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# MARITIME REPORTER AND ENGINEERING NEWS

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May 2013

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"Rotterdam of the Tropics"
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**Bergen, Norway is the featured region in this month's NorShipping edition. Read about the booming business in this region starting on page 32**



## ON THE COVER

*Bergen, Norway is a bonafide maritime boom town, with a good percentage of its population and resources dedicated to maritime and offshore industry. Starting on p. 32 is a 10-page feature section on emerging players and technologies from the region.*
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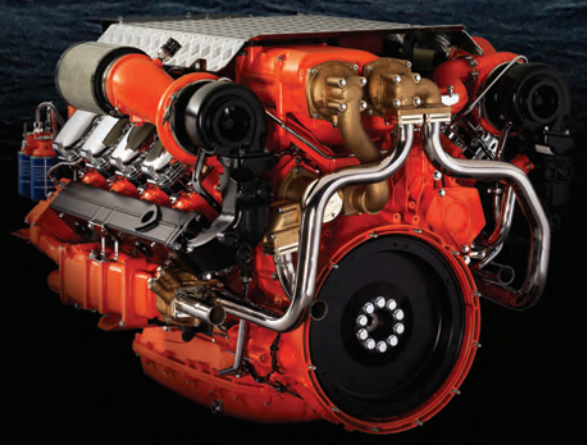

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# The Norway Way

My 20 plus years at the helm of Maritime Reporter & Engineering News have afforded me the opportunity to literally travel the globe, as the maritime industry is, if nothing else, global and mobile. Per usual with any business travel, you tend to visit the same places more than once. In the case of Norway, I have been there more than 20 times. Surprisingly, I have never been to Bergen.

However, having requested and read the full slate of reports from the pen of Alan Johnstone in this month's edition (starting on page 32), I feel not only that I've been to Bergen, Norway, but that I know Bergen, Norway.

Personally, I have always found Norway to be a special place personally and professionally. I would argue that there is no place in the world where the maritime industry is more intricately ingrained in the population. In fact, ingrained is the wrong word: maritime is embedded in the genetic code of Norwegians. Living by, from and (most of the time) harmoniously with the sea is my overriding impression of Norwegians and their sea, their industry, and you would be hard pressed to find a population anywhere that simultaneously respects and benefits from the waters that surround it.

This is, of course, our "Norwegian" edition on the occasion of Norshipping 2013, scheduled to take place in early June. Norshipping is one of the world's top two prestige maritime events, a traditional exhibition at its core for sure, but it is an event that transcends the dozens of nameless, faceless business gatherings around the globe.

The vibe of Norshipping is unique to any maritime event I've ever attended, and trust when I say I've attended more than my fair share. In addition to the exhibition, it is home to one of the more outstanding conference and symposia – attracting the top names and characters in the industry – for high level discussion in a usually entertaining fashion, hitting on the pressing maritime matters of the day.

And as anyone reading this publication can attest, there are more than few pressing matters in maritime to face.

The Ballast Water Management System debate has dominated headlines for years, and now that it has unofficially been dubbed "the most expensive refit in maritime history," it has truly gained the attention of key stakeholders. Last month the U.S. Coast Guard moved the BWTS ball forward, accepting nine systems as Alternate Management Systems (AMS). Full details on the ruling and the systems starts on page 26.

You have read Dennis Bryant's unique take on the maritime industry for more than a decade in our pages, and this, combined with his twice-weekly blog on MaritimeProfessional.com, has helped to deliver an abundance of insight on the critical issues of the day, as well as insights on the unusual. This month, starting on page 18, Bryant writes his column entitled "Rebuilding the Presumption of Preemption," which in short takes issue with the fractured nature of regulation and enforcement in the maritime industry, particularly in the U.S. where Federal and International rules can on some occasion be overridden by local law (ie. California).

I'm pleased, too, to welcome a new column in our Training & Education offering from Timothy L. Gauthier of AVO Training Institute. The article on Shipyard Electrical Safety is punctuated with three graphic cases of when man and electricity have met – each time electricity the victor – an important column that should be bulletin board material for any company intent on keeping its employees safe and alive.

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# MR DIGITAL

When you leave the page and head to the screen, Maritime Reporter offers the most digital and online news offerings. Here are select stories from last month on MaritimeProfessional.com

## SWIRE Chief Recovery Delayed

### Hughes-Hallett says two years to a healthy balance sheet

**2015**
*The year which there is a "chance" the market will be stronger*

*Just when you thought things had to start looking up soon, along comes John Swire & Sons boss James Hughes-Hallett to say that the shipping market is going to remain in its depressed state until 2015.* **Posted on MaritimeProfessional.com by Greg Knowler**

The Swire chairman's comments at Maritime Week in Singapore can hardly have come as a surprise, and the reason is that old culprit that has been sticking it to the container shipping industry for the last five years - overcapacity.

Too many ships that all have to be absorbed, somehow. Hughes-Hallett said that would make any recovery gradual and in 2015 there was "a chance" that the shipping market would be stronger. That sort of confidence makes you want to invest everything you own in shipping. The good news is that all those new ships flooding into service will be the latest generation fuel-efficient vessels, so when the recovery starts the bunker burden of shipping lines will be lighter. The bad news is that fuel will continue to go up, threatening to continue eroding shipping line profitability.

Fortunately for Swire, it has a bunch of offshore vessels and the rising price of oil was driving exploration, giving it "the perfect hedge," the Swire supremo said in the somewhat grandly titled "Maritime Lecture" that is a feature of Maritime Week every year in Singapore.

Rising fuel prices certainly won't do the container shipping business any favours, but weak volumes and low rates make it difficult to manage the balance sheet, especially when room has to be found for the excess capacity.

Drewry makes that point in a release this week, saying that absorbing the additional capacity at the trade route level will be the number one priority for carriers if they are to "have any chance of being profitable" this year. Higher freight rates are a critical requirement in this search for profitability, but 2013 has not followed the positive start of 2012. Last year a host of GRIs stuck but the general rates increase to North Europe levied on the market in mid-March was successful for about a week, Drewry said. An increase of $300 per FEU lost most of the gains before the week was through.

Emerging market trade with China is about the only area that is growing, but the volumes are not yet large enough to offset the falling trade with developed markets in the U.S. and Europe. Larger capacity ships are also cascading down into these trades, pushing down rates.

There is no just escaping the effects of container shipping's capacity overhang. Whatever costs that can be cut have long since been slashed, so managing the overcapacity is ultimately what will determine the health of the carriers.

There may be a sliver of silver lining in that the recovery of trade will be gradual and consistent. The industry won't see much profitability but the carriers will have time to dispose of their older vessels and bring new ships into service.

## The 'SALVAGE BONANZA' Torrential rains to bring salvaging bonanza to India

With the monsoon set to hit the Indian coast there is much expectations on the salvaging and wreck removal front most of which is likely to be highlighted during the forthcoming conference on salvaging scheduled to take place next week

In recent years, there have been a number of high profile salvaging and wrecks removals on the Indian coast, particularly in Mumbai port. The MSC Chitra, which collided with MV Khalijia and the naval vessel INS Vindhyagiri that caught fire when it collided with a merchant vessel near the Mumbai harbor are just two in the series.

There have been quite a few other incidents of old vessels of more than 25 years getting grounded especially on the West coast. Creating public awareness of the continued dangers of shipping even in this day and age of advanced technology and engineering has become an issue of paramount importance. Such cases highlight the issue of growing concern to marine insurers, shipowners and the wider marine industry. Managing the wreck removal operations for these cases costs large sums of money.

Prior to the onset of each monsoon in these past few years has seen leading global players in the salvage sector getting set to grab opportunities coming their way. They keep a watchful eye on the coast for any incidents which could translate into salvagebusiness. In this regard, Hinode Events and Services Pvt Ltd., is providing a decisive platform which will bring together a significantly large number stakeholders. They had organized the first conference in India on Salvage and Wreck Removal last year, which saw a good turnout.

The second edition of this conference to be held on Tuesday, May 7, 2013 has created intense interests among various players. The organizers say the registration is beyond expectations and as a result of the large number of participants already registered they have had to switch over to a bigger venue in the same hotel to accommodate the large number.

The reason is that some of the world's best known companies in the field of marine emergency response, marine salvage and wreck removal have accepted invitation to participate. Besides, there being only a month left before the monsoon hits the Indian subcontinent hence, this forum will provide an in-depth and factual review of the prevailing guidelines of the maritime administration with their implications. It will also be an opportunity to learn about other strategies which are expected to be brought into focus and their current state of preparedness to handle marine emergencies in Indian waters. Free and frank discussions are likely and analysis is set to take place on the implications of an accident in India's several offshore oil and gas fields.

Risk managers in ship-owning companies, maritime lawyers and maritime insurance practitioners besides most of the leading global salvage and towage companies, diving specialists, tug boat owners, ship recyclers and many others have already registered themselves as it is said to be of special interest to them. More details about registration could be had at www.hespl.in.

It is a fact that to prevent extensive damage and the need to maintain the environment there is an immediate need for intervention by marine and salvage professionals during any ship accident. Though salvaging is not considered a difficult task, it is the challenges that pop up that pose most of the problems including pressures from authorities, commercial commitments and other requirements. These included technical, diplomatic, legal, commercial and other challenges. The conference is expected to present the solutions.

**Posted on MaritimeProfessional.com**
**by Joseph Fonseca**


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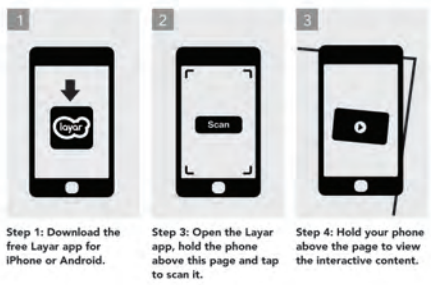


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Monthly Change

## Secondhand Vessel Values

by Year & Size

**VesselsValue.com** provides data driven ship valuations for tankers, bulkers and containerships. These graphs show how vessel value depends on age for the major types. Vessels are assumed to have typical size and specification for age and high built quality at a top tier shipyard.

VesselsValue.com

01 May 2013 — VV Mini Matrix - Monthly Change

| Built | Tankers | | | | | Bulkers | | | | Containers | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Vlcc | Suez | Afra | LR1 | MR | Cape | Pmax | Supra / Hmax | Handy | Post Pmax | Pmax | Handy | Fmax |
| 2013 | -1.2% 310k | +0.2% 160k | +0.3% 110k | +3.2% 75k | +6.3% 50k | +6.2% 180k | +1.6% 80k | +5.3% 60k | -1.0% 30k | -0.2% 7,000 | +0.3% 4,250 | +1.6% 1,400 | +1.5% 750 |
| 2008 | -1.5% 310k | +0.8% 160k | +0.7% 110k | +3.3% 75k | +3.3% 50k | +0.6% 180k | +0.0% 80k | +0.5% 55k | -0.6% 30k | +0.0% 7,000 | +0.4% 4,250 | +1.6% 1,400 | +0.0% 750 |
| 2003 | -2.4% 305k | +0.4% 155k | -4.2% 105k | -4.8% 70k | +1.3% 45k | +0.0% 175k | -0.7% 75k | -2.2% 50k | -0.8% 30k | +0.8% 6,500 | +0.7% 4,000 | +1.3% 1,400 | +0.0% 750 |
| 1998 | -3.3% 300k | +0.0% 150k | -8.8% 105k | -11.1% 65k | -2.8% 45k | +1.5% 170k | -1.1% 75k | -2.1% 48k | +0.0% 30k | +1.4% 6,500 | +2.3% 4,000 | +4.4% 1,400 | -3.0% 750 |
| 1993 | +2.2% 290k | +1.8% 145k | +2.4% 100k | +3.3% 65k | -7.9% 40k | +3.2% 150k | -1.7% 70k | -1.6% 45k | +0.0% 30k | +2.4% 4,500 | +2.6% 3,750 | +3.2% 1,400 | +0.0% 750 |
| 1988 | +2.4% 260k | +2.8% 140k | +2.4% 100k | +3.3% 65k | +2.3% 40k | +2.2% 140k | +1.9% 65k | +0.0% 42k | +2.7% 30k | N/A – | +2.5% 3,750 | +3.1% 1,400 | +5.9% 750 |

# New Scripps RV Honors Ride

**Dr. Sally Ride was selected for NASA's astronaut corps in 1978 and became the first American woman in space aboard Space Shuttle Challenger in 1983. In 1989, she joined the faculty of UC San Diego as professor of physics and was director of the university's California Space Institute. She died in July 2012 at the age of 61.**

**The new vessel will be the third in the Scripps fleet that is owned by the U.S. Navy and managed by the Office of Naval Research, joining research vessels Melville and Roger Revelle as well as research platform FLIP.**

**The R/V Sally Ride is currently under construction at Dakota Creek Industries Inc. in Anacortes, Wash., and is scheduled for launch in 2015, with routine scientific operations commencing in 2016 following installation of instrumentation and sea trials.**

(U.S. Navy photo)

U.S. Secretary of the Navy Ray Mabus said the nation's newest research vessel will be named R/V Sally Ride, in honor of the former UC San Diego faculty member who was the first American female astronaut and the youngest American to fly in space.

The ship is owned by the U.S. Navy, will be operated by Scripps Institution of Oceanography, UC San Diego, and will have its home port at the Scripps Nimitz Marine Facility in Point Loma on San Diego Bay.

"Scripps has a century-long history of seagoing excellence that is vital to the well-being of our planet and its pressing environmental challenges, and we appreciate the confidence the U.S. Navy has in UC San Diego with stewardship of its newest, state-of-the-art vessel for global ocean exploration," said UC San Diego Chancellor Pradeep K. Khosla. Designed to operate globally, R/V Sally Ride will continue the Scripps legacy of conducting pioneering ocean exploration and research critical to our understanding of our planet, our oceans, and our atmosphere. As a shared-use, general-purpose ship, R/V Sally Ride will engage in a broad spectrum of research in physics, chemistry, biology, geology, and climate science, including research missions with relevance to the Navy.

"Our Navy and Marine Corps depend on detailed prediction of the ocean environment," said Chief of Naval Research Rear Adm. Matthew Klunder.

"The new knowledge provided by our basic and applied research is critical for improvements to prediction systems. The research vessel Sally Ride will enable that research and represents the continuation of a long and fruitful partnership among the Navy, Scripps Institution of Oceanography, and the larger ocean science community."

As a seagoing laboratory supporting research and education, the new ship will feature modern research instrumentation to fuel scientific exploration, including mapping systems, sensors, and profilers that will investigate features from the seafloor to the atmosphere.

For more than a century, Scripps has been a part of the University California and its ships have benefitted from key support from the UC System and UC San Diego.

As with other Scripps research vessels Roger Revelle, Melville, New Horizon, and Robert Gordon Sproul, R/V Sally Ride will allow early career scientists to engage in ship-based science and training to support the next generation of researchers. The ship will participate in the UC Ship Funds Program, a unique resource that allows University of California graduate students to proposes, design, and execute their own research programs at sea.

Scripps Associate Director Bruce Appelgate, head of Scripps Ship Operations, notes that the Navy funds about 30%of the work done on Scripps vessels for basic research with relevance to Department of Defense (DoD) operations. Funding for research expeditions aboard the Scripps fleet is also provided by the National Science Foundation, NOAA, and the U.S. Geological Survey.

# Energy Transportation

## Providing Tugs For the Intricate Escort Regulations Of SF Bay

Trevor Bozina is a Captain for Baydelta Maritime since 2010 is a 2006 graduate of the California Maritime Academy. He lives in Hood River, OR.
**TBozina@gmail.com**


Responding to the oil spills of the Exxon Valdez in 1989 and the American Trader in 1990, California enacted the Lempert-Keene-Seastrand Oil Spill Prevention and Response Act (OPA 90). With this act came requirements for tankers to employ escort tugs whose construction produced the "best achievable technology."

Thus, an evaluation of tractor tug development and construction on the west coast led to tugs providing bollard pulls of +/-90 tons. San Francisco Marine Exchange (SFMX), a non-profit whose maritime history in San Francisco dates back to 1849, acts on behalf of California's Office of Oil Spill Prevention and Response (OSPR). They help to monitor the compliance of these OSPR regulations.

Escort tugs and tankers work closely with the SFMX to ensure each shipping company, and citizens of the local community a safe tanker transit throughout San Francisco Bay. Tankers are required to employ an escort under OSPR rules if transporting 5,000 long tons or more of oil in bulk. This requirement is one of the most important. It ensures a safety measure for each tanker during its entire bay evolution, unless secured at a berth or anchored. Within these rules an escort tug must be able to influence a tankers speed and direction if it encounters a steering or propulsion casualty. The goal is preventing the possibility of a grounding, a collision or any risk of spills that may result. In addition, the tug must be capable of stopping a tanker with a speed of 5 knots through the water.

Unique to San Francisco, tankers and tugs are matched based on the regions kip system. A kip is 1,000 lbs of braking force. Tugs are given a kip rating based on their static bollard pull and a third party analysis of the tugs design. The SFMX publishes a list of escort tugs and their kips, as well as a matrix of kip requirements. The Bay is divided into six zones; escorts are required in four of those six. The matrix shows the required kips for tankers of a given displacement transiting the four zones during a slack or following current. As displacement, following current, or a combination of the two changes so does the required kips.

A tug that can provide the best available technology and a high kip rating is a valuable safety asset to the petroleum industry. This is especially true in San Francisco where a tugs ability to perform during escort is measured by its kips. Baydelta Maritime's Delta Billie and Delta Cathryn provide this to its customers and the OSPR system.

The Delta Billie and Delta Cathryn, delivered in 2009, are identical 6800 hp azimuthing stern drive tractor tugs, with static bollard pulls of more than 90 tons. Dimensions of 100-ft. long by 40-ft. wide, deep forward skegs, and deep drafts combined with their bollard pulls give them certified kip ratings of 264 and 266. Of San Francisco's escort tugs the Delta Billie and Delta Cathryn provide the most kips, bollard pull and horsepower.

Delta Billie and Delta Cathryn were built around the local OSPR requirements. The goal: provide as many single tug escorts as possible, without compromising safety. Individually they provide enough kips to allow for one tug during escorts, a cost savings to operators. Baydelta has been in San Francisco since 1982 evolving its operations with changing times. Prior to the Delta Billie and Delta Cathryn it operated two other generations of escort tractors, starting in the 1990's and maintaining the best available technology since.

San Francisco offers a combination of conditions that many other west coast ports do not. Normal inbound escorts from sea to Martinez are roughly a six hour transit from the time a tug arrives on station outside the Golden Gate Bridge, in zone 1, to the tankers berth in zone 6. Just over 40 nm from the sea buoy. The escort will pass through three bridge spans, may encounter strong currents and

winds, navigational channels providing draft considerations, as well as commercial and recreational traffic. There are regulated navigation areas with navigational controls for vessels 1600 GT or more and tug's with tows greater than 1600 GT. Once a tanker crosses through the Golden Gate Bridge after a pre-escort conference is held, a single course is rarely held for more than 3 nm. Ships are required to keep their escort within 1000 ft. ahead or aside, or within 500 ft. astern. Beyond this requirement, Pilots tether the tug astern during the entire trip. This offers the most immediate tug response, as the tug is able to provide immediate steering and braking assistance. The tugs can produce forces in excess of 100 tons in the direct and indirect modes.

Tankers and their escorts face environmental and navigational challenges in the bay on their way to any one of approximately 20 different berths able to handle petroleum. The OSPR regulations ensure safety and better facilitation of tanker movement. In a heavily regulated international industry, these requirements are in place for the protection of all ships, owners, charterers, and the San Francisco Bay community.

The most important goal is to make sure a tankers call into San Francisco is flawless. Baydelta embodies this and their numbers prove it; it completes 500 to 600 escorts annually with 90 percent of Baydelta's work being tanker related. For every escort there is at least one assist that the escort boat will provide, often being met by a second Baydelta tug for docking. Built to the OSPR specifications was one of two build requirements, the other being to provide excellent ship assist capabilities for tug and barge escorts, container ships, bulkers, military vessels, cruise ships, flat tows and more.

Every berth, Pilot, or tanker, on any given day will produce a dynamic list of considerations. Tugs and their operators must stand out in their ability to adjust to these factors.

OSPR has guidelines ensuring escort tugs in San Francisco are up to standards. For the Delta Billie and Delta Cathryn to be let loose on the bay, each boat completed a bollard pull test. This included members from the Department of Fish and Game, and AWO RCP auditors. Data analysis of the vessel designs by Glosten Associates, was also conducted. A three year AWO RCP audit is done and educational requirements are followed per OSPR. Four crewmen are required on board during escorts. Baydelta primarily operates with four crewmen at all times for safety and work hour compliance. Of the four onboard, OSPR requires three to be tanker escort qualified. For educational compliance an in house education and training program is in place that each employee undergoes. The tug crews review the program every year. As there are ever changing requirements for tankers, there exists the same for tugs. Baydelta was one of the first to participate in the US Coast Guard Voluntary Uninspected Towing Vessel Examination, in accordance with the proposed Sub Chapter M. Ensuring up to date compliance with all requirements today and those in the future.

As the dynamic environment escort tugs work in continues to change, demands of shippers, pilots, and citizens will change as well. It's important for the local escort industry to commit to adapting to these changes so tankers can feel comfortable every time they pass under the Golden Gate Bridge.



# Jumping Off the Fiscal Cliff?

## It's more of a Downward Slope for Maritime, Transportation, and Energy Programs

**Joan Bondareff**, of counsel at Blank Rome, focuses her practice on marine transportation, environmental, and legislative issues, and represents clients in many industries and state and local governments. **Email: Bondareff@BlankRome.com**

With the able assistance of **Abby Jagoda**, Member, Blank Rome Government Relations LLC.

You are not alone if you are bewildered by the talk in Washington about "sequester," "continuing resolution", "fiscal cliff," "budget resolutions," and "debt ceilings." Even those of us who think we understand what's going on have trouble keeping up. This article will break down the talk into segments on the continuing resolution that funds the government for the rest of this fiscal year: the House and Senate budget resolutions, the upcoming debt ceiling fight; and, finally, the President's budget request for FY2014. The focus is on maritime, transportation and energy programs.

### The Continuing Resolution

When the Congress cannot pass the 12 required appropriation bills to keep the government funded for a particular fiscal year, it resorts to a mechanism called the Continuing Resolution or CR. This allows the government to remain open and to fund its programs—usually at the previous year's level of funding. This year, we have a mix of a regular CR and five appropriation bills to fund the government through the end of the fiscal year, or September 30, 2013. As a result of her hard work, Senator Barbara Mikulski, Chair of the Senate Appropriations Committee, was able to reach agreement across the aisle and with her counterpart in the House, Congressman Hal Rogers of Kentucky, to add five specific funding measures for the Departments of Agriculture, Homeland Security, Commerce/Justice/State, as well as the two funding measures already passed by the House of Representatives for the Department of Defense and the Military-Construction-Veterans Affairs budgets. The five specific measures gave greater guidance and in some cases a budget boost to these departments.

Since the Coast Guard is now housed in the Department of Homeland Security (DHS), it received its funding under the DHS appropriation section of the CR. This includes $10.4 billion for the Coast Guard, an increase of $79 million over last year's funding, allowing the Coast Guard to continue its acquisition program for new ships and planes and to move its headquarters to the grounds of historic St. Elizabeth's Hospital in Washington, D.C.'s Ward 8. FEMA, the disaster relief and grants management arm of DHS, received a total of $2.5 billion for State and Local and First Responder Grants that include the Port Security Grants.

According to DHS sources, these grants are estimated to be between $92 million and $93 million this year. Finally, Customs and Border Protection (CBP) was funded at $10.4 billion, an increase of $215 million over last year's level, allowing full funding for border security agents at our southern border.

Unfortunately, due to differences of opinion with some House Members over federal funding for high-speed rail projects in California, the appropriations bill for the Department of Transportation (DOT) was not added to the CR—although DOT remains largely funded at FY2012 levels under the CR. In fact, for programs that fall under the Highway Trust Fund, the CR includes appropriations consistent with the funding levels authorized by the Moving Ahead for Progress in the 21st Century Act (MAP-21), signed into law last year.

As part of DOT, the Maritime Administration is funded at the FY2012 level minus the five percent cut attributable to sequestration, described below. Since the Obama Administration has never included funding for the title XI loan guarantee program in its budget, it is unlikely that new funds have been appropriated for this program. Any new loan guarantees would have to be funded from residual funds. But, MARAD does have approximately $9 million for Small Shipyard Grants. Applications are due within 60 days of the President's signing the CR, or 60 days from March 26, 2013.

Funding for the Energy and Interior Departments, which have responsibility for promoting renewable energy, including offshore wind development, falls within the general terms of the CR, or mostly to be funded at last year's level plus the sequester cuts. In addition, Energy's program to promote renewable energy was specifically cut by $11 million. As part of the Commerce Department, the National Oceanic and Atmospheric Administration (NOAA) did receive its regular budget.

The budget contains $5 billion for NOAA, which is $111 million above fiscal year 2012, but $50 million below the President's request. Senator Mikulski directed that full funding be provided for weather satellites and critical weather predictions. The budget for EPA continues at FY2012 levels, in general, less the sequester cut. At this time, we are waiting to learn how much money is available for grants for diesel engine replacement through the popular DERA program.

### The Sequester Cuts

On March 1, 2013, federal agencies were hit with a 5 to 7.8 percent across-the-board cut as a result of sequestration. Sequestration, a term derived from the Budget Control Act of 2011, is a "process of automatic, largely across-the-board spending re-

ductions under which budgetary resources are permanently canceled to enforce certain budget policy goals." (From the Congressional Research Service March 22, 2013 Report to Congress on Budget Sequestration.) Originally intended to be an action-forcing mechanism to force compromise during the budget negotiations of 2011 and 2012, sequestration was supposed to administer equally painful cuts to the Defense Department and their supporters and to the non-defense agencies and their supporters. Unfortunately, no compromise was reached and the cuts have gone into effect. The total budget cut from sequestration amounts to $85 billion, to be divided between defense and non-defense programs.

Sequestration hits the government with a wide pickaxe as opposed to a surgeon's scalpel. With the exception of dispensation granted to the Department of Defense, agency heads have little if any discretion to administer the cuts selectively based on which programs are worth keeping and which should be terminated. Military personnel were protected from the sequester, but this is not the case for the 800,000 civilian employees of the Department of Defense and millions of other civil servants. Most of these employees can be expected to be furloughed from 14-22 days before the end of the fiscal year.

The sequester is also having a cascading effect on the private sector who provide services to the military. For example, shipyard workers in Newport News, VA, may be laid off, hampering work on repairing and maintain our Naval fleet. (For more information, see the March 28, 2013 report by the PBS Newshour on "Southeastern Virginia's Military Industry Feels Effects of Sequester.")

Compounding the impacts of sequestration is the fact that the cuts have to be taken between now and the end of the fiscal year, i.e., in a 6-month period.

## The Budget Resolution(s) and Upcoming Debt Ceiling Fight

Now that Congress has "resolved" the budget for the remainder of FY2013, they have to quickly turn to the FY2014 budget, which starts on October 1, 2013. The House and Senate have passed competing versions of their budget plans for FY2014 in the form of Budget Resolutions. While the Budget Resolutions do not have the force of law, they do provide guidance for the respective bodies and appropriation committees on what spending to allocate for the upcoming fiscal year.

The Senate Budget Resolution calls for a mix of tax revenues and spending cuts, an approach favored by President Obama. The Senate Resolution also includes a "$100 billion targeted jobs and infrastructure package...[to create] new jobs quickly [by] repairing the worst of our crumbling roads and bridges and help train our workers for 21st century jobs." (From the Senate Budget Committee summary of the FY2014 Senate Budget.) This package is paid for with eliminating loopholes and "wasteful spending" in the tax code. (Senate Budget Committee.) There is no comparable infrastructure proposal in the House Budget that identifies high-speed and intercity rail projects as areas to cut from any federal funding.

The only possible way to reconcile these vastly different visions of the role of the federal government is through a "grand bargain." However, the window for reaching such a bargain may only be open until sometime this spring, or perhaps as early as May 19, when the U.S. bumps up against the next debt ceiling—an event that usually focuses the attention of both the White House and Congress.

## President Obama's Budget Proposal for New Infrastructure Funding

The President was supposed to submit his FY2014 budget to the Congress in February, but it was delayed until April 10. We have seen some hints of what the budget is likely to contain. During a visit to the Port of Miami on March 28, 2013, the President unveiled some details of his infrastructure funding proposal.

These include a proposed Infrastructure Bank as well as additional funding for the TIGER grant and TIFIA loan programs, both administered by the Department of Transportation. The President would also create a new bond program to encourage private sector investment in our bridges, rails, ports, and highways.

(For more on the President's funding proposal, see "Obama Offers Details on Infrastructure Plan But Stakeholders Say Solvency issues Remain," Bloomberg Government News, March 29, 2013.)

Although a wide gulf continues to separate the House and Senate on the budget, they were able to bridge the difference to fund the government for the remainder of FY2013. This provides some level of certainty, albeit at reduced levels of funding, to government programs that support the maritime, energy, and transportation communities. Most grants supporting these interests were not eliminated but were cut back. The budget battles for FY2014 have just begun.

As long as we have a divided government, we can anticipate a repeat of funding challenges for the next fiscal year.

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## Rebuilding the

# Presumption of Preemption

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I propose that the Legislative, Executive, Judicial Branches of the federal government should cooperatively work toward the rebuilding of the presumption in favor of federal preemption with respect to all matters related to maritime commerce. I also propose that maritime stakeholders undertake measures to make this a reality.

The Constitution already allows for such preemption – and it has been implemented with regard to various issues over time, particularly in the early days of the Republic. The practice, though, has lacked uniformity and consistency, to the detriment of maritime commerce and the U.S. economy in general.

