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MARITIME REPORTER AND ENGINEERING NEWS

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AUGUST 2012

THE SHIPYARD EDITION

Insights
Jan Kees Pilaar
MD, Blohm + Voss

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NSRP: Navy & Industry Partner

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John Dane III

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Preview
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contents

Welcome to Hamburg!

The SMM 2012 sets to convene again in Hamburg, Germany in early September, and pictured here is an indelible sight on the Hamburg waterfront, the Blohm + Voss Repair in Hamburg on the River Elbe.

On the occassion of our SMM edition, and in conjunction with our "Shipyards" coverage, **MR interviews Jan Kees Pilaar, managing director, Blohm + Voss,** starting on page 44.

(Photo: Blohm + Voss)

ON THE COVER

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Pictured on the cover is an Austal USA aluminum welder working on USS Independence (LCS 2). Thirty pages of Shipyard coverage starts on page 44.

(Photo Credit: Lewis Communications)

ALSO IN THIS EDITION

SUBSCRIPTION INFORMATION
One full year (12 issues) $73.00; two years (24 issues) $105.00 in U.S. (Canada & Mexico also)
Rest of world one year international $120.00; two years $174.00 including postage and handling. For subscription information:
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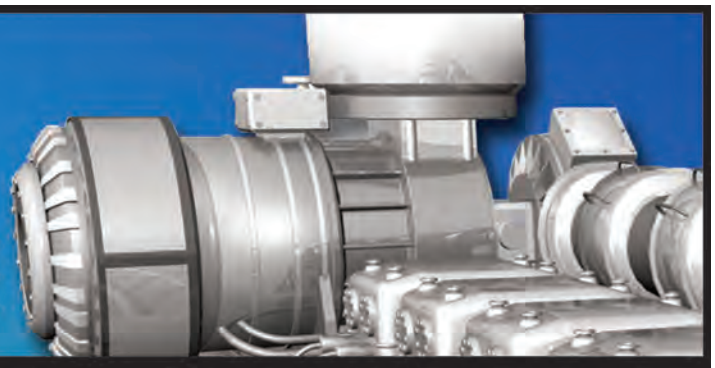

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Tel: (561) 732-4368; Fax: (561) 732-6984

SUBSCRIPTION INFORMATION
One full year (12 issues)
• in U.S.: $69.00; two years (24 issues) $98.00 • in Canada: $73.00; two years (24 issues) $105.00
• Rest of the World: $98.00; two years $152.00 including postage and handling. For subscription information:
Email: mrcirc@marinelink.com • www.marinelink.com
Tel: (212) 477-6700 • Fax: (212) 254-6271

POSTMASTER: Send address changes to: **Maritime Reporter** 118 East 25th Street, New York, N.Y. 10160-1062.
Maritime Reporter is published monthly by Maritime Activity Reports Inc. Periodicals Postage paid at New York, NY and additional mailing offices.

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THE SHIPYARD EDITION

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Digging in with a Vigor

Vigor, already a major driver in the consolidation and expansion of ship-building operations on the U.S. West Coast, has plans to double its size in five years.

Read Vigor's story on page 72

(Photo: Vigor)

Did you hear the one about the guy who fell asleep on the bridge?

It wasn't funny.

The USCG states that thousands of preventable maritime accidents are caused by operator inattention, citing this twice as frequently as the next leading factor. Understandably, the International Maritime Organization is requiring the installation of Bridge Navigational Watch Alarm Systems (BNWAS) aboard mandated vessels to monitor operator fitness.

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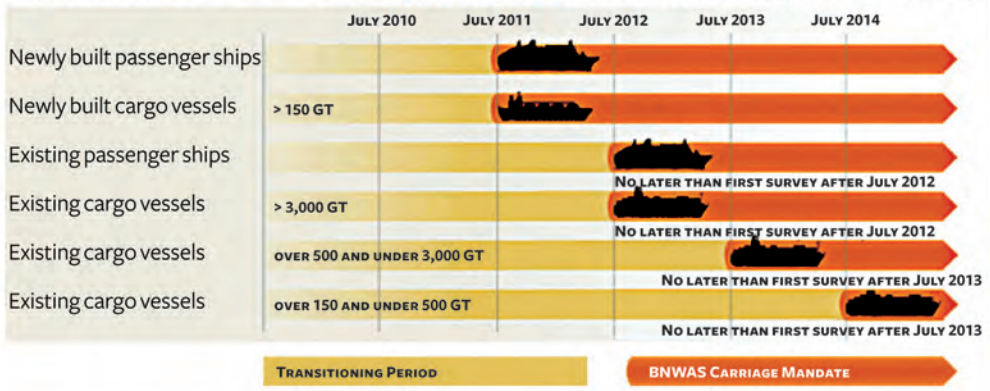
BR500 BNWAS

Implementation Schedule of Bridge Navigational Watch Alarm System (BNWAS)



If you haven't brought your mandated vessel into compliance yet, take a look at the BR500 BNWAS Suite from Furuno!

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Joseph Keefe is the lead commentator of **MaritimeProfessional.com**. Additionally, he is Editor of both Maritime Professional and MarineNews print magazines. He can be reached at jkeefe@maritimeprofessional.com or at Keefe@marinelink.com. MaritimeProfessional.com is the largest business networking site devoted to the marine industry. Each day thousands of industry professionals around the world log on to network, connect, and communicate.

But, that's only one-half of the story. As the U.S. Army Corps of Engineers (USACE) sees its budget slashed, an already overtaxed and crumbling inland waterway system takes another body blow. The true value of the American marine highway is about to become painfully obvious.

When both National Public Radio (NPR) and the NBC Nightly News both highlight a growing crisis on the nation's inland rivers in the same week, it's a sign that that the lifeblood of this island nation's most valuable asset – its collective commercial waterfront – has finally reached the big time in terms of public awareness. That it must happen only as a function of the lack of available water that threatens to bring traffic on the rivers to a grinding halt shouldn't be a surprise to anyone. Already, in some areas, traffic is being limited to one-way passage due to the rapidly dropping water levels.

Even as Mark Mestemacher, co-owner of Ceres Barge Line, was being quoted on NPR as saying that river levels near East St. Louis had deteriorated to three-foot levels all the way from 20-feet just two months, the drought that has gripped much of the nation's mid-section showed no signs of letting up. With river levels already pushing record lows, the crisis only underscores the needed maintenance on domestic river locks, dams and other infrastructure. Unfortunately, and at the same time, the USACE's proposed budget has been slashed by about 5 percent for the coming year.

According to some estimates, for every foot of draft lost by seven typical river barges, another similar barge must be loaded to make up for the lost cargo. **And, American Waterways Operators (AWO) President Tom Allegretti recently noted that every one-inch loss of water decreases the carrying capacity of a single barge by 17 tons of cargo**. Losing one foot of draft results in a loss of 204 tons of cargo capacity per barge. He added, "When you consider that a typical tow on the Upper Mississippi or Ohio Rivers has 15 barges, a one-foot loss of draft will decrease the capacity of that tow by 3,000 tons," Allegretti stated.

Also according to AWO, the low-water levels resulting from severe drought conditions in the Midwest are a stark contrast to the historic flooding of 2011 but share the same potential for significant economic consequences. The 350-member trade association represents the nation's tugboat, towboat and barge industries. Allegretti insists, "The implications of the drought conditions and low-water levels are a one-two punch for the economy, impacting both the agricultural community and one of the major modes of transporting agricultural and other essential products." This, added to the already miserable condition of aging inland infrastructure is, without a doubt, the recipe for economic disaster. Sadly, few Americans appreciate the realities of the day. They may – and very soon – be in for a rude awakening.

Allegretti and his AWO staff have been working closely with the U.S. Coast Guard and Army Corps of Engineers through the River Industry Executive Task Force (RIETF) to assess the impact of the low water and find ways to keep commerce moving safely. Curiously, AWO's efforts on behalf of its membership coincide with the U.S. Department of Agriculture's declaration that more than 1,000 counties in 26 U.S. states are natural-disaster areas as the ongoing drought grips the Midwest. The edict from Washington means that farmers and ranchers in an area that encompasses about 30 percent of entire country are now eligible for low-interest loans to help them weather the drought and related issues caused by it. The USDA is even changing procedures to allow claims to be processed faster and easing other rules to make life easier for ranchers. To my knowledge, no such relief is being contemplated for workboat operators on inland rivers. I'm happy to be proven wrong on that point. Let me know. The latest weather forecasts do not promise any appreciable amounts of precipitation, meaning that the massive drought impacting the nation's heartland will continue to wither crops and dry up rivers. As consumers are warned about the impending price increases for corn and beef, little is being mentioned about the state of the transport industry and infrastructure that eventually gets this product to market. That the farming industries get relief is no surprise. Maritime businesses accustomed to seeing reduced funding from Washington for their concerns shouldn't be surprised, either.

The worst drought in 50 years is scorching about two-thirds of the nation's land area and has had a similar effect on the nation's waterways. That mainstream national media outlets are giving airtime to highlight the latter condition is heartening. NBC Nightly News yesterday even dubbed the Mississippi River as "America's Maritime Superhighway." If only they knew the truth about how "super" it could really be, given more emphasis in Washington on a daily basis. Maybe DOT and Marad was watching last night. No, probably not.

With no relief in the weather expected for the balance of the summer, Americans are about to learn (the hard way) as to the critical nature of inland waterways, and for that matter, the greater domestic waterfront as a whole. Mother Nature will, of course, have a big hand in that educational experience. But the ongoing neglect in terms of policy decisions and dearth of financial support from inside the Beltway is perhaps the bigger story.

As we hear about the massive disaster relief getting ready to be heaped upon farmers and ranchers (and I'm happy that they will get it) I'm also reminded of a bumper sticker that I've seen more than a few times in my travels. The Slogan reads something like, "It will be a wonderful time when the military industrial complex has to hold a bake sale in order to make ends meet." Typically, it is an educational advocacy group that puts this sort of message out. Maybe it is time for the domestic maritime industry to do the exact same thing.

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MARITIME REPORTER AND ENGINEERING•NEWS

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ISSN-0025-3448
USPS-016-750

No. 8 Vol. 74

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

Founder: *John J. O'Malley 1905 - 1980*
Charles P. O'Malley 1928 - 2000

Maritime Reporter/Engineering News (ISSN # 0025-3448) is published monthly by Maritime Activity Reports, Inc.118 East 25th Street, New York, NY 10010. Mailed at Periodicals Postage Rates at New York, NY 10199 and additional mailing offices.

Postmaster send notification (Form 3579) regarding undeliverable magazines to Maritime Reporter/Engineering News, 118 East 25th Street, New York, NY 10010.

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While it certainly is true that shipyards large and small, near and far, have been in some form of 'struggle' mode since the financial collapse and lingering stagnation since 2008, as always there are pockets of prosperity to be found and the truly strong shall survive. As most of you know, the pockets of prosperity today reside offshore, as in the offshore energy business. Offshore technology, more succinctly the evolution of technologies that allow oil majors to more quickly, efficiently and cost effectively discover and recover oil and gas, continues to evolve at a rapid rate. With the evolution comes a bigger, stronger and more capable breed of Offshore Service Vessel, such as the first of four GPA 688SC PSV's designed by Guida Perla & Associates and launched in Brazil from Detroit Brasil Ltd.

Regular readers of our pages recognize that August is *Maritime Reporter & Engineering News'* traditional Shipyard edition, a fitting end to the dog days of summer and introduction to the busier days and months ahead. To that end we present here more than 30 pages of coverage on shipyard activity from around the world, via personal interview with industry leaders and overviews of innovative yard of every conceivable shape and size.

In particular, I would like to extend gratitude to **Jan Kees Pilaar, Managing Director Blohm + Voss** in Hamburg, Germany, for taking the time to provide thoughtful insight and commentary to not only his shipyard's endeavors, but to the maritime market as a whole. I met with Mr. Pilaar on the sidelines of the Connecticut Maritime Association's (CMA) Shipping 2012 back in March, where he agreed to the interview for this edition. Seeing that this is the edition that will distribute at the upcoming SMM 2012 exhibition in Hamburg — which for those of you have never had the opportunity to attend is hands-down the largest and best shipbuilding and marine technology show in the world — it is only fitting that Mr. Pilaar's interview serves as the informal 'kick-off' to our shipbuilding coverage, starting on page 44.

While the vast majority of our shipbuilding coverage is dedicated to commercial matters, contributing editor Edward Lundquist on page 48 provides MR readers with a most insightful view of the National Shipbuilding Research Program, the program by with the Navy and the industry partner for research and the sharing of cost, risk and reward in the never-ending quest to reduce the total cost of ownership. **Connie Bowling, the Navy's NSRP Program Manager, Naval Sea Systems Command**, informs MR readers with the story of a robotic welder created in a basement workshop as a modest NSRP project involving a small business and the University of Tennessee. Bowling says four shipyards are now employing the welder for use on the Navy's DDG 1000, DDG 51, LPD 17, the Coast Guard's National Security Cutter, and tank barges, and others are purchasing the system to introduce at their yards. *"We've saved 88% reduction in setup time, 93% reduction in removal/disassembly time and 30% reduction in total time on the job. And that's just the easily measured stuff."*

In conjunction with the NSRP story Lundquist was able to visit the Marinette Marine, which has been on a fast-track growth plan in conjunction with its successful bid in the Littoral Combat Ship program, among others. According to Scott A. Wellens, the company is doubling the size of its physical plan in just a few short years.

These are just a sampling of ship construction companies on the move. The historic $33B Canadian Navy ship construction contract has both Irving & Seaspan investing heavily in infrastructure, equipment and people; Vigor Industrial on the West Coast has been a major player in the consolidation of shipbuilding power, is a major player in the burgeoning Alaska market and is set to double its size in the coming five years; and India's ABG Shipyard — the largest private shipyard in India — under the guidance of Maj. Arun Phatak is expanding, too, preparing to open a new shipyard in Calcutta, he reports to our Joseph Fonseca in Mumbai.

Read about, and better yet, report back to us on your experiences in the current market, for coverage in our pages.

Gregory R. Trauthwein, Editor & Associate Publisher
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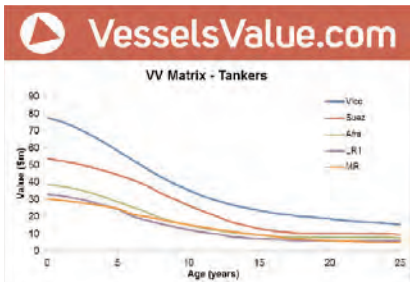

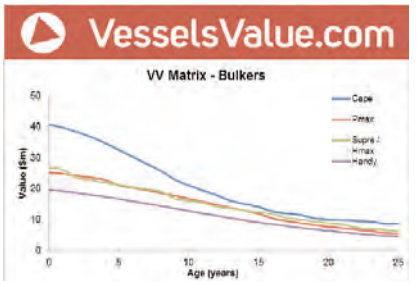

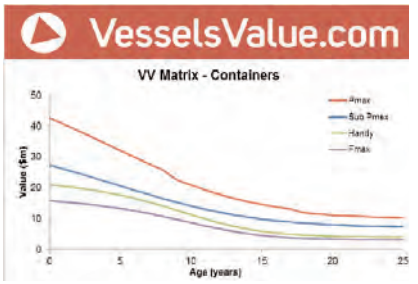

Fendercare's Rowlands Carries the Olympic Torch

On Wednesday July 4, Paul Rowlands, Marketing Executive for Fendercare Marine was given the honor of being an official Olympic Torchbearer and carrying the flame through Fakenham, Norfolk. Paul was nominated to carry the torch in recognition of his fundraising efforts, following the death of his daughter, Alice at just 15 days old in 2007. Alice was born six weeks early and with a rare liver condition, neonatal hemochromatosis, at the Norfolk and Norwich University Hospital in September 2007. After just five days she was moved to King's College Hospital in London where she died. After her death, Paul, his wife Miranda and son Sam set up the Alice Rowlands Memorial Society (ARMS) to raise money for the Ronald McDonald House Charities (RMHC), which provides accommodation for families whose loved ones are in hospital miles from home. To date the family has raised almost £50,000 for RMHC through their website

www.justgiving.com/teamrowlands

The (flash) Mob Rules

Massimo Bernardo, Chairman of Cruise Venice Committee: "Our intention was not "to give a trial of strength" against those who intend to close the harbour to large cruise ships. Rather we wanted to send an urgent call to Venice as a whole. It is necessary to understand the importance of supporting over 3,000 jobs, the income of hundreds of households, but above all the cultural interest which Venice is able to raise: in Venice, a cruise begins precisely with a visit to the city itself.
A flashmob to support Venice cruise industry. More than 600 people responded.

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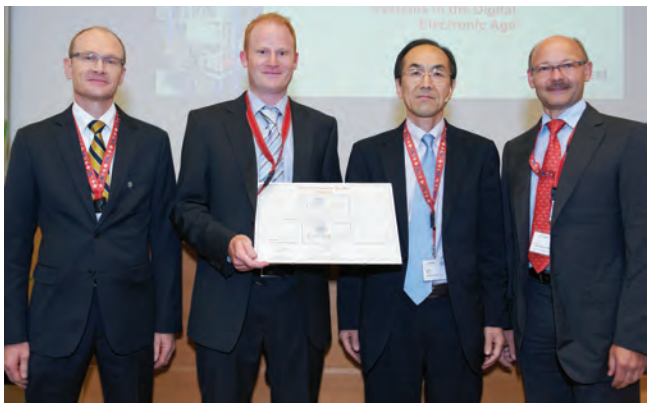

The Award Winner: A. Weber, Kistler.

Presenter MC Meier, MAN Germany.

As the marine industry professes the need to groom the next generation of top level technical talent, organizations such as CIMAC are leading the way.

The third staging of the CIMAC CASCADES seminar for younger engineers and students took place at the ETH Swiss Institute of Technology in Zürich, Switzerland earlier this summer. Organized by the CIMAC National Member Association (NMA) in Switzerland, the Division Combustion Engines of the Swiss Mechanical and Electrical Industries (Swissmem), the event was considered a considerable success by all attendees. In what may become the standard framework for a CASCADES event, the seminar itself was preceded by a visit to a member company's facility. Wärtsilä invited CIMAC delegates to view its Diesel Technology Center in Winterthur, site of research and development on large 2-stroke diesels. The viewing of the facility was complemented by an exhibit from a further CIMAC and Swissmem Member Company, ABB Turbo Systems based in Baden, Switzerland. Rounding off the first day was a boat trip with dinner on Lake Zürich.

In total more than 100 delegates and officials from 12 countries signed up to enjoy the program of lively and topical **CASCADES presentations around the central theme of the efficiency, low emissions and flexible performance made possible by state-of-the art electronic management on modern large engines.** Following welcome addresses from Yashiuro Itoh, CIMAC President and Oliver Riemenschneider, Chairman of the Swissmem Division Combustion Engines, Professor Konstantinos Boulouchos, head of the ETH's Aerothermochemistry and Combustion Systems Laboratory, gave an excellent Keynote Speech. His theme was the differences, but principally the unexpectedly strong similarities between large and small engines, and the consequent potential for universally valid R&D work.

As requested by the organizing committee, each of the speakers, after fulfilling their topic obligation, expounded on the challenges, motivations and rewards of undertaking vital R&D projects early in their careers. In an especially interesting aspect, speakers stressed the differences between theoretical work in an academic environment and "real world" experience where the yardstick of economic viability has to be applied to every finding and proposed engine modification. The decision regarding the Best Paper was difficult in the view of the high standard of all the presentations. The decision finally fell in favor of the paper *"Interfacing Thermodynamics and Controls – The Application of Combustion Pressure Sensors"* from local presenter Alex Weber, Project Engineer Pressure Sensors Engines at Kistler Instruments. He was rewarded with a Certificate and free entry to the 2013 CIMAC World Congress to be held in Shanghai, China, from May 13-16, 2013. CIMAC recognized Swissmem for organizng the 3rd CASCADES and all the presenters for their excellent contributions:

- Melanie Hubacher, ABB Turbo Systems, Switzerland
- Elias Bürli, Design Engineer Wärtsilä, Switzerland
- Markus-Christian Meier, Engineer, Thermodynamics Department MAN Diesel & Turbo, Germany
- Nora Viktoria Santa, Engineer, Thermodynamics and Fluid Systems Department MTU Friedrichshafen, Germany
- Marcos Gutierrez, Project Manager DUAP, Switzerland
- Kevin Whitley, Applications Engineer Woodward Governor, The Netherlands
- Alex Weber, Project Engineer, Pressure Sensors Engines, Kistler Instruments, Switzerland
- Koji Edo, Deputy Manager, Design Section, Marine Diesel Engine Mitsubishi Heavy Industries, Japan.

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LEFT: Triyards' COO Andrew Mak. Above, Triyards' Saigon shipyard.

Some of our readers may be unaware of the TRIYARDS brand. Can you give to us an executive overview of your facilities globally?

TRIYARDS offers a broad spectrum of engineering and fabrication services that are marketed under the "TRIYARDS" brand. The company operates out of its two yards in Vietnam's Ho Chi Minh City (TRIYARDS SSY) and Vung Tau (TRIYARDS SOFEL), as well as another in Houston, Texas, USA (TRIYARDS Houston). TRIYARDS SOFEL, the vessel construction yard, was established along Vietnam's Dinh River at Dong Xuyen Industrial Park in 2009. TRIYARDS SSY is involved mainly in carrying out medium to heavy steel fabrication work as well as providing equipment manufacturing services to a wide range of industries. TRIYARDS Houston produces equipment such as cranes, A-frames and winches, which can be installed on the self-elevating units and offshore support and construction vessels fabricated in Vietnam.

By Greg Trauthwein, editor

While you are geographically diverse, what do you count as the core strength of the TRIYARDS brand?

Mak We have several key competitive strengths that position us to take advantage of opportunities we see in our industry. First, we ensure the quality of our products and achieve the engagement of our customers through our core values of Responsiveness, Innovation and Excellence. Second, we have a leading market position in Southeast Asia for the construction of selfelevating, self-propelled units and have established a significant track record, having delivered six self-elevating units over the past four years, with an additional two newly designed self-elevating units being built for use in deeper waters to be delivered by 2014. As the demand for self-elevating, self-propelled accommodation and construction units continues to grow globally following the increase in offshore construction activity and the aging of offshore infrastructure, our strategic focus on the construction and fabrication of such units will continue to be one of our key strengths. Third, our yards in Vietnam possess strategic advantages. The yards are within a major shipbuilding cluster, strategically-located along the South China Sea. The yards also have sheltered fabrication facilities to allow for year-round production in all weather conditions. The facilities benefit from a skilled labor force (including naval architects and engineers, who have significant production efficiency) and access to lower-cost labor. In addition, the local government is supportive of the shipbuilding industry.

Looking at the past 12 months (or future 12 months) please provide to us details on what you consider to be the two or three most important contracts?

Mak TRIYARDS has clinched a new $77m order for a specialized offshore unit, strengthening its position in the Southeast Asian offshore engineering and fabrication market. The contract also adds to TRIYARDS' fast growing order book. Jobs in hand include two self-elevating, mobile offshore units and the *Lewek Constellation* - an ice-class, deepwater multi-lay vessel with heavylift capability - which is among the most advanced construction and pipelay vessels globally in its class.

How is TRIYARDS investing in its yard to make it more efficient?

Mak Our strategic objective is to establish our Group as one of the leading self-elevating units and platforms, offshore support and construction vessels and offshore equipment fabrication yards in Vietnam and the whole of Southeast Asia. We plan to achieve our objective by expanding the Group's product range of self-elevating, self-propelled accommodation and construction units, offshore support and construction vessels. We are also looking to expand into new product categories and developing our own equipment product line and branding, and constantly strive to upgrade our fabrication capabilities.

What do you consider to be the top challenges of running an efficient, profitable industrial construction business today?

Mak The two top challenges of running an efficient, profitable industrial construction business today are keeping ahead with technology to ensure that products better meet the needs of the industry, and building an optimal organization with the right talent. With our emphasis on Responsiveness, Innovation and Excellence, TRIYARDS is at the forefront of innovation that responds to industry needs. **Our *Lewek Constellation* will be the crowning glory of TRIYARDS. It will be one of the most technologically-advanced construction vessels in the world when ready**, and will add to TRIYARDS' track record for delivering quality products. Recruiting and retaining talent is a global challenge. In order to ensure that TRIYARDS remains a competitive employer, we have structured systems of grooming all who come through our doors. One of the most essential roles I have is to ensure that our people are trained and prepared for a rewarding career with us. This will always be one of management's priorities. It is only with the right talent that any industrial construction business can thrive.

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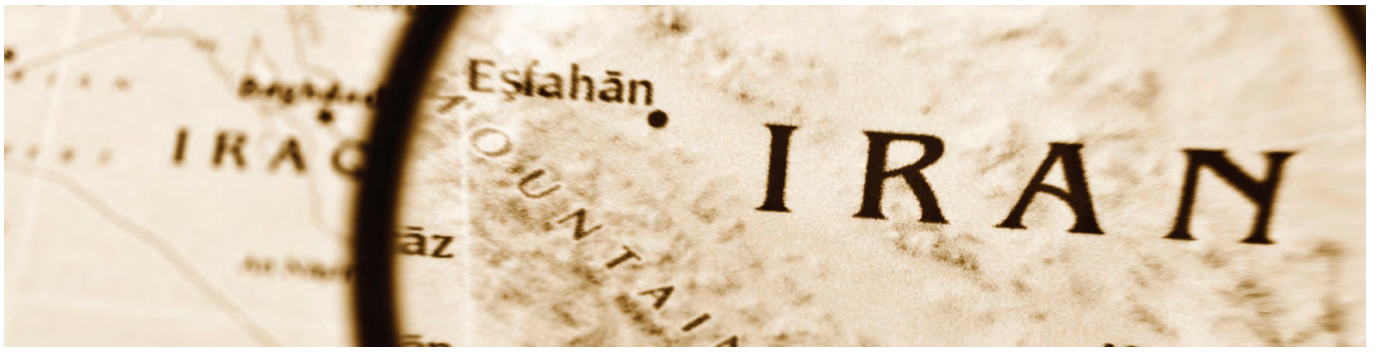

Economic sanctions, imposed by national and international governments for a variety of political reasons, can be snare traps for unsuspecting maritime enterprises. For the maritime industry, port calls in any nation against which sanctions have been imposed should be undertaken with caution. As this article illustrates, there are additional ways to run afoul of economic sanctions, but trading in a prohibited manner with a sanctioned nation is the most common.

From the maritime perspective, economic sanctions come in three flavors. First, there are sanctions that apply directly to the maritime industry. An example is the United States regulation that states: "No vessel that enters a port or place in Cuba to engage in the trade of goods or the purchase or provision of services, may enter a U.S. port for the purpose of loading or unloading freight for a period of 180 days from the date the vessel departed from a port or place in Cuba." You cannot get more direct than that.

The second flavor of economic sanctions is those that apply indirectly to the maritime industry. An example is the United Nations Security Council resolution that prohibits the export to Iran of specific materials for nuclear enrichment. Involvement in such prohibited exportations would subject the vessel and its owner to potential administrative or judicial action.

The third flavor of economic sanctions is those that would not in usual circumstances apply to the maritime industry. An example is the UK regulation freezing the funds of persons engaged in the North Korea nuclear weapons program. The freezing of funds, by itself (as opposed to the actual export to North Korea of nuclear material), does not directly impact the maritime industry.

The governments that tend to impose unique economic sanctions are relatively few. The United Nations Security Council (UNSC) imposes the broadest sanctions. These apply to all persons and entities world-wide. Actual enforcement is left up to individual nation states, but these sanctions tend to be quite effective in achieving their immediate goal (the long-term goal is often more elusive). Currently, there are UNSC sanctions applicable to the Democratic Republic of Congo; Cote D'Ivoire; the Democratic People's Republic of Korea (North Korea); Eritrea; Iran; Lebanon; Somalia; Sudan; and individuals and entities associated with the Taliban and/or Al-Qaida. Various nations have instituted sanctions intended to implement, in one form or another, sanctions adopted by the UNSC.

The European Union (EU) has adopted a number of economic sanctions. Most of these sanctions are targeted at human rights issues. A recent EU sanction, though, directly and indirectly impacts the maritime industry. On 23 January 2012, an EU Council Decision was promulgated that, among other things, prohibits (effective 1 July 2012) the import, purchase, or transport of Iranian crude oil and petroleum products by any person or entity subject to EU jurisdiction. This is a wide-ranging sanction that applies not only to the carriage of Iranian crude oil and petroleum products as cargo, but to the purchase of such items as bunkers derived from Iranian crude oil. Various bunker suppliers world-wide have been endeavoring to establish protocols to ensure that their bunkers are not associated with Iran. Ship owners and operators should institute procedures to avoid purchasing bunkers in situations where the source of the petroleum is questionable in this respect.

Australia has adopted various autonomous (or unilateral) economic sanctions. Many of these sanctions are similar to UNSC sanctions. Possibly the most unique Australian autonomous sanction prohibits the supply, sale, or transfer to Fiji of arms and related material.

Japan has various restrictions related primarily to end-use controls on militarily sensitive goods and technologies. An export license is required for exportation of such goods and technologies and will not be granted where the end user is on the prohibited list.

The United Kingdom (UK) has imposed economic sanctions that mostly control the export of arms and certain dual-use items. Financial sanctions also apply to transactions with terrorist organizations such as Al-Qaida.

The United States has by far the most extensive unilateral sanctions programs. Countries that are subject to US economic sanctions include: Belarus; Burma; Cote d'Ivoire; Cuba; the Democratic Republic of the Congo; Iran; Lebanon; North Korea; Somalia; Sudan; Syria; Yemen; and Zimbabwe. In addition, there are sanction programs related to counter narcotics trafficking; counter terrorism; non-proliferation of nuclear material; the rough diamond trade; and transnational criminal organizations. Virtually all trade with North Korea or Iran by persons subject to the jurisdiction of the United States is prohibited. Most trade with Cuba is also prohibited. Imports into the US of Burma (Myanmar) origin goods is largely prohibited. Most trade with the Government of Syria or anyone involved with the Government of Syria is prohibited. US persons are prohibited from engaging in any transactions or activities related to the petroleum or petrochemical industries of Sudan without prior US authorization.

One less known way to run afoul of US sanctions is to deal with a "blocked vessel". A blocked vessel is a vessel that is owned or controlled by a nation, entity, or person that is itself subject to sanction. Persons subject to US jurisdiction should avoid buying, chartering, booking cargo on, or otherwise dealing with blocked vessels. There is a list of blocked vessels, but it is not well-publicized and is subject to change without prior notice.

One of the problems regarding the sanctions programs is that there is often no advance notice of implementation. One day a particular activity or trade is authorized – the next day that activity or trade is subject to a sanction. Governments imposing the sanctions invariably do a poor job of announcing and explaining the sanctions. This is not to say that they don't make the information public, but they often issue obscure news releases and post the information electronically on websites that are frequented only by a select group of persons. Thus, unless a particular sanction is wide-ranging, it may be an extended period before the information is well-known and understood by the maritime industry and other affected groups. If compliance (rather than punishment) is the goal of these governments, it behooves them to do a better job of disseminating useful information concerning those sanctions to all who might be affected thereby.

Members of the maritime industry must also do their part. They must work to follow developments related to economic sanctions. They also must adopt and implement programs to reduce the risk of non-compliance with applicable sanctions. Having a reasonable sanctions compliance program will go a long way to convincing an enforcement agency that any non-compliant event was truly accidental as opposed to negligent or intentional.

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LNG Import & Export

Growth to be Driven by Activity in the Pacific Basin

Douglas-Westwood's new LNG Market report examines new prospects for liquefaction & regasification (import) terminals and LNG carriers, looks at the technology underlying the LNG business and presents market forecasts for activity in the sector over the 2012-2016 period.

The LNG carrier Amali was delivered Daewoo Shipbuilding & Marine Engineering Co. Ltd. (DSME) to BGC of Brunei in August, 2011. (Photo courtesy DSME)

A Shift in Geographic Focus

During the 2006-2010 period much of the LNG export construction activity was focused on the Middle East, in particular Qatar. The next five years will see a shift in regional focus to Asia and Australasia, where there are a number of terminals planned or under construction. Australia will dominate Australasian expenditure during this period; investing around $60bn. Papua New Guinea will also see development as the country moves towards its first LNG terminal in 2014.

Australasia

Australia has three operational LNG facilities – North West Shelf, Darwin LNG and Pluto, offering a combined export capacity of 24 mmtpa. There has been discussion around the expansion of the Darwin and Pluto projects; however, this will be dependent on whether substantial gas discoveries are made, and therefore is not expected within the forecast period.

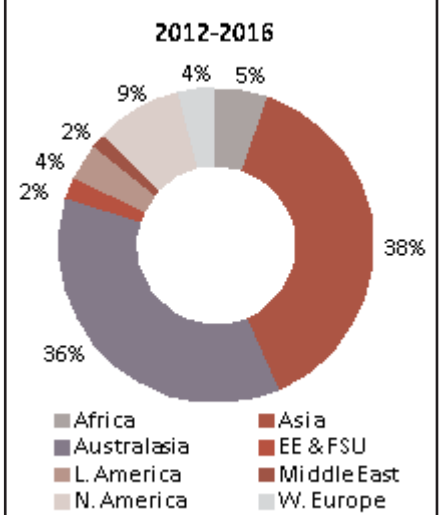
The nearby Asian consumer markets offer the highest gas prices of any region, with an average price of $15 per million BTU. This, coupled with large coal-bed methane (CBM) reserves has led to considerable investment in Australian export infrastructure. There are currently seven facilities under construction in the country; these are expected onstream 2014-2017 and will provide an additional 49 mmtpa capacity. Notably, Australia can contribute a further 46% capacity with a number of potential projects to come onstream beyond the forecast period.

Australian projects can be split into three categories – onshore terminals that source their gas from offshore fields, CBM to LNG export projects and Floating LNG (FLNG).

A potential downside to unconventional gas as a key feedstock is that CBM has never been liquefied into LNG on a scale as large as the one proposed. Issues with production such as cost, application or practicality may reduce the level of anticipated supply.

LNG Market Forecast 2012-2016

Global LNG Capital Expenditure by Region 2012-2016



Source: Douglas-Westwood, World

FLNG

The key drivers of the floating liquefaction sector are the desire to monetise stranded offshore gas fields and the relative high costs of an onshore liquefaction terminal. A modular design allows the FLNG vessel to be built in lower cost environments then towed to location. Positioning the liquefaction facility on field reduces the requirements for costly upstream facilities and long pipelines to shore which would be required for an onshore development.

Australasia was the first region in the world with an approved FLNG liquefaction project – Shell's 3.6 mmtpa Prelude floater which is expected to be onstream in 2017.

Offshore gas fields and deep subsea trenches such as the Timor Sea Trench which render pipelines impractical make this region a key focus area for FLNG project developers. Other FLNG prospects in this region include GDF Suez/Santos' Bonaparte development; PTT's plans to monetize its Cash and Maple fields and Woodside's Sunrise project.

Papua New Guinea

ExxonMobil will invest $4.5bn to bring the country's first liquefaction plant onstream within the 2012-2016 period. This facility has generated discussion around a number of other projects amongst Operators; however topographical and security related factors may potentially limit their progression due to the associated difficulties and costs. Offshore liquefaction has been suggested as a possible alternative solution to this.

Asia

• China

China is looking to increase gas imports to sustain growing energy demand, as well as an alternative to coal in response to global pressure to reduce emissions and concerns over coal dependence and supply. Furthermore, the continued rise in the price of crude has significantly increased demand for LNG as a suitable substitute for meeting the country's energy needs. China currently has six projects under construction; these include the first phases of the Zhuhai and Tangshan projects. China's reward of LNG expansion projects and new developments will provide an additional 18 mmtpa in import capacity.

• Japan

Japan will see eight new LNG import terminals come onstream between 2012-2016 as the country seeks to cover the energy deficit following the shutdown of its nuclear power stations; the last of which was powered down in May 2012. As a result, the country has imported 27% more LNG when compared with May 2011. There are currently five new developments and a storage tank project due onstream between 2012 and 2016. This, coupled with the Yoshinoura terminal, which came onstream earlier this year,

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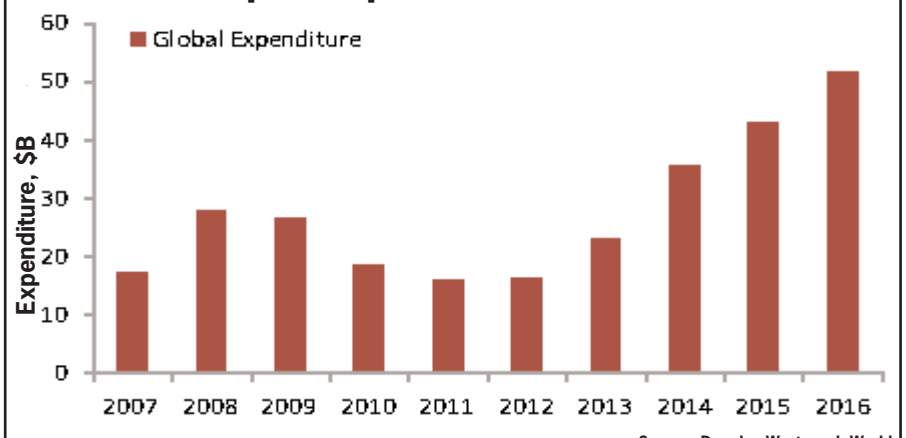
LNG Market Summary

Global LNG Capital Expenditure 2007-2016



Source: Douglas-Westwood, World

Australian Projects by Date Onstream (2012-2020)

Name	Operator	Type	Capacity (mmtpa)
Pluto LNG	Woodside	Offshore to Shore	4.3
Greater Gorgon LNG	Chevron	Offshore to Shore	15
Queensland Curtis LNG	BG Group	CBM	8.5
GLNG	Santos	CBM	7.8
APLNG	APLNG	CBM	9
Wheatstone LNG	Chevron	Offshore to Shore	8.9
Ichthys	Inpex	Offshore to Shore	8.4
Prelude FLNG	Shell	FLNG	3.6
Browse LNG	Woodside	Offshore to Shore	12
Bonaparte FLNG	GDF Suez	FLNG	2.5
Cash Maple FLNG	PTT LNG	FLNG	2
Arrow LNG	Arrow Energy	CBM	8
Gladstone LNG	LNG Limited	CBM	1.5

Source: Douglas-Westwood, World LNG Market Forecast 2012-2016

will give Japan an additional import capacity of 13 mmtpa. This excludes Tokyo Gas's Hitachi project which may come onstream at the end of the five year forecast, adding around 3 mmtpa in import capacity.

Indonesia & Malaysia

Indonesia is one of the world's largest LNG exporters and has three operational liquefaction plants – Arun, Bontang and Tangguh. The biggest challenge that the country faces is whether it is able to balance long-term declining natural gas production with a growing consumption in its major cities.

Since becoming an exporter in 1983, Malaysia has increased production to become the largest LNG exporter in the Pacific region. However, similar to demand trends in Indonesia, Malaysia has experienced rising gas consumption in its urban areas, leading it to seek LNG imports.

Russia

Russia is currently the only LNG exporter in Eastern Europe & the FSU, exporting from the Sakhalin II facility. It is currently looking to exploit LNG as a means of supplying gas to Asia, and to reduce its dependency on European gas demand.

However, LNG transport from terminals slated for the North and North West areas of the country would be hampered by ice conditions, requiring the use of specialized vessels similar to those employed on the Sakhalin-II facility.

North America – USA

Recent developments in unconventional production such as shale gas will see a significant shift in the US as the country moves from an importer to an emergent player in the LNG export market. Gas prices in the US are currently less than $3 per million BTU; arguably these prices are unsustainable, falling below the cost of production. Furthermore, exposure to global markets will reduce excess supply and could drive up domestic prices.

The US is currently set to bring the Sabine Pass project in the Gulf Coast onstream at the end of 2016. The development involves the construction of production trains in existing import facilities, and will have a total export capacity of 8 mmtpa. The complete project will cost $3.9bn and is designed for further expansion with trains 3 & 4 due online between 2017 and 2018.

One potentially limiting factor for US exports is the stage of unconventional production. At present, the US is exploiting 'sweet spots'; however, as these diminish and the production moves into the next phase, there could be a significant rise in costs and decline rates of wells. This could potentially limit the long-term exporting aims of the US and Canada.

Overall, capital expenditure in the global LNG market is expected to grow to $169bn between 2012-2016. Asia will be the main driver in import terminal developments, and is forecast to invest $31bn during this period.

The global LNG business will see growth and recovery in a number of sectors. Expenditure on liquefaction facilities will exhibit the highest level growth in global expenditure over the forecast period, a large proportion of which will come from Australian developments. Furthermore, growing demand for import terminals will see regasification Capex increase to represent 20% of global expenditure. Following a sharp decline through 2010-2011, the LNG carrier market will begin to recover from 2012 onwards with Capex expected to be over $30bn.

The Author

Murray Dormer sits within Douglas-Westwood's Research team where his principal activities include quantitative analytics and macro-economic analysis, competitive analysis and supply chain mapping. He has a degree in Business Administration from the University of Kent.

The Report

World LNG Market Forecast 2012-2016 - the latest edition of The World LNG Market Report highlights LNG facilities' capital expenditure over the 2012-2016 period.

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Export Control Reform

In the Shipyard, will it Simplify Regulation of the Supply Chain?

Over the past year, the interagency effort to reform the U.S. export control regime has resulted in specific proposals to transfer regulatory oversight of various items and technology from the Department of State's Directorate of Defense Trade Controls (DDTC) to the Department of Commerce's Bureau of Industry and Security (BIS). This transfer of jurisdiction is intended to be accomplished by a restructuring of both the U.S. Munitions List (USML) and the Commerce Control List (CCL).

Under the current regime, exports of defense articles, defense services, and technical data listed on the USML are regulated by DDTC pursuant to the International Traffic in Arms Regulations (ITAR), while items and technology listed on the CCL are regulated by BIS under the Export Administration Regulations (EAR). Although the ultimate goal of export reform is to merge the two lists and create a single licensing and enforcement agency, the current proposals represent an interim step designed to relax controls on defense articles that the Administration believes no longer warrant control under the ITAR.

Of particular interest to the shipbuilding industry are the proposed amendments to USML Category VI ("Vessels of War") and Category 8 of the CCL ("Marine"). USML Category VI would be amended and restated in its entirety, and the ITAR definition of "Vessels of war and special naval equipment" subject to ITAR control would be narrowed. Amendments to USML Category XX ("Submersible Vessels, Oceanographic and Associated Equipment") also have been proposed (including transfer of submarines to this category). Simultaneously, Category 8 of the CCL would be expanded to include several new ECCNs (Export Control Classification Numbers) that would control articles previously controlled under USML Categories VI or XX.

One of the most vexing aspects of the current export control system is that all "specifically designed or modified components, parts, accessories, attachments, and associated equipment" for ITAR controlled vessels and related technical data and defense services are subject to ITAR control even if they are substantially similar to items and technology subject to the EAR that could be exported freely on an NLR (No License Required) basis. Under the current reform proposals, many such items will be transferred to the CCL and subject to somewhat more lenient export licensing requirements, but the new regulations will not completely eliminate design intent criteria.

In certain instances, jurisdiction or the level of control or both will turn on whether a vessel or other item is "specially designed" – a term that, unlike the current "specifically designed" terminology, which was not defined, would have a common definition under both the ITAR and the EAR. The most recent proposed definition of the new term is intended by the Administration to achieve a total of nine objectives and requires a sequential analysis of up to eight standards enumerated in the definition, which in turn is modified by six to nine explanatory notes, depending upon whether the EAR or ITAR version of the definition is being applied. While at first glance the structure of the definition may appear to belie at least one of the nine objectives (i.e., that the definition be easily understood and applied), application of the definition's "catch and release" formula in the definition will in fact draw some bright lines. Among other things, parts, components, accessories or attachments that were or are being developed for use in or with both USML and non-USML items, or that were or are being developed with no reasonable expectation of use for a particular application, as well as single unassembled parts that are of a type commonly used in multiple types of commodities not enumerated on either the USML or CCL will be excluded from ITAR controls.

The new Category VI will cover combatants, vessels that are armed or specifically designed to be used as a platform for munitions systems, those which incorporate "mission systems" and certain other enumerated vessels, including those with nuclear propulsion systems and developmental vessels developed under contracts with the Department of Defense. Other vessels of war "specially designed" for a military use and not enumerated on the USML will be controlled under the EAR (e.g., certain auxiliaries and unarmored and unarmed patrol craft with mounts or hard points for firearms of .50 caliber or less). As reformed, Category VI likewise will cover only a positive list of specific types of vessel and naval equipment components, parts, accessories and attachments that will continue to warrant ITAR control (such as certain hulls or superstructures, propulsion systems, and shipborne auxiliary and active protection systems). On the other hand, many specially designed systems will transfer to the CCL, including ship service hydraulic and pneumatic systems, internal communications systems, potable water storage systems, and so on). A comprehensive recitation of vessels, components and related technology that will remain subject to the ITAR or be shifted to the CCL is beyond the scope of this article, but both shipyards and their suppliers should familiarize themselves with the proposed rules to determine how their products and those of their customers and suppliers will be affected. Implementation of the new rules

will require many shipyard suppliers whose operations currently are subject exclusively to the ITAR to familiarize themselves with the EAR in order to ensure export compliance under the new regime. However, for most suppliers, ITAR compliance will remain a priority, insofar as they will continue to require access to technical data directly related to ITAR controlled vessels and components even if their own products become subject to CCL controls. Therefore, the end result of export reform will be that many in the shipyard supply chain will be forced to master both the ITAR and EAR control regimes. Furthermore, a steep learning curve will be imposed even for those whose operations already are subject to both the ITAR and the EAR, given that the reform proposals contemplate numerous amendments to the EAR license exceptions in order to avoid the incongruous result of tighter controls under the EAR for items previously subject to more permissive ITAR exemptions in certain circumstances.

Shifting of items to the EAR will not, however, completely eliminate current ITAR restrictions on exports and re-exports to arms embargoed countries (including China) or Congressional notification requirements.

In order to avoid the additional complexities that an immediate effective date would impose on the defense industry, the Administration has proposed a phased implementation plan. Licenses and agreements issued prior to publication of the final rule for each USML category will remain valid for up to two years from the effective date. Other transitional provisions address licenses in process at the time of publication and through the effective date of the final rule. The transition plan also contemplates interim registration fee relief for those who will no longer be required to register with DDTC as a result of the new rules – although, as noted above, as a practical matter registration will still be required in order to employ foreign nationals or engage in offshore procurement where access to ITAR controlled technical data related to the vessel is involved, even if the registrant's own products have transitioned to the CCL. Registrants will, however, benefit from lower registration fees as licensing volume declines due to transfer of previously licensed exports to the CCL. Additional proposed rules are contemplated, but while the publication of proposed rules continues, the Administration hopes to begin phasing in transfers from the USML to the CCL. The naval vessel and marine categories will not, however, be the first categories to be revised, so it will be next year at the earliest before a more sensible – if not simpler – reformed export control approach is implemented in the nation's shipyards.

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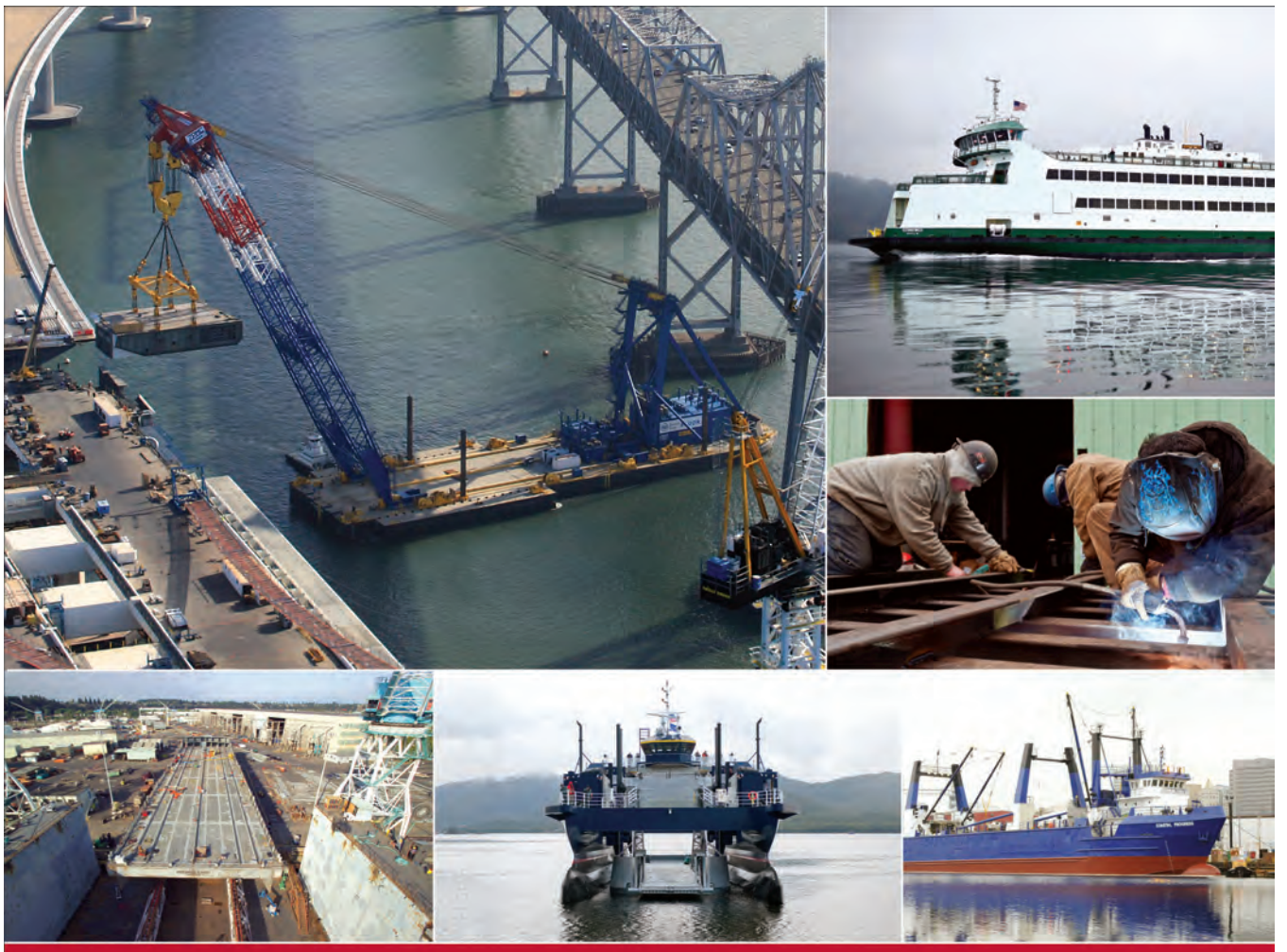
Notes

This article reflects developments through July 27, 2012, the date of submission for publication. The views expressed herein are those of the author, do not necessarily reflect the opinion of the firm or other members of the firm, and should not be construed as legal advice or opinion or a substitute for the advice of counsel.

1 The author's overview of the export reform process can be found in the May 2011 edition of *Maritime Reporter* ("U.S. Export Control Reform: What It Means for Shipyards").

The author's analysis of the challenges faced by shipyards and their suppliers under the current system can be found in the April 2009 edition of *Maritime Reporter* ("Complying With U.S. Export Controls").



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"Maritime … or Not?"

The fine line between what constitutes a Maritime Contract & what does not

How is it that a contract to build or sell a ship is not a maritime contract whereas a contract to repair or mortgage a ship is a maritime contract? The answer goes back at least as far as 1857, when the United States Supreme Court decided **People's Ferry Company of Boston v. Beers**

Here is a multiple choice question: which of the following contracts is considered to be a "maritime contract" under U.S. law?

(a) a shipbuilding contract
(b) a ship-sale contract
(c) a ship-repair contract, and/or
(d) a ship mortgage

You will be forgiven if you simply tried to apply logic in answering this question and guessed that all four are maritime contracts. If you know your maritime law, however, then you should have answered that "c" and "d" are maritime contracts whereas "a" and "b" are not. Or, at least, that is the current state of the law.

Why might this matter?

In the first place, it may impact whether a claim can be brought in the federal courts or whether it must be asserted in state court. Federal courts possess only "limited" jurisdiction, meaning they can only hear cases that are within the scope of their constitutionally defined jurisdiction. If the dispute involves a maritime contract, a claim may be brought in the federal court under its "admiralty and maritime" jurisdiction. If it is a non-maritime contract, however, then it may only be brought in the federal court if the "diversity" rules are met, meaning that the claim must exceed a certain amount and be between citizens of different states. Importantly, claims between non-U.S. citizens do not meet the diversity requirement, whereas the court's admiralty jurisdiction has no similar "citizenship" limitations.

A second important issue is that the maritime law has relatively permissive rules allowing for pre-judgment attachment of assets in support of a "maritime claim," which are not available to claimants on non-maritime claims. This right is principally defined by Rule B of the Federal Rules of Civil Procedure, Supplemental Rules for Admiralty or Maritime Claims. Under that rule, a party may obtain an attachment of the defendant's property located in a district where the defendant is not otherwise "found" merely by asserting a prima facie maritime claim. This is a low pleading threshold, and Rule B can be a very powerful tool—particularly useful in an industry where the business is international and assets are transitory.

A third and related issue is whether maritime liens can arise out of a breach of a contract. Such liens can create powerful priority and enforcement rights both as against the vessel owner and third-party claimants who may be seeking to enforce their own claims against the same assets. No maritime lien can arise from the breach of a non-maritime contract.

How did this happen?

How is it that a contract to build or sell a ship is not a maritime contract whereas a contract to repair or mortgage a ship is a maritime contract? The answer goes back at least as far as 1857, when the United States Supreme Court decided People's Ferry Company of Boston v. Beers and said this about a shipbuilding contract: "So far from the contract being purely maritime, and touching the rights and duties appertaining to navigation, (on the ocean or elsewhere,) it was a contract made on land, to be performed on land." In 1918, the Court of Appeals for the Second Circuit (encompassing New York, Connecticut, and Vermont) held in The ADA that a ship sale contract was not a maritime contract. The court cited no authority for the rule nor articulated any rational for the holding; nevertheless, the holding stuck and has been widely followed, in the Second Circuit and elsewhere.

For whatever their original merit, commentators have long criticized these rulings as defying logic and as being inconsistent with international practice. As the eminent admiralty author Charles L. Black, Jr. wrote in Admiralty Jurisdiction: Critique and Suggestions, regarding the determination of what contracts are maritime: "The attempt to project some 'principle' is best left alone. There is about as much 'principle' as there is in a list of irregular verbs." Others have described the analysis as "inconsistent even in its artificiality," as "produc[ing] bizarre results, outcomes that warp the fabric of admiralty jurisdiction," or, more to the point, as simply "unfortunate."

More recent decisions from the Supreme Court have raised some hope among scholars that these rulings are susceptible to being overruled. In Exxon Corp v. Central Gulf Lines, Inc., the Supreme Court reversed a longstanding bright line rule that agency contracts could never be maritime contracts. That court ruled that "the 'nature and subject-matter' of the contract at issue should be the crucial consideration in assessing admiralty jurisdiction." And in Norfolk Southern Railway Co. v. James N. Kirby, Pty. Ltd., the Supreme Court held that a multi-modal bill of lading involving ocean carriage was a maritime contract governed by the Carriage of Goods by Sea Act even as to damage occurring on the over-land legs of the voyage. According to the Kirby court, the inquiry was whether the contract had reference to maritime service or maritime transaction—in sum, was it sufficiently "salty" in nature to involve the court's maritime jurisdiction.

In 2008, a United States District judge in New York felt sufficiently emboldened by these rulings to conclude that Exxon and Kirby "support the demise of the holding in The ADA" and ruled that a ship sale contract was a maritime contract and, consequently, that a claim thereunder would support a maritime pre-judgment attachment. That court wrote "a contract for the purchase of a launched ship … has a distinctly 'salty flavor,' for the sole purpose of a ship is to sail" and "[maritime] commerce requires a vessel, sailors, and ship fuel, and there is simply no justification for including contracts for the latter two requirements in admiralty jurisdiction while excluding contracts for the former."

Other judges in the Southern District of New York declined to follow the new course charted by Kalafrana, however, finding instead that nothing in Kirby and Exxon supported the ruling that The ADA had been reversed sub silentio. And in December 2009, in Primera Maritime Ltd. v. Comet Fin. Inc., the Second Circuit thwarted a similar assault on the ship-construction contract rule, though perhaps not without providing a glimmer of hope for those aspiring someday to change the rule: "[Plaintiff] is correct to point out that the conceptual approach taken in [Exxon and Kirby] suggests that modern principles disfavor per se admiralty rules based on the site of the contract's formation or performance." Still, the Second Circuit concluded that its hands were tied: "Until the Supreme Court declares that contracts for ship construction are maritime in nature, disputes arising from such contract will not give rise to the federal courts' admiralty jurisdiction."

Conclusion

It is probably just a matter of time before the right case gets before the Supreme Court that will allow it to reassess these jurisdictional questions in light of modern developments. And one might surmise that if the Supreme Court is willing to take a critical look at its earlier rulings, it would be hard pressed to defend them in light of its rulings in Exxon and Kirby and in light of the widespread criticism of the current doctrine. Of course, as we learned just recently with regard to its ruling on the heath care legislation, the Supreme Court is full of surprises. So, we will have to wait and see what happens.

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Vibration Mitigation

Whole body vibration affects crew & passengers on fast craft

(Photo courtesy FRC International)

The professional maritime sector recognizes the need to reduce the effects of Whole Body Vibration (WBV) but this is not a straightforward process for those operating planing craft. These vessels can expose crews and passengers to high levels of repeated shock and vibration which has been shown to increase the risk of injury.

In flat sea conditions there is vibration from the engine, gearbox and shaft but the crew and passengers are not exposed to harmful vibration. All fast boat operators know that waves change everything.

Waves can be wind-blown and build up in a few minutes but WBV exposure on planing craft is usually caused by continuous 'hammering' from short steep seas or wind against tide conditions. Repeated shock on planing craft is usually caused by random 'hits' from head sea impacts, crossing seas or overtaking following seas.

Professional maritime organizations use planing craft to perform a wide range of operations. The tasks performed by personnel after a fast boat transit are often physical and include ship boarding, law enforcement, sea rescue and more recently wind farm maintenance. The consistent objective is that boat crews are not injured and passengers arrive safely at their destination ready to perform a task.

Millions of workers around the world are exposed to mechanical vibration transmitted to the whole body through industrial seating, flooring and decks. WBV can affect back, neck, knees and joints. Fast boats are a challenging workplace and the UK MCA Marine Guidance Note, MGN 353 titled 'Control of Vibration at Work' states that, 'Whole body vibration may be most apparent in smaller, fast craft such as fast rescue boats, RIBs or work boats, particularly when operating in choppy conditions.'

For example anyone onboard a pilot cutter at planing speed needs to be aware of vibration at sea. Although the onboard tasks are not physical for pilots there is the ladder climb. A pilot may have difficulty climbing and will be less effective onboard ship when suffering from back pain or a recurring injury aggravated by the cutter transit in rough conditions. Cognitive ability for navigation and decision making also needs to be considered after any open sea transit.

Fast boats are a challenging workplace and the UK MCA Marine Guidance Note, MGN 353 titled 'Control of Vibration at Work' states that, 'Whole body vibration may be most apparent in smaller, fast craft such as fast rescue boats, RIBs or work boats, particularly when operating in choppy conditions.'

However, the need for awareness of WBV issues is not limited to small vessels. According to Commander Chris Pratt, MBE AFNI, of UK Border Agency, 'WBV risks can apply to many ship types and in many work areas. For these reasons, a developed professional awareness of these issues applies throughout the maritime environment. Big ship people cannot be ruled out as many large ship types now carry fast rescue craft. If anything, these people should be primary targets as they use these boats less often than the main working groups do. For these reasons, they are probably far less aware of the issues and risks.'

To highlight these issues FRC International hosted the WBV & H-SURV Seminars at the RNLI Lifeboat College, Poole UK, on 10th & 11th July 2012. These seminars attracted over 50 delegates from maritime sectors including military, SAR, government agencies, port authorities, police, and commercial operators. Boat builders, specialist equipment manufacturers and naval architects also attended. The WBV seminar is internationally recognized by The Nautical Institute and Captain Harry Gale, Technical Director of the Institute, was in attendance for both days.

FRC Director John Haynes AFNI, who introduced the seminars said, "stopping fast craft operations is not a realistic option, but making them safer is essential. The internationally recognized FRC training and qualification structure supports competence based interoperability between both individuals and professional maritime organizations. The objective is that a genuine best practice approach helps crews to remain safe and healthy. Besides prolonging the career of boat operators this approach leads to a more effective organization."

Dr Trevor Dobbins led the technical presentations by assessing the current situation and how the FRC WBV & H-SURV Seminar can support the fast craft industry worldwide. Throughout the two day seminar Dr Dobbins included various papers co-authored with experts from around the world. New tools developed to assist the professional sector include the HSC Motion Analysis Guide and a simple 4x4 Risk Assessment. He had recently presented new concepts to the US

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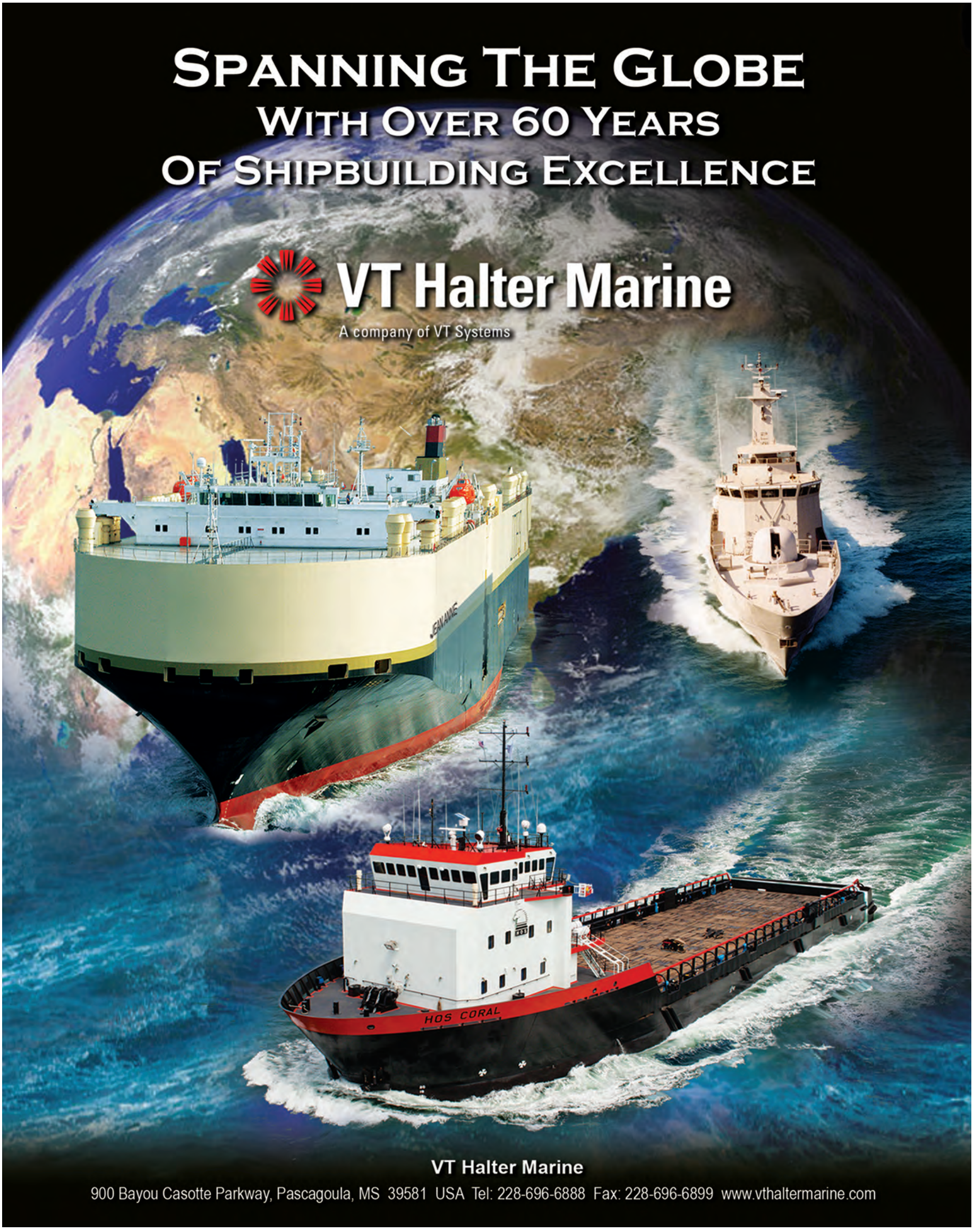

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Navy, at the HiPer Craft 2012 conference in Norfolk VA, and passed on what are now becoming global views on both whole body vibration and health surveillance. This evolving knowledge and genuine best practice underpinned the two day program.

Specialist manufacturers gained a lot of new knowledge from the event. David Price, from Tampa Yacht Manufacturing, said, “This is probably the best seminar on any subject I have ever been to. It has been open and very informative.” End user organizations attending the WBV and H-SURV Seminars were keen to know what steps others are taking to address the issues of WBV and health surveillance. Alan Cartwright, Head of Marine Engineering for the Port of London Authority, said, “What I found most useful about the WBV seminar was discussion with practitioners and providers, also the presentation, from Dr Tom Gunston, about vibration measurement.”

Dr Tom Gunston delivered a detailed presentation on the technical aspects of RS (Repeated Shock) and WBV (Whole Body Vibration) analysis. His in depth understanding of ISO and international measuring methods and the resulting metrics highlighted glaring errors in certain international organizations mathematics and measuring methods. There are ongoing debates from academics around the world regarding the use of rms and VDV for the assessment of vibration exposure to people on boats. Impact Count Index and the USN Ride Severity Index were discussed along with the development of ISO 2631 Part5 (Sed-8) update.

WBV is a major consideration in the U.S. for military boat builders. Naval Surface Warfare Command will assess all future craft for operator exposure to shock levels that could cause musculoskeletal, boat-related injuries. The latest combatant craft requirements refer to the standard Sed-8, which relates to a daily exposure dose over eight hours.

The Human-Boat-Interface (HBI) is the technical name for how crews and passengers come into contact with the boat. Certain designs of suspension seating have feet off the deck, but generally there are three points of contact. Hands are in contact through a handhold, or for the helmsman through the wheel and controls. Feet are in contact with the boat through the deck. The backside is in contact with the boat through the seat base. Depending on the seat height and design, it may be carrying most of a person’s body weight. Fast boat operators need to consider, what happens if the seat or suspension mechanism is damaged or broken.

(Photo courtesy FRC International)

It is now possible to measure vibration on boats by using accelerometers and data loggers. But how much vibration is too much vibration for the human body? That is a question that academics around the world have considered at length. The UK Health and Safety Executive (HSE) consider Exposure Action Value (EAV) and Exposure Limit Value (ELV) to be the most relevant. The Exposure Action Value is a daily amount of vibration exposure above which action needs to be taken to control exposure. The Exposure Limit Value is the maximum amount of vibration a person may be exposed to on any single day. In simple terms the greater the exposure level, the greater the risk and the more action will need to be taken to reduce the risk.

The WBV & H-SURV seminars delivered informative presentations that were enhanced by audience participation. On day one John Haynes used a SWOT analysis approach to discuss UK MCA Mariners Guidance Notes. These MGNs need to be read by operators to assist in understanding EAV (Exposure Action Value) and ELV (Exposure Limit Value) as part of compliance with the EC Vibration Directive, July 2010. The discussion showed that the numbers are difficult to comply with and many attendees were eager to know more about the metrics.

The seminar introduced various innovative concepts. Development of the suspended deck was discussed as a novel means of delivering shock mitigation to the entire deck area. This could be used to protect personnel, console, controls, sensitive equipment and payload. Integration into an existing boat design has been proven and trials are underway. James Glover, managing director of DYENA, discussed the various hardware options that are currently available for recording vibration and acceleration. He introduced a small waterproof ‘black box’ with built in GPS that is designed as a vibration exposure recorder on boats.

To close day two of the seminar FRC Training Director Jon Hill AFNI referred to his military experience operating fast boats and said, ‘WBV is a global problem and the injury statistics are growing. WBV awareness is relevant to all sectors affected by this major health and safety issue.’ FRC International have developed specialist WBV Awareness Courses, recognized by The Nautical Institute, with the objective of understanding that WBV exposure affects all planing craft. These short courses define and benchmark best practice and provide a consistent approach to WBV compliance for the professional maritime sector.

For further information:
FRC International WBV Awareness Courses
www.frc-wbv.com
EC Vibration Directive & Mariners Guidance Notes
www.vibrationdirective.com

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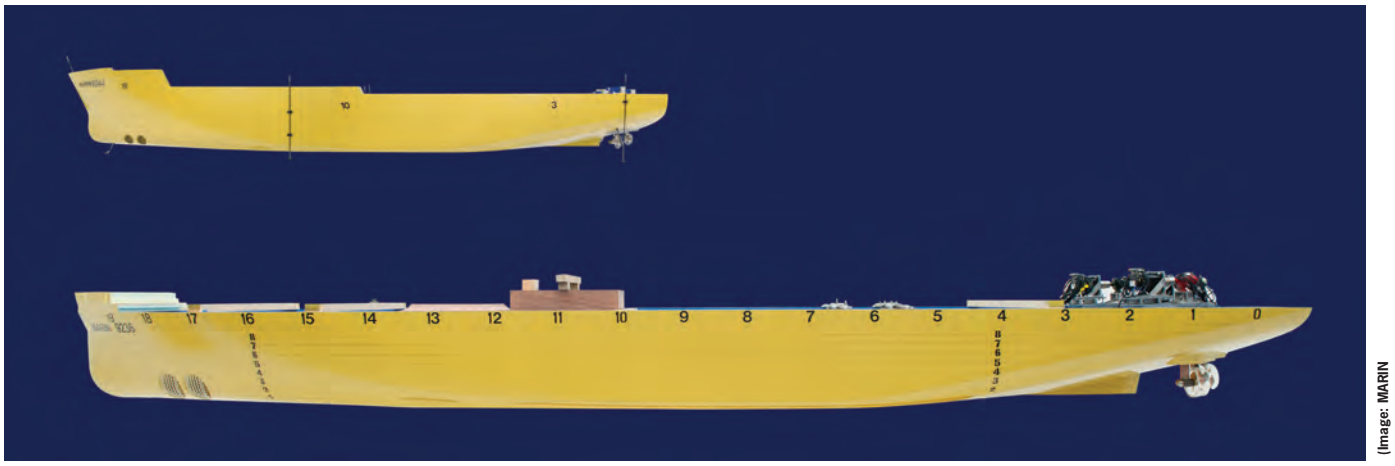

(Image: MARIN

Model tests for the evaluation of ship designs should not only be performed in calm water but also in waves. MARIN's new Depressurized Wave Basin (DWB) helps unravel some of the mysteries of wave added resistance.

A ship is usually designed with a focus on its performance in calm water. However, operational conditions should be taken into account, including added resistance due to waves because it is an important factor in the economical performance of a ship.

The sustained speed in storm conditions should be investigated but also the power increase in typical service conditions. And with the trend for an increasing ship size, the latter becomes even more important. In addition, upcoming regulations such as EEDI require a very careful correction for the added resistance during speed trials.

Using large ship models in a 240x18x8 m towing tank can make the difference when trying to understand the secrets of wave added resistance. In the DWB a large ship model of a Very Large Container Ship of about 350 m for instance, can be tested at a model scale ratio of 1 to 30.

In our Seakeeping and Maneuvering Basin (SMB) the scale ratio typically doubles, which means that a 1.5 m wave for the ship would require a 2.5 cm wave in the SMB and a 5 cm wave in the DWB. This increase, in combination with increased measurement accuracy, improves the prediction of wave added resistance in typical service conditions.

A further benefit of the DWB is that only one large ship model is used to perform calm water resistance and propulsion tests, cavitation observations, hull pressure measurements and wave added resistance tests for mild to severe weather conditions. When well prepared, all the tests can be conducted within one week. A ship model can be chosen with large propeller models with a diameter of about 300mm, reducing significant scale effects on propeller blade cavitation and propeller thrust and torque. This provides a high level of accuracy when measuring for instance the wave added resistance. In this way MARIN expects to unveil some of the secrets of wave added resistance.

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Ready for the Worst

Taking Emergency Plans for a Dry Run

Most every company knows it should have a plan to deal with catastrophe. That's especially true for shipyards and vessel owners who often ply their trade in hurricane zones, where weather can rip apart a lifetime of work overnight, make confetti out of assets, and leave disarray in its wake.

Emergency plans can be simple or complex, depending on the needs of a specific business. There are a number of resources to help business owners create customized plans, including online templates, detailed guidelines and model documents. A company's insurance agent and carrier can also serve as useful resources for businesses trying to determine what should be in a plan, and how to best position themselves to recover quickly if disaster strikes.

A plan by itself, however, is not enough. A company that makes a plan and sticks it on a shelf has taken only the first step toward preparing for a catastrophe. Based on extensive experience cleaning up after natural disasters over many years, insurance carriers have noticed that some businesses bounce back quickly while others have a difficult time recovering. Those that survive most often are the ones that have gone beyond making a plan, taking extra precautions and thinking through worst-case scenarios.

A Plan Is Only As Good As Its Execution

The story of one shipyard's experience with Hurricane Katrina demonstrates why having a plan is not always enough. With the storm approaching, a designated crew followed the shipyard's emergency plan, taking two spud barges and a breasting barge deep into a marshy area away from the anticipated path of the hurricane.

Upon arrival at the designated spot, the crew realized it had not brought the proper lines to secure the breasting barge. With the storm approaching and the yard an hour and a half away, there was no time to do anything other than use the worn lines that were available. The spuds were dropped into place and the breasting barge was tied between the two spud barges.

Unfortunately, the winds were stronger than the lines. Perhaps even the emergency lines, set aside but forgotten, would not have been enough. The breasting barge broke free and was blown into an interstate freeway bridge more than a mile away, causing extensive damage and disrupting traffic.

Twenty days and almost $6 million later, the bridge was once again operational. However, that was not the only expense.

When the waters receded after Katrina died down, the barge was stranded in a shallow area until a canal could be dug to get it back to where it could be floated to the yard.

"For Want of a Nail" is an old proverb that spells out the chain of circumstances when a horseshoe nail comes loose, the horse falters, a man is thrown, a battle is lost and a kingdom falls. In this case, for want of a good line, a barge was lost, a bridge was disabled and a shipyard suffered.

Beyond an Emergency Plan

So what should a company do besides have an emergency plan in place? The following are four steps that can make a difference in how a company rides out a storm.

1 The Emergency Drill. At least once a year, the emergency plan should be removed from the shelf, dusted off and reviewed for its continuing suitability. In the time since the plan was made, a company may have added a different line of business, brought on new equipment to the site, or even have new people in place who have never seen the plan. By running a table-top exercise with current staff on a regular schedule, the company can familiarize everyone with the plan's content and determine if it still makes sense. The plan should also be incorporated as a topic into routine safety meetings and the orientation training for new hires. If a staff position has certain responsibilities in the plan, it is imperative that the person currently filling the job knows the duties in advance, so that any questions or issues can be addressed long before a storm hits.

2 The Right Stores. In addition to having an effective plan, a company should have the right equipment on hand to carry out the activities detailed in the plan. When a storm is approaching and everyone rushes to buy generators, ropes and plywood, shortages can develop. It is far better to know what is needed, buy it ahead of time and store it in a state of readiness. Particular attention should be paid to chains, lines and other equipment that face the wear and tear of daily use. Having new equipment, fresh and unused, stashed away in a designated locker that is to be accessed only in emergencies is a good way to ensure that the protections put in place will be at top strength.

3 Beyond the Zone. Effective emergency plans usually provide an updated list of suppliers, whether it is for manpower, fuel, equipment or water. These are often local vendors with whom the company is familiar or even those who are regularly relied on during normal business times. However, the plan should be reviewed with an eye to what happens if a disaster shuts down an entire city or region. The local vendors may have just as much trouble getting back into operational mode as the company depending on them. Instead, look farther afield – even several states away – and establish relationships in advance with alternative sources of supplies.

4 Manpower Solutions. One aspect of disaster recovery that sometimes catches companies by surprise is the lack of manpower available. This goes beyond the obvious need for employees to take care of their personal situations, such as property damage or family concerns, before they are able to focus on work. The aftermath of a storm often creates cleanup jobs with salaries that are higher than normal local labor rates. A shipyard that during the year relies on a regular crew of hourly contractors may find its pool drying up as these workers seek and take more lucrative assignments. To address this issue, a company may want to plan in advance for incentives (e.g., bonuses or temporary higher pay) or contractual language that will keep their regular workers on the job. They may also consider seeking out companies that specialize in placing temporary workers and incorporate those manpower sources into the emergency plan in advance.

A few calm hurricane seasons can lull shipyards and other marine operators into forgetting about the emergency plans on their shelves. But such plans can only serve their purpose if they are current and everyone is ready to carry out their assigned tasks. By working closely with their insurance agent and carrier, companies can learn about and implement best practices that will give their emergency plans a much better chance of helping them ride out whatever storm comes their way.

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Torque Marine IPS

Precise Maneuvering and 26% Fuel & CO2-Saving

Gearless, diesel-electrical Torque-Drive System proves safe and reduces operating costs

By Peter Pospeich, Germany

Led by calls to reduce emissions (CO2, NOx, PM-values), while at the same time increasing energy efficiency with a long-term eye on the diminishing supply of fossil fuels, it is clear for all that "alternatives" — even under the aspect of higher investment costs — will pay back in the future.

Beside economic and safety-related aspects, more and more questions about environmental protection as well as health hazards due to the emission of harmful substances into the environment play an essential role in shipbuilding.

Unfortunately, hitting environmental targets while maintaining efficient operations is becoming ever more difficult with conventional drive systems, requiring costly additional components, such as exhaust after-treatment systems.

Low operating costs, precise maneuvering and a high starting torque at lowest propeller speed as well as a low-noise operation pays back in many respects.

For these reasons, today more than ever there is a call for investment in new and emerging propulsion technologies to meet all criteria.

And these mentioned facts open the chance, with an innovative propulsion concept, to ensure the competitiveness of the shipping industry, further increasing existing advantages.

Torque Marine IPS GmbH & CO. KG based in Hamburg, has developed in 2010 its High Torque Power Drive (HTP) — an innovative diesel-electric propulsion system for all kinds of vessels, from river to coastal to tugboats — which is outclassing the conventional systems with combustion engines, reduction gears and drive systems.

The idea of diesel-electric ship propulsion system is nothing new: Already in 1838 Professor Moritz Hermann Jacobi experimented on the river Neva in Russia with an electric driven paddlewheeler.

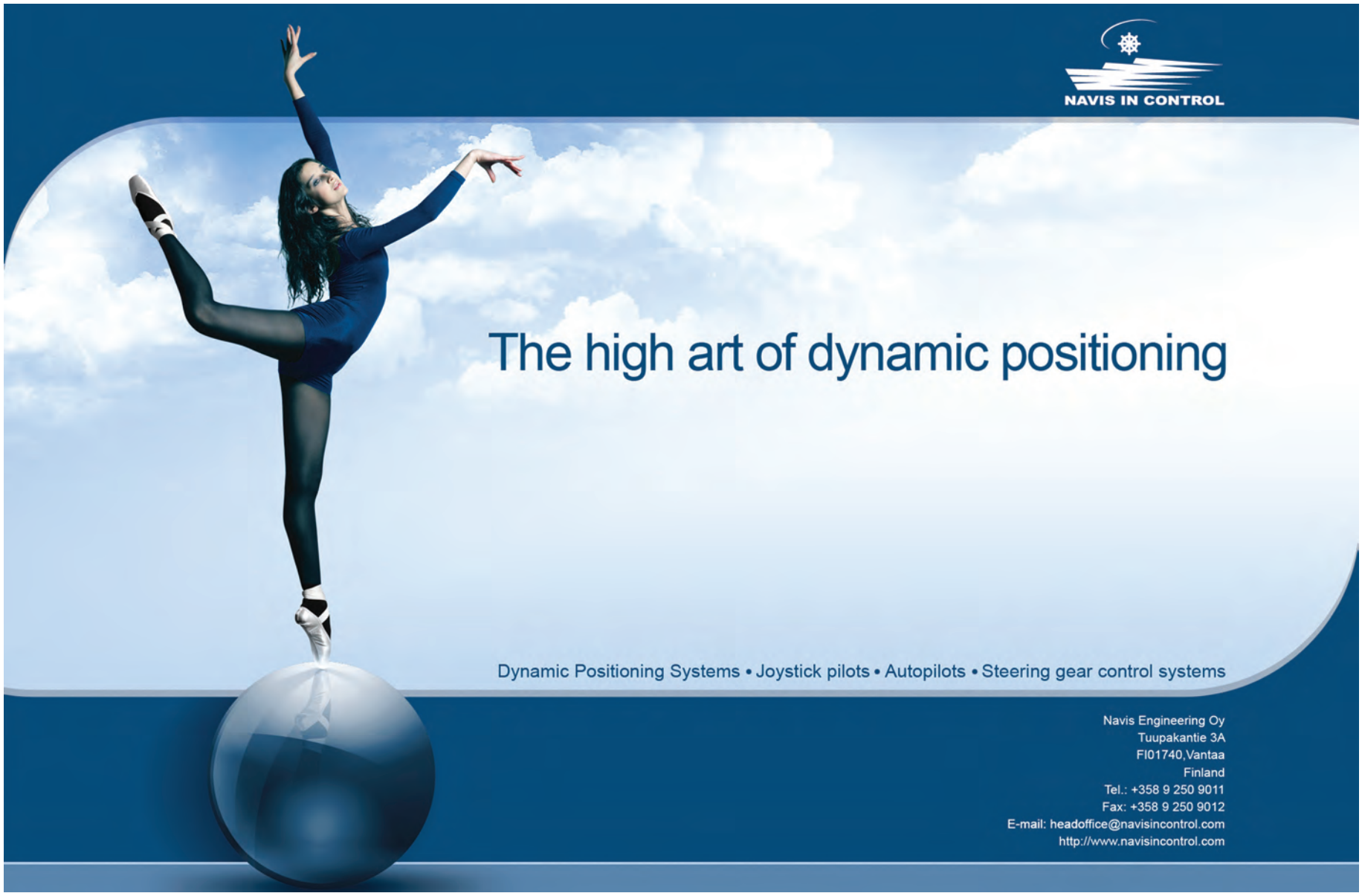
Ronald Schröder, Business Development Manager at Germanischer Lloyd, addresses the advantages of diesel-electric drive applications:

- High redundance of the entire ship operation system
- High torque already at lowest propeller speeds
- Reduction of the initial ship building costs

Partners in business: Thorsten Schramm (l), owner of Schramm Group, Brunsbüttel and Claus-D. Christophel (r), GM of Torque Marine IPS.

MV ENOK is worldwide the first motor vessel with a gearless, diesel-electrical Troque-Drive System. Inset: Rudi Koopmans (64) Captain of the vessel ENOk is absolutely satisfied with the new Torque Drive.

Two electrical drive units combined on one of the shafts.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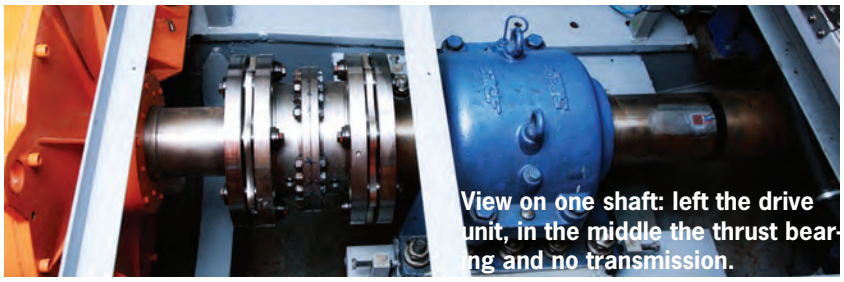


View on one shaft: left the drive unit, in the middle the thrust bearing and no transmission.

- Reduction of the operating costs
- Increase of transport security
- Reduction of pollutant and noise emission

"We, the GL, see a great potential with this new HTP-Drive system for the shipping industry," he said.

To reduce fuel consumption and emission values, the development center for ship technology in Duisburg, were, on behalf of the German Federal Environmental Ministry, deeply engaged with the subject many years ago. The conventional diesel-electric drive could not fulfill the preconditions, e.g. weight and volume reduction. Hence new possibilities had to be developed.

"The idea to develop something new in this field kept me busy from this moment on," said Claus-D. Christophel, General Manager Torque Marine IPS.

After extensive research and development work, together with the development center for ship technology, DST, in Duisburg, Torque Marine IPS successfully converted in 2010 a twin-propeller river freighter, MS ENOK, with a Torque Drive System. Measuring 84 x 9.5m, ENOK can load 1,500 to of cargo at a load draft of 2.86 m.

ENOK is worldwide believed to be the first motor vessel, which has been equipped with a permanent magnet motor (PM drive) as a gearless electrical direct drive. Since mid of 2010 the vessel runs in regular cargo service on European Waterways.

Rudi Koopmans (64), captain of the vessel is more than satisfied with the results: **"Within five seconds I can bring the propellers to a standstill. It's a complete new world. Each second, we can react faster, is more safety. Since 14 years I am captain on this ship, but such an fantastic handling with this new Torque-Drive I never experienced before. The power of the shaft is steplessly available. Today we have a noise level in our cabins of measured 47 dB(A). I don't want to have something else anymore."**

The High Torque Power (HTP) Drive-Concept

The modular system consists of, according to power requirements, encapsulated diesel engines with water-cooled, permanently excited generators in modular design and water-cooled redundant torque units, as well as weight and power optimized converters.

Hence, for diesel-electric operations modern and compact torque drives are available, which, based on their low power-to-weight ratios, offer the following possibilities:

- Propulsion redundancy
- Extremely high torque which, via a shaft thrust bearing, is direct available at the propeller,
- Low noise emission and
- Almost maintenance free operation.

For the time being driving power per shaft and propeller up to a maximum of 1,890 kWe are available. To drive gener-

ators (power producer/gensets) diesel engines are still indispensable; but already now combustion engines operating on LNG are considered for further torque drives. And also fuel cell techniques will be introduced in the future.

The installations of the genset modules are independent of the propulsion elements with the shaft drive units. Hence, further optimizations in ship building are visible, e.g. engine compartment configuration (shifting of the center of gravity) in respect of the ships shallow water characteristics, optimization of the propellers based on the higher available torque. In the case at hand, two gensets had been installed in the foreship and two in the stern main engine compartment.

Despite the fact that ENOK is an "old" vessel, meaning it did not feature an optimal hull form and its propellers were not matched to the new drive system, there were nonetheless impressive advantages: efficiency increase of around 26%, stepless rpm adjustment of the torque drive unit from 20 rpm up to maximum rpm.

The reversing of ahead/astern occurs via phase commutation of the converter. Hence, very precise maneuvering and speed control, e.g. during lock passages, with speeds from as low as 20 rpm are given. Elimination of costly mechanical rotational direction units like reversing gears or variable pitch propeller devices are additional advantages.

The water-cooled permanent exited, PME, synchronous generator

Basically this one is predestinated for applications where low weight, a compact design and a very high efficiency is required. The particular advantages of the PME-generators compared to conventional synchronous generators are the increased efficiency, the reduced power-to-weight and -volume as well as the loss of collector rings. ENOK's early installed generators featured "pasted on" magnets on their rotors. That was to the disadvantage of efficiency, temperature rise and finally to the performance capability.

In November and December 2011, further developed PME-generators were installed. Via so-called 'buried magnets,' the generator temperature could be reduced and the efficiency, on the other hand, increased by 1.5% points – to now 97% at full load.

Results after almost two years of "Torque-Operation"

The ship operation with the Torque-system has been, to date, safe and trouble-free. Since the drive-unit modification, there have not been any breakdowns or malfunctions that have interfered in the ships unrestricted operational readiness.

During a voyage from Amsterdam to Stuttgart in January 2012 the Torque-system proved its function impressively. The ship was loaded with 1,000 to soy shred. Draft at this time was 2.2m.

The flooded river Rhein featured at this time a countercurrent of 7–8 km. At that the ENOK had still a ground speed of around 6 km. The average load on the diesel engines was around 70%. Since it's commissioning in August 2010 around 2,000 operating hours have been recorded in the ships log-book.

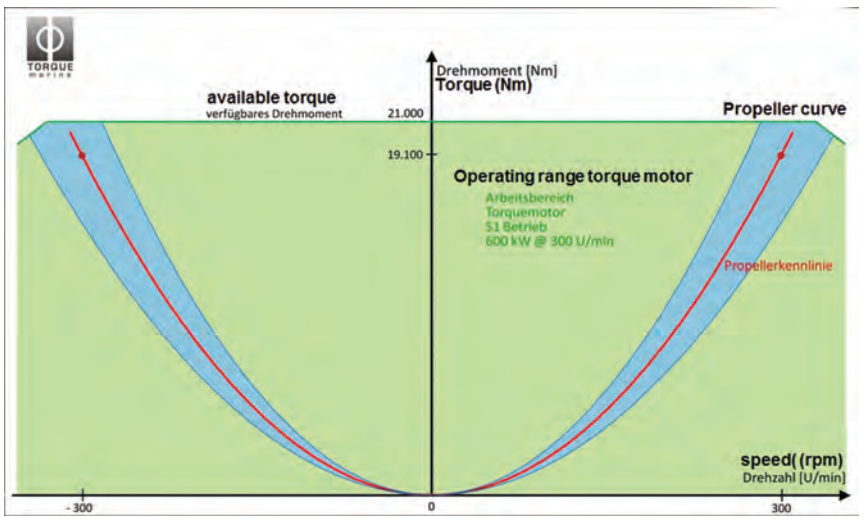
Thereby 1,200 hours (60%) only with one genset, around 600 hours (30%) with two and about 200 hours with three engines. The drive system of Torque Marine fulfills all requirements of the legislators according to energy efficiency, NOx limit values as well as noise protection regulations.

