fax:843-881-9026, lcourcoux@pennelusa.com

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SANITATION DEVICE- POLLUTION CONTROL

Scienco/FAST - a division of Bio-Microbics, 12977 Maurer Industrial Drive, Sunset Hills, MO 03055, USA , tel:866-652-4539, fax:314-756-9306, solutions@sciencofast.com

SEATING

The Springfield Marine Company, 1093 N. Cynthia Drive, Suite #1 Nixa, MO 65714 , tel:417 616-6707, fax:417 724 9035, dsweeney@springfieldgrp.com

SHIP REPAIR

Malin International, 320 77th Street, Pier 40/41 Galveston, TX 77554 , tel:409-682-0232, ghart@malinshiprepair.com

SHIPBUILDING-REPAIRS, MAINTENANCE, DRYDOCKING

Signal International, 1011 S.Hwy 6 Suite 108, Houston TX , tel:281 899-2122 contact: Rob Busby, www.signalshiprepairllc.com

SIMULATION TRAINING

Kongsberg Maritime Simulation Inc., PO Box 180 70 Essex Street, West Mystic, CT , tel:709 582-1112

SURFACE PREP MATERIALS

HOLDTIGHT SOLUTIONS INC., PO BOX 27907 HOUSTON, TX 77227-7907 , tel:713-266-9339, sales@holdtight.com

SURFACE PREP TOOLS

CS Unitec, 22 Harbor Avenue, Norwalk, CT 01608, USA , tel:(203) 853-9522, fax:(203) 853-9921, tcarroll@csunitec.com contact: Tom Carroll, www.csunitec.com

HOLDTIGHT SOLUTIONS INC., PO BOX 27907 HOUSTON, TX 77227-7907 , tel:713-266-9339, sales@holdtight.com

TURBOCHARGERS

Motor Services Hugo Stamp, 3190 SW 4th Avenue Ft. Lauderdale, Fla.33315

VACUUM TOILET SYSTEM

Jets Vacuum AS, Myravegen 1 6060 Hareid , tel:47 700 39 100, fax:47 700 39 101, post@jets.no

WASTE WATER TREATMENT

Scienco/Fast - a division of Bio-Microbics, 12977 Maurer Industrial Drive, Sunset Hills, MO , tel:(866) 652-4539, fax:(314) 756-9306, solutions@sciencofast.com

WINCH MANUFACTURER

Patterson Company, 870 Riversea Road, Pittsburgh, PA 33310-5247, USA , tel:(412) 322-2012, russ.mayhew@pattersonmfg.com contact: Russ Mayhew, www.pattersonmfg.com

WINCHES & FAIRLEADS

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

Superior-Lidgerwood-Mundy, Corp., 302 Grand Ave., Superior, WI V6J 1C7, USA , tel:(715) 394-2383, stenerelli@lidgerwood.com

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Shipyard General Manager
Job Location: USA, Cleveland

Great Lakes Shipyard, an affiliate of The Great Lakes Group and The Great Lakes Towing Company, is a full-service shipyard for new construction, fabrication, and repairs in a state-of-the-art facility. The Shipyard specializes in all types of commercial and government vessels and barges, as well as both on-site and off-site topside work, steel fabrication and emergency repairs of every kind. The company has been in continuous business for 115 years.

GENERAL DESCRIPTION: Proven leader responsible for all production, manufacturing, yard support and administrative functions needed for safe and efficient shipyard operations.

RESPONSIBILITIES INCLUDE: Develops budgets; establishes plant and departmental goals; ensures compliance with all Safety, Quality, Company and Regulatory directives; directs activities in areas of safety and personnel, production, scheduling, material handling, and quality; manages managers, foremen and office personnel.

DESIRABLE EXPERIENCE & TRAINING:

• Minimum 15 years of experience as a shipyard manager
• Experience with Profit and Loss Responsibility
• Experience in ship building, particularly tugs and barges
• Completion of four years of college level course work equivalent to a B.S. in production management or engineering and extensive experience managing multiple areas within a manufacturing facility combined with considerable supervisory experience; or any equivalent combination of experience and training which results in the required knowledge, skills and abilities

HIGHLIGHTS:

We offer an excellent benefits package that includes healthcare, dental, vision, short-term and long-term insurance, 401(k) profit sharing plan, vacation time, sick time, company paid holidays and a friendly working environment.

Submit resume by email: hr@thegreatlakesgroup.com; by fax: 216-781-7472. For more information about our company, please visit our website: www.thegreatlakesgroup.com

Wanda Reddy
Great Lakes Shipyard
4500 Division Avenue
Cleveland OH 44102 USA
Phone: 216-367-8139
Fax: 216-781-7472
Email: hr@thegreatlakesgroup.com
Web: http://www.thegreatlakesgroup.com

Shipyard Superintendent & HR Manager
Job Location: USA, Seattle

Lake Union Drydock Company, a Seattle shipyard, has an opening for a motivated Shipyard Superintendent/HR Manager. Only candidates with the required experience will be considered for the position. Local candidates or those able to self relocate are encouraged to apply.

Responsibilities for the Shipyard Superintendent

•Maintain facilities in a clean, orderly and safe manner at all times.
•Assess maintenance and capital improvement needs. Obtain estimates for proposed work and manage projects.
•Review and approve all overhead purchase requests.
•Develop and manage preventative maintenance schedules for all equipment.
•Maintain documentation files.

Responsibilities for the HR Manager

•Supervise all shop Foremen and facilitate improved productivity, communications, and cooperation between Shops, Project Superintendents, Purchasing, Estimating and Plant Administration.
•Assist with the administration of Collective Bargaining Agreements.
•Mediate problems and misunderstanding between shops.
•Coordinate with the various departments to assess and resolve manpower needs relative to production commitments.
•Ensure that all policies are communicated and uniformly enforced.

Requirements

•Must have 5 years of relevant experience as an on-site Superintendent and Human Resource Manager.
•Proficiency in Excel, Word, Outlook, as well as strong verbal and written presentation skills
•Experience with unions required
•Shipyard experience preferred.

Job Profile

•Non-union, exempt
•Salary range: $75,000 - $85,000, depending upon qualifications
•Benefits offered: Medical, dental, vacation, paid holidays, paid sick leave, 401(k) plan, profit sharing after one year of service, and life insurance

To apply: email resume and cover letter to jobs@ludd.com. NO PHONE CALLS PLEASE.

Lake Union Drydock Company is an Equal Opportunity Company
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57	Allied Systems Company	cranes@alliedsystems.com	(503) 625-2560
63	Anchor Maine & Supply, INC	www.anchormarinehouston.com	(713) 644-1183
61	ATC King Engineering	www.king-gage.com	(304) 387-1200
19	Austal USA	www.austaljobs.com	Please visit our website
65	Autoship Systems Corp.	www.autoship.com	(604) 254-4171
38	Baker Marine Solutions	www.bakermarinesolutions.com	(985) 845-9439
59	Bosch Rexroth	www.boschrexroth-us.com/marine	Please visit our website
55	C.M. Hammar AB	www.cmhammar.com	(800) 828-1131
64	Capilano Maritime Design	www.capilanomaritime.com	(604) 929-6475
59	Coastal Marine Equipment, Inc.	www.coastalmarineequipment.com	(228) 832-7655
59	Creative Systems	www.ghsport.com	(360) 385-6212
73	Cruise Shipping Miami 2014	www.cruiseshippingmiami.com	Please visit our website
17	Damen Shipyards Group	www.damen.com	31 (0) 183 63 9911
33	David Clark Company	www.davidclark.com	(800) 298-6235
5	DMW Marine Group	www.dmwmarinegroup.com	(610) 827-2032
50,51	Electronic Marine Systems	www.emsmarcon.com	(732) 382-4344
52,53	Electronic Marine Systems	www.emsmarcon.com	(732) 382-4344
65	Environmental Solution, Inc	www.totalbiosolution.com	(919) 740-0546
66	Europort 2013	www.europort.nl	Please visit our website
7	ExxonMobil	www.exxonmobil.com/marine	Please visit our website
41	Fire Fighting Systems	www.fifisystems.com	+47 69 24 49 90
59	Fireboy-Xentex Inc	www.fireboy-xintex.com	(866) 350-9500
45	Floscan	www.floscan.com	(206) 524-6625
35	Great American Insurance	www.gaic.com	(212) 510-0135
39	Gulf Copper	www.gulfcopper.com	(281) 599-8200
39	HOLDTIGHT SOLUTIONS INC.	www.holdtight.com	(800) 319-8802
64	Hougen Inc.	www.hougen.com	(800) 426-7818
43	Inventory Locator Service, LLC	www.ILSmarine.com	(901) 794-5000
24	Jastram Engineering	www.jastram.com	(604) 988-1111
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29	Kidde-Fenwall, Inc	www.kiddemarine.com	(508) 881-2000
3	KVH	www.minivsat.com/vip	(401) 847-3327
27	Lee Engineering Supply Co Inc.	www.LeeEngineeringSupply.com	(504) 733-3333
45	Louisiana Cat	www.louisianacat.com	(866) 843-7440
57	Malin International	www.malinshiprepair.com	409-682-0232
65	Maritime Associates	www.marinesigns.com	(775) 832-2422
11	Motor Services Hugo Stamp, Inc.	www.mshs.com	(954) 763-3660
63	Nabrico Marine Products	www.nabrico-marine.com	(615) 442-1300
49	Niedax Inc.	www.niedaxusa.com	(800) 544-2105
1	Omega Engineering Inc.	www.omega.com	(888) 826-6342
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68	SNAME	www.sname.org	Please visit our website
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42	Springfield Marine Company	www.springfieldgrp.com	(417) 616-6714
C3	SSI	www.ssi-corporate.com	(888) 210-7420
37	St. Lawrence Seaway Management Corporation	portwellereoi@seaway.ca	Please email us at
C2	Trans Marine Propulsion Systems, Inc.	www.transmarine.org	(813) 830-9180
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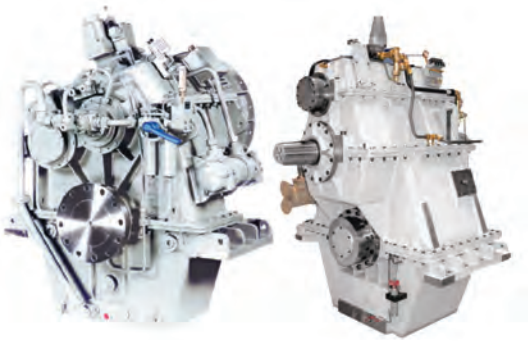

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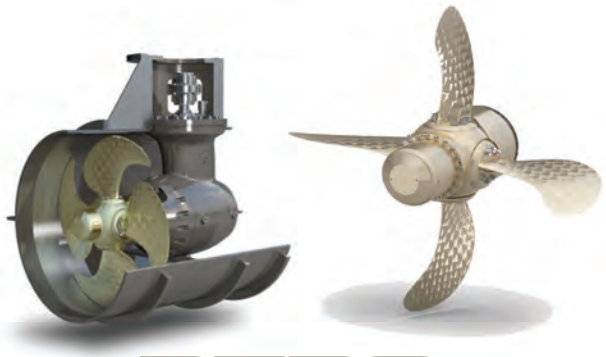

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CONTACT US

NEW ORLEANS
Karl Senner, LLC.
25 W. Third St. Kenner, LA 70062
Phone: (504) 469-4000
Fax: (504) 464-7528

E-MAIL US
Service@karlsenner.com
Sales@karlsenner.com
Parts@karlsenner.com

WEST COAST
Karl Senner, LLC.
Seattle, WA,
(425) 338-3344

www.karlsenner.com