The Commerce Clause of the United States Constitution provides that Congress shall have the power to "regulate Commerce with foreign Nations, and among the several States, and with the Indian tribes." The Supremacy Clause of the Constitution provides: "This Constitution, and the Laws of the United States which shall be made in pursuance thereof; and all treaties made, or which shall be made, under the authority of the United States, shall be the supreme law of the land; and the judges in every state shall be bound thereby, anything in the constitution or laws of any state to the contrary notwithstanding." The Constitution also provides that the judicial power of the United States extends to, among other things, "all Cases of admiralty and maritime Jurisdiction."

The federal government has frequently exercised its broad authority over interstate and foreign commerce and over maritime issues. Only the federal government assesses and collects customs duties. Only the federal government establishes and maintains lighthouses and other major maritime aids to navigation. Only the federal government issues licenses and documents to US merchant mariners. Only the federal government regulates the design and construction of merchant vessels. States are granted limited authority to license and regulate small commercial vessels, unless the vessel owner elects to register the vessel with the US Coast Guard. Otherwise, documentation of commercial vessels is exclusively assigned to the federal government. States are granted authority to regulate maritime pilotage in local waters, except for vessels eligible to engage in the coastwise trade (once again, a determination made by the federal government).

The principal area in which the federal government fails to exercise its preemptory rights is with regard to protection of the marine environment. In large measure, this is because some of the states jumped on the environmental regulation bandwagon while the federal government was still mulling over the issue. A prime example is ballast water management. The state of California and various others instituted ballast water management regimes even while the issue was being debated at IMO and in other fora. It took years for the IMO and the federal government to coalesce around procedures other than high seas ballast water exchange and the IMO measures have yet to come into force. Even though the ultimate approach adopted by the state of California is currently impossible to achieve, the state refuses to voluntarily accede to the federally approved methodology.

The Department of Defense saw these differences arising at an early stage. Working with the Environmental Protection Agency (EPA), it successfully urged Congress to enact an amendment to the Federal Water Pollution Control Act (FWPCA, also known as the Clean Water Act) that provides for development of uniform national discharge standards for vessels of the Armed Forces. The amendment specifically preempts state and local governments from adopting or enforcing their own discharge standards for covered vessels. The commercial sector should work to amend this statute so as to include merchant vessels.

Congress has successfully kept the states from regulating the commercial aviation industry. It is ironic that Congress has been less interested in protecting the commercial maritime sector from similar encroachments. A recent bill to preempt state regulation with regard to ballast water management failed to attract sufficient support in the Senate, even after adoption in the House of Representatives.

The state of California asserts authority to regulate fuel usage by ships up to 24 nautical miles off its coast. Since state waters only extend out to three nautical miles, this is clearly extra-territorial. Yet, the U.S. Department of Justice fails to vigorously defend the federal interests in this regard. If a coastal state can assert jurisdiction out to 24 miles, there seems to be no reason it couldn't assert jurisdiction out to 200 miles.

The federal courts have a mixed history in addressing preemption in the maritime sector. In an early case decided by Supreme Court Justice Joseph Story while riding circuit, he stated: "The advantages resulting to

the commerce and navigation of the United States, from a uniformity of rules and decisions in all maritime questions, authorize us to believe that national policy, as well as judicial logic, require the clause of the Constitution to be construed as to embrace all maritime contracts, torts, and injuries, or, in other words, to embrace all those causes which originally and inherently belonged to the admiralty before any statutable restriction." DeLovio v. Boit, 7 Fed.Cas. 418 (C.C.D.Mass. 1815). That case concerned whether a contract for marine insurance was controlled by state law or federal law. Justice Story emphatically ruled in favor of federal admiralty and maritime jurisdiction.

The issue of the extent of the federal power over foreign and interstate commerce as applied to maritime navigation reached the U.S. Supreme Court several years later. The state of New York had granted exclusive rights for the operation of mechanically-powered ships in its waters to the company founded by Robert Fulton. A competing company brought suit. After losing in New York state court, the competitor appealed to the US Supreme Court. In striking down the state decision, the court stated in pertinent part: "If, as has always been understood, the sovereignty of Congress, though limited to specified objects, is plenary as to those objects, the power over commerce with foreign nations and among the several states is vested in Congress as absolutely as it would be in a single government, having in its constitution the same restrictions on the exercise of the power as are found in the Constitution of the United States." Gibbons v. Ogden, 22 U.S. 1 (1824).

**In 1959, the Supreme Court struck down an Illinois statute that required certain rear fender mudguards on trucks and trailers operated on its highways as constituting an unreasonable burden on interstate commerce. Yet in 1960, it upheld the Detroit Smoke Abatement Code as applied to a ship engaged in interstate commerce while docked at a pier within the city.** In the latter case, the court ruled that the Detroit code was an even-handed exercise of police power in an area where the federal government had not exercised its authority. Where the federal government has pervasively exercised its authority with respect to the design, construction, and operation of commercial vessels, the court has ruled that the concept of field preemption applies – that the federal government has adopted such a body of regulation that there is no room left for states to exercise any authority. It can reasonably be asserted that the federal government has now established an extensive and detailed body of law with regard to marine environmental protection. Whatever gaps may have existed previously have now been closed. State regulation of maritime commerce should be the exception, rather than the rule, and it should be clearly and carefully circumscribed. As noted above, the federal government could adopt, if it so chose, a field preemption approach with regard to marine environmental protection matters and elsewhere. There has though, at least to date, been insufficient pressure on the legislative, executive, and judicial branches to adopt such a position. I contend that the time has come. I do not advocate that the marine industry should be unregulated, or even underregulated. Rather, I contend that Justice Story was right when, almost 200 years ago, he advocated uniformity in the regulation of the maritime industry. Federal uniformity has been allowed to erode over time. The rebuilding effort must begin now.

## Get on Board with Shipyard

# Electrical Safety

**Timothy L. Gauthier,** Project Manager/Senior Training Specialist, AVO Training Institute, is currently Secretary of the IEEE P45.5 (Shipyard Safety) Committee, and an IEEE 1584 Workgroup member. He has more than 30 years of electrical experience. He is also an instructor AVO Training Institute's proprietary Shipboard Electrical Awareness & NFPA 70E Electrical Safety course.

After teaching electrical safety for many years, one tends to understand the regulations, and the standards more than the average safety professional. We live them most every day. We also understand what regulations and standards apply to shipyard employment and what regulations and standards apply to industry – and which apply to both. For your safety, you should know about electrical safe work practices and shipboard electrical awareness.

If you do not believe that you should know about electrical safe work practices, please keep two things in mind; one – electricity does not care if you are or are not an electrician and two – electricity does not follow any standard or regulatory rules. Let's take a look at that first one. You do not need to know about electrical safe work practices if you are a crane operator, rigger, or welder, correct?

*"A welder was tasked to repair a hole in the hull of a barge. Assisted by two other employees he opened the hatch into the compartment where the repair was to be made. A welding machine was positioned on deck near the hatch. Carrying the welding leads the welder climbed down to the repair site. The compartment was flooded with five inches of water, so he quickly became wet. He inserted a welding rod into the electrode holder. He waded back through the compartment and climbed up to the deck. He turned on the welding machine and went below to repair the hole. He burned the first rod and dropped the stub into the water. He picked up a new welding rod and as he inserted it into the electrode holder he completed the circuit between the electrode holder and ground. Ccurrent flowed through his saturated glove, through his wet body, out his submerged steel toed shoes and into the steel deck he was standing on. The location of the victim inside the barge made rescue difficult. Because no rescue equipment was available at the job site the fire department was called. They were not trained in confined space rescue, upon arrival they found that the victim was beyond resuscitation."[1]*

*"A crane operator and two riggers were moving structural sections of a crane boom from a storage area to another area of the shipyard. The riggers were positioned at both ends of the structural sections while they were being transported. After the first section was delivered the men noticed their original route taken to deliver the first section was now blocked by another working crane. Rather than wait for the crane to finish and move out of the way, they decided to take another route to the work site. As they transported the second section the two riggers focused their attention on keeping the load headed straight down the narrow path. All three workers failed to see the overhead power lines. The crane boom contacted these high voltage power lines. Seven thousand, two hundred volts passed from the power lines through the wire rope into the suspended structural section to the rigger who was still holding onto the section. The rigger was killed instantly."[1]*

Remember, electricity does not care what kind of work you do. Even as a qualified electrician doing everything by the book, electricity still does not care. It will kill the untrained rigger and the trained electrician if mistakes happen.


*"An electrician was working on an open electrical panel on a ship. He needed to add a new cable and attach it to a breaker within the panel. The electrician identified the isolation breaker that fed the entire panel on the schematic drawing. The electrician de-energized the breaker and properly tagged out. As the electrician was fitting the new cable into the panel his left hand came into contact with the panel's main bust bars. Four hundred forty volts of current passed from the bus bars through his left hand, across his chest, and out his right hand that braced him against the panel electrocuting him. At some point the tagged out isolation breaker had been crossed wired with another breaker. The electrician did not know that the panel he was working on was never de-energized."[1]*

There are four protective strategies that could have saved the lives of the welder, rigger, and electrician:

- Create an electrical safe work condition.
- Train employees to recognize and avoid potential injuries.
- Plan the task.
- Select and use personal protective equipment.

Electrical equipment can also be safeguarded to help prevent electrical hazards from happening by:

- Installing wiring systems according to the National Electric Code,
- Assuring that electrical equipment is certified by a Nationally Recognized Testing Laboratory,
- Making sure that electrical equipment meets manufacturer's installation, maintenance, and operating requirements, and
- Operating electrical equipment within specified parameters.

Keep in mind that "safeguarding" equipment does not completely eliminate electrical hazards.

Electrical safety in the workplace is necessary in order to help stop shocks and electrocutions from happening.

References: [1]OSHA Shipyard Accidents, Video Transcripts
http://www.osha.gov/video/shipyard_accidents/shipyard_accidents_video_transcript.html#v2_7

As long as unsafe workplace practices keep taking place and people keep being shocked or killed by those unsafe acts, regulations are necessary to enforce safe work practices. Loading another welding stick in an unsafe environment is an unsafe act, even with welding equipment safeguards in place. Using two riggers as ground guides for the crane operator did not eliminate the overhead power lines as electrical hazard. If the riggers are not aware of the hazard, it does not mean the hazard did not exist. And the electrician failed to create an electrical safe work condition by confirming the circuit that was about to be worked on was in fact de-energized by testing the circuit before touching it.

Electrical safe work practice terms like lockout, tagout, tags-plus, personal protection equipment, de-energizing, and isolation maybe easily recognized. The regulations that cover Shipyard Employment may not be so easily recognized. Most safety managers and electrical workers believe that the only Occupational Safety and Health Regulation that covers Shipyard Employment is OSHA 29 CFR 1915. They also believe that the OSHA regulation and safety standard that covers Industry, OSHA 29 CFR 1910 and NFPA70E, have nothing to do with Shipyards. In believing so, they are absolutely 100% incorrect. The reason they can fully understand the terminology associated with electrical safe work practices and yet not understand why the standard for Electrical Safety in the Workplace – NFPA70E – does apply to the shipyard industry is because they are not aware of 29 CFR 1910.5 – Applicability of standards (what standards apply to what situation).

29 CFR 1910.5(c)(1) states; "If a particular standard is specifically applicable to a condition, practice, means, method, operation, or process, it shall prevail over any different general standard which might otherwise be applicable to the same condition, practice, means, method, operation, or process." In other words, if a Shipyard Regulation exists and an Industry Regulation exists for the same situation, then the Shipyard Regulation applies to the Shipyard and the Industry Regulation applies to the Industry. However, General Industry Regulations may cover Regulations not covered by Shipyard Employment Regulations. For example: OSHA 29 CFR 1910.331-.335 applies on shore for both qualified persons and unqualified persons. On vessels, these provisions cover all electrical safety-related work practices for qualified persons when shore-based electrical installations provide power for use aboard vessels and for unqualified persons, including temporary electrical systems and the vessels permanently installed electrical systems. On vessels, these provisions do not apply to qualified persons working on the vessels permanently installed electrical system. And for those individuals who do not know, OSHA 29 CFR 1910.331-.335 is the Standard for Electrical Safety in the Workplace – NFPA70E.

AVO Training Institute teaches electrical safety. We understand the regulations, and we understand the standards. We also understand what regulations and standards apply to Shipyard Employment and what regulations and standards apply to Industry – and which apply to both. For your safety, you should know about electrical safe work practices and shipboard electrical awareness.

## Crew System Integration on

# RHIBs & High Speed Craft

**John Haynes**, AFNI, is Operations Director of FRC International and a presenter of WBV courses. He is a Yachtmaster Ocean and Advanced Powerboat Instructor. Subject matter expertise includes high speed craft consultancy, product development and specialist training.
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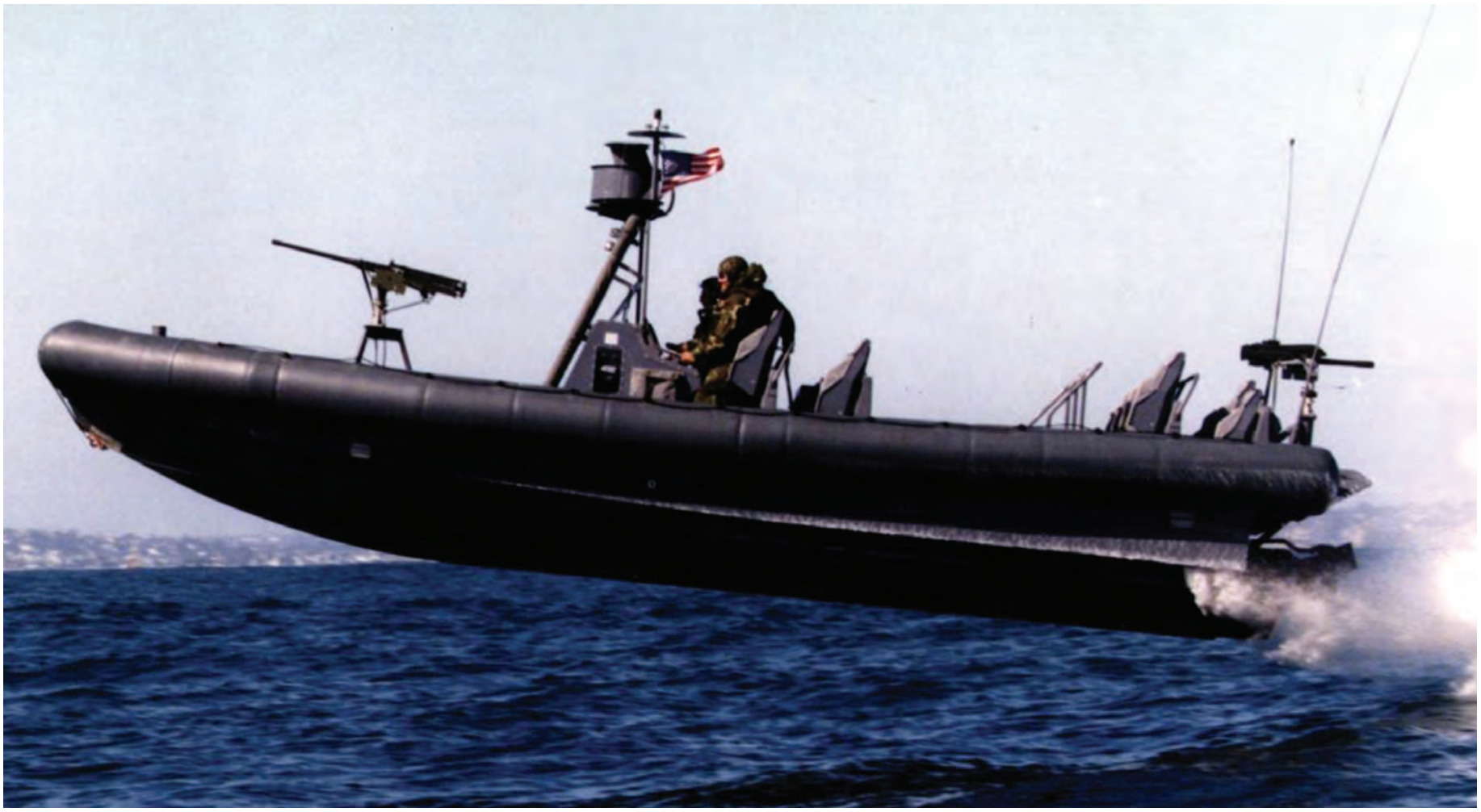
Human Systems Integration (HSI) is a recognized requirement for many organizations. This is rapidly becoming more important as the professional RHIB and high speed craft sector are required to perform increasingly complex tasks. The objective is for marine units to deal with new scenarios, make fast decisions and implement them using high speed craft and specialist equipment to achieve successful outcomes.

Crew-Systems Integration (CSI) brings together all these elements for the fast boat sector. The challenge for all professional organizations is the integration aspect of the many disparate areas that are required to deliver enhanced performance and safety. To highlight how a number of CSI domains integrate for the marine sector, the graphical interpretation of Crew-Systems Integration is used (see diagram, next page). FRC International is an education, training and qualification developer for Fast Response Craft (FRC) personnel. The innovative approach includes understanding risk, duty-of-care, legislation, evolving technologies, new operational tasks and scenarios. FRC training recognizes the growing need for professional and commercial maritime operators to be interoperable with other agencies and assets. A set of competence-based international qualifications has been recognized by The Nautical Institute to support best practice for military, professional and commercial marine organizations worldwide.

FRC International is hosting the CSI 2013 conference, an event that will attract end-user organizations and industry from around the world. It will cover the full range of factors that deliver performance and safety for the crew and operating organization. The topics that will be covered include Crew, Craft & Equipment, Training and the interface between them. Human Factors Engineering which can be linked to defined Qualifications and Simulation. To complete the integration picture the conference will also focus on Repeated Shock & Whole Body Vibration, Unmanned Vehicles and Operations. These nine topics can be considered separately but ultimately the challenge is linking them up.

### Craft & Equipment

The sub 80 ft. (24 m) sector is developing at a rapid pace. Not only has this resulted in increased boat speed and capability but new technologies and systems are available both for new craft and as retrofits. Boat builders now need to understand the level of test and evaluation that their craft will go through as part of a tender process. Equipment manufacturers need to develop electronics and equipment to international standards and where appropriate military specifications. Seat manufacturers will now have the opportunity to integrate new interna-



(U.S. Navy photo)

**Naval Special Warfare (NSW) 11-meter Rigid-Hull Inflatable Boat (RIB) during a training exercise conducted by Naval Amphibious Base (NAB) Coronado, San Diego. The airborne launch shown here is not uncommon for such craft. Landings are characterized by high-acceleration impacts that may be damaging to structure, mechanical and electrical systems, and people.**

tional testing standards into their development process. The conference will highlight the latest innovations and how operators can incorporate these developments into their requirements.

## Crew

This increasing operational capability facilitated by enhanced craft no longer means that the vessel is simple to operate within the full operational envelope. Slow speeds and benign environments are relatively simple to operate in, but as speed increases, the environment deteriorates. As systems become more complex the competencies demanded of the crew move to a higher level and are more like those required by a helicopter crew where effective situational awareness and Command & Control (C2) become crucial for performance and safety. The needs of regular passengers increasingly need to be considered by the crew as they are often being transported at speed to perform tasks on a fixed or moving platform. This includes ships pilots, boarding teams and wind farm engineers. The conference will examine demands on crew and passengers and how the crew may be supported to overcome these.

## Training

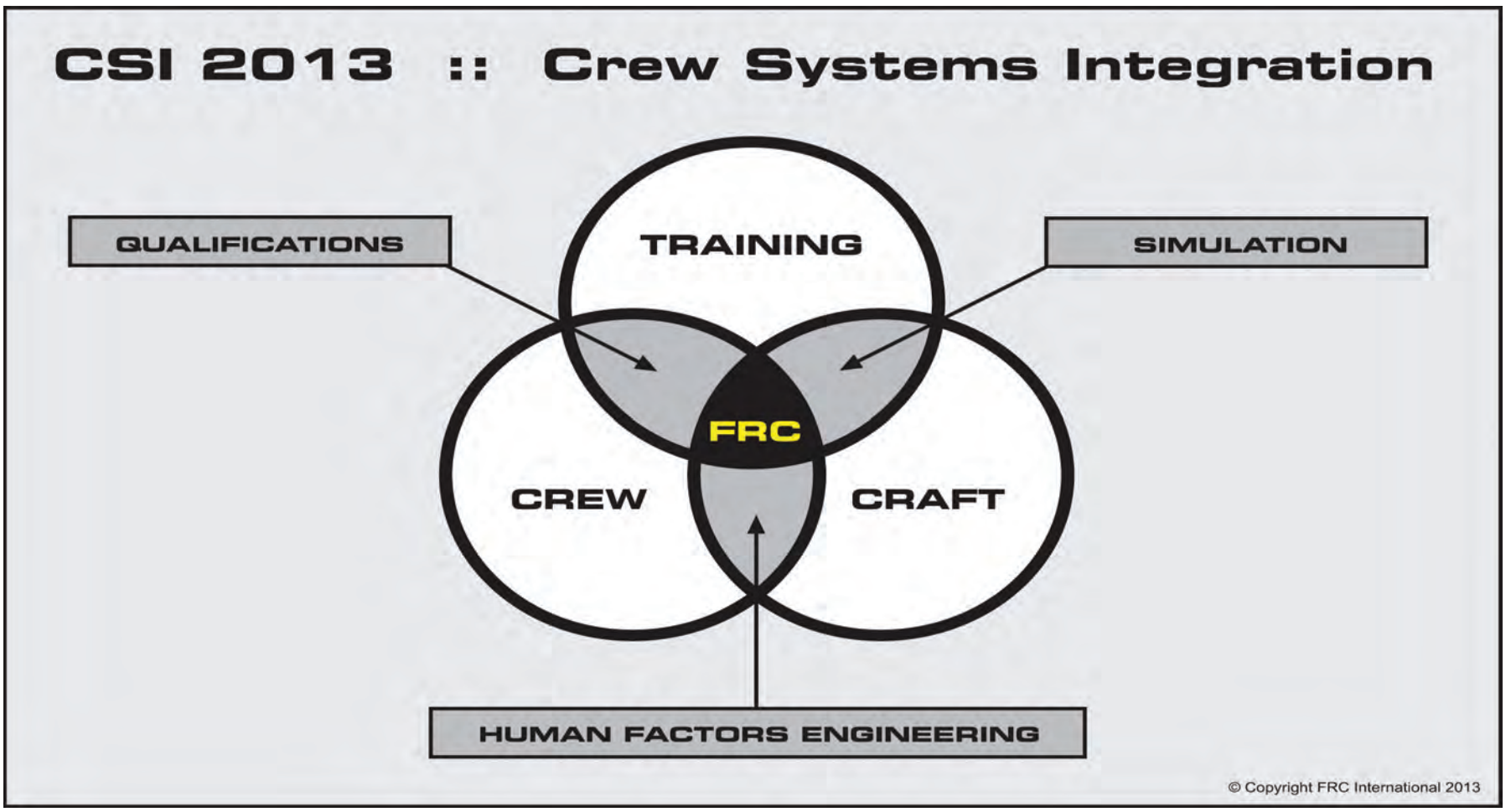
As the capability of the craft and its systems have advanced the crew, in evolutionary terms, remains unchanged and can be outperformed by the craft. To counter this a part of the integrated solution is enhanced training. Boats very rarely operate alone and so standardization is required to ensure effective interoperability. This ranges from teamwork between two boats to multiple craft operating together in coalition operations. The conference will examine current developments in training programs and Standard Operating Procedures (SOPs) and how they are being developed and disseminated to the global community.

## Human Factors Engineering (HFE)

With new and retrofitted craft being capable of out-performing the crew it is essential that the designers focus on designing for the human crew to ensure that they can operate the craft at the edge of its operating envelope to ensure operational success and safety for the crew and their passengers. The conference will highlight developments in HFE, often called ergonomics, specific to fast craft design and operations.

## Qualifications

Qualifications help to differentiate between individuals. They also allow marine employers to recruit good crew members and provide them with a developmental career structure. Qualifications are the foundation of Standardization-for-Interoperability. It is essential that the international marine community have a qualification system that provides minimum standards of competence. The system also needs to demonstrate the advanced competencies required to op-




erate the advanced systems and procedures now being deployed on RHIBs and high speed craft.

The conference will highlight the work being undertaken to develop qualifications appropriate to the professional sub 80 ft. (24 m) sector and how these can be utilized by the international community.

## Simulation

For ship maritime operations, including bridge and control room, simulation is recognized as an effective training tool. In other sectors, including aviation, it is an essential training tool.

The sub 24m sector has not yet effectively embraced simulation but this is about to change.

There are many reasons for this but a fundamental requirement is the increasing deployment of sophisticated electronic systems for those operating at high speed in demanding environments. Relevant simulation can be used to effectively support training and qualification programs.

It can provide a controlled environment that does not require use of a boat or fuel. The conference will highlight the different types of simulation and how operators can effectively use simulation to enhance operational effectiveness and safety.

## Whole Body Vibration & Repeated Shock (WBV & RS)

The risks of exposing fast craft crews and passengers to WBV & RS have now been recognized. Systems have been developed to reduce or manage the exposure. Besides the obvious risk of acute and chronic injury RS & WBV can induce fatigue and degrade the interaction between the crew and the craft. The drive for legal compliance within the EU and employers needing to demonstrate duty-of-care in the rest of the world has driven the pace of development. Although reducing the risk to zero is virtually impossible for planing craft at sea, operators are now engaging with the concept of ALARP (As Low As Reasonably Practicable). The conference will highlight developments related to the management and control of exposure to WBV & RS.

## Unmanned Surface Vehicles (USV)

The rapid development of unmanned vessels and systems is due to a number of factors. The drive for reduced manning can be due to cost and recruitment issues. The manning of craft can constrain the operational envelope and in certain applications 'unmanned' can simply remove the human from harms way. Although remote control systems are not new, the technical developments that are leading to more autonomous systems are changing the face of fast craft operations. The conference will highlight the developments in unmanned systems and the opportunities for the marine sector that these developments bring.

## Operations

For the modern RHIB and high speed craft organization all of the topics described above then need to be integrated to deliver operational capability.

The technical developments and systems to support human effectiveness provide the ability to either enhance the operational envelope or provide more resilience within the system for current operations. The conference will examine how fast craft operations are changing and what the future may hold for the crews and their organisations.

Emerging maritime nations have the opportunity to use the integration template to develop fast craft capabilities based on international best practice. For established maritime organizations the challenge in these times of austerity is having clear reasons for where to apply their efforts and budgets when replacing or upgrading craft. This approach can benefit all sectors from ships being replaced with multiple small craft fleets to the challenges of renewable energy support craft.

FRC International are hosting the CSI 2013 conference at the RNLI College in Poole UK from July 2-4, 2013. Dr Trevor Dobbins, Technical Director of FRC International, said, "the 2013 event has a focused program that includes more than 20 presentations by international experts. The objective is to bring together all the topics of Crew Systems Integration to show how marine operations in all sectors can benefit from a joined up approach." The conference also gives industry the opportunity to participate with an exhibition area designed to highlight the latest developments in technology for RHIBs and high speed craft.

CSI 2013 is an independent event that is relevant to all professional operators, boat builders, equipment manufacturers and designers. To highlight the importance of CSI for the international community keynote presentations are by leading experts including, former Royal Navy Rear Admiral Chris Parry, who was Director of Concept and Doctrine Development for the UK Ministry of Defence, and is now a noted strategic consultant and geopolitical forecaster.

For further information see CSI 2013 Conference

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# Ballast Water Management

## U.S. Coast Guard Accepts Nine BWTS as AMS

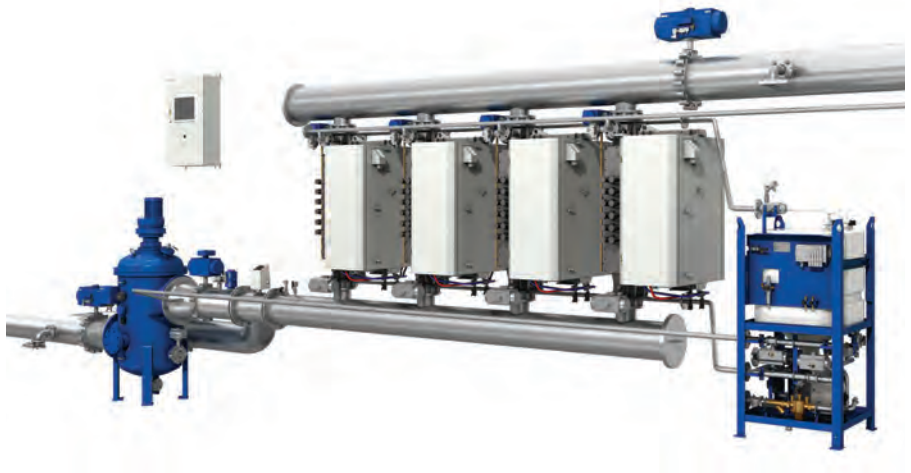
Followers of the Ballast Water Treatement System (BWTS) situation (ie. presumably anyone reading this publication) were heartened last month when the U.S Coast Guard announced its acceptance of nine BWTS as Alternate Management Systems (AMS), helping to finally bring some clarity to ship owners, yards and suppliers.

On April 15, 2013, the USCG announced the acceptance of the ballast water treatment systems as AMS in compliance with the service's March 2012 final rule for Standards for Living Organisms in Ships' Ballast Water Discharged (SLOSBWD) in U.S. waters. AMS acceptance by the Coast Guard is a temporary designation given to a ballast water treatment system approved by a foreign administration. Vessel operators may use an AMS to manage their ballast water discharges in lieu of ballast water exchange, while the treatment system undergoes approval testing to Coast Guard standards.