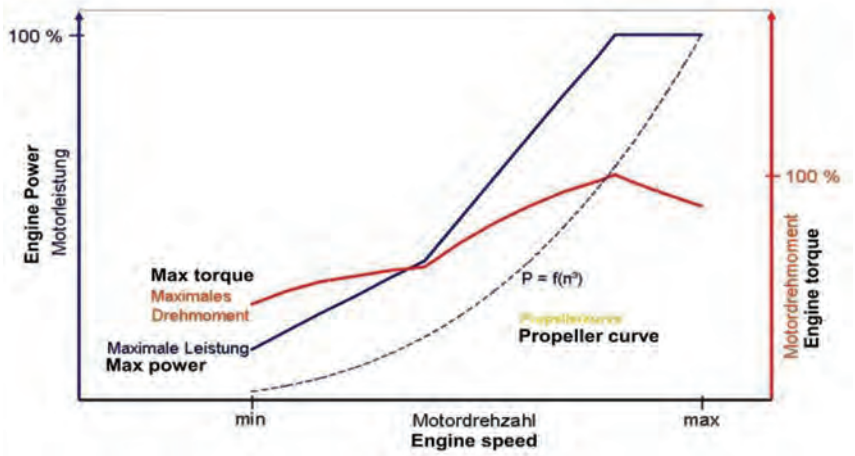
The Torque-System as Torque Converter

The knowledge that ship propulsions require power for the speed is the basis for the design of the necessary driving power. But this power is used only very seldom. In some applications, river / tugs etc, this utilization is at an average of 45% of the installed power.

The classic diesel mechanical drive has its maximum torque, according to its completion, between 40 to 80% of speed. To reverse the drive system at lowest possible propeller speed, power of the engine is defined on the required torque at lowest engine speed.

As a consequence diesel mechanical drives are basically oversized.





Power characteristics of a modern diesel in the range of up to 4,300 kW.

The Diesel Engine and its Torque

Unfortunately a diesel engine requires a certain low speed (idling speed) to run independently. Below this lowest speed the engine has no torsional force: it dies! In addition, at idling speed the combustion engine supplies no torque.

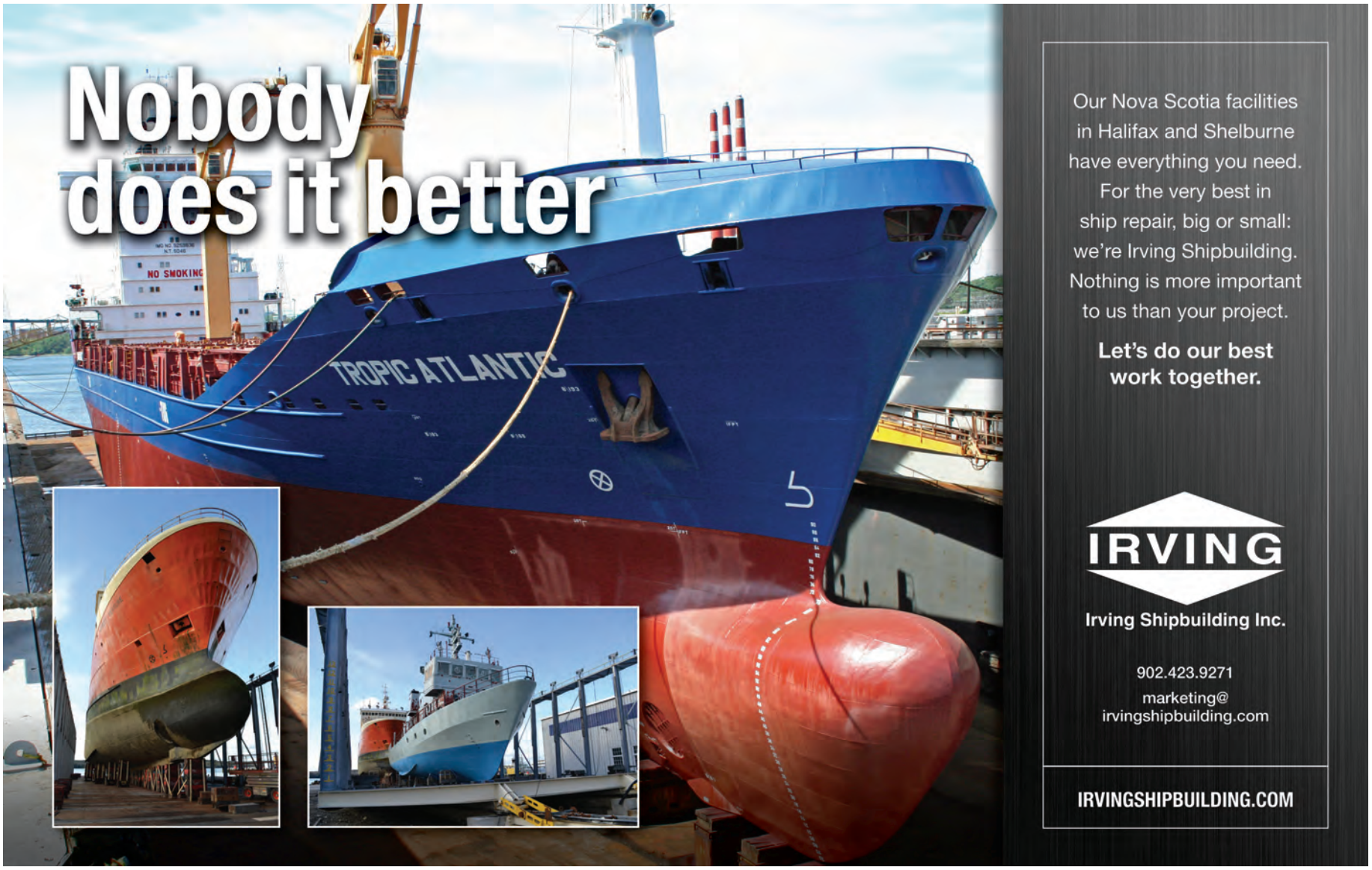
But low engine respectively propeller speeds are essential for particular drive conditions. Also the very often common installation of transmissions helps somewhat to nothing. The attached power-torque-diagram of a modern ships diesel engine shows very plainly that, not until an engine speed of around 40% of the rated speed, is there a noticeable torque starting.

For many drive conditions, such as frequent lock passages, long channel passages, maneuvering support by tugs and AHTS, high torque at lowest propeller speeds are essential.

Low Speed, High Torque

Here comes the new drive concept of TORQUE Marine IPS on the table. With this diesel electric drive, gensets and electrical drive units, the necessary low propeller speeds are reached exactly as required. The reason for the extreme low propeller speeds are based in the high torque of the permanent exited drive units. The Torque-Motor supplies its full torque already from the first rpm over the entire speed range (see diagram). This high torque is generated by the Torque-Motor directly; it is developed from reciprocation between magnets and the runnier current through the stator winding. This drive system offers an almost wear- and maintenance free operation And as a specific “treat” customers receive fuel and emission reductions on top.

www.torquemarine.de



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The Corvus Power Play

Corvus Energy has quickly evolved as a leader in the marine hybrid propulsion market, developing state-of-the-art battery system solutions on some of the world's biggest projects. And this is just the beginning.

By Greg Trauthwein, Editor

REVOLUTIONARY:
*c : constituting or bringing about a major or fundamental change <**a revolutionary new product**>*
(http://www.merriam-webster.com)

While the world "revolutionary" is too often and liberally bandied about in the description of new products, Vancouver, BC-based Corvus Energy arguably has created a revolutionary battery for the maritime market, a power source with a power density, longevity and durability which has brought it from concept to major player on leading maritime hybrid projects in less than five years.

What is Corvus?

Corvus Energy is a manufacturer of high power lithium polymer batteries used in the hybridization of heavy machinery such as commercial vessels. Similar in chemistry to the batteries found in the iPhone, these are not just any batteries, they are "smart" batteries according to the company, able to communicate with each other, with the application they power, with the grid, with the source of energy that charges them, and with their human manager who controls them.

"I think what makes us unique is simply that we didn't come to this business from a battery perspective; we came at it from a boating perspective," said Brent Perry, CEO, Corvus Energy.

The company started as an idea in 2006. Perry, who enjoyed a career as a boat builder on several continents, was increasingly asked by his customers for hybrid boats. An exhaustive search for a battery source that could help create the solution turned up empty; even direct appeals to battery manufacturers elicited a response which said that commercial maritime was "too niche of a market." So Perry and his co-founders embarked on the path to design and build their own solution, and to date the company is working on projects ranging in size from 6.5kWh up to multiple megawatt scale installations, with its batteries in hybrid marine applications soon being directly responsible for emissions reductions in the range of thousands of tons annually.

Building a Better Battery

Manufacturing any product for the maritime market means engineering a solution that can take the unique rigors of working day in, day out, in one of the most demanding and corrosive environments on the planet. According to Perry, when he first embarked on the mission to find battery solutions for his boatbuilding customers that sought hybrids, he found no batteries rugged or serviceable enough that combined the necessary power and long-life capability to withstand the rigors of the marine environ.

"The conditions in maritime are harsh and unique," Perry said, and offer many factors to consider, including:

- **Atmosphere:** Extreme weather, high salt, high humidity. "We knew it had to be a fully sealed product, capable of shedding heat as if it were fully vented."
- **Energy capacity:** "If you don't perform as well as a diesel engine, then you are not a true hybrid. The operator should never be able to tell a difference if they are running on diesel or battery power."
- **Communication:** The batteries have to be able to communicate … with each other in a network, with the operators … to properly gauge performance.
- **Durability:** "Our casings start at 30 and go up to 100g impact. They are built to deal with the rigors maritime offers, and there are no moving parts in the battery to fail."

In addition, they must operate well for a long time. Corvus' shortest life battery is seven years; it's longest 20 years.

While the solution is elegant and the reference list chock full of some of the biggest, most progressive names in maritime and growing, running a start-up does not come without challenge.

"Simply put, when you talk about making a decision (to build a company), when sitting around the table everyone can agree on the correct course," said Perry. "The real pressure comes when you are under pressure to deliver. Maintaining the integrity of your values and corporate culture while you live and work through the initial growth – where every dollar made and every dollar spent is critical – I think is the greatest challenge. Invaluable for me was my previous experience in the maritime industry, because in the marine industry, your reputation is everything. We are lucky to have staff and partners that are focused on getting it right."

"We don't really sell batteries. We look at the total project and help to create a total solution, where as other battery manufacturers tend to be commodity sellers."

Brent Perry, CEO, Corvus Energy

Move to Green

Perry agrees with the assessment that the maritime industry is inherently conservative, averse to adopting new technologies until they are well proven in the field. But there is a twist on the notion of "green."

"The marine industry is averse to new technology, and I wouldn't have put anything in my boats that wasn't proven for 10 years," Perry said. But when talk turns to "green" in the marine industry, the first of mind thought is energy efficiency and emission reduction. Perry contends, too, there is a stronger "green" pull today.

"But while the industry may be conservative on adopting new technology, the marine industry, too, is all about money … more accurately saving money and improving reliability. If we can prove to them that we can save them money, they will participate. I won't take a job on if I don't think we can improve the performance of their operations."

In fact, Perry sees the users of Corvus Technology as not simply customers, rather as business partners, and he and his team are not simply looking to push batteries out into the market place, rather evaluate each individual company and initiative as a project on its own merits. It is this holistic, project-based approach which gives him the backing to enter only projects where the payback on incorporating the system has a payback of 5 years or less. Today he sees the ferry, tug and Offshore Service Vessel as particularly ripe for the hybrid solution, as well as a major push into the subsea market – where power consumption and integrity are the definitive limiters in the expanded use of subsea robotics – as the major forces of activity in the near term.

But while saving green (cash) is indeed nice, saving the other green (environment) offers tangible benefits, too, fitting in with the Corvus Energy mantra of looking at the whole picture rather than a few pixels. Corvus Energy batteries are the key to hybridizing heavy equipment such as harbor tugboats, ferries and OSVs, which due to duty cycle and fuel consumption lend themselves to dramatic fuel reductions. These fuel reductions translate into large cost savings – particularly with the skyrocketing costs of all fuel and pending legislation that will make marine fuel significantly cleaner and more expensive by 2020 – and provide return on investment in very short time frames. In turn, the fuel saved also provides huge reductions in carbon, particulate and NOx emissions. Particulate matter is reduced most significantly as most of the fuel savings is incurred at low engine speeds when the engines are operating at least efficiency and producing most soot.

References

In any industry it seems that a company's prowess is best told by the references it holds, and Corvus has no shortage of high-profile marine references, serving some of the biggest, most progress names in the business, including Foss, Eidesvik Offshore and KOTUG, many of which have been covered in our pages in volume, and will be briefly recapped here.

Corvus and Foss are inextricably linked as they have together with many other industry partners designed, built and delivered a series of hybrid tugboats to serve the west coast U.S. market, one of the world's more stringent areas of operation in terms of environmental initiative and

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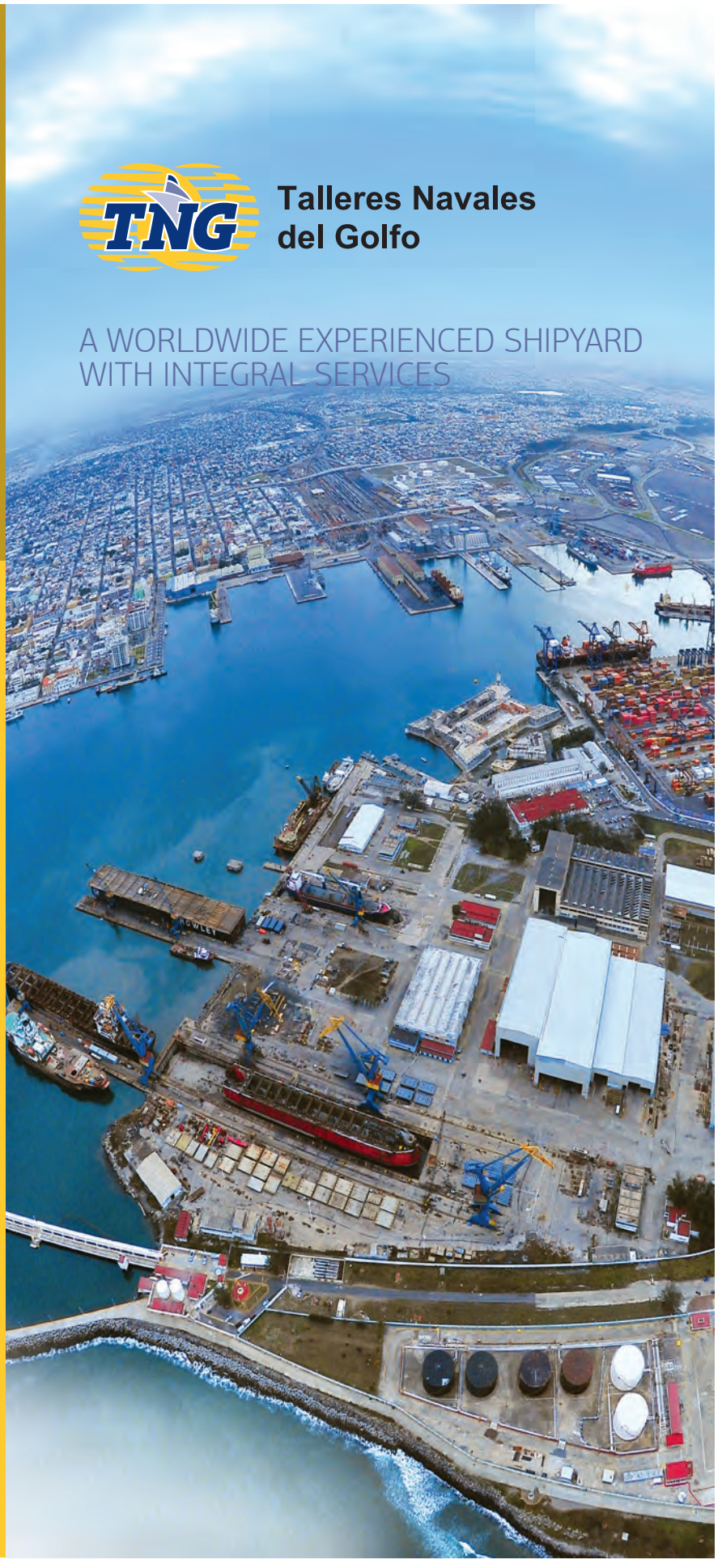

compliance. Campbell Foss was the world's second Hybrid Tugboat, converted to hybrid power at the Foss Rainier Shipyard.

The 73.4-ft., 144-gt boat built originally in 2005 became Foss' and the world's second hybrid tug, following the Carolyn Dorothy, which entered service in 2009. The ongoing project entails modifying and testing the boat 's propulsion system along with other maintenance in advance of its return to service in Long Beach.

The Campbell Foss is sister to the Carolyn Dorothy, which has been bringing cleaner air and fuel efficiency to southern California ports since its 2010 arrival in Los Angeles and Long Beach. The retrofit included replacing one of the boat's 125-kW generators with a new 350-kW Detroit Diesel Series 60 generator to support diesel-electric transiting between jobs. The main engines will not be changed, but will be used only during actual assist work. Ten Lithium-Polymer batteries provided by Corvus Energy will supply power for the boat's lights and other systems not related to propulsion and for minor maneuvering during periods of idling. A side-by-side comparison of two Foss Maritime dolphin-class tugs—the Carolyn Dorothy and a conventional tug named the Alta June — showed significant emissions reductions, as follows: 73% reduction for particulate matter (PM); 51% reduction for nitrogen oxide (NOx); and 27% for carbon dioxide (CO_2). Aspin Kemp and Associates (AKA) provided the hybrid electronics and control system that tie the hybrid components together.

> "In under 3 years, Corvus has gone from 6 "boat guys" with a great idea and homemade business cards to almost 50 of the top minds in electrical and mechanical engineering, who now possess the key to high power industrial grade energy storage,"
>
> **Grant Brown, Marketing Director, Corvus Energy**

Similarly, Corvus Energy was integral in the plan to develop a true hybrid energy system for installation on board the offshore supply vessel Viking Lady (featured on the cover of the April 2012 edition of *Maritime Reporter & Engineering News*) with the company providing the battery pack for energy storage. Viking Lady is unique when compared to any other OSVs. Thanks to its Norwegian heritage, which stresses both maritime innovation and environmental conservation, the three-year-old LNG-fueled vessel, which is owned by Eidesvik Offshore, was the very first merchant ship to use a fuel cell as part of its propulsion system. The fuel cell, which generates an electric output of 330 kW, was installed in the autumn of 2009 and has successfully run for more than 18,500 hours. With the Corvus-supplied battery pack is in place, the ship operates using a hybrid system similar to that which has been installed in hybrid cars, and the potential emission reductions are higher and the return on investment period is shorter for ships than it is for cars. The Corvus Energy battery back in the Viking Lady will consist of four packs of 17 AT6500 modules, for a total of 68 modules - or about 1/2 of a MW.

- Maximum bus voltage of 856V.
- Maximum current 1000A. (total: each pack is rated at 250A, we have four in parallel.

The pack needs no cooling system due to its extremely low internal resistance. The batteries cathode is nickel manganese cobalt and has about 20-25% more power than competing lithium ion versions. The primary potential benefits of the hybrid energy system for a ship like the Viking Lady are a 20/30% reduction in fuel consumption and CO_2 emissions through smoother and more efficient operation of the engines and fuel cell. The reductions of other exhaust components are even higher. Finally, Corvus Energy's battery packs were earlier this year installed in Europe's first hybrid tugboat, the RotorTug RT Adriaan of KOTUG of The Netherlands. This diesel-to-hybrid retrofit represents Europe's first low emissions hybrid tugboat, and the conversion features Corvus' AT6500 48 volt lithium polymer battery packs. Completed in March 2012, the converted RT Adriaan, now renamed E-KOTUG RT Adriaan, has rejoined the KOTUG fleet. For example, the harbor tug RT Adriaan is currently achieving a 20 perent savings after being converted to hybrid form.

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Insights with

Jan Kees Pilaar

MD, Blohm + Voss

By Greg Trauthwein, Editor

It could be argued that running an efficient, safe and profitable ship repair yard is one of the most difficult of all maritime jobs. First and foremost, unpredictability – in terms of planned and actual workload, as well as the very nature of the job themselves – is a recurring theme. Maintaining experienced staff in times good and bad; keeping ahead of evolving regulations, as they pertain to the local environment and the global ship market; and weathering the inevitable influx of cut-rate competition from emerging nations are but a sampling of the issues ship repair managers face every day. To get answers to some tough questions, Maritime Reporter recently spent some time with Jan Kees Pilaar, managing director of one of the world's long-tenured and storied shipyards, Hamburg, Germany based Blohm + Voss.

Please provide a brief background on how you come to your current position.

Pilaar In 1992 Keppel Verolme Shipyard appointed me as their Senior Business Manager for the yard's offshore repair and maintenance activities. In 2005, when the shipyard group ThyssenKrupp Marine Systems, a result of the merger of the HDW-Group and ThyssenKrupp Werften, was established I was appointed by ThyssenKrupp to become Managing Director for the repair activities of Hellenic Shipyards in Greece. On the decision by ThyssenKrupp to sell Hellenic Shipyards in 2008/2009, ThyssenKrupp Marine Systems offered me the position as Managing Director at Blohm + Voss Repair in Hamburg.

As of May 1, 2009 I accepted this position and managed beside my daily business, the selling process of Blohm + Voss Repair, as part of the civil shipbuilding activities of Blohm + Voss, to the final closing with Star Capital Partners. Since the closing has taken place on January 31, 2012 I operate as Managing Partner at Blohm + Voss Repair.

Give us the Executive Overview of Blohm + Voss' ship repair capabilities today?

Pilaar Blohm + Voss Repair in Hamburg is the premier address for ship owners and managers requiring a specialized shipyard for conversions, refits, repairs and routine drydockings focusing on passenger/cruise vessel and offshore units for the oil and gas industry. **We repair anything that floats, is our slogan!** Shipyard work on a passenger/cruise vessel is one of the industry's ultimate challenges; assignments include work on the hull, hotel and public areas, machinery

and operating systems. Blohm + Voss Repair has the facilities and expertise as well as a first class reputation for punctual deliveries of such tasks – its management and motivated labor pool make the impossible possible. Its work force is both experienced and flexible, and can be increased in numbers as well as trades at very short notice due to Hamburg's centre pin location and far-flung infrastructure.

Blohm + Voss Repair in Hamburg on the River Elbe is easily accessed by equipment operated by the Northern Atlantic and North Sea offshore industry. Blohm + Voss Repair staff is renown for fast conversions and 7/24 repairs always working on-time and to budget. Specialist expertise includes conversions and modifications, lengthening, re-engining, refits, upgrades, lifetime extensions and repairs to offshore units, rigs, tankers, LNG/LPG gas tankers, FPSO's as well as work on wind power and oil industry support vessels.

What do you count as the primary strength of your company?

Pilaar We have very sophisticated project management. In combination with the long lasting experience of more than 135 years in ship building at Blohm + Voss at a glance, this will come to a very good customer focus to understand the needs and requirements in handling complex projects in the field of passenger/cruise vessels as well as in proceeding projects for the oil and gas industry.

In what areas do you see room for improvement?

Pilaar In general, Blohm + Voss Repair is very well positioned in the market. **The most challenging task is to get the "old lady" Blohm + Voss Repair attractive to the market participants. We have to work against the impression, that we are an "old" and "traditional" company.** During the years, we always adapt ourselves to the requirements of the market in the field of service, management systems and customer orientation. To get this spirit alive is a task that has to be proved on daily basis. "Is not possible, does not exist!"

There are some tough economic and budgetary times: How has the recent economic slump affected your business?

Pilaar Less projects and orders in the general ship repair business are leading to more competition in the market. And at the very end, the price is the essential point whether you will get an order or not!

In your opinion how are ship owners today most the same, and most different in their approach to procurement of ship repair and conversion?

Pilaar Also for shipowners nowadays it is difficult to earn a dime. Export market in Europe is basically low and a heavy influence of the financial crisis is present. So, if not much is earned, not much can be spent. And we notice this. I believe however in quality and we deliver quality. I hear this again and again from our customers. And this we have to maintain, the goal for us is to offer the quality against competitive prices. So nowadays we do a lot with regular returning customers who value this.

What do you consider the biggest challenge in running your business today?

Pilaar From my point of view, effective project controlling is most essential to run a modern and efficient repair and conversion yard these days. You must be informed how a project/order will run, actually on a daily basis. Whether you will run out of budget or you will be in budget. And this is not only for your own financial security but also as a service to your customer, since he also wants to compare against to the budget he has available.

Insights with Jan Kees Pilaar, Managing Director, Blohm + Voss

A challenging repair job was the conversion of KRAKA to DAN SWIFT for Lauritzen Tankers, a project which turned an uncompleted cable layer into an ocean going, DP accommodation and support vessel.

In the face of cheaper ship repair alternatives in the Far East, what do you count as the biggest challenge to run a German-based ship repair business today?

Pilaar Stay and be focused! Select a project, evaluate if this is good project for the yard. And then work on the project until the order is there. You can only succeed if you know what you want and what route you take to get there. We know very well when we have to do a "technical sale" or a "price sale." If we can beat the competition on our technical skills and competence we will give such a project priority.

Over your career, what do you consider to be the leading technologies or developments that have positively impacted the business of repairing ships?

Pilaar The change of mindset to what is today called "Green Shipping." In conjunction with it, the development of new technologies and techniques to keep the environment cleaner. This applies not only for ships in operation but also for the treatment of ships being at the yard. For example the treatment of ship hulls from grit blasting to hydro blasting was generated by Blohm + Voss Repair. Together with our wastewater treatment plant, where we collect the waste water from our docks, we have made a big step even to a "green shipyard" and prove that German shipyards are advanced in regard to sophisticated technologies.

How is Blohm + Voss investing today?

Pilaar First of all, we invest in our staff. It is important, even for a German-based repair yard, that our employees will always be trained on the highest business and technical standards. Further

Repair Arab Shipbuilding & Repair Yard

Bahrain-based Ship Repair Yard Invests $188m in facilities; Expands offshore operations

ASRY CEO Chris Potter

Bahrain's Arab Shipbuilding & Repair Yard (ASRY) has come a long way since starting operations towards the end of 1977, as the Arabian Gulf's first VLCC repair yard. Today ASRY is involved in the repair of all types of commercial vessels, naval craft and offshore jack-up rigs. It also has an expanding newbuilding division which has built specialist barges as well as completing four new tugs for its own use. In a further diversification, ASRY has established two new divisions, ASRY Energy which is building Power Barges (floating electricity generating stations), and ASRY Consultancy Services, which is offering turnkey engineering design services for major conversion projects as well as newbuildings. While business for pure shiprepair yards continues to be tough, especially in the Middle East where the arrival of two brand new yards has increased competition, ASRY diversification policy is paying off.

Shipyard Investment and Improvement

ASRY is currently coming to the completion of a major $188m facility expansion project, which positions the yard for the inevitable market upturn, and is indicative of the yard's long term commitment: investing in a down market. The $188m expansion project has seen the construction of a new deep water 1.38m Repair Quay Wall, equipped with two large rail-mounted cranes; a 200,000 sq. m. offshore fabrication area with load-out quay: and four new Azimuth Stern Drive (ASD) tugs, built by ASRY itself. In early 2012 the yard continued to invest in new facilities, notably a $8.6m desalination plant and a $2.3m eco-friendly sewage treatment plant. ASRY is also investing in people, starting an apprentice scheme and also training 50 Bahraini's to work in all departments of ASRY.

The Bahrain repairer has also undertaken measures to help the hard-pressed ship owning community. At the end of 2011 ASRY undertook a strategic review of the way the yard approaches Fleet Repair Agreement with shipowners, resulting in ASRY re-adjusting its terms for mutual benefit and positioning the ASRY offering more competitively.

The decision to establish a dedicated offshore division three years ago has paid off, with ASRY Offshore Services (AOS) contributing 40% of all sales and 50% of profit in 2011. To cope with increased offshore business, not just jack-up repairs, but also the potential of AOS moving into the offshore fabrication sector, AOS's offices within the yard have virtually double in size this year, not just for offices for AOS staff, but also representatives of offshore operators.

Shiprepair Projects

The end of June 2012 saw the Bahrain face perhaps its major challenge to date, when the fire and explosion damaged 25,268dwt; 2004-built chemical tanker Stolt Valor arrived at the yard under tow. The Liberian-flag chemical tanker, operated by Stolt Tankers BV (a subsidiary of Stolt-Nielsen Ltd) suffered a cargo tank explosion on March 15, 2012, while 48 nautical miles south east of Farsi Island, Iran, while carrying 13,000 tons of MTBE (Methyl Tertiary Butyl

on, we invest in our operational resources because a repair yard can not work if their equipment is not accurately maintained and on the current technical standard. Our new owner Star Capital believes in this view as well. Combine tradition with nowadays knowledge and you are top of the Bill!

What do you count as the most interesting or challenging ship repair job you and your company has ever been involved?

Pilaar The two most interesting and challenging repair jobs in the last years were the conversion of KRAKA to DAN SWIFT for Lauritzen Tankers and the lengthening of the cruise vessels BALMORALl and BRAEMAR for Fred. Olsen Cruise Lines.

When the KRAKA docked late 2007 at Blohm + Voss Repair, a long, demanding conversion program awaited the vessel, turning it from an uncompleted cable layerinto an ocean going, dynamically positioned accommodation and support vessel.

Shipbuilding work included the addition of over 1,600 tons of steel, pulling of 400 km cables and the instalment of 40 km of new piping.

Accommodations for 291 were created along with all facilities such as galleys, provision rooms, messes, laundries, recreation, cinema and fitness rooms as well as a swimming pool. New ship operations kit included a new bridge, engine control centers, workshops, a HVAC plant, and fire fighting, sprinkler, CO2 and water mist systems. Amongst further sophisticated equipment, the vessel received three new azimuth thrusters, offshore gangways, a helicopter deck, dynamic positioning, integrated navigation, thruster control and power management systems. After completing the staggering program, the vessel, now renamed DAN SWIFT by its owner J. Lauritzen, left Europe to commence a new life working adjacent to fixed structures, platforms and floating units in Brazil's new offshore oil and gas fields, where she supplies accommodation, hook-up, ommissioning, start-up, maintenance, light construction and crane support.

In November 2007 the cruise ship BALMORAL (ex Norwegian Crown) was docked at Blohm + Voss Repair to be lengthened by a new mid-body section of 30.2 meters.

In January 2008 the completed cruise ship left Blohm + Voss, now with increased length and passenger capacity heading to Southampton where the cruise ship was handed over to her owner. In May 2008 the BRAEMAR (ex Crown Dynasty) was docked the get the same treatment as BALMORAL. The cruise ship was cut in two pieces in order to be lengthened also by a new mid-body section on 31.2 meters. Besides this, 18 balconies were installed and the restaurant on Deck 8 was completely renovated. What was proved with BALMORAL fits also the BRAEMAR and the cruise ship with an increased capacity of 988 passengers left Blohm + Voss Repair on July 2, 2008, within time and within budget again exactly what our clients expect from us what we deliver.

(ASRY)

Ether). Following the vessel being declared a CTL (Constructive Total Loss), Holland's Smit Salvage was awarded the salvage contract. Then began the delicate task of discharging the cargo, fuel oil and ballast water.

The Kingdom of Bahrain was one of only two Arabian Gulf nations to provide a port of refuge for this vessel, the other being the Kingdom of Saudi Arabia. Bahrain was identified as the best destination for Stolt Valor due to the technical capabilities of both the General Organization of Sea Ports (GOP), as a regulator and supervisor of maritime safety and environmental matters in Bahrain, and of ASRY's capabilities and expertise as a world renowned shiprepair yard. Stolt Valor arrived at ASRY on June 28, 2012, where a thorough safety inspection took place prior to any further investigation to ensure the vessel had no outstanding safety concerns. She was then transferred alongside the yards new 1.38km Repair Quay Wall where a detailed inspection and investigation was carried out in conjunction with the vessel's owners to determine the best course of action. This has now been completed and ASRY is awaiting a decision from the owners as to whether the tanker will be repaired, or made seaworthy for towing to a ship breakers.

National Shipbuilding Research Program

Navy, Industry partner for research; sharing costs, risks, and rewards to reduce total ownership costs

By Edward Lundquist

America's shipyards are fierce competitors, but they can also be close collaborators. The National Shipbuilding Research Program (NSRP) is a cooperative effort for American shipbuilders and the U.S. Navy, with the aim of improving efficiency and economy to reduce the cost of Navy ship construction and repair in American shipyards.

According to the Navy's NSRP program manager Connie Bowling of the Naval Sea Systems Command, the program seeks to reduce the cost of building, operating and repairing Navy ships by improving productivity and quality through advanced technology and processes.

NSRP seeks to share and rapidly implement manufacturing best practices, take advantage of breakthrough technologies and processes with the entire shipbuilding industry through government and industry collaboration.

Projects have been awarded to more than 200 entities from 37 different states. Resource allocation decisions are made by the industry-led Executive Control Board, after consideration of input from Navy sponsors. "Navy and industry set the strategic focus and direction, but the initiatives have to come from come from industry," Bowling says.

NSRP has a budget of about $30 million a year, split between the Navy and industry. "We require a cost share for the products," Bowling says.

The NSRP research program is not subject to Federal Acquisition Regulations (FAR), but project funding decisions are supported by a competitive process characterized by independent third-party evaluation of project proposals. NSRP calls for the resulting work to be shared across the shipbuilding industry and not be held as proprietary to a single entity. "We can quickly award projects to the consortium with the agreement that the R&D results, products and costs are shared with all."

Participants represent all of the Navy's platforms, including the associated technical warrant holders and Program Executive Offices (PEOs), and each of the Navy shipyards. The Coast Guard is also involved. "All of the key factions of the Navy and our shipbuilding industry, including some of our tiered suppliers, are working together to make better ships at a more affordable price," Bowling says.

> "We've saved 88% reduction in setup time, 93% reduction in removal/disassembly time and 30% reduction in total time on the job. And that's just the easily measured stuff."
>
> **Connie Bowling, Navy's NSRP Program Manager, Naval Sea Systems Command**

NSRP is focused on more than just controlling acquisition costs, but reducing total ownership costs (TOC), as well. The program complements, and has proven successful in leveraging, other programs such as Office of Naval Research (ONR) Manufacturing Technology (ManTech) and SBIR (Small Business Innovative Research), the latter providing smaller companies and organizations the opportunity to contribute and benefit. In addition, each of the PEOs has a research and development program that is coordinated with NSRP activities.

NSRP opened the aperture for academic programs as well as small and new companies. Even college courses and relatively small projects can have a big impact. A relatively low-cost NSRP-supported project created a mobile, autonomous, robotic welding platform to replace manual welding processes in order to realize substantial savings in time, set-up requirements, safety and overall cost in Naval ship construction.

The robotic welder, created in a basement workshop as a modest NSRP project involving a small business and the University of Tennessee, is a success story. Bowling says four shipyards are now employing the welder for use on the Navy's DDG 1000, DDG 51, LPD 17, the Coast Guard's National Security Cutter, and tank barges, and others are purchasing the system to introduce at their yards. "We've saved 88% reduction in setup time, 93% reduction in removal/disassembly time and 30% reduction in total time on the job. And that's just the easily measured stuff. We have reduced support structure needs like man-lifts and scaffolding, while at the same time improved worker safety, and enabled more flexible labor alternatives for shipyard supervisors."

Not all projects relate directly to tangible shipbuilding processes, but focus on such things as education, better environmental practices, streamlined business processes or advanced information technology applications.

Research investments are determined by consensus based on the agreed upon NSRP strategic plan, and results are shared with all participants. The NSRP Executive Control Board meets four times a year, and includes participation by the sponsoring PEOs. Research panels meet regularly to report on their projects and discuss ways to increase collaboration. And, an annual event at the Washington Navy Yard, attended by top Navy leadership, including the Assistant Secretary of the Navy for Research, Development & Acquisition, gives the

project teams the chance to showcase their work, and Navy program managers the opportunity to witness NSRP value delivery.

The shipbuilding industry is highly competitive. Risks can be high and margins low. So shipbuilders are not known for sharing their technological advancements with each other. "It took a long time for them to get comfortable with this model," said Bowling.

But, Bowling says, the industry understands the value of working together to help the nation and the Navy spend their limited shipbuilding and repair dollars wisely. "Industry gets that. The Navy gets that. Ideas and projects are flowing in, and this program is hitting its stride."

At NSRP's inception, it required significant creativity to establish the mechanisms and business practices across NAVSEA/ PEOs and industry to avoid anti-trust violations. "We have gained effectiveness over the past decade after figuring out the legalities and processes to do what was intended - focus on results," Bowling said. "Once we determined our common objectives, and got through the business aspects, with proper accounting rules and audit trails in place, and established equitable meeting scenarios, we were able to become productive," she said. "Now the focus is on the greater good. We can determine what's broken, what needs to be improved, and how quickly can we get there."

(Continued on page 50)

Smart Growth at

Marinette Marine

Scott A. Wellens (right) the director of facility and process improvement for Marinette Marine Corporation (MMC), a Fincantieri company, is a member of the NSRP executive board. The Wisconsin shipyard is busy with several projects, including the Navy's Littoral Combat Ship. That means updating the infrastructure and bringing in new workers.

"We had to grow," Wellens says. "We will essentially double the size of our physical plant in a just a few short years. Rarely, do you ever get a chance to do everything in a short period of time. We couldn't stop production because we had to keep building ships as we were expanding. With our process improvement efforts, we want to make the buildings work for us so we can improve the efficiency of building the ships. We needed to create a sequence that improved our flow and reduced the travel time from one stage of construction to the next. We're balancing our work stations and leveraging the learning curve. "

"We knew we would be hiring a number of people because our existing work force was about 600 to 700 people, and we have to grow to between 1,300 and 1,400 people," Wellens says. "That's more than double the work force. "

"We've set up programs with University of Wisconsin at Marinette for some of the drafters, designers, and those types of professional positions," Wellens says.

According to University of Wisconsin-Marinette Dean and Campus Executive Officer Paula Langteau, the school has been working with MMC for the past five years to help the shipyard meet their growing need for qualified shipbuilding designers, thanks to funding from NSRP to develop the curriculum. "In 2007 we developed a classroom continuing-education course called 'Applications of Modern Shipbuilding Design' for Marinette Marine," Langteau says. "We also started offering the course online for the rest of the industry."

Based on the initial success, UW-Marinette developed four follow-on classes in specific disciplines, such as structure, electrical, piping and HVAC, and design for production. All five courses are now offered online in a certificate program which is available to the entire industry. "This package of courses made UW-Marinette the first institution in North America to offer fast-track, distance-delivered courses in a full certificate program in modern shipbuilding design," she says.

Today MMC is not just sending designers to the course. Langteau says the company has begun to send production staff through it. "We are told they can be more productive if they have an understanding of the full design concept."

Training people for professional positions was a good project for NSRP because what works at Marinette could be applied to the shipbuilding business as a whole, she says. "Our delivery platform is unique as well," Langteau explains, "enabling students to connect remotely from anywhere in the world to access our courses."

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National Shipbuilding Research Program & Marinette Marine Corp.

(Continued from page 48)

NSRP projects are targeted at engineering planning, production, environmental issues, education and training, facilities, technology, and regulatory compliance for shipbuilding, including new construction and repair, and more. "We're focused on the critical factors that impact acquisition and TOC, so we can make the most out of our investment," says Bowling.

For example, an industry proposer can recommend an industry-wide problem to be solved, or a technology that can be matured—such as in design, welding, or painting—with a cost proposal and a team to do the work. If the industry board and the government agree that the project addresses program strategic objectives the project can compete with other proposals for funding. "We're trying to address similar problems at similar shipyards. Industry tells us collectively what they think should happen. We look to see if that recommendation could be used on a Navy ship, could meet a military specification or requirement, or further the development of a needed technology," she says.

NSRP projects have addressed coatings, modular construction, welding techniques and processes, reduction of rework, production planning, exchange and interoperability of data, materials, standardized procedures, safety and health issues and environmental concerns, and more.

For example, a single-coat primer and coating system for voids and tanks that will last the life of the ship has been developed and tested; saving money that otherwise would have to be spent on difficult and expensive process during overhauls.

"Many of these things have a long return on investment," she said. "But when these ideas are looked at for their total ownership costs over the life cycle of a ship, they're no-brainers."

Focus on Marinette Marine Corporation

Located on the Menominee River in Marinette, Wisconsin, Marinette Marine Corporation (MMC) was founded in 1942 to support the shipbuilding needs of America during World War II. The shipyard was privately held, and was acquired by The Manitowoc Company in 2000. In 2008, the company was acquired by Fincantieri Marine Group Holdings in 2008. Fincantieri has shipyards in Italy building both commercial and naval ships, from cruise ships and mega-yachts to aircraft carriers, frigates and submarines. MMC has built three of New York City's landmark Staten Island ferries, Guy V. Molinari, Senator John J. Marchi, and Spirit of America.

A number of ships for the Navy and Coast Guard have been built here at the MMC facility on the Menominee River. The Coast Guard's 16 Juniper-class 206-ft. and 14 Keeper-class 175-ft. seagoing buoy tenders were built at Marinette, as was the 3,500 ton Great Lakes icebreaker, USCGC Mackinaw (WLBB 30), along with several of the Avenger-class mine countermeasure vessels; torpedo weapons retrievers and Yard Patrol Craft for the U.S. Naval Academy. More recently, the yard built the Improved Navy Lighterage System (INLS) self-powered causeway sections for offloading elements of the sea base to the shore.

Today, Wellens says the focus at Marinette is on building LCS.

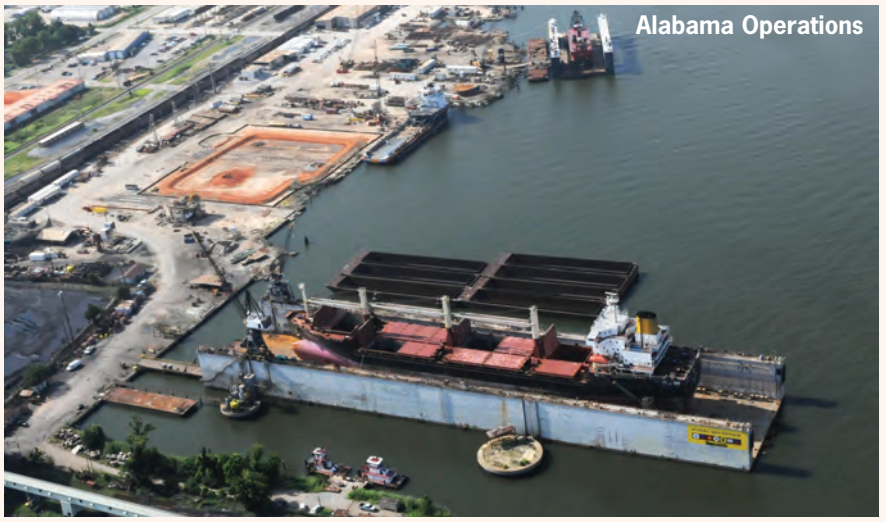
MMC is a partner on the Lockheed Martin-led team responsible for the Freedom-class variant for LCS, one of two variants being built for the Navy. The other is the Independence-class being built at Austal USA in Mobile, Ala.

MMC started construction on the first LCS in 2005. USS Freedom (LCS 1) was launched in 2006 and commissioned in 2008 at Milwaukee. Construction on Marinette's second LCS, Fort Worth (LCS 3) began in 2009, and was delivered to the Navy two months early. The Fort Worth is scheduled for commissioning in September 2012.

In addition to LCS, two other ships are being built at Marinette now. On June 16, the yard celebrated the launch of the fisheries survey vessel Reuben Lasker for

Shipyard Signal International

Signal invests $40m in Orange, TX shipyard; Building ATBs currently for Kirby Ocean Tranporation Co.



Alabama Operations

Signal International CEO Dick Marler

A ubiquitous presence in the Gulf of Mexico ship construction and repair market is Mobile, Ala.-based Signal International, a Marine and Fabrication company which employs about 1800 in its four production facilities across Alabama, Mississippi and Texas. Signal specializes in new construction, ship repair, and rig repair.

Signal can handle marine construction and repair needs with three dry docks; Dry Dock 1 is Panamax size with a lift capacity of 22,000 tons; Dry Dock 2 has a 4500t lift capacity and the Dual Carrier, a heavy lift dry dock, boasts a 400 x 200 ft. footprint with a lift capacity of 30,000 tons. Signal offers both offshore and technical services such as leg-up, quarters mods, platform installations and 3D modeling and 3D laser scanning.

Signal is currently building two ATBs for Kirby Ocean Transport Company (KOTC) in Orange, Texas. The 488 x 90 x 36 ft. barges will use the Articouple coupling system to connect to ocean tugs, which are also being built by the Orange shipyard. The vessels have been designed by Robert Hill and Ocean Tug & Barge Engineering Corp., and the 6,000 hp tugs will each measure 125 x 42 x 22 ft., powered by two EMD 12-710 main engines with Reintjes reduction gears, outfitted with Nautican nozzles and triple rudders. The tugs are classed to ABS Maltese Cross, +A1 Ocean Towing Service standards. The barges are based on Ocean Tug & Barge's Costwise Class AT/B barges, designed to reduce resistance and enhance maneuvering. In particular, the stern design of the barges is the result of extensive model testing and CFD studies.

Signal made a strategic decision over three years ago to close its overhaul and repair yards in Texas and concentrate on new construction at its Orange shipyard using modular construction and world-class manufacturing techniques. This decision resulted in an investment of about $40 million and a complete revamping of the Orange yard, which sits on 80 acres and has almost 500,000 sq. ft. (46,452 sq. m.) of covered building halls and shops.

The core of the effort is a formal Continuous Improvement Program based on Lean Manufacturing principles. Changing the workflow and a complete rethinking of how to reduce costs and improve schedules with no sacrifice in safety or quality was undertaken by our Industrial Engineering Department and the workers themselves.

Virtually all aspects of Signal's engineering, procurement and manufacturing processes were affected.

The general term we use for the new process is Continuous Flow Manufacturing.

The Pascagoula East Yard has similar investments to improve automation as well as dredging a deep hole 500 x 300 x 60 ft. deep dockside.

Signal Ship Repair in Mobile, AL has recertified its Panamax floating dry dock, made quayside improvements and added new Administration, Estimating, Personnel and Port Engineer offices.

the National Oceanic and Atmospheric Administration (NOAA). The ship is extremely quiet so it won't disturb marine life, and features advanced navigation systems, acoustic sensors, and scientific sampling gear to conduct research on fish, marine mammal and turtle populations. The Arctic Region Research Vessel (ARRV) Sikuliaq is currently being built alongside LCS. Sikuliaq is sponsored by the National Science Foundation and will be operated by the University of Alaska Fairbanks to conduct science mission on behalf of the University-National Oceanographic Laboratory System (UNOLS) community.

New way to train new workers

This past year, UW-Marinette again teamed up with Marinette Marine and ShipConstructor Software for the development of a new Shipyard Orientation Program course. Along with other contributors, the team created a virtual shipyard to get a basic understanding of shipyard layouts and functions.

SOP is an immersive, virtual 3-D shipyard training model for newcomers and non-shipbuilders that provides self-paced instruction to achieve a basic understanding of shipyard layouts and functions. Students can go into buildings and perform tasks to learn about safety, reveal properties of ship systems and components, and become familiar with process of ship construction and maintenance.

The concept for this course was to create a 3D virtual shipyard that coupled with a shipyard orientation curriculum enables new employees to fly an avatar around to explore the virtual shipyard, click on items, and learn about the interconnectedness of processes and production, at their own pace. This time, the course was designed to be offered fully online, in a 24/7, on-demand, instructor-less platform. The virtual, 3D yard addresses the industry need for a standardized, cross-discipline orientation program that is both cost-effective and shipyard neutral. This model is generic, and represents various items seen in any shipyard and is not just modeled after one shipyard. But Langteau says the program can also be customized for any shipyard, with their particular layout, rules and procedures. There are other local educational synergies. Northeastern Wisconsin Technical College has a facility that's walking distance from the shipyard. "The technical college system in Wisconsin is a model because they work well with local industry as to what our needs are," says Wellens. "The State of Wisconsin awarded us a grant to develop that curriculum. NWTC has subject matter experts with shipbuilding experience—some former employees of Marinette Marine—in the areas of electrical, welding, pipe fitting and ship fitting."

Wellens also says tours of the yard have been conducted for area high school students, and they can take vocational courses that earn dual credits leading to their high school diploma as well as the technical college. "Working with area high schools and colleges, we're aligning the vocational curriculum through education and employment with concentrations in shipbuilding trades."

NSRP funding available for research using two different vehicles

A Research Announcement (RA) project is a major initiative project. In general, they are higher dollar value and from one to three years in durations. A panel project is generally under $100-150k and short—up to 12 months—in duration.

RA projects also bring together a cross functional team to solve a problem and usually more time and testing to resolve or mature. The panel vice the major project (the RA) path is available to solve a more immediate problem or to determine viability of a bigger problem. "Our panel projects are key to NSRP success," says Bowling. "We have subject matter expects from across the industry—(shipbuilders, centers of excellence, technical warrant holders, small business, etc.—who gather to solve or address a functional issue, such as. welding, safety, painting or surface preparation, or education, to give a few examples.

Examples of RA and Panel projects can be found at www.NSRP.org

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John Dane III

& his newly rebranded TY Offshore

By Susan Buchanan

In the more than two years since its founding, Mississippi-based TY Offshore, the former Trinity Offshore, has invested in a new yard in Gulfport and repaired its storm-damaged New Orleans holdings. The company has doubled its capacity and racked up new orders, president and CEO John Dane III said. TY Offshore designs and builds offshore barges, tugs, oilfield-support vessels and spill-response and patrol vessels.

The company's new name, adopted in late June, should make business simpler. “We decided to rebrand for two reasons,” Dane said. “One was to eliminate any confusion in the marketplace with Trinity Industries’ marine products division.” Trinity Industries, Inc. in Dallas is the nation's largest, inland barge builder.

Dane said “the other reason is that having TY in the name shows a connection with a company that's been producing sophisticated vessels for over 24 years.” TY Offshore is operated separately from Trinity Yachts, LLC, which was founded in 1988, though the two share management and facilities. Trinity Offshore was launched in New Orleans just before the BP spill in April 2010.

Another benefit of the name change, though Dane didn't mention it, is that a firm in Singapore is also called Trinity Offshore.

Dane's Trinity, now TY Offshore, hasn't sat still since its founding. “We've spent over $70 million on capital expenditures since Hurricane Katrina devastated our New Orleans shipyard on the Industrial Canal,” Dane said. “Right after the storm, we acquired a dormant facility in Gulfport from VT Halter that we've expanded by adding another two production buildings, a 3,325-ton synchrolift, a 550-ton travel lift, a panel line and multitude of other equipment. This is on top of totally refurbishing the New Orleans facility.”

The company's two, large production facilities contain more than 1.1 million square feet of under-cover fabrication area. “This gives us an advantage in working conditions since typical problems with rain days are eliminated and employees can work in the shade,” Dane said. “These factors help us attract really top-level employees, and our Gulf Coast location gives us access to probably the largest pool of experienced ship builders in the world.”

Another company strength is combined experience. “My partners and our top-level management have been in the business for over 25 years and some of us over 35 years,” Dane said. In house-engineering capabilities are another major strength. “We're able to help our customers create new designs that will meet new demands from their clients,” he said. Workmanship and delivery times benefit from having engineering on the premises.

On July 25, TY Offshore and FMT Industries, LLC christened and launched FMT 3242, which was built in Gulfport and is the first of ten 297’6” 30,000-barrel tank barges that TY is producing. The barges will be launched in thirty-day intervals. So far, construction has been on time and on budget.

Business Is Brisk & TY Is Hiring

As for the next few years, Dane said “our backlog with Harvey Gulf is two and a half years for Platform Supply Vessels and our inland tank barge business with Florida Marine Transportation is two years, so we see steady work for awhile.” And he said inquiries for offshore and military projects will likely to add to its backlog.

Changes in the regulatory environment since the spill have affected TY and firms across the Gulf Coast. “The slow permitting process in the Gulf set us back 18 months ago — when we had a PSV order pending,” Dane said. “But the permit backlog is being attended to now. The good news-bad news is that so many shipyards are full with work that the pool of experienced workers that were readily available and looking for work is getting smaller.” The company has responded with in-house training and by coordinating with local authorities to train workers. But Dane said “that drives up our costs.”

He also said “we wish that the unemployed workers we read about in the news would consider blue-collar trades, which can be high-paying careers.” In late July, TY Offshore was looking for another 50 welders and shopfitters.

Dane gave an example of tough, new regulations. “In a recent application for a bulkhead to allow for construction of larger, offshore power barges, the Mississippi Dept. of Environmental Quality told us we couldn't get a bulkhead permit — unless we could show we had an air permit for the start-up of gas turbines that will be mounted on the barges. We've never been asked before to permit for emissions on the vessels we're building.”

When asked about safety in the Gulf since the BP spill, Dane said “I believe that all offshore company executives are stressing safety over schedules now. In conversations, it's obvious that none of our customers want to have their names or their company appear in a news report concerning accidents or death.”

He continued “at TY Offshore, we emphasize worker safety in all that we do. Increased awareness will lead to increased safety. In that regard, you could say the industry is safer following extended publicity in the wake of the BP spill.”

Nibbling Away At The Jones Act

In other industry developments, Dane said he's worried about continual attacks on the Jones Act. “A recent letter ruling by Justice Department allowed for foreign flag ships to deliver certain oil field products to the Outer Continental Shelf from a U.S. port. This was never allowed in the past. It's simply an interpretation by a bureaucrat that slowly nibbles away at the Jones Act.”

He added “then we have senators like Arizona's John McCain, who thinks we should do away with the Jones Act alto-

gether." Dane said the nation's marine industry needs to be diligent to protect the Jones Act." U.S. cabotage laws, known as the Jones Act, require commercial vessels transporting merchandise between ports in the United States to be built, owned, operated and manned by U.S. citizens and be registered under the U.S. flag.

Oil Industry Is Promising But Yachts Have Been A Tough Sell

Dane is optimistic about the global oil business over the next few years. "Turmoil in the Middle East and the crazy administration in Iran makes executives want to find replacement oil supplies," he said. And the current price of oil and natural gas make alternative sources, such as solar and wind, noncompetitive on a large-scale basis. "The opening of new areas in Alaska means more U.S. activity, and can help get the United States become more energy independent," he said. "All of this in turn could help end the recession."

said "everything has gotten bigger and more complex. When I left Halter Marine as a junior executive and started Moss Point Marine, we had just designed and delivered the first diesel electric 200-foot supply vessel. Now almost all boats are diesel electric, dynamic positioned with cargo capacities many multiples above what the 'large for their time' 200 footers in the early 1980's could carry."

He added "now, with the ingenuity of the offshore industry, rigs are drilling in water depths on a regular basis that were considered unattainable back then."

Sailing Took Dane To The 2008 Olympics

Dane, a New Orleans native, is a lifelong sailor who has spent many hours on Lake Pontchartrain and won a number of U.S. and international championships. At the age of 58, he competed on the U.S. sailing team in the 2008 Olympics. "I've retired from the large, international sailing scene after checking the Olympics off my bucket list," he said last month. "This

TY Offshore's Heada Smith, Johnny Pasentine, Dennis J Pasentine, with Cindy Pasentine Hull as she Christens FMT 3242.

"The '08 financial crash slowed the luxury business, and **the new class warfare coming out of Washington** has made owning a large yacht out of favor. Hopefully, this class warfare will change this November and maybe put hundreds of laid-off workers back to work."

John Dane III, TY Offshore

Dane said "while the oil patch is doing well, our sister company Trinity Yachts is hurting. The 2008 financial crash slowed the luxury business, and the new class warfare coming out of Washington has made owning a large yacht out of favor. Hopefully, this class warfare will change this November and maybe put hundreds of laid-off workers back to work."

Dane, who holds a B.S. and Ph.D. in Civil Engineering from Tulane University, began his career with Halter Marine in 1974 as a program manager and in 1980 formed his own shipyard, Moss Point Marine. Halter Marine's predecessor, Trinity Industries later purchased the Moss Point Marine yard in 1987, and Dane was named president of Trinity Marine Group. Dane then spun the Halter Marine Group off from Trinity Industries as a new public company in September 1996. He founded Trinity Yachts in 1988 as a division of Halter Marine Group.

When asked how the marine industry had changed in the last 30 years, Dane said "everything has gotten bigger and more complex. When I left Halter Marine as a junior executive and started Moss Point Marine, we had just designed and delivered the first diesel electric 200-foot supply vessel. Now almost all boats are diesel electric, dynamic positioned with cargo capacities many multiples above what the 'large for their time' 200 footers in the early 1980's could carry."

He added "now, with the ingenuity of the offshore industry, rigs are drilling in water depths on a regular basis that were considered unattainable back then."

July I competed in a regatta in Florida in a 17-foot single-handed boat. It was the first time this year and the rust was showing. I ended up in second place, having been beaten by my oldest son, John F. Dane. All in all in was a good regatta for the family."

Dane's son-in-law Austin Sperry was his 2008 Olympic sailing teammate. When asked if he plans to retire anytime soon, the 62-year-old Dane said "probably never. I like the business and the people. And with seven kids, who can ever retire?" Dane is married to Leslie Weatherly, and they also have two grandchildren. Dane said "I've heard so many stories about someone who retires becoming lethargic and dying soon afterwards. Hopefully, you won't see me hanging it up for a long while!"

In addition to Dane, principals of TY Offshore are Felix Sabates, Billy Smith, Wayne Bourgeois and Jim Berulis — an ownership group similar to TY's sister company, Trinity Yachts.

Shipbuilder Seaspan

Scottish Shipyard Exec Graeme Thomson Joins Seaspan as it preps for $8B Navy Contract

Seaspan is an association of Canadian companies primarily involved in coastal and deep sea transportation, bunkering, ship docking/ship escort, ship repair and shipbuilding services in Western North America. Seaspan's three shipyards are located in Vancouver and Victoria, British Columbia (BC), Canada. Seaspan has served a variety of customers, including the Canadian Navy and Coast Guard, with construction, conversion, repair and maintenance projects on deep sea vessels and container ships, ice breakers, ferries, tugs, fishing vessels, Arctic Class and research vessels, cruise ships, barges and yachts.

On October 19, 2011, the Canadian Federal Government announced that Seaspan was awarded the non-combat vessel portion of the National Shipbuilding Procurement Strategy (NSPS). This calls for two Joint Support Ships, one Offshore Oceanographic Science Vessel, three Offshore Fisheries Science Vessels and one Polar Icebreaker.

While planning has already begun, construction on the new vessels won't start until 2013. In the meantime, as part of the shipyard modernization project, over $200m worth of new and upgraded infrastructure is being built at Seaspan's shipyards while vessel design work is being finalized.

Enter Graeme Thomson

Four weeks into his new role as Vice President of Program Management at Seaspan, Thomson is well-positioned to meet the challenges coming his way. Formerly a Program Director at BAE Systems Surface Ships in Glasgow, Scotland, Thomson is armed with an Electrical Engineering degree, an MBA and the experience of dealing with the UK's Ministry of Defense as a customer.

"We're going to be building complex ships at Seaspan, and it's no different to the complex ships I was involved in at BAE Systems," said Thomson. " I tend to think the projects and challenges are very much alike–getting them to be affordable, making sure we operate with the right processes, making sure we have the management and infrastructure to stay in control."

In addition to project management responsibilities in his role at Seaspan, Thomson is overseeing the development, integration and implementation of all the Program Management processes and toolsets needed for the NSPS project. According to Thomson, he also is "working closely with the customer to ensure we are staying aligned at all times as we go through the various phases of shipbuilding, and that we're consistent in our approaches and technique for program managing the vessels." Though on the job a short time, Thomson is impressed with the skilled and dedicated workforce, and has noticed a distinct advantage that Seaspan has, saying, "The one thing that really strikes me is the agility that Seaspan has. Looking at the type of work they do and the spread of the work they do, between the repair and construction of their own barges and repair of the tugs, to responding to the Canadian Navy or to cruise ships—it gives Seaspan a unique advantage in how to respond to the challenges that we're about to face as we go into the NSPS contract." According to Thomson, Seaspan's flexibility and adaptability will be instrumental in helping surmount the inevitable growing pains that will come with new facilities and new processes.

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Graeme Thomson, VP, Program Management, Seaspan

Putting the new facilities and processes to the test, however, is one reason Thomson is looking forward to the actual building process. "The build I'm looking forward to most just now is the Offshore Fisheries Science Vessels," he said. "And not particularly that they're any more complex, they all have their challenges. I think what makes them interesting from my perspective is that it's the time to fine tune and improve all the infrastructure, the site facilities, the IT, the processes, the organization, the relationships with the customer and all the controls we'll have in place. And that's going to be in real-time, and when we are focused on maintaining schedule and budget."

Though Thomson is used to dealing with challenges at work, challenges as a newcomer to the city of Vancouver are something new. Finding accommodation, learning to drive on the "wrong" side of the road and using the correct turn of phrase are just a few of the daily tasks that suddenly seem to take a lot more effort than they did in Glasgow. Even shopping poses its challenges, says Thomson, "I don't recognize 90% of the products. You lay on top of that what I would describe as intense and challenging days of work as I get use to working in a new organization, and I really have a lot to keep myself occupied."

Thomson's experiences are being carefully documented as Seaspan continues to look at international recruits and seeks to improve its on-boarding program for newcomers. "The people at Seaspan are very keen to hear my experiences as they work to improve the program going forward," he says.

While there may be many challenges ahead, Thomson is quick to point out that he's standing at the doorstep of a tremendous opportunity. "The development of the shipyards in terms of creating a world-class state-of-the-art facility and the investment put into the IT infrastructure, people development and training, the organization, and growing all of that, it marries up to what appeals to me as complexity of work and challenge of work. At the same time, we're trying to develop a strong business that's capable of delivering what we have ahead of us, and that gives a real buzz in and of itself."

Thomson continues, "There's a part of participating in something that's big for Seaspan, big for British Columbia and big for Canada—that we create a successful modern shipyard that gets respected worldwide for what it does. If this is where I end up leaving my footprint—helping shipbuilding in Vancouver, and Seaspan, be successful–and I've played a small part in that, then I'm delighted to do so. It's a real honor."

Chinese to Build Polar RV

The world's move north to the Arctic for the exploration of energy resources has attracted global attention of Arctic and non-Arctic states. The newest player: China, which last month announced its plan to design and build its first ever Polar Research Vessel.

The plan has been organized by State Oceanic Administration (SOA),China, Chinese Arctic and Antarctic Administration (CAA) and the Polar Research Institute of China (PRIC) to build a new icebreaking research vessel to meet the country's increased need of polar scientific research.

As would be expected, the new vessel will be equipped with advanced scientific equipment for polar oceans research, an integrated survey systems including marine geological and geophysical equipment, marine biological and ecological instruments.

For the integrated environmental science programs the vessel will have marine and atmospheric observing and sampling capabilities closely related with climate change monitoring. The marine geological and geophysical capabilities will give possibilities for seasonal polar marine geology, marine gravity, magnetic and seismic surveys. For marine biological and ecological programs the vessel will enable marine organism and ecological surveys and acts as a biological research platform.

To design the new ship China has turned to Finnish Arctic powerhouse Aker Arctic, an organization with a long and successful record in designs for the harsh Arctic environment. Aker Arctic will perform the conceptual and basic design of the new Polar Research Vessel. The value of the signed contract for Aker Arctic is more than $5m.

"After sustained effort, the State Oceanic Administration (SOA) and the Aker Arctic Technology Inc., agree with all the basic design requirements of the new Polar Research Vessel of China and sign the contract," said Mr. Qu Tanzhou, Director General, Chinese Arctic and Antarctic Administration of State Oeananic Administration. "As the first polar scientific research icebreaker for China, its successful design and build will not only push forward our polar scientific research career by achieving more successes, but also will make great development on Chinese ship construction industry."

The polar research icebreaker for China will be designed to accommodate a total of 90 persons and will have a length overall of about 120m, a maximum breadth of 22.3m and draft of 8.5 m. The vessel will have the ability to break through 1.5 m of level ice at 2 to 3 knots speed, including multi-year ice. The vessel will be Ice class will be PC3 and the vessel will have dual classification from China Classification Society (CCS) and Lloyds Register of Shipping (LR).

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Shipbuilder Detroit Brasil Ltda

First of Four GPA 688SC PSVs Launched in Brazil

April 2012 is when the Starnav Perseus, the first of four GPA 688SC PSVs (PETROBRAS PSV 4500) was launched at Brazilian shipyard Detroit Brasil Ltda., a subsidiary of Detroit Chile. Naval Architecture and Marine Engineering firm Guido Perla & Associates, Inc. (GPA) provided the Basic/Class Design and Detailed Construction Engineering.

GPA worked closely with the yard and equipment suppliers to meet all of PETROBRAS' requirements for these vessels, which are owned and operated by Brazilian-based Starnav Serviços Marítimos Ltda. GPA brought a high level of experience to this project, setting a high value on technical and economical benefits to both the operator and shipyard. For the PSV 4500 PETROBRAS tender, GPA developed a modern look vessel, the GPA 688SC PSV, with a special hull shape and new deckhouse styling. The design also has the capability to be easily transformed into the PSV 3000 (GPA 675 PSV), another vessel specified by PETROBRAS, by removing part of the parallel midbody section and making some modifications on the tank farm area.

This characteristic is valuable for the shipyard as it offers flexibility in production by retaining a large part of the hull for both models, thus reducing cost of production and increasing efficiency of construction.

"Detroit Brazil together with its operating company Starnav has worked as a team with GPA in implementing the construction of these vessels,'' said Guido F. Perla, Chairman of GPA. "This has been a team effort with the companies' staff working together with the single purpose of designing and building a vessel that best meets their production and operational requirements while meeting the requirements of the tender and high quality and safety standards."

The GPA 688SC PSV, measuring 90m in overall length, has a deadweight capacity of 4500 MT, thus the designation of the vessel. The vessel's mechanical and cargo systems meet PETROBRAS requirements for four segregated liquid cargo systems with independent exclusive tanks, piping systems and cargo pumps. All of them are controlled by a fully automatic cargo management system and are capable of carrying synthetic oil-based mud (1,160 cu. m., Segregation 1), hydrocarbonated oil-based mud (290 cu. m., Segregation 2), water-based mud (590 cu. m., Segregation 3), and brine (1,494 cu. m., Segregation 4). In addition, the vessels are equipped with tanks capable of carrying fresh water (172 cu. m.), dry bulk (340 cu. m.), ship's fuel oil (261 cu. m.), ship's fuel oil day (38 cu. m.), fuel oil overflow (55 cu. m.), lube oil (4.5 cu. m.), dirty oil (13.6 cu. m.), oily water (13.6 cu. m.), sewage (13.4 cu. m.), as well as ship's ballast (2,060 cu. m.),

The hull is capable of more deadweight than the 4500 tons due to its large size. This large size comes from having the physical tank volume as required by PETROBRAS of having dedicated exclusive tanks of single cargo use for each of the segregations of liquid cargo.

The vessels are optimally equipped for all conditions with the most advanced diesel-electric propulsion system, consisting of **MTU** engines, azimuthal propulsion units by **SCHOTTEL** and the Integrated Engine Control Room (ECR) (pictured) by **EPD**.

Running on four MTU generators rated for 1,845 kW and one MTU emergency generator rated for 176 kW, GPA sees several benefits for the operator as these generators provide a powerful and compact, robust and quiet solution. They also offer the highest cost-effectiveness and profitability due to low consumption values, long maintenance intervals, and a low-maintenance engine design. The generators are located on the maindeck, a concept GPA pioneered several years ago, fully utilizing the flexibility of the diesel-electric propulsion system. The concept increases the cargo capacity below deck by about 30% while offering a high degree of power management flexibility inherent of the diesel-electric system, allowing to bring on power in small increments matching the power demand of the operational profile of the vessels keeping the generator engines at appropriate loadings, operating at their highest efficiencies. Thus, fuel consumption and CO2 reject are reduced by 20-30% compared to conventional systems. An additional benefit of the installation of the engine room on the main deck concept is the notable reduction of noise and vibration levels in the accommodation areas, achieved by adding an extra deck level of attenuation between the accommodations and the bow thrusters and cargo machinery, two of the prime contributors to noise onboard these types of vessels.

This propulsion configuration is optimized by combining it with two high efficiency azimuthal twin propellers combi drives rated for 2,500 kW each and two tunnel thrusters rated for 900 kW each delivered by SCHOTTEL. Combined with GPA hull shape, the SCHOTTEL units provide economic operation meeting the speed requirement of PETROBRAS. **The ECR provided by EPD (pictued left and inset on the vessel during installation) is a completely pre-tested, pre-manufactured self contained system and designed as an integral part of the ship's structure that was first brought to market on the GPA-designed GPA 654 PSV in 2007.** Since then, GPA continued to work closely with EPD, integrating the system on more than 50 offshore vessels designed by GPA. The system allows for the equipment to be installed and tested in a controlled environment. During construction, the ECR is lowered onto the vessel, secured and connected to power and control cables externally. This proven approach greatly reduces the possibility of equipment damage while in shipyard and reduces start up time. The GPA 688 PSVs, providing accommodations for 30 crew members, will bear the class notation ABS, +DPS-2, +A1, Offshore Support Vessel, Circle E, +AMS and +ACCU.

The vessels are under an 8-year contract for PETROBRAS and will be operating in the offshore fields in Brazil.

EPD is proud to be a member of the Detroit Brasil Ltda / Starnav Serviços Marítimos Ltda PSV-4500 new build project team.

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Shipbuilder AUSTAL USA

Mobile, Ala.-based builder continues building next generation of U.S. Navy warfighters

Austal USA has recently

- Received Award for Excellence in Safety for 3rd year in a row from the Shipbuilders Council of America (SCA) for commitment to improving safety and health in the workplace. The industry average Total Recordable Incidence Rate in 2011 was 9.2, four times higher than Austal USA's rate of 2.3.
- Received Navy construction contracts for 4 Joint High Speed Vessels (worth $634.7 million) and 4 Littoral Combat Ships (worth $x billion).
- Celebrated the opening of three new shipyard facilities, including: Phase 2 of our Module Manufacturing Facility (MMF) (350,000 sf), a new office complex (108,000 sf), and a new final assembly bay (59,000 sf).
- Honored 38 graduates of Austal's 4-year Apprenticeship Program who received their certificates of completion and designation as Department of Labor Class A Journeymen. The program is governed by the Department of Labor Standards of Apprenticeship and is certified by the U.S. Department of Labor, Alabama Department of Post Secondary Education, and the Veteran's Administration.
- Launched and christened first Joint High Speed Vessel, USNS Spearhead (JHSV 1) for U.S. Navy in September 2011, scheduled for delivery in August 2012.

(Photo credit: Lewis Communications)

Above
JHSV module on the move.

Left
Austal USA aluminum welder working on USS Independence (LCS 2).

Projects

In 2004, the U.S. Navy awarded a final design contract for the Littoral Combat Ship (LCS) to Bath Iron Works (BIW). Austal is the LCS 127-meter trimaran seaframe designer and builder for this contract. The first order for a prototype was awarded to the BIW/Austal LCS Team in October 2005. USS Independence was launched at Austal's Mobile, Alabama shipyard in April 2008 and delivered to the Navy in December 2009. The LCS will be the most advanced high-speed military craft in the world and is intended to operate in coastal areas globally. As a key part of the U.S. Navy fleet, they will be highly maneuverable and configurable to support mine detection/elimination, anti-submarine, and surface ship warfare. The trimaran hull form provides the ship with superior seakeeping, fuel efficiency, and the capacity to carry a large, modular cache of weapons packages. A contract for a second BIW/Austal LCS was awarded by the Navy in May 2009 and Coronado (LCS 4) was launched and christened in January 2012. In December 2010, Austal, as prime contractor, received a Navy contract worth over $3.5 billion for construction of up to 10 more LCSs. Austal currently has 5 LCS under contract; 4 of which are from the new 10-ship award.

Shipyard Investments

Austal USA was created to reach the commercial and defense aluminum vessel market in the U.S., and it brings a new dimension in high-speed marine transport, using the company's lightweight aluminum fabrication technology and capabilities. Austal builds large aluminum ships, including naval surface combatants and theater support vessels, at its 125-acre waterfront facility in Mobile, Alabama.

Austal USA made more than $100M in expansion and improvements in its shipyard from 2008 to 2010. Austal will invest an additional $300M as it doubles its facilities and completes the transformation of Austal. The investments made by Austal in its facility, partnering with AIDT to develop a hands-on employee training program at the Maritime Training Center and with the Alabama Technology Network to implement lean manufacturing principals into the culture of the workforce, and the partnership between the City/County of Mobile, the State of Alabama, and Austal has allowed for a reduction in the cost of the U.S. Navy's Littoral Combat Ship (LCS): evidenced by the $3.5B-award for construction of up to 10 LCS. The methods introduced at Austal also led to the $1.6B-Navy award of the 10-ship JHSV contract, which has helped to label the entire Mobile area as a rising star in the ranks of U.S. Navy shipbuilding.

Austal is committed to implementing R&D initiatives focused on increasing manufacturing efficiency and improving product quality. According to the company, the single greatest technological advancement in Austal's history is the development of the trimaran hullform (the seaframe for the Austal-designed LCS) which decouples vessel length from capacity and permits the marriage of a cost-effective platform with a longer hull form that offers superior sea keeping in a range of conditions. Austal also implemented modular manufacturing techniques in aluminum shipbuilding. Applying lessons learned from industries as diverse as aerospace and automotive, a new manufacturing approach for aluminum ships culminated with the establishment of the 700,000 SF Module Manufacturing Facility.

Austal continues to refine its operations and within its warehouse has implemented a number of "high tech" solutions to include Cribmaster software and hardware which manages its maintenance and repair operation (MRO) supplies, plant MRO vending machines, and provides daily updates of usage of items. Austal installed "Accuports" which allow for unmanned material cribs saving considerable labor and recently installed an RFID Bar Code/ Data Collection coding system which allows for automatic transactions of inventoried parts, real time updates, and traceability of parts throughout the process, reducing data entry errors and improving production efficiencies.

Brazil Receives its First Ocean Patrol Vessel

Amazonas, the first of three Ocean Patrol Vessels built by BAE Systems, was delivered to the Brazilian Navy in a ceremony at Portsmouth Naval Base. The delivery comes just six months after the $208m contract for the supply of three Ocean Patrol Vessels and ancillary support services was signed. BAE Systems is also providing training for more than 80 members of Amazonas crew, currently based in Portsmouth, in areas such as seamanship, electronics and propulsion. The ship left for Plymouth in July, where the crew completed their training before setting sail for Brazil this month.

First of class, Amazonas, was built at BAE Systems' Portsmouth facility. Her sister ships Apa and Araguari were built at the company's Scotstoun shipyard on the Clyde and are expected to be delivered to the Brazilian Navy in December 2012 and April 2013, respectively.

The Ocean Patrol Vessels are outfitted with a 30mm cannon and two 25mm guns, as well as a rigid inflatable boat and a helicopter flight deck capable of landing a medium-sized helicopter, the ships are ideal for performing maritime security in Brazil's territorial waters, including the protection of the country's oil and gas reserves.

Designed to accommodate a crew of up to 70, with additional accommodation for 50 embarked troops or passengers and ample deck space for container storage, the vessels are also effective for search and rescue, disaster and humanitarian relief operations.

Møkster OSV Designed for Arctic Ops

Main particulars:

Length, o.a.	92 m
Breadth, molded	20 m
Depth main deck	8.2 m
Design draft	6.0 m
Max. draft midship	6.8 m
Draft with 2 m freeboard	6.2 m
Cargo deck area	1000 sq. m.
DWT summer-draft	5000 T
Engines	4 x Rolls-Royce Marine main generator sets. 4 x Bergen Diesel C25:33L6ACD

(Photo Copyright Rolls-Royce)

Rolls-Royce signed a $15.6m contract with Simon Møkster Shipping for a wave piercing offshore vessel with a new bow design that will go into service for Statoil in the Arctic region. "We are happy to be chosen by Simon Møkster Shipping to develop this highly innovative offshore vessel," said Hans Robert Almestad, Rolls-Royce, General Sales Manager. "Our wave piercing designs and other highly efficient technologies are becoming increasingly popular with customers seeking to reduce their operating costs and improve the environmental performance of their fleets."

The vessel will be built in Spain at the Gondan shipyard, and are developed specifically for missions in the arctic region, equipped to undertake oil spill recovery duties. Due for delivery in 2014, the Rolls-Royce vessel includes an extensive range of advanced equipment, such as Azipull propellers, thrusters, the latest generation of automation and control systems and a dynamic positioning system (DP2) which uses GPS systems to ensure the vessel can hold its position even in

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Shipyards Weather the Storm (*again*)

Whether they are large or small, domestic or foreign, many shipyards have hauntingly familiar tales. They work in a notoriously cyclical markets which can wreak havoc on attracting and retaining top talent; they are capital intensive, demanding steady investment to stay safe, compliant and efficient, no matter the health of a particular year's balance sheet. Through it all, though, you arguably will not find a more resilient or resourceful brand of business. *Following are some of their stories.*

St. Johns Shipbuilding is a young and growing operation breathing new life into an old yard. Five years ago Steve Ganoe and partner Michael Grandonico purchased a closed, 98-acre facility on Florida's St. Johns River and have since renewed its infrastructure and doubled its tonnage capacity. St. Johns has a number of successful deliveries under its belt now, including tugs, barges and offshore support vessels for U.S. and foreign flags. The yard is pushing forward with still more improvements allowing it to take on a wide variety of projects. St. Johns recently delivered the OSV Sea Strength for work in the Caribbean and is nearly ready to deliver its first split-hull scow barge.

St. Johns Shipbuilding is half-way through a five-year infrastructure improvement project aimed at more than doubling its tonnage capacity. The yard sits on 98 acres along the St. Johns River in Palatka, Fla., approximately 68 miles southwest of Jacksonville. When Ganoe and Grandonico purchased the yard it had been mostly empty for several years. Since then, the owners and managers have been transforming it, updating and renewing 30-year-old facilities to support multiple new build and repair projects.

In the last year St. Johns has been busy creating more jigs, or construction areas for vessel hulls, and installing more bulkhead along the 2,400 ft. of water frontage. A second rail launch system was completed to move vessels between land and water. St. Johns is also in the process of increasing its three phase amperage and anticipates finishing the electrical power source expansion this winter.

The shipyard's goal is to build capacity for simultaneous construction of four to five vessels with room for dry docking and repair of additional vessels. With a footprint as large as St. Johns' there is plenty of room for this type of expansion and the founding partners believes the market is ready for more U.S. shipbuilding capacity.

"We're encouraged by the interest in new construction right now," said Ganoe. "There are a lot of different types of projects out there." This includes barges, excursion vessels, cargo vessels and offshore support vessels. While Ganoe and Grandonico see the offshore support vessel market as the most active, St. Johns is focused on being competitive in the overall market.

St. Johns Shipbuilding employee at work on split-hull scow.

Jim Irving, CEO Irving Shipbuilding and Steve Durrell, President Irving Shipbuilding.

Besides its renewed infrastructure, Ganoe counts the experience of its yard supervisors and its location as St. Johns' biggest advantages. Most of its supervisors have 20 or more years of shipyard experience. In addition, Ganoe said, "We're on the East Coast with great access to New England as well as the Caribbean, but not far enough from the Gulf to be cost prohibitive."

Demonstrating the yard's ability to take on a wide range of projects, St. Johns is building its first split-hull scow barge. Ganoe described this project as technically challenging because the vessel weighs more than 1,200 tons and "represents a great deal of precision work including steel cutting and articulating pieces together."

Irving Shipbuilding: Mammoth $25b Canadian Navy Contract

Late last year Irving Shipbuilding was awarded the lion's share of a historic Canadian Navy shipbuilding contract, a deal worth approximately $25b which has set in motion the future transformation of a historic operation for the coming generation. "The Irving Shipbuilding team is honored to have been chosen by Canada to build the Navy's new combat vessel fleet and we look forward to continued successful negotiations with the federal government," said Steve Durrell, President, Irving Shipbuilding. "Irving Shipbuilding has a proven record of successfully delivering 80% of Canada's current combat vessel fleet, including serving as prime Contractor for Canada's largest shipbuilding Major Crown Project, the Canadian Patrol Frigate (CPF) program. In priming the CPF program in the late 1980s and early 1990s, our team met all contract requirements as well as delivered to Canada additional benefits such as production innovations, technology transfers, industrial benefits and efficiency improvements."

Today Irving Shipbuilding employs approximately 1,300 experienced shipbuilders, who are currently working on a number of key Canadian shipbuilding programs, which include Mid-Life Refits on seven of the RCN's patrol frigates as part of the Frigate Life Extension Program, as well as seven of nine high-tech

Mid-Shore Patrol Vessels under construction for the Canadian Coast Guard. The first of class Mid-Shore Patrol Vessel, CCGS Private Robertson V.C., recently completed successful sea trials and has been delivered.

"That current and past experience with federal, multi-ship programs prepares us well to take on both the Arctic Offshore Patrol Ships (AOPS), as well as the Canadian Surface Combatants (CSC) that will follow under the National Shipbuilding Procurement Strategy," said Durrell. "In addition, our plans for continued significant infrastructure and technology investments to modernize Irving Shipbuilding facilities will ensure the most effective, efficient shipbuilding methods will be employed for the benefit of all Canadians. "

Irving Shipbuilding has already invested heavily to prepare for the NSPS opportunity, having made more than $100m of improvements and additions focused on its facilities, people and infrastructure over the last five years. Its future facilities plan involves expanding the capacity of the yard, modernizing equipment and improving the efficiency of the flow of work through the yard so as to maximize the value to the customer. "We anticipate we will implement this expansion in a number of discreet phases of construction in order to minimize disruption to the existing order book of business and still be ready for the start of the construction of AOPS," said Durrell. "Our goal is to be shovel ready by the spring of 2013 and we have already begun to issue RFP's for engineering services related to the facility upgrades."

CTruk: Success is Blowing in the Wind

Established in 2009, the CTruk team has a long collective history of working and sailing on the UK's east coast. The company builds a diversity of vessels, with applications in the offshore wind, military, super yacht and commercial sectors at its shipyard in Brightlingsea, Essex. **CTruk has applied for a patent for its flexible pod system, which enables vessels to transform in just a few hours to meet the varying demands of offshore wind support work.** Using vacuum infusion to build composite boats, saving up to 40% on weight, the company has also developed a modular manufacturing process to increase production efficiency. The CTruk team has built eight catamaran vessels in two years and is currently constructing a SWATH, which will increase the current wave height limits for offshore wind farm technician transfer. CTruk recently launched its eighth vessel in a two-year period. Over the last 12 months the company has doubled in size in response to production demand and now employs 40 technicians.

Alliance, a CTruk 20T MPC


Andy White, Chairman, CTruk

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Factory space has increased 100%, enabling the company to implement its modular production system, with dedicated areas and teams for each stage of the build process. These changes have resulted in a massive increase in production capacity and the company continues on a recruitment drive. A resin infusion process is used to build these composite workboats to the highest standards (surveyed to DNV), saving up to 40% on weight. Kevlar armor plating in key areas and sub-divisions provide damage stability in excess of current UK standards.

Senesco MARINE

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When impeccable quality from the keel to the pilot house is an owner's goal to assure lifelong structural and mechanical integrity, reliability of operation and pride of ownership Senesco Marine will construct the marine vessels your company will be proud to own and operate.

Craftsmen Not Just Constructors

Bayonne Dry Dock & GMD Shipyard: Two Shipyards in the New York City area.

Bayonne Dry Dock & Repair Corp., Bayonne, NJ, and GMD Shipyard Corp. in Brooklyn have been a compelling story on the U.S. East Coast waterfront for more than 25 years. The ship repair company helps keep the business flowing with a strong focus on its customer service and a diverse service offering, focused on servicing larger oceangoing ships in its Bayonne, NJ facility, and the smaller workboat and coastwise trade market in its Brooklyn facility. A major client of the larger facility is the Military Sealift Command, and at press time **Bayonne Dry Dock was finalizing repair work on the USNS Watson (T-AKR 310), a Large, Medium-Speed RoRo Ship.** At 950 x 106 ft., Watson was a sight to behold in the Bayonne dry dock. USNS Watson entered the dry dock in late April 2012, and the maintenance included a long list of standard repair items, from blasting and coating to propeller work. USNS Watson displaces 63,644 long tons and is one of 30 ships in Military Sealift Command's Prepositioning Program.

Bayonne Dry Dock & Repair Corp. operates a full service ship repair yard located in the Port Jersey area of New York/New Jersey harbor. Situated a few miles from the Verrazano Bridge, the Bayonne facility has no aerial draft restrictions and is suited for both commercial and government vessels. The facility's graving dock measures 1092 x 148 ft., with a dock floor load capacity of 99,000 tons.

In Brooklyn is GMD Shipyard Corp. is located within the Brooklyn Navy Yard and is the largest dry dock facility in New York City. GMD offers two 1090 x 150 ft. graving docks, in addition to 1100 ft. of wet berth, and provides 24-hour full service operational capabilities. The dockyard maintains and operates numerous cranes ranging from 15 tons mobile to 200 tons gantry. The facility is outfitted with all the equipment and services necessary to produce and perform any type of maintenance or repair, including grit blasting, ultra high-pressure water blasting, painting and steel fabrication.

The focus in Brooklyn is smaller vessels: ATB's, Utility workboats, & Oceangoing Barges, for example, with most of the business from commercial operators, coastal trade and vessels you see in and around New York City.

Damen

One of the most successful shipbuilding businesses based in Europe and operating globally is the family owned Dutch company Damen Shipyards Group, which started in 1927 when a shipyard was founded at Hardinxveld near Rotterdam, building and repairing ships on the River Merwede that flows into the North Sea. Today, the Damen name is ubiquitous and global, largely spurred in 1969 when Kommer Damen took over the running of the shipyard, listened to his clients' requests, and instigated the vision

of producing standard rather than custom built vessels. This approach allowed Damen to have the more popular ships "in stock" able to be delivered in a matter of weeks rather than months or years. **Today's stock of ships in different locations, exceed 150 vessels. All a customer has to do is to specify the paint livery: in some cases the electrical/electronics/navigation packages to be fitted and the ship is ready for delivery.** Another and important benefit is that standardization of production means, greater efficiency and a lower manufacturing cost. No wonder this "double win" of fast delivery and competitive pricing meant rapidly increasing sales.

The standardization concept also makes it easier for ships to be sold in "kit form" whereby the steel is precut to size for assembly (welding) locally in far off places. As required, a suitable workforce can be flown in to do the work, or more often, supervise and train a local workforce to build the ship themselves. On going training to ensure a lasting business is provided on request.

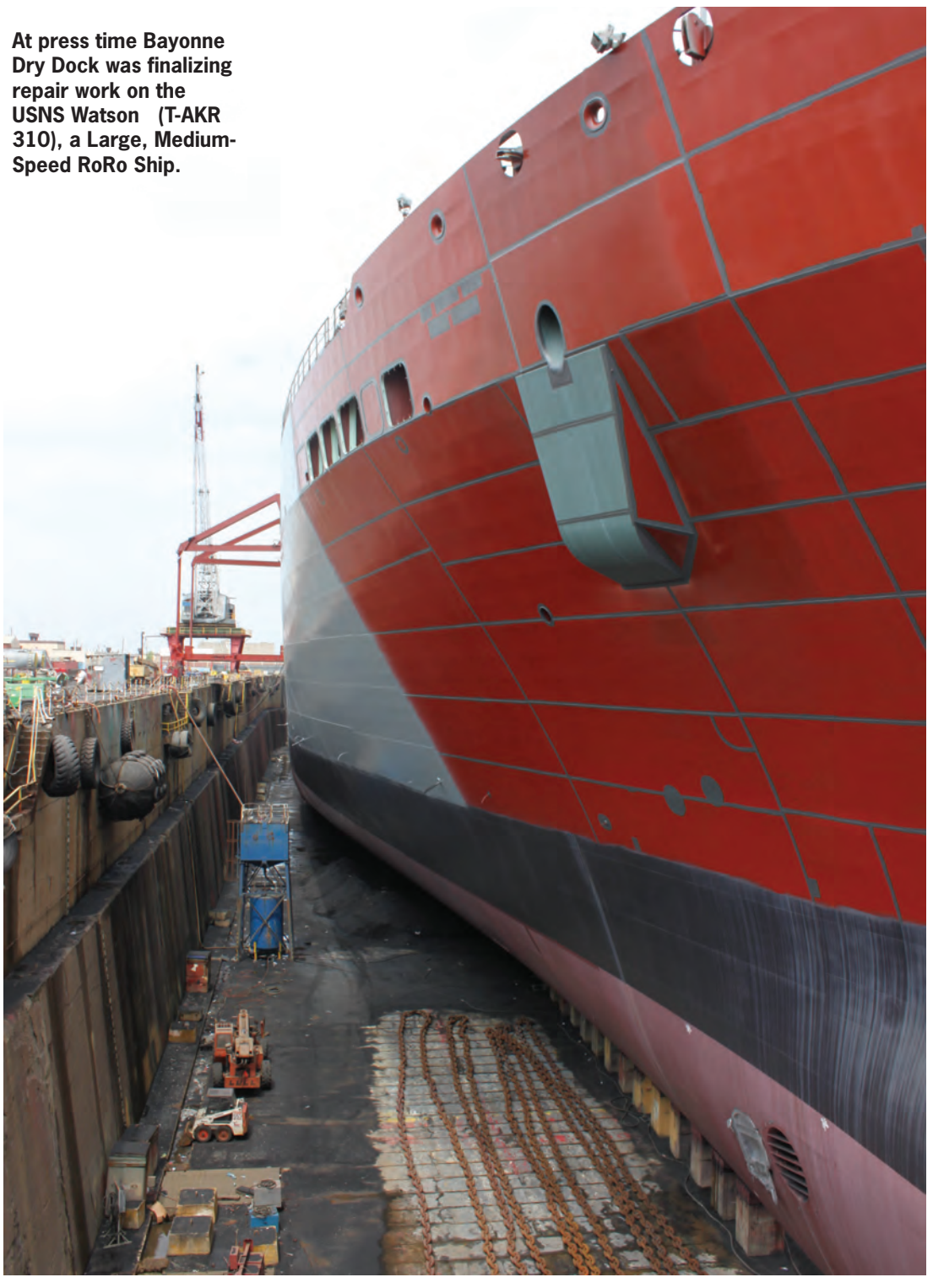
Where no shipyard exists, Damen will even help to create the shipyard first, then supervise building the vessels.

In the 1990's "The Enlarged Ship Concept"(ESC) was introduced in the patrol ship designs of the Stan Patrol 4207 and 4708 vessels. The ESC extends the length of the ship without changing the beam and importantly, not loading up the additional space with heavy objects so the displacement is not greatly increased. The lengthened hull offers more suitable positioning of vital areas such as the wheelhouse and crew accommodation areas. Increasing the length without changing the functionality creates more space enabling greater hydromechanical optimization of the hull design. A very sharp slender bow further reduces vertical accelerations with large waves.

Early in the new millennium, complementing the ESC, the Sea Axe Bow Concept was developed offering superior motion behavior and unprecedented sea keeping attributes for certain applications. Damen was quick to incorporate these benefits into new ship designs producing greatly improved bow performance with dramatic reduction in wave resistance and offering up to 20% reduction in fuel usage.

The Sea Axe Bow is so called from the side view of the straight perpendicular bow where the keel line slopes down forward and the sheer line slopes up – strongly resembling the blade of an axe. It was originally developed by a team of Delft Technical University, Damen Shipyards, US Coast Guard, Royal Netherlands Navy and MARIN for patrol boats but is widely used for crew boats and fast supply vessels. Recently a 26m Fast Crew Supplier with catamaran hull has been successfully in-

At press time Bayonne Dry Dock was finalizing repair work on the USNS Watson (T-AKR 310), a Large, Medium-Speed RoRo Ship.



The "Sentinel" Class Fast Response Cutter is built by Bollinger and uses a Damen Stan Patrol 4708 as parent design. USCG Sentinel Class cutter.

troduced called the Twin Axe.

Despite the economic slowdown of the last years, the Damen philosophy of standardization of supply while offering full through life support of the vessel, continues to be their secret of success. The Group enjoys an annual turnover of $1.8 billion from their 35 owned or partner shipyards in 34 countries worldwide. Annually, the group's 6,000 plus employees build around 120-150 vessels and complete 1,000 repair jobs.

Senesco Steams Ahead

Rhode Island-based Senesco Marine LLC – which for more than a decade was engrossed in primarily serving Reinauer requirements – has moved more aggressively into the outside commercial markets. Senesco is an accomplished builder of modern tonnage, capable of most any mid-tier shipyard newbuild or repair challenge. To look at future prospects it is sometimes wise to take a step back, and this surely is the case with Senesco. In operation since 1999, the Senesco shipyard of today was born when the original developers of the then relatively new shipyard encountered construction difficulties with a very large ATB unit. At the same time, Reinauer Transportation Company had received two tank barges completed by the yard, with an ambitious OPA-90 driven fleet replacement program also planned. The obvious quality of the workmanship found in the first two Reinauer barges with plans for more led to the rescue and redirection of the yard by Reinauer.

Another driving force of the acquisition was the lack of open slots in Gulf Coast yards at the time, especially following the now-famous hurricane activity that took its toll on Gulf Coast infrastructure. Dedicated to a fleet replacement program, the yard remained for more than five years, more or less as a captive operation by Reinauer.

With the end of OPA-90 fleet replacement activity for both Reinauer and the Jones Act industry in general, the yard is now engaging the commercial marine industry at large.

Senesco Marine operates two facilities which include a new building yard and a repair yard both located on the deep water of Narragansett Bay. Both facilities

Topside Offshore Inland

Offshore Inland Marine & Oilfield Services: Topside Service and Repair Around the World

Offshore Inland Marine & Oilfield Services, Inc. (OIMO) offers a unique combination of topside marine services throughout the U.S. and abroad. Positioned with US Gulf (primarily deep water) topside service centers in Pensacola, Mobile, Port Fourchon, Galveston, and Port Isabel as well as supporting topside services at additional locations in Mexico, Western Mediterranean, and West Africa. Offering a strong engineering and design capabilities supporting both traditional marine overhaul needs as well as more complicated and demanding project upgrades for the oil and gas service and drill rig sector.

Moving to a its offering of specialty services such as electrical, mechanical, and hydraulic services as well as high pressure and structural support are all enhanced by strong teams of scaffold builders, painters, riggers, etc. This full service offering allows OIMO to support the above service centers as well as mobilize these service teams to anywhere in the world.

In recent years, OIMO has provided these traveling shipyard teams to support our customers in over a dozen countries around the world.

In the recent past, OIMO has made several technical and geographical investments and improvements.

Technically, the company's engineering and design capabilities has expanded to include more pipe, electrical, and structural expertise as well as a new laser scanner system, which is used for reverse engineering and upgrade support. The company has also expanded its electrical, electronic, and power management services capabilities lead by a strong supervision team.

Tom Haley, president, Offshore Inland Marine & Oilfield Services Inc.

Geographically, OIMO has put extensive effort into expanding its deep-water service locations especially with its large facility in Pensacola, Galveston, and Dos Bocas, Mexico.

These locations include full service topside marine services, full fabrication, as well as subsea and drill rig project mobilization and storage support.

OIMO completes more than 500 projects each year ranging from large rig upgrades to full topside ship special survey periods, to design and build projects featuring full service offshore installations.

One project was a full service special survey period in Dos Bocas, Mexico on a jack up drill rig.

This project included large structural ballast and hull repairs, reworking several piping systems, change out of main engines, accommodation upgrade, scaffolding, diving inspections, etc.

Another example of OIMO's capabilities can be highlighted from a recent project off the coast of West Africa.

The OIMO's team removed two deck cranes from an Atwood Oceanic Rig and replaced them with two new Seatrax cranes. This project was handled by OIMO as the full general contractor prefabricating all the necessary under deck structures and pedestals and providing a high impact team to handle the entire on board change out.

In a recent letter from the Drilling and Completions Manager, Jamie Ressler, the OIMO team and the Seahawk crew were congratulated and praised for all their good work:

"To the best of my knowledge," Ressler said, "no rig contractor/operator partnership has ever even considered such an under-taking.

The crane change out would have been a significant body of work in a shipyard. The fact that the work was done in the field during rig operations without incident or disruptions was exceptional. I know of zero examples where such a significant scope of work was conducted in the field while conducting well operations."

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Açu
Shipbuilding

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Anyone in the maritime business has heard of or experienced the explosive growth of shipbuilding and offshore activities in Brazil … not to mention the logistical and financial headaches inherent when doing business in the country. While there are many business hoops to jump through, one cannot ignore the tremendous level of activity, particularly the building of the Açu Shipbuilding Unit.

OSX has been building the shipyard since July 2011 in the north of the State of Rio de Janeiro, and is scheduled to begin partial operations in the first quarter of 2013. UCN Açu's order book already includes 16 offshore units for oil and gas production in Brazil.

UCN Açu is a 5th generation shipyard with technology provided by partner Hyundai Heavy Industries, generating more than 10,000 direct jobs. **Its 2,400 m quay and expandable to 3,525 m may simultaneously integrate up to 11 FPSOs.** Located in the Açu Superport Industrial Complex, it is 150 km from the Campos Basin.

SENESCO: Overhead shots of the shipyard in North Kingstown Rhode Island.

Senesco Marine operates two facilities which include a new building yard and a repair yard both located on the deep water of Narragansett Bay. Both facilities are situated on a southern portion of the very large Quonset Business Park about 15 miles south of Providence, RI. Senesco holds a lengthy ground lease with Quonset, providing the footprint of two yards. The new construction yard consists of about 29 acres with more than 248,000 sq. ft. of covered fabrication space including a separate ocean tug construction shelter.

The main portion of the 248,000 sq. ft. of space boasts updated and increased overhead crane capability enabling almost all of the steel preparation and fabrication to take place in weather protected environments with final erection of prefabricated modules taking outside on erection/launching slabs. The entire 29+ acres of the yard are paved in concrete providing for a clean work environment, even in inclement weather.

Senesco's repair yard is located nearby on about 4 acres including a 1,200 ft. deepwater pier with a floating dry dock with a capacity of 4,500 tons and internal dimensions of 400 x 82 ft. Beyond this, the yard's collective assets are impressive. Upgrading infrastructure at this Rhode Island yard has always been a priority. To that end, Senesco has also received two ARRA grants. The first, $1.8 million towards the erection of an overhead, 20-ton double-girder underhung crane system for Building 1, updated facilities left over from the 1940's. Senesco also purchased a new ship section lift transporter with some of the proceeds of this grant. Another ARRA grant, still in progress, includes the acquisition of Launch Airbags, Ship Estimating Software and training and Ship Constructor Software and training.

Thoma-Sea: A Family Affair

Thoma-Sea Marine — founded by Robert J. Thomassie, Sr. and today still a family owned and operated small business — specializes in the construction and repair of vessels up to 100m in length. Beginning with the construction of fishing vessels, and small brown water tugs, Thoma-Sea has built a variety of successful projects, including Offshore Tugs, Harbor Tugs, Survey Vessels, Utility vessels, and PSV's of various sizes. The company has grown from a small shipyard employing a handful of people to two Newbuild locations, employing more than 300, including a new repair/conversion facility with three floating dry-docks, with a fourth dock under construction.

Thoma-Sea Marine, in fact, has long history of investment, including:

- **Repair Division – Houma, LA**: It recently completed Phase I of its 32 acre Repair/Conversion facilities, with (2) – 3,500LT floating dry docks, and (1)-2,500LT floating dry-dock. Thoma-Sea will also be adding a 8,500LT floating dry dock to our fleet, which is currently under construction in its Houma facility, to be completed late summer 2012.
- **New Construction Division:** Thoma-

Shipyard BAE Systems

Delivering American Phoenix; U.S.-Flag/Jones Act Qualified product/chemical tanker

BAE Systems joined with Mid Ocean Tanker Company (MOTC), Mid Ocean Marine and Alterna Captial Partners to commission the American Phoenix, a U.S. Flag/Jones Act-qualified product-chemical tanker. Measuring 616 x 105 ft., American Phoenix is the largest vessel ever built and launched in the State of Alabama. It has a laden draft of 36 ft. and a cargo capacity of 49,000 dwt.

BAE Systems was contracted to complete construction of the American Phoenix and prepare it for use. The vessel is owned by MOTC, a joint venture between Mid Ocean Marine and private equity firm Alterna Capital Partners. The vessel is scheduled to conduct trade initially in the Gulf of Mexico. Operating management of the vessel will be performed by Seabulk Tankers.

American Phoenix is the newest vessel to come from the BAE Systems Mobile shipyard, which has a long history of ship construction and repair. The yard launched its first new construction vessel, the steam powered ship Banago, on September 19, 1918. Banago, built under the U. S. Shipping Board's World War I emergency shipbuilding program, grossed 2,551 tons and had a wooden hull. More than nine decades later, the American Phoenix is more than six times the size. Along with the hundreds of BAE Systems employees and the MOTC team, several local Mobile and Gulf Coast helped to complete this project. Alternative Marine Technologies, ABS, US Coatings, MMIF, F & S Superb Marine, LES, Diamond Scaffolding, Insulation Inc, Jamestown Metal and Machinery, L-3 Maritime Systems, R+S Stolze, MAK, International Paint, Sea Technology, Bisso Marine Company, 2/2 Houston Holloway, Universal Services, Offshore Inland, Resolve Engineering and Fire Protection Services all played a significant part in completing the American Phoenix.

Resolve Engineering Group, LLC provided construction support for the owner during final outfitting and completion of the American Phoenix.

Sea Marine's New Construction Division consists of two locations, Houma & Lockport, seated on approximately 85 acres, combined – with over 170,000 sq. ft. of covered fabrication shops. In recent months, Thoma-Sea has invested in upgrading its capabilities with the installation of a new, full-service steel processing center, including: a new 20,000 sq. ft. work shop; CNC Plasma Cutting Table; 1,100T CNC Press; 20 ft. Plate Roller; and a 185T Plate & Structural Shear.

Thoma-Sea is set to soon deliver a pair of PSV's for Gulf Offshore Logistics (GOL) of Raceland, LA. The vessel are a significant project for Thoma-Sea that has led to sales of similar vessels for the Deepwater and Ultra-Deepwater Oil exploration sector.

The GOL vessels are designed to provide offshore services worldwide. They are being classed by ABS and meet all rigorous ABS ENVIRO requirements and the requirements of the USCG, subchapter I & L, as well as IMO, SOLAS and MARPOL international regulations. The PSVs can attain a maximum speed in excess of 12 knots. Main Propulsion installation includes 2 x Rolls-Royce US255P Azimuth thrusters which are driven by 2200kW electric motors. The two CPP bow thrusters, each rated at 1000kW are also electric driven. The diesel electric plant comprises of 2x1700kW (CAT3512) and 2x2000kW (CAT3516) generators resulting in total installed electric power of 7.4MW. This stepped approach in using different sized generators ensure maximum loading of each generator on line for maximum efficiency.

Thoma-Sea's Houma, La. yard. The family owned company specialized in construction and repair on vessels up to 100m.

Steel Cut on World's Largest Wind Power HVDC Offshore Platform

The Middle East has been a hotbed of maritime activities, driven largely by a burgeoning offshore oil and gas exploration and production business. There is another form of offshore power however – offshore wind – which has provided a stable of work for Drydocks World (DDW).

DDW has begun construction on DolWin beta, what is reported to be the world's largest Wind Power HVDC Offshore Platform for Aibel AS, a service company that works within the oil, gas and renewable energy sectors. The dimension of the platform is 100.1 x 74.1 m. It will be 83 m tall with accommodation and outfits and weigh 20,000 metric tons approximately. The platform can generate 900 MW power and can receive electricity from three wind farms, i.e. a total of 240 turbines. The platform will be ready for sail-away from Dubai Drydocks at the end of 2013. The German company TenneT has awarded the Contract to ABB to supply the Platform, which acts as a transmission link that will connect offshore wind farms located in the cluster DolWin in the North Sea to the German grid.

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ABG Shipyard

Largest Private Shipyard in India

By Joseph Fonseca, Mumbai

The enthusiasm, dedication and passion for ship building have helped ABG Shipyard Ltd remain in the forefront. Speaking to *Maritime Reporter & Engineering News*, Major Arun Phatak (right) points out that it is more important to be a responsible shipbuilder demonstrating with solid results rather than empty talk.

Unruffled by the slump in shipping freight rates, ABG Shipyard Ltd., the largest private shipbuilder in the country, has persisted on a high-growth trajectory. With a record delivery of 158 specialized and sophisticated vessels to date, the versatility of the shipyard and expertise to build a complex and wide range of vessels speaks volumes about ABG's potential and vibrant track record.

"We managed to foray into the international market because of the quality of our product, timely deliveries and cost competitiveness," says Maj. Arun Phatak, President and Executive Director of AGB Group. "We compare much better than the Korean and Japanese ship yards. Almost 90% of our orders in the merchant marine side today are for exports. For this we have been acknowledged by the government of India as the highest exporters in the engineering category in India and have been receiving several awards including the All India Trophy for Highest Exporters consistently from 2003-04 onwards, in recognition of our outstanding contribution to Engineering Export. We have also been felicitated with the 'Shipyard of the Year Award' by Lloyd List in Dubai last year."

"We have a shipyard under construction at Calcutta, on the East Coast. It will cost $ 28.9m and be dedicated solely for building smaller vessels of 150 to 160 meters in length."

Maj. Arun Phatak, AGB Group

Major Phatak is all praise for his team of well-qualified professionals 'fired with a passion for ship building'. "Our Chairman Rishi Agarwal's visionary zeal serves as a catalyst for sustained growth," he says. "If there is something about ship building that Mr. Agarwal does not know it is not worth knowing," he adds for good measure.

He elaborates about their 275 strong ABG team which represents a unique blend of skill, expertise and camaraderie along with support from contractual labor consisting of over 8000 workers. Their greatest forte is that their executives keep abreast of the latest developments. Well trained and equipped with sophisticated tools, they rise to global challenges with finesse.

ABG's exclusive Vocational Training Program enables ongoing skill enhancement. Most importantly, diverse skills such as creative and analytical thinking, technical know-how, managerial expertise and financial knowledge are integrated to create more highly motivated customer driven teams.

More than 55% of the orders today are repeat orders from old customers with whom ABG has maintained an enduring relationship. Today, the orders in hand are worth $ 3,192 million for a total of 72 new buildings.

The company boasts of celebrated clients including Sea Tankers (John Fredriksen Group – World's largest tanker operator), LYS-Line (Norway), Lamnalco, (Sharjah), Dess Cyprus Ltd, Maridive Offshore S.A.E. Egypt, and several others.

Advantage ABG

ABG has three major facilities on the Indian West coast - at Surat, Dahej and Goa. The state-of-the-art shipyard at Surat has the capacity to build vessels up to 155 meter length and 20,000 DWT. With the acquisition of Vipul yard and restructuring of the existing yard, the shipbuilding capacity has more than doubled at Surat.

The Dahej facility incorporates the latest manufacturing set-up with high levels of automation making it capable of building all kinds of vessels for the Indian Navy and others of up to 250 meter length and 1,20,000 DWT. Launching of large sized vessels can be undertaken by the 33,000 ton ship lift, the heaviest ship lift facility in the world designed by Rolls Royce and built entirely in-house by ABG.

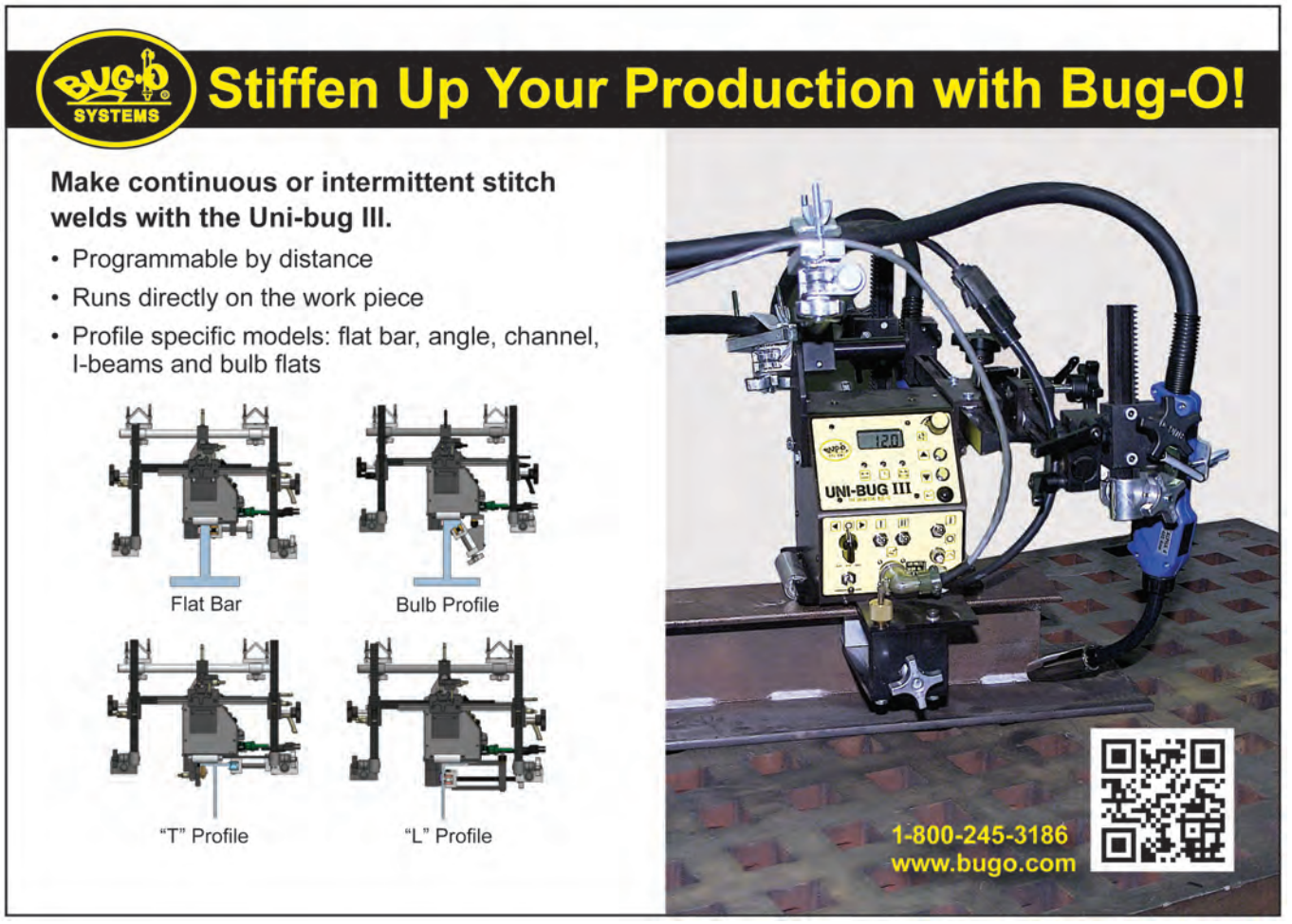
A key feature of the yard is its capability to construct offshore rigs and platforms. Presently four jack-up rigs are being built. At Goa, ABG has its Western India Shipyard Ltd which is India's largest ship and rig repair facility in the private sector. With a capacity to repair ships of up to 60,000 DWT, the yard also features state of the art floating dry dock.

On the Anvil

"We have a shipyard under construction at Calcutta, on the East Coast," informs Major Phatak. "It will costs $ 28.9 million and be dedicated solely for building smaller vessels of 150 to 160 meters in length. Having a shipyard on the East coast will greatly help ship owners by providing them the logistical advantage, as there is no repair facility on that coast. Besides, a number of public sector companies are looking to outsource their ship building and repair operations on the East coast. Hence we will be able to take a major share of this."

From 2000 onwards ABG has delivered 54 ships equaling approximately one ship every 7 weeks. The company is ready to take a quantum leap into the world's front ranking shipbuilders as those from Korea, Japan and China. Unfortunately India's contribution to global shipbuilding activity is only 0.1%. "The reason these three nations enjoy major global share is because of the support they receive from their governments by way of subsidy," Major Phatak points out. "Their government recognizes this industry as an employment generator.

Similarly, if the Indian government extends similar support, ship building in India can become a major contributor. It is for the government to realize that the revenue it would have acquired through taxes would actually be much more than the subsidy it would be providing."



Northeast
Ship Repair

By Rhonda Moniz

Meeting customer demands while providing high quality-work with a fast turn around in a competitive environment is a tall order, but an order regularly filled by Northeast Ship Repair. With dry dock facilities in Boston Massachusetts and Philadelphia Pennsylvania, the company is able to offer personalized service in vessel maintenance, repair, overhaul, and conversions for domestic, and international clientele. The Boston facility is located in Boston Harbor and is an easily accessible location with a graving dock that has 65,000 tons displacement capability, and a length of 1,150 feet. The channel draft is 40 feet with 360-degree crane coverage, and a crane capacity of 65 tons. The graving dock in Philadelphia has a 60,000-ton displacement capability with a length of 984 feet. The channel draft is 35 feet with cranes capable of lifting up to 50 tons.

The company was originally established in 1995 and has undergone several changes in ownership. Currently Northeast Ship Repair is the parent company of Boston Ship Repair and Philadelphia Ship Repair. The current president who oversees both shipyards is Edward Snyder who originally worked for the founding company in 1995, and took the reign as president of North East Ship Repair in 2001. As of 2008 the Manhattan based JF Lehman has become the parent company of Northeast Ship Repair. "When we stared here in 1995 it was basically a hole in the ground," said Mr. Snyder. "We put a lot of improvements into the facility and basically built it from the ground up, from pumping water out of the dry dock, to re-modifying all the electrical systems to operate all of our equipment. Our main clientele is overhauling Naval and commercial ships. "Ships registered in the US must be inspected twice every five years." "Some of the most common things we see are associated with the hull,

Navy ship Capella was in drydock for hull repair and propeller work.

the propellers and propeller systems, mechanical seals, and different types of seal assemblies on the props that get renewed. Catalytic systems along the hull of the vessel also need to be inspected. Bow thrusters and anchor chains are checked, and any steel work that has deteriorated is removed and re-installed. These are some of the common elements that need to be done with the vessel out of the water in a dry dock."

Most of the ships serviced at the Boston facility are in excess of over 1,000 feet in length or less. One of the vessels in for repair was the United States Navy Ship the Comfort, a Medical Treatment Facility. The ship is one of only two support vessels that serve around the world in areas of distress. One of the latest missions of the USNS Comfort was in Haiti

In 2008 the Manhattan based JF Lehman became the parent company of Northeast Ship Repair, which has facilities in Boston and Philadelphia.

"When we stared here in 1995 it was basically a hole in the ground,"

Edward Snyder, President, Northeast Ship Repair

after the 7.0 magnitude earthquake that hit causing the deaths of more than 316, 000 people, and injuring an estimated 300,000 more. The ship has a length of 894 feet with a displacement of 69, 360 tons, and a patient capacity of 1000 beds with 12 operating rooms. It is the second Mercy-class hospital ship to join the Navy fleet. Some of the work performed on the USNS Comfort at the Boston facility included:

- Blasting and painting the hull
- Blasting and coating various ballast tanks
- Blasting and coating anchor chains
- Overhauling the vessels HP and LP turbines
- Overhaul of sea valves
- Ventilation cleaning
- Replacement of various doors
- Boiler overhauls
- Switchboard cleaning
- Thermographic surveys
- Pump replacement and repairs
- Life raft overhauls.

"We do mostly government work with about 80 percent being government and the balance being commercial and industrial. Most of our work is Military Sealift Command, and also military ships that are operated by commercial companies. We have also worked with various cruise lines companies as well. Dry docks this size are far and few between these days" said Mr. Snyder. 'If you tried to build a similar dry dock today it would be impossible both cost wise, and in dealing with environmental permits." "One of the main focuses of Northeast Ship Repair is in providing standards for personal safety and health at all the facilities." "We preach safety here far and above anything else."

Gladding-Hearn Delivers 34m Cat

A 34m Catamaran Passenger Ferry, Ava Pearl, designed by Incat Crowther and built by Gladding-Hearn Shipbuilding, was delivered to Rhode Island Fast Ferry, where it will contribute to an expansion of operations. As a long-time operator of Incat Crowther ferries, Rhode Island Fast Ferry turned to Gladding Hearn and Incat Crowther to develop and build a ferry with twin engines and propellers, with a view to more efficient operation.

Ava Pearl has entered service, replacing the former Boston Harbor Cruises vessel Millennium on the ferry run between Quonset Point and Martha's Vineyard. This has freed up Millennium to increase its sightseeing cruise operation, which will now run daily.

Ava Pearl is powered by two MTU 12V4000 M53 main engines, each producing 1850hp. In recent trials, it achieved a loaded speed of 31.5 knots and has a top speed of 33 knots.

Ava Pearl features 130 seats on the main deck, configured at tables. A large bar is situated aft, with ample luggage racks and toilet spaces. The upper deck features 81 seats in forward-facing configuration, with further seats located outdoors on the aft deck.

Shipbuilder VIGOR

Vigor Industrial is a comprehensive marine services provider specializing in shipbuilding and ship repair. Three years ago, Vigor initiated an aggressive growth strategy that consolidated major shipyard facilities in Oregon, Washington, and Alaska under one umbrella, and more than doubled the size of its business, and leading a renaissance of the marine business on the U.S. West Coast.

Over the next five years, Vigor has set its sights on an expansion plan that will double the current size of the company.

Shipyard Investment and Improvement

In early 2012, Vigor Industrial acquired Alaska Ship & Drydock (ASD). ASD's strategic position in the ice-free waters of Alaska's southern panhandle combined with a skilled Alaskan workforce, that possesses advanced expertise in the needs of arctic operations, made it a good fit for Vigor Industrial's five year growth strategy. Since the acquisition, construction of a 70,000 sq. ft. assembly hall, with adjacent five story production center, has been completed. ASD is currently working on the first vessel to be completed in the new hall, The Arctic Prowler, a 136 ft., steel-hulled longliner for Alaska Longline Company. Vigor's strongest investment, now and in the future, will continue to be in its people. There is no question that manufacturing success hinges upon the availability of skilled workers in a wide variety of trades. Industrial jobs matter and Vigor is deeply committed to doing its part to ensure that the well-trained workforce, necessary for the future of the industry, is available.

The Swan Island Training Center at Vigor's Portland shipyard is a proactive step to train a new generation of welders. The training center is a public/private partnership between Vigor Industrial and Portland Community College. It was founded in 2008 with Vigor's initial $200,000 investment and ongoing support of $10,000 to $20,000 per month. Students of the training center gain hands-on experience and graduates supply Vigor companies and surrounding manufacturing firms with the skilled labor necessary for continued success. As important as these efforts are, Vigor recognizes that a broader solution to workforce development is necessary, one that aligns the objectives of America's education system with employer needs. At a time when the public school system is eliminating vocational career paths, Vigor is actively engaged in a partnership with industry, community groups and labor to establish a vocational skills program at an existing charter high school. Vigor's $100,000 contribution this year to help start the program is an important step toward solving the shrinking pool of skilled industrial workers among the younger population entering the workforce.

People are cornerstone to Vigor's current growth and future success, and the company recognizes that a broader solution to workforce development is necessary, one that aligns the objectives of America's education system with employer needs.

Industry partners include the Manufacturing 21 Coalition; Impact Northwest, a non-profit with programs for at-risk youth; LEP High, a public charter school in Portland; and Oregon Labor Commissioner, Brad Avakian who is actively engaging union participation. Each sector has already made significant contributions in terms of dollars, time and skill. Each will also have unique responsibilities aimed at providing high school students with an in-depth exploration of manufacturing career opportunities, showing them a clear path for achievement, and providing training for early development of requisite skills and competencies. If all goes according to plan, the new program at LEP High will admit its first students in the fall of 2013.

Projects

In February, 2012, Vigor Industrial subsidiary, US Fab, began construction of the first, Olympic Class, 144-car auto/passenger ferry in Washington State Ferries' fleet (WSF). US Fab teams have built six consecutive ferries for WSF, the largest ferry system in the United States and the fourth largest in the world. The 144-car ferry measures 362 x 83 x 25 ft. and is being fabricated in the extensive facilities of Vigor's Seattle yard. It is the first of four and features a steel monohull design with an aluminum wheelhouse and is being built to current USCG regulations. An integrated propulsion package features two (2) main diesel engines, gear boxes and controllable pitched propellers. US Fab's in-house engineering staff will collaborate closely with the exceptional team at WSF throughout the entire production process.

The three 64-car, 750 passenger ferries recently constructed by US Fab prior to the commencement of work on the 144-car project won the regional, American Transportation Award for "Under Budget, Large Project." US Fab delivered the three Kwa-di Tabil class ferries three months ahead of schedule and $7 million under budget.

The 144-car ferry is scheduled for delivery in early 2014.

Horizon Shipbuilding
2012 Shaping to be a Good Year

Horizon Shipbuilding, Inc., Bayou La Batre, Ala., has recorded a busy 2012 to date, with multiple launches, facilities upgrades, and several new orders from both long-term as well as new customers.

Between vessels repairs, conversions, new vessel launches and deliveries and putting the finishing touches on its $5m facilities upgrades, Horizon has emerged as a state-of-the-art shipyard for its size in the U.S.

Recently Horizon Shipbuilding launched two new towboats in the same day, Florida Marine Transporters Dale Artigue and Canal Barge Company's Eugenie J. Huger, using its 660 ton Travelift.

Horizon has completed a multitude of repair jobs, large and small, in nearly every material, from fiberglass to aluminum to steel. Currently eight vessels are under construction; two vessels are undergoing major repairs and another is going through a major conversion.

Florida Marine Transporters has entrusted Horizon to build for its fleet of large, powerful towboats. The U.S. Army Corps of Engineers has awarded Horizon contracts to build its two newest vessels, a 58-ft. towboat and a 114-ft. towboat.

Also under construction are a pair of 74-ft. towboats for Canal Barge Company.

Bayou La Batre-based Horizon Shipbuilding has had a strong start to 2012.

Damen Patrol Boat Delivered to Albanian Coast Guard

The second of a series of four Damen Stan Patrol Vessels 4207 – Oriku – has been finalized in the Pashaliman Shipyard in Vlorë (Albania) and delivered to the Albanian Coast Guard. The third Stan Patrol Vessel (SPa) – Lisus – is presently under construction. The Spa's were ordered by the Albanian Ministry of Defense for patrol duties and S&R missions in the territorial waters. The project included extensive knowledge transfer and the reconstruction of a naval shipyard. The first ship of the Stan Patrol 4207 project was built in the Netherlands and delivered to the Albanian Coast Guard in August 2008. **The project also included the thorough reconstruction of the Vlorë Naval Shipyard and the building of a new assembly hall, in which vessels as large as 60m can be built.** Both projects were handled by Damen Services. The operation has been carried out under the late ORET program of the Dutch Ministry of Foreign Affairs. Its objective was to support sustainable investment in infrastructural projects in developing countries. Under the Damen Technical Cooperation (DTC) concept the complete, prefabricated material packages for the construction hall and the patrol vessel were sent to Albania. The standardiaed material packages can be used to build a Damen-designed vessel according to the builder's own wishes and requirements and at a shipyard in the customers' country.

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Bunker Fuel for Marine Engines

A Technical Introduction

— By Nigel Draffin M.I.Mar.E.S.T.

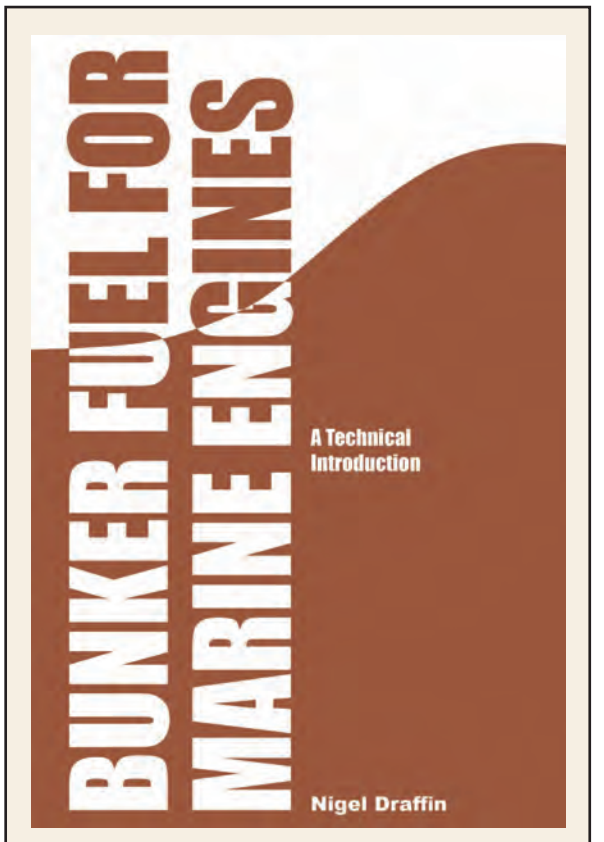
Bunker Fuel for Marine Engines – A Technical Introduction focuses on the complicated relationship between ships' engines and the marine fuels that power them.Complete with extensive glossary and full of photographs and technical illustrations, the book has been hailed by the highly respected industry veteran of Exxon and DNV Petroleum Services, Dr Rudolph Kassinger, as 'a comprehensive sequel to John Lamb's seminal treatise Petroleum and its Combustion in Diesel Engines'. That book was first published in December 1955, and is long out of print. According to Dr Kassinger in his Foreword to Bunker Fuel for Marine Engines, Lamb's book, 'now has a worthy successor'.

According to Nigel Draffin, Bunker Fuel for Marine Engines provides the reader with a solid introduction to a subject which every supplier or user of marine fuels would do well to understand.

Draffin believes that 'a ship's engine room is a place of refuge for engineers but a place of mysteries to most others' and uses the thoroughly researched book to take the reader on a technical tour around the equipment that will be found there, from main and auxiliary engines to generators, refrigerating plant and other fuel-using machines.

For many readers, this highly illustrated book 'is a chance to look underneath the hood and, perhaps for the first time, to recognise what makes this equipment work and why some fuel problems are more significant than others'.

Draffin takes the reader through the complete process of burning fuel onboard, from storage of fuel to dealing with the exhaust, before looking at the different types of diesel engine and their specific fuel requirements. He also looks at gas turbines, fuel cells and developments in shore power, and covers boilers, fuel and accommodation heating and incinerators, before also looking at waste heat recovery systems. Fuel types and bunker quality standards are, of course, laid out for the reader, as are blending, storage and onboard fuel treatment, where the work of separators, purifiers, clarifiers, decanters, homogenisers, filters and other engine room kit is explained. Fuel heating, pumps, fuel measurement and storage are amply covered as are an engine's sensitivity to fuel qualities. Importantly, the book looks at emissions and how they might be controlled, and also at unconventional fuels such as biodiesel, shale oil, liquefied and compressed natural gas, liquefied petroleum gas and even coal.



Bunker Fuel for Marine Engines – A Technical Introduction

By Nigel Draffin M.I.Mar.E.S.T.

Official Launch: June 2012
First Edition, 2012
140 pp plus 22 prelims
Published by Petrospot Limited
Price: £75 / Euro90 / $125 + carriage
www.petrospot.com/books

"It seems to me that the more people able to access and understand the information contained in this book, the fewer fuel-related engine problems might be expected. And for seafarers ... this can only be a good development."

Dr. Rudolph Kassinger, Veteran of Exxon & DNV Petroleum Services

About the Author Nigel Draffin

Bunker Fuel for Marine Engines – A Technical Introduction is Nigel Draffin's fifth book on marine fuels. His previous titles are:

- *An Introduction to Bunkering (2008) in English and Spanish*
- *An Introduction to Fuel Analysis (2009)*
- *An Introduction to Bunker Operations (2010)*
- *Commercial Practice in Bunkering (2011)*

Nigel has been involved in shipping for almost 50 years and with the commercial bunker market for over 25 years. He is a founder member of the International Bunker Industry Association (IBIA) and has served several times on its council of management and executive board. In April 2012 he became Chairman of IBIA.

Nigel is Director of the Oxford Bunker Course and the Oxford Bunker Course (Advanced), a member of the Institute of Marine Engineering Science and Technology and Past Master of the Worshipful Company of Fuellers. He is also Senior Broker and Technical Director of US-based bunker broker LQM Petroleum Services.

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Boatracs

A long-tenured player in the workboat fleet management sector, Boatracs last month was acquired by Orolia, charting its path toward global expansion.

Boatracs, a San Diego-based company with more than two decades of experience supplying communications, tracking and monitoring and innovative software solutions for the workboat and commercial fishing markets, was acquired last month by the French company Orolia, a move that could significantly extend the Boatracs brand beyond it North American core.

"(Currently) 100% of our current customers are in North America," said Irwin Rodrigues, CEO of Boatracs Inc. "This is an acceleration of our vision and everything we want to do for our customers. Orolia is an international company, and we just went from being a small company to a growing mid-size company with many more resources. For Boatracs, it gives us immediate international exposure."

While focused on the North American market, Boatracs has built an enviable base, with more than 1000 customers and revenues of more than $5m in 2011, nearly 75% of which is from recurring software and communications services sales. While the Orolia name may not be a familiar one in maritime circles, many of its brands surely are, as Orolia is a high-technology group specialized in precise Positioning, Navigation and Timing. Since 2006 the group has established itself as a leader in PNT solutions at a global level through its brands: Spectracom, SpectraTime, T4Science, McMurdo, Kannad Aviation, and Kannad Marine

Rodrigues insists that the acquisition transition will be seamless for established Boatracs customers, as Boatracs remains laser-focussed on its core mission. "Our core mission is to solve business problems for our customers," said Rodriques. "We call it a focus on the "3 Cs": complexity, competitiveness and cost."

"Our customers work in a complex environment, with a myriad of new regulation, the harsh weather in which they operate, and the basic communication gap (communication's speed and reliability) that most land-based businesses take for granted," said Rodriques. "In addition, there are so many choices (of software and communication solutions) for them to make. We deal with this by making our solutions easy to understand, easy to adopt, and affordable."

While the first "C" is complexity, most smaller workboat and fishing vessel customers concern themselves with the last "C": Costs. Simply put, Boatracs delivers its product and service at an attractive and hard to match price point. "We make our product as cost effective as possible," said Rodriques. "For example, with OmniTRACS, you can get started for as little as $100 per month on the connectivity; that's a cell phone plan."

Irwin Rodrigues, CEO, Boatracs Inc.

For Orolia, the purchase was a strategic initiative to expand its business into new areas, a strategy to move up the value chain by offering more complete business solutions to its customers operating critical infrastructure in remote or harsh environments. "This acquisition not only expands our product offering, but also strengthens our presence in the North American fishing and workboat market segments," said Jean-Yves Courtois, President and CEO of Orolia, in a press release announcing the acquisition. "It has the added benefit of bringing us critical size in the application software domain, human-machine interfaces and client-server architectures."

Boatracs & KVH

While the integration of modern fleet management solutions has traditionally met resistance in the form of a conservative customer base, Rodriques reckons this is starting to change, as increasingly mariners and managers expect the same level of connectivity and seamless service that they find on land. Fleet management software can be a game-changing tool for maritime companies to compete more effectively and run their operations more efficiently, and according to Boatracs, a key driver of any software solution is good data. In the marine industry, this means how vessels and shore side operations communicate – both the software that is used as well as the network that is used to transmit the information.

In tailoring a solution, factors to consider include fleet size, area of operation, assessment of onboard computer power, as well as the type and amount of information required to be shared between the vessel and the shore.

Since its inception, Boatracs has provided a narrowband satellite solution with shore side fleet management software to enable vessels to communicate consistently with operations: Boatracs OmniTRACS. OmniTRACS is designed to meet the needs of those companies who have minimum data sharing needs and require simplicity and ease of use in an extremely affordable satellite solution.

"We look at our customer's customer to help them solve problems," said Rodriques. "Ultimately, we want to ensure that information is captured timely and correctly; and is accessed with a simple user interface on the vessel. This makes their life and job much."

The fleet management software can be accessed from any PC or mobile device with internet connectivity. For those customers who operate within cellular coverage but require greater coverage and reliability, the OmniTRACS solution makes transmitting the data as cost effective as possible.

The OmniTRACS solution currently serves thousands of vessels across North America, but the number of customers with requirements for uninterrupted internet connectivity and high-speed data transmission is growing. More vessels have PCs on board utilizing a variety of software applications, and satellite broadband has become a viable option due to a steady decrease in airtime rates combined with a decrease in the size of antennas.

Responding to the market, Boatracs announced a partnership with KVH to offer the industry a Broadband Fleet Management Solution.

"KVH is a great step forward," said Rodriques, in evaluating this new partnership. "KVH arguably has the best total cost of ownership solution …. hardware, reliability and airtime. At about a $1/MB, it is hard to find anything competitive with that in the VSAT market."

The Boatracs Broadband Fleet Management Solution is an end-to-end combination of fleet management software with mini-VSAT broadband connectivity designed to make data collection and transmission smooth, easy and affordable. The solution combines Internet and Voice over IP with vessel tracking, two-way messaging and custom forms to satisfy the needs of customers, crew and operations in one complete package. Components include Boatracs BTConnect, a web-based fleet management software that pulls data in from any vessel hardware to display positions and messaging on one integrated user interface , Boatracs BTForms, a custom smart forms software that converts the paper forms crew and operations are adept at using into dynamic forms that standardize data transfer and

www.boatracs.com

Globe Wireless

R6 for Globe iFusion Launched at Posidonia

Globe Wireless is a leading player in providing communications, operational and IT solutions to the maritime industry. Earlier this summer at Posidonia 2012 in Athens the company announced that it would launches its latest software release, R6 for Globe iFusion in July 2012; a free upgrade to all existing users. While software enhancements and upgrades are commonplace across the IT community, this one is significant for a number of reasons, according to Mark Witsaman, CTO, Globe Wireless.

"This particular one (software upgrade) is a pretty big leap," said Witsaman. "Globe Wireless has been one of the trailblazers in putting GSM on commercial ships, but GSM has one drawback: You have to have a GSM phone to use it, and if you're In port and it's switched off for security reasons, you can't use it. What we've done is extended this to the fixed lines on the ships, using the mariner's GSM pin code. This is a massive advantage, particularly on the billing end of the service. The call will be charged to the individual mariner's personal account, so the ship owner does not even see that on their bill." The software will feature the following enhancements:

- **A Fixed-Multiple Voice solution for Fleet Broadband:** There is not a lot of them out there. INMARSAT has just introduced this, but with them it's only one number. We can map multiple numbers, multiple accounts, said Witsaman.

- **VSAT Auto-Recovery Tools**, or a means to more rapidly recover the VSAT, with active monitoring built. According to Witsaman, on many occasions the iFusion box can actually fix the problem and help recover the system without any action from shore.

R6 for Globe iFusion takes the existing GlobeMobile multiple voice lines, currently on over 1000 FB vessels, using it as a VoIP solution. This enables multiple calls using Globe's unique Digital Quality Voice (DQV) technology – which is very high-quality voice that Witsaman says will sound better than a standard call – on both the GSM and VoIP phones over a standard FB terminal.

In this release, the Globe iFusion Fixed-Multiple Voice solution allows up to five inbound and outbound calls over DQV, while the standard circuit switched voice line remains free at all time for the captain's use or for emergencies, which is a Globe Wireless pioneering element.

"Ships are becoming more sophisticated, and with broadband more widely available to the ships, the IT departments are finding new ways to take advantage."

One of key features of Fixed-Multiple Voice is the ability to assign international phone numbers from over 60 countries to each phone line onboard reducing the cost to call the ship from shore as no 870 number is required.

Customers who have offices in the UK, Singapore, or Italy, for example, can have a local in-country number that will be routed to the vessel and the vessel will be charged the same rate as if they were making the call from ship to shore. R6 for Globe iFusion will support up to 8 VoIP handsets onboard the vessel and POTs handset plugged directly into the i250. Each handset is configured from shore via Globe iPortalallowing a simple name to be assigned, an international inbound number if requested, PIN codes to restrict outbound calls, and split billing for sub-accounts.

PINs can be created as needed either fleet wide or per ship. Even pre-pay PINS may be used that are independent or tied to a GlobeMobile GSM account. In the case of a chartered vessel the charterer would have a unique PIN and all calls will be billed under a sub-account in the customers invoice each month.

According to Witsaman, there are two primary factors driving IT and maritime communications use onboard commercial vessels today.

"Ships are becoming more sophisticated, and with broadband more widely available to the ships, the IT departments are finding new ways to take advantage of it. It used to be all email, but increasingly vessel owners are looking at remote processes and access."

Another driver, according to Witsaman, is the fact that crews are are demanding to be more connected. "A lot of the features we offer (such as GSM service) is aimed toward that"

Key VSAT Back-up and Reovery

R6 for Globe iFusion contains additional VSAT features developed to keep VSAT terminals online, requiring less backup L-Band usage. Automated scripts monitor the VSAT system and will attempt to auto-recover the system with no intervention by technicians or crew. If auto-recovery does not work the Globe iFusion, via L-Band backup, allows the Globe Wireless VSAT technician remote access to all the core components and systems onboard.

"This new feature assures the customer that over 95% of all outages are recovered remotely. We have found that for every one vessel that does require a visit another 20-25 vessels are brought back online remotely," said Brad Rogers, Director, VSAT Engineering. He went on to say "With our live monitoring, typically within one hour of any outage, our engineers are already online checking the system and coverage."

In ongoing efforts to help vessel owners monitor and contain communication costs, R6 for Globe iFusionwill also includes a pre-paid and sponsored email solution. Via Globe iPortal, customers can set up sponsored monthly quotas with message size limits, allowing the customer to control how much, sponsored email the crew can use. These settings can be configured fleet wide or specific for each crew member allowing officers more usage for example or as a bonus for good work.

The pre-paid account can be tied to the crew members GlobeMobile GSM account allowing them to share the pre-paid balance between GSM calls, pre-paid Fixed-Multiple Voice, email and SMS. Crew members will be able to pick up any Fixed-Multiple Voice handsets, enter a PIN and password and pay the same rate as the GlobeMobile service.

If a crew member has a GlobeMobile number and uses a Fixed-Multiple Voice line, the end user on shore will see the GlobeMobile number on their phone as the caller ID rather than the vessels phone number. If there is no GlobeMobile number associated with the crew member then no number is displayed. These features will be available on VSAT and FB terminals.

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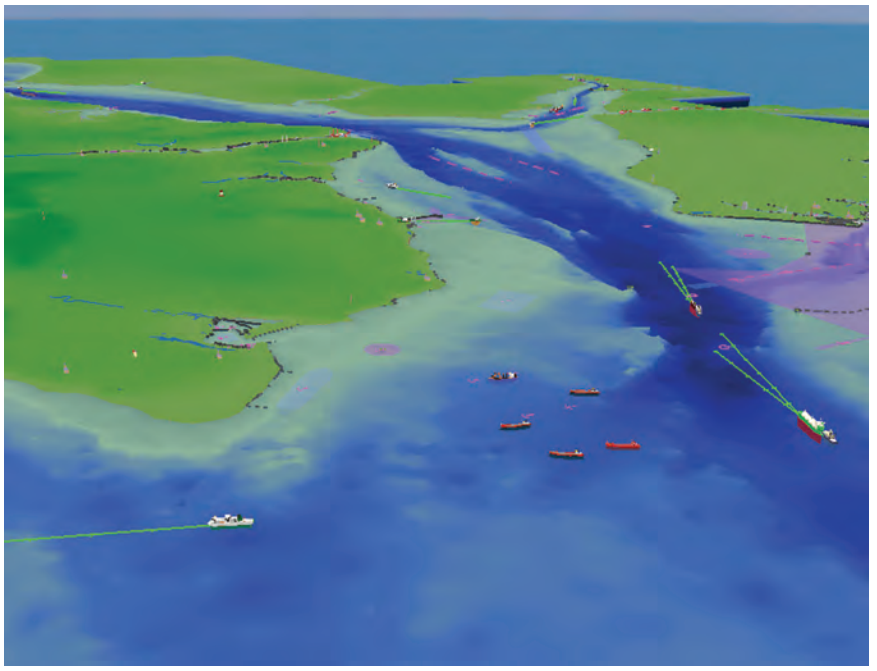
C-Vu 3 DVTS

3D Vessel Tracking: A new course in port traffic control

Marine operators and entities have long struggled with the most efficient, effective means to monitor and manage traffic in increasingly busy ports around the world. The marine industry, unlike the airline industry, is unique in that mixed with high levels of commercial traffic is a broad and ever changing mix of personal watercraft of varying sizes, with equal variables in terms of operator experience. Thus the ability to rapidly collect, compute, disseminate and act on information is central to safe port operations. A U.K. company, GeoVS, believes that it has the answer in the form of its new 3D Vessel Tracking System.

"For the past 12 years colleagues and I have been grappling with the complex realities of enhancing situational awareness for maritime safety," said Dr. Rafal Goralski, Director of Technology at GeoVS. "Only now do technological advances allow the integration of data from many sensors around a port to produce a real time, three dimensional traffic management and visualization tool. This research has resulted in the development of the world's first commercial three dimensional real time vessel tracking system."



Dr. Rafal Goralski, GeoVS

The System

Managing large ship's progress, usually in and out of ports and in other restricted channels, has understandably assumed a critical role in ensuring their safety. But the Cardiff based company GeoVS has produced what it is calling the world's first commercial marine three-dimensional vessel tracking system. This brings a step change in monitoring and management of vessels in ports, estuaries and restricted waterways.

It provides a more comprehensive picture of vessel movements than existing systems, it is easier to use, enhances efficiency and improves safety. "Research in Sweden has shown that the use of three dimensional charts leads to a significant reduction in human error and a similar increase in the operator's efficiency," said Dr. Goralski. "The system, which we call , C-Vu 3D VTS works either on its own or as a bolt on to existing two dimensional systems, and can be used by port operators, ships' pilots and other navigators."

Vessel Traffic Systems (VTS) are the technology that enable efficient tracking, monitoring, management, recording and analysis of vessel movements in a particular area, such as a port or confined waterway.

Vessel Traffic Systems comprise a set of sensors (most commonly radar, radio based automatic identification systems (AIS) and CCTV, often also tide gauges and meteorological stations), signal processing and storage servers and any number of co-located or distributed VTS operator stations. It presents real-time navigational data overlaid on an electronic chart system (ECS) display.

These systems are used in ports and confined waterways to monitor and control vessels for navigational safety and operational efficiency, and ensure vessels follow designated routes. Users are typically port authorities and Coastguards.

Current Practice

Currently vessel tracking systems largely rely on radar signals and present a 2D picture of vessels moving within the designated area on an electronic chart, displayed on computer screens. They allow port operators or Coastguards to see the vessels and monitor and to control their progress. But they do not identify individual vessels, and the performance of radar systems can be adversely affected by weather. And when vessels are close together, radar blips can merge.

They only show the surface picture, not hazards that lie beneath the water, and thus rely upon the operator's local knowledge. Neither do they give tidal information, again relying on the operator's knowledge and experience, which varies from operator to operator.

Despite these limitations, they are still a technological leap forward from the Mark 1 eyeball, and early radar systems which used small and difficult to interpret circular radar screens.

GeoVS's new system, C-Vu 3D VTS, is a leap forward, according to the company. The picture it presents to operators is more encompassing, clearer and straightforward to understand.

It presents a 3D image and also gives realistic representations of all the vessels, the waterway, port installations and navigational marks such as buoys. At the click of a mouse it shows the underwater picture and hazards vessels may encounter. This includes critical real time tidal data, so the operator knows exactly the depth of water beneath the keel of each vessel. GeoVS's system draws on information from existing radar systems, and supplements this with inputs from tidal gauges, meteorological stations, and radio based automatic identification systems, which are now mandatory for all commercial vessels. Thus it is designed to present a comprehensive real time picture of what is happening in the waterway, identifying individual vessels, in a way that is straightforward to understand. It improves situational awareness, reduces fatigue, particularly eye strain so enhancing operators efficiency. The system automatically records the picture and can store it for up to 10 years.

Tech Developments

GeoVS's C-Vu 3D VTS has been made possible by a number of technological advances and a decade's worth of research and development by Dr. Goralski and colleagues.

The advent of high speed data processing, electronic charts, large LCD screens, improvements to radar, and the introduction of AIS, were essential for enhancements GeoVS's system brings. "The last two decades have seen unprecedented technological progress in electronics, computers and software," said Dr Goralski. "With that progress a trend has started to emerge, it is not people who should have to learn how to operate complex technology, and keep bending themselves to its peculiarities and limitations – it is the computer systems which should be optimized to better cater for our needs, enhance our natural capabilities and compensate for our limitations. This will dramatically enhance efficiency and improve the users' operational comfort."

In the marine world, as a result of that thinking, the idea for the 3D chart emerged. It was sensible to remove the extra workload and concentration required to interpret two dimensional charts and instead use the natural three dimensional cognitive capabilities of the human brain."

GeoVS's states that C-Vu 3D VTS offers a range of benefits, including:

- Reduces operators' fatigue.
- Built from official electronic charts.
- Hydrographic survey data, and real-time inputs from tide gauges and meteorological instruments.
- A 10-year recording capability for AIS and radar tracks.
- Fully compatible with any existing vessel tracking system..
- Can operate on its own as a fully capable primary vessel tracking display.

www.geovs.com

Extending Capabilities to Smartphones

PortVision Vessel-Tracking Service, Terminal & Fleet Management for iPhone, Android, and BlackBerry

PortVision said that the company's desktop Automatic Identification System (AIS) vessel-tracking service is now available in a mobile platform, optimized for the latest smartphones including BlackBerry, iPhone and Android devices. Its mobile platform is available now, at no cost, to PortVision customers who subscribe to its PortVision Plus, PortVision Advantage, TerminalSmart and Fleet Management System offerings.

As the world becomes more mobile and capable in its communications, so too grows the possibility among maritime players. "This new platform takes advantage of the latest smartphone capabilities to deliver key real-time features of our widely adopted web-based solutions, and is designed to provide remote access for any maritime professional who spends the majority of their work day away from their desk," said Dean Rosenberg, PortVision, CEO.

The new PortVision Mobile 2.0 platform adds a number of capabilities based on extensive feedback from the company's active mobile users. Key features include:

- Integrated terminal and fleet dashboards: Quick and easy access to key terminal and fleet information including arrival/departure data, real-time vessel locations, and terminal dock availability.
- Flexible search capabilities: Search by vessel, terminal and point of interest.
- Optimized interface for arrival/departure alerts: Simplifies creation and maintenance alerts for vessel arrivals and departures.
- Integrated Mapping: Migrates the power of PortVision's real-time mapping capabilities to a smartphone display.
- Fleet management: Includes integrated fleet traffic reporting, enabling mobile users and their customers to share traffic updates and other fleet management data in near-real time so they can actively manage fleet activities using their smartphone.
- A modern, "app-like" experience: Provides a mobile experience similar to what users expect from today's popular smartphone apps.

The PortVision Mobile 2.0 application extends the power of the company's web-based vessel-tracking service for company executives, terminal management, dock and fleet operators, and other maritime professionals who spend the majority of their work day away from their desk.

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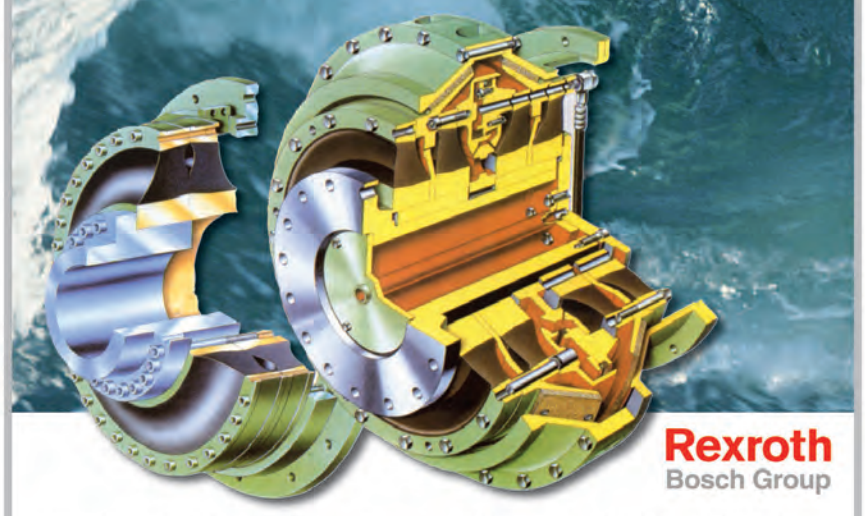

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Iridium is Flying High Again

The fight in the maritime satcom sector is somewhat analogous to the one fought by Apple and Microsoft in the early '80s: two tech companies, polar-opposite philosophies and a raging battle for market share.

By Greg Trauthwein, Editor

Market watchers likely have noted an increased "competitive spirit" among providers of ship-to-shore communication services. Drivers are multiple and diverse, and include:

- increased use of shore-to-ship monitoring and control;
- piracy mitigation and emergency response;
- the trend toward data versus voice;
- the need to keep crew content with Email, Internet & entertainment.

A corporate driver for change has been Iridium, the McLean, VA-based satellite communications company with a renewed swagger and a plan to make serious market share inroads in the maritime sector. By the company's reckoning, Iridium's strength lies in its core philosophy, which is an open architecture approach, relying on the strength and diversity of more than 300 global partners in the creation and delivery of product and service.

"We have deliberately decided not to be too greedy about technology or market control," said Iridium CEO Matt Desch in an interview with *MR* earlier this year. "We have opened up our core technical interfaces, chipsets, and technology to external partners so they can trust that our network is the one they want to innovate around."

According to Herman Pon, Vice President, Technology, the network of Iridium partners is a key advantage. "(Through, and with, our partners) we actually talk to real, potential customers, and take their input in technical design."

Pon is responsible for all product development of end-user devices, from handsets to modules, from start to finish; and is also responsible for Iridium's end-to-end service design. Proof that the partner network concept is working for Iridium is the development and delivery of its new service, Global Data Broadcast: an idea that was brough to Iridium by one of its partners. This service — scheduled to debut at year's end — is a new messaging system that will allow vessel owners of all sizes to simultaneously communicate to its fleet globally, in a standard format. "With Global Data Broadcast we'll have the ability to offer a broadcast service that, while it won't have quite the bandwith of an XM, we can broadcast text and information to certain devices," said Pon. "The modules we would use for Global Data Broadcast are what we call our Short Message Modules, something small enough to be put inside a handheld unit, or embedded in the ship somewhere with an antenna."

What's NEXT?

Cornerstone to Iridium's future is the status and health of its most precious asset, the satellite network that provides its service. While Iridium's current satellite system is aging, according to the company's recently released 2Q 2012 report, net income increased 51% year-over-year, benefitting from a $6.6m reduction in depreciation expense due to an extension of the estimated useful life of the company's current satellite constellation.

"We have a new constellation going up – Iridium NEXT set to deploy between 2015 and 2017 – that will be backward compatible to systems like the Pilot that we are deploying today," said Pon. "So no one will be stranded where they would have to switch to a different frequency band, or buy new units." Iridium NEXT is a fully funded, approximately $3 billion plan, retaining the LEO architecture with 66 new operational satellites, as well as six 'in-orbit' and nine 'ground' spares.

"The new constellation will have the ability to offer higher bandwidth speeds," said Pon. "Currently we're thinking terms of getting up to greater than 400 kb per second, versus 134 today, so it's a 2.5 to 3 times increase in speed."

The new constellation also gives Iridium the flexibity to further enhance what he considers a key company strength: specifically "how to best exploit what is unique about Iridium, which is our global coverage. From a device point of view, we're always focused on how do we make it smaller, how do we make it cheaper. That's an advantage we have because of our overall architecture … we can get deployed on a ship at a much lower first cost basis," said Pon. The price point advantage directly leads to what Pon considers to be another strategic advantage: the ability to carry Iridium Pilot, for example, in tandem with VSAT, as a secondary service back-up or for use when a ship exits VSAT coverage.

"Take the example of the Iridium Pilot," said Pon. "The deployment costs of that is going to be much lower than a comparable device, so we are more cost effective for smaller ships, but even in larger ships. They may put out product and service on their ships as a complement to VSAT, so when they move out of VSAT coverage, they can switch to Iridium."

Conservative Nature No More?

While the maritime industry is often labeled conservative, Pon said that maritime is much more amenable to change than say, the aviation sector, where product approval hoops and product specification are much more rigorous.

"We are seeing a lot of sophistication in the maritime sector. They're looking to do things like "cash content," where they may offer services to people inside the ship, for example, so the crew itself are potential customers for whoever put our system on the ship," said Pon.

In explaining Iridium's relationship to the end user, Pon explained succinctly: "We are more like a wholesaler, we are Direct TV. When you actually want to buy Direct TV, there is a local installation company that comes in and sets everything up in your house," said Pon. "But we have a very strong set of partners that help to ease the transition, because they supply the people to do on-ship installation, and then essentially you have a mini-computer network inside the ship once you install the Pilot, so someone has to configure firewalls, routers on the ship, and to setup lap tops."

With its new constellation coming online, a legion of allies in its partner network, and a 'David vs. Goliath' chipset on its shoulder, Iridium appears well armed for the battle for market share ahead. Who will emerge the winner? Shipowner's votes count, and only time will tell

Iridium Pilot

Iridium Pilot is small and durable, with enhanced capabilities to optimize telecommunications across fleets. It is designed to provide full global voice and broadband data connectivity at an affordable cost. It's also fully compatible with VSAT technologies to even further increase the broadband tool's value.

For Iridium, it is a complement to its commitment to the broadband market, complementing handheld service.

Iridium Pilot is the third of many products the company plans to "power by" the Iridium OpenPort

Service, a strategy that is designed to provide a growth path for Iridium to expand into new markets. Significantly, Iridium Pilot is designed to be compatible with Iridium NEXT, the company's next-generation satellite constellation.

Recently German shipping company Reederei Werner Bockstiegel selected Iridium Pilot to upgrade its shipping fleet with broadband communications. Globecomm Maritime, a long-standing Iridium partner, is offering Iridium Pilot as part of an upgraded "Telaurus se@COMM" communications package, and will manage the installation fleet-wide.

Krill's Monitoring Systems on Board Arctic Vessels

Krill Systems Inc., a provider of Vessel Fuel Measurement and Monitoring Systems (VFMMS), announced the successful installation and sea trial of Krill VFMMS systems on-board three support vessels operating as part of the Shell Alaska Arctic offshore drilling project.

Installation of the Krill VFMMS systems took place in July. The Krill VFMMS systems will measure the amount of fuel being consumed by these vessels, in real time, and report the data back to company headquarters where it will be used to accurately record fuel use and, also, provide the opportunity to reduce fuel consumption, and manage emissions. Krill Systems uses Microsoft SQL server database technology to record all sensor data with 2-second resolution and storage capacity of at least one year with unlimited roll-over capacity (ROC). Any communication system including Cellular or Satellite internet access, supporting standard SMTP email protocols, may be used to transmit customizable reports and sensor data menus, in Excel format, to any number of operators, anywhere, with no monthly fees or charges.

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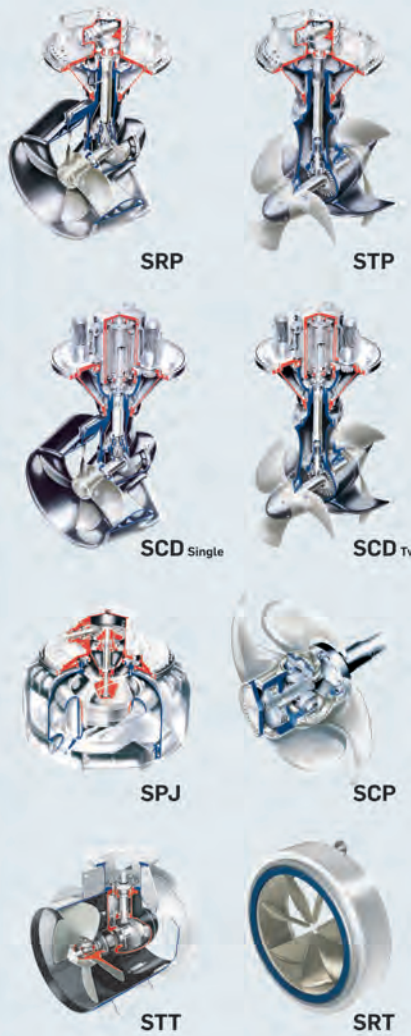

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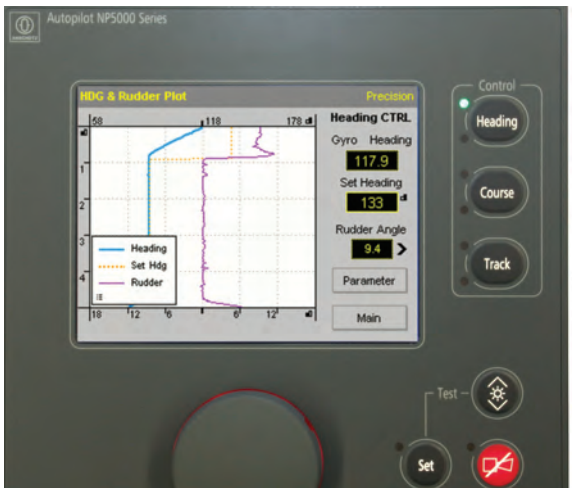
OSG Contracts for Autopilot Refit of Fleet

NP 5000 & Good Fuel Consumption

As a consequence of recent IMO regulations, shipowners are requested to improve energy efficiency of their ships' operation with regard to various factors that drive fuel consumption and emissions. The German navigation system manufacturer Raytheon Anschütz addresses these requirements with its newly developed autopilot series NP 5000. Overseas Shipholding Group (OSG) has contracted Raytheon Anschütz for retrofitting existing autopilot systems on its fleet of oil tankers with the newly developed Anschütz NautoPilot 5300. The first autopilot system was installed onboard Overseas Fran in October 2011.

"OSG are undertaking great efforts to increase energy efficiency onboard of their ships. The choice of our new adaptive autopilot system was influenced by considerations of saving fuel and thus reducing emissions," said Olav Denker, Product Manager at Raytheon Anschütz. "With OSG, we have now had the chance to prove positive effects of NP 5000 on steering performance and fuel consumption in practice for the first time."

NP 5000 helps optimize rudder movements with its integrated ECO-Mode. In Eco-Mode, the autopilot automatically adapts to the current sea-state and weather. Instead of keeping a heading with frequent rudder actions with high amplitudes, the rudder's sensitivity to periodical yawing movements caused by roll and pitch is reduced. Subsequently less rudder action is required, which leads to lower levels of speed reduction and thus less fuel consumption.



NautoPilot 5000 with Integrated Heading and Rudder Plotter.

The first voyage of "Overseas Fran" with NP 5000 was from Skagen to New York. To investigate the actual effect of NP 5000 on rudder steering, the heading and rudder plot of this voyage was compared with the results of the last voyage on the same route with the old autopilot system, under similar weather conditions during both voyages.

Capt. Dmitry Shatrov, Master of Overseas Fran, explains: "We can see on our print-out that rudder movement is more economic and gentle with the new autopilot system."

The effect of ECO-Mode is further supported by the new integrated heading and rudder plotter, which provides a graphical indication of heading changes and the resulting rudder angles. This graphic display instantaneously indicates the steering performance of the vessel due to the effects of changes to parameter settings such as rudder, counter rudder and yawing. The operator benefits from simplified adjustments of the autopilot's settings to gain optimized steering performance, which further minimizes rudder action and thus increases fuel efficiency.

"The newly installed autopilot system has a user-friendly interface in which you can easily adjust autopilot functionality in the prevailing circumstances, weather condition and required steering accuracy. So that we can navigate the vessel more gently and economically, taking into consideration fuel savings and safety," said Capt. Shatrov. The relevance of optimized rudder movements for fuel savings has already been highlighted by IMO as a "best practice" for efficient ship operation when developing a Ship Energy Efficiency Management Plan (SEEMP). "Since we all know that less rudder movement significantly contributes to reduced fuel consumption and emissions, we have developed and implemented unique features such as the Eco-mode and the heading and rudder plotter into the new NP 5000 autopilot series," said Denker.

In addition to its fuel-saving potential, NP 5000 is also equipped with advanced functions for high precision course keeping, for example for safe navigation in challenging sea areas near coastlines and shallow sea areas, platforms or archipelagos. Besides heading control and track control the new autopilot features a course control mode. When steering in this mode, the autopilot automatically compensates for drift and keeps the vessel on the defined course over ground line. An optionally integrated acceleration monitor provides a warning if a pre-defined cross acceleration limit is exceeded. This helps to avoid damage to cargo or discomfort to passengers due to high acceleration stresses that might occur for example during a heading change at high speed.

MISC Berhad Chooses Inmarsat XpressLink

Malaysian shipping conglomerate MISC Berhad (MISC) signed up 46 of its vessels – a grouping comprised of chemical and LNG tankers – for Inmarsat's XpressLink service. XpressLink is a fully integrated and managed combination of VSAT and FleetBroadband delivering unlimited data availability across the world's oceans. It includes an option for MISC Berhad to double its available bandwidth at a pre-determined monthly rate when Inmarsat's Global Xpress constellation becomes commercially available from 2014. The battle for supremecy in the maritime communication sector has been vigorous, and the MISC signing is a significant win for Inmarsat. "It is important for us to have ample bandwidth to manage our ship and shore operational systems and meet the communication needs of our seafarers at sea," said Captain S Rajalingam, VP, Fleet Management System at MISC Berhad. "During our sea trials, XpressLink impressed us with its performance (and) offered the best value proposition delivering reliable, unlimited data usage on both the VSAT and FleetBroadband services."

XpressLink combines Inmarsat's high volume Ku-band VSAT system with FleetBroadband in a single package. In a press briefing to announce the contract, Frank Coles, President of Inmarsat Maritime, said: "We launched Inmarsat XpressLink in response to the growing need for unlimited high speed communications in the worldwide shipping market. Crew welfare and the need for increased operational efficiency are key drivers in the market, and with XpressLink, we can provide a future-proof communications platform."

"It is important for us to have ample bandwidth to manage our ship and shore operational systems"

Captain S Rajalingam, VP, Fleet Management System, MISC Berhad

Transas: Draft Information System

Approval for Saint Lawrence Seaway Draft Information System

At the St. Lawrence Seaway is one of the most important transportation links in North America. To maximize the efficient use of the seaway, in 2001, the Seaway authorities started to a study which would determine the maximum load ships can carry while maintaining a safe Under-Keel Clearance (UKC). Over the years the maximum draft of vessels transiting the Seaway in the MLO Montreal to Lake Ontario and the Welland Canal has been gradually increased. At the opening of the Seaway in 1959, the maximum draft for ships was set at 6.85 meters (22.5 ft.). This maximum draft is now set at (26.5 ft.). However, changes in water levels and a phenomenon called ship sinkage or "squat" made adjusting the maximum draft again more complicated.

Draft is measured prior to departure but a moving ship actually sits much lower in the water, particularly in shallow or constrained channels. How much a ship "squats" depends on factors such as the size and speed of the ship, shape of the channel, depth of the water, currents, wind, and even the presence of other ships.

Undertaken at the request of the St. Lawrence Seaway Management Corporation and industry partners that included the Canadian Ship owners Association and the Shipping Federation of Canada, the mentioned study resulted in standard squat models for the various types of vessels transiting the Seaway.

Over the past year and a half, the St. Lawrence Seaway authorities have developed a functionality description of a Draft Information System that incorporates the Seaway squat models, which was finally approved by all stake holders in March of this year and was then issued to the public.

In accordance with this specification, TRANSAS has developed a Draft Information System (DIS) based on the NS4000 ECDIS which allows the accurate display of the vessel's position, real time water levels and data from highly detailed bathymetric charts.

An independent functionality verification and assessment was performed by Lloyds Register in June of this year after which the system was installed on board the M/V Algoma Spirit for final approval by the St. Lawrence Seaway authorities.

The Transas Draft Information System passed the performance tests without comments or open items. The DIS can run as a stand-alone system or in a network with the Transas NS4000 ECDIS providing a unique combination of precise navigation instruments, high definition chart data and real-time navigation information in both the DIS and the ECDIS. The Transas DIS is built on the same hardware platform as the Transas NS4000 ECDIS MFD providing for better redundancy and lower cost of maintenance.

The Draft Information System (DIS) is a program designed to calculate and display the under-keel clearance (UKC) on the basis of the following data:

- High Resolution Bathymetry data provided by the Canadian Hydrographic Service (CHS);
- Water levels; received automatically via Seaway AIS stations of a network of water level gauge stations or set manually by the user;
- Ship forward and after draft set manually by the user;
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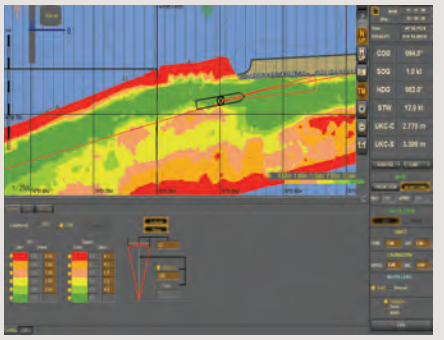

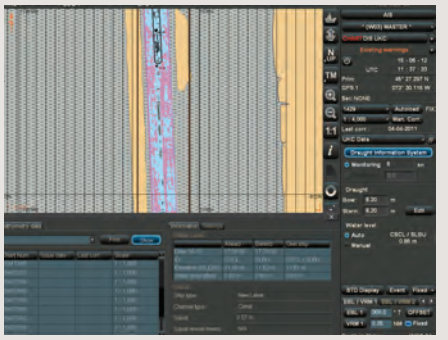

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Profile of a 2012 Fleet Optimization Conference Speaker

Dr. Henry Chen

Chief Naval Architect, Jeppesen

The term "Fleet Optimization" means many things to many people. What does it mean to you?

Dr. Chen Fleet Optimization encompasses many aspects of shipping operations ranging from finding the best deployments and schedules for maximizing the fleet revenue/profit to minimizing total fuel consumption on a particular passage given the loading conditions and forecast weather to arrive on-time. Historically, such decisions are derived from years of experiences with hit or miss results. The current market and regulatory conditions have introduced added complexity that if not well-managed they could result in costly mistakes. Decision support systems are therefore needed to find the best solution while satisfying these constraints. **This conference is very timely as the industry is facing such challenges and looking for solutions.**

You have elected to speak at the inaugural Shipping Insight Fleet Optimization Conference in Stamford in October: If you could boil it down into a paragraph, what will be the thrust of your message?

Dr. Chen The thrust of my message will be to show how such decision support systems for voyage optimization and safety have been proven over the years and how they are being increasing deployed by progressive shipping companies to manage risks and minimize fuel cost. Utilizing the advances in numerical weather/current forecast, ship performance modeling/simulation, high speed satellite communication and powerful desk top computers, voyage optimization has superseded traditional "hit or miss" weather routing methods.

Vessel owners of every size are faced with legislated challenges in terms of emissions, fuel quality and the standard array of new equipment rules, such as ballast water treatment systems. I know the solutions vary greatly by vessel type and area of operation, but in your opinion, regardless of geographic locale or type of vessel in their fleet, what could/should every vessel owner be doing today to optimize the efficiency of their fleet.

Dr. Chen Regulatory challenges will only increase in the future. Owners should invest in strategic efficiency management planning, training, and decision support systems to help ship's crew to understand the consequences of their actions in dollars and cents. Unbiased, quantitative procedures (for example, benchmark processes with valid KPIs) will reward the good performers while helping the rest to improve.

Much is read and said regarding emerging rules regarding fuel, emissions and the environment and their impact on vessels and the companies that own them. Can you put in perspective for our readers the changes we are seeing today, putting them in context with changes you have seen?

Dr. Chen Looking back over the past 30 years, the shipping industry has always been reactive to major accidents: **Double-hulls after Exxon Valdez, VDRs after the Erica accident, ECAs in response to port states, GHG from green initiatives of cargo owners, ballast water treatment from marine biologists; EEDI to satisfy the environmentalists.** Since the regulations often were crafted by people who do not have in-depth shipping knowledge, the operators are faced with high cost and unsafe solutions to satisfy the rules. We need to be PROACTIVE and anticipate the future requirements in building new ships. One such example is EEOI.

While it is not currently mandated, it will be a lot more cost effective to fit necessary sensors and monitoring systems in a new-build than to add the capability after ships are in service. Taking a systems approach will also enable multi-purpose use of equipment (e.g. using the same VDR for both SOLAS and SEEMP/EEOI requirements) thereby reducing life cycle costs and training effort.

Dr. Henry Chen

Dr. Henry Chen is currently the Chief Naval Architect for Denver, CO-based Jeppesen. Jeppesen is a Boeing Company that specializes in providing navigation and optimization solutions to the aviation, marine and land transportation industries. Dr. Chen has 37 years of experience working for the maritime and offshore industries. He was previously the founder of Ocean Systems Inc. and developed the Voyage Optimization and Safety system based on his Ph.D. thesis at MIT. The company was acquired by Boeing in 2008 and merged into Jeppesen. He received B.Sc. in Naval architecture from University of Newcastle Upon Tyne, Master degrees in Shipping Management, Ocean Engineering and Ph.D. in Ship Systems from MIT.

SHIPPING Insight

October 8-10, 2012, Stamford, CT
http://www.shippinginsight.com

Program at a Glance

The 2012 Fleet Optimization Conference, organized by Shipping Insight, and assisted by the publishers of *Maritime Reporter & Engineering News*, have effectively worked to assemble a "who's who" list of speakers and panelists. Speakers and panelists will include senior executives from across the shipping industry spectrum. Below is a partial list. For full details, visit **www.shippinginsight.com**

Monday, October 8

6:00 PM Reception and Networking Event

Tuesday, October 9

Shipping Market Outlook 2013
Steven Gordon, Clarksons

Environmental Regulations Overview
Jeanne Grasso, Partner, Blank Rome LLP

Ship Design: Session 1 – Efficiency
Moderator: Capt. Rene Menzel, Managing Director, Peter Dohle/Hammonia Reederei
Speakers
Spencer Schilling, Herbert Engineering Corp
Bill Lind, Director, ABS Americas
Elisabeth Tørstad, DNV
Leo Schellmann, Wärtsilä

Ship Operations: Session 2 – Fuel Management
Moderator:
Capt. Ulf Svedberg, Master Mariner, Swedish Maritime Association
Speakers
Uwe Bullwinkel, Germanischer Lloyd USA
Mark Kester, Emerson

Ship Operations: Session 3 – Ship Performance/Voyage Optimization
Moderator
Ulf Samuelson, Royal Caribbean International

Speakers
Henry Chen, Jeppesen
Paul Welling, Transas
Jan Hansen, NG Sperry Marine

6:00 PM Networking Event

Wednesday, October 10

Ship Operations: Session 4 – Hull Performance
Moderator:
Capt. Ulf Samuelson,Royal Caribbean International

Speakers
Jim Brown, International Paint
Frank Christophersen, Raytheon

Session 5 – Technology
Moderator:
Capt. Ulf Svedberg, Swedish Maritime Association
Speakers
Johan Nystrom, NAPA
Henrik Dahl, CTO, Eniram
Peter Bergljung, Director, SAAB

Berthing a Submarine

Project to design, develop and fabricate a composite universal camel for all classes of submarines

By Scott Reeve, President, Composite Advantage

Berthing a fast attack or fleet ballistic missile (Trident) submarine requires skilled vessel handling, knowledge and practice. The larger Trident subs are 560 ft. long with a beam of 42 ft. and displace almost 17,000 tons. When maneuvering them into port a deep draft camel is a crucial aide to optimizing berthing and mooring procedures. The camel creates and maintains separation between a sub and a waterfront facility. Deflecting or compressing with vessel movement, the camel prevents damage to the hull, diving planes, screws, fairings, special skin treatments and appurtenances by absorbing the sub's energy.

Over the years factors like operational requirements, environmental conditions and pier and fender system designs have led to the use of more than 17 different types of deep draft camels built from a variety of materials at Navy waterfront facilities. When the Navy decided to standardize these camels to increase efficiency, it also wanted a design and material that would help lower operational costs and resist the ravages of saltwater affecting wood and steel camels. The Navy tapped Composite Advantage LLC of Dayton, Ohio and Whitman, Requardt & Associates LLP of Baltimore, Md., for a design-build project to develop and fabricate a composite universal camel able to accommodate all classes of submarines at any port in the world. Gregg Blaszak, a principle of Coastline Composites Inc., Lancaster, Pa., said, "A universal or one-size-fits-all deep draft camel offers greater flexibility in berthing submarines, helps reduce inventory, allows support between Navy installations and provides a cost savings by improving operational efficiency." Coastline Composites is a consulting group specializing in composite products and applications. Following the Navy's selection of Composite Advantage, the firm acted as an owner's representative for the Navy to review the portions of the project relating to the composite materials.

"To effectively marry composites with steel and concrete, you need composite design and manufacturing expertise," said Blaszak. "CA was very cost competitive but they also had the necessary design and fabrication skills to handle the unique properties of composites." CA teamed with WR&A to develop the concept for the camel's internal structure. "We knew they had previous experience designing waterfront infrastructure for the Navy and felt they would be a good fit with us for the project," says Andy Loff, vice-president of CA. The Navy's criteria for the new camel included the ability to absorb the massive amount of energy generated by a berthing submarine, freeboard, as well as list and trim angles and overall flotation stability. The flotation criteria posed a challenge.

"We were dealing with a unique shape and the criteria were somewhat at odds with each other in that if we designed to meet one requirement, issues surfaced with the other criteria," says Matthew Lambros, structural engineer for WR&A. "This was largely due to the fact that a number of properties affecting the camel

such as volumes and densities can vary and must be considered to establish precise flotation calculations."

The first design step was to determine the amount of kinetic energy the camel would need to absorb from a submarine to avoid over or under-designing the structure. WR&A used the kinetic energy standard for the Navy's largest sub in less-than-ideal environmental conditions so that the camel could be used with any combination of sub class and port in the world. Arch rubber fenders had to be selected that could effectively absorb the energy without transferring too large of a reaction force on the supporting structure. Components and connection details were designed based on the magnitude and path of resulting forces. Once preliminary geometry was established along with weights of the building material, drawings and specifications were generated for CA.

"Unlike working with existing shapes and steel parameters, the advantage of using composite material is that you can design much more specifically for the project," says Lambros. "We were able to determine what we needed in terms of structural strength and stiffness allowing CA to mold the product to those physical and mechanical properties. The use of composites made the design-build process much more productive because of the ability to work in such close coordination with CA fabrication personnel.

Testing revealed an unexpected challenge. The large structure equipped with rubber fenders weighed in at 70,000 lbs. with an additional 35,000 lbs of ballast required to meet flotation requirements established by the Navy. "We had to look at how the camel could be lifted during maintenance or installation in a manner that was structurally efficient, yet maintained safety measures and easy handling for base personnel," says Loff.

CA and WR&A developed specialized lifting methodology able to accommodate the unique characteristics of the composite material and loads. Steel bars were integrated in the composite panels along the top edges of the camel. Pockets were formed around the bars at four locations so that lifting slings could be attached instead of traditional lifting hooks or pad eyes at discreet points. Specialty lifting bars distribute the camel's extreme self-weight along the length of the steel rod instead of focusing forces at single discreet points.Flotation and structural strength were also aided by the use of TYCOR, a fiber-reinforced foam core inside the composite panels creating a "sandwich" cross section. The patented material reduces the weight of the panels and its unique architecture enhances strength. "The core, incorporated with fiberglass fabric and infused with resin, contributes to flotation which eliminated the need to add extra flotation foam," Loff says.

Following fabrication, composite sub-assemblies were assembled on-site at SUBASE New London in Groton, Conn., in October 2010 and the camel was installed in the water in November 2010 for a flotation test. "When we designed the camel we developed the ballast to consist of a combination of concrete mass and steel plates," says Lambros. "The steel plates are movable inside the camel so that if the camel flotation trim is a few degrees off, then the ballast can be adjusted by moving the plates. Each plate weighs just 50 lbs. so they can easily be moved by a one person." Following completion of the flotation test, the camels were delivered to the Navy for installation on their newest submarine pier.

The set of universal composite camels has been successfully used by berthing submarines at New London for over a year. "Feedback from Navy facilities engineers and port operations is very favorable," says Loff. "Elimination of recurring maintenance is a major operational benefit and multiple bases are now looking at the composite camels for future use." According to Loff the Navy also is looking at using the technology for CVN aircraft carrier camels as well as ship separators to provide standoff distance between the ship and the pier or ship-to-ship. The standoff distance for the separators is adjustable.

The composite ship separators offer applications at commercial ports for sea-going vessels that include cruise ships and cargo ships. The composite technology and construction CA developed for vehicle bridges also is suited for waterfront infrastructure such as piers, wharves, walkways and brows.


Fuchs


Ulrichs


Jongen


Stoddart


Huang

Rüdiger Fuchs is the New CEO of P+S Werften

Rüdiger Fuchs (46) will become the new CEO of Germany's P+S Werften. He takes over from Dr. Dieter Brammertz, who is leaving P+S as planned. Dr. Dieter Brammertz (63) was Chairman of P+S Werften from February 2010 and planned and designed the speedy restructuring of the former Hegemann-Werftengruppe. The merger of the shipyards at Stralsund and Wolgast into P+S Werften, and the repositioning of the company as a specialist shipbuilder, are the substantial milestones he achieved.

"I represent a new start at P+S Werften," said Fuchs. "It's my aim to lead P+S Werften to long-term success as a specialist shipbuilder with a clear product profile. My first steps will be to win back the trust of customers, employees and suppliers as well as banks and guarantors in the company, and to work out a truly realistic company concept. To this end, we need a thorough and clear analysis which begins this very day. This will form the basis for a comprehensive restructuring plan which we will present to the European Commission by the end of 2012."

After studying aviation and space technology at the University of Stuttgart, Fuchs began his career in the space industry, subsequently taking on management roles in the defense and rail industries. In 2001 he moved to Airbus as head of its Hamburg plant. In 2004 he took over as manager of the newly established international Cabins business area, and at the same time was appointed to the executive board of Airbus Germany. As chief representative of the A380 for Germany he solved the electrics problems of the world's biggest passenger aircraft.

Ulrichs Appointed MD of Rickmers-Linie

Rickmers-Linie, part of Hamburg's Rickmers Group, promoted Ulrich Ulrichs to the position of Managing Director. Ulrichs joined Rickmers-Linie in 2005 when he took over responsibility for Line Management. In 2008 he became Director of this division before being appointed Deputy Managing Director in August 2011.

Ulrichs will work alongside Rüdiger Gerhardt, who has held the title of Managing Director since July 1, 2011 as well as Head of Logistics Services for the Rickmers Group.

Bayley to Lead Celebrity Cruises

Royal Caribbean Cruises, Ltd. said that Michael Bayley has been promoted to President and CEO of Celebrity Cruises, replacing Dan Hanrahan, whose departure was recently announced. Bayley will report directly to Richard D. Fain, Chairman and CEO of Royal Caribbean Cruises, Ltd. Bayley has been with Royal Caribbean for over 30 years, most recently as Executive Vice President of Operations. Prior to this role, Bayley served as Executive Vice President — International, where he oversaw the international expansion for the company. In a related move, Lisa Lutoff-Perlo will be promoted to Senior Vice President of Operations for Royal Caribbean International, reporting to Adam Goldstein, President and CEO of Royal Caribbean International. Lutoff-Perlo is a 27 year veteran of the company who has served in a variety of roles within both Celebrity Cruises and Royal Caribbean International.

New MD for Damen Shipyards Singapore

Maarten Jongen has been appointed Managing Director of Damen Shipyards Singapore (DSSi) from March 2012. In his new role, Jongen will focus on marketing, services and further improving efficiency at the yard that has been building (aluminium) Damen vessels since 2000. DSSi has been part of the Damen Shipyards Group since 2000.

New CFO at Eagle Bulk Shipping

Eagle Bulk Shipping Inc. said that Adir Katzav, formerly Director of Financial Reporting, has been promoted to CFO. Katzav succeeds Alan S. Ginsberg, who is leaving to pursue other professional interests. To facilitate an orderly transition, Ginsberg agreed to oversee a transition of his responsibilities through mid-August 2012.

GL Noble Denton Appoints Stoddart

GL Noble Denton appointed Arthur Stoddart to lead its operations in the Americas. Stoddart will become Executive Vice President for the region, based in Houston. Stoddart brings nearly 30 years of hands-on oil and gas engineering experience to GL Noble Denton's Americas Region.

Huang Joins A/S Dan-Bunkering

A/S Dan-Bunkering said that Sarah Huang, 29, joined Dan-Bunkering's Shanghai office as Marketing Executive as of June 2012. Huang was born in China and moved to Denmark as a child, but is now back in China.

Klüber Lubrication North America Promotes Bryant

Klüber Lubrication appointed Ben Bryant as marine market manager. Bryant is a graduate of the Massachusetts Maritime Academy and holds a 1,600 ton master's license with experience on oil tankers, offshore supply vessels, tug and barge units, and various small power and sail vessels. Prior to joining Klüber, he worked as an environmental consultant in the oil spill response industry. His primary focus at Klüber is to launch a new portfolio of environmentally acceptable lubricants for the marine industry. Bryant holds a master of marine policy from the University of Rhode Island and a master of business administration from Boston College.

Savisaari: MD of Atlas Elektonik Finland

Jaakko Savisaari, 56, was appointed new Managing Director of Atlas Elektonik Finland Oy, a subsidiary of Atlas Elektonik, a supplier of naval electronics. In previous positions, Savisaari has been an officer in the Finnish Navy, most recently as a military attaché in the USA. He succeeds Sami Sohlberg.

GAC Bunker Fuels Strengthens HQ Team

GAC Bunker Fuels Limited has appointed two new UAE-based bunker traders as part of its regional expansion plan. Georgia Paravalou will trade and broker marine fuels in her new role. An economics and management graduate, she joins GAC Bunker Fuels from AP&A Ltd, where she worked as a shipbroker, coordinated the marketing department and developed business in the UK and

LITE

Dr. Kam Ng

Louisiana Immersive Technologies Enterprise's (LITE) newly appointed chief executive officer (CEO), Dr. Kam Ng, has officially arrived and is active in his new position. Ng was selected in April 2012 and is joining the LITE team after retiring from the Office of Naval Research (ONR) as the deputy director for research. Ng is relieving Dr. Robert Twilley who has served as the interim CEO for LITE since November 2010. Twilley took the position of interim CEO while also serving as the vice president of research at the University of Louisiana at Lafayette, and will be leaving in August to head up the Louisiana Sea Grant Program at Louisiana State University (LSU). Ng received his Ph.D. in mechanical engineering and applied mechanics from the University of Rhode Island in 1988. He also received an MBA from the Marymount University in 2005, a Master of Arts in international commerce and policy from George Mason University in 2008, and completed the Senior Executive Fellow Program from the Kennedy School of Government at Harvard University in 2002, and the Senior Executive Program at the Federal Executive Institute in 2004. While at ONR, Ng managed the basic and applied research portfolio of $900m. He also managed the education and outreach programs that develop the next generation of scientists and engineers, and is responsible for the strategy and development of the Navy Science, Technology, Engineering and Mathematics (STEM) program.

Savisaari

Jewett

Emerson

Jaya, IHC Asia Sign Agreement

SinoPacific Signs Deal to build Six OSVs

South China.

Anthony Inglis is charged with expanding GAC's bunker business in the Middle East and developing bunkering operations in Sub-Saharan Africa. He joined GAC Bunker Fuels from Weatherford International, where he served as a Procurement and Logistics Co-ordinator for the same market.

Thuraya Appoints VP

Thuraya Telecommunications Company reported that it has appointed T. Sanford Jewett as its new Vice President, Marketing.

Jewett brings his expertise in international markets to Thuraya and will play a major role in leading the expansion of Thuraya's global marketing strategies.

During the start-up of Iridium Satellite in the late 1990s, Jewett worked in the marketing department, where he led the development and global marketing of the Iridium satellite pager product. More recently, he ran Operations and Business Development for WorldCell.

W&O's Emmerson Earns Propeller Club Award

W&O employee Tammy Emerson was recognized as the Propeller Club of Jacksonville's 2011-2012 Maritime Member of the Year. W&O announced that longtime-employee Tammy Emerson, Senior Outside Sales Representative, was recognized as the Propeller Club of Jacksonville's 2011-2012 Maritime Member of the Year. Emerson received this distinction as a result of her commitment to the club and its mission to promote the maritime industry. Emerson was a key player in securing new sponsors for the Propeller Club, and made a number of noteworthy contributions to the club's fundraising event efforts. She was recently elected as the club's 2012-2013 Vice President of Sponsorship. Her goals with this position are to further increase sponsorships and continue advancing the maritime industry in Jacksonville through corporate and community outreach.

IHC Merwede Signs Agreement with Jaya

IHC Asia Pacific, a subsidiary of IHC Merwede, signed an agreement with Jaya Shipbuilding and Engineering Pte Ltd, which enables IHC Asia Pacific's high-specification offshore vessels to be produced by Jaya at its yards in Singapore and Batam, Indonesia. As part of the wide-ranging terms, IHC Merwede will also provide engineering support services to Jaya.

Oakwell Buys Into FORAN

Oakwell Shipyard Co., Ltd., part of the Oakwell Group Company, has started operations in its shipyard facilities at Sattahip, Thailand. Today, Oakwell Shipyard has an order´s book that includes seismic vessels and split hopper barges, among others. A key piece of the new operation is its Computer Aided Design (CAD) Toolset. Oakwell Shipyard has selected the FORAN System.

Marine Bunker Measurement Soluition for Progressive Barge Line

W&O and Emerson Process Management announced that a Micro Motion MID-Certified (Measurement Instrument Directive) Marine Bunker Measurement Solution has been installed on a barge operated by Progressive Barge Line, Inc. in the Port of New Orleans, La. Emerson's bunkering solution is designed to provide accurate, transparent bunker fuel deliveries. This installation by W&O on the 27,000-ton Progressive barge PBL2402 is the first in North America.

SinoPacific Signs Deals for Six OSVs

The SINOPACIFIC Shipbuilding Group signed a newbuilding contract for four SPP35 platform supply vessels (PSV) and a Letter of Intent on two large SPP50 PSVs with SLOK Nigeria Ltd. The six vessels are scheduled to be delivered by the end of 2014, and are significant for the yard as they mark the first time that independently designed offshore supply vessel (OSV) products of SINOPACIFIC direct selling to the African market. Reportedly, the two newly contracted types will be built at SINOPACIFIC's Dayang Shipyard.

"Dayang has been focusing on efficiently building bulk carriers. This time,

WSS Helps Safe Northern Sea Route Passage

Wilhelmsen Ships Service (WSS) is helping clients execute voyages through the Northern Sea Route (NSR) as this new trade lane begins to open up new opportunities for shipping. WSS is working with Russian Arctic shipping specialist Rosatomflot for ice-breaking assistance and has developed a program to assists clients with technical, legal and insurance preparations they must satisfy to make the journey safely.

The NSR is currently open between 1 July and 1 November but holds out the long-term prospect of a faster route between Northern Europe and North Asia/Alaska, cutting the journey time on an Europe-Asia voyage from 34 days to 22 days. This has the potential to provide substantial savings in fuel consumption and emissions, as well as hastening the development of oil and gas reserves in the Arctic. In 2011, 34 voyages carried more than 820,000 tons of cargo via the NSR, a figure likely to rise to 1m tons in 2012. Summer sea ice levels on the route have decreased about 12% over the last decade and the warming climate ice could bring ice-free summers by 2050, according to Norwegian Polar Institute estimates. The average cost for a single NSR passage is about 10% greater than a Suez canal transit, however this is negotiable for multiple transits. Each transit is considered a separate project as to preparations, such as application for permission to the Russian authorities, equipment and crew training. Issues that owners need to be aware of before navigating the NSR include amendments to the terms of their P&I and hull and machinery insurance cover. In addition, paper charts and publications are in Russian only and ice pilots do not always speak languages other than Russian.

To make the journey, all vessels must comply with Russian rules for the NSR, including its guide and regulations for navigation and pilotage as well as requirements for vessel design and construction, ice operations and knowledge of tariffs for icebreaking services. At present it takes two to three weeks to get a ship accepted to transit the NSR and the vessel nominated must be the highest, 1A ice class.

the building of high value-added OSVs is a major strategic initiative taken by SINOPACIFIC to transform and upgrade Dayang in the downturn of the current shipbuilding market," said Wang Jianding, GM, Dayang Shipbuilding, "In the future, Dayang will continue to build upon the Group's design and market advantages to adjust our product mix accordingly, fully leverage our strength in production capacity and manufacturing efficiency, to ensure it to become one of the manufacturing bases which SINOPACIFIC will use to carry out its OSV strategy - leadership in niche market."

Raytheon Anschütz Opens in Rio de Janeiro


Robbe

Raytheon Anschütz established a new subsidiary Raytheon Anschuetz do Brasil Sistemas Marítimos Ltda., headquartered in Rio de Janeiro. With the new company, Raytheon Anschütz expands its sales and service activities in South America. Raytheon Anschuetz do Brasil starts operation in July 2012.

This includes supply and systems integration for Raytheon Anschütz navigation components such as gyro compasses, autopilots and steering systems, Radars, ECDIS, and complete integrated bridge systems. For offshore platforms, Raytheon Anschuetz do Brasil can offer tailored and surveillance and security solutions on a commercial-off-the-shelf basis.

Raytheon Anschuetz do Brasil, Sistemas Marítimos Ltda., Avenida das Américas 7899, Bloco 2, Sala 508, Barra da Tijuca, CEP 22793-081, Rio de Janeiro, Brasil

www.raytheon-anschuetz.com.br

Seaspan Selects IFS Applications to Support $8B Contract

IFS North America said that Seaspan has selected IFS Applications as its Shipbuilding materials requirements planning (MRP) solution. IFS Applications was chosen because it provides a powerful project-based solution (PBS) with the ability to control cost and schedule in real-time, enhancing Seaspan's ability to efficiently meet customer requirements.

www.IFSWORLD.com

Wärtsilä for Nine Kuwait Oil Tanker

Wärtsilä will supply the main engines for a series of vessels being built for Kuwait Oil Tanker Co. (KOTC), a Subsidiary of Kuwait Petroleum Corporation. Four VLCCs (Very Large Crude Oil Carriers), one Aframax tanker and four medium-range tankers that are being built in South Korea at Daewoo Shipbuilding & Marine Engineering (DSME). The VLCCs will be fitted with 7-cylinder Wärtsilä RT-flex 82T engines and a Waste Heat Recovery System. The Aframax vessel will be powered by a Wärtsilä 6-cylinder RT-flex 58T main engine, and the medium-range tankers by a Wärtsilä 7RT-flex50D main engine. All engines will be built by the Engine & Machinery Division of Hyundai Heavy Industries Co., Ltd. (HHI-EMD), which is a Wärtsilä licensee.

MHI Licenses Deck Machinery Tech To Imabari

Mitsubishi Heavy Industries, Ltd. (MHI) signed an agreement with Imabari Shipbuilding Co., Ltd. in Imabari, Ehime Prefecture, Japan, under which MHI licenses production and marketing of deck machinery. The production of licensed machinery is scheduled to be started in April 2013. Imabari Shipbuilding is the Japan's largest shipbuilder, based on new shipbuilding tonnage and ship sales. The licensed deck machineries consist of various configuration types and are capable for use in all ships. Hydraulic pumps and motors, which drive machines, will be supplied by MHI. Imabari plans to build the deck machinery at the shop in Dalian Imaoka Shipbuilding Co., Ltd., a ship block manufacture plant that Imabari has established in Dalian, China. Deck machinery consists of anchor windlasses, which are used for anchoring and anchor hoisting, and mooring winches, which are used to moor a vessel to a pier or berthing facilities.

MHI manufactured its first deck machinery in 1962. The company's deck machinery has built up a solid delivery track record and has won high reputation from customers for their high reliability, and durability.

Parker Hannifin Acquires Kittiwake Group

Kittiwake Group has been acquired by Parker Hannifin Corp., a leader in motion and control technologies. The transaction is designed to offer greater value with a comprehensive and innovative range of products and solutions and includes the acquisition of the entire Kittiwake Group, including Kittiwake Developments Ltd, Kittiwake Procal Limited, Kittiwake Holroyd Limited and Kittiwake Incorporated. Kittiwake, with annual sales of approximately $20m and employing 95 people, will be integrated into Parker's Filtration Group and the sales will be reported as part of the International Industrial Segment. Parker Hannifin employs approximately 58,000 people in 47 countries and its sales revenue was more than $12 billion in fiscal year 2011.

ExxonMobil Expands Supply Capability of MobilGard

ExxonMobil Marine Lubricants completed the first bulk delivery of Mobilgard 570 cylinder oil in the Port of Shanghai in May. The bulk delivery of Mobilgard 570 was made by Hai Gong You 30, the first double-hulled marine lubricants-delivery barge to operate in Shanghai. Built and owned by China Marine Bunker PetroChina Co. Ltd (Chimbusco), the IMO-compliant barge is 278 dwt and iss equipped with state-of-the-art flow meter technology and a 1.5 metric ton crane. Mobilgard 570 is formulated with high-quality, heavy neutral base stocks, which have less thermal and oxidative stability. To optimize the oil's performance, ExxonMobil balances individual additive components instead of using an additive package. One of these additives is a patented synthetic thickener technology to increase viscosity, important for engine designs that incorporate higher combustion gas pressures and temperatures, higher stroke/bore ratios and reduced cylinder oil feed rates. The oil also contains proprietary performance-enhancing detergents, dispersants, anti-oxidants and anti-corrosive additives. In addition to helping extend piston overhaul intervals, Mobilgard 570 helps increase engine reliability, providing outstanding thermal stability and acid-corrosion protection. It also promotes cleanliness and reduces the amount of waste cylinder oil requiring disposal, thus allowing ship operators to be more environmentally responsible. Mobilgard 570 will be replaced by Mobilgard 560 VS later this year. New Mobilgard 560 VS is an advanced variable-sulfur cylinder oil that is formulated to deliver outstanding performance and engine wear protection for slow-speed diesel engines. It is designed for use with residual fuels spanning both high and low sulfur levels.

Bulk delivery of ExxonMobil's Mobilgard 570 cylinder oil in the Port of Shanghai is now available by Hai Gong You 30, the first double-hulled marine lubricants-delivery barge to operate in Shanghai.

Harris PYE, H&W Repair FPSO

Harris Pye has completed planned maintenance and upgrades on Husky's SeaRose Floating Production and Storage (FPSO) vessel, the first to be drydocked in the UK in 12 years. Working for H&W at their Belfast Repair Dock, the Harris Pye team worked 24/7 to complete all works in under 28 days. The 272 x 45-m wide FPSO is operated by Husky Energy at the White Rose oil field, 350km off the Newfoundland coast.

Prime Contractor H&W dedicated its Belfast Repair facility and resources, so that the vessel could undergo an FPSO Off Station Program (OSP), where planned maintenance and upgrades were completed in dry dock. H&W awarded Harris Pye the contract to carry out all major topside works, which included specialist piping and turret system upgrades. Having previously completed similar projects, they were also tasked with additional works such as the installation of a new deepwell pump system and the refurbishment of the turret lower bearing's and utility swivel seals.

www.harrispye.com

Jaya: $84m to deliver two vessels

Jaya Holdings Limited won ship building contracts worth $84m to deliver a 5,150 bhp Anchor Handling Tug and Supply Vessel and a 16,000 bhp AHTSV. The 16,000 bhp AHTSV, one of the largest vessels to be built by JAYA, will be designed and built for offshore support and is capable of oil rig towing, oil rig positioning and anchor handling, offshore oilfield supply, stand by rescue, and iceberg towing/ice management. The vessel is Ice Class 1A; giving it the ability to navigate in moderate level ice conditions and northern regions. The vessel has also been designed to Norwegian Maritime Directorate standards (highest in world for offshore vessels) and carries the Clean Design (CD) designation from DNV.

Open Ocean Launches Maritime Security Program

Hammick

Aboard the HQS Wellington, Chenega UK Ltd. launched its fully integrated maritime security system to combat piracy and provide the ship owning community with a holistic, single point of contact security program to mitigate the risk of piracy. "The shipping world has had to deal in a piecemeal fashion with the realities of piracy and related crimes against their seafarers and ships with little support from the establishment (however that is defined), and it is somewhat inevitable that the provision of maritime security has been a rather haphazard affair in the circumstances," said Murray Hammick, Chenega UK Managing Director. "A few years ago we in Chenega had the undoubted luxury of being able to take a 60,000 foot view of the problem and, from the perspective of a defense corporation with expertise in the fields of IT, data collection and processing, security and operational planning and support, so we set out to see what a comprehensive, top-down maritime security solution might look like. This was the genesis of Open Ocean."

www.openoceanmaritime.com.

OSD Wins PSV Contracts

Wijsmuller

Offshore Ship Designers UK division OSD-IMT won a contract to supply the design for a modified version of its IMT 982 Platform Supply Vessel to be built at the new shipyard facility of Honghua Offshore Oil & Gas Equipment in Jiangsu, China. The basic class-approved design documentation and design licence is provided by OSD-IMT Ltd, Montrose, UK. The 83.2-m PSV will have a deck area of 900 sq. m. and can carry 1330 cu. m. of fuel oil, 800 cu. m. of potable fresh water, 980 cu. m. of liquid mud/brine, 1350 cu. m. of drill water/water ballast, 265 cu. m. of dry bulk and 170 cu. m. of base oil. It has a maximum load deadweight of about 4,000 tons at 6m draft.

A diesel electric propulsion system is fitted comprising four main diesel generators, 2 x 1900 kW frequency controlled electric motor-driven azimuth thrusters for main propulsion and 2 x 800 kW frequency controlled electric motor driven tunnel thrusters fitted forward. The vessel is classed with Lloyds Register of Shipping and is fitted with a DP2 system. It has accommodation for a crew of 28 persons and has a trial speed of 14.0 knots. Meanwhile, Swire Pacific Offshore (SPO) has confirmed an order with Universal Shipbuilding Corporation (USC) in Japan for six high-specification IMT 984 3700 DWT PSVs designed by OSD-IMT, with options for a further 4 vessels. The vessels will be built in USC's Keihin Shipyard and delivered progressively from third-quarter 2014. These orders follow on from the one placed in late 2011 for four OSD-IMT-designed IMT 997 5000 DWT PSVs at USC's Maizuru Shipyard and 4 IMT 997 PSVs at the EISA Shipyard, Rio de Janeiro, Brasil.

AVEVA: Major Deal With Ingalls

AVEVA signed a major contract extension with Huntington Ingalls Industries for AVEVA MARS, an Enterprise Resource Management (ERM) software solution from the AVEVA Enterprise portfolio. Implemented at Ingalls Shipbuilding, a division of HII, this new con-

tract will incorporate additional maintenance, services, consultancy, and development to further enhance and tailor the AVEVA MARS system to Ingalls' business processes.

Supplying U.S. Naval and Coast Guard vessels, Ingalls has been an important customer of AVEVA MARS since 2006. AVEVA MARS, with modules for Material, Planning and Production designed specifically for the shipbuilding industry, has enabled Ingalls to streamline and improve shipyard and waterfront operations from initial proposals through to commissioning.

www.aveva.com/enterprise

AVEVA Opens New Office in Helsinki

AVEVA has opened a new office in Helsinki, Finland to support its growing presence in the country and to maximize business opportunities in the power generation industry. The office will offer sales and support for all AVEVA's products and solutions in both the plant and marine sectors.

Richard Longdon, CEO, AVEVA said, "AVEVA continues to invest significantly in our long-term growth strategy. The new office in Helsinki is a perfect example of how we are expanding our geographic footprint to provide better local service for our customers and create new channels for our business. In recent months we have opened a number of new offices in fast growing markets like Latin America, but also in well-established areas including Europe. We are very positive about the prospects for our business and will continue to expand our global presence to meet our growth targets."

ABS Endows Chair in Ocean Engineering at University of California at Berkeley

ABS has established the American Bureau of Shipping Endowed Chair in Ocean Engineering in the Department of Mechanical Engineering at the University of California at Berkeley (UC Berkeley). Professor Ronald W. Yeung has received the inaugural appointment to this chair for a five-year term, effective 1 July 2012 through 30 June 2017.

Noreq Cranes for Offshore Wind Farms

Noreq's Danish subsidiary, NoreqActa, has been awarded the contract for 108 pieces WTPC's (Wind Turbine Platform Cranes) to be placed on the West of Duddon Sands (WODS) offshore wind farm. The West of Duddon Sands wind farm is a joint venture between Scottish Power Renewables and Danish company DONG Energy. The total capacity of the farm after start up will be 389 MW.

MeteoGroup Singapore Opens

The launch of MeteoGroup Singapore signals a significant expansion in Southeast Asia for Europe's independent weather company. MeteoGroup Singapore will initially focus on providing weather products and services to the Southeast Asian shipping and offshore markets. MeteoGroup has provided market-leading marine weather services to this market for many years and the opening of an office in Singapore will enable the company to provide an enhanced level of service to existing customers and to expand its business in the territory.

USS Iowa Repainted with PSX ONE Coating by PPG

The exterior of the historic battleship USS Iowa has been repainted using PSX(R) ONE coating, a one-component acrylic-siloxane coating introduced last year by PPG Industries' protective and marine coatings business (PMC). The ship, which was originally commissioned in 1943 and served in the Atlantic and Pacific fleets during World War II, opened July 7 as an interactive naval museum at the Port of Los Angeles in San Pedro, Calif.

Nearly 900 gallons of PSX ONE coating were applied - in standard naval Haze Gray as well as black, red, white and blue - to the exterior surfaces of the USS Iowa. A crew of as many as 20 workers at a time painted the 887-foot-long battleship from March through May, after which the ship was towed from Richmond, Calif., north of San Francisco, to its new home at Los Angeles Harbor in San Pedro, Calif.

www.ppgpmc.com/northamerica

Resource Power Group Authorized for Napier Turbochargers

Large bore engine sales and service company, Resource Power Group (RPG) has received Napier Turbocharger's authorization as a service, repair and spare parts center. This move compliments RPG's existing capabilities as a medium speed engine, turbocharger, and fuel equipment service and sales company.

Wärtsilä for Three New Statoil PSVs

Wärtsilä contracted with Kleven Maritime AS to supply the ship designs for three new platform supply vessels (PSVs). Two of the vessels will be owned by Atlantic Offshore and the other by Remøy Shipping. All three ships will be operated by Statoil.

The two PSVs for Atlantic Offshore will also feature Wärtsilä power and propulsion, electrical and automation systems, including the Wärtsilä Low Loss Concept (LLC). The diesel-electric system provides additional reliability for continuous operation in various failure modes. The vessels will attain the highest possible Environmental Rating Number (ERN) of 99.99.99.99, representing their capacity to maintain position and normal operations in certain weather conditions. The Integrated Automation System (IAS) to be delivered will also include the advanced Wärtsilä ECOmeter. This feature allows the operator to be able to optimize the vessel's fuel consumption, and is an efficient tool for track planning, as well as ensuring the most efficient running of the generators. The vessels are also required to meet the IMO's most stringent requirements regarding emissions of NOx.

Wärtsilä's equipment deliveries will begin in autumn 2013, and all three vessels are scheduled to be operational by the end of 2014.

Caley Davits for Japanese FPVs

Caley Ocean Systems has supplied davits for four Japanese Fisheries patrol vessels. The davits will allow the rapid deployment and retrieval of a range of high speed workboats, even in Sea State 6 conditions, during patrol operations. The all-weather Caley davits enable rigid inflatable boats (RIBS) to be held in readiness and launched in seconds. Crew safety is paramount to the davit's handling system which features anti-pendulation control for pitch and roll damping and reduction of pendulum swing. During boat recovery, the towing boom positions the boat under the davit, eliminating boat yaw, while light auto tension winch control eliminates snatching during recovery.

www.caley.co.uk

Rolls-Royce to Power Drillships

Rolls-Royce won orders worth over $110 million to supply large thrusters for offshore drilling vessels. These orders, which include options for additional thrusters, are from a variety of customers who are expanding their drillship fleets and are driven by greater demand in oil and gas exploration in deep water and harsh conditions.

Keeping Production Moving *on a Challenging Aluminum Ship Project*

Material Specifications and Quick Turnaround Requirements Drive Great Lakes Shipyard Welding Efficiency Gains

When the U.S. Geological Survey (USGS) approached Great Lakes Shipyard in Cleveland last June, the government research agency had a tall order: Build two new, 70-ft. aluminum vessels for delivery before September 2011.

For the USGS, the $8.2m contract meant the agency would replace two of its oldest research vessels in its Great Lakes fleet, floating laboratories equipped with state-of-the-art instrumentation designed to improve the understanding of deep-water ecosystems and fish species in Lake Erie and Lake Ontario. One boat is moored at USGS Lake Erie Biological Station in Sandusky, Ohio; the other at the USGS Lake Ontario Biological Station in Oswego, N.Y.

For Great Lakes Shipyard, a division of the Great Lakes Towing Company located on Cuyahoga River's Old River Channel just off of Lake Erie, the order posed the ship designer and fabricator's biggest challenge in recent history – designing and fabricating not one, but two aluminum ships; something the company had never done.

Aluminum Specs

USGS approached Great Lakes with basic preliminary designs, specifying to build the vessels out of 5083 aluminum alloy after performing a feasibility study, said Christopher C. Peifer, Great Lakes assistant vice president of engineering and the company's safety officer. "The three biggest factors that drove them to choosing aluminum were draft, speed, and weight," he explains. "Lake Erie is the shallowest of all the Great Lakes and minimizing the vessel's draft is crucial for access to certain regions. The speed allows the owner to reduce transit time between sampling locations and the weight determines where the vessel can be pulled out of the water for the winter months."

According to Peifer, all these factors are closely related to each other and made the determining factor on the USGS' choice of material.

"The aluminum was a big change for us. We had worked with it a bit on smaller jobs, but we had not built an entire boat from it," Peifer said. "But we were up to the challenge of learning the ropes while we worked on such a tight turnaround."

Design Considerations

The USGS order required the shipyard to design and build two ships in just over a year, a taxing time-frame for those experienced in building aluminum boats

In order to build these vessels, Peifer and other on-site engineers received 3D preliminary drawings from the USGS and then turned these drawings into 2D layouts in which all materials and sizes of plate are indicated on the drawings. Each part in the layout is assigned a piece number and is sent to the material provider, who then cuts the pieces and sends them back to the shipyard with a set of assembly drawings.

"We used those assembly drawings, to tack the pieces together and weld it out from bow to stern," said shipyard general manager, Joseph J. Craine. "Actually we do more than just weld it out. We do all of the ancillary work, as well, including electrical, piping, insulation and more. It's a turnkey process."

Reshaping a Welding Department

Taking on the project required the ship-

yard to invest in new welding equipment, said Ryan Cooper, technical sales representative with The Lincoln Electric Company in Cleveland, who assisted the shipyard in making the transition.

"For this kind of work, they needed to weld out of position with a solid aluminum wire (GMAW – Gas Metal Arc Welding [MIG])," Cooper said. "Welding on aluminum is different than welding on steel. The crew was used to welding in position with older power sources using cored wire. To get the out-of-position weld on aluminum, they needed to learn how to use a pulsing power source to get a good bead and the penetration needed for this kind of job."

During a trial period Lincoln Electric showcased its Power Wave 355M with Power Feed 25M and the Python Plus Push-Pull gun combined with Lincoln Electric's SuperGlaze 5356 wire, the company's most popular aluminum welding wire for shipbuilding.

The Power Wave features some of Lincoln Electric's most sophisticated welding technologies and processes combined into a single, highly efficient inverter-driven power source designed for advanced semiautomatic welding. Lincoln Electric's Waveform Control Technology is at the heart of Power Wave 355M performance, enabling processes such as Pulse-On-Pulse and Power Mode. Precise control of process parameters permit welding on a variety of materials, including steel, stainless steel and nickel alloys, as well as the aluminum alloy Great Lakes Shipyard was required to use to meet USGS specifications. Programmable optimization of the arc for each material type, welding wire type, wire diameter and shielding gas mix delivers consistent welds time after time.

"Everyone here had been working with older equipment, and we realized the programmable Power Wave 355M would take us to the next step," Craine said. "It really simplified the process for our welders. We also evaluated welding wire choices. We tested eight different types of wire, and as far as production goes, the SuperGlaze was the most productive."

Another factor came into play in the decision making process – Training. As Craine noted, only a handful of the welding staff was certified in aluminum welding by the American Bureau of Shipping. "Only three or four of our 28 welders were certified to weld on aluminum," he said.

Lincoln Electric stepped in and remedied the situation with two weeks of intensive training for the Great Lakes welders. The program, led by Cooper and a Lincoln Electric Welding School instructor Lyle Binns, consisted of both classroom lessons and hands-on welding.

"At the end of the two weeks, everyone was certified in aluminum welding," Craine said.

On the Job

To keep pace with the requirements of both the materials and the job deadlines, the Great Lakes fabrication team worked 10-hour shifts, six days a week on both of the vessels. "Aluminum is much more difficult to work with than steel," Craine says. "It moves around, warps, flexes. It's definitely not as predictable as steel, and there's less margin for error. Because it is delicate and also oxidizes quickly, you can't grind a weld out on it like you can with steel. You have to start over with a fresh component. And, in steel fabrication, once you cut it, you can just tack it and weld it. With aluminum, you have to clean it and then weld it almost immediately after cutting."

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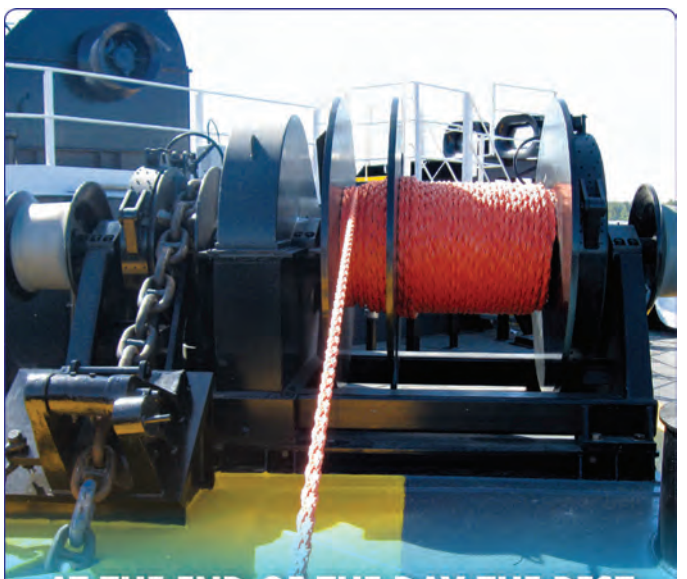

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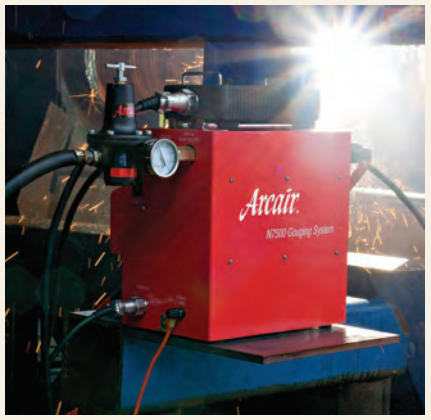
New Automatic Air Carbon-Arc Gouging System



Arcair introduced the Arcair-Matic N7500, an automatic gouging system that is said by the manufacturer to offer five times greater productivity and 10 times faster clean-up compared to manual carbon arc gouging. It can gouge with carbons up to .75" in diameter at 1600 amps at 100% duty cycle and gouge with an accuracy of 0.025". Slag removes easily and the bottom of the gouge exhibits minimal carbon deposits.

Compared to the previous Arcair-Matic system, the new N7500 offers:

• A digital pendant that improves consistency through a pre-set parameter menu (view video) based on carbon size and gouge depth.

• An extended front end that provides operators with a better view of the seam, making it easier for them to keep the torch on track.

• A rough machining mode that compensates for out-of-round rolls or pitted areas by enabling the operator to stall the electrode feed.

• Safer operation; it uses the power source's remote contactor switch and keeps the system electrically cold until the start button is pressed. Also enhancing safety are "no current" detect and low voltage functions that shut down the system when these conditions are present.

www.victortechnologies.com

Phoenix Product' LED Berth & Mirror Light

Phoenix Products Company, Inc. launched the LEDBM Series, an LED berth and mirror light fixture designed to replace less energy-efficient fluorescent, below-deck lighting. Backed by a three-year warranty, this fixture is designed to provide years of service with virtually no maintenance, even when installed in harsh environments. The LEDBM also eliminates the hassle and safety concerns with proper disposal of fluorescent lamps. Conformal-coated circuit boards, stainless steel hardware, and corrosion-resistant, low-copper content housing are among the design features that help protect the fixture against water and vibration damage.

The LEDBM is ideally suited for marine applications. The premium-brand LEDs are rated for 50,000 hours. A convenience outlet and on/off rocker switch add to the functionality of this fixture. The LEDBM is also ETL/cETL certified to UL 1598 and is 1598A Marine Listed.

www.phoenixproducts.com

Stauff ACT Clamp

In order to complete the product portfolio and fulfil customers' requirements, the Stauff ACT Clamp – recently awarded by the U.S. American NACE International association with a prestigious Corrosion Innovation of the Year Award – will also be available in the Twin Series design from the fourth quarter of 2012 on. The new twin clamp allows for the simple, fast and secure fastening of two parallel running pipes with standard diameters from 6 mm to 25.4 mm (from 1/4 inch to 1 inch). Clamps for the installation of pipes with alternative or even two different outside diameters are also available upon request. It has been designed in accordance with DIN 3015 (Part 3). Thus, it can be used in combination with all the regular mounting hardware of the same series.

Jotron AS Launches Tron AIS TR-8000

Jotron presents the new Tron AIS TR-8000, the latest generation AIS Class A. After several months with dedicated development, this new ship-born AIS Class A has been designed with special features to optimize easy installation and to secure safe operation onboard all types of ships.

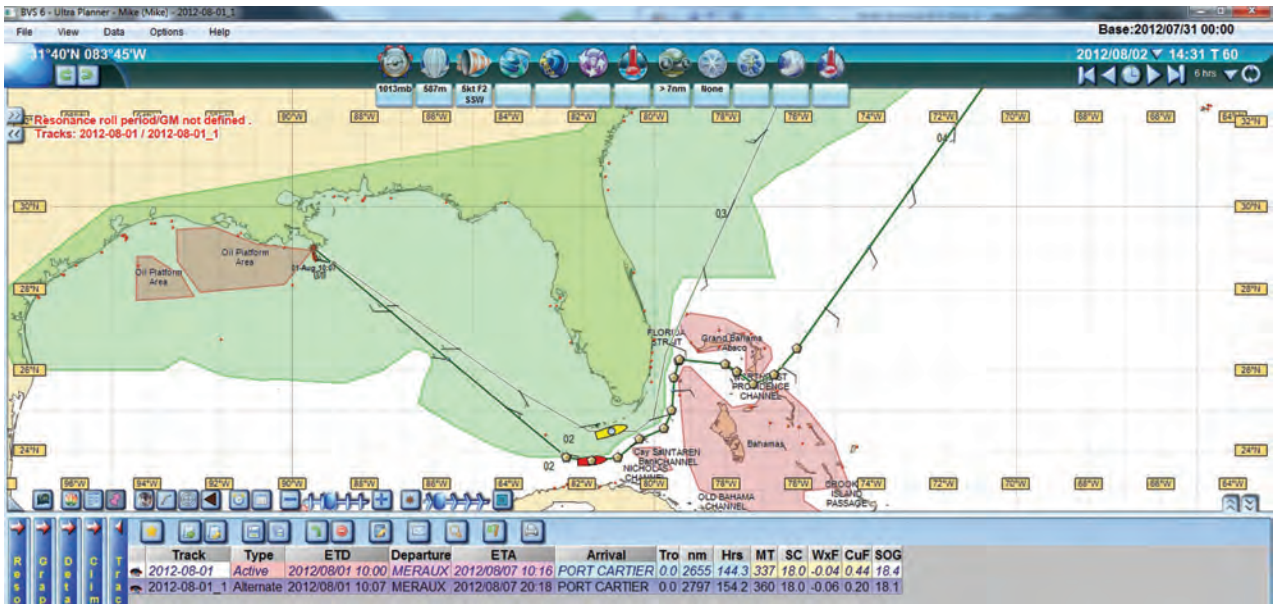
Jotron`s long tradition in working close with the marine industry has resulted in the new Tron AIS TR-8000 to be filled with several innovated solutions. The AIS has been designed with a separate transceiver unit including junction interface and a 7-IN. touch display unit. The separate transceiver unit has been developed to simplify any ECDIS interface while the design of the display unit will meet "stand-alone", flush- and panel mounting. Tron AIS TR-8000 has been approved according to the latest specifications. It has a GPS antenna included in the device, so plug and play. Tron AIS TR-8000 will comply with the new inland waterways requirements.

AWT Offers ECA Zone Calculator

The Fleet Optimization Experts

Applied Weather Technology announced its BVS onboard software provides Emission Control Areas (ECAs) and calculation tools to evaluate the most cost effective voyage track. Using the latest version of BVS, captains manage their voyage track by displaying ECA zones and making them "no-go" areas. By doing this, they can see their voyage track outside and inside the ECA zones. Simply moving waypoints in BVS allows captains to visualize the impact of time in the ECA zone and compare it to the overall effect of time en route. The result is that the captain has the information to sail the optimal route.

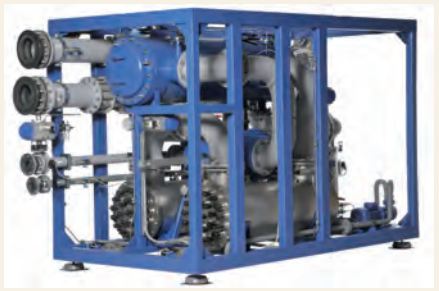
On August 1, 2012, North America Emissions Control Area (ECA) zones become enforceable. The regulation is part of Annex VI to the MARPOL Convention titled "Regulations for the Prevention of Air Pollution from Ships". The regulation dictates that the ECA Zones extend up to 200 nautical miles (NM) from coasts of the United States and Canada, including a portion of the Hawaiian Islands. In the ECA Zones, ships are required to burn fuel with sulfur content not exceeding 1.00%. Notable exceptions to this area are the Aleutian Islands and Arctic waters of North America.



www.jotron.com

MAHLE OPS BWTS Contract

MAHLE Industriefiltration GmbH, a systems specialist for water treatment, received the order from Hyundai Heavy Industries (HHI) to equip six new 9600 TEU ships operated by Hamburg Süd with the OPS (Ocean Protection System) ballast water treatment system. These containerships are each fitted with an OPS 800 system that treats a ballast water flow rate of 800 cu. m./hr. with the proven MAHLE technology in accordance with the applicable IMO D2 standard. The OPS comprises a prefiltration system, a main filtration system, and a low-pressure UV irradiation facility for disinfection. Even the more stringent requirements applicable in the USA (USCG standards) can be fulfilled as the values obtained in both the land and sea tests fell significantly below the IMO thresholds.



USCG Approval: SeaCor and SeaDrain Plus Plastic Piping Systems

GF Piping Systems received U.S. Coast Guard (USCG) certificate of approvals on its SeaCor and SeaDrain Plus Plastic Piping Systems. Both of the piping systems approved by the USCG meet IMO A753 (18) Part 5 for low flame spread and IMO A753 (18) Part 2 for low smoke and toxicity and are permitted for installation in concealed spaces in accommodations, service and control spaces. The systems need not meet the additional requirements of 46 CFR 56.60-25 (A) (2).

The SeaCor Piping System is available in sizes from ½" through 12" with a complete selection of approved fittings. The SeaDrain Plus Piping System is available in sizes from 1-1/2" to 6" with a wide range of Drain, Waste and VENT (DWV) approved fittings.

www.gfpiping.com

Rigless Intervention System for Baker Hughes

EFC Group, a designer and manufacturer of instrumentation, monitoring, handling and control systems for the oil and gas industry, delivered an mechanical handling contract to provide a Rigless Intervention System (RIS) for Baker Hughes. Following a brief from the oilfield services company, Aberdeen-based EFC Group delivered on the ambitious concept by designing and building the Mastiff RIS. The system was initially conceived for well bore tubular extraction during well abandonment and conductor pre-installation activities, however carries the potential for useful work in many other offshore well servicing and construction type activities.

The Mastiff RIS supports pulling and cutting of 15m (50-ft.) sections of 36-in. (and larger) conductor pipe, inner casing and cement, a significant improvement over casing jack systems which usually work with 1.5m (5 ft.) sections. The substructure has also been designed to accommodate a wide range of platform layouts to achieve a 'turn-up and assemble' capability, without the need for platform modification. In addition, the RIS is designed to be quickly dismantled into standard shipping containers.

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New MAN Diesel & Turbo Engine

"Generational Change" in Container Shipping

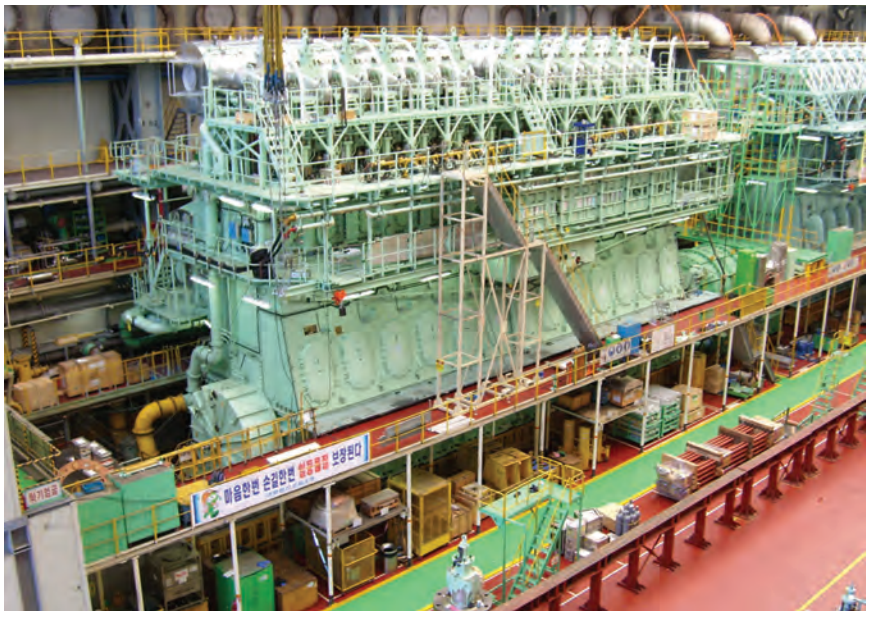
MAN Diesel & Turbo said its first super-long-stroke, 90-cm bore Mk 9 engine has completed test bed trials at Hyundai Heavy Industries Engine & Machinery Division successfully. The S90ME-C9.2 covers the new trend in container shipping demanding smaller bore, super-long-stroke engines with lower propeller speeds.

Physically it is the largest two-stroke engine ever designed by MAN Diesel & Turbo and will deliver a torque of 8.5 million Nm at 84 rpm.

It has a total output of 69,720 kW. The engine has been built by one of world's major two-stroke engine builders, Hyundai Heavy Industries, and it will be installed on a container vessel built at Samsung Heavy Industries for Orient Overseas Container Line (OOCL).

The engine is in fact partly due to the global economic implosion of 2008 and continued economic malaise today, a development which has hit the container shipping sector hard.

With this, shipowners continue to investigate operating cost reductions, through measures like low-load optimization of engines, slow steaming and operation with turbocharger cut-out. These tendencies led MAN Diesel & Turbo to offer possibilities supporting optimized propulsion efficiency by way of lower propeller speeds by using longer-stroke engine designs.



First S90ME-C9.2 unit tested at Hyundai Heavy Industries Engine & Machinery Division in Korea

In the midst of economic turmoil, shipowners are expected to clean up their act, literally, as a mounting array of international initiatives, led by the new Energy Efficiency Design Index, EEDI, which has helped manufacturers such as MAN Diesel & Turbo to develop the MAN B&W super-long-stroke S90ME-C9.2.

Developed specifically for container ships, the S90ME-C9.2 is based on the VLCC-optimized S90ME-C8, which in the meantime also found applications in a number of container ships.

Furthermore, the G series of engines with even larger stroke to bore ratios, has been made available, with G40, G45, G50, G60, G70, and G80 type engines supporting the tendency of using lower propeller speeds with a super-long stroke for all ocean-going ship types.

By using the low propeller speed supported by the S90ME-C9.2 engine, the engine is delivered with the following three different MCR optimizations:

1) High-rated MCR with part load optimization

2) De-rated MCR optimization with part-load tuning

3) De-rated MCR optimization with low-load tuning.

Are Stray Currents Destroying Your Machinery?

- Sohre SHAFT GROUNDING (EARTHING) BRUSHES are used on propeller shafts, turbines, generators, electric motors, gears, pumps, etc. Failure to properly ground (earth) rotating shafts can result in expensive damage to seals, bearings, and other critical components.
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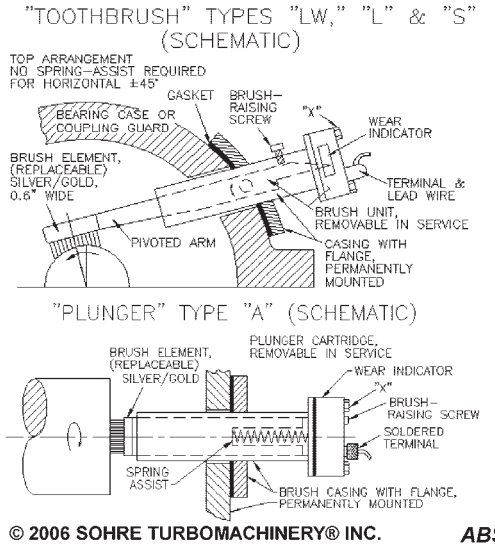

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ABS Nautical Systems

SEEMP & Improving Energy Efficiency

With the evolution of ship efficiency mandates comes the requisite host of "solutions" offered from companies known and unknown. As shipowners face mounting pressure to keep ships running efficient and environmentally sound, it is comforting to evaluate solutions from tried and trusted partners such as ABS and ABS Nautical Systems, which recently began offering its own innovative solution to improving vessel energy efficiency per the Ship Energy Efficiency Management Plan, or SEEMP. Here's how.

SEEMP, made mandatory by the International Maritime Organization (IMO), is a tool for shipowners and operators to use in outlining a program that continuously improves the energy efficiency of their ships. Starting as early as January 1, 2013, shipowners and operators must identify and develop ship-specific energy efficiency measures for vessels. The ship-specific plan can serve as an element when developing a broader Company Energy Efficiency Management Plan (CEEMP), which incorporates all measures of efficiency company-wide, both onshore and offshore.

Breaking it down, SEEMP is a digest containing best practices that can be implemented on a vessel to improve its energy efficiency. Each ship-specific plan will be monitored, updated and improved throughout the life of the vessel.

As ships and the companies that own and operate them vary wide by market sector and geographic region, ABS provides owners and operators with an understanding of the guidance offered by many industry organizations for developing an SEEMP; identifying options to assist in their efforts.

Drafting an energy efficiency plan follows a four-step process:

- Planning & Energy Efficiency Assessment
- Implementation
- Monitoring the Implemented Measures
- Self-evaluation and Improvement

ABS supports the development and implementation of the SEEMP and CEEMP by preparing the initial assessment and facilitating workshops, helping to choose proper energy efficiency measures and provide help in setting efficiency goals. While implementation and plan monitoring is managed primarily by ship operators, ABS can work in close collaboration to provide guidance.

ABS Nautical Systems Solutions to Support SEEMP

ABS Nautical Systems recently released two new solutions to provide the tools necessary to assist owners and operators to demonstrate compliance with IMO's mandate for SEEMP. The new Energy & Environmental module within the NS5 Enterprise platform, allows for the collection, analysis and reporting of a vessel's performance, efficiency, emissions and discharges. The software's shipboard component offers easy-to-use data entry forms that can be populated manually or automatically, while generating the required reports to demonstrate SEEMP compliance.

The onshore component offers sophisticated functionality with flexible dashboards that provide owners with the information necessary to execute better vessel and fleet operations. This new software module is fully integrated into the NS5 Enterprise suite or it can be used as a stand-alone tool.

Energy & Environmental Software

Customized dashboards

- Reports with drag and drop industry standard energy and environmental key performance indicators (KPIs)
- Monitor emissions with built-in CO2 and SOx calculators
- Full voyage management capabilities at ship and fleet levels
- Fully integrated into NS5 Enterprise or use as a standalone tool

Also available, in partnership with Herbert-ABS Software Solutions LLC is a trim optimization tool based on trim and draft as a way to help with the fuel efficiency of a vessel. The applied method is to conduct model tests in calm water covering relevant speeds and drafts for the operational profile of each vessel class. This tool was developed to optimize within applicable regulatory bounds and assist the crew in finding the best trim for any combination of draft and speed.

Trim Optimization Tool

- Integrated ship performance curves
- Push button optimization advice
- User-defined optimization parameters
- Auto ballast tool
- Auto cargo distribution
- State-of-the-art algorithms

Geislinger

Geislingers new SAE couplings

Geislingers new SAE couplings offer the renowned Geislinger reliability and compact design in a modular concept.

Geislinger designed a one-piece skeleton holding the springs (patent pending), giving its new coupling a very slim outline. Available in four different stiffness series, the coupling adapts to the customers' requirements. Towards the flywheel the SAE J620 standard connection interface is used, but optionally also metric or non-standard bolt patterns can be ordered. The inner connection features a spline connection to handle the axial misalignments and provide the possibility for blind assembly. To connect to various designs, tailor-made adapter pieces with spline on one side and flange, keyway or conical taper are available as an option.The Geislinger SE steel spring coupling can be combined with a Geislinger support bearing housing to obtain combinations with misalignment couplings or cardan shafts. Geislinger has chosen an oil filled design to maximize engine compatibility. The coupling design is optimized for the maximum oil volume to ensure the highest oil quality within the exchange intervals. The composite membrane allows for the thermal expansion of the oil and also provides the chance for a very quick and easy oil exchange.

http://www.geislinger.com

SMM 2012 *September 4-7, Hamburg, Germany*

See Terragon Environmental at SMM Hall B2.EG, Booth 221

The Next "STEP" in Shipboard Waste Management

In February 2012 Maritime Reporter introduced to you Terragon Environmental Technologies and its vision to transform solid and liquid waste handling operations on ships and rigs. Recently we caught up with Dr. Panayotis (Peter) Tsantrizos, President, CEO and founder of Terragon, to discuss the next "STEP."

– by Greg Trauthwein

"A journey of a thousand miles begins with a single STEP."

This quote attributed to Chinese philosopher Lao-tzu (604 BC - 531 BC) (Source: www.quotationspage.com) is applicable today when discussing the work being conducted by Dr. Panayotis (Peter) Tsantrizos and his team at Terragon Environmental Technologies in Montreal Canada. Dr. Tsantrizos, CEO, President and Founder of Terragon Environmental Technologies is embarked on the noble challenge to make sustainable the world's processing and resource recovery of trash. While the concept is scalable to communities large and small, land-based and sea-based, for the context here we will focus on work about to begin that will mate the solid waste handling unit with the liquid waste handling unit – or STEP – identifying and addressing the challenges to make it a safe, efficient, sustainable and cost-effective means to handle trash on the high seas.

One STEP Back

MAGS, or Micro Auto-Gasification System, is Terragon's solution to solid waste management that today is available commercially. The system, now in its sixth iteration, has been involved in some broad based real-life field testing, including MAGS' V4 installations onboard the commercial vessel Maersk Laser and the Canadian Navy's HMCS Protecteur, while its V5 installations include the U.S. Marine's Camp Smith base on Hawaii, as well as an onshore oilfield operation for Saudi Aramco. V6 models are shipping this year to a diversity of users, land and sea-based. To put it succinctly, MAGS accomplishes its mission to "cook" a wide variety of waste using Terragon's Auto Gasification Process, a patented technology which thermally breaks down hydrocarbons into sold carbon and synthesis gas, and uses the synthesis gas to fuel the process. The result? A small pile of "Bio-Char" that is many magnitudes less volume than the original waste.

The WETT technology – under development for four years with support from the U.S. and Canadian Navies – is the system to handle liquid waste onboard ships. WETT removes suspended solids and contaminants, and produces clean water that is safe for discharge or reuse. This technology – which today is targeted to both landside and marine applications, specifically habitats with fewer than 300 people – is approximately a year behind the MAGS technology. It is currently in field trials aboard Amelia, a 108.2 x 14.94 m, 4,433 GRT Lloyd's classed bulk carrier owned by Transport Desgagnes.

Together MAGS and WETT are transformational: together – as STEP – they have the potential to be revolutionary.

Two STEP's Ahead

The System for Total Environmental Protection (STEP) is the current mission focus of the Terragon Environmental crew, as they seek to identify and eliminate the challenges inherent in marine operations. Terragon's intention is to integrate the solid and liquid waste handling systems into a homogenous unit using MAGS and WETT technologies, where you can take all the waste of the ship and end up with only clean water, thermal energy and Bio-Char. According to Dr. Tsantrizos, there are many questions that still need answers, including:

• **What do you do with the extra water?** The easy answer is to send it overboard, but in sticking with his mission toward sustainability, Dr. Tsantrizos would like a solution which puts it to use on the ship, as potable water or utility water.

• **What do you do with the thermal energy generated?** As Dr. Tsantrizos points out, ships already have an abundance of thermal energy recovery via its main machinery. His preferred solution regarding the use of STEP generated thermal energy is to 'keep it in the box,' or more specifically to use it fully in the solid and liquid waste management loop.

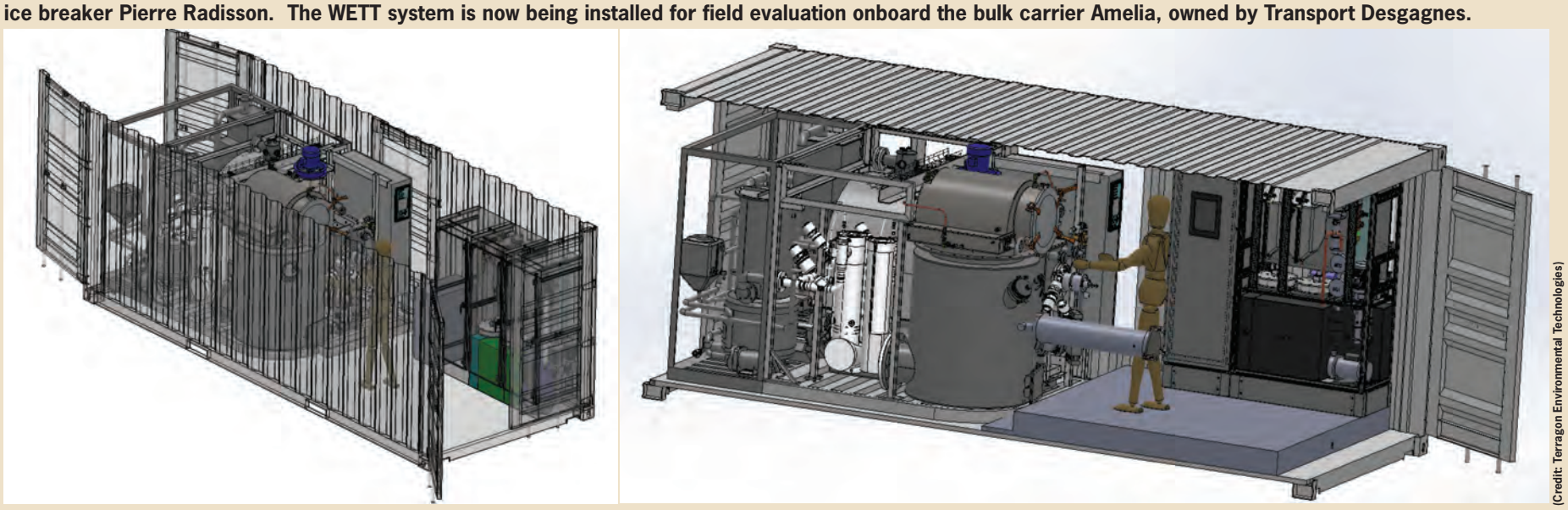
• **Integration of MAGS & WETT:** The ultimate challenge, however, remains the seamless integration of two proven technologies: MAGS and WETT. Dr. Tsantrizos noted that today WETT creates more liquid waste than MAGS can handle.

STEP Timeline: September 2013

Terragon Envrionmental Technlogies and its partners, both corporate and government, have embarked on a series of actions to make the STEP a commercial reality, with all indicators pointing toward September 2013. A nine-month study is set to commence that will compare STEP to conventional waste management options in terms of economic, operational and environmental impacts. Specifically the study – which is being conducted with Alion Canada and a number of other partners – will consider three applications, including: [a] a commercial ship with a crew of less than 25; [b] a research vessel with a crew of less than 60; and, [c] a military ship with a crew of about 250. Teekay Corp. will participate in the study and will be the independent reviewer of the assessment for the research vessel. Finally, the Naval Engineering Test Establishment (NETE) will participate and review the evaluation of the military vessel.

The Canadian Coast Guard Ice Breaker Pierre Radisson will be the first to host the STEP demonstration in December 2012. STEP will be installed within its ISO container (see picture page XX) on the deck of the ship for six months, treating bilge water, solid waste and used oils generated by the ship, as well as most of the gray water. Black water will not be treated for this demonstration, but will be incorporated on subsequent STEP demonstrations. Ultimately, the success of the system in the maritime realm is a story to be told years from now, as trash handling rules become more oppressive to ship owners and innovative solutions must be found. Regardless of its ultimate fate, by focussing its efforts on creating sustainable trash handling practices with residual benefits for communities large and small is surely a STEP in the right direction.

A containerized schematic of STEP, the combination of the MAGS & WETT systems. STEP will be installed in December 2012 onboard the Canadian Coast Guard ice breaker Pierre Radisson. The WETT system is now being installed for field evaluation onboard the bulk carrier Amelia, owned by Transport Desgagnes.



(Credit: Terragon Environmental Technologies)

Shell "Breakthrough"

Shell launched Shell Alexia S4, a product it dubs a 'breakthrough' and its most innovative marine engine oil in a generation. It is designed for use across a wide range of vessel and engine types, fuel specifications, loads and climates– from the Antarctic to the Amazon to the Suez Canal, essentially meaning vessels no longer need to carry multiple oils. It is designed to work effectively at any vessel speed, including slow and ultra slow.

The new formulation went through testing at Shell's Marine and Power Innovation Center in Hamburg, Germany. Tests in laboratory engines under simulated slow steaming conditions demonstrated that Shell Alexia S4 provided up to a 20% improvement in overall engine wear, compared to Shell's existing cylinder oil. It was also extensively tested during more than 25, 000 hours of field trials, by customers and the original engine manufacturers MAN and Wärtsilä. Here it proved its ability to protect engines running on distillates and residual fuels containing 0.2% to 3.75% sulfur content in a range of locations and climates, including the Antarctic, the Middle East and South America. With technical support and a switch to Alexia S4, one specific trial showed a 33% reduction in oil feedrate. Alexia S4 became available commercially this month.

http://www.shell.com/home/content/marine_products/alexia/animation/

(Photo Credit: Shell)

GEA Westfalia Separator

Hall A3, Booth 212

At SMM 2012, with the new BallastMaster ultraV solution, GEA Westfalia Separator Group demonstrates once again its development of new products that are customer-oriented and in line with market requirements: with this solution, the necessary cleaning processes can be completed entirely without the use of chemicals and solely on the basis of filtration and irradiation with UV-C light. As ultrasound is used for the self-cleaning of the lamps, no disinfection by-products occur.

The BallastMaster ultraV has a modular structure and is therefore suited both to use in the construction of new ships and to retrofitting. The system has already been certified under IMO regulations and is being presented for the first time at SMM in Hamburg.

Conrac

Hall B6, Booth 207

An new product is a fully integrated Marine Panel Computer with a diagonal of 13.3-in. (33.8 cm) specially designed for ship automation and control applications. Products launched at SMM will be a Marine Panel Computer with a screen diagonal of 7 in. (17.8 cm) with touch function. Moreover, Conrac will present its latest series of Marine Grade Panel Computers. Designed for 24/7 operation, the new Marine Panel Computer series is specified to run all marine applications, from automation and control to ECDIS and Navigation. The integrated high performance industrial PC with advanced low-power embedded technology ensures an optimum performance, superior graphic performance and utmost reliability. As a special feature, CONRAC integrated a proprietary system monitoring application called SysMon which is used to control various settings and to obtain exact information on a multitude of parameters.

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Learn more about Hammar Remote Release Systems:
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BETTER SOLUTIONS FOR SAFETY AT SEA

HAMMAR®

Wärtsilä

Wärtsilä: Hall 4, Booth 305,
Wärtsilä Hamworthy: Hall 1, Booth 521

Wärtsilä provides a complete offering of marine solutions for ship owners, shipyards and operators, continually focusing on helping its customers to find their "shorter route to bigger profits."

Its portfolio of marine products, solutions and services is divided into four key areas:

- operational efficiency,
- environmental excellence,
- fuel flexibility and
- services.

At SMM 2012, Wärtsilä will present its complete product and service offering in the marine industry and its customized approach to each of our customers distinct requirements. Wärtsilä will explain how its tailored solutions are dedicated to optimzing lifecycle value, using a wide scope of services to extend the life of vessels and enhance its value as an asset.

Moxa

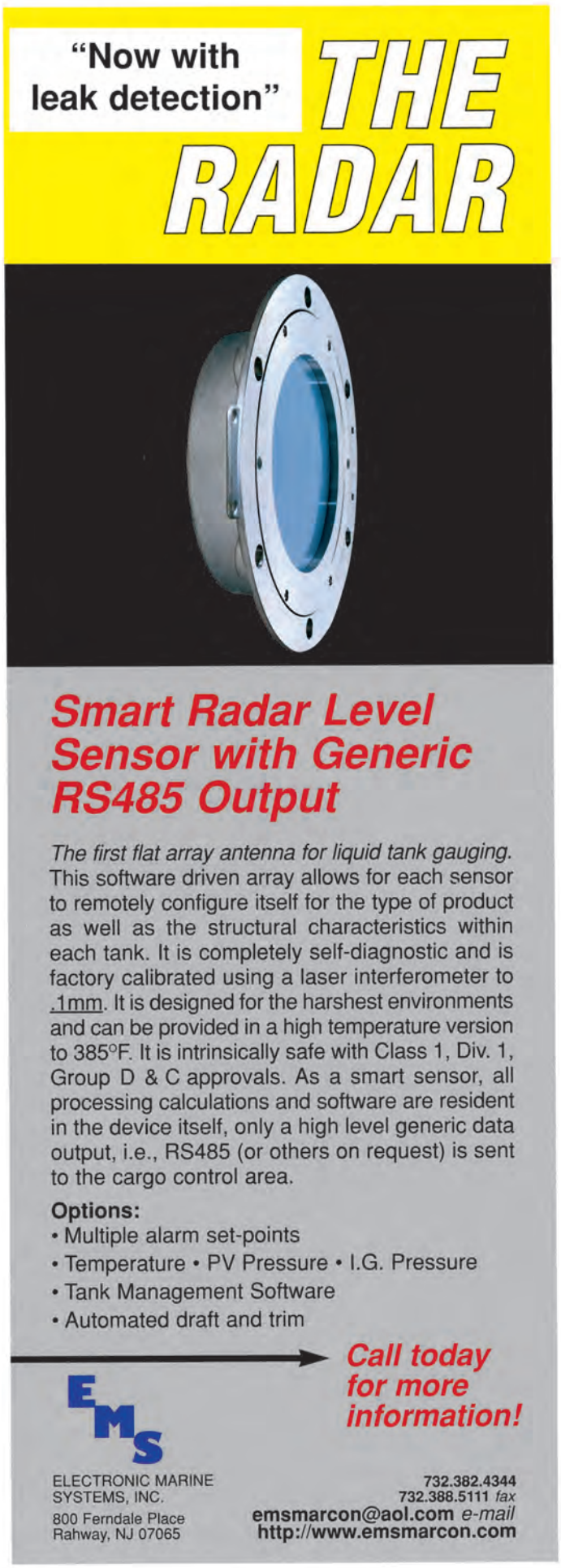
Hall B8, Booth 111

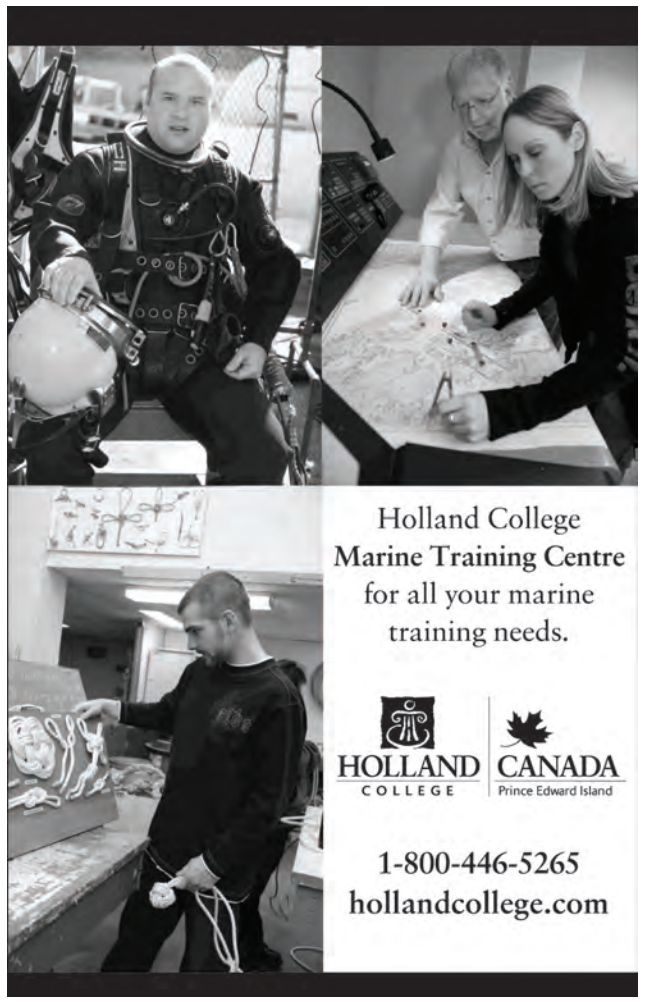
Moxa´s rugged marine computing solutions integrate ECDIS, radar and conning systems to facilitate navigation. To facilitate the lives of ship and vessel crews, Moxa offers comprehensive solutions for ship networks, including marine panel PCs, ECDIS displays, embedded computers and marine certified Ethernet switches. At SMM, Moxa will present its new x86-based ECDIS computer MC-5157-AC/DC, a high-performance, fanless marine computer. The Intel Core i5 520E CPU features a 3 MB L2 cache that can easily satisfy the heavy computing loads demanded by ship-board automation systems. In addition to its computing power and rugged design, 2 PCI slots make hardware extensions simple, while the 8 built-in NMEA ports allow users to easily connect gyros, speed logs, wind sensors and other specialized maritime hardware without the headache of configuring additional NMEA converters.

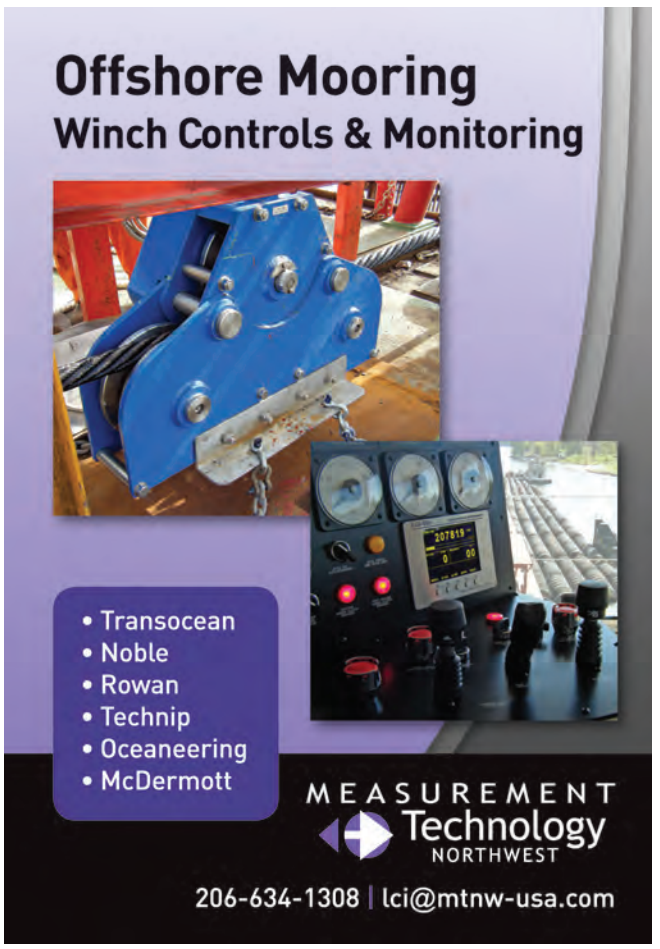
Hatz Diesel

Hall A3, Booth 201

Hatz Diesel is a manufacturer of single- and multi-cylinder air-cooled diesel engines up to 53 kW (78 hp), that are found mainly in industrial applications. In the seagoing and inland waterways sector, Hatz has also been supplying diesel engines for decades for power generators, pumps and compressors as well as for the







main propulsion in marine vessels and small fishing boats.

In the maritime business, a robust and reliable quality and a high flexibility in terms of installation options plays a major role. The Hatz products meet these requirements with ease and due to the low complexity of the air -cooled design it is easy to integrate into existing systems. At SMM Hatz displays a complete drive unit which consists of a Hatz 4 cylinder diesel engine 4L41C Silentpack including driving control, shaft and propeller. Besides a power generator with noise insulation a fire pump which uses Hatz D-Series engines will be shown. The later product was developed jointly with a partner, e specially for use on ships.

Colfax Fluid Handling

Hall A2;, Booth 213

Each pump can be equipped with Allmind. The shown "AM 101" Master Module at cooling water pump is the central "brain" of the system.

Colfax Fluid Handling will exhibit its enhanced product Allmind (pat. pending) at SMM. Colfax's Allmind pump upgrade is designed to reduce total cost of ownership through diagnostic capability and variable speed drive control. The concept of Allmind developed from a single leakage control device to become an intelligent condition monitoring and variable speed control unit. Allmind is comprised of interchangeable modules, giving the system the flexibility needed to adapt to highly individualized processes. The system offers the ability to handle everything from relatively simple condition monitoring to sophisticated monitoring and control activities involving multiple pumps. And it does it all with a single unit.

Baytek Monitors & IPC

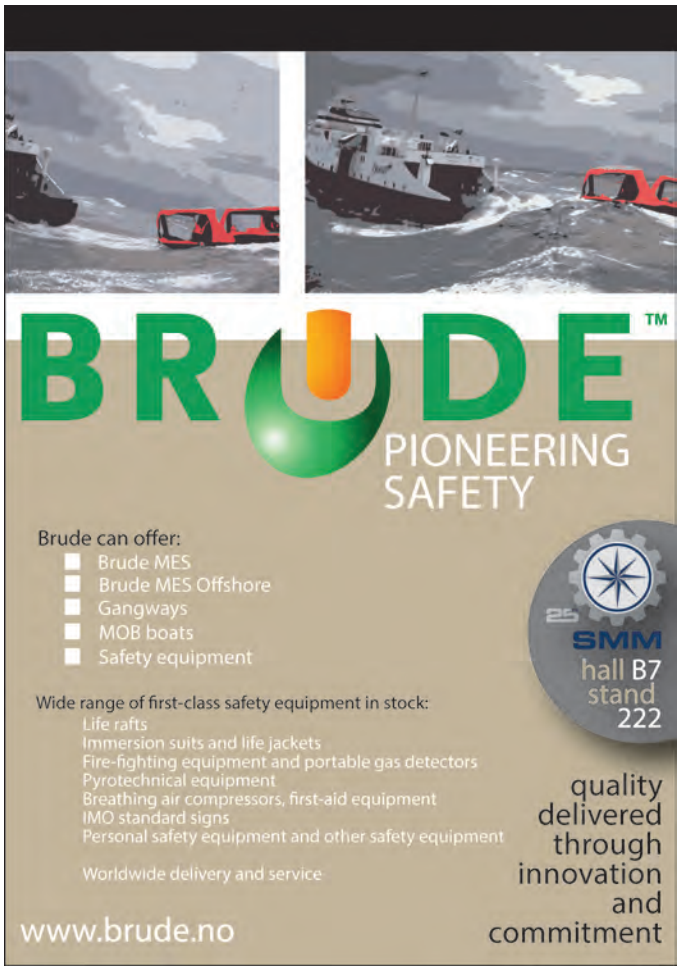
Hall B6, Booth 108

Baytek will be present innovative new products for the maritime sector: Maritime monitors & IPC with LED display technology, multi-touch function, glass fronts and bonded displays.New monitors use multi-touch control, monitor lines are gradually being switched to LED displays and the company will soon meet a frequently expressed customer wish for fully enclosed glass-fronted monitors. The maritime monitors & IPC from Baytek come with ECDIS and radar certification where applicable, or are ECDIS-compliant.

Van der Velden Marine

Hall A4, Booth 410

Van der VeldenVan der Velden Marine Systems, specialist in the field of maneu-



vering and propulsion efficiency will present part of the entire product range which consists of different kind of rudders, ram-type and rotary vane steering gear and propulsion efficiency - enhancing products.

Models and information of some top products like the BARKE and TIMON rudder as well as the Van der Velden COMMANDER rotary vane steering gear will be showed and provided at the booth.

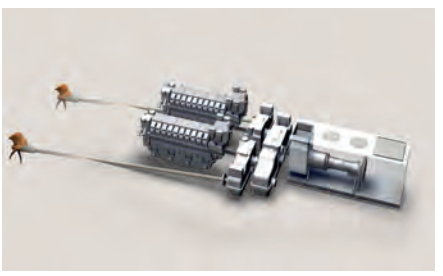
Imes

Hall B6, Booth513

German cylinder pressure measuring specialist Imes GmbH has launched two new cylinder pressure sensors. The HTT-05 and CPS-02 cylinder pressure sensors from Imes both feature integral signal conditioning units, hence allowing much simpler on-engine installation. With its M14 x 1.25 thread, the HTT-05 is the direct successor to the widely used and well-proven HTT-04 sensor, of which Imes has supplied over 30,000 units to engine builders and operators. Specifically targeting medium and high speed engines, the CPS-02 is a slimline "pencil" sensor, featuring a narrow body and M10 x 1 mm thread.

MTU

Hall A3, Booth 305



Combined propulsion systems of diesel engines and gas turbines (CODOG, CODAG and CODELAG) are used in military vessels and yachts. The TF40, TF50 and LM2500 gas turbines with a power output of up to 30,110 kW enable ships to achieve maximum speeds of over 50 knots. MTU supplies and installs complete propulsion plants that offer an optimal combination of compact power and low weight. Pictured: CODAG propulsion system

The SMM display will include main propulsion engines delivering up to 7,400kW, on-board gensets for commercial vessels in the power range from 5 to 3,000kW and combined propulsion systems with diesel engines and gas turbines with a power output of up to 30MW. In the field of automation, the company will display a new control console for megayachts. Comprehensive "MTU ValueCare" service products including customized service contracts, original MTU spare parts or consumables such as coolants, engine oil and engine filters will complement the product portfolio.

SAM Electronics

Hall B6, Booth 310

SAM Electronics and its associate L-3 companies will feature extensive ranges of systems and products for automation,

communications, navigation, positioning, propulsion, energy generation and distribution for improving ship operating efficiencies. Highlights include live demonstrations of the latest NACOS Platinum series of scalable navigation, automation and control systems featuring standardized components and operating networks which are already providing fully integrated functionality for vessels of all types and sizes. Displays will be complemented by a bridge simulator with three large screens and NACOS-type consoles. Also featured as an integral part of demonstrations will be an L-3 Valmarine multifunctional VALMATIC Platinum automation assembly as well as a new integrated Platinum dynamic positioning and control system developed by L-3 Dynamic Positioning & Control Systems together with SAM and Lyngsø Marine.

New exhibits on display for NACOS Platinum systems consist of a Remote Service software package for supporting vessel maintenance and for shore-based fleet control operations, a centralized data monitoring facility for evaluating key performance indicators, Fleetpilot.

Lankhorst Ropes

Hall A1, Booth 510

Ease of rope handling and optimizing rope performance are the themes of the Lankhorst Ropes booth at this year's SMM. In addition to the Lankhorst A3 rope splice, the booth will also feature the industry leading, Tipto Winchline and innovative Challenger coated Lankoforce rope - simultaneously improving abrasion resistance and making the rope easier to handle.

The A3 splice has 100% efficiency, which means there is no loss in rope strength due to splicing. It also makes rope handling easier as there is no doubling of the rope or splice stiffness in the mainline commonly experienced with traditional rope splicing.

The A3 splice is a standard feature of the Tipto Winchline - a dedicated floating winchline, developed especially to be used on single drum, self tensioning winches. The load-bearing 7- strand core combines high strength and low elongation. The Tipto Winchline has a breaking force of 785 kN with the A3 splice, compared to 682 kN without the A3 splice.

Alfa Lava

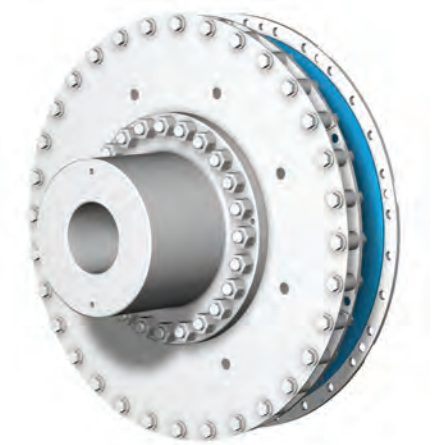
The SMM trade fair takes place in Hamburg, on 4–7 September 2012. Alfa Laval will be showcasing a wide range of solutions designed to address the big issues for the marine industry, such as boosting efficiency and reducing operating costs.

Fuel strategies and ways to cut fuel bills are important priorities for all ship owners and operators today, Alfa Laval will be showing some innovative new solutions that tackle these issues. Saving energy and reducing CO_2 are high on the agenda, and our key environmental products will be on display. Excellent support is of course essential for maximizing performance, and our parts and service offering will also be featured.

This year's SMM will be the launch pad for three new products. PureSOx introduces cost-effective exhaust gas cleaning. PureDry introduces waste fuel recovery and a paradigm shift in separator design. The wide temperature and pressure range of the AlfaNova fusion-bonded plate heat exchanger meets the demanding applications set by today's modern fleet.

Vulkan Couplings

Hall A3, Booth 302



Vulkan Couplings extended the range of the enhanced performance ACOTEC couplings with the RATO R +. The drive specialist, which is based in Herne, is launching the initial sizes of the development and presenting it to specialists for the first time at SMM. ACOTEC (Advanced Compound Technology) is a holistic approach to optimizing all relevant areas of influence, in order to be able to offer the best possible products and services. The basis for this is that VULKAN Couplings combines all competencies in-house, from application technology and torsional vibration calculations to the construction and development, the elastomer and vulcanization technology right up to the test centre, condition monitoring and service. The couplings manufactured and tested with this technology form the ACOTEC coupling range of the company, which are characterized by extreme resilience and reliability and which are labeled in the respective type designation with an additional plus sign following the brand name.

Danfoss

Hall B1, Danish Pavillion

At SMM Danfoss will exhibit its marine portfolio, including our frequency converter-family that holds eight marine approvals. Visitors will also be introduced to a variety of sensors, such as our cylinder pressure sensor that reduces fuel consumption and increases engine life.

Frequency converter: compact size and marine approved

The more compact D-frame construction design of the VLT Frequency converter is now fully available in the 90 to 250 KW output range. VLT frequency converters are available in protection classes up to IP 66, making the products ideal for the refurbishment of older vessels. Danfoss VLT frequency converters for marine applications are certified by eight authorities within the maritime and off-shore area, including DNV, RINA, Lloyds, CCI and others.

Cylinder Pressure Sensor – reduces fuel consumption

The new high quality pressure sensor allows 2-stroke and 4-stroke engines to operate with a higher output than is the case today. Owners benefit from reduced fuel consumption, lower maintenance costs as well as longer operating life.

Survitec Group

Hall B1.OG, Booth 600

During SMM, visitors to the Survitec Group stand will have the first opportunity to observe the new remote life raft launch feature for the world-leading SurvitecZodiac MIS (Medium Inflatable Slide) Escape Slide System. The innovative feature of the new SurvitecZodiac system enables a second liferaft to be remotely launched after the double track escape slide has been deployed and its first 150 person liferaft has been automatically inflated. By pulling a painter line on the ship, the new development allows the second liferaft to be deployed. Previously it was necessary for a crew member to descend into the first liferaft, from where the second could be inflated.

The development of a remote inflation capability now eliminates the need for any crew to leave the ship ahead of passengers and permits the almost immediate deployment of a second liferaft as soon as the first has been activated. This is expected to save valuable seconds of vessel evacuation time for passengers and crew.

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

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BARGE FABRICATION

McDonough Marine Services, 1750 Clearview Parkway Suite 201, Metarie, LA 77063, USA , tel:(504) 780-8100, fax:(504) 780-8200, mcdonoughmarine@marmac.net

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Omnithruster Inc., 2201 Pinnacle Parkway Twinsburg, Ohio 44087, Cleveland, OH 44139, USA , tel:330 963-6310, fax:330 963-6325, widmer@omnithruster.com contact: Kurt Widmer, www.omnithruster.com

CABLE TRAY SYSTEMS

Niedax-Kleinhuis USA, Inc., 2260 Westbrooke Drive Building K, Columbus, OH 33619, USA , tel:(614) 921-8469, fax:(614) 921-8676, sales@niedaxusa.com

CAPSTANS

Coastal Marine Equipment, 20995 Coastal Parkway, Gulfport, MS 39503-9517, USA , tel:228-832-7655, fax:228-832-7675, sales@coastalmarineequipment.com , www.coastalmarineequipment.com

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PPG Protective & Marine Coatings, One PPG Place, 38N Pittsburgh, PA 15272 USA
Rustibus, 2901 WEST SAM HOUSTON PKWY, N. SUITE E-325 HOUSTON, TX 77043 , tel:(832) 203-7170, fax:(832) 203-7171, djj@rustibus.com contact: Dominic Jordan

COMMUNICATIONS

Jepessen Marine, Hovlandsveien 52 PO Box 212, Egersund , tel:011 47 51 46 4700, info.marine@jeppesen.com , www.jeppesen.com/marine

COMMUNICATIONS SERVICE

David Clark, PO Box 15054, Worcester, MA 01615, USA , tel:1-800-298-6235, Sales@davidclark.com

CONSOLE- GMDSS

Engine Monitor, Inc., 191 James Drive West, St. Rose, LA 08872, USA , tel:(504) 620-9800, fax:(504) 620-9801, emonitor@emi-marine.com

CONTROL SYSTEM-MONITORING/STEERING

Omega Engineering, One Omega Dr., Stamford, CT 06907, USA , tel:203 359-1660, fax:203 968-7192, kkwait@omega.com contact: Kathy Kwait, www.omega.com

CRANE - HOIST - DERRICK - WHIRLEYS

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

DECK FITTINGS

Nabrico Marine Products, 1050 Trinity Road, Ashland City, TN 37016, USA

DECK MACHINERY- CARGO HANDLING EQUIPMENT

AF Theriault & Son, P.O. Box 10, Meteghan River, NS B0W 2L0, Canada , tel:902 645 2327, fax:902 645 2174
DMW Marine Group, 1123 St Matthews Rd Chester Springs PA 19425 , tel:(610) 827-2032, dw@dmwmarinegroup.com
JonRie InterTech, LLC, 982 Whispering Oak Circle, Manahawkin, NJ 60007, USA , tel:(609) 978-3523, fax:(609) 978-4959, BJDME@marinewinch.com contact: Brandon Durar, www.marinewinch.com
Liebherr nenzing Crane Co., 7075 Bennington Street, Houston, TX
Nabrico Marine Products, 1050 Trinity Road, Ashland City, TN 37016, USA

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Hydrex US, 604 Druid Rd E; Clearwater, FL, USA , tel:727-443-3900 (24/7), fax:727-443-3990, info@hydrex.us contact: Dave Lamon, www.hydrex.us

ELECTRONICS/NAVIGATION COMMUNICATIONS SERVICE AND

Jeppesen Marine, Hovlandsveien 52 PO Box 212, Egersund , tel:011 47 51 46 4700, info.marine@jeppesen.com , www.jeppesen.com/marine

ENGINES

GE Energy, 3993 West Sam Houston Parkway North, Houston, TX , tel:713 895-0068, fax:713 895-0072, Keith.Wyatt@ge.com contact: Keith Wyatt, www.ge-energy.com/electrifyingchange
Mitsubishi Engine North America, Inc., 1250 GREENBRIAR DRIVE, STE. E, ADDISON, IL 10550, USA , tel:(630) 268-0750, fax:(630) 268-9293, than@mitsubishi-engine.com

EXPANSION JOINTS

Elasto Valve Rubber Products, 1691 PIONEER RD SUDBURY ON, P3G 1R2

FUEL ADDITIVES

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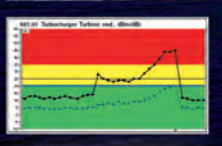


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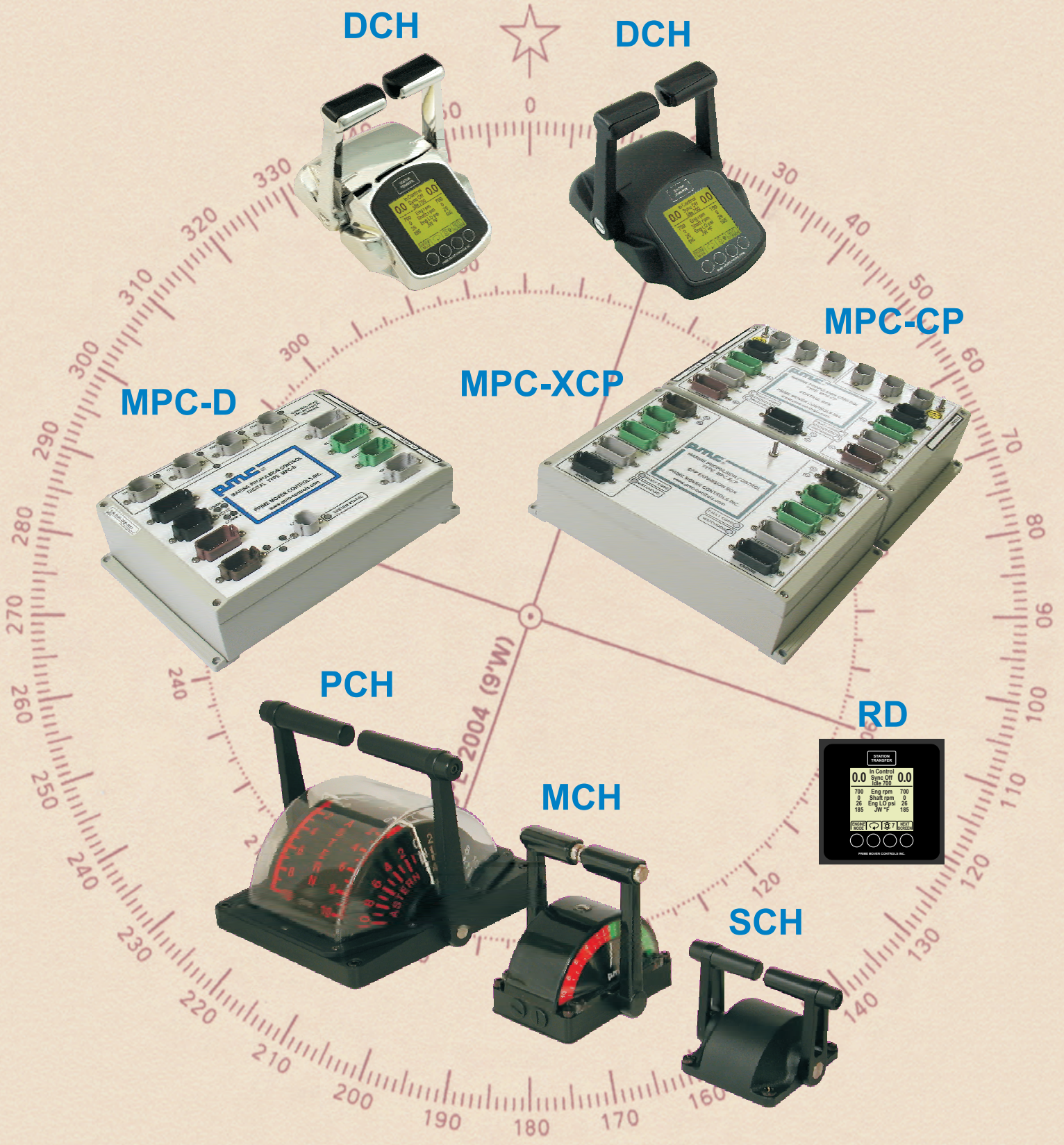

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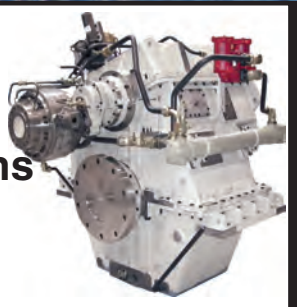

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