

DECEMBER 2011

# MARITIME REPORTER AND ENGINEERING NEWS

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charge at Wärtsilä

*Great Ships  
of 2011*

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## 2012 is Looking Up



Few companies in maritime and offshore will be sorry to see the year 2011 slip beneath the surface. While many entered the year buoyed by a rebound of sorts in 2010, the sputtering global economy (to be succinct, the ongoing political and financial tumult in the Euro zone and the stagnate U.S. economy) have conspired to make the second half of 2011 difficult for many. However, I believe that 2012 will mark the beginning of prosperity in maritime circles. Here's why:

### • Offshore Oil & Gas

In the aftermath of the Macondo well blow out and resulting disaster in the Gulf of Mexico, the business of drilling for oil and gas in the GOM region was shuttered. There are significant signs of life here and in fact around the world — as many vessel builders and equipment suppliers are reporting “tire kickers” are fast becoming contracts — and a vibrant offshore O&G industry significantly improves the prospects for many things maritime.

### • Emerging Markets

As one insider recently shared: Europe is up slightly, the U.S. is flat, while Asia, and the emerging markets in Africa and South America are hot. A recent interview with A.P. Møller - Mærsk A/S Group CEO **Nils Andersen** published in the November 7, 2011 edition of *Fortune* magazine is a great read and significant for a couple of reasons: one, it brings the maritime industry front and center to the general public; and two, he discusses how serving the infrastructure-challenged emerging markets, particularly in Africa, is in some cases dictating ship design innovation. Sticking closer to home, you can turn to page 14 and read a thorough primer from Blank Rome LLP's **Joan Bondareff** and **Ernest Chung** regarding U.S. companies capitalizing on opportunities in Brazil.

### • Regulation & Advancing Technology

I know that “regulation” is a figurative four-letter word in most any industry, but face it: would any but a handful of operators switch to cleaner burning, more efficient powerplants if not forced by IMO and EPA regulations? Looming emission targets and the overall emphasis on environmental issues has spurred a generational leap in vessel design, outfitting and operational technology and technique. While keeping current is a struggle for some, incorporating new technologies can help make the maritime mode of transport more efficient overall.

Tying this all together nicely is a bookend pair of features in this edition, starting on page 8 with our cover story, **Henrik Segercrantz**' sit down interview with **Björn Rosengren**, the new President and CEO at Wärtsilä who explains the company's growth strategy runs through Asia.

Starting page 18 is our annual collection of “Great Ships,” a 2011 class which includes an interesting and innovative mix of vessels large and small from around the world.

Gregory R. Trauthwein, Editor & Associate Publisher [trauthwein@marinelink.com](mailto:trauthwein@marinelink.com)



# Class' Move into Ship Design "Deeply Troubling"

ABS President and CEO Christopher J. Wiernicki has warned that a move into ship design by some class societies creates a fundamental conflict of interest with their role as independent providers of safety approval and certification.

Wiernicki used his keynote address at the Houston Mare Forum USA conference to question the rationale of some class societies in promoting energy-optimized designs created in-house, a development he described as 'deeply troubling'.

Wiernicki said the issue went to the heart of the underlying principle for classification, yet he was surprised to have heard no other voices questioning the growing intrusion of class into an area of ethical quicksand.

"The bottom line is that, since the objectives of the designer and the class society are so fundamentally different, having class societies promote themselves as designers is dangerous," said Wiernicki. "It undermines the basic fabric of the industry, it destroys the credibility of class as an independent third party, it has the potential to lead to poor

designs that could impact the credibility of the whole industry and it upsets the essential checks and balances between commercial pressures and effective safety and environmental risk management."

Having trained and qualified as a naval architect, Wiernicki said he was acutely aware of the differences between the design and certification disciplines and the dangers of crossing the line between them.

"When classification societies begin developing and promoting their own designs, the essential independence of class is compromised. If ABS were to promote an in-house design for an energy-efficient tanker, how could we retain our integrity if we were then to approve that same design for construction?"

With the International Maritime Organization's Energy Efficiency Design Index (EEDI) adopted for new vessel construction earlier this year, he acknowledged that the industry is moving into a period of innovative thinking with respect to basic ship design.

But this change should not have the unintended consequence of allowing class

societies to become ship designers in an attempt to increase their market share. Classification's independent reputation with underwriters, bankers, flag and port States would be fatally compromised if it designed the ships it also classes, he said.

"The EEDI will be the design scorecard of the future. Yet the current focus on energy-efficient designs and the prospect of tough market conditions is pushing class societies to move into the design space to either gain a commercial advantage or protect their existing position."

Wiernicki said discussions internally at ABS as well as with clients and shipyards left him unable to reconcile the concept of class acting as a ship designer which then reviews and approves the same design. He went on to state that class societies need to choose between being class societies and designers – they cannot be both.

"I will go even further and say that they should not and cannot be allowed to, because wearing both these critical hats undermines the basic safety integrity of our entire industry. This is not a class issue; this is an industry issue," he concluded.



**"The bottom line is that, since the objectives of the designer and the class society are so fundamentally different, having class societies promote themselves as designers is dangerous."**

**ABS President and CEO  
Christopher J. Wiernicki**



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# Björn Rosengren

President and CEO, Wärtsilä Corporation

## Wärtsilä - Global Growth Through Ever Stronger Presence in Asia

*Björn Rosengren was appointed President and CEO at Wärtsilä Corporation, as from September 1 this year. In a recent interview he told Maritime Reporter his views on the current business environment, the markets and about tasks ahead.*

*By Henrik Segercrantz*

Wärtsilä, a leading global provider of power solutions for ships and power plants, is a global market leader in some of its segments. On the maritime side, the group has over the years expanded from its core products, that of producing medium- and low-speed engines, into a provider of a wide portfolio of related products, such as propellers, waterjet propulsion, shaft seals, gears, automation, ship design, scrubbers and ballast water treatment systems, to mention some. This has taken place through the acquisition of key companies in these sectors, and through own development work. Production is increasingly built up in Asia.

The lifecycle of the products is emphasized by the group, and services have become a major part of its business. Research and Development are key elements of operations, providing solutions to meet the continuous need for increased efficiency and for decreased environmental footprint, and to develop new products. The growing LNG segment, the use of liquefied natural gas as engine fuel, is gaining much focus, and much work is also directed at bio-fuels and on fuel-cell power.

*Maritime Reporter* met with Mr. Rosengren a few weeks after he had presented the third quarter results of his new employer, the Wärtsilä Group, at the

headquarters in Helsinki, Finland. "Summarizing the third quarter results I think they were quite good considering how the surrounding world looks like today, with all the question marks that are out there. The strong cards were that we still see good growth in order intake, which is important, and we also see good profitability, in relation to our sales. The basis feels right," Mr. Rosengren reflects.

The year to date for Wärtsilä's Ship Power and Power Plants businesses have shown good order intake, relatively speaking, already matching that of 2009, and expected to beat the figures of 2010, some EUR4b. The sales figures are down year on year by four percent on group level, but profitability remains a high eleven percent. Particularly positive development has been seen in the Power Plants segment, a more even development in Services, but not so in Ship Power, which Rosengren also points out. "There are sectors with bigger challenges and one of them is of course the maritime sector, not the least because many shipowners today have difficulties with their profitability. Overcapacity and low freight rates result in the need to save in costs as much as possible, in investments and in costs in general. This is seen partly in our Services sector but also in the new-building orderbooks at the shipyards."

At the Q3 presentation Mr. Rosengren

had shown a graph of the development of global contracting activity within the maritime sector, reminding the analysts in the audience of the gloomy prevailing conditions, with the ship contracting volumes of 2010 and 2011, so far, only a third or a fourth of the boom levels a few years back. For the third quarter, the curves were pointing further down, particularly in deadweight tons if not in the number of vessels. "There are segments which perform better. One has been offshore and another is the LNG sector," Rosengren points out.

Both of these areas are strong for Wärtsilä, which has offset the effects of the current tough times "so far relatively well," as Rosengren puts it.