An AMS may be used to meet the Coast Guard ballast water treatment requirements for up to five years after the ship's ballast water discharge standard compliance date specified in the final rule. This five-year timeframe allows for the completion of required land-based and shipboard testing. "This is an important first step in making Coast Guard and foreign approved ballast water treatment systems available for the global shipping industry," said Coast Guard Rear Adm. Joseph A. Servidio, Assistant Commandant for Prevention Policy. "The Coast Guard AMS program will allow ship owners and operators to install a ballast water treatment system and use it in U.S. waters while it undergoes approval testing." In the following pages, Maritime Reporter & Engineering News presents information on the many of the systems currently accepted as an AMS


### Alfa Laval: PureBallast

PureBallast was among the first ballast water treatment systems to receive Ballast Water Type Approval. Operating under real-life conditions since 2003, PureBallast provides ballast water treatment that is 100% chemical-free. The process is based on a patented form of advanced oxidation technology (AOT), developed in cooperation with Wallenius Water. Treatment occurs in a closed chamber known as a Wallenius AOT unit, in which radicals are generated. These radicals are potent yet exist for only a few milliseconds, which means they neutralize microorganisms but are incapable of leaving the treatment system. A 40 µm mesh filter is used during ballasting operations. This blocks the intake of larger organisms, but also reduces the amount of sediment in the ballast water tanks. The number of AOT units is determined by the system's flow rate, with individual units handling a flow of 250 cu. m./hr. The performance of the AOT units is safeguarded by an automatic Cleaning-in-Place (CIP) system, which circulates a biodegradable solution to prevent seawater scaling within the AOT units. This solution is reusable and is replaced once annually when its pH level becomes too high. The automatic cleaning cycle occurs after each operation. The filter is also rinsed once ballasting is completed. A flow meter regulates the certified flow rate and records the volume of ballast that been treated. The water then continues through the AOT units, which treat the water to IMO established limits before it enters the ballast water tanks. The de-ballasting process is the same as ballasting, but bypasses the filter system (which is cleaned via automatic back-flushing). Outgoing ballast water passes through the Wallenius AOT units to eliminate any re-growth of microorganisms that may have occurred.




A single PureBallast system can handle flow rates of 250-3000 cu. m./hr. If more capacity is required, even higher flow rates can be achieved by installing multiple systems in parallel. Sold to all vessel types, container vessels, RO/RO and pure car/truck carriers account for about one-third of all units sold. For Alfa Laval, the 250 to 2,000 cu. m./hr. sector is strongest target market. Alfa Laval has achieved IMO Basic and Final approvals as well as Type Approval from DNV.

### Ecochlor Inc.: Ecochlor

Ecochlor, Inc. received U.S. Coast Guard Alternative Management System (AMS) acceptance for its full line of ballast water management systems (BWMS). This will allow ship operators to use an Ecochlor ballast water management system in U.S. waters to effectively manage their ballast discharges.

"We are pleased to be among the first group of companies to receive AMS acceptance," said Charlie Miller, Chairman and CEO of Ecochlor. "An AMS determination offers ship owners an additional level of security and assurance that the efficacy and performance of Ecochlor's ballast water treatment systems will meet both present and future discharge standards throughout the world."

Ecochlor, Inc. received Product Design Assessment (PDA) Approval from ABS for its full range of ballast water treatment systems (BWTS), systems that have the capacity to treat ballast water flow rates of up to 16,000 cu. m./hr. The Ecochlor BWTS uses a two-step process to treat ballast water – filtration followed by disinfection with the well-known biocide, chlorine dioxide. The system's effectiveness is not impaired by variations in salinity, temperature, turbidity, organics and vibration, which can impact other treatment options. Furthermore, the small size, low power, and low maintenance characteristics of the Ecochlor system make it ideally

# expect zero

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USCG AMS ACCEPTED

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suited for installation on the world's largest ships. Compatibility with explosion protection specifications also allows the Ecochlor system to be easily installed on tankers.

Prior to ABS PDA Approval, the Ecochlor BWTS received IMO G9 Final Approval in September 2010. The Ecochlor BWTS has IMO Type Approval from Germany (BSH), as well as Type Approvals from the Liberian Administration. Ten consecutive test cycles on land and aboard ship over a two-year period resulted in no surviving organisms after treatment. With testing results of all zeros, it proved that the system could meet or exceed proposed U.S. requirements of at least 10x IMO standards. This completed the international approvals of all of Ecochlor's Systems and confirms that they fully comply with the 2004 IMO International Convention for the Control and Management of Ship's Ballast Water and Sediments.

Ecochlor holds a unique position in the shipping industry as using patented chlorine dioxide (ClO2) treatment technology for ballast water. There is an exclusive distribution agreement with EKA Chemicals (part of the Akzo Nobel group of companies) for the EKA ClO2 generation technology for use in the marine and shipboard environment. Key system advantages are touted as small size, low power and low maintenance characteristics.

### Headway Technology Co., Ltd.: OceanGuard

OceanGuard Ballast Water Management System (BWMS), developed and manufactured by Headway Technology Co., Ltd., has proven its value with references aboard some of the largest, highest value and conspicuous ships on the world's waterways: luxury cruise ship. OceanGuard was recently installed onboard Aida Stella, a Carnival cruise vessel. Aida Stella is the first order and application in Germany for Headway, and is the second luxury cruise vessel order from Carnival Corporation, as Headway reached its first cooperation with Costa Crociere S.p.A, Italy on July 26, 2011.

After that, Headway signed agreements for the BWMS projects for oil tankers from Greece, Norwegian multi-purpose vessels and barges, as well as the Singapore offshore operating company POET.

On Aida Stella, installation and commissioning of OceanGuard BWMS was finished in Papenburg, Germany, and the ship was scheduled to be launched early March 2013. During the installation, representatives from Aida Stella/Carnival spoke highly of OceanGuard BWMS for its compact design and easy installation.

## Alternate Management Systems for Ballast Water Treatment

The ballast water treatment systems (BWTS) listed in the table below have been accepted for use in U.S. waters as Alternate Management Systems (AMS). Use of a BWTS as an AMS is subject to the general and specific conditions and requirements listed in the AMS acceptance letter issued to the system's manufacturer.

| Manufacturer | Model Name | Model Number(s) | Date |
|---|---|---|---|
| **Alfa Laval Tumba AB** | PureBallast | Models 250 to 2500 | 15 April 2013 |
| **Alfa Laval Tumba AB** | PureBallast | Models 2.0 and 2.0Ex<br>www.alfalaval.com | 15 April 2013 |
| **Ecochlor Inc.** | Ecochlor | Series 75, 100, 150, 200, 250, and 300<br>www.ecochlor.com | 15 April 2013 |
| **Hyde** | Guardian | HG-60, -100, -150, -200,-250, -300, -400, -450, -500, -600, -700, -800, -900, -1000, -1250, -1350,-1400, -1488, -1600, -2000, -2500, -2975, -4000, -5000, and -6000<br>www.hydemarine.com | 15 April 2013 |
| **NK Company, Ltd** | BlueBallast | NK-03-010, -015, -030, -040, -050, -075, -100, -150, -200, -250, -300, and -400 | 15 April 2013 |
| **Qingdao Headway Technology Company** | OceanGuard | OceanGuard<br>http://www.headwaytech.com | 15 April 2013 |
| **RWO GmbH Veolia Water Solutions** | CleanBallast | CleanBallast-150, -200,-250, -300, -350, -400, -450, -500, -500-1, -750, -1000, -1250, -1500, -1750, -2000, -2250, -2500, -2750, -3000, -3250, -3500, and -3750<br>www.rwo.de | 15 April 2013 |
| **Severn Trent De Nora, LLC** | | BalPure -675, -1000, -2000, -2650, -3000, -4000, and -5000<br>www.severntrentdenora.com | Models BP-500, 15 April 2013 |
| **SunRui BalClor** | BalClor | BC-300 and BC-1000<br>http://www.sunrui.net | 15 April 2013 |

**http://www.uscg.mil/hq/cg5/cg522/cg5224/bwm.asp**

### Hyde Marine

Hyde produced its first system in 1999 and installed its first system on the M/S Coral Princess in 2003. The Hyde system was the first accepted into USCG STEP program in October of 2008.

With more than 225 BWT systems already sold into the marine markets via about 180 ships, Hyde is well known in blue water shipping as a top tier provider of BWT solutions. But, Hyde has also sold as many as 75 systems to Offshore Supply Vessel (OSV) owners and also sells to a myriad of other smaller platform operators as well.

Hyde's Guardian features a two-stage process; stacked disk filtration to remove sediment and larger organisms, and a UV disinfection unit to kill or inactivate smaller plankton, bacteria and other pathogens. During ballasting, water is processed through both filter and UV stages. All captured solids and organisms are discharged during back flushing to the location they entered. During de-ballasting, the filter is bypassed and water flows only through the UV system before discharging overboard. Hyde Guardian system and ballast operation data are automatically logged.

Hyde Guardian uses a high intensity ultraviolet (UV) treatment as a means of disinfection. The UV chamber is designed for minimum pressure drop, maximum retention time, and compatibility with the marine operating environment. The medium pressure lamps produce a polychromatic out-

put across the entire spectrum of the germicidal curve and have an expected service life of up to 8,000 hours.

The Hyde Guardian Ballast Water Treatment Systems have IMO Type Approval for capacity from 60 to 6,000 cu. m./hr., and a Type Approval Certificate has been issued by Lloyd's Register on behalf of the U.K. Maritime and Coastguard Agency to confirm compliance with Guidelines contained in IMO resolution MEPC.174(58). Other certifications include ABS, Dutch Flag State, Russian Maritime Registry of Shipping, DNV (Hazardous Area Certification) and DNV EC-Type Examination Certification.

### RWO: CleanBallast

As one of the first ballast water treatment systems, RWO's CleanBallast has received the AMS approval. "The AMS is a very important certificate for us," said Martyn Ayris, MD, RWO. "Being chosen by USCG as one of the first companies to receive it again confirms the technical refinement of our CleanBallast system and demonstrates that our two-stage treatment concept with its advanced process steps is a mature technology - providing the necessary reliability to make owners and their fleets ready for future challenges."

The AMS approval is just the latest success in a series of achievements RWO accomplished in the past months. In the course of 2012 many owners demonstrated confidence in the CleanBallast technology and selected the system for newbuilds, as well as for retrofits. In September the Bremen-based manufacturer also received Product Design Assessment (PDA) Certificate from Germanischer Lloyd for its ballast water treatment system. To date the CleanBallast technology has already been selected by customers from Belgium, China, Canada, Cyprus, France, Germany, Hong Kong, Japan, South Korea and the Netherlands for a variety of vessels including container, bulker, heavy lift, RoCon, multi-purpose and tankers.

Seaspan caused a stir when it showcased its revolutionary SAVER (Seaspan Action on Vessel Energy Reduction) design of 10,000 TEU container vessels. Pursuing the aim of top-efficiency ship operation and improved operational performances, Seaspan has decided to equip its Saver class vessels with RWO's ballast water

RWO: CleanBallast

# CASE STUDY Hyde, PG & OSVs

While much of the focus on Ballast Water Management issues is on the big ship, blue water fleet, there is a growing large need for BWMS on large modern offshore vessels, too.

Hyde Marine has long been active in the worldwide effort to control the spread of aquatic invasive species in ballast water. Early on, Hyde supplied the first fully operational shipboard Ballast Water Treatment system. In 2003, after requirements were better defined, Hyde installed a state-of-the-art filtration and UV disinfection system aboard the Coral Princess. This system was tested extensively on land based installations and onboard the Coral Princess in the fall of 2004. The onboard tests demonstrated the Hyde Guardian's capability to meet the IMO BWT Convention requirements.

Hyde's Guardian Ballast Water Treatment Systems have IMO Type Approval for capacity from 60 to 6,000 cu. m./hr. A Type Approval Certificate has been issued by Lloyd's Register on behalf of the U.K. Maritime and Coastguard Agency to confirm compliance with Guidelines contained in IMO resolution MEPC.174(58).

With more than 225 BWT systems already sold into the marine markets via about 180 ships, Hyde is well known in blue water shipping as a top tier provider of BWT solutions. But, Hyde has also sold as many as 75 systems to Offshore Supply Vessel (OSV) owners and also sells to a myriad of other smaller platform operators as well. In fact, Jim Mackey of Hyde Marine told MarineNews – sister publication to Maritime Reporter & Engineering News – in February that about one half of Hyde systems sold to date have been placed onto OSV's and smaller sized – less than 300 foot – vessels. These include tugs, research vessels, fishing vessels, dredges and private passenger vessels. Mackey explained, "We don't want to be buttonholed into just one market, but we are very effective in serving that sector, and it is certainly a big part of our business." He added, "Success has made us an expert in that area."

The OSV Olympic Zeus was a recent, successful Hyde Marine retrofit project

## Enter PG Marine

PG Marine Group is a well-recognized name in liquid cargo systems for the global OSV fleet. The core of PG Marine's business is pumps, and pumping systems for the oil and gas sector, in particular those systems used by offshore service providers. PG started screening the BWTS market at the point of time when the first products were being IMO Type Approved. Early on, it became clear that they had to narrow down to technologies which target the market's demands. These include low CAPEX, low OPEX and flexibility in installation.

According to Roy Norum CEO of PG Marine Group, "It was clear to us that Hyde Guardian met the criteria at an attractive profile to PG's market approach." Norum also said that PG gave early commitment to Hyde to high market shares within the Norwegian shipping market regionally, and the Global OSV Market internationally. PG has since the represented Hyde exclusively for these market segments.

Since then, PG has built fabrication, testing and packaging capacities and secured contracts for newbuilds and retro-fits for Hyde for about 75 vessels. To date PG has secured seven BWTS units in the U.S. market. To meet what is expected to be overwhelming global demand, PG is currently building a new 94,000 sq. ft. fabrication facility in Norway, in which an initial BWTS fabrication capacity of 400 units annually is secured. The PG philosophy includes making the BWT installation process as painless as possible, with only one to two days needed after installation for commissioning, and, according to the company, will even train larger customers to commission their own units to ease the pain of early installation.

In short, PG Marine Group knows the OSV markets well. And since many operators want to use the same pumps for cargo as they employ for ballast water handling, the relationship between PG Marine and Hyde becomes clearer. PG Marine also has the in-house technical and engineering expertise to meld the Hyde solution into one of its own systems, or conversely, an existing ship already in service. PG Marine Group, therefore, is a close technical and business partner for Hyde, acting in certain cases as Hyde commissioning engineers. Rather than just shoehorning any solution onto a particular hull, PG Marine and Hyde work together to provide a seamless, integrated approach, leveraging the strengths of both groups into a predictable outcome, backed by global service.

## BWT for OSVs

Increasingly, OSV owners are starting to look at BWT systems for newbuild projects, as it is more expensive to retrofit BWT onto an existing hull then it would be to design and properly plan installation during the newbuild process.

One of the biggest challenges in the OSV sector is the lack of space onboard these highly specialized, but compact workboats. Normally, there is plenty of power, but the available space to place BWT equipment can be more than 15% less than what might be available in the typical VLCC pump room. To that end, PG Marine and Hyde provide 2D and 3D design-modeling, physical engineering onboard, prefabrication and the flexibility that Hyde's BWT solution can be split and built into clusters, lines, L-shaped formations or even stacked. And while the physical footprint of Hyde's equipment isn't the smallest in the industry, it arguably is the most flexible in terms of configuration on the vessel.

While retrofits can involve more money, time and complications, they can be done, and Hyde, through its partnership with PG Marine, has been involved in a fair share of this type of installation. The OSV Olympic Zeus installation – sold through PG Marine – is a perfect example of one such job. Tight spaces and the need for a compact physical footprint and a simple design were all part of the winning package.

Operating in today's OSV markets, however, requires savvy that extends far beyond simple cost comparisons of systems. Owners who want to be in a position of being able to quickly reposition a vessel from one are to another also need to know that ballast water compliance issues may come into play. And with OSV day rates commanding breathtaking six figure magnitude for some specialties, operators do not want to lose even one day of fees. And, in the not-too-distant future, the difference in securing an oil major's offshore support work and losing that work to a competitor could well come down to which operator has the best, most environmentally sound and compliant equipment on board. – **JK**

treatment system CleanBallast. The delivery of the first plant to China's Jiangsu New Yangzi shipyard was set for March 2013.

The CleanBallast technology gained official type approval from the German BSH in 2010, and was submitted for AMS and USCG approval in mid-2012. At last year's SMM exhibition, RWO officially launched a modified version of the system, based on the technology but using considerably less footprint.

The treatment principle is based on two cleaning steps, consisting of the removal of sediments and bigger particles by self-cleaning deep-filtration disc filters followed by a disinfection step using RWO's patented EctoSys technology eliminating the remaining bacteria and organisms.

### Severn Trent De Nora: BalPure

The IMO Type-Approved Balpure ballast water treatment system from Severn Trent De Nora has become one of the first ballast water treatment technologies to receive the United States Coast Guard's (USCG) Alternate Management System (AMS) certification. The AMS certification has specifically approved the use of Balpure, which complies with IECEx Classification, in hazardous areas on board vessels. Severn Trent De Nora has sold and delivered 20 Balpure units since it received its IMO Type Approval in July 2011. "The Balpure team has been working tirelessly to obtain the various approvals required for the system to be accepted for use on board international trading vessels," said Marwan Nesicolaci, VP, global sales and marketing, Severn Trent Services.

"This new AMS certification of Balpure is a significant milestone for us as it signifies the system is now permitted to be used on board vessels trading in U.S. waters that are required to comply with the USCG Final Rule.

This achievement solidifies Balpure's position as a robust and reliable solution that shipping companies can trust."

As part of the USCG's extensive review process for AMS, Severn Trent De Nora submitted: basic approval documentation, final approval documentation, shipboard test data, Operations & Maintenance manual, detailed drawings for each Balpure System (flow sheets, P&ID, general arrangement), and Bill of Materials (BoM) for each system including vendor technical literature and certification for all equipment.

Balpure features proven electrolytic disinfection technology, ease of installation and operation, minimal maintenance and low operating costs for both retrofits and newbuilds. Its slip stream treatment approach, where approximately one percent of the total ballast water flow is used to generate the hypochlorite disinfection solution, enables remote mounting away from the main ballast line. The slip stream treatment approach, coupled with a design that requires treatment only during the uptake of the ballasting cycle, offers significantly reduced power requirements when compared to competing technologies – ensuring low operational costs. Balpure offers a virtually maintenance-free approach to ballast water treatment through the use of proprietary self-cleaning electrodes that eliminate the need for time-consuming chemical and mechanical maintenance

## Severn Trent De Nora: BalPure

# Bergen

## A Unique Maritime Environment

**The weather might be depressing, but the outlook for the city is anything but. Bergen's shipping industry and maritime related services sectors are going from strength to strength, bullishly rebutting the worst of the waves caused by the ongoing global financial crisis. The secret, locals argue, is a long-term industry view, the strength and diversity of the maritime cluster and the fact that Bergen blood is very much thicker than water. Maritime Reporter goes native to investigate.**

***By Alan Johnstone***

***Images Courtesy David Zadig/www.brb.no***

Rain, mountains and fjords: The three things that spring most readily to mind when the name Bergen is mentioned. The city of around 270,000 people – Norway's capital in the 13th century – is a dramatic, beautiful and, yes, very wet place.

Its brightly colored buildings sit scattered between and up the sides of the seven mountains that encircle the metropolitan area. Its UNESCO World Heritage listed harbor area bustles with activity, from snap happy tourists to time poor traders, before everything melts out into the cold and crystal waters that slide serenely into the North Sea. Its people are proud, but friendly, its beer is expensive, but worth it, and its puddles are, well, everywhere.

Such are the impressions of Bergen. It's a striking and memorable place. But not always for the right reasons, argues Øystein Meland, the Managing Director of Bergen Shipowners' Association.

Meland appreciates that the obvious natural beauty may catch the imagination and the headlines, but he believes it's the industrial heritage, abundance of talent and on-going maritime opportunities that should really be making waves.

### The quiet over-achiever

Meland's organization, along with seven other local partners, is leading the Maritime Bergen initiative, a campaign aiming to bring the strength of the regional industry to a global audience. Together the partners commissioned economic research outfit Menon in 2012 to map the maritime sector in the wider Bergen region. The results of this study, published in a special report this year, make captivating reading.

According to Menon's findings, the local maritime cluster employs a total of 20,184 people and produces a turnover of NOK 80 billion ($13.9 billion). In terms of 'wealth creation' for the region – a measure worked out by adding the operating profits of the companies to the wages of the individuals that they employ – the cluster generated NOK 27 billion ($4.7 billion) for the local area. Bergen is the largest port for handling oil cargo volumes in the entire Nordic region, and Norway's largest for cruise ship calls (with 338 scheduled for 2013) and domestic and international cargo.

In addition to this, Bergen easily outshines its "big brother" Oslo, more globally renowned as a shipping centre, in terms of its overall fleet. Bergen has 510 vessels sailing with a Norwegian flag (compared to 240 in Ålesund and "only" 180 in Oslo) and 530 registered in foreign territories (all above 100 gross tons).

All this and people still focus on the leaky clouds. It can be, Meland imparts, more than a little frustrating.

"We have good reason to confidently say that Bergen has the most complete, strongest and well-developed maritime cluster in Norway," he says, adding that the city region is awash with "genuinely world class companies" with "long traditions of innovation, customer focus and excellent fleet organisation and management."

On this last note he points to numerous examples to prove his, and his partners' case.

(Copyright: David Zadig/www.brb.no)

# BERGEN

## Keeping it in the family

For a comparatively small area, Bergen has an abundance of large, sector leading shipping concerns. The city has the world's largest fleet of chemical tankers – led by firms such as Odfjell, which controls a fleet of 100 specialized vessels – while it is arguably the 'home' of open hatch bulk carriers, as evidenced by Grieg Star's global market position and the 40 open-hatch vessels operated by Westfal-Larsen, which employs a workforce in excess of 1,100.

Such companies have prospered through exploiting niche markets, but also because, as Meland stresses, they have taken a long-term approach to business: "The shipping companies are the most important part of the cluster here in terms of their combined revenues ($6.6 billion 2011) and value creation ($1.7 billion, 2011). Their success is molded by what we call their 'industrial shipping' strength."

He explains: "They specialize in vessels customized for certain markets and manage to secure lengthy contracts and build close customer relationships. Everything is long-term. There's not the same asset play mentality as there is in other centres, such as Oslo. "This segment focus and willingness to invest in specialist, expensive tonnage for long-term strategic gain ensures that we can stay competitive internationally. We have made our niche."

Meland also points out that this long-termism is, in many ways, a product of the ownership of the main shipping players, which all fall under family control (high profile examples include the aforementioned Grieg, Odfjell and Westfal-Larsen, as well as Kristian Gerhard Jebsen Skipsrederi, or KGJS, which operates three divisions, including SBS Tankers, controlling 30 vessels, and KGJ Cement, the world's largest cement carrier fleet). Cynics could argue that this may not make for exciting stock developments, but it does provide stability in a financially unstable market. And that, Meland stresses, is the key to a sustainable shipping sector.

## Support structure

The other key, locals would argue, is strength in depth. The main shipping companies are the cornerstones of the regional industry, but there's plenty more bricks in this particular wall. The maritime cluster – which employs 12% of all private sector workers in the region – is tremendously diverse. Growing shipping subsectors, such as offshore and seismic (with ambitious players including DOF, with a payroll of around 4,000, Atlantic Offshore, an emerging star in the Multi-role Rescue Vessel and PSV segments, and Dolphin Geophysical, now established as the fifth biggest global marine seismic player after just two full years in business), mix with major shipbuilders such as the Bergen Group, and engineering and equipment giants including Bergen Engines (a division of Rolls Royce), pump producer Frank Mohn and TTS. Alongside the heavy lifters, there's the white collar world of financial and legal services – where the Norwegian Hull Club leads the insurance sector, underwriting more than 9,000 vessels (and seeing a 19% growth in its portfolio in 2012) – and banking, with DnB choosing to site one of its seven global hubs in the city. Add the shipbroking services and rig and drilling businesses (where turnover has doubled since 2004) and Meland's claim of a 'complete, strong and well-developed maritime cluster' gathers further force.

## Money Talks

If all this seems like unequivocal cheerleading for the region then that's because it's difficult to argue against the facts. The Menon report makes a compelling case for a regional industry that, despite the global travails of recent times, is not just holding its own, but actually managing to record genuine growth.

Since 2004 the cluster's turnover has nearly doubled, climbing from $8.3 billion to $13.7 billion in 2011. Of this, the maritime services sector is the star performer (from $1.2 billion to $2.7 billion in the period), with shipowners seeing a revenue increase from $5.2 billion to $7.8 billion. Even shipyards, which have felt the full force of the crash, have enjoyed seeing their incomes rise from $678 million to $1.3 billion.

Total cluster employee numbers have also risen, although less markedly than revenues, from 17,334 in 2004 to 20,814 in 2011. It's difficult to pinpoint an overriding reason for such eye-catching development, but, as Meland suggests, it may find its roots in the sector's long-term commitment to the cause.

Even now, while the markets continue to wax a little then wane a lot, the main players are investing, and investing heavily, in a brighter future. Grieg, for example, has earmarked $521.7 million for 10 newbuild open-hatch ships that are being delivered through to 2014. In addition, Odfjell (which is taking delivery of the world's largest chemical tanker in May), Nor Lines, Jo Tankers, Gearbulk, Viken and Wilson have 24 vessels ordered between them for delivery over the next two years. These are obviously not asset-play investments, but rather show the strength of the firms' long-term commitments to ride out the notoriously weak marketplace.

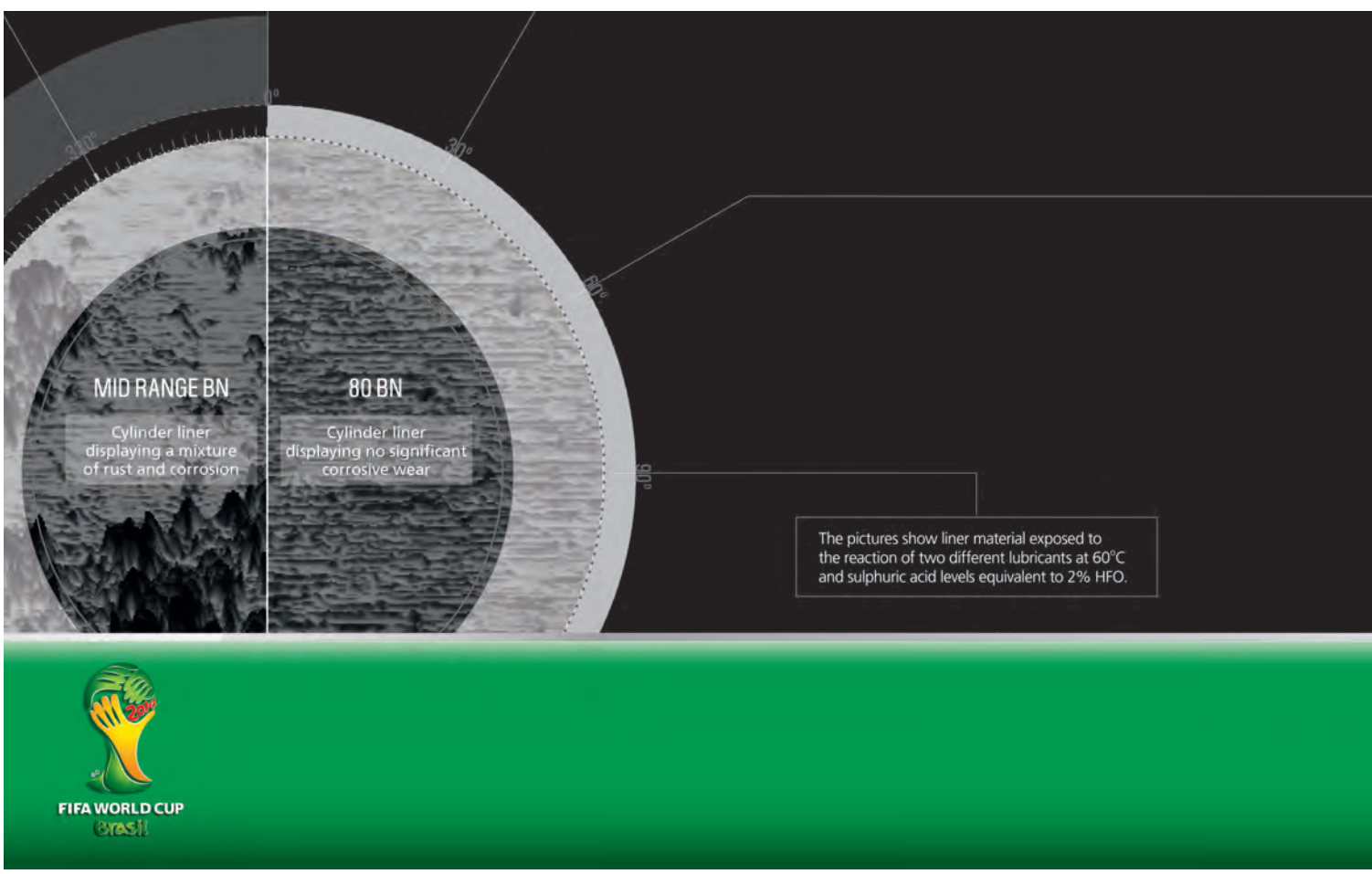
The Maritime Bergen partners are now working to rally the industry behind their standard and push for further global recognition of the city region as a true, world-class maritime hub.

A key driver for the collective is a branding exercise for the city, which is set to officially launch at the Nor-Shipping exhibition in June. Bergen will be unveiled as "The Industrial Shipping Capital" at the event, in recognition of the discussed long-term business strategies, commitment and specialized nature of the city's fleet and associated products.

Meland says that the push will not only help Bergen get the recognition it deserves, but also encourage even closer collaboration between the individual cluster players, leading to further innovations and combined strength, while helping with the recruitment of fresh talent and investment.

"We are passionate about this industry," he concludes. "We have a long and proud seafaring history here, and we believe we have a long and proud future ahead of us."

And no amount of rain can dampen that kind of enthusiasm.



**The maritime sector dominates the Bergen skyline, literally and figuratively, as the statistics to the right suggest.**

## Bergen in Numbers

Population:
**268,800 (city), 395,100 (metropolitan area)**

Employed in the maritime cluster:
**20,814 (2011)**

No. of ships (above 100 tons):
**510 Norwegian flag, 530 foreign registers**

Maritime cluster turnover:
**NOK 80 billion ($13.9 billion)**

Avg. salary for regional sector:
**NOK 800,000 ($139,000)**

Wealth creation per employee:
**NOK 1.5 million ($261,000)**

Annual increase in shipping companies' turnover since 2004:
**5%**

Proportion of Norwegian wet bulk shipments handled through Bergen:
**57%**

Number of cruise ship visits:
**338 (Europes' 7th busiest cruise port)**

(Copyright: David Zadig/www.brb.no)

## Atle Jacobsen, Dolphin Geophysical

**"It's this broad base that allows myself and the rest of the executive management team to plan for long-term sustainability in what we know, from our own experience, is a very cyclical industry."**

Atle Jacobsen CEO Dolphin Geophysical

# Jacobsen

## Unconventional Wisdom from Dolphin Geophysical CEO

Atle Jacobsen, the CEO of Dolphin Geophysical, is, in many ways, a bit of a paradox.

An experienced, no-nonsense, veteran of the marine seismic surveying industry, he is also disarmingly easy to "talk shop" with, engaging and has an obvious thirst for new ideas and technology. But the core contradiction lies in his approach to business.

This is a man that shows no qualms about ripping up the rulebooks and making brave decisions, but at the same time there is a steadfast caution that underpins the very essence of the Dolphin business model. It is bold, yet calculated – leaping in new directions, but ensuring that it has prepared the ground for a comfortable landing in advance.

It's an approach that is paying huge dividends, with revenues for 2012 (only the firm's second full year in business) standing at $221.3m (a 50% increase on the previous year), while profits hit $40.6m before tax. From out of nowhere Dolphin is now the fifth biggest player in the competitive marine seismic marketplace. Here's how:

### Low assets, high potential

Jacobsen, formerly the CEO of seismic operator Wavefield Inseis (which he sold to CGG Veritas in 2008), saw the opportunity for a new seismic company in 2010, just when the sector was hitting a low point. Oil prices were around $70 a barrel, E&P spending was suffering as a result and seismic stock was, to put it mildly, unattractive.

"That's when I saw the potential," he says, from the HQ of Dolphin Group AS in Bergen, Norway. "The market was depressed, but there was, I believed, gathering evidence of an upturn. Myself and my partners knew the seismic business inside out and decided to take advantage with a new kind of company, founded on a financially cautious business model."

Jacobsen made the novel decision to invest in people instead of steel; recruiting experienced seismic minds, while chartering, rather than owning, a fleet of high-tech vessels. This asset-light model would, he believed, allow the company to remain limber enough to constantly adapt to the market, seeking fresh opportunities and optimising revenues, whatever the conditions.

"I wanted to be in the position where we could upscale and, if needed, downscale our fleet whenever necessary. The long-term charter agreements (between three and five years) allow us to do that. In addition, this gives us the luxury of being less capital intensive than many of our competitors, while we can also cherry-pick the very best high-end vessels for our seismic fleet. It's a win-win."

Cynics might argue that not owning the steel provides less long-term security, but, in a constantly fluctuating market, Jacobsen disagrees. "I don't see the disadvantage," he said. "We have been careful to forge very strong relationships with our charterers – for example with Sanco and GC Rieber (Dolphin is anticipating the delivery of the newbuilds San-

co Swift in Q2 2013 and Sanco Sword in 2014, while it ordered the refurbished "Geo Atlantic" and newbuild "Super Duke" from GC Rieber earlier this year) – where we understand and respect each others needs.

"We're reliable partners for one another and this gives us all the stability the business requires, while giving our customers the most cutting-edge, operationally excellent seismic fleet on the market."

## Investing in the future

Although the vessel investments have been "cautious," the capital injected into the business has been sufficiently generous to fund ambitious expansion. Through a mixture of bank lending, bond activity and stock market equity moves (Dolphin is listed on the Oslo Stock Exchange), the firm raised $141m in 2012 to facilitate its growth, particularly in the Multi-Client and Processing fields.

The Processing division of the firm saw a startling evolution last year – with an onshore center opening in London, onboard processing rolling out across the entire fleet, around 40 new members of staff and the purchase of Open Geophysical in Houston, the developer of the OpenCPS seismic software product – while Multi-Client saw investment levels reach $63m.

Jacobsen sees this diversification away from pure survey data acquisition as a key building block for Dolphin's sustainable success.

"This kind of strategic investment provides value both for the business and for the levels of service we provide to our client portfolio (which now includes names of the order of Shell, Statoil, TGS, Oil India and ONGC). A growing 3D and 2D Multi-Client data library gives us long-term, proprietary, marketable assets, while processing allows us to get the optimum value out of this, keeping everything in-house, and gives our clients the services they need."

"It's this broad base," he said, "that allows myself and the rest of the executive management team to plan for long-term sustainability in what we know, from our own experience, is a very cyclical industry."

## People first

Jacobsen, who has over 19 year's experience of the industry, is planning further growth for Dolphin this year (he's set his sights on revenues of $300m for 2013), but plans to stay true to the principles he founded the business on.

"I invested in people first and foremost, because over the years I've learnt that they're the greatest asset in this industry," Jacobsen opines. "Anyone can buy seismic equipment, or charter vessels, but you don't get anywhere unless you have the talent and the experience to read, understand and adapt to this industry."

He continues, "I've surrounded myself with the right people and that's the reason Dolphin has developed so rapidly. From the outside it might look like we've made some bold decisions, but thanks to the experience on the team, they've always been well-informed ones."

And there's nothing contradictory about that.

## Atle Jacobsen

**Home**
Bergen, Norway

**Education**
MSc. in Nautical Engineering from NTH in Trondheim

**Experience**
CEO of Wavefield Inesis, SVP of Marien Product Line at CGGVeritas, offshore experience with contractors including PGS and Stolt Offshore.

**Best business achievement**
Gazelle Award 2008, Wavefield Inseis

**Plans for the future**
Continuing to build Dolphin as a full service marine seismic operator, with a good mix of contract and Multi-Client activity, and the most high-end, operationally excellent fleet in the sector.

The Innovation Greenhouse

# Home Grown Marine Tech

## Bergen, Norway serves as a greenhouse for advanced maritime technologies

*Something strange is happening in Bergen. The mountains that crowd round the city, pushing its people either closer together or out to sea, have created an environment where new ideas are flourishing. Fed by maritime passion (and watered by the ample rainfall), these innovations are growing fast and garnering global attention. Here Maritime Reporter presents four of the best ideas that are emerging from the city area right now.*

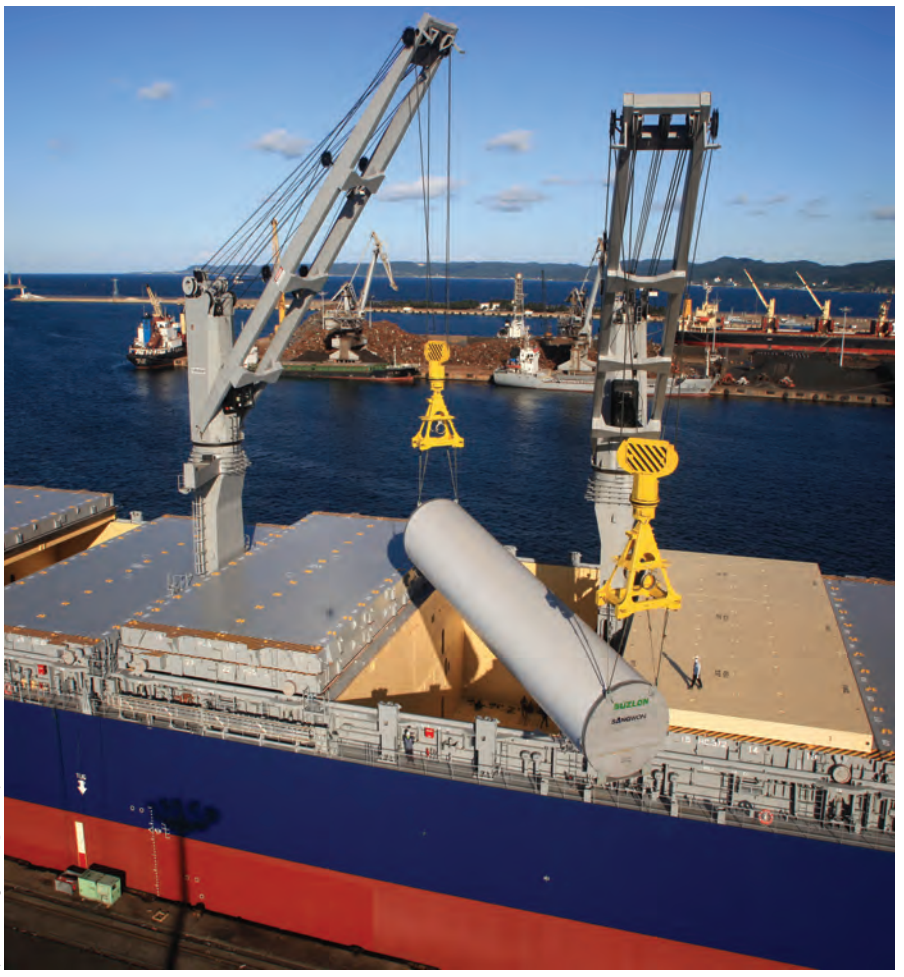
**By Alan Johnstone**

## Grieg Star & DNV's Crane Collaboration

Saving money and the planet, it's the Holy Grail for today's cost and image conscious shipowners. Bearing that in mind, fellow open hatch cargo vessel operators should sit up and pay attention to the findings of a new research project conducted by Grieg Star, in partnership with DNV Research & Innovation, and supported by the Research Council of Norway.

Grieg and DNV have been investigating the potential of hybrid battery/diesel solutions for powering onboard cargo cranes. In a unique simulation project, using DNV's COSSMOS tool, the pair modeled scenarios whereby two sets of four cranes were in operation over an extended period – with one set powered using a conventional system of diesel generator sets producing electric power, while the competing configuration utilized a hybrid system with a lithium-ion battery (of 312kwh).

Grieg's operational knowledge, harvested from decades of loading and unloading products such as wood pulp, forestry cargo and steel products, and DNV's industry focused research expertise combined to produce startling results. The hybrid solution – which actually allowed the battery to recharge itself with the energy from loads being lowered on and off the vessel – used less fuel, reduced engine maintenance requirements, produced less emissions and created huge cost savings.



(Courtesy Grieg Star)

The models showed that the fuel used by the conventional system amounted to 313 tons a year, whereas the hybrid solution consumed only 217 tons. This translates to a 96-ton, or 31%, fuel reduction for crane operations, totaling an eye-catching $110,000 annual saving.

After the cost of the battery and installation were taken into consideration, the payback period for the hybrid system was found to be less than one year. A strong case, DNV claims, for considering getting battery power onboard vessels "sooner rather than later."

Grieg Star, which is currently in the middle of a $500m newbuild investment program (adding 10 new vessels to its existing fleet of 30 open hatchers), said it was encouraged by the results. Jan Øivind Svardal, Vice President Newbuildings & Projects in Grieg Star, says that the environmental and financial benefits create "a win-win" scenario for shipping businesses.

He disclosed that the firm would consider the solution for the next generation of its vessels and possible retrofitting on existing ships, if feasible. Such initiatives, he stressed, would fit in with Grieg's broader environmental vision and sustainable business aims.


(Photo: Arne Svenning)

# 2 NES Powers Up in Competitive Market

Last year Bergen's Norwegian Electric Systems (NES) made a bold claim. The designer and manufacturer of diesel electric and hybrid electric systems for the maritime sector, established in 2009 and already past NOK 1 billion in sales revenues ($171m), revealed that it had produced the largest ever low voltage marine diesel electric system.

The 690v 60Hz system was created for the 125m long, 7,500 dwt OSV Grand Canyon (pictured), released from Bergen Group's Fosen yard to owner Volstad Management in October 2012. NES' landmark system delivers a total of 22,600kVA (18,000kVA was said to be the previous low voltage record). The ship has two main thrusters, each driven by two 2,500kw electric motors, creating a total effect of 10,000kW (13,600 hp), with six side thrusters of 2,000kW (2,700 hp). **NES CEO and President Jan Berg (pictured)** describes this output as "huge" for a low voltage unit and said that the Grand Canyon project – which the firm provided a comprehensive package for, including generators, motors, main switchboard, emergency switchboard and ROV switchboard – was a defining moment in the comparatively short history of the business.

"We're very proud of what we've achieved so far, and by the fact that we're the only 100% Norwegian owned player in what is a very competitive marketplace," he said.

Pointing to other innovations within the business, Berg highlighted the NES Quadro Drive, "a next generation propulsion convertor." This "very compact" unit, he claimed, has weight savings over competing products, requires 50% less installation work and, technically speaking, "is three years ahead of anything else on the market." The drive, which Berg also described as "the icing on the cake" of his company's portfolio, has now been installed on 14 vessels worldwide.

# 3 Atlantic Offshore and Ocean Response

Multi-role Rescue Vessel (MRV) and Platform Supply Vessel (PSV) specialist Atlantic Offshore recently took its active fleet number to 19 vessels (six newbuilds are also under construction), with the delivery of the Ocean Response (pictured).

Built by nearby Bergen shipyards, the vessel is the first of its kind to use a configuration of varying sized Wärtsilä engines (two of the Wärtsilä 6L32 models and two 6L20 generating sets) to maximize fuel efficiency and reduce emissions. **Roy Wareberg, CEO, Atlantic (pictured)** explained, "The vessel has a sister ship, built back in 1985, called the Ocean Troll (an AHTS). It has the same power output – 12,000 bhp – the same bollard pull and is the same size (75m long, 18m wide) as the Ocean Response. However, the emissions are a staggering 90% lower for the new vessel." Wareberg details that this is achieved predominantly through the engine arrangement, which also delivers huge cost efficiencies, with only around 40% of the fuel (compared to the older vessel) used on like-for-like operations. "In the Troll, we have four engines of approximately 3,000 bhp. In Ocean Response, we have four engines of varying size linked by a power management system that chooses what engine, or configuration of engines, to call upon dependent on the power that is required."

"So, at every moment you have only the exact bhp you need - not 3,000 (at least), or 6,000 or 9,000. It's sensational. As we were the first to do it with Wärtsilä engines we were a little nervous, but, after just one month in operation (it was delivered in March 2013) it's performing above all expectations."

Norwegian oil major Statoil is also reported to be happy with the innovative approach to engine, fuel and environmental management. The firm has engaged Ocean Response on a 15-year time-charter agreement.


(Image Credit: Bjørn Ottosen, Maritime Photo)

The Innovation Greenhouse

# A Billion to One Shot

## TTS Sets its sites on China to Achieve its Financial Goals

*By Alan Johnstone*

TTS has set its sights on becoming a billion euro business and is focusing on China as a key growth driver. Through long-term joint ventures with state-owned Chinese concerns, TTS has established itself as the leading (and largest) Norwegian business in China. Ivar K. Hanson, the chief operating officer of marine, offshore and ports and logistics equipment supplier TTS Group, has adopted the diplomatic smile of an experienced politician.

He's batted away a question about the tense relations between the Norwegian and Chinese states (rocked by the decision to award the 2010 Nobel Peace Prize to democracy campaigner Liu Xiabo) and made light of the perceived problems associated with setting up foreign businesses in the world's most populous nation.

"We're very well established, very well positioned in China," he states, adding that the firm's joint ventures with Chinese partners make it "almost Chinese," helping to side-line such potentially incendiary issues.

"China is absolutely key to us and we're going to leverage our position there to help meet our ambitious company growth objectives," he stresses.

### Uplifting Plans

Hanson's reference to "ambitious growth objectives" could be seen in some circles as an understatement.

TTS has publicly stated that it has aims to be a 'billion Euro company' by 2016, driven by organic growth in the offshore and port sector, acquisitions in the marine arena and increased service volume everywhere.

Revenues in 2012 were $414 million or Euro 317 million and profits sat at $78.2 million. The company said it was "content" with these results, given the unstable market conditions, but, with 2016 looming on the mid-term horizon, is gunning for much more. China, it would seem from a conversation with Hanson, will give it the required firepower.

"We were an early mover into China," he says, "securing our first contract in 1982. In 1998 we set up a joint venture with the state-owned China State Shipbuilding Corporation (CSSC), the nation's largest shipbuilder, creating TTS Hua Hai Ships Equipment Co. In 2005 this was followed by the establishment of TTS Bohai Machinery Co in Dalian, a JV with Dalian Shipbuilding Industry Corporation (DSIC). Hua Hai produces products such as hatch covers and winches, while Bohai produces cargo cranes, offshore cranes and, previously (before the sale of TTS Energy to Cameron in June 2012), drilling equipment.

"In total," he states, "we now have five operating companies, around 200 staff and revenues of just over $434 million in China. That makes us the biggest Norwegian company in the country, giving us a unique platform for further growth."

The joint ventures have worked so far, according to Hanson, because both 50/50 partners have something to offer one another. TTS has solid relationships with shipowners, an established brand and proven equipment technology, while CSSC and DSIC have the shipyards ("our main market," says Hanson) and a low cost production base that benefits a global business, like TTS, looking for economies of scale.

This combination has allowed the JVs to capture 60% of the hatch cover market in China, while the corresponding share of the cargo crane sector has jumped from 18% to 28% in the space of the last year. Hanson hopes that TTS' winch products, introduced to the market in 2011, will now be able to "piggyback" on the success achieved by the hatch covers and quickly establish a similar share.

The TTS COO goes as far as to say that China will now become "the most important and focused" market for the business, as, over the course of the next decade, it emerges as the largest producer of offshore equipment in the world. TTS facilities there will, he believes, allow the firm to take advantage of offshore and marine opportunities throughout the whole of the Far East, while opening up important after market revenue streams.

"We share profits 50/50 in the JVs," he notes, "but, outside of China, we have 100% of the service market for the portfolio. When you consider that TTS Hua Hai produces 1.5 shipsets a day, that's a lot of equipment that will require after market support."

### Winning Back High Margin Business

Beyond China, servicing is another key to unlocking TTS' planned growth.

CEO Johannes D. Neteland has made it clear that he's unsatisfied with the circa 20% share of the after sales and service markets that TTS has in its core business areas. Profits for servicing are, he has stressed, higher than they are for new products, meaning that the company is effectively giving its competitors high margin business with every product that rolls off the production line.

Hansen says that this is set to change. TTS has now established one service hub in Bremerhaven to cater for the European market and will establish one more in Houston this year, followed by an Asian hub in Singapore and a Middle East base in Dubai. These will increase the firms capability to service its own, and competitor's, products "when and where" the customer needs it, in addition to operating as customer accounts (sales) centers, warehouses for spare parts, workshops and design facilities.

"It's a new worldwide service strategy," Hansen says. "It will give us a competitive edge while giving our customers

**Ivar K Hanson, COO, TTS Group**

the best possible profitability from their assets – getting vessels back in the water as quickly as possible."

## Acquiring Ambitions

On the subject of speed, the firm will have to grow fast to meet its self-imposed 2016 objective. The marine segment is its "bread and butter" division – accounting for 82% of total turnover in 2012 – and is a key focus going forwards. However, as it already has a market leading position as a provider of hatch covers, cranes and a variety of RoRo equipment (including doors, car decks and ramps), the firm will be looking to acquisition to give it the extra market share – a policy facilitated in part by the aforementioned sale of the drilling business last year, which netted TTS a financial war-chest of $270 million.

"We'll be looking at firms that can offer us something on the technology front," Hansen reveals, adding that the firm has a rich history of acquisitions, with 25 companies purchased since 1998. Location wise, Europe seems to be the target for this activity, but, with a billion Euros in mind, it's easy to conclude that TTS will go anywhere that it sees the market opportunity. It's an approach that has been transformational for the equipment design, development and supply specialist, which now has over 1,100 staff in 13 countries around the world, situated across 25 business units.

In 2000 the firm had a presence in just one territory, Norway. Back then it didn't have to worry about who the Nobel Peace Prize went to, but that is surely a small price to pay for some great big leaps forward.

# Rolls-Royce has a Gas with Bergen Engines

March 2013 saw Rolls Royce collect the Green Ship Technology Award at the Green Ship Technology Conference in Hamburg for its Environship concept, which has lean burn Bergen Engines gas power units at it core.

The Environship combines a range of Rolls Royce technologies (Bergen Engines is a subsidiary business) in a cargo ship model that, set against comparable vessels using diesel power engines, offers CO2 reductions of up to 40% (alongside 92% reductions in NOx and 100% less SOx emissions).

Stein Ruben Larsen, the Vice President of Sales & Marketing (cargo vessels), at Rolls Royce in Bergen, believes that the current combination of environmental pressures and regulatory requirements, added to increased LNG bunker availability, will lead to a surge of interest in marine gas engines. At present the market is still somewhat in its infancy, with 48 Bergen units currently operating (in 27 vessels), while the firm's first marine gas engine recently passed 30,000 running hours.

The Environship concept, he says, is a key way to market the benefits of LNG powered engines in an attractive all-round package. "This is an important year for us," he told Maritime Reporter; "there are two deliveries scheduled, with more contracts expected to be signed – the latest for a LNG bunkering vessel, which we can't quite go public with as yet."

The two Environship vessels that will be going public this year are a multi-purpose cargo ship from Tsuji Heavy Industries (Jiangsu) Shipyard, China for Nor Lines (delivery expected in December) and a 75m long fish food carrier for Skretting in Norway, which is scheduled to be delivered this month (May). The latter vessel has been built by STX OSV in Brattvåg, Norway.

"It's a scalable concept that is highly versatile," Larsen concludes. "What's more, it has the best lean burn gas engines in the world, produced right here in Bergen."

# Açu Superport

Acu Superport Illustration (Courtesy of LLX)

## A Modern Port Concept for Brazil "Rotterdam of the Tropics"

*By Claudio Paschoa*

After spending a day exploring the sprawling Açu Superport and Industrial Complex construction site far up the northeast coast of the state of Rio de Janeiro courtesy of LLX and OSX, Claudio Paschoa, Maritime Reporter's Contributing Editor in Brazil, flew back to Rio for a conversation with Marcus Berto, LLX's new CEO at the EBX Group headquarters in downtown Rio de Janeiro. "This is a not simply a port belonging to LLX. This is a port for Brazil," he said.

### History and Expectations

LLX is the logistics branch of the EBX Group, the company founded in March 2007 by Brazilian entrepreneur Eike Batista, born eying the strong demand for modern, efficient ports in Brazil. With the start of pre-salt production and the steady stream of new O&G discoveries in Brazil, the current port infrastructure is part of a serious logistics bottleneck which could affect the future of the local O&G industry as well as the industrial growth of Brazil. Case in point is an ongoing port crisis, as this year's massive harvest of grains is causing traffic jams on roads leading to the Santos Port in the State of São Paulo.

Açu was first pinpointed as a possible location for a port by the U.S. Navy during WWII, according to Berto. He maintains, though, that even back then, the idea was for a commercial port.

Ultimately, though, it was Eike Batista's selection, who was in search of an export outlet for the EBX Group's mining company MMX. Following flights up and down the Brazilian coast by helicopter searching for suitable port locations, Açu was chosen. Originally the concept for the port was to be an export outlet for the EBX Group's mining company MMX, but with the growth of the O&G industry in Brazil, the original vision was expanded.

The LLX Açu Superport is expected to be the largest industrial port venture in Latin America: a private location in the municipality of São João da Barra on the northeast coast of the state of Rio de Janeiro, about 400km from the city of Rio. Occupying a total area of 90 sq. km., the Açu Superport construction process began in October 2007, and it will have an initial tanker channel and mooring depth of 21m (to be expanded to 26m) and the capacity to receive the largest cargo ships in the world. The venture will have two terminals TX1 and TX2, which will handle iron ore, oil, steel products, coal, pig iron, slag and granite (TX1), in addition to liquid, solid bulk and offshore supplies (TX2).

LLX's strategy for the Açu Supeport is based on having anchor companies investing in the port and industrial complex along with them, said Berto. He said an advantage for companies setting shop at the Açu Superport is the fact that the location already has an environmental license, which in Brazil can take up to five years for approval. The three companies building at the TX2 part of the port; Technip, National Oilwell Varco and Intermoor, had only to wait an average of 80 days for their licenses, according to Berto. "For Brazil, this is a record in license approval time" said Berto.

In short LLX is seeking to create one of the most modern and efficient ports in the world; multiple use for bulk, petroleum and perhaps containerships, helping to revolutionize Brazil's port logistics outlook and contribute to Brazil's growth.

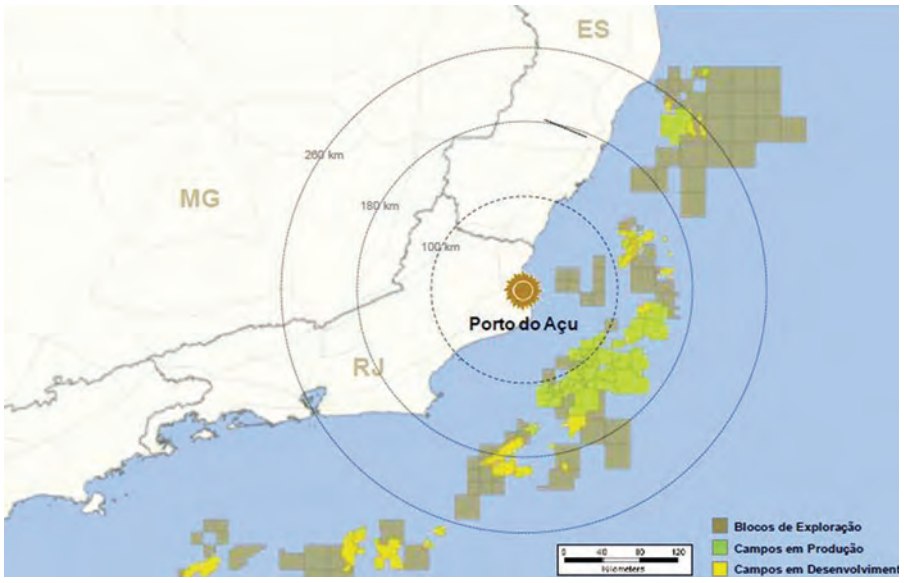
"This combination is expected to reflect in lower operating costs, better results and more efficient operations as our clients demand. Some are already christening it as the Rotterdam of the tropics," said Berto.

### TX1

The Acu Superport's TX1 terminal calls for 17 km of piers, 47 berths and a projected combined import/export volume of 350 million tons a year. Berto said that the 3km bridge leading to the cargo and tanker ship berths will have a capacity to transport 100 million tons of iron ore per year and 1.2 million barrels of oil per day, in addition to product transfers, storage and blending activities, among other services. The bridge and iron ore handling piers, with a current depth of 21m, have now been completed. Spanish company FCC was contracted to build the breakwater to protect the berths and this is scheduled to be ready by the end of 2014, allowing for the start of iron ore loading still in 2014 and the loading of oil at the beginning of 2015.

(Image LLX)

**Marcus Berto, CEO, LLX**




(Image LLX)

**Açu location in relation to O&G basins.**

(Photo Claudio Paschoa)

**Workers at OSX quay in the TX2.**

## TX2

The TX2 channel will be 6.5km long, with a 13km wharf line, a width of 300m, and a 600m maneuvering basin capable of handling the largest OSVs at a depth of between 10.5-18m. The works began in August 2011, and the first stage was completed at the end of 2012. The channel currently is 4.8 km long, from which 35.7 million cu. m. of sand have been dredged by Dutch company Boskalis.

Construction of the breakwater at TX2 started in December 2011. The breakwater's structure will consist of the north and south ends and will have a length of up to 4km, consisting of 42 concrete blocks and 4.8 million tons of stone. The operation began with Boskalis's vessel Seaway using its dredging equipment to dredge the foundation pits, the first step for laying the concrete blocks that will form the breakwater. The Kugira, Europe's largest floating dyke, was moored at Porto do Forno in Arraial do Cabo until November 2012, where it produced six concrete blocks. Each block is massive, measuring 66.85m long, 24m wide and 18m high. All six blocks built by the Kugira in Arraial do Cabo have been laid at the north end of the breakwater. The Kugira was transported to Açu in November 2012, where it will continue producing the remaining 36 blocks. The provisional wharf to moor the Kugira has been completed, within the structure of the north end of the breakwater. This is the first time a breakwater has been built in Brazil using floating concrete blocks technology.

The TX2 terminal has a total area of 2 million sq. m., slated for the installation of offshore support industries and is set to become a leading support hub for the O&G industry and offshore E&P operations. This location around 150km from the Campos Basin, (which answers for 85% of Brazil's oil production) and reasonably close to the pre-salt heavy Santos Basin (around 400km to the south) and Espirito Santo Basin (around 250km to the north), may well place it in a position to help solve some of the logistics bottlenecks which are expected to affect the Brazilian O&G industry in the near future.

## Investments

LLX hopes to attract investments of around $26 billion for the port and industrial complex. These investments will come from the company itself and its partners, such as the consortium LLX Minas-Rio which is investing around $15 billion, including investments by Anglo American in a roughly 500km railway line to bring mineral production from the major Brazilian mining state of Minas Gerais to Açu. The LLX Minas-Rio consortium is formed by LLX 51% and Anglo American 49%. LLX Minas-Rio has invested around $500 million in the Açu Superport. According to the contract between the companies, the additional investment in Açu of around $1.15 billion is being made by Anglo American. Some companies are already installed and building facilities at the TX2, such as Technip, National Oilwell Varco and Intermoor, which together are investing to the tune of $1 billion, while LLX Açu is investing around $3 billion, and partner company OSX will be investing another $4.8 billion, so the targeted total investment is already close at hand. According to Berto, LLX recently signed a joint venture contract with the ASCO Group a leading international Oil & Gas services company. They will occupy a location close to the inland tip of the TX2 channel. Marcus is positive that this will be interesting for both companies and also for the offshore support companies present at the TX2. Additional deals to solidify the port's position include:

- **In March 2013**, BP Products North America Inc. signed a contract to create the company MFX (Marine Fuels X), to import, export, sell and distribute marine fuels under the BP Marine brand.

- **In March 2013**, Wärtsilä rented a 29,300 sq. m. patch along the TX2 channel. Wärtsilä will install a facility to assemble and produce gensets and propulsion products, in addition to offering solutions and services to its clients for the marine propulsion and energy sectors.

- **On November 28, 2012**, GE do Brasil signed a contract entailing the construction of a GE industrial plant in the landside area of Açu Superport. To be located in the metal works cluster of the Industrial Complex, GE's manufacturing facility will have a total area of up to 322,489 sq. m., primarily to serve the oil and gas and power generation sectors.

- **On December 19, 2012**, V & M do Brasil signed a deal for the construction of a logistics base in the landside yard of Açu Superport. V & M's plant will serve oil companies operating in the Campos Basin, offering Just-in-Time storage and supply of pipes and specialist services. The logistics base will be located in the metal works cluster of the industrial complex and will occupy a to-

tal area of up to 150,000 sq. m.

In terms of access infrastructure, which is vital to any port and historically problematic in Brazilian ports, the Açu Super Port Project contemplates integration with local transport routes, including the construction of a dedicated 43 km logistics corridor with highways, railroads, power lines and telecommunications connections, interconnecting the Açu Superport adjacent cities and main highways. The port will also feature an ore pipeline 525 km long, with capacity to transport 26.6 million tons of material. One snag is the airport in the city of Campos, which is the large urban center closest to the port. The airport is in need of expansion and modernization, as anyone who has flown into Campos would surely attest.

## Petrobras Partnership

It's no secret that LLX has been through difficult times, with its biggest challenge overcoming skepticism from investors and the financial markets. Local media were quick to tout that Petrobras was out to rescue LLX, with bold letters capping sensationalistic journalistic endeavor. Both companies were quick to deny, yet it certainly wasn't all that bad for LLX, as its stock price rose in tandem.

In fact, today negotiations between Petrobras and LLX are ongoing, targeting a partnership where Açu Superport facilities would be used by Petrobras as a downstream option for the pre-salt oil. Petrobras's E&P Director José Formigli was quick to point out that Petrobras's main pre-salt and OSV base would still be in the Rio port, although it is probable that at least some of the vast support vessel fleet used by Petrobras would benefit from the TX2 facilities.

"The X group is one of the groups we are evaluating for medium and long term projects. This is business, not a rescue. Petrobras can't do everything, own everything. We want to maximize the use of what others have, paying market rates," said Petrobras President Graça Foster. The Açu Superport could be considered a political football of sorts, too, as it is considered strategic to the revival of Brazilian ports. With powerful political and corporate forces, it is a story who's end is still being written.

## New Port Laws

Among other significant changes, MP 595/2012 revoked Law 8630/93 (Law of the Ports), creating new Port Laws, with clear rules that give more flexibility to the private sector and also allow state and private companies to work together. The new regulatory framework of the port sector is good news for LLX's venture, which already has a license from ANTAQ and has applied for an expansion, which is pending a decision. Berto said the new laws are exciting, as it brings a new reality to the private port sector, allowing more leverage to private port and consequently attracting more investors to the sector, while allowing the sector to feel more secure to invest in better infrastructure and labor training along with introducing a more efficient work methodology.

"This is the beginning of a new age for Brazilian ports."

# Volvo Penta Targets Marine for Growth

Ron Huibers has been on the job as president of Volvo Penta Region America for just more than six months, but upon entering the position in the autumn of 2013, the goal for the engine industry veteran was clear: "We have the mandate to grow the business substantially; we want to double the business in the next few years."

A strong brand in the leisure marine segment, Volvo Penta is now making the moves it believes will help it fortify and extend as a player in the commercial marine engine sector, and Huibers believes that he has the people, the corporate infrastructure and most importantly the products to hit the aggressive sales targets. Volvo Penta is a part of the Swedish Volvo Group, a leading power supplier for the truck, bus, construction machine, industrial and marine sectors to over 180 countries around the world. Huibers, who previously served as the head of the truck division, hopes to leverage Volvo's technology in those markets to address the needs of the commercial marine market.


## Streamlined Operations

Effective January 1, 2013, the company underwent a major restructuring in this hemisphere, folding its Latin American operations into its North American business unit, creating a single unified organization, for which Huibers now has responsibility for all of Volvo Penta's commercial marine, leisure marine and industrial engine business from the North Slope of Alaska to the tip of Cape Horn, including the Caribbean, from his headquarters in Chesapeake, Va.

"If you look at the numbers, our business has been up 5% (Volvo Penta America)," Huibers said. "While it is still well down from historical numbers, I think we are starting to see some firming up and cause for optimism."

The streamlining of North American operations is designed to provide better and faster service to customers in Latin America from the U.S., whereas previously the Latin American countries fell under the international group based in Sweden. "We are creating a single business unit with commonality in practices, procedures, sales, service and support," he said. "We have already made important appointments for OEM and aftermarket business in our Latin American operation center in Curitiba, Brazil. We will make additional changes to strengthen our operation, distribution channels and technical support this year."


(Photo: Greg Trauthwein)

## The Product

Volvo Penta offers marine diesel engines ranging from 120 to 900 hp, suitable for tugs, commercial fishing craft, pilot boats, offshore supply vessels, inland and coastal ships, as well as a range of auxiliary engines and gensets for commercial applications.

Last autumn the company announced that it had supplied the main propulsion system for the new 60-ft tug Ted Kayser, which was recently delivered to Kathryn Rae Towing of Hahnville, La. The installation was overseen by Allemand Industries, the Volvo Penta Power Center in Harvey, La. The vessel's two Volvo Penta D16 engines each provide continuous 650 hp at 1,800 rpm. The engines drive a pair of Rolls Royce four-bladed stainless steel propellers through Twin Disc MGX5222 5.04:1 marine gears. David LeBlanc, product manager at Allemand, said, "The D16 engines are ideally suited for tugboats because their low-end

**Above**
**Ron Huiber, President of Volvo Penta Region America, said "We have the mandate to grow the business substantially; we want to double the business in the next few years."**

**Left**
**Volvo Penta powers six new custom 13.9 m (46-ft.) power catamarans, which were built last year for use as course markers and VIP viewing platforms for the America's Cup racing events.**

torque enables the vessel to start pushing when the rpm reaches 1,100. The result is good momentum from the start at a lower rpm and better fuel economy."

In addition, Huibers noted a pair of recent commercial marine projects as examples of Volvo Penta's range of technologies and capabilities. The first is the propulsion systems for six new custom 13.9m (46-ft.) power catamarans, which were built last year for use as course markers and VIP viewing platforms for the America's Cup racing events. The vessels were designed by Australian naval architects One2three and built by East Asia Composites. The boats' twin Volvo D6-330 engines and IPS450 pod drives are linked to the GPS for automatic precise position keeping when serving as a course marker, even in strong currents and wind conditions. "The captains were very pleased with the Volvo Penta propulsion and dynamic positioning systems, which enabled them to keep the boats precisely on station without anchor lines," said Helmut Aholinger, president of Helmut's Marine Service, the Volvo Penta Power Center in the San Francisco area. "This is a tremendous improvement over the smaller outboard boats used in the past, which needed constant manual maneuvering to hold a steady position. And, unlike fixed buoys, the marker vessels can easily and quickly be repositioned as needed to alter the race course for changing weather conditions."

The second project is a Volvo Penta diesel-electric hybrid plant for the inland waterway tanker MTS Duandra, which was commissioned last year in Benelux. The ship's two standard Volvo Penta D16 MG gensets generate power for on-board electricity, thruster, cargo pumps and two electric engines which are part of the propulsion system. The propulsion system consists of a 750 hp Volvo Penta engine connected to a MMW1700 gearbox. On the gearbox a 475 hp electric motor is also connected, and together they can drive the 1,225 hp designed propeller to full speed on request. The propeller can be diesel-electric, diesel-direct or combined driven, so the skipper can always find the most efficient way of propulsion and has a lot of redundancy which guarantees an almost 100% uptime of the ship. This setup, according to the manufacturer, reduces the total installed diesel power on-board by approximately 30% compared to a conventionally built ship. The savings made were used to invest in the extra electric equipment, catalytic converters and particulate filters on all the D16 engines. By using this technique the NOx emissions are reduced by 70-90% and particulates are reduced by about 40%.

Building and maintaining a technically advanced line takes considerable R&D investment, and while Huibers would not share specific dollar amounts, he indicated the company has a long and strong history of investing in future tech.

Our core values are quality, safety and environmental care," Huibers said. "When the truck buiness collapsed 66%, our company didn't pull back, it doubled down on its R&D investment and we came out ahead. Today Volvo Penta is investing heavily in R&D to reduce emissions and fuel consumption and minimize downtime in its commercial marine engines.

"With our SCR and DPM filtration technologies we are in conformance with EPA Tier 3 standards in our marine diesel engines," he said. "We are already supplying Tier 4 engines for industrial applications. In fact, we have Volvo Penta Tier 4 industrial engines powering heavy machinery in underground mines, which have some of the world's most stringent clean-air requirements, so we understand what it takes to meet emission standards with our marine diesels."

## LNG in its Future?

While the marine operators are starting to move towards the use of LNG as fuel onboard ships of varying sizes, Huibers is not ready yet to coronate LNG technology, citing a number of obstacles and challenges inherent with the fuel and ancillary systems on the vessel and shoreside.

"As part of the larger Volvo Group, we have access to the tremendous R&D facilities of the larger organization, which is actively launching LNG, DME, hybrid and other alternative fuels for trucks, buses and construction machines. While LNG is less expensive and has considerable potential to reduce emissions, we do not believe it will replace diesel as the fuel-of-choice in the near future," Huibers said. "There are enormous barriers to the widespread use of LNG as a marine fuel, in terms of the infrastructure required to produce and distribute to the market. The handling costs of LNG are high. We will keep a close eye on developments and will bring new alternative-fuel products to market as warranted by demand, timing and technology."

# Realistic Engine Simulation

## Abaqus FEA and XFEM for a Weld Redesign Against Fatigue Cracks

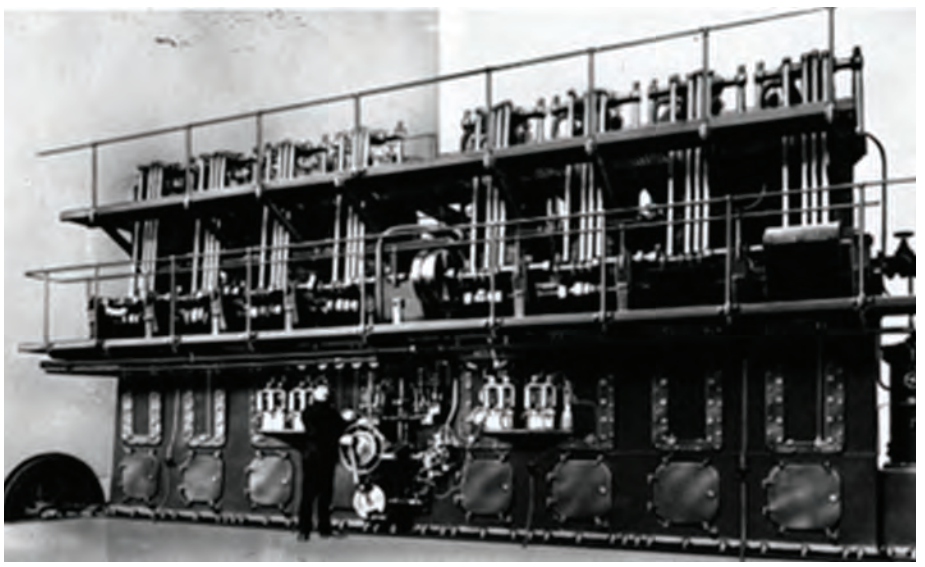
A century ago this year, the first ocean-going diesel ship in the world, the M/S Selandia, embarked on her maiden voyage. She was a technological wonder, and both her hull and engines were built by Burmeister & Wain (B&W) of Copenhagen, Denmark.

B&W is now a part of MAN Diesel & Turbo — a company with 12,000 employees worldwide — and the marine low-speed business unit is located in Copenhagen. The unit has capitalized on B&W's historic expertise to produce new engines that can weigh up to 2,800 metric tons and tower 16 meters high. Once such behemoth engines are installed, they have to be serviced in place—and they must require servicing as infrequently as possible.

Reliability and durability, over a long and demanding life, are crucial to marine engines. They are built to perform over 30 years, roughly 6,000 hours a year, at a constant speed of about 100 rpm—a billion revolution cycles on full design load. Under these grueling conditions, fuel combustion and inertia of moving components can potentially cause high-cycle fatigue failure. "It's vital that every part of our engines is designed and analyzed with sufficient safety margins against fatigue loads—right down to the welds," says Tore Lucht, industrial researcher at the R&D department of the marine low business unit in Copenhagen.

Simulation of cracks: A strong tool to design against weld fatigue

The criticality of paying full attention to every single weld detail in the huge complex engine structure became a focus for R&D when a butt weld on a low speed marine diesel engine developed a crack. The weld was on the face of a second order compensator, a large rotating component that dampens engine vibration for greater crew comfort. While the compensator was designed to withstand large loads and stresses, the engine had only been in service two years, logging 13,000 hours and approximately 78 million revolutions of the crankshaft when the crack was observed.



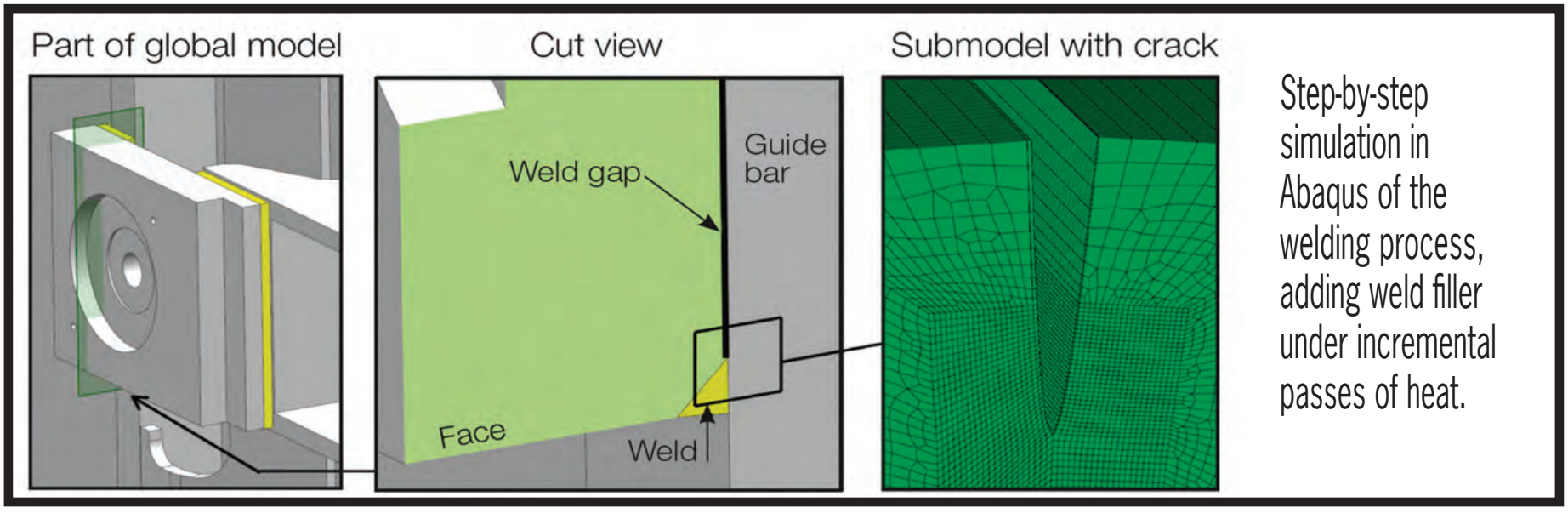
A diesel engine on the MS Selandia, built by B&W in 1911-12 and launched in 1912.

The R&D department conducted a preliminary investigation using Abaqus finite element analysis (FEA) from SIMULIA, the Dassault Systèmes application for realistic simulation. "We switched to Abaqus several years ago because we found it was the best tool for simulating engine structures," says Lucht. "We use it for all structural calculations of our low-speed engines." In the initial investigation they modeled a small cut-out from the engine undergoing centrifugal force from the flyweights (see picture above). The centrifugal force was that of a MAN B&W 5S60MC-C diesel engine at 100% rpm—a 16-metric-ton load. The engineers were able to simulate all these loads accurately based on decades of field data from operating engines. "Our engine analyses are highly realistic," Lucht says, "because we put so much effort into benchmarking against literature, measurements, and service."

The initial simulation showed that small areas of the weld root had stress levels above a reasonable design limit. A different weld design might significantly reduce stress amplitude and solve the problem, but how could the engineers make sure that the improvement was sufficient? "Clearly more investigation would be required to determine a repair procedure and a suitable weld for future engines," Lucht says.

The International Institute of Welding (IIW) recommends three different methods to analyze welds: hot spot stress, effective notch stress, and fracture mechanics. The first method evaluates the weld by comparing structural stress at the hot spot to the FAT (fatigue) class of different weld details. Effective notch stress analysis can assess both toe and root stress level, again comparing each to a special FAT class. Fracture mechanics can be used to simulate typical weld defects on any part of the weld, using linear elastic fracture mechanics (LEFM).

Based on previous research projects and experience, the analysts at the R&D department decided that LEFM would give them the most accurate answers, even though it potentially involved a great deal of model preparation. "The applied meshing of the crack can be very time-consuming because a special mesh is required along the crack front," says Lucht. However, the team employed Abaqus' eXtended Finite Element Meth-




Step-by-step simulation in Abaqus of the welding process, adding weld filler under incremental passes of heat.

od (XFEM) technology, which reduces modeling time while offering an enriched environment for exploring fracture failure, even when the crack doesn't follow element boundaries. Lucht adds, "Since we already had advanced numerical models of our engines in Abaqus, that cut simulation time even further."

The engineers submodeled the area of the crack in XFEM with a fine mesh. "Investigating a crack of a few millimeters growing in a four-story engine undoubtedly requires some mesh refinement in the pertinent area," Lucht says. "This submodeling strategy made our task easier and less time-consuming."

Opting to model the most severe dynamic loading on the crack, the engineers excluded contact in the crack definition, leaving a weld gap—which could occur in such a structure due to either residual stresses from welding or from a slight misalignment between the parts that the weld joins.

After calculating the stresses on the original design, the engineers performed similar analyses on proposed welds for the engine repair and for weld designs on new engines going forward. One final load check was needed to confirm that the repair was sufficiently strong: the residual stress state caused by the welding process itself. This stress was not included in the other LFEM calculations, and it could potentially alter the strength of the final weld. To determine the residual stress state of the weld, the R&D department used a weld simulation tool for Abaqus developed in a previous research project with the Technical University of Denmark: a specialized modeling principle for simulation of a moving heat source by weld filler, body flux and surface flux. The simulation adds the weld filler incrementally, with the elements representing the weld filler assigned a temperature above its melting point.

The elements were activated in groups with the model change command and with predefined values of temperature, body flux, and surface flux. New groups were automatically activated in subsequent steps as the old groups cooled as a function of the heat transfer. "Realistic simulation of the moving heat source of the weld is a key to this type of simulation," Lucht says. "By adjusting the active parameters like weld sequence, heat, and flux, it has been possible to obtain a high level of validation by comparison to experiments using methods like neutron diffraction measurements."

In this case, the simulation helped the engineers see the result of welding an additional supporting structure onto an engine. This predicted both the deformation of the existing engine structure and the size of the residual stress field around the crack front. The analysis assumed that filler material was welded in only three strings, and the welding was simulated along the side of the model, where it would introduce residual stresses perpendicular to the only critical weld defect that could cause an opening or closing of the crack.

These final simulation results enabled the engineers to relate both the residual welding stress fields and the crack simulation to obtain realistic fatigue assessments. As expected, large tensile residual stresses remained at the toes of the weld, but the stress level was close to zero at the weld's root. This meant that the stress intensity factor evaluation of the critical root of new weld designs would only be marginally influenced by the residual stresses of welding.

"Even so," Lucht points out, "It would be good practice to take precautions, such as adding a peening step to the weld toes, to limit the influence of high tensile stresses on the safety margin against fatigue failure, so that we don't introduce a new problem with the repair."

**Analysis Results: Clear Sailing Ahead**

Realistic simulation revealed why the original weld design performed as it did and confirmed that the new design would be safely within the recommended limit curve. The demonstrated lack of tensile stress in the weld root proved out the integrity of the new design. "This combined method of weld process simulation and fracture mechanical evaluation of weld defects with XFEM is a strong tool to evaluate the structural integrity of complex welded structures," says Lucht. "From this analysis, we were able to verify that our new weld design is safe, both for repair of existing engines and for use in future engines."

Ribcraft


Moose Boats

Metal Craft Marine

# RIBS & Patrol Craft

*As technologies have enabled small patrol craft to become increasingly fast and maneuverable, the challenge today is to enhance and ensure the safety of crew onboard. This month's focus on RIBS and Patrol craft spotlights some recent innovations from industry leaders.*

**Ribcraft** has had a busy year fulfilling orders for state and municipal first responders, federal agencies, private industry and internationals clients. It had record sales in 2012 and is currently tracking to exceed 2013 projections. Recently it delivered a Ribcraft 7.8 for specialized LNG security and rescue operations. Requiring the ability to carry multiple response personnel quickly, the 25.6 ft. Ribcraft 7.8 complete with jockey-style pod seating for six passengers and crew features twin 170 hp Volvo Penta diesel engines with Hamilton Jets. The designated power plant delivers a top speed of more than 36 knots regardless of the conditions. With the dual jet propulsion, the vessel delivers optimal maneuverability, enabling the operators to easily maintain position or quickly maneuver regardless of headway speed. The boat will serve multiple functions for the international client with the primary mission to transport and deploy security and rescue personnel. The RIB is designed as a deployable shipboard vessel that is capable of operating in both open sea conditions and near shore shallow water operations. In addition to crew seating, the boat features adequate deck space for patient transport and treatment.

**Moose Boats** is building a M3-36 patrol boat for City of Los Angeles, a boat that features triple 300 hp outboard engines. The vessel's primary responsibility will be for drug and panga interdiction off the coast of Los Angeles by the LAPD marine unit. The M3-36 features: 900 hp with 400 gallon fuel capacity, a fully enclosed climate controlled cabin, 7 kW genset, dive door configuration in cockpit and a full suite of navigation electronics including a FLIR camera and AIS unit. The vessel's secondary mission is to support large dive missions along with LAPD's primary dive vessel, a M1-46 Moose Boat catamaran which was delivered in December 2012. The new M3-36 Moose Boat joins two additional Moose Boats procured in 2012 via Port Security Grant Program allocations.

From **Metal Craft Marine**, the Kingston 32-ft. ridged hull inflatable collar patrol boat is the design platform selected as the basis for the proposed new generation of U.S. Navy Force Protection Medium. The Kingston Series has been in the boat builder's product line since 1987 and has enjoyed success in the patrol boat market. The hull is designed to be versatile and has excelled in a wide variety of configurations; examples of demonstrated performance have been built in sizes from 23 up to 70-ft., with deadrises of six degrees for rivers up to 24 degrees for offshore applications, has incorporated air, foam and air-foam hybrid collar systems and been powered with outboard, sterndrive and inboard water jet propulsion. The Kingston 32 Patrol RIB was originally designed in 2000 for the U.S. Navy Inshore Boat Unit in both a stern drive and diesel water jet propulsion configuration. Twenty boats were built in total between 2000 and 2003 on three separate contracts with the U.S. Navy. Thirteen are still in service today, each averaging over 30,000 hours of operation in the demanding marine environment of the Middle East. Sentry 32 Patrol Boat: In 2010 MetalCraft Marine U.S. Inc. entered into a strategic partnership agreement with Brunswick Commercial and Government Products Group (BCGP) to design and build high performance aluminum patrol boat. Under the agreement, Brunswick Commercial and Government Products' (BCGP) will expand their product offerings to include the Sentry aluminum patrol boat line based on MetalCraft Marine's established Kingston hull platform. A demo Sentry 32 Patrol Boat was built in 2011 to highlight the strengths of both companies.

**Silver Ships, Inc.** provide a wide arrangement of RHIBS throughout DOD, Federal and State agencies as well as FMS and overseas market. In business since 1987, it has seen the introduction of the RHIBS into the main stream of contracts and has improved design and functionality to ensure a high performance; low life cycle cost approach is maintained throughout the designs. "Successfully developing solutions to requirements has allowed Silver Ships to be awarded contracts which integrate ballistic protection, counter measures, C4SIR systems and ability to maintain low level sound and reduced impact to crew through use of shock mitigated seats, floors and the ergonomics of the RHIB" said Scott Clanton, Director of Special Projects. Recently Silver Ships delivered, through U.S. Navy FMS office, six Riverine Patrol Boats (RPB's) to support operations in the Philippines. The boats are approximately 40 ft. long, soft-sided watercraft. While the RPB's technical challenges were different from other boats produced by our company, it's this challenge that continuously keeps everyone here engaged.

Silver Ships produces RHIBs between 21 through 40 ft. in length that are center consoles through full cabin; outboard and inboard powered. While the majority of the RHIBs are twin engine powered, Silver Ships is developing a new single engine designed primarily for Law Enforcement, which will be shown at the National Sheriff's Association Conference this June in Charlotte, NC.

For 2013 **Ocean Craft Marine (OCM)** introduced a 9.5m RIB called the Vessel Interdiction and Boarding-Team Delivery Craft (VI-BTD). This high-endurance platform was designed for elite law-enforcement and military

Silver Ships

Ocean Craft Marine

Tampa Yacht

mariners. The 9.5m VI-BTD – also available in 12m version – uses a concave "reverse" chine hull design for maximum lift and reduced drag. Equally impressive is the agile maneuverability of this design. When entering any turn, no matter the speed or quickness of execution, "the boat does not skip, trip, or catch a chine; it just digs-in and turns like it is on rails," according to Todd Salus, Ocean Craft Marine Vice-President. This hull design is just half the story; OCM partnered with the design team at Shockwave Seats to customize and adapt a three-axis, and fully shock-mitigated operator console known as the Integrated Control Environment or ICE2. This console is designed to fully isolate the crew and sensitive electronic equipment from jarring impacts, helping to eliminate the possibility of compression type injuries. The vessel also takes advantage of some of the latest maritime technologies to include the 9900 Series wireless crew-communications system specially adapted by the David Clark Company. This system provides clear voice-activated (VOX) communications, without the encumbrance of wires, even when the boarding-team is embarked on another vessel for VBSS operations. In addition, the system is fully-integrated with the marine VHF radio, the tactical radio, the load hailer and up to several mobile phones. The 9.5m VI-BTD also sports an M-Series thermal imaging camera from FLIR Systems, Inc. It is powered by super-quiet twin 300 hp Mercury Verado supercharged engines.

The Tempest 50-FAC from **Tampa Yacht Manufacturing (TYM)** is designed to provide Patrol and surveillance in shallow coastal and riverine waters by day and night in marshy areas of creeks with shifting sand bars, with low draft, high maneuverability and speed. The vessel's hull design, which includes forward center of projected planning area center to ensure controlled turning at extreme rudder angles at high speed for pursuit and evasion, is of conventional high speed modified-vee hull with engineered deadrise distribution and chine beam distribution for low accelerations and smooth performance in a seaway and high speed transport in calm seas. The vessel's bottom area supports large payloads and ensures performance under all loading conditions, TYM said. The 50-FAC is arranged for propulsion using twin inboard engines and Ultrajet waterjets to provide speed and redundant capability. The 50-FAC's fendering system aims to protect it from damage during boarding operations. The arrangements of the 50-FAC maximize system functionality while minimizing crew fatigue. Built and outfitted to comply with all the applicable provisions and requirements of RINA Classification, ABYC and NMMA Rules, 50-FAC vessels will operate in varying sea and weather conditions, in littoral waters worldwide. Typical missions include locating, tracking and intercepting suspicious vessels. The 50FAC is mission capable for port security and pursuit of suspect vessels for the purpose of boarding and searching and, when necessary, arrest of violators and seizure of vessels and/or contraband. The vessel is equipped with night vision cameras, red LED lighting, flood lighting, spotlights and other equipment for night operability and with the helmsman and engineer having a radar and integrated chart plotter system, the 50-FAC is fully capable and comfortable in over the horizon missions. With integrated ballistic protection, 50-caliber machine gun armament, autopilot and the ability to cruise at any speed comfortably, TYM said the 50-FAC is suited for force protection.

**Kvichak Marine Industries** recently delivered the third 44.5-ft. Response Boat Medium – C (RB-M C) to the New York Police Department Harbor Unit. The first two RB-M C's were delivered in April 2010 and August 2012. Both have been providing maritime security and law enforcement along with search and rescue in the New York metropolitan area. These all-aluminum vessels are designed by Camarc Design, U.K., and powered by tier II compliant twin Detroit Diesel 60 series engines rated for 825 bhp each coupled to Twin Disc MG5114SC marine gears. Rolls-Royce Kamewa FF375S waterjets are the chosen propulsion. A full cabin provides crew protection from the elements and is equipped with a robust navigation system, heat and air conditioning, shock mitigating seats and a communication

# Scania Powering the Riverine Command Boat (RCB)

**The Riverine Command Boats (RCB) built by Safe Boats International Inc. – measuring 48 x 12 ft. and weighing approximately 50,000 lbs. – currently operate within the U.S. Navy. Each RCB has been powered by Twin Scania DI16 45M engines, coupled to Twin Disc marine gears, driven by Kamewa waterjets. The RCB is the U.S. version of the CB 90 (Combat Boat 90), which was designed by Swedish designer and builder, Docstavarvet AB.**

**Additional facts about the RCB**

- **Twin DI16 45M 850 HP @2300 RPM engines**
- **45 Knot top speed**
- **Last boat built in 2011**


Photo: John Fleck Photography

Kvichak


BCGP

North River Boats

system capable of communicating with other maritime security partners.

In response to requests for lighter weight patrol boats, **Brunswick Commercial & Government Products (BCGP)** developed a proprietary resin infusion construction process that results in a weight savings of up to 35% compared to traditional open-molded parts, the manufacturer claims. The lighter weight boats demonstrate better performance with lower horsepower, the ability to carry heavier loads, and improved fuel economy. The challenge to BCGP was to ensure that the lighter weight resin infused boats maintained structural integrity equal to or greater than traditionally constructed boats. To achieve this, BCGP selected a specific laminate material designed to yield the lightest part possible without sacrificing strength. BCGP also employ considerably more injection ports to ensure the fabric is appropriately saturated with resin while the excess resin (and weight) are removed via the vacuum process. BCGP offers optional resin infused production throughout its line of Impact RHIBs, 15-39 ft.

**North River Boats** delivered the first eight of nine U.S. Navy Force Protection Large Harbor Security Patrol Boats under a contract valued at just over $3m, said Mike Blocher, Director of Sales. “We’re scheduled to deliver the ninth boat in early July,” he said. These boats are based on the 36-ft. North River Valor platform. The Navy Harbor Security

Boat FP-L is 36-ft. long with a 41.7-ft. LOA and a 10-ft. beam. The draft is 27-in. fully loaded and 23-in. light ship. Propulsion is provided by Twin 250 hp Yamaha 4.2L four stroke outboard motors. Cruising speed ranges from 27.9 to 29.3 knots based on full load or light ship. Maximum speed with a full load is 39.2 knots and with a light ship is 40 knots. Fuel capacity is 200 gal.

Key features include: an enclosed cabin; heating and air conditioning; aft deck space for cargo; overhead canopy for sun protection; hybrid foam and air fender for hull protection, stability and flotation if swamped; multiple weapons foundations; adjustable outboard motor crash-rope guard; diver's recovery ladders; a Furuno Navnet electronics package; FLIR Thermal Imagining; a Gentex intercom, VHF and UHF radios; NVIS compatibility; emergency lighting package. Blocher said in addition, the company is scheduled to deliver several patrol or combat vessels to various federal, state and local agencies: These include valor models ranging from 29 up to 36-ft. in length; Liberty models ranging from 38 to 40-ft. in length and multiple Sounder vessels. These boats will be used for Law Enforcement Patrol, Fire and Rescue and Combatant Craft. "We anticipate an increase of commercial and government boats for the 2014 model year."

**Wing Inflatables** is expanding its series of polyurethane Combat Rigid Raiding Craft (CRRC) to include a 5.8m model. This newest addition to the series also features Wing's patent pending hull design that creates hydrodynamic lift and compartmentalizes the running surface to reduce vacuum affording higher speeds with heavier loads, shorter time to plane and greater fuel efficiency. Other unique design characteristics include tapered tubes for lighter weight and more usable interior space. Both the 4.7 and the 5.8 can be easily transported to remote areas or shallow draft situations otherwise inaccessible to bigger craft. Like all Wing inflatable boats, the CRRC series features heat-welded seams for a permanent bond with superior air retention and longevity. Wing boats are designed and built in the United States and are Berry Amendment compliant.

**CPI Marine** is launching a new family of inflatable collars for the RIB market at Seawork International.

The new baffle collars will augment CPI Marine's existing line of removable bladder systems. The individual chambers of the collar are separated by internal baffles, which protect the integrity of the collar by isolating various sections and chambers of the collar in case of tears or punctures.

"We make our baffle collars with seams strong enough to be able to accept an inflatable bladder retrofit several years down the road should the need arise," said Bill Clark, director of inflatable technologies at CPI Marine. "You can extend the lifecycle of the original collar by inserting an inflatable bladder without replacing the entire collar assembly."

CPI Marine will also showcase its line of removable bladder collars. The internal bladder acts like an "inner tube" in a tire. The internal bladder can be deflated and removed from the collar and replaced with a new one without pulling the RIB from the water.

Based in Kyle, Texas, CPI Marine is a leading U.S. manufacturer of sponsons and collars for rigid inflatable boats (RIBs) and fendering solutions for traditional military and commercial-duty workboats.

## In Big Ship Fuel Economy

# Finances Trump Regulation

### By Eric Haun

While increased regulation is often cited as the primary culprit driving shipowners to adopt new energy efficient technologies and practices for their ships, one major shipowner has a differing opinion.

"You can make the argument that regulations are what's driving it, but personally I think it's more economics," said Chris Errington, Director of Engineering at Maersk Line. Errington, along with industry veteran Graham Westgarth, Executive Vice President of Operations and Strategy, GasLog Logistics, was part of a panel discussion led by Dr. Kirsi Tikka, President and COO, ABS European Division, on energy efficiency of maritime vessels held on March 19, 2013 at the Connecticut Maritime Association's Shipping 2013 event in Stamford, Connecticut.

"I think, even without the regulations, the shipyards and the economics of it are driven by the owners. The owners are the people that are demanding better designs and better efficiencies on the vessels." Errington said, linking much of the industry's focus on energy solutions to the "present financial climate and the economics of more energy efficient vessels."

**Left to right: Graham Westgarth, EVP Operations and Strategy, GasLog Ltd.; Kirsi Tikka, President & COO, ABS Europe Division and Chris Errington, Director, Engineering Maritime Technical Services, Maersk Line Ltd.**

Given the market's financial turbulence, squeezing fleets for the very last drop of profit has become a necessity for many shipowners. Vessel efficiency and company profits often go hand in hand, forcing shipowners to set their sights on energy solutions as an approach toward fleet-wide savings.

"[Maersk] has targets every year. Last year the target was $40 million in fuel savings, and we exceeded that. I think it was $78 million. We actually doubled it. And in the U.S. we achieved $16.7 million of that cost," Errington said. "At the end of the day, everything is going to equate in dollar values. We'll continue to challenge ourselves each year as we go. This year it's a similar challenge of $80 million globally."

But these savings are not achieved without careful consideration and attention to detail. Even seemingly small features such as marine coatings can draw big savings, Errington said. "Paint systems play a huge factor in your economies," he noted. "We found that you can have huge savings by having the right paint system on a vessel. At Maersk in the last two years, we have taken six of our vessels out of the water, not when they were due but drydocked them early just to change the paint system. And we could see the paybacks virtually immediately."

Echoing Errington's view on economic-driven energy advancements, Westgarth said, "Because of the price of fuel and the pressure the industry's under, I'm seeing more innovation than I ever have before.

"There's different hull designs, there's retrofits, there's different engines, there's a lot of focus on using LNG as a marine fuel on ships outside of the LNG business. In 10 years' time I think we will look back and see a quantum leap." Speaking to the economy's impact on future design, he added, "The new generation of ships, in my view, are going to be at least 10-15% more efficient than anything that we actually see right now."

Westgarth also referred to regulation as a driving force for proactive energy efficiency initiatives—still not without strong economic implications.

"One way or another, there will eventually be a tax on greenhouse gas emissions, whether it is a levy or a tax, there will be some form of cost associate," Westgarth said.

"The legislation will come, and I think if you're a responsible company it makes a lot of sense to have the systems and processes in place before the legislation so you're not scrambling at the last minute."

Both Maersk and GasLog along with many other companies have used ABS framework to adopt efficient best-practices for their respective fleets, but certainly not without consideration to their company's financial interests.

Regulations provide benchmarks which help keep shipowners on track; but the economy is ultimately shining the spotlight on energy solutions and catalyzing industry efforts toward efficiency.

# According to Kirsi Tikka

*On the sidelines at the Connecticut Maritime Association's Shipping 2013, in the wake of the ABS led panel discussion on energy efficiency of maritime vessels, Dr. Kirsi Tikka, President and COO, ABS European Division shared with Maritime Reporter & Engineering News.*

**Maersk and GasLog are strong players obviously, but was there a particular reasoning for including them in this high-level discussion?**

First and foremost, they were some of the first companies to receive this certification through ABS (ISO 50001 through our HSQEEN framework, so basically they have our notation for energy management.

**For many years "being green" was more marketing slogan than corporate policy. Is this changing?**

I believe that almost all companies are taking some measures for fuel efficiency. Some do it in a more structured framework, such as Maersk and GasLog; others do it within their own operational framework.

**In the conference, you floated the notion of self regulation for the maritime industry. Is this a reality, and what would be the driver?**

Being with a class society, we are part of the industry which to a large extent is self-regulating. If you think of the class rules, it is self regulation for the industry. We have traditionally focused on structures, machinery and safety aspects … but the class role is changing clearly now we look at energy efficiency and performance. As Graham (Graham Westgarth, EVP of Operations and Strategy, GasLog Logistics) mentioned, there are a lot of political drivers, particularly in the greenhouse gas discussion.

**When you look at the legislative horizon, what do you see?**

Right now, clearly Ballast Water and the ECA requirements are the big ticket items. Regarding EEDI: I think industry will adapt to it, and it will not have the financial impact as the other two regulations. In the future, if there are market-based measures for greenhouse gas, it will have a huge impact on the maritime industry.

**If you had to pick just one factor, in your mind what makes the operations of ships more efficient?**

Well I'm not an operator, so I don't have the same vision. But I probably would say it is the awareness and the training required to go beyond the awareness. I think with everyday actions you can gain a lot of operational efficiencies without doing anything else.

**LNG as marine fuel is a common headline these days. What is the future for this fuel in the maritime sector?**

There's no question there is a future, and the biggest driver right now is the ECA regulation and the 2015 sulfur reduction mandates. It's most attractive to companies with operations in the ECA area only, or for those that spend a lot of time in the ECA. That's in the short term. In the long term, the driver will be the framework of LNG supply available everywhere in the world."
Technical challenges can always be overcome, and while the technology is there there are some safety issues that need to be dealt with. If you look at LNG as a cargo, it has been a very safe industry. It's a different matter though when you have a limited number of LNG carriers versus having an entire fleet operating on LNG as fuel. Do you have crews that know how to handle LNG. If you have more ships carrying LNG and you have an accident; there are still issues regarding the placement of the fuel tank and the type of piping to use. The fact that we don't yet have international regulation is a concern.

**What do you count as the most significant change in the role of class?**

I think the biggest change is the step away from purely looking at the structure and the machinery and looking at human factors and performance aspects of the vessels. Moving into the verification of performance is a big change.

# Portable Oil Analysis Instruments

## *Save 15 Hours per Week and Improve Accuracy on Navy Sealift Ship*

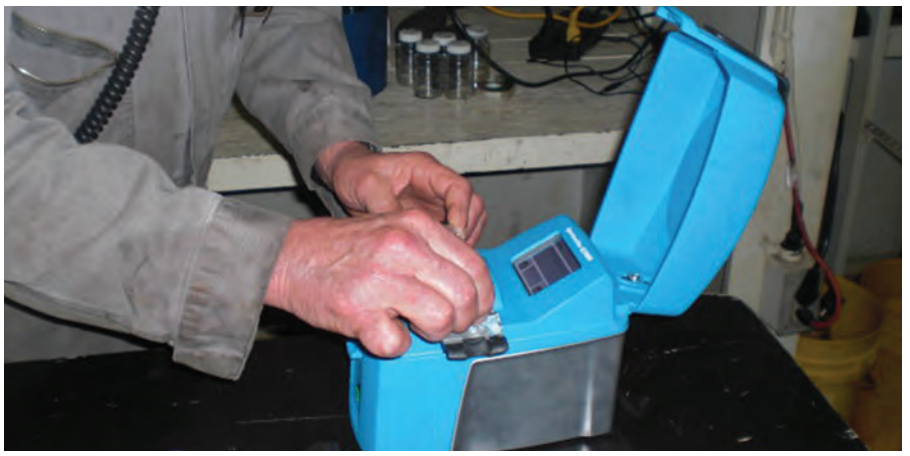
The United States Naval Ship (USNS) Watson is one of the large, medium-speed, roll-on, roll-off (LMSR) ships that have significantly expanded the nation's sealift capacity. The Watson has a considerable amount of machinery including main engines, generators and cranes that need oil tested on a regular basis to detect potential problems and eliminate the possibility of a catastrophic failure. The test kits used in the past were time-consuming and their accuracy was questionable. The (USNS) Watson is operated by Ocean Shipholdings, Inc. (OSI) under contract to Military Sealift Command.

Three years ago, the ship switched to the Spectro FluidScan Q1000 handheld lubricant condition monitor and one year ago added the SpectroVisc Q3000 portable viscometer. The Q10000 performs 87 tests and provides 174 results in about two-thirds the time it took to conduct 138 tests yielding 138 results with the chemical test kit.

"The Spectro portable instruments helps us get more done in less time while providing results that are more accurate and reliable than single-test kits," said William Maus, an employee of OSI, is the Chief Engineer of the USNS Watson. "When I show them to engineers from other ships they ask, 'when can we get ours?'"

Military Sealift Command operates approximately 110 non-combatant, civilian-crewed ships that replenish U.S. Navy ships, strategically preposition combat cargo at sea around the world and move military cargo and supplies used by deployed U.S. forces and coalition partners. The Watson can carry a variety of military equipment in support of Army and Marine Corps operations. The Watson and other ships of its class were the major transporters of military equipment during Operations Enduring Freedom and Iraqi Freedom and during the military operations in Afghanistan and Iraq that began after the 911 terrorist attacks.

The Watson is 950 feet long, has a beam of 106 feet, a fully loaded displacement of 62,644 tons, and a service speed of 24 knots. It has a cargo-carrying capacity of more than 380,000 square feet, equivalent to almost eight football fields. There are two gas turbine engines, each with an output of 32,000 brake horse power (bhp), driving two shafts with 24 foot controllable pitch propellers at 95 revolutions per minute (rpm) at full power. The ship's diesel generators are capable of producing 12,500 KW of electrical power. The ship has many hydraulically powered cranes, cargo doors, and ramps.



**TOP: USNS Watson (T-AKR 310) underway.**

**BOTTOM: Testing oil with the Q1000 and the Q3000.**

### Importance of oil analysis

"Our engineering department consists of 11 people, which is not a lot for a 950 foot ship," Maus said. "We are responsible for millions of dollars of machinery which could at any moment become critical to our national defense. As in all major Navy ships, oil analysis plays a critical role on the Watson by alerting us to problems that have the potential to damage a vital system and by providing information that enables us to efficiently allocate our scarce resources by planning maintenance based on actual need as opposed to simple intervals of time."

In the past, Watson engineers used test kits for oil analysis. Engineers collected oil samples, brought them back to the control room, and mixed them with the chemicals in the test kit. It was necessary to perform tests in the control room to maintain a stable environment for the test chemicals and for the test equipment. The chemicals used in the testing process are classified as HAZMAT, which poses problems for the shipping of chemicals and disposal of the used reagents. It takes about five minutes to collect a sample, five minutes to bring it back to the control room, and five minutes to perform each of the five tests required for generator oil for a total of 35 minutes. Maus was concerned about the accuracy and repeatability of the tests because they were dependent on using the right amount of both oil and chemicals and reliability of the test kit base equipment. He was also concerned about the need to work with hazardous chemicals.

### Head-to-head comparison

The USNS WATSON was one of two USNS ships asked to perform a head-to-head comparison of the traditional one-test-at-a-time kits versus portable instruments that operate on the same principles as laboratory instruments. To evaluate the performance of the kits versus portable instruments, WATSON personnel were asked to perform a specified number of tests in triplicate - once on a test kit, one on a portable instrument and also by sending a sample to a lab on shore.

### Substantial time savings

"The first thing we noticed was that Spectro Inc.'s instruments greatly simplify the process of measuring oil conditions," Maus said. "The instruments are light and don't require any chemicals or extra steps so you can carry them to the machinery and perform the analysis on-site. Another benefit is a major reduction of the quantity of oil required for testing and no generation of HAZMAT requiring disposal.

The FluidScan Q1000 measures the full range of oil condition parameters in about five minutes, the same time that is required to measure a single parameter with a test kit.

The result is that it takes five minutes to take a sample of oil from a diesel generator, five minutes to measure critical parameters on the oil condition analyzer at the generator, and five minutes to measure the viscosity for a total of 15 minutes, less than half the time required with test kits."

"When we are sitting in port and not operating a lot of equipment, we save about 10 hours per week," Maus said. "When we are underway the savings are approximately 15 hours per week. The responsibility for oil analysis is assigned to a licensed engineer with many other responsibilities, so these time savings make his job much easier and allows more efforts to be focused on maintenance and repair throughout the ship."

### Improved Accuracy

A key part of the head-to-head assessment was comparing the accuracy of the portable instruments to the test kits. Testing by an independent laboratory showed that the portable instruments were consistently accurate over the full range of measurement parameters. The accuracy of the test kits, on the other hand, varied from good to poor depend-

ing on the specific test and the care taken by the person running the test.

For example, problems were identified in the measurement of TBN with the test kits. This measurement is used on diesel engine oil to measure additives used to neutralize acids produced as a byproduct of combustion. The test kit measurement is based on and requires entry of the original TBN in the oil. Ship's engineers entered this value based on the specifications provided by the oil manufacturer; however, the accuracy of these specifications was in doubt. The FluidScan Q1000, on the other hand, accurately measures TBN without being dependent on manufacturers' specs. The portable instruments also provide many additional measurements at no additional cost or time.

The FluidScan Q1000 is a rugged, handheld infrared spectrometer that measures a range of key oil condition parameters in synthetic and petroleum-based lubricants and fluids. It can determine lubrication contamination, degradation and cross-contamination at the point of use by measuring key oil condition parameters in both synthetic and petroleum-based lubricants and fluids. FluidScan can readily determine total acid number (TAN), total base number (TBN), oxidation, nitration, sulfation, additive depletion, incorrect lubricant, water, glycol, soot, glycerine and FAME in biodiesels.

The SpectroVisc Q3000 was designed to determine kinematic viscosity in the field for applications when immediate lubricant viscosity is required to determine the health of critical equipment. This portable, battery-operated instrument has a touch-screen interface and is easy to use.

Requiring no solvents, no density checks and no thermometer, the SpectroVisc Q3000 is ready for use whenever and wherever required. Each sample is measured at a constant temperature for consistent accuracy without pretest measurements.

Maus added that another benefit of using portable instruments is that their higher accuracy increases the confidence in their results and leads to greater predictive maintenance efforts. "The accuracy of the portable instruments gives us confidence to base our predictive maintenance program on their results. We can track exactly what's going on and identify problems in plenty of time to take corrective action. At the same time, if the results look good we can extend the service life of the oils to save time and money. In addition to the advantages this equipment offers, the portable instruments are actually less expensive than the test kits previously used, which required replenishment of chemicals and periodic recalibration of the base unit."

"At the end of the trial period, our guys did not want to give up the Spectro instruments and go back to the test kits," Maus said. "The Navy agreed that the Watson could continue to use the Spectro kits while they continued their evaluations. We are hopeful they will decide to switch the entire fleet over to the new portable instruments. The end result will be increased accuracy and more measurements, which in turn will provide higher mission readiness, lower maintenance expenses, and time savings that can be applied to other shipboard projects. Our future goal is to integrate the results from the new instruments into the ship's computer based maintenance program so measurement results will automatically be available to shoreside personnel within 24 hours after samples are tested."

**www.spectroinc.com**

# Reusable Oil Filter Technology

*High fuel prices, increasing emissions regulations and environmental concerns are driving fleets to cut expenses, emissions and waste disposal using new filter technology*

With ship fleets facing spiraling fuel prices and new tougher environmental regulations from the EPA and IMO, fleet managers have had to look for new technology to control costs and emissions. One of the most promising areas to considerably cut spending while meeting all EPA and IMO regulations is reducing maintenance costs and waste production/disposal with reusable lubrication filter technology.

Traditional disposable filters have an important disadvantage: high replacement, disposal, inventory and environmental cost. Every oil change, oil filters must be replaced, the old filters disposed of and the spare filters inventoried in a space-restricted marine setting. All lubricant and air filters must also be regularly replaced, with disposal and inventory significantly adding to maintenance costs.

In a ship, there are many engines: not just propulsion engines, but up to 30 diesel engines on large ships that can run generators and pumps on a 24/7 basis. All of these engines use filters, and replacement costs can spiral exponentially—as can disposal costs. While some try to stretch the time each filter can last, failing to replace them when needed can hurt performance, horsepower, fuel mileage and engine life. With fleets of ships, these costs can add up, and over 10 years can reach hundreds of thousands of dollars.

"The trend in the marine industry is away from disposable filters due to their high replacement, disposal, inventory and environmental costs," said Bob Story, Vice President of Story Electric Co., a fleet, marine, and industry supplier based in Paducah, Ky., whose marine customers primarily transport commodities up and down the Mississippi River.

"For my marine customers, the cost of oil filter disposal is now several times the cost of the disposable filter itself," said Story. "River boats don't stop when they take on fuel, supplies, or remove waste. Third-party boats tie onto them while they're in motion, remove the old filters, then a disposal company is paid to dispose of the waste. The fleet ends up paying the price."

A growing number of fleets, including some of Bob Story's customers, are discovering that innovative, reusable filter technology can really cut the cost and complexity of filter maintenance.

"As part of a push toward reusability and sustainability, an energy company that uses tugboats to push coal up the river chose an FTG cleanable, reusable oil filter to reduce their environmental impact and save money," said Story. "The ROI can be rather quick, particularly in working fleets with high disposal costs."

Instead of a traditional, disposable filter media enclosed in a metal canister that ends up in a landfill, Filtration Technology Group (FTG), a Cerritos, Calif.-based manufacturer of custom lubrication filters and a global supplier of quality filters and fittings, offers full-flow, cleanable, reusable filters that are designed to last the life of the engine or beyond. The reusable filters replace lube oil and other filters with a cleanable stainless steel wire cloth filter and are available in configurations that spin directly onto existing mounting heads or in remote-mount models well-suited to space-constrained, below deck, marine applications.

The cleanable, reusable filter technology was first developed, tested and manufactured by Parker Hannifin's Racor Division almost a decade before they turned the technology over to FTG, a full-service Racor distributor, which has independently manufactured it for the past several years. Parker Hannifin Corporation, a $13 billion, global company, is the world's leading diversified manufacturer of motion and control technologies and systems.

"The idea was to reduce the continual cost of filter replacement, waste disposal, and inventory," said David Cline, Oil Filtration Product Manager at Parker Hannifin Corporation's-Racor Filtration Division in Modesto, Calif. "The cleanable, reusable filters reduce the waste stream by 100% because there are no longer any dirty oil filters to dispose of."

"The reusable filters are designed to last the life of the engine and beyond," said Cline. "In fact, after an engine has served its life, it's possible to remove the cleanable oil filter housing, screw it into the next marine application, and continue using the cleanable filter if it's the same style engine. The filters are that permanent."

For ships that depend on 24/7 engine and diesel generator reliability during voyages that can last for weeks, there's a further benefit from using the cleanable, reusable filters: greater self-reliance and simplified inventory.

"In the marine market, FTG cleanable filters will help fleets become more self-sufficient," said Story. "Fleets won't be at the mercy of filter availability. They won't be reliant on third parties to provide new filters or dispose of costly used filter waste, which takes up extra space onboard. Inventory will be streamlined as well."

Pat Vuoso said the Ports of Los Angeles and Long Beach are also beginning to look to cleanable, reusable filters for an environmental and economic advantage, in place of traditional, disposable ones.

As Vice President of Parts and Logistics at HD Industries, a Long Beach, Calif.-based factory authorized full service dealer, and division of Harbor Diesel and Equipment, Inc., Vuoso had business contacts at Port of Los Angeles and Port of Long Beach stevedoring terminals approach him. They requested reusable, cleanable air filters in place of disposable ones for use in cargo cranes.

"FTG was able to manufacture replacements for the port cranes' existing OEM air filters that matched all specs and passed all tests," said Vuoso. FTG, which is MBE & ISO 9001:2008 certified, can design and manufacture cleanable, reusable filters in wide variety of shapes and sizes, including pleat depths from 1/4" to 4" and lengths of 40". "My port contacts are quite happy with the result. As word has gotten out that there's a cost-effective alternative to disposable air filters, other port terminals are asking about cleanable, reusable filters, and the technology is spreading to other terminals."

"Everyone is looking for alternatives to disposable filters because of rising disposal cost and environmental scrutiny," said Vuoso. "Everywhere there's a disposable marine filter application, cleanable, reusable filtration should be considered as an option." Reusable, cleanable filters can be designed and used for any liquid filtration in any application.

**About the Author**

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## New Product

# Parker: icountBSplus


Motion and control technology specialists, Parker Hannifin, recently introduced the compact, icountBSplus. The icountBSplus is a fully contained, portable bottle sampling system that uses laser particle counting technology to ensure fast and accurate detection of contamination in hydraulic oils and hydrocarbon fuels.

The icountBSplus is designed to help improve the reliability, productivity and profitability of key equipment and processes. It is CE compliant and fully accredited to all particle-counting standards. Its portability and ease of use enables it to be used for portable contamination testing in a wide range of industry sectors including marine and oil and gas.

The laser particle counting technology and user interface can deliver results in as little as 15 seconds. A front-loading sample bottle chamber provides a controlled environment where every sample is degassed using suppressed, clean air prior to delivery to the measurement cell via a fixed displacement pumping system. This helps eliminate many of the variables associated with traditional methods of contamination monitoring. An integrated relative humidity moisture sensor reports on the water content in the sample being tested. An additional sensor provides accurate temperature monitoring while an external fluid supply adaptor facilitates sampling from a hydraulic pressure line.

A high-resolution touch-screen makes setup quick and simple with the ability to control the stylus and set test parameters.

# LNG Tech on tap at Europort 2013

Emissions regulations from 2015 onwards are driving shipowners to a crossroads on fuel selection. Ahead of Europort 2013, Rotterdam, Dutch interests are making significant waves in tangible investments in LNG as a fuel option.

While there is not consensus on the potential of liquefied natural gas (LNG) as a marine fuel, the concept is gaining traction rapidly as using LNG reduces nitrogen oxide (NOx) and carbon dioxide (CO2) emissions from ships, as well as allowing operators to meet restrictions set in Sulfur Emission Control Areas (SECAs) today, which tighten from 2015 onwards. With the clock ticking, the coming legislation and the potential for LNG fuel as a viable choice will be a key focus at Europort 2013 Rotterdam November 5-8, 2013. The LNG option offers an alternative to low-sulfur marine gas oil (MGO), which is already favored by some owners for use within Sulfur Emission Control Areas (SECAs). Its attractions offer even more promise beyond 2015, particularly if not enough distillate is available to meet market requirements and alternative scrubbing technologies to continue burning heavy fuel oil remain insufficiently mature. However, there are significant obstacles to overcome, including developing the necessary bunkering infrastructure to support LNG as an alternative to heavy fuel oil and distillates and completion of regulations on shipboard storage of LNG.

Encouraged by government backing and in line with the hub status of Dutch terminals along the Northern port range, companies based in the Netherlands are stepping up to promote LNG as a marine fuel, including the presentation of their progress at the Europort Advanced Technology Conferences.

For the Port of Rotterdam itself, LNG as a fuel has already been earmarked as a strategic growth opportunity. The Port, which predicts becoming a LNG bunkering hub by 2030, recently announced a new partnership with Port of Gothenburg looking to promote the fueling option. The aim of the memorandum of understanding is for the ports to work together to have LNG bunkering facilities in place in both locations by 2015. The deal is likely to be the first of a number of joint initiatives with other ports involving Port of Rotterdam, with a view to creating an end-to end-network of LNG bunker opportunities.

Maurits Prinssen, Project Manager at the Department of Port Planning & Development/ Shipping of Port of Rotterdam, said, “Commitment at the European level is needed for this and the partnership with the Port of Gothenburg will be a very important strategic alliance. We believe that Europort 2013 will offer the ideal networking opportunity for key industry players to exchange knowledge and experience as the industry faces a turning point on fuelling.”

Port of Rotterdam is also working with the leading terminal operator ECT and has made land available for an LNG filling station between the Gate LNG import terminal and the Euromax container terminal. Shareholders in the Gate, Vopak, are understood to want to build a smaller outbound terminal on an adjacent site so that LNG imported to Gate can be supplied as fuel for ships, as well as for land-based uses. This concept involves developing a breakbulk LNG facility that will feed satellite LNG terminals in northern Europe and rely on a bunker barge that could deliver LNG to inland waterway, short sea and deepsea vessels calling at the port of Rotterdam.

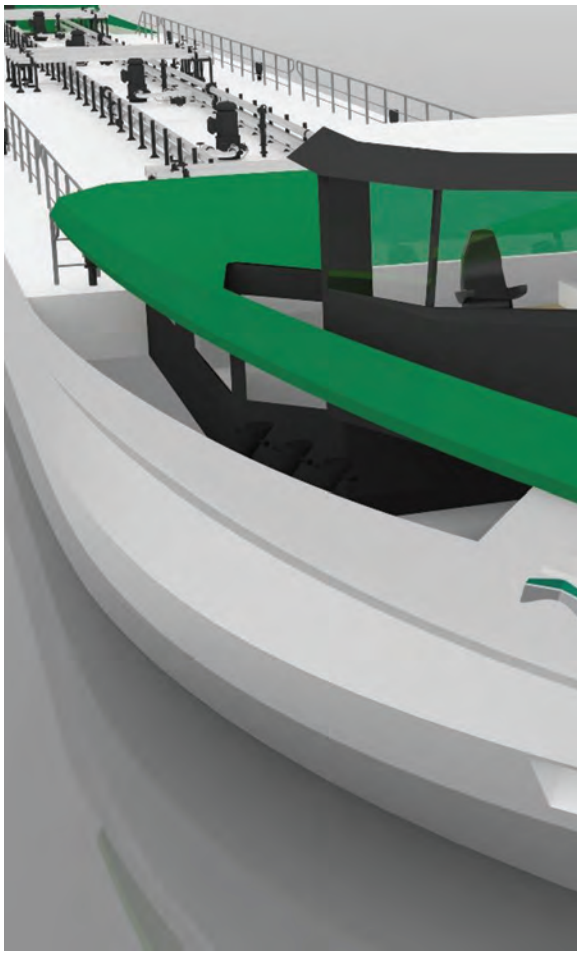
One company leading the line in terms of firm commitments to LNG as a fuel has been Deen Shipping, which has been operating the inland waterway barge Argonon for almost a year. The first barge of its type in the world capable of running on both LNG and diesel, the 110m long, 6,060 dwt tanker has been designed to burn an 80/20 mix of LNG and diesel.

“The first 12 months of running this barge have been an extremely positive experience, and this has convinced us that LNG is the fuel of the future for inland shipping,” said Gerard Deen, owner. “Operating the Argonon has demonstrated that LNG as a fuel is very clean, cost efficient and reliable compared with marine gas oil.”

Argonon has two standard Caterpillar 3512 engines that use 20% diesel to ignite the gas mixture. These engines have

## The Port of Rotterdam predicts becoming a LNG bunkering hub by 2030

## Peters Barge



been modified by Pon Power so that the combustion air is enriched with natural gas. Argonon also has two gas turbines to power the electrical system.

Deen Shipping recently joined forces with the Linde group to establish what will be the first LNG bunker station in the port of Rotterdam. Deen said: "We have found a suitable site and hope to be up and running in 2014. I want to convince others that LNG is the way to go for inland shipping and so it is only right that I put my money where my mouth is and invest in LNG fuel infrastructure."

Deen Shipping has four more barges in its fleet and is already working with engine manufacturers to evaluate retrofitting them with dual fuel engines using LNG and diesel.

Dutch experience is also at work in its shipbuilding sector where the Peters Shipyard in Kampen recently confirmed receipt of an order for two new LNG-powered tanker barges from Interstream Barging (see illustration middle, below), which will be chartered by Shell Shipping. The 110m long vessels will operate along the Rhine as far south as Switzerland, with the first due delivery to Shell in spring 2013.

Dr. Grahaeme Henderson, Shell Vice President, Shipping, said, "Shell sees real growth opportunities for LNG as a fuel in coastal and inland shipping in Europe. LNG can help shipping operators meet strict emissions standards, such as those that are due to apply on the Rhine."

The new LNG-propelled inland tankers will carry enough LNG as fuel to sail from Rotterdam to Basel and back without refuelling. Dubbed 'Greenstream' barges, they will feature four 400-horsepower SGI-16 CGM Scania engines from one of Europort's exhibitors Sandfirden Technics, driving HCM 434F generators.

Lex van der Loo, Sandfirden Technics' Managing Director, is also one of the members of the advisory board of Europort, and he believes that Europort 2013 will offer an ideal opportunity to those interested in developing LNG as a fuel to see how aspiration is being turned into reality. van der Loo said that LNG has the potential to make a "profound change" within the shipping industry, especially as long as the LNG fuel price remains as it is today.

"I believe that there is significant potential for gas-electric propulsion, particularly when it comes to inland vessels, ferries and feeders," he said. "While many topics will be addressed at Europort 2013, perhaps LNG as fuel is top of the agenda, given the timing and location of the event."

## @ EUROPORT

### Panel 1: LNG by Numbers

A recent Lloyds Register (LR) study, LNG-fueled deep sea shipping – the outlook for LNG bunker and LNG-fuelled newbuild demand up to 2025, uses a base case scenario envisaging 653 LNG-fueled newbuildings entering service worldwide with LNG bunker demand reaching 24 million tons in the period to 2026.

### PANEL 2: Recent Moves

- **22 LNG-fueled vessels** currently in operation have been classed by DNV. In addition DNV has 18 LNG-fueled newbuilding contracts and three conversions underway.
- **Wärtsilä**, has been contracted to supply ship design services and the power and propulsion system for a LNG powered Platform Supply Vessel (PSV) to be built at Hellesøy Verft for owner Siem Offshore and on-charter to TOTAL.
- **The port of Hamburg** has a feasibility study investigating new LNG bunkering infrastructure and considering run its harbor vessels on LNG.
- **Marquand & Bahls**, through its subsidiary Bomin, and Linde have established a JV to build LNG infrastructure in Europe and establish a supply chain.

## Keel Laying at Peters Shipyard



## Ulstein PSV to Kuma Shipping

Kuma Shipping ordered two new P128 ships, a design developed to serve the general PSV market related to work-over barges and jack-up rigs. "This is a design that combines low fuel oil consumption with high carrying capacity at an attractive price," says Ove Dimmen, area sales manager in Ulstein Design and Solutions. "We wanted to come up with a design for a smaller PSV that could support barges and rigs in a more economical way than the traditional offshore support vessel, both in terms of building cost and operational costs." Dimmen and his team developed the Ulstein P128 with input from Kuma Shipping, amongst others. The Hong Kong-based company ordered the basic design from Ulstein, and the vessels will be constructed at a Chinese shipyard with sufficient experience. The vessels are planned for delivery in 2014. The vessels measure 71.5 meters by 15 meters, and have a deadweight of approximately 3,000 tons. The 610 m2 work deck can accommodate four lengths of 12 m casing pipes and is enclosed by plate covered crash barriers providing increased safety for crew and cargo. The discharge systems have been designed for safe and efficient loading and discharging of several dry and wet bulk cargoes simultaneously. DP2 and automation system for machinery and cargo handling will contribute to safe and efficient vessel's operation.

## Third Austal-Built JHSV Delivered

Austal christened USNS Millinocket (JHSV 3) on at its shipyard in Mobile, Alabama. USNS Millinocket is the third of 10 Joint High Speed Vessels (JHSV) Austal has under contract with the U.S. Navy as part of an overall 10-ship contract worth over $1.6 billion. More than 600 naval and shipyard guests attended the ceremony, which was held underneath the ship, between the iconic twin hulls of the USNS Millinocket. Vice Admiral William R. Burke, USN, Deputy Chief of Naval Operations for Warfare Systems, was the principal speaker at the event.

The ship's sponsor, the Honorable Karen Gordon Mills, was sworn in as Administrator of the Small Business Administration in April 2009. A Maine resident, Mills served in the President's Cabinet since January 2012, where she is a key member of the President's economic leadership team reflecting the important role that small businesses and entrepreneurs play in our nation's long-term economic growth and prosperity.

The 338-foot catamaran was named by Secretary of the Navy Ray Mabus after the Maine towns of East Millinocket and Millinocket.

# Tugboat Christened in Montreal

Océan Remorquage Montréal Inc. christened its newest tug, the Ocean Pierre Julien, which was built for $10.6 million at Ocean Industries shipyard on Isle-aux-Coudres. This is the third of the Intrépide series to be built at Ocean Industries.

The 25-meter tug is equipped with a firefighting system with water cannons that have an output capacity of 1,200 cu. m. per hour. It is powered by two omnidirectional Z-Drive propellers and two engines that can reach 4,000 BHP.

The traditional christening ceremony was held in the presence of the President and First VP and GM of Ocean, Messrs. Gordon Bain and Jacques Tanguay, Ms. Sylvie Vachon, President and CEO of the Montreal Port Authority, Mr. Pierre Julien, Executive Vice President - Special Projects at Ocean, and his wife, Ms. Nicole Gagné, the ship's godmother.

The vessel's construction was made possible, in part, due to the financial support of Industry Canada through its Structured Financing Facility program. This contribution, granted to Océan Remorquage Montréal Inc., represents close to 15% of the construction cost.

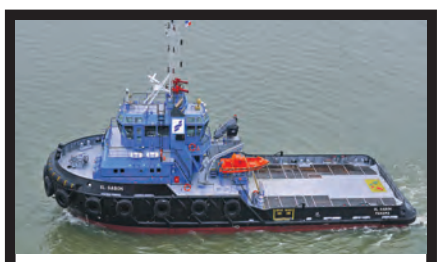
# Vigor Completes Unique Maintenance and Moorage Barge

LR classed Alexandros and Aristotelis are the first of five new 5,000 TEU super-efficient new ships, all to be delivered from HHI Gunsan by June 2013, that sees Capital expand its operations into the container sector. Capital Shipmanagement marked the delivery of its new containerships, Alexandros (on charter as Hyundai Prestige) and Aristotelis (on charter as Hyundai Premium) delivered at HHI Gunsan, respectively.

"These are demanding times for all of us," said Evangelos Marinakis, CEO of Capital. "We are doing our upmost to serve as best as possible the needs of our clients for the years to come. With fuel prices high and with our increasing environmental responsibilities, we are investing in high performance, truly eco, environmentally-friendly new tonnage."

Marinakis added, "When contracting for this new series of 5,000-teu container ships, we paid special attention to obtaining a design with engines which offer high efficiency throughout the entire load range in order to achieve speed flexibility with the best fuel consumption and a reduced carbon footprint. It's great to see this new design in the water and safely delivered to our charterers Hyundai Merchant Marine."

The ships are equipped with AMP (Alternative Marine Power System), often known as a cold ironing system facility, where shore can provide electrical supply while in port with maximum power of 3.2 MW. This is a system where a container vessel can, while in port, shut down its generators and plug into the shore power. The ships are also fitted with an "X" – twisted full spade rudder. The benefits of using such a rudder is that a twist in the upper and lower part of the rudder blade prevents cavitation and associated erosion problems developing as a consequence of rotational flow aft of the propeller.



## Smit Lamnalco: New Vessels in Gabon

A welcoming ceremony was held for two newbuild vessels SL Gabon and SL Libreville at Port Gentil, Gabon on April 17. SL Gabon and SL Libreville were contracted for a five year period by Total Gabon. The vessels will support offshore oilfield activities and tanker operations at the terminal of Cap Lopez, Port Gentil. Smit Lamnalco now operates five vessels for Total Gabon, has a further four vessels under contract for Shell at its Gamba terminal and manages one vessel for Perenco.

(Photos Copyright: Smit Lamnalco)


# Coastal Fast Ferries Takes New 45m Cat Ferry

**Main Particulars 45 M Cat Ferry**

| | |
|---|---|
| Length, o.a. | 146.7 ft. |
| Length, w.l. | 140.7 ft. |
| Breadth, o.a. | 37.7 ft. |
| Draft (hull) | 3.7 ft. |
| Depth | 12.9 ft. |
| Construction | Marine grade aluminum |
| Fuel Oil | 75,700 gal. |
| Fresh Water | 15,140 gal. |
| Sullage | 11,350 gal. |
| Passengers | 606 |
| Crew | 10 |
| Speed (Service) | 34 knots |
| Speed (Max) | 36 knots |
| Main Engines | 4 x Cummins KTA 50 M2 |
| Power | 4 x 1342kW @ 1900rpm |
| Gearboxes | 4 x ZF 7600 NR2H |
| Propulsion | 4 x KaMeWa 50A3 Waterjets |
| Generators | 2 x Cummins 170kVA (ship's power) |
| | 1 x Cummins 17kVA (crew supply) |
| REGULATORY | |
| Flag | Tanzania |
| Class/Survey | NSCV 1C |

Incat Crowther launched Kilimanjaro IV, a 45-meter passenger ferry for the African Operator Coastal Fast Ferries. The vessel capitalizes on the rapid growth in the operator's passenger numbers, bringing the Coastal Fast Ferries' fleet to seven successful Incat Crowther designed vessels.

Cooperation between the builder, Richardson Devine Marine, operator and designer resulted in a vessel offering high speed, high passenger capacity and rugged efficiency.

Kilimajaro IV's main deck has two partitioned passenger spaces: an 86-seat business class cabin and a 168-seat economy class cabin. Upstairs is a premium class cabin with 88 seats. Each class has its own independent boarding ramp to port and starboard. Additional boarding is provided on the upper deck aft. Exterior economy class seating is provided on the upper aft deck (130 seats), roof deck (90 seats) and foredeck (70 seats).

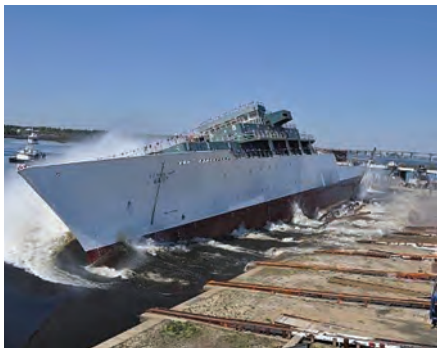
In addition to high passenger capacity Kilimanjaro IV has a large freight capacity capable of carrying 32 freight carts in a dedicated freight compartment, with a fully integrated freight transfer system.

Powered by a quartet of Cummins KTA 50 M2 main engines, Kilimanjaro IV shares common machinery with earlier vessels in the fleet, to streamline maintenance and spares inventory. Propulsion is through KaMeWa 50A3 waterjets. In recent trials, Kilimanjaro IV achieved a loaded service speed of 35 knots, and is capable of a top speed of 38 knots.

Incat Crowther is pleased to continue to support Coastal Fast Ferries and believe the growth in business is in part due to Incat Crowther's attention to client service and its ability to add value to the client's operation.

## IHC Merwede: First IHC Beaver 65 DDSP Sold

Following the launch of the IHC Beaver 65 DDSP in February, the first vessel was sold to Advanced Construction Company, a member of the Al Geithy Group, based in Saudi Arabia. Testing was completed at IHC Merwede's shipyard in Sliedrecht, The Netherlands, in early March, and delivery to Jeddah will be organized in the second quarter of this year. After delivery the dredger will begin work in the Red Sea. The new vessel succeeds the IHC Beaver 6518 and belongs to the IHC Beaver series of standard cutter suction dredgers. It was designed with an integrated spud carrier, which makes for a stronger dredging vessel, especially in waves. Another key feature is the directly driven submerged pump (DDSP) mounted on the cutter ladder. Working in combination with the Curve impeller, this allows the vessel to dredge at high-mixture densities, without any limitation on the vacuum – even at larger dredging depths. Compared to other dredgers in its class, she is equipped with greater cutting and pumping power. Built in accordance with BV Coastal Area classification, the vessel can be used on inland water and out at sea. Like all IHC Beaver dredgers, she offers easy dismounting and transportation possibilities, and is built from stock for short delivery times.



## New Oceanographic Survey Ship

The Navy christened and launched its newest oceanographic survey ship, USNS Maury (T-AGS 66), the last of its class at VT Halter Marine's shipyard in Moss Point, Miss., in a traditional Navy ceremony on March 27. The 350-ft. ship is named for Cmdr. Matthew F. Maury, considered to be the father of oceanography, nicknamed the "Pathfinder of the Seas" and the first superintendent of the U.S. Naval Observatory. Maury is 24 ft. longer than its six sister ships to accommodate a 300 sq.-ft. moon pool for easier deployment and retrieval of unmanned underwater vehicles. Rear Adm. Jonathan White, Oceanographer and Navigator of the Navy and the principal speaker at the launch and christening, said the T-AGS ships are a reflection of Matthew Maury, who he said "led a transformation in our Navy."

Matthew Maury developed wind and tide charts in the 1840s from ship's logs. White said that Maury realized the importance that understanding the natural environment has for ship operations. That lesson has persisted. "We need to know about the environment to be the best navy in the world," White said.

## Grandweld to Build 33.5m Fast Aluminum Crew Boat

Grandweld Shipyards (Dubai) signed a contract to design, build and deliver 33.5m Fast Aluminum Crew boat for LIWA Marine Services LLC, Abu Dhabi. The contract was signed on April 9, 2013. The 33.5m crew boat will be designed by Grandweld, and will be powered by three high speed diesel engines driving three fixed pitch propellers to reach speeds in excess of 25 knots. The vessel is designed to seat 60 passengers, and will have 80 sq. m. of deck cargo area. The vessel will be certified for unrestricted navigation, and will be utilized to transport offshore personnel and support offshore oil and gas operations. It will have full class certified propulsion machinery, and is scheduled for delivery in March 2014.

## Launch of CSS Olympia

STX Marine launched MAC Offshore's Compact Semi-Submersible (CSS), CSS Olympia on March 28, 2013, at the Liya Pingtan Shipyard, in Fujian Province, China, a yard managed by Fujian Mawei Shipbuilding. The delivery of the vessel is due in November 2013 to CSS Olympia's new owner Graal Invest of Brazil.

MAC Offshore also signed four additional CSS contracts to be constructed by Fujian Mawei Shipbuilding with delivery between August 2014 and October 2015.

## The eLPP
## Lamor's New Power Pack

Lamor Corporation launched its next generation smart eco Lamor Power Pack (eLPP 55-80). The eLPP is one unit with multiple functions to operate several oil spill response units: skimmers, pumps and boom reels simultaneously, as well as other hydraulically driven equipment with green technology.

Lamor eLPP series has direct intelligent communications between the diesel engine and hydraulic system synchronizing all functions and reducing emissions utilizing the Lamor Monitoring Control System (LMC). The remote monitoring function provides instant feedback, alerts, service updates and diagnostics. The global positioning system (GPS) coupled with the animated display has automatic reporting features such as location, data log and service intervals to a remote command center. eLPP has a 55-80 kW capacity and is a robust and user-friendly unit with fewer emissions and reduced noise levels. The new technology features preadjusted hydraulic flow and pressure for Lamor pumps and skimmers and customized adjustable hydraulic flow and pressure for other equipment. The eLPP has automatic sleep and idle modes.


**www.lamor.com**

## Transas Update FleetView Online

Transas Marine released a new version of its FleetView Online web-based SSAS-tracking service with improved user interface, object overlay and chart navigation controls. Object overlay on the charts have been updated to enhance visual appearance and improve user experience at lower scales. Previous toolbars have been removed and navigation controls added to the chart display to improve viewing ability. A new map slider bar has been added allowing scaling through the charts in three ways: zoom slider, mouse wheel scroll or manual selection from lower task bar. Vessel information panel on the left of the display can be hidden, providing a full screen chart display for presentation views. Layer options for show graticule and show gauge chart settings have also been implemented. Newly-developed vessel on map functionality allows inclusion of a small PNG image showing vessels location in Positon reports and SSAS alerts email and track history for the previous week. In addition, object clustering in the AIS data has been added to improve display at larger scales.

**www.transas.com**

## BMT Strain Measurement Awarded Patent

BMT Scientific Marine Services (BMT), a subsidiary of BMT Group Ltd, has been granted a patent for its strain measurement system and attachment scheme that can be integrated into the insulation layer on ultra-deep water Steel Catenary Risers (SCRs). The patent recognizes the device and method, invented by BMT's riser engineers, that monitors strain on steel pipes with reduced or eliminated disruption of the insulation layer that covers the pipe. The attachment scheme is less intrusive than previous strain monitoring solutions.


This technology was first deployed offshore in Nigeria to monitor bending strain and fatigue on production gas export risers in the Touch Down Zone (TDZ). BMT will soon utilize this technology for two additional projects in Brazil.

**www.scimar.com**

## One Stop Solution for Marine-Urea

EcoAdBlue distributes Urea throughout the world from nine of our strategically placed production sites allowing the company to offer international coverage, supplying businesses for an array of various vehicles; from tractors and lorries to large-scale marine vessels.

It offers competitive rates and bespoke solutions to meet each of its customers' individual requirements and is able to do so largely due to its relationship with/parent company major logistics firm, Streamline Shipping Group Ltd. Streamline manage all of EcoAdBlue's logistics, offering not only international coverage, but also second-to-none reliability for our customers. [Director] Justin Roberts said, "This partnership allows us great manageability and freedom. Working closely with this well-established shipping company gives us the edge over any would-be competitor and offers a reliable and efficient delivery solution every time".

**www.ecoadblue.com**

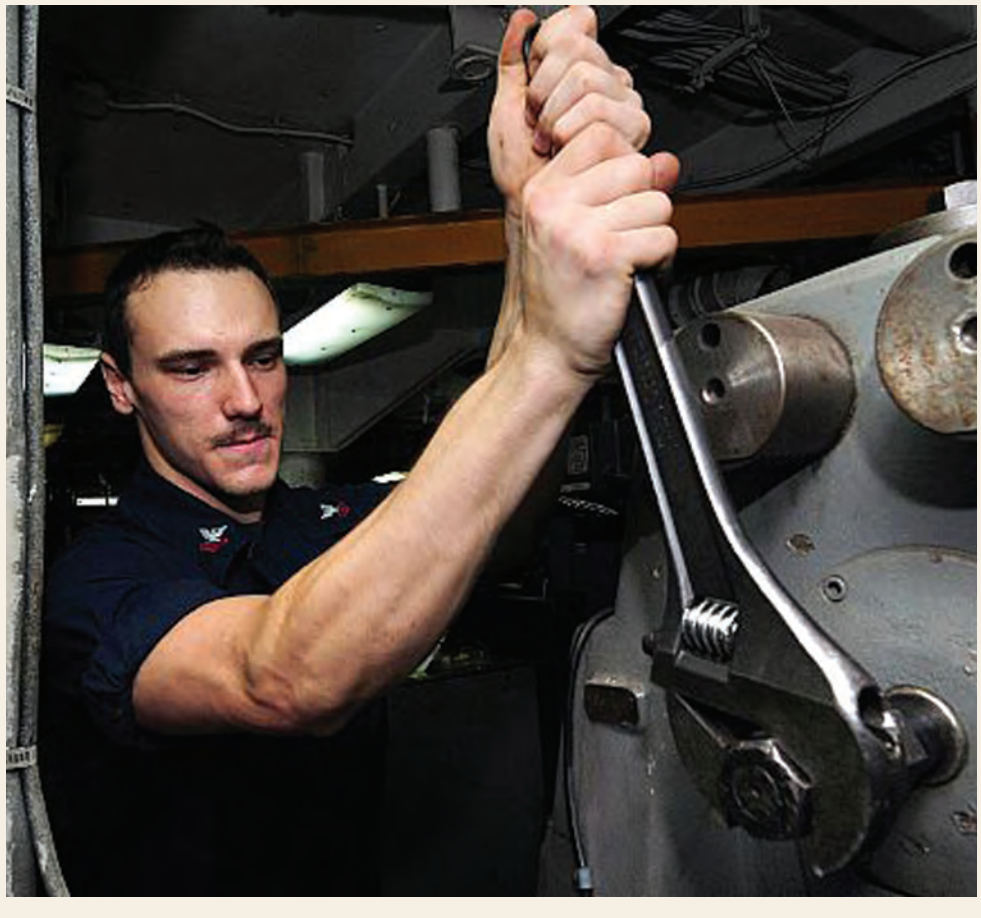
# Fastener Commonality Deep Dive Yields Navy Supply System Efficiencies

Naval Sea Systems Command completed a fleet-wide fastener study, identifying and recommending the removal of thousands of fasteners from the Navy supply system. The 16-week supply system review identified 108,000 dormant fasteners-fasteners with no contract, requisition or maintenance history in the past five years-and 3,200 duplicate fasteners where two or more identical fasteners had different stock numbers. The NAVSEA Commonality Project management team led the study, collaborating with in-service engineering agents, technical warrant holders, program offices, shipyards, shipbuilders, the Defense Logistics Agency and original equipment manufacturers.

The Defense Logistics Agency documents the cost per year to maintain a stock number between $200 and $500 each, according to the Tessa Kashuba, a member of the Commonality Project management team. "The savings may seem small, but when taken in context of number of dormant and duplicate [stock numbers], the cost escalates rapidly," said Kashuba.

Another focus of the study was to work with shipbuilders and shipyards to familiarize them with NAVSEA's Virtual Shelf. Virtual Shelf is an electronic repository of standard architectures, design guidelines, specifications and parts lists for ship systems. According to Fredrick Kachele, Metallurgy and Fasteners Branch subject matter expert, shipyards machine their own fasteners, or do a local small-quantity purchase, when they cannot find a [stock number] for the fastener they need. Both options are very expensive, but NAVSEA's Virtual Shelf can help users find required, qualified equipment at lowest total ownership cost.

**By Joseph Battista, NSWCCD-SSES Public Affairs**



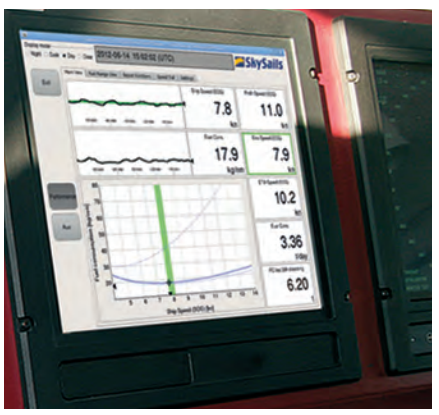
## WSS Nalfleet Water Test Kit

In response to Maritime Labor Convention (MLC 2006) in August 2013 specifying the need to maintain high quality drinking water standards onboard ship which protect crew from waterborne health risks, Wilhelmsen Ships Service (WSS) has launched the Nalfleet Potable Water Test Kit, which enables sea staff to monitor the quality of the potable water network onboard ship, providing tests for common infectious bacteria and in the process reduce the risk of possible risk to health by bacteria proliferation.

The basic Nalfleet Potable Water Kit includes test equipment for E. Coli and Coliform bacteria, chlorine and pH, as well as an incubator and UV Lamp for detection of E. Coli bacteria. The inclusion of the incubator ensures a controlled temperature environment and therefore consistent results of bacteria tests. Also included is a comprehensive instruction manual and a video showing how to carry out testing to support crew training and competence. Owners may also construct a more comprehensive kit including tests for total bacteria count (HPC), Legionella bacteria, color, turbidity, Intestinal Enterococci, depending on the specific requirements of their flag state. The kit is available for immediate supply from WSS Service centres in Europe, the Middle East, Asia Pacific and the Americas.

## Ardmore Adds SkySails Performance Monitors

Irish product and chemical tanker specialist Ardmore Shipping added SkySails Performance Monitors across its fleet to measure the numerous fuel-saving technologies that have been integrated across Ardmore's new build vessels, including larger and more efficient propellers, Mewis Duct and propeller boss cap fin devices for improved propeller and hull form efficiency, MAN B&W ME-B and ME-C electronic engines, as well as a high-performance hull coating.




SkySails' Performance Monitor is a sensors-based computer system continuously collecting and analyzing data about the ships' and operating conditions, thus lending transparency to the interrelation between the various factors that determine the optimal settings for operating a vessel. The SkySails Performance Monitor delivers the necessary insights for improving a ship's operational efficiency.


## United Arab Shipping Order Alfa Laval WHR

Alfa Laval received an order for its Aalborg XS-TC7A waste heat recovery (WHR) economizers for installation after auxiliary engines onboard the entire fleet of the United Arab Shipping Company. Delivery is scheduled for later this year. With its small footprint and the lowest possible weight to output ratio, the Aalborg XS-TC7A economizer optimizes the use of waste heat from the auxiliary engine exhaust gases during voyage and port stays. When used in combination with a waste heat recovery system installed after main engine, the Aalborg XS-TC7A contributes to significant reductions in the oil consumption on the oil-fired boiler under most load conditions. Each unit will be specially tailored to the individual ship and engine design with due consideration to the existing uptake backpressure and other critical factors.

## Vessel Management System Enhances Maritime Safety in Poole Harbor

GeoVS was awarded a contract to supply and install its system in Poole Harbor, Dorset. The system brings a step change in monitoring and managing ship movements in ports and restricted waterways.

**GeoVS was awarded a contract to supply and install its system in Poole Harbor, Dorset.**

GeoVS's system presents a comprehensive real time picture of what is happening in the waterway, identifying individual vessels in a way that is straightforward. Its 3D image gives realistic representations of all the vessels, the waterway, port installations and navigational marks such as buoys. 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. The system automatically records the picture and can store it for up to 10 years. This brings big benefits as a training aid and for investigation and analysis of incidents, particularly if there is litigation.

## Metal Non-Skid for Workboat Deck

Silvagrip, which exceeds Navy Milspec MIL-PRF-24667C for non skid surface on Navy Ships, offers revolutionary, patent pending, extreme grip made of aluminum with ceramic or titanium abrasives. Silvagrip is a surface engineered grip that offers: 10 plus years expected life; UV proof; waterproof; oil and chemical resistant; corrosion proof; can be cleaned by scrubbing and/or pressure washing; resistant to wear; variable surface textures and profiles; apply and use at all temperatures; and is peel and stick. Silvagrip is fabricated alloys, metals that hold a matrix of sharp ceramic abrasives, with hardness just under diamonds. Silvagrip is ductile and capable of being shaped or bent, but at the same time giving you the strongest and hardest non skid wear surface.

**www.silvanonskidsolutions.com**

# Raytheon Anschütz Wins IBS Contracts

The German navigation system manufacturer Raytheon Anschütz reports a number of contract awards for the delivery of integrated bridge systems to newbuilt vessels for offshore operations.

Raytheon Anschütz Singapore, a wholly owned subsidiary of Raytheon Anschütz, will deliver the bridge navigation system and communication systems to a 4,500 dwt Platfrom Supply Vessel built at Keppel Singmarine Brasil shipyard. The navigation bridge will be equipped according to ABS class requirements with Synapsis Radar and Chart Radar, Synapsis ECDIS, NautoPilot adaptive autopilot system as well as a triple Standard 22 gyro compass system and further navigation sensors. Additionally, Raytheon Anschütz Singapore supplies a wide range of radio communication and broadband equipment and CCTV as specified by the owner.

Raytheon Anschütz will also supply integrated bridge systems to six Platform Supply Vessels (PSV) built at Fujian Southeast shipyard in China. The DNV NAUT-OSV compliant bridge systems consist of Radar and Chart Radar systems, two ECDIS, Conning, gyro compasses, autopilot and main navigation sensors.

Another contract covers the supply of bridge systems to newbuilds of the Norwegian shipowner BOA Offshore, who have placed orders for two DNV NAUT-OSV classed Multi-Purpose Supply Vessels (MPSV) at Chinese Mingde shipyard. The scope of supply covers Radar, Chart Radar, ECDIS and Conning for the fore and aft bridge as well as gyro compasses, adaptive autopilot and the full package navigation sensors and radio communication equipment.

## Gas Detector from Martek

Martek Marine released a MED-certified portable gas detector that can be easily and safely recalibrated onboard, providing tamperproof certification to meet the many regulations governing detector calibration. Martek's Marine 4 is supplied with a self-certification/calibration station which provides the user with fail-safe automatic bump testing and calibration. The seafarer simply places the Marine 4 gas detector in the station, press a button and waits one minute for the detector to be tested and certified, ensuring that calibrations are carried out in a repeatable, tamperproof manner without the possibility of human error. The system then automatically produces a tamper-proof calibration certificate which is acceptable to classification societies, oil majors and port state control. Testing programs can be set to meet individual requirements, for example, daily bump tests with weekly calibration and monthly certification.

## Xylem: FerryBox Water Quality Monitor

Xylem Analytics UK and Aanderaa Data Instruments launched a new marine water quality monitor, SOOGuard FerryBox, designed to enable wider deployment of water quality sensors on ferries and other marine vessels. A key objective for the SOOGuard design team was therefore to develop a FerryBox that would meet the needs of most vessels whilst requiring the minimum of operational support. The system's four sensors (conductivity, temperature, optical dissolved oxygen and chlorophyll a) are fitted onto the door of a flow-through cell, a design that allows simple and rapid cleaning. The sensors are stable and require calibration checks less than once a year in most environments. In addition, flow-though cells can be fitted to allow for the measurement of additional parameters. The system is complemented by a hull temperature sensor to support the chamber measurements, and a flow sensor provides confirmation that the system has a continuous feed of water. While readings are stored locally in the system's datalogger, communication via GSM, GPRS and Iridium satellite is also possible. Additionally, users can access transmitted data via a web-based interface.

**www.xylemanalytics.co.uk**

## Intellian V100GX VSAT Antenna


The new Intellian v100GX three-Axis Ku-Band VSAT communications antenna will be seen for the first time at Norshipping 2013. This antenna is fully prepared for the upcoming Global Xpress (GX) Ka-band broadband service from Inmarsat, and can be upgraded to the service with minimal technical intervention. The one-meter v100GX incorporates a superb dual-band, carbon fiber reflector and tuned radome for consistent service, whether operating on the existing Ku- band or converting to Ka- band when available next year. The antenna can be monitored and controlled remotely using the new Aptus PC software, maximizing operational efficiency for service providers, operators and end users. As standard, it is equipped with the patent-pending Intellian Ku-band Global PLL LNB, which is capable of receiving all global satellite signals by using programmable L.O. (Local Oscillator) frequencies. Additionally, the v100GX comes with co-pol and cross-pol functionality as standard.

# EC Gas-Injection Diesel Engine (ME-GI) for Marine Use

Mitsui Engineering & Shipbuilding Co., Ltd., in cooperation with Mitsui OSK Lines, recently carried out a full-scale demonstrational running of electronically controlled (EC) slow-speed diesel engine for marine use burning natural gas, which is the first of its kind in Japan and is called "ME-GI," and has confirmed that the engine has the same reliability with the oil fired diesel engines used for almost all ocean going merchant ships in the world.

The test was carried out on the electronically controlled ME-GI of which fuel system was converted to gas burning system from conventional oil burning system temporarily.

MES completed its power generation plant with slow-speed gas injection diesel engine (GIDE) in its Chiba Works in 1994.

Through this operation, MES carried out various reliability assessments and accumulated its various operation know-how of such engine. ME-GI, based upon such operational experiences, is a fusion of state-of-the art technologies such as electronic control technology and emission reduction technology. MES exerts its utmost efforts for further adoption of ME-GI to many commercial ships starting with LNG carrier.

In July last year, LNG carrier Double Eco MAX, with ME-GI propulsion and with decreased fuel cost and CO2 emission by 30%, was developed by MES and put into market.

Through the demonstrational operation, MES has established not only a comprehensive control system of ME-GI including gas supply system but also the supply system of ME-GI to the customers.

MES will also establish a sales system to offer to customers ships with ME-GI propulsion system which are economical and environmentally friendly as well.


Wiernicki

Sec. Stackley & ASSA's Hepburn


Aaldriks


Amaratunga


Perciavalle

## Wiernicki Named ABS Chairman

Christopher J. Wiernicki, President and CEO of ABS, was elected to the position of Chairman of ABS. The decision was made by the ABS Board of Directors, who voted at its April meeting to transfer the additional duties of Chairman to Wiernicki. Separately, the Board of Directors of ABS Group of Companies, Inc. a subsidiary of ABS also elected Wiernicki to the position of Chairman.

Wiernicki, a 20-year veteran of ABS, joined the company in 1993 as Vice President of Engineering within the ABS Americas Division.

Other senior positions include President and COO of ABS Europe Ltd., Chief Technology Officer and President and COO of ABS Group of Companies, Inc. Wiernicki holds a BS in Civil Engineering from Vanderbilt University, an MS in Structural Engineering from George Washington University and an MS in Ocean Engineering from Massachusetts Institute of Technology.

Wiernicki is a graduate of the Harvard Business School Advanced Management Program. This transfer of responsibilities to Wiernicki from ABS Chairman Robert D. Somerville is the final step in a leadership transition strategy that has been executed over the past two years. The effective date of the transition is May 1, 2013.

## Ultrapetrol Appoints Yap CFO

Ultrapetrol Limited, an industrial transportation company serving marine transportation needs in three markets (river business, offshore supply business and ocean business), appointed Cecilia Yad as the company's Chief Financial Officer, succeeding Leonard J. Hoskinson. Hoskinson will remain with the Company as Vice President, International Finance. Yad is a Certified Public Accountant with more than 25 years of finance experience working with diverse multinational companies. Most recently, she was the CFO for Iberia-Latin America of ISS, a Danish-based services company. Prior to ISS, she held planning, accounting and finance executive positions with Clorox, a U.S. consumer goods company where she worked for 10 years.

## ASSA Hosts Roundtable with Sec. Stackley

The American Shipbuilding Suppliers Association (ASSA) hosted a roundtable discussion on April 10, 2013 that included 35 representatives from member companies; the Honorable Sean Stackley, assistant secretary of the Navy for research, development and acquisition, and Elliott Branch, deputy assistant secretary of the Navy for acquisition and procurement (DASN AP). Member companies raised concerns related to timely issues such as FY13 and FY14 budgets, foreign competition, contracting timeliness, military standard enforcement, Navy investments in research and development, and frequency of quality audits. Secretary Stackley emphasized the importance of performance, affordability and the industrial base. There was insightful dialogue on both sides and follow-on actions items were established for both the Navy and industry. Secretary Stackley closed the meeting by noting the importance for communicating with suppliers to raise the Navy's sensitivity to specific critical issues This members-only meeting was collocated (but unaffiliated) with the United States Navy League Sea Air Space Expo 2013 at the Gaylord Hotel in National Harbor, Maryland.

## KPI Appoints Vice CEO, New Managing Director

KPI Bridge Oil appointed Rob Atkinson as Vice CEO for the group and Jesper Rasmussen as Managing Director for its North American operations.

## Amaratunga, Aaldriks Appointed at BMT

BMT ARGOSS (BMT), a subsidiary of BMT Group Ltd, appointed two new Directors. Shane Amaratunga whose career with BMT dates back to 2000 will assume the role of Director of Internal Affairs, while Wilfred Aaldriks will take the position of Director of External Affairs.

## Austal Earns SCA Safety Award

The Shipbuilders' Council of America (SCA) awarded Austal the 2012 SCA Award for Excellence in Safety. This honor is awarded to the shipyard members of the Association with the lowest total recordable incidence rates (TRIR) based on a quarterly injury and illness survey conducted by the SCA. This year, Austal contributed to the SCA's lowest TRIR averages ever, which was 65% below the industry average. "Despite growing total employment from 1,000 to over 3,500 in just a few short years, we have successfully focused on improving the working environment of our employees as evidenced by receiving this award for the fourth consecutive year," said Craig Perciavalle, President, Austal USA.

## T&T Salvage Strengthen Singapore Team

T&T Salvage recruited three salvage professionals, Lee Hiok Liang, Alex Ang Yew Boon, and Hussain Shah, for its Singapore base.

Lee Hiok Liang joins as a naval architect from a diverse background of twenty years of experience in the marine industry. Lee joins from Royal Boskalis, where he was a Senior Project Engineer. Alex Ang Yew Boon is another trained diver, beginning his career as a Singaporean Navy diver before entering the industry via Smit in 2004 as a salvage diver. Hussain Shah joins T&T as a Salvage Supervisor and will also perform a dual role as a Warehouse/Technical Superintendent. He comes from a career with Smit Singapore as Senior Salvage Logistics and Maintenance Executive from 1998 to early 2013 where he was placed in charge of planned maintenance, inventory control, allocation and distribution locally and global assets worldwide, procurement, maintenance and consumables for salvage projects, coordination of mobilization and demobilization of salvage projects.

## Forbes Receives SCA Maritime Leadership Award

The Shipbuilders Council of America (SCA) presented its inaugural "SCA Maritime Leadership Award" to shipbuilding and repair advocate, Congressman J. Randy Forbes (R) from Virginia's 4th District.

## Teekay Management Change

Geir Sekkesaeter, Senior Vice President, Conventional Fleet Operations, and Head, Technical, Safety and Quality at Teekay Corporation decided to leave the company for personal reasons. mSekkesaeter's responsibilities have been transferred to the respective Business Unit Presidents of the conventional, shuttle, and gas fleets, each of whom is a member of the Teekay Senior Leadership Team.

## Bowhead, Crowley Provide Arctic Service

In a joint venture, Bowhead Transport Company, LLC, and Crowley Marine Services, Inc. will provide marine services in Alaska's Arctic. The new Alaska-based joint venture will operate under the name UIC Bowhead-Crowley, LLC. Bowhead Transport is a wholly-owned subsidiary of Ukpeaġvik Iñupiat Corporation (UIC), the Alaska Native Village Corporation of Barrow, Alaska. The UIC Bowhead-Crowley joint venture will be mainly focused on the oil and gas industries and supporting their growing needs in the Arctic. Because of the companies' strong ties to the communities in which they work, they are able to facilitate local hire and provide local expertise.

## Imtech Marine Introduces IM IPTV

Imtech Marine developed an IPTV solution specifically suitable for merchant and special vessels. The IPTV system enhances the crew comfort on board and helps the ship owner retain its valuable crew. It is based on Internet Protocol Television (IPTV) and offers interactive multimedia services such as television, video, audio, text and graphics delivered over IP-based networks. The system reduces costs by eliminating the cable TV infrastructure and works via a plug-and-play IP network. The Imtech Marine IPTV solution offers TV and a package of regularly refreshed high class content like blockbuster movies, top TV series, music, news and sports.

It also offers a tailored infotainment system to communicate, describe safety procedures and to educate the crew about relevant topics.

### RMA Selects Transas Engine Room Simulator

Resolve Maritime Academy (RMA) ordered the Transas Techsim 5000, DNV approved, Class A, Full Mission Engine Room Simulator for their new simulation facility in Fort Lauderdale, Florida. The new engine simulation systems will facilitate the conduct of a wide range of courses for the training of marine engineers, including operational and emergency procedures and crew resource management training with Resolve's existing Transas Full Mission Bridge Simulators. The simulator system will offer a high level of flexibility, employing a combination of real controls and the latest Techsim 5000 touch screen technology, thereby allowing RMA to maximize their training effectiveness by simulating multiple engine platforms (diesel electric, slow speed diesel, medium speed diesel, CODOG, etc.) within the same full mission simulation spaces.

**www.transas.com**

### Amarcon, GTT Signs Agreement on Sloshing Prevention Tech

Amarcon, a member of the ABB group, signed a cooperation agreement with GTT (Gaztransport & Technigaz) to market and develop a forecasting and advice software system for sloshing prevention onboard LNG carriers, as in the coming years, a significant growth in the long distance transport of LNG is expected. Consequently, a considerable number of new build LNG carriers will come into the market. To respond to this demand, Amarcon and GTT last year announced the joint effort on development of sloshing prevention software. The sloshing prevention is an advanced module within Amarcon's OCTOPUS advisory suite that will forecast and advise the crew with optimum route to achieve time savings while preventing risk for sloshing.

**www.abb.com**

### Design Alaska, Art Anderson to Improve Energy Efficiency

Design Alaska, a Fairbanks-based architecture, engineering and surveying firm, and Art Anderson Associates, its naval architecture subconsultant, were recently awarded a contract for the Alaska Marine Highway System (AMHS) to investigate potential energy efficiency improvements. The vessels included in the project are the M/V Taku, M/V Matanuska and M/V Kennicott. The contract, driven by new International Maritime Organization (IMO) regulations, requires development of Ship Energy Efficiency Management Plans (SEEMPs) for three AMHS vessels. New IMO standards require vessels traveling internationally to obtain International Energy Efficiency Certificates (IEECs) demonstrating that vessel owners and operators have developed energy efficiency plans for their travel routes and vessel operating systems.

**www.designalaska.com**
**www.artanderson.com**

### Rolls-Royce Propulsion for Neptune Ships

Rolls-Royce won a contract to supply its Promas propulsion system for two new car and truck carrying ships being built in Korea at Hyundai Mipo Dockyard Co (HMD), for Neptune Lines. Promas is an integrated propeller and rudder system that is designed to increase efficiency and maneuverability. HMD has also signed an agreement with Rolls-Royce for further model testing of Promas in order to evaluate its suitability for a number of other vessel designs.

**www.designalaska.com**

### Aker to Design Finnish Icebreaker

In contract with the Finnish Transport Agency, Aker Arctic Technology Oy, in cooperation with ILS Oy, will design a new icebreaker for the government and prepare the technical documents needed to hold tender for its construction in compliance with the performance requirements for the vessel. It will also assist the Finnish Transport Agency in negotiations with shipyards later this autumn. The government has already taken earlier a decision in principle to procure a new icebreaker; and 125 million euro has been earmarked for its construction by winter 2016. The capacity of the new icebreaker in all parameters will comply with the Urho-class icebreaker. Due to its diesel-electric machinery, it will be able to move continuously through about 1.6-meter-thick level ice, to break a 25-meter-wide channel in 1.2-meter ice at speed of 6 knots, as well as to reach 9-11 knots of average assistance speed in the Baltic Sea.

### Technology Assoc.: $6.1m USCG Contract

Technology Associates, Inc., a New Orleans based Naval Architecture and Marine Engineering firm, signed a contract with the U.S. Coast Guard to provide engineering services to the Sentinel-class Fast Response Cutter (FRC) patrol craft Project Resident Office located at Bollinger Shipyards in Lockport, La. When options are exercised, the contract will exceed $6.1 million.

### £63million BP Contract for North Star

North Star Shipping, a division of the family-owned global shipping and energy services firm The Craig Group, entered a £63million contract

## Control Systems on LCC 20 Saves Fuel, Reduces Workload

Naval Sea Systems Command completed the installation of new control systems aboard USS Mount Whitney (LCC 20), April 8, which will reduce fuel usage and crew workload.

Engineers from the Naval Surface Warfare Center Carderock Division - Ship Systems Engineering Station (NSWCCD-SSES) SSES installed the new control systems on a number of shipboard engineering components and are specifically designed to improve automation on the optimally manned ships. "Military Sealift Command-operated ships like the Mount Whitney traditionally have lower manning levels, therefore being able to operate many systems from one central control unit is essential," said Matthew Douglass, Auxiliary Machinery Automation Branch head. "The automation of the controls greatly improves the quality of life for the professional engineers aboard."

Todd Woltjen, mechanical engineer with Auxiliary Machinery Automation Branch who coordinated and oversaw the upgrades, said the improved automation saves money by reducing fuel consumption and lowering the electricity used.

"For example, upgrading the main engine lube oil pressure system from constant two speed pumps to variable speed drives allows the pumps to throttle at speeds between 10-100 percent," said Woltjen. "This ability uses less electricity and maintains more stable pressure, which saves money."

According to Woltjen, limitations in automation when the ship was built did not allow for optimization of the fuel-to-air mixture used in boiler combustion. This caused excess air in the combustion process and resulted in higher fuel consumption.

"With current automation we can accurately measure more processes such as combustible gases," said Woltjen. "We can integrate data into more powerful [programmable logic controllers] to optimize the fuel/air mixture and reduce excess waste heat up the stack, ultimately using less fuel."

Mount Whitney's control systems were upgraded over three weeks from late March to early April during the ship's availability at the San Giorgio Del Porto shipyard in Genoa, Italy. The Ship Systems Engineering Station, Philadelphia, is a major component of Naval Surface Warfare Center Carderock Division and a field activity of the Naval Sea Systems Command. It is the Navy's principal test and evaluation station and in-service engineering agent for all hull, mechanical and electrical ship systems and equipment, and has the capability to test and engineer the full range of shipboard systems and equipment from full-scale propulsion systems to digital controls and electric power systems.

**By Joseph Battista, NSWCCD-SSES Public Affairs**

# Titan Refloats Grounded Vessel

Titan Salvage refloated the 262-foot containership M/V Danio from its stricken position on England's Northumberland after the ship, which was carrying a load of timber and en route to Belgium from Scotland, ran aground at Farne Islands, an environmentally sensitive area, in early March. The onset of severe weather conditions prevented an immediate attempt to tow the Danio from the coastline.

Because the Farne Islands – home to thousands of puffins and grey seals, as well as more than 20 bird species – is classified as a site of Special Scientific Interest (SSI), Titan took extra precautions to safeguard the environment. The company's Jason Bennett, commercial director, and his team of salvors took quick action to establish safety of the vessel, immediately deploy a tugboat and prepare for a controlled and safe re-floating operation. Danio was ballasted down to the rocky sea bottom while the Titan team repaired damage to the vessel's skeg and other areas, which required cement boxing, shoring and patching before the vessel could be refloated and towed away. Portable pumps were also installed and used during re-float and transit to safety.

Salvage Master Mark Loughlin, of C Waves, a London-based independent maritime and engineering consultancy contracted by the Titan alliance, transferred to Danio after initial assessment and remained on board alongside the crew throughout the operation. He was joined by Titan's salvage team, which worked in difficult conditions to ensure that the ship remained secure in the deteriorating weather conditions, which were marked by high seas and swells (up to seven meters), freezing rain and gale-force winds.

When it was determined that conditions were too extreme for supplies to be brought in via helicopter, the salvage crew partnered with local fishermen who ferried in equipment and provisions. The Titan team also worked closely with Briggs Marine Environmental, which provided spill-prevention equipment, the Secretary of State's Representative for Maritime Salvage and Intervention (SOSREP), the Maritime and Coastguard Agency (MCA), the Environment Group (EG) and the National Trust, alongside the ship's owner and insurers, to ensure vessel security and environmental protection.

During a brief window of suitable tides, Danio was refloated without incident with the assistance of the Titan-chartered tugboat Lomax. No spills or damage to the region were reported as a result of the incident or salvage work.

**www.titansalvage.com**

with BP. The multi-service contract is for five years with a possible extension of five years and includes tanker assist, platform supply and emergency and response rescue vessels, all supporting BP's operations in the North Sea. Four vessels, with a possible fifth to be added are being contracted – the Grampian Talisker, Grampian Frontier, Grampian Conquest and Grampian Dee. The Craig Group fleet, operated by North Star, now stands at 35 vessels in service.

**www.northstarshipping.com**

## ABS Grants AIP for Small LNG Carrier Design

ABS granted engineering company GTT approval in principle (AIP) for a 32,000 cu. m. capacity LNG carrier design. "While a few membrane LNG carriers in the 20,000 cu. m. capacity range were built in the 1990s, this is the first new design to be introduced since that time," said ABS Vice President, LNG, Patrick Janssens. The reason for this innovation, Janssens said, is the development of new markets that have led to a keen interest in smaller LNG carrier designs.

"Potential markets for these smaller carriers include inland transportation, bunkering, feeder trade, archipelago trade in regions such as the Caribbean and coastal distribution," said Janssens.

## SENER Opens Office in Brazil

The engineering and technology group SENER opened an office in São Paulo, Brazil, made up of about 300 Brazilian professionals specialized in engineering and construction that will carry out projects in the fields of power and process, civil engineering and architecture, aerospace and marine engineering. SENER premises in Brazil also include an office in Rio de Janeiro. Heading this office is Marine Engineer Guido Casanova, SENER's General Manager in Brazil. He graduated from the Polytechnic School of the University of São Paulo and was previously responsible for managing Pirelli's business in Brazil and Mexico, heading additionally the telecommunications division in Brazil as well as holding various management posts.

**www.sener.es**

## World Wide Metric Joins FPDA Motion and Control Network

World Wide Metric, a global supplier specializing in metric components in the fluid power, oil/gas, energy, industrial flow control and maritime markets, joined the FPDA Motion and Control Network, a professional network for fluid power, automation and motion technology providers dedicated to significantly enhancing member and channel performance by delivering indispensable networking, education and success strategies.

**www.worldwidemetric.com**

## Rolls-Royce, Drydocks World to Manufacture LNG Tugs

Rolls-Royce plc signed a memorandum of understanding with Drydocks World Dubai to provide systems for Liquid Natural Gas (LNG) powered tugs for the Middle East market. The tugs, to be designed by the Drydocks World in-house design team, will incorporate a range of power and propulsion equipment from Rolls-Royce, including Bergen medium speed gas engines

## Keppel Delivers Rig to Perforadora

Keppel AmFELS LLC delivered the jackup rig, Papaloapan, to Mexico's Perforadora Central SA de CV. Papaloapan is the the third jackup rig built by Keppel AmFELS for Perforadora Central and is based on the LeTourneau Super 116E design. Capable of drilling wells up to 30,000 ft at a water depth of 375 ft, it is the first Super 116E newbuild to be further enhanced to provide for an additional 1,500 kips of elevated load.

## Wärtsilä 34DF Receives U.S. EPA Certificate

Wärtsila obtained certification of emission standard compliance from the United States Environmental Protection Agency (EPA) for its Wärtsilä 34DF dual-fuel engines, enabling Wärtsilä to enter the American market with marine engine technology that offers operators and owners the option of using either diesel or gas as fuel.

EPA certification applies to United States flagged vessels. The Wärtsilä dual-fuel engine capability enables ships to be operated on either conventional liquid marine fuels or LNG. The switch between fuels can be made seamlessly without loss of power or speed. Such fuel flexibility enables compliance with

emission regulations in controlled areas, while giving operators the option of determining the fuel according to cost and availability.

**www.wartsila.com**

## Norsafe Continues Expansion

Norsafe opened a new service station in Perth, Australia, the center for the Australian offshore oil and gas industry. The new establishment will strengthen after sales services and the supply of spare parts for Norsafe products in the Australasia region, with staff and facilities now located closer to existing and prospective clients. The new service office also has a 350m² workshop for refurbishment and repair of lifeboats and is fully supported by the nearest Singapore service station.

**www.norsafe.com**

## Black & Veatch, Wison Jointly Pursue Offshore LNG Projects

Shanghai-based Wison Offshore & Marine Ltd., a subsidiary of the Wison Group, announced the signing of a Memorandum of Understanding with Black & Veatch to jointly pursue barge-based natural gas liquefaction facility projects on an exclusive basis. Under the agreement, Wison will hold responsibility for barge design and engineering, overall project management, construction, delivery and financing of the integrated facility. Black & Veatch will provide the basic and detailed LNG plant designs, supply certain LNG equipment and components as well as provide commissioning services and process guarantees. The solution deploys Black & Veatch's patented PRICO liquefaction technology.

**www.wison.com**
**www.bv.com**

## EMP, AIMS Promote Eco-friendly Shipping

Eco Marine Power (EMP) signed a Memorandum of Understanding (MOU) with AIMS Global Engineering (AIMS) of Kuala Terengganu, Malaysia to market and develop renewable energy solutions for shipping. The companies will initially focus on a project to complete the detailed design of the Medaka eco-commuter ferry with the aim to start marketing this innovative solar-electric urban passenger ferry across the Asia-Pacific Region later this year. The Medaka eco-commuter ferry will incorporate a range of technologies including hybrid marine propulsion, a data management system, Lithium-ion storage modules and a solar array incorporating flexible solar panels.

**www.ecomarinepower.com**
**aimsglobal.com.my**

## New JIP to Reduce Jacking Failure

To achieve higher availability, reduce the risk of gear failure and lower the life cycle cost, DNV is inviting the industry to participate in a Joint Industry Project (JIP). The project's main focus will be on defining best practices in the maintenance and inspection of jacking gears. Based on their respective backgrounds as a classification society and recognized service supplier, DNV and Dutch company WillTeco have now initiated a project to improve the inspection and maintenance of jacking gears. The JIP's goal is to develop a recommended practice document that describes the solution to achieve higher availability and at the same time reduces the risk of jacking gear failure. The lifecycle cost will also be on the agenda. The JIP plans to collect and analyze experienced incidents, review current inspection and maintenance work supported by risk-based modeling and define and select best practices.

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

### AUTOMATIC IDENTIFICATION SYSTEM

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

### AUTOPILOT SYSTEMS

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

### BOAT BUILDING AND DESIGN

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

### CAPSTANS

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

### COATINGS/ CORROSION CONTROL/ PAINT

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

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

### COMPACTORS

Compactors Inc., PO Box 3173, Hilton Head Island, SC , tel:843 686-5503, Mike@compactorsinc.com

### CONTROL SYSTEM-MONITORING/STEERING

Prime Mover Controls, 3600 Gilmore Way, Burnaby BC

### CORDAGE

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

### CORROSION CONTROL

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

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

### COUPLINGS

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

### CRANE - HOIST - DERRICK - WHIRLEYS

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

### DECK MACHINERY- CARGO HANDLING EQUIPMENT

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

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

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

### DIESEL ENGINE- SPARE PARTS & REPAIR

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

### DRILLS

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

### DRIVESHAFTS

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

### ELECTRIC & CONTROL SYSTEMS

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

### ENGINES

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

### FANS

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

### FILTERS/FILTER SYSTEMS

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

### GALLEY EQUIPMENT

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

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

### HVAC

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

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

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### MARITIME TRAINING & SCHOOLS

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

### MEASURMENT & CONTROL PRODUCTS

Omega Engineering, 1 Omega Drive, Stamford, CT

### METEOROLOGICAL INSTRUMENTS

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

### NAV/COMM EQUIPMENT

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

### PAINTS AND ANTI FOULANTS

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

### PARTS LOCATOR SERVICE

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

### PIPE FITTINGS/CUTTINGS/CONNECTING/ SYSTEMS

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

### PROPULSION EQUIPMENT

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

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

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Rustibus, 2901 West Sam Houston Pkwy, North Suite E-325, Houston, TX 36652, USA , tel:(832) 203-7170, fax:(832) 203-7171, houston@rustibus.com , www.rustibus.com

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

### SHIPBUILDING-REPAIRS, MAINTENANCE, DRYDOCKING

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

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

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### TURBOCHARGERS

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- Ensure that all jobs are properly estimated and accurate purchase orders are issued
- Travel to shipyards and witness repairs and inspections with shipyards, regulatory agencies and outside contractors
- Process and approve invoices from outside contractors as per company procedures

**QUALIFICATIONS AND REQUIREMENTS:**
- Degree from a maritime college in engineering
- Minimum of eight (8) years shore side experience
- Current clean drivers license
- Current Transportation Worker Identification Card (TWIC)

**PERSONAL ATTRIBUTES:**
- Strong communication skills with the ability to work with vessel crewmembers and outside contractors
- Able to multi-task with strong problem solving skills in a fast paced environment and work well under pressure
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- TWIC
- GMDSS operator/maintainer a plus

**Asst Engineer**
Qualifications:
- Degree from Merchant Marine Academy or 3 year's experience working on tugs of at least 2,000 HP
- MMD DDE 1,000 to 4,000 HP
- STCW
- TWIC

**Tankerman AB/Cargo Mate**
Qualifications:
- Minimum of a AB Tankerman PIC (BARGE)
- STCW
- TWIC

Send all resumes to
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