For the first time Wärtsilä also reported numbers from their joint ventures in engine manufacturing, and the reason for this was clear. "The order intake from the joint venture side was this quarter roughly the same size as that of our Ship Power operations. This is a result of our strategy which has now started to show results," Rosengren notes. Wärtsilä has a 50/50-owned joint venture for the manufacturing of dual-fuel engines for LNG carriers, with Hyundai Heavy Industries in South Korea. "44 of these ships were order during the third quarter, which is fantastic, and in this quarter we have already received engine orders for 16 of

these vessels. Our market share in these engines is nearly 90 percent, so I believe we will receive some more engine orders for these vessels in the coming quarters." Wärtsilä also operates a joint venture in Shanghai, Wärtsilä Qiyao Diesel Company, which focuses on auxiliary engine manufacturing. The total order intake from these joint ventures in the third quarter was EUR182m, nearly as much as that of Ship Power.

The company's activities in China also include production of low-speed engines, through a 27% share in a joint venture with China Shipbuilding Industry Corporation (50%) and Mitsubishi (23%). Also thrusters and propellers are produced in China. The company is currently building up a new joint venture in Nantong for the assembly of the Wärtsilä 32 and Wärtsilä 26 types of medium-speed marine engines, for the Chinese market. "This is very important for us. We talk about our 32 engine, which is our crown jewel. We set up this joint venture to strengthen our market shares in China," Rosengren points out.

The partners of Wärtsilä are the local community Nantong, the State, and a private investor. Wärtsilä provides the engine know-how and is also to build an industrial park around the plant, to provide the possibility for key suppliers to start manufacturing locally.

Maritime Reporter & Engineering News

"We will work much on setting up local manufacturing of engine components in order to receive a competitive cost structure."

The markets in China and in Asia in general are very important for Wärtsilä. Rosengren says their position is unique, for a Western company, in that 40 percent of business comes from Asia. "On the Power Plant side we see a number of key countries and markets globally, but thinking at Ship Power, we talk above all about South Korea, China and somewhat Japan," he says. He notes that Japan has it much more difficult now due to their high currency exchange rate which results in high manufacturing costs. But still, the engines for the local Japanese market are manufactured in Japan. "The big markets for us are Korea and China and this is how it will be also when looking forward."

"Another interesting market is Brazil, which we believe in much. In order to be able to sell to the big companies in Brazil, such as Petrobras and VALE, you have to have more than 60 percent manufactured locally," Rosengren points out. In Brazil, Wärtsilä has a licence agreement with Nuclebras Equipamentos Pesados S.A., NUCLEP, which grants NUCLEP the right to manufacture Wärtsilä's electronically-controlled common-rail two-stroke marine diesel engines. Joint production is now being planned, through a letter of intent signed in February this year.

Wärtsilä's Power Plants segment is very active in marketing its power plants for the US market, also for providing back-up power. On the Ship Power side, Wärtsilä recently received the order for the dual-fuel engines for the first two U.S. flagged offshore supply vessel to run on environmentally beneficial LNG, the newbuildings for Harvey Gulf International Marine. This order includes the LNG fuel storage and handling components and also the electrical and automation package and the complete electric propulsion system. Wärtsilä also recently signed a cooperation agreement with Shell Oil Company, producing oil and gas also in the Gulf of Mexico, aiming at promoting and accelerating the use of liquefied natural gas as a marine fuel. The cooperation first focuses on supplies from the US Gulf Coast, and then later to expand to cover a broader geographical range. Supplies of low cost, low emissions LNG fuel will be made available to Wärtsilä natural gas powered vessel operators and to other customers, by Shell. "It is in our strategy to further develop the gas side regarding gas engines and the usage of gas as fuel," Rosengren comments this agreement. "An important part of making gas an alternative to heavy fuel oil is a good distribution network."

In tough world market conditions the focus on increased productivity becomes even more important, and that of adjusting production capacity to demand. In 2009 Wärtsilä initiated restructuring programs aiming at annual savings of approximately EUR130m. The restructuring will be finalized this year and is almost completed. It included a staff cut of some 1,800 people. "Our organisation is now adapted to the current orderbook size. We have no plans in this situation to start a new such program. If the world crashes we have to look at that separately, but as things look like now, the organisation

feels right," Rosengren says calmly. He though adds: "On the offshore vessel side, competition is increasing and also the price pressure, which is worrying."

Reflecting on the current markets and on Wärtsilä's strengths, Rosengren points out the different segments of Wärtsilä, providing a balance. "We have Power Plants, which is doing well. We have Services, which does not grow much right now but has stayed on a quite constant level. Then we have Ship Power, which is growing compared to last year, but is still on a very low level compared to what one was used to before 2008. What is important now is to keep our market shares in the segments which move. This is important." He also sees new opportunities within the gas sector, for LNG carriers but also for other types of vessels. "With our dual-fuel engines we feel we have a good position here. We do not know exactly how long time it will take for this market to take effect, but it is completely obvious that the environmental regulations on SOx and NOx will affect this market. With the gas engines we have we can fulfil the environmental requirements of the SECA and ECA restricted areas. We can help our clients to fulfil existing and coming regulations, both on the ballast water side and what comes to emissions. This is an important area for us, and an area in which we will invest much and where we see much potential." How big can this sector become, for you? "We do not have exact data on that yet. We know that on the ballast water side, between 60,000 and 70,000 vessels have to be converted, according to a North-American consulting company. If we look at the cost which has to be invested on each of these vessels, it is between half a million and four million US dollars, we talk about very much money. On the emission side the numbers are even bigger, but over a longer time frame. The ballast water side is to come first." Wärtsilä has indeed the right structure for this mega-size conversion process ahead, to provide the new equipment needed onboard the world fleet. The group has service centres at 160 locations and more than 7,000 service technicians placed globally. Before his appointment as President and CEO of Wärtsilä, Björn Rosengren lived in Shanghai for one year as Senior Executive Vice President for the big Swedish industrial company Atlas Copco AB. He headed the Construction and Mining Technique operations of the group, which has some 68 production sites in 20 countries and employs some 33,000 people, and as of year 2010 with China as its largest single market. One can understand that Mr. Rosengren shares the views of the importance of Asia with the Board of Wärtsilä Corporation. At 52 years of age, he has headed a number of companies during his career. He graduated as a M.Sc. in Technology at Chalmers in Gothenburg, Sweden, back in 1985. "I like China very much. It is easy to live there nowadays," he tells Maritime Reporter. "If you want to be such a big company as Wärtsilä, calling itself a world leading company, it is very important also to have a leading position in China. Otherwise I think things will become difficult in the future. One has to be present and one has to be able to adapt the cost structure of your products for the market. If one does not succeed in this, it will become very difficult going forward."

**The company's activities in China also include production of low-speed engines, through a 27% share in a joint venture with China Shipbuilding Industry Corporation (50%) and Mitsubishi (23%).**

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# Seafarers and Shore Leave

**Domestic Port Security as it relates to visiting mariners remains nothing more than a charade, intended to make the general public feel a little bit better.**

**Reader response to my first column tells how and why.**

by Joe Keefe, posted November 30, 2011

My last MarPro entry (<http://www.maritimeprofessional.com/Blogs/The-Final-Word-with-Joseph-Keefe/November-2011/Seafarers-and-Shore-Leave.aspx>) garnered more than a little attention with multiple posts to the web site from readers and a raft of E-mails. The original piece involved a look at a recent GAO report that examined, among other things, "Risks Posed by Seafarers." To say that the report was an eye-opener in terms of misguided priorities would not be overstating the case. As a minimum, it gives you a hint as to why someone might not want to go to sea in 2012. Most readers seemed to agree that the situation was indeed getting worse. And, while my focus went towards the full breadth of what sends potential mariners fleeing for land, the issue of shore leave (or lack thereof) is clearly a sore point – maybe THE point – for many.

One E-mail came from an old friend who is still at sea. He wrote to me this week, "Here's a little story about Seafarer's and Shore Leave: I arrived by (US flag) tug and barge at a refinery on the U.S. East Coast. We wanted to get to the store to pick up some fresh produce and a couple gallons of milk. Two of us walked from our dock about a quarter-mile through the refinery, past storage tanks, under pipelines and along a pier where a VLCC was discharging. We got to the main gate where the security guard told us that to get through the gate we would have to have a security escort. Knowing full well what the office would say about hiring an outside contractor to escort us one giant step round-trip, we tried to convince the security guard that we were harmless and just wanted to make a quick trip to the grocery store. He was steadfast and refused to allow us to pass. So, we retraced our steps through the terminal past the storage tanks, under the pipelines and by the VLCC, completely unchallenged and unescorted and returned to the tug empty-handed. I really felt secure knowing that a hard-working and diligent person was manning the gate to keep us safe."

It's a sad story but one that resonates across dozens of ports nationwide. The bottom line is that if the effort is to keep seamen from going ashore – our own mariners, for crying out loud (all of whom possess TWIC cards that deem them safe, right?) – then the real emphasis should be on protecting the facility first. In the case depicted above, it is clear that no one is being protected from anybody. Along the way, the rights of seafarers are being abridged under a broken rule that is haphazardly applied in an uneven manner. It doesn't have to be this way. Let me explain why:

In another "Joe Keefe" sea story, I was sailing on the U.S. West coast in the summer of 1979 on a VLCC running back and forth from Valdez, AK to various stops in Washington and California. Just a

cadet at the time, I didn't have a whole lot of responsibility and I often tried to get ashore when we were in port. On our first voyage up to Valdez, I decided to go for a run. Descending the gangway, I broke into a trot and headed out on that quarter-mile jetty so familiar to the myriad mariners who have berthed there 1,000 times. At the end of the pier, I turned right into the tank farm area and looked to continue my run. Or so I thought.

Within 90 seconds, I was cut off by a speeding SUV with flashing lights and two very unfriendly security guards. One of them asked brusquely, "Where do you think you are going?" I paused, caught my breath and said, "Um, running?" In way of response, the big one snarled, "Get in the car." I didn't need to be told twice. Brought all the way back to the ship, I was told not to come ashore again without the requisite escort – which could be had by a simple radio call to the dock. Later, I did just that and they drove me to the front gate and then even called me a cab. That's how to do security.

At the Valdez crude oil terminal, back then, the real concern was that clueless cadets made tasty snacks for the bears which could plainly be seen via binoculars (from the safety of the ship) playing in the massive tank farm on the hill. Sure, security for the number one source of domestic crude oil (at that time) was a factor, too. Unlike our present day Mate on the east coast, no doubt I was also under video surveillance from the nanosecond that I started my lazy jog down the pier.

The point is easy to see: if the world's merchant seafarers pose such an ominous threat to U.S. infrastructure, then do the security job properly or not at all. The restrictions in place at the moment represent no more than a paper tiger; a charade to make the general public feel a little better while making life miserable for the very folks who largely comprise the vehicle to make the American way of life possible. A little more of this kind of treatment is bound to give those who still go to sea plenty of cause to question that decision.

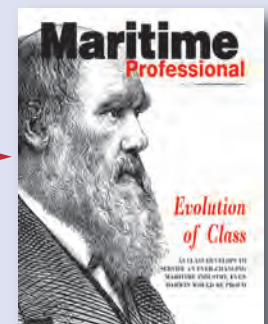
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Global Exchange Events, a rising star in the creation of industry-leading Hosted Buyer Events, is redefining commercial marine industry B2B events with the creation of Work Boats Exchange, which will be held April 9-12, 2012 at the Ritz-Carlton Fort Lauderdale.

**“We see this as the perfect complement to trade shows,”** said Rob Ingham, CEO of Exchange Events. **“After participants have had a chance to really see what’s out there at the shows, our events offer a second round of very focused one-on-one meetings between fleet owners and marine suppliers that are ready to discuss new business development and close deals. It just works.”**

Maritime Reporter & Engineering News, an industry-leading periodical published by New Wave Media LLC, will act as the exclusive sponsoring publication of Work Boats Exchange. **“The support of New Wave Media and their innovative publications can’t be overstated,”** said Karen Kelly, EVP of the Work Boats Exchange. **“We know how valuable our events are for promoting partnerships and we’re thrilled to be working with Rob Howard (Senior VP, New Wave Media/Marine Link) and his team on the commercial marine industry’s newest hosted buyer event.”**

**“We are very excited to be a part of this amazing new format for B2B events in the maritime industry,”** says Rob Howard, Senior VP, New Wave Media. **“Work Boats Exchange is about more than just sales; three focused days of networking and meetings will positively affect the entire industry and we’re looking forward to spending time with so many highly respected fleet owners and suppliers.”**

Work Boats Exchange ([www.workboatexchange.com](http://www.workboatexchange.com)) gives fleet owners and commercial marine suppliers the most direct, personal and cost-effective way to connect, network and develop long-lasting business relationships. The event takes place in Fort Lauderdale at the luxurious Ritz-Carlton Fort Lauderdale on April 9-12, 2012.

**For more information or to qualify contact**  
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## Implications of the

# eNav Strategy

Virtually everyone is, by now, familiar with the concept of electronic navigation, also called eNavigation or eNav. The problem is that the term means different things to different people. Historically, it started with radio beacons. Radar, loran, and GPS have been added over time. Now we have AIS and electronic charting. Most mariners view this as an increasingly sophisticated set of tools installed on the ship to improve the ability to avoid collisions, groundings, and related casualties. That is only part of the story. The International Maritime Organization (IMO), the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA), and various flag administrations take a broader view of the role of eNav. They define eNav as “the harmonized collection, integration, exchange, presentation, and analysis of marine information onboard and ashore by electronic means to enhance berth to berth navigation and related services for safety and security at sea and protection of the marine environment.” The shoreside aspect greatly increases the complexity of the eNav system. The goal is not only to make the various eNav tools interoperable on a ship (a task that has largely been accomplished), but to integrate those shipboard systems with counterparts ashore. It is the design, construction, and operation of those shoreside components, along with the interconnectivity with ships, that lead to the need for an overarching eNav strategy. Development of an eNav strategy commenced in December 2005 with the submittal to the IMO’s Maritime Safety Committee (MSC) of a formal proposal by Japan, the Marshall Islands, the Netherlands, Norway, Singapore, the United Kingdom, and the United States for development of an E-Navigation Strategy. As stated in their joint submittal: “The aim should be to develop a strategic vision for the utilization of existing and new navigational tools, in particular electronic tools, in a holistic and systematic manner.”

The authors of the proposal acknowledged that its scope was broad. At the same time they expressed a belief that it was timely and appropriate for the IMO



**Air traffic controllers plot the positions of aircraft on a wall-mounted display, circa 1950. Will control of ships at sea evolve as did air traffic control?**

to develop a strategic vision for incorporating the use of new technologies in a structured way and ensuring that their use was compliant with the various electronic navigational and communication technologies and services that are already available. The aim of their proposal was to develop an overarching accurate, secure, and cost-effective system with the potential to provide global coverage for vessels of all sizes. The submittal recognized that implementation of this new strategic vision might require modification of working methods and navigational tools, such as charts, bridge display equipment, electronic aids to navigation, communications, and shore infrastructure. Following discussion of the proposal, the MSC decided in May 2006 to include in the work programs of the Safety of Navigation (NAV) and Radio-communications and Search and Rescue (COMSAR) Sub-Committees a high priority item on development of an eNav strategy, with a target completion date of 2008. The Sub-Committee on Standards of Training and Watchkeeping (STW) was later brought into the project. The MSC noted that the basic technology for such an innovative step is already available. The challenge lies in ensuring the availability of the various components and using that availability effectively in order to simplify, to the benefit of the mariner, the display of the occasional

local navigational environment.

Development of an eNav strategy was identified by Secretary-General Efthimios Mitropoulos in 2007 as one of the IMO’s highest priorities.

The eNav strategy was officially approved at the eighty-fifth session of the Maritime Safety Committee (MSC 85) on December 19, 2008. It is sweeping in its scope and potentially far-reaching in its implications. The strategy envisions navigation systems on the ship that benefit from the integration of own ship sensors, supporting information (largely from shoreside sources), a standard user interface, and a comprehensive system for managing guard zones and alerts. Core elements of the system would actively engage the mariner in the process of navigation to carry out those duties in an efficient manner while preventing distraction and overburdening. Based on my limited experience, this idyllic goal is more easily defined than attained.

Meanwhile, the management of vessel traffic and related services ashore would be enhanced through better provision, coordination, and exchange of comprehensive data in formats that will be more easily understood and utilized by the shore-based operators in support of vessel safety and efficiency. As with the shipborne component, I see this as technically feasible but unlikely. I can just imagine a VTM center watchstander in

New York, Rotterdam, or Shanghai trying to anticipate a collision or grounding and issuing a warning (or order) to the deck watch officer on the ship (or two ships) while being flooded with and having to evaluate a multitude of detailed information from every ship within range.

This end-state eNav system would be supported by an infrastructure providing authorized seamless information transfer on board ship, between ships, between ship and shore, and between shore authorities and other parties with many related (but vaguely defined) benefits. Potentially massive amounts of information (such as tides, currents, water heights, wind, weather, status of aids to navigation, marine traffic conditions, etc.) from shoreside sources would be collected, collated, and made available to ships. At the same time, large amounts of information about the situation on the ship would be collected and transmitted to authorities ashore on a real-time basis.

To me personally, the most revolutionary provision in the eNav strategy document is the following:

In human reliability analysis terms, the presence of someone checking the decision-making process improves reliability by a factor of 10. If e-navigation could assist in improving this aspect, both by well-designed onboard systems and [by] closer cooperation with vessel traffic management (VTM) instruments and

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systems, risk of collisions and groundings and their inherent liabilities could be dramatically reduced. This clearly presages a move toward the traffic control system utilized in the aviation sector. I have two divergent views on this development, which are impossible to reconcile. First, I accept that a large percentage of marine casualties are caused solely or primarily by human error and/or poor judgment. One only needs to recall the Titanic or the Exxon Valdez for pertinent examples. Secondly, I am not convinced that people sitting in a darkened room ashore can do a significantly better job than a trained deck watch officer on the bridge. While someone in a VTM center might have counseled the master of the Titanic to reduce speed, it is unlikely that such a center would have been monitoring the ship in mid-ocean. With regard to the Exxon Valdez, the grounding occurred in part because the helmsman did not realize that the ship was operating on auto-pilot. It only took a few minutes to realize the error, but by then the die had been cast. It is possible that someone in a VTM center might have caught the mistake before the deck watch officer did, but doubtful. The eNav strategy envisions a significantly expanded data exchange system between ship and shore that would allow shoreside authorities to remotely determine such things as the make and model of the ECDIS, GPS, and radar systems on the ship and whether their operating systems are up to date. The shipboard navigation system could be closely coupled with that of the VTM center to allow for increased shoreside supervision of vessel navigation in congested waters. Shoreside authorities might eventually have the capability to remotely alter a ship's AIS voyage details if those details are determined to be out of date or erroneous. All of these capabilities are being undertaken with little awareness by or input from the average mariner.

Please do not get me wrong. I strongly support technological improvement. For example, I think that the ECDIS should automatically input the ship's current draft as updated by hull sensors (plus a cushion of about 10%) and establish "no-go" areas where audible warnings would activate on the bridge and in the master's cabin if anyone tries to lay a course through or the vessel wanders into such an area. The same could be done with air draft. Weather, tides, currents, and water heights should be automatically downloaded and made available at the touch of a button. Google Maps have "street views" of roadways, showing what a driver should expect to see if traveling that particular road. Why can't mariners be provided the same thing from a waterway perspective, with significant landmarks labeled? There are numerous ways that technology can be harnessed to make life easier for the overworked mariner. I'm just not sure that those charged with developing the eNav strategy focused on these possibilities.

I am strongly in favor of providing mariners with all the information needed to perform their important duties. There are three caveats though. The information must be provided in a user-friendly manner. More importantly, the changes must be implemented in a manner that reduces, rather than increases, the workload of the mariner. Finally, any changes should be undertaken with due respect for the professionalism of the mariner.



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# BRAZIL

## *U.S. Companies Look to Brazil for New Market Opportunities*

By Joan Bondareff and Ernest Chung

While the U.S. economy may be in the doldrums, smart U.S. companies are looking increasingly to exports to help their bottom lines. A major market for U.S. exports is Brazil. This article examines new market opportunities in the oil and gas, shipbuilding and port infrastructure in Brazil, and identifies certain financing sources available to U.S. companies seeking to participate in these markets.

Brazil's growth in recent years has been amazing. Over the past 5 years, real GDP growth in Brazil has averaged 4.3% annually (as compared to 1.3% annually in the U.S.), reaching 7.5% in 2010. This growth will only be enhanced as Brazil prepares to host the final games of the soccer World Cup in 2014 and the Summer Olympics in 2016. Brazil is investing heavily in new infrastructure ahead of the games, with a significant amount of that construction focused in the State of Rio de Janeiro. Rio State forecasts \$102 billion in investments from 2011 through 2013, in such areas as oil and gas, energy, shipbuilding, steel production, ports and roads, sports complexes and hotels, and the environment. Investment in the State of Rio's oil and energy sectors alone is forecast at \$75 billion. Brazil is also investing \$2.7 billion in a Superport at Açú, to be completed in 2012 and forecast to handle 350 million tons a year.

### **OPPORTUNITIES FOR U.S. COMPANIES IN BRAZIL ENERGY & MARITIME MARKETS**

The boom in the Brazilian offshore oil and gas market, including a new market in pre-salt oil and gas reserves, is also providing multiple opportunities for U.S. maritime and energy companies. Petrobras, the partially state-owned oil and gas giant, is at the forefront of this growth. The company predicts investments of \$108 billion in domestic oil & gas exploration and production by 2014, which will include the acquisition of 53 new drilling units, 504 support ships, 84 production platforms and 30 oil tankers. While Petrobras expects a "good portion of these can be expected to be placed with [Brazilian] companies," there is room for U.S. companies to take advantage of this boom—and many are.

According to a recent study by Booz & Company cited by the Agência Nacional do Petróleo, Gás Natural e Biocom-



bustíveis (ANP), the Brazilian petroleum regulator, there are either few or no Brazilian suppliers in approximately 80% of the equipment categories that will be procured for pre-salt development, particularly in the case of high-technology equipment. In addition, significant opportunities exist for a wide variety of service providers focused on the maritime and energy sectors, such as providers of subsea engineering and installation services and vessel support services.

Due to the Brazilian Government's strict local content policies, which are expected to become only more stringent over time, forward-looking U.S. companies may consider establishing production facilities in Brazil, either alone or in partnership with Brazilian companies. Many U.S. companies are already on the ground in Brazil, such as Baker & Hughes, FMC and General Electric, to name a few. This trend is creating additional opportunities for U.S. companies all along the maritime and oil & gas supply chain, such as those engaged in de-

sign and engineering, materials fabrication, and vessel construction.

### **FINANCING OPPORTUNITIES FOR U.S. COMPANIES**

The U.S. Government offers a variety of financing programs, which can support U.S. companies intending to do business with Brazil. Such programs include those offered by the U.S. Maritime Agency (MARAD), and the Export-Import Bank of the United States (Eximbank). Other U.S. Government financing programs potentially available to U.S. exporters, not discussed in detail in this article, are offered through the Small Business Administration and the Overseas Private Investment Corporation (OPIC).

### **TITLE XI LOAN GUARANTEES FOR U.S. SHIPBUILDING EXPORTS TO BRAZIL**

The Title XI loan guarantee program administered by Marad can be used, in certain circumstances, to finance U.S. shipbuilding for the export market. In

March 2011, MARAD approved a \$241 million loan guarantee to Boldini, S.A. for the construction of five platform supply vessels expected to be chartered to Petrobras and built at Eastern Shipyard's facility in Panama City, Florida. This contract is expected to bring 300 new jobs to the Panama City, FL area, as well as enhance our balance of trade with Brazil, which is already in positive territory.

The terms of the Title XI program are exceedingly favorable, as long as it continues to exist, and include up to 25 year financing and guarantees of up to 85% of the amount of the loan. However, the Title XI program may be of limited value to U.S. shipyards going forward. The House has proposed a rescission of most of the remaining Title XI funds while the Senate is looking to rescind only one-half.

### **EXIMBANK FINANCING FOR U.S. EXPORTS TO BRAZIL**

Eximbank is actively implementing the President's stated goal of doubling U.S.





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Ernest W. Chung, partner at Blank Rome, concentrates his practice in the areas of project finance and development, and has significant experience representing borrowers and lenders on transactions involving U.S. Eximbank products. Email: [EChung@BlankRome.com](mailto:EChung@BlankRome.com); Tel: 212.885.5447

exports by 2014, and looking to assist exporters to Brazil. According to Fred Hochberg, the Chairman of Eximbank, "Brazil is a powerhouse among South American economies and offers tremendous opportunities for U.S. exporters in many sectors."

Eximbank offers several forms of financing, including loan guarantees, direct loans, letter of credit guarantees, and insurance. Generally, Eximbank guarantees are available to support 85% of the contract price of eligible U.S. goods and services with financings of up to 15 years (or 18 years in certain exceptional circumstances). In April 2009, Eximbank offered to consider up to \$2 billion in financing to secure the purchase of U.S. goods and services by Petrobras. Eximbank estimates that the financing will help create and maintain over 16,000 U.S. jobs.

To date, Eximbank has approved a request from JP Morgan Chase Bank, N.A, acting as the lender, for an Eximbank guarantee of a \$308 million loan facility for Petrobras, under Eximbank's medium-term loan guarantee program. According to Eximbank, this facility was made operative in May, 2011, and is being used to finance Petrobras's general purchases of U.S. manufactured oil and gas equipment and services. Exports by approximately 150 companies are being supported by this loan guarantee, including those by Dresser Rand, FMC Technologies, and National Oilwell Varco.

In March 2011, Eximbank announced that it had authorized \$1 billion in export credit financing for the State of Rio de Janeiro. As noted above, this is the staging area for many oil and gas projects as well as the focus of infrastructure development in anticipation of the World Cup and Olympics. This financing could be used to support U.S. exporters providing goods and services related to marine port or oil and gas infrastructure construction in the State of Rio.

Eximbank can also support working capital financing for exporters of U.S. goods and services to Brazil through its working capital guarantee program, and can insure export receivables originated by Brazilian customers of U.S. exporters.

#### CONCLUSIONS

Smart U.S. companies are looking to rapidly growing overseas markets for their next sales. Eximbank is a major source of financing for these sales. Congress should reauthorize this agency and let more deals benefit U.S. companies. For those deficit hawks, it's important to note that Eximbank does not get any U.S. tax dollars, but rather exists on fees and interest charges on all loan-related transactions. However, it does have to be reauthorized for FY2012, and legislation is presently pending in Congress to do just that. Reauthorization of Eximbank is strongly supported by the U.S. Chamber of Commerce and other business groups.

Congress should also stop and think about the potential growth in U.S. shipbuilding that the Brazilian market presents and encourage the Title XI program be used for this purpose. Finally, when considering infrastructure projects to finance in the U.S., we should not forget our own critical port infrastructure needs. Without a thriving port program, exports of U.S. goods and services to promising markets such as Brazil's will be adversely affected, undermining the Obama Administration's stated goal of stimulating the economy through growth in U.S. exports.



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*It is now proven that air lubrication leads to a reduction in power and consequently, leads to fuel savings thanks to the Joint Industry Projects PELS and SMOOTH. The projects have shown that air lubrication makes it possible to **reduce power by 15%** for an inland ship travelling at normal operational speeds.*

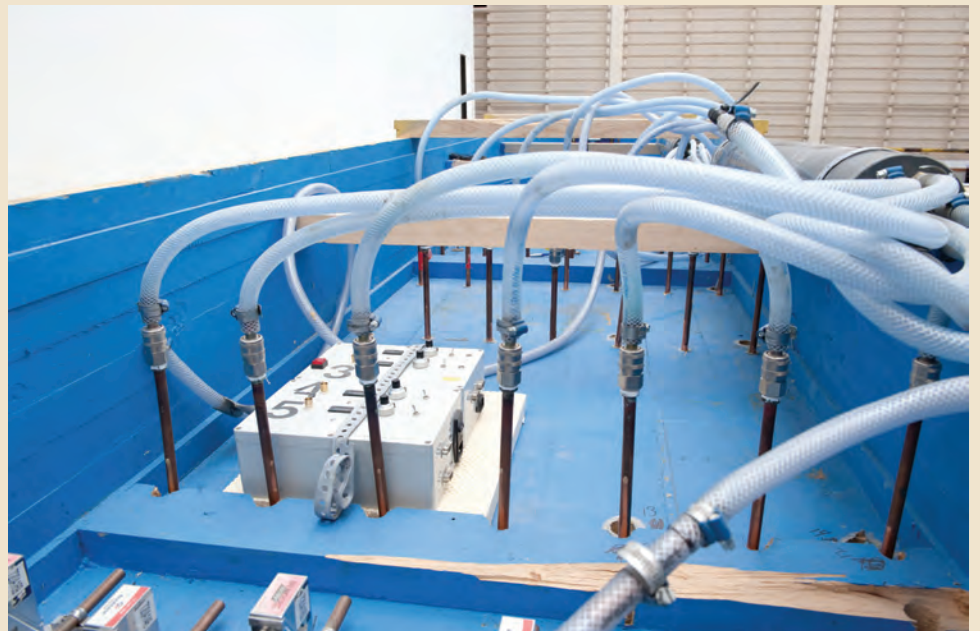
Although it is possible to optimize the wave pattern and the hull, skin friction is almost a constant. Reducing friction by injecting air has been tried before but actually accomplishing a power reduction has proven more difficult. The beneficial effect of air bubbles on the drag for boundary layers is well known but two important effects block its application for displacement ships. Small microbubbles are effective at reducing drag but are challenging to produce in a laboratory, let alone aboard a ship. Large bubbles that can be produced easily only remain in the boundary layer briefly and their beneficial effect dissipates quickly. This is difficult to verify at model scale when air bubbles do not have sufficient time to escape the boundary layer. Trials with a ship fitted with blowers supplying air through porous plates in the side and bottom plating showed a resistance reduction of only 1% to 2%.

### POWER SAVINGS

A series of cavities in the hull filled with air, whereby the boundary layer is removed altogether, proved to be far more effective. However, a poorly designed cavity can increase resistance and some hull forms are not suited. Together with DST and DAMEN Shipyards Group, a series of model tests and trials with the modified inland ship Kraichgau were performed and results showed net power savings as high as 15%. The ship performed equally well in both deep and shallow water. Tests where Kraichgau sailed unneringly close to passing ships, bridge pylons and riverbanks confirmed that the cavities remained filled with air and continued to operate as intended. Addressing questions such as how we can get bubbles to work and how much we really gain from air cavities, MARIN will continue its research on air lubrication.

### About the Author

Evert-Jan Foeth is project manager Ships at MARIN, the Maritime Research Institute Netherlands. MARIN offers simulation, model testing, full-scale measurements and training programs, to the shipbuilding and offshore industry and governments. Email: e.j.foeth@marin.nl



The air supply system of the air cavity ship was reproduced faithfully.





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# GREAT SHIPS / 11

*Even as the maritime industry struggles to shake the hangover of a global world economic meltdown, maritime companies — forced by legislation and the need to adopt modern, efficient tonnage — continued to churn out innovative new designs for the movement of cargo and people around the globe.*

## SONANGOL SAMBIZANGA

### *Largest Steam Turbine Driven LNG Carrier*

The **Sonangol Sambizanga**, the largest steam turbine driven LNG carrier in the world, was delivered to **Sonangol USA Company** by **Daewoo Shipbuilding and Marine Engineering Co., Ltd. (DSME)** which is building a series of three vessels, each measuring 291 x 43.4 m. The vessel's cargo area consists of four cargo tanks with a cumulative capacity of 160,500 cu. m. The vessel is designed environmentally friendly, excluding harmful materials, such as toxic smoke producing material, CFC, HCFC & Halon to name a few, and by preparing the list of potentially hazardous materials in accordance with IMO assembly resolution 962 'IMO Guidelines on ship recycling.' Additionally, a silicon antifouling paint was used to enhance energy efficiency by reducing friction resistance during voyages. The ship is robust with a design fatigue life of 40 years.



Shipbuilder ..... Daewoo Shipbuilding & Marine Engineering Co., Ltd.  
 Owner/Operator ..... Chevron Shipping Company  
 Designer ..... Daewoo Shipbuilding & Marine Engineering Co., Ltd.  
 Model testing ..... SSPA  
 Flag ..... Bahamas  
 IMO number ..... 9475600  
 Number of sister ships still on order ..... 2  
 Length, o.a. .... 291m  
 Length b.p. .... 280m  
 Breadth, molded ..... 43.4 m  
 Draft, scantling ..... 11.7 m  
 Draft, design ..... 12.7 m  
 Gross ..... 10,900

Deadweight, design ..... 75,400  
 Deadweight, scantling ..... 85,900  
 Speed, service ..... 20 knots  
 Cargo capacity ..... 160,500 cu. m.  
 Bunkers, Heavy oil ..... 6,200 cu. m.  
 Diesel oil ..... 450 cu. m.  
 Water ballast ..... 52,500 cu. m.  
 Daily fuel consumption (tonnes/day)  
 Main engine only ..... 196.6  
 Classification .....  
 ABS +A1(E) Liquefied Gas Carrier, +AMS, +ACCU, SH, SH-DLA, SFA(40), RES, SHCM, NIBS, CRC, +APS, +ES, POT, Port, RW, with description in the Record: Ship Type 2G Membrane Tank (Max. Pressure 25 kPaG, Min. Temperature -163°C), UWILD.

Main engine  
 ..... Design: Cross compound impulse turbine  
 ..... Model: UA-400  
 ..... Manufacturer: KHI  
 ..... Type of fuel: HFO, Fuel Gas, HFO  
 ..... and FG for main boiler  
 ..... Output of each engine: 28,300 kW x 90.3 rpm  
 Gearbox ..... KHI, Double reduction  
 Propeller(s) ..... Mecklenburger Metallguss  
 ..... Diameter: 8.6 m  
 ..... Speed: 90.3 rpm  
 Diesel-driven alternators ..... STX Engine Co.  
 Alternator make/type: ..... Self excited  
 ..... with a rotary AC exciter

Output/speed of each set: ..... 3,800 kW x 720 rpm  
 Deck cranes ..... Oriental  
 Mooring equipment ..... Rolls-Royce  
 Cargo pumps ..... 8 x Ebara, 1,750 m<sup>3</sup>/h (each)  
 Cargo control system ..... Kongsberg Maritime  
 Ballast control system ..... Hanla IMS  
 Complement  
 ..... Officers: 20  
 ..... Crew: 18  
 ..... Suez/Repair Crew: 6  
 ..... Single/double/other rooms: 43  
 Fire extinguishing system ..... Wilhelmsen/  
 ..... Dry powder system  
 Waste compactor ..... USON

## **SIFA** 317,000 dwt VLCC

The **317,000 DWT VLCC SIFA** built at **Hyundai Heavy Industries Co., Ltd. (HHI)** was delivered to **Oman Shipping**, on January 10, 2011. The ship has one continuous freeboard deck from stem to stern, transverse bulkheads, four longitudinal bulkheads, and double bottom and double side construction in the cargo space. SIFA is designed to carry three grades of cargo simultaneously, handled by three steam turbine cargo pumps, each delivering 5,500 cu. m./hr. and housed in a pump room at the forward of engine room. The valve control of the cargo and ballast system is hydraulically operated. Cargo control and monitoring covers ullage measurement, pump operation and inert gas systems. Radar beam type level gauges are fitted to cargo tanks while electro pneumatic type level gauges are used in the ballast tanks. The ship has five center cargo oil tanks, five pairs of side cargo oil tanks, one pair of slop tanks and water ballast tanks surrounding cargo oil tanks. The vessel is, among others, equipped with the highly advanced navigation system which supports integrated bridge operations of the ship such as route planning, maneuvering for collision and grounding avoidance and navigation monitoring. The vessel measures 333 x 60 x 30.4m, with a design draft of 21m. It is powered by a **Hyundai-Wärtsilä 7RT-flex82T** main engine with an MCR output of 31,640 kW at 80 rpm, enabling it to sail at a service speed of 15.55 knots when running at 85% MCR and reserving a 20% sea margin. Electric power is supplied by three main diesel generators with an output of 1,400 kW and one 300 kW emergency generator. Ballast water treatment system is installed to prevent and minimize risks to environment from the transfer of harmful aquatic organisms and pathogens in ballast water on board the vessel meeting the requirement of regulation D-2 of International Convention for the Control and Management of Ship's Ballast Water and Sediments, 2004. The ship is classed by **Lloyd's Register of Shipping +100A1 Double Hull Oil Tanker ESP, CSR, ShipRight(CM), +LMC, UMS, IGS, COW, LI, SPM, EP, \*IWS, NAV1** with descriptive notes of BWMP(S), PCWBT, SCM, SEA(HSS-4, L), Pt.Ht.



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## BIT VIKING *World's First LNG-Fuelled Product Tanker*

The **Bit Viking** is reportedly the world's first vessel in service whose main machinery has been converted to burn LNG as fuel. She is also the largest commercial vessel which is not an LNG tanker, to use LNG as fuel. After the conversion which was undertaken under the supervision of classification society Germanischer Lloyd (GL), the 25,000 dwt product tanker successfully completed sea trials. Owned by **Sweden's Tarbit Shipping**, Bit Viking now qualifies for lower nitrogen oxide (NOx) emission taxes under the Norwegian government's NOx fund scheme, due to substantial reductions in its carbon emissions.

Delivered in 2007 by **China's Shanghai Edwards Shipyard**, the Bit Viking is built with double engine rooms, propellers, steering gears, rudders and control systems. Having previously been powered by two 6-cylinder in-line **Wärtsilä 46** engines running on heavy fuel oil, the conversion has changed these to 6-cylinder in-line Wärtsilä 50DF dual-fuel engines operating on LNG, supplied by two 500 cubic meter LNG storage tanks on the fore deck.

During the conversion the vessel was fitted out with the new equipment necessary for the LNG operation. GL experts played a critical role by safeguarding the components manufactured and installed in the system — the piping, valves, safety equipment, and the tanks themselves — ensuring that they were all safely constructed, using the right type of materials and right type of welding.

The technical challenge in the conversion process was immense, said Ronnie-Torsten Westerman, Business Development Manager at GL. As a world first, the project required special attention on how to interpret the relevant class rules and how the flag administration would understand and accept the risk analysis. Said Westerman: "Special attention was given to the bunkering process and how it should be performed, since this is a critical operation and requires special expertise and equipment."

The conversion of the Bit Viking was also a good opportunity to evaluate whether GL's own rules for gas as ship fuel would prove up to the task. After the successful conversion Westerman is optimistic: "The existing rules are sufficient to cover such a conversion, as the Bit Viking underwent."

Within the short period of operation since her conversion, Bit Viking has achieved considerable benefits for the environment: greenhouse gases have been reduced by 20 to 25%; sulfur output has been cut entirely; NOx gases were cut by 90%; and particulate emissions reduced by 99%. An official emissions measurement has been conducted, but the final results are not available yet. "However, these figures are a strong indicator of the outcome," said Westerman.

The Bit Viking recommenced commercial trading on October 25, 2011. Ever since, she has been performing as expected and the crew has successfully bunkered her from the shore facility at

Risavika, South of Stavanger. The Bit Viking is trading along the entire length of the coast of Norway, from Oslo to Kirkenes, on behalf of oil major Statoil.

Bit Viking was the first vessel ever to undergo a conversion by Wärtsilä from heavy fuel oil to liquefied natural gas (LNG) operation.

The re-commissioned vessel is operated by Statoil along the Norwegian coastline.

This is the first marine installation in the world to involve converting Wärtsilä 46 engines to Wärtsilä 50DF engines, and the first 50DF marine installation with mechanical propulsion. By operating on LNG, the Bit Viking becomes one of the most environmental friendly product tankers in the world.

In August 2010, Wärtsilä announced that it had signed a turnkey project with Tarbit Shipping to convert the Bit Viking to LNG operation.

The scope of the conversion package from Wärtsilä included deck-mounted gas fuel systems, piping, two six-cylinder Wärtsilä 46 engines converted to Wärtsilä 50DF units with related control systems and all adjustments to the ship's systems necessitated by the conversion. The vessel's classification certificate was also updated.

The engines are connected directly to the propeller shafts through a reduction gearbox. This enables a significant improvement in propulsion efficiency, reduced fuel consumption, and corresponding reductions in emissions.

### NEW LNG STORAGE SYSTEM

Bit Viking uses **Wärtsilä's new LNG-Pac** system, which enables the safe and convenient onboard storage of LNG. The two 500 cu. m. LNG storage tanks are mounted on the deck to facilitate bunkering operations and permit the bunkering of LNG at a rate of 430 cu. m./hr. The storage tanks provide the vessel with 12 days of autonomous operation at 80 percent load, with the option to switch to marine gas oil if an extended range is required. When visiting EU ports, which have a 0.1 percent limit on sulfur emissions, the vessel operates on gas.

"Wärtsilä's unique expertise and experience with dual fuel technology, as well as with fuel conversion projects, were the main reasons for us choosing them. We appreciate the technological efficiency of the Wärtsilä solutions and the expert way in which this conversion project has been handled. We are proud that the 'Bit Viking' is now one of the world's most environmentally sustainable tankers in operation," said Anders Hermansson, Technical Manager, Tarbit Shipping.

"This is a major step for Wärtsilä in consolidating its market leading position in LNG solutions for the shipping industry. The successful sea trials with this vessel provide yet further validation of the viability of LNG as the marine fuel of the future. We anticipate that this development will rapidly accelerate during the coming few years," says Sören Karlsson, General Manager, Gas Applications, Ship Power Technology.

## ATLANTIC CONDOR

### *UT-755's ... the "Workhorse of the Offshore"*

Based on the prolific design of the UT 755 LN, and a commercially competitive bid, this vessel is favored by marine operators globally in the offshore sector. **Atlantic Towing Limited's (ATL)** bid for the supply vessel contract to EnCana's Deep Panuke natural gas play off Nova Scotia, Canada was a success. ATL's bid was based on a local Nova Scotia construction of the vessel through one of its affiliate companies **Irving Shipbuilding's Halifax Shipyard**, located on the waterfront in the heart of Port of Halifax, Nova Scotia. The name Atlantic Condor was ultimately selected for the UT 755 LN; keeping in line with ATL's other offshore vessels, Atlantic Hawk, Eagle, Osprey, Kingfisher and Raven. Excluding the Raven, all of ATL's offshore fleet was built at Irving's Halifax Shipyard between the years 1999 and 2003 and collectively these vessels represent the most modern offshore fleet in Canadian waters; comparable on a world scale in terms of quality, capability and reliability.

Delivered in late 2011, the Condor comes complete with IAI, EO, SF, TMON, DYNPOS-AUTR, OILREC, FIFI 1, LFL, and CLEAN design. It is powered by two Bergen 2560 KW main propulsion engines producing an output of approximately 6,900 bhp and connecting through to two Controllable Pitch props with high lift flap rudders. For additional maneuverability the Condor is outfitted with one 1200 bhp foreword retractable az-

imuth thruster accompanied by one forward 800 bhp tunnel thruster and two aft 800 bhp tunnel thrusters. With 635 cu. m. of clear deck space the Condor, by all accounts, lives up to the UT-755's nick name of the "workhorse of the offshore." The Condor is a testament to the quality and management of Irving shipbuilding and their 1500+ person work force. EnCana has contracted the Condor on a multiyear contract and it is now transporting general supplies and production equipment out to the Deep Panuke Production Field Center (PFC) located approximately 250 nautical miles South West of Halifax and in close proximity to Exxon/Mobil's Sable Project. EnCana selected Single Buoy Mooring N.V. (SBM) to build and operate the PFC for the life of the field which is expected to be 13 years. One of the cargos SBM requires the Condor to transport is large volumes of Methanol for its production operations. Methanol a Low Flashpoint Liquid (LFL) requires specialized training to handle and transport in compliance with both Federal and Provincial regulations. The crew of Condor has undergone this training along with other regulatory required courses in order to work in one of the Worlds harshest ice free environments. ATL welcomes the addition of the Atlantic Condor to its fleet and thanks its charterer, EnCana, for its trust in ATL to consistently deliver uninterrupted supply services.



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# AMALI

## LNG Carrier

Amali has been delivered Daewoo Shipbuilding & Marine Engineering Co. Ltd. to BGC of Brunei in August, 2011.

The vessel has a continuous upper deck with aft sunken deck, a raked stem with bulbous bow and a transom stern with open water type stern frame, two semi balanced rudders and two fixed pitch propellers driven by electric propulsion motors through reduction gears based on DF engines. The cargo area is to be of double hull, and cofferdams which are located at forward and after part of cargo area and between cargo tanks with double bottom construction, and consist of four center cargo tanks with Gaz Transport & Technigaz (GTT) membrane system (GT NO 96 E-2). The vessel is built with the Sealed LNG Carrier concept and applied the BV notation of CLEANSHIP(C) which is environmental class notation. It has the Green Passport according to IMO resolution and Certificates for the non-use of hazardous materials such as Asbestos, PCBs and CFCs.

Various robust systems such as no single fault tolerant, application software, EMC management plan and others have been applied for archiving ship's security and reliability and most major systems have been verified by Hazard and Operability Study (HAZOP) and Failure Mode and Effect Analysis (FMEA).



Shipbuilder	Daewoo Shipbuilding & Marine Engineering Co., Ltd.
Hull No	2277
Owner/Operator	BGC
Country	Brunei
Flag	Brunei
IMO number	9496317
Length o.a.	284.2 m
Length b.p.	273.2 m
Breadth molded	43.4m
Depth molded, to main deck	26 m
to upper deck	26 m
to other decks(sunken deck)	20.912m
Width of double skin, side	2,211mm
Width of double skin, bottom	3,200mm
Draft, scantling	11.5m
Draft, design	12.50m
Gross tons	98,490
Deadweight, Design	73,600 metric tons
Deadweight, scantling	84,100 metric tons
Speed, service (79.8 % MCR output)	

Speed, service (21% sea margin)	19.5 knots with 21% sea margin
Cargo capacity	147,000 cu. m.
Bunkers, Heavy oil	3,250 cu. m.
Bunkers, Diesel oil	3,100 cu. m.
Water ballast (m3)	52,000 cu. m.
Daily fuel consumption (tons/day)	
Main engine only	Approx. 114.4
Auxiliaries	Approx. 9.3
Classification society and notations	BV, +HULL, +MACH, Liquefied gas carrier/LNG, Ship type 2G(membrane tank, 0.25 bar, -163oC, 500 kg/m3), unrestricted navigation, +VeriSTAR-HULL, DFL 40, +AUT-UMS, +SYS-NEQ-1, +SYS-IBS, INWATERSURVEY, MON-SHAFT, CLEANSHIP(C).
Main generator engine(s)	4 x Wärtsilä 12V50DF and 6L50DF
Output of each engine	11,400 kW at 514 rpm (12V50DF)
	5,700 kW at 514 rpm (6L50DF)
Alternator make/type	AMG 1600LK14KSE & AMG 1120SM14LSE
Output/speed of each set	11,000 kW (12,222 kVA)

Output/speed of each set	11,000 kW (12,222 kVA)
Gearbox(es)	2 x Kawasaki Heavy Industries Ltd.
Boilers	2 x Aalborg Industries
Output, each boiler	6,500 kg/h x 0.7 MPa
Cargo cranes/cargo gear	2 x MacGREGOR Crane As
Mooring equipment	2 x Rolls Royce Marine As
Cargo tanks	4 x LNG
Cargo pumps	8 x Shinko
Cargo control system	Yokogawa Electric
Complement	CENTUM CS 3000
Officers	24
Crew	21
Bow thruster	Hyundai Heavy Industry Ltd.
Bridge control system	ABB AS
Fire detection system	Consilium Marine AB, CS400
Radars	2 x Japan Radio Co., Ltd.
	JMA-933B-SA & JMA-923B-7XA
Integrated bridge system	Japan Radio Co.
Delivery date	Aug. 01, 2011

# F WHALE

## A 320,000 DWT VLOO

Hyundai Heavy Industries Co., Ltd (HHI) delivered the 320,000 DWT VLOO F Whale to TMT (Today Makes Tomorrow), on January 3, 2011. *It is a ship that has the capability to switch wet and dry trades.* F Whale has one continuous freeboard deck from stem to stern with forecastle deck, transverse bulkheads and four longitudinal bulkheads in way of the cargo space. The ship has five center holds for oil or ore loading, five pairs of side cargo oil tanks, one pair of slop tanks and five pairs of water ballast tanks surrounding cargo tanks (holds).

The five center holds are accessed through 10 hatches closed by one panel side-rolling type covers for dry trade. All hatch covers are operated by a hydraulically driven rack-and-pinion mechanism and kept oil tight when the covers are in closed position.

From the initial design stage, the unique design of F Whale has been focused on operational efficiency for sav-

ing time in loading/unloading port. Six sets of electro-hydraulic, wire luffing type single jib crane with self-contained hydraulic power unit are fitted for handling of electro-hydraulic operated grab and dozers on deck. Each dozer and grab handling crane has the capacity of 30 metric ton S.W.L. on hook, and a 25m maximum outreach.

Two sets of electric motor driven ballast pumps are provided with a capacity of 4,000 cu. m./hr. to cope with a heavy loading rate.

Each set of electric motor driven, controllable pitch propeller type thruster is equipped at the bow and stern. The combined use of bow and stern thrusters is designed to eliminate, or greatly reduce, the need for harbor tugs and for optimal maneuvering time in port.

F Whale has been designed to carry crude oil and limited product oil compatible with the tank coating system for wet trade. Most main cargo pipes are

arranged in pipe ducts located beneath the deck to escape the risk of oil-spill and mechanical damages on pipes.

The vessel is able to load and discharge three different kinds of cargo oils simultaneously without contamination. The cargo pump system allows maximum unloading rate of cargo oil 16,500 cu. m./hr. with three main cargo pumps, which are driven by one variable speed controllable electric motor and a pair of three-stage steam turbines.

The cargo and ballast remote valve control systems are electro-hydraulically operated. Cargo control and monitoring cover ullage measurement, operation of pumps and inert gas systems, and manual control is also available.

Radar beam type level gauges have been fitted to cargo tanks, and electro pneumatic type level gauges are used in the ballast tanks. The vessel is, among others, equipped with the highly advanced navigation system which supports

integrated bridge operation such as route planning, maneuvering for collision and grounding avoidance and navigation monitoring.

The vessel measures 339.8 x 60 x 31 m, with a design draft of 22.3m. It is powered by a **Hyundai-Wärtsilä 7RT-flex82T** main engine. This develops 31,640 kW MCR at 80 rpm and drives the ship at 16.3 knots when running at 90% of MCR and allowing a 15% sea margin. The Ship is classed by **Lloyd's Register of Shipping**, +100A1 Ore or Oil Carrier, ESP, ShipRight (SDA, FDA, CM), +LMC, UMS, IGS, COW, LI, BWMP.

### F Whale Main Particulars

Length, o.a.	339.8m
Length, b.p.	327m
Breadth (molded)	60m
Depth (molded)	31m
Scantling draft (molded)	22.3m
Design draft (molded)	22.3m
Main engine	Hyundai-Wärtsilä



## VALE BRASIL *World's Largest Ore Carriers*

The world's largest ore carrier, **Vale Brasil**, was loaded for the first time on May 24, at Pier I at Ponta da Madeira Port Terminal (TPPM) in São Luís, Maranhão. The ship, which was loaded with 391,000 tons of iron ore, will now sail for Asia. Vale Brasil is the latest milestone in Vale's long history of investment in infrastructure, a key element for the competitiveness of Brazilian iron ore on the international market. "We don't stop investing and innovating. Vale's investments in infrastructure are the biggest ever made in the country, resulting in efficient logistics for our customers. We invested \$9b over the last six years and, in 2011 alone, a further \$5b will be invested in the integrated mine-railroad-port-shipping chain," said Integrated Operations executive director, Eduardo Bartolomeo.

Vale Brasil was ordered by **Vale** from **Daewoo Shipbuilding & Marine Engineering Co.** in South Korea. It is the biggest ore carrier in the world, with a 400,000-ton capacity, 362-m length and 65-m width. Vale Brasil is the first of seven ore carriers ordered by Vale from the South Korean shipyard, totaling an investment of \$748m.

Vale has also ordered 12 ships each with a capacity of 400,000 tons from the **Rongsheng Shipbuilding and Heavy Industries Shipyard** in China. These vessels, being built at the Chinese shipyard, involve a total investment of \$1.6b.

A highly efficient logistics infrastructure is a key element for competitiveness in the iron ore market. In order to maximize the efficiency of its operations and meet growing global demand, Vale is developing various initiatives to obtain economies of scale.

The ordered vessels will be part of the logistical solution between the company's maritime terminals in Brazil and Asian customers. The ore carriers have a high standard of safety and will contribute to reducing the cost of long haul maritime transportation of iron ore to steelmakers.

Vale's logistics innovate and raise competitiveness further

Besides owning 19 400,000-ton ships, Vale will have an additional 16 ships with the same dimensions, which will operate exclusively for the company under long-term contracts signed with ship owner partners. These 35 ships are due to be delivered between 2011 and 2013.

"With our fleet of our own and chartered ships, we will be able to reduce volatility in the freight market. Volatility does not only affect the freight cost, but

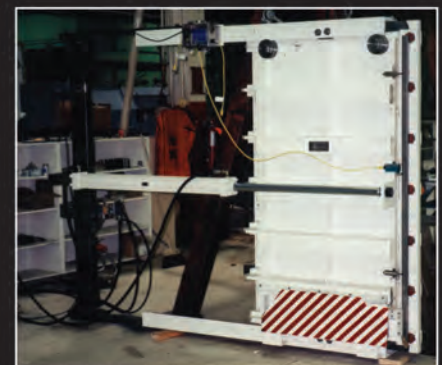
also the price of ore itself. As the new ships come into operation, the freight and ore costs will become more stable, benefiting Vale and its steelmaking cus-

tomers," said José Carlos Martins. From the concept to the basic design, the engineering involved in the world's biggest ore carriers is Brazilian. Developing the

design represented an enormous technological challenge and involved considerable innovation, and the desired results were achieved.

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# GDF SUEZ CAPE ANN & GDF SUEZ NEPTUNE

*Green focus for Höegh LNG SRVs*



Höegh LNG (together with its partner Mitsui OSK Lines), has proven its sound environmental credentials with two new shuttle and regasification vessels (SRVs) for GDF Suez. The vessels have many technological characteristics that set them apart from other vessels of their type.

Höegh LNG's President and Chief Executive Officer, Sveinung Støhle, said that the SRVs the GDF Suez Cape Ann and GDF Suez Neptune demonstrate the company's approach to sustainable shipping. "In our view, it is not enough merely to comply with applicable regulations and the demands of the charterer - we have an obligation to take a more proactive approach to utilize the best available proven technology to improve our environmental and safety performance," he said. The SRVs are equipped to store, transport and vaporize LNG, and to send out natural gas via the turret buoy which is connected to a subsea pipeline by means of a flexible riser.

The SRVs measure 283 x 43m, with a beam of 43.4m and a depth to upper deck of 26m. The vessels have a gross tonnage of 96,153gt each. They were built by Samsung Heavy Industries in Geoje Island, Korea and are jointly owned by Höegh LNG and Mitsui OSK Lines and are managed by Höegh LNG for GDF Suez under 20-year time charter agreements. The vessels will discharge natural gas under high pressure directly into the designated US Environmental Protection

Agency- permitted GDF Suez Neptune LNG Deep Water Port, offshore Massachusetts, but can also operate world-wide as a conventional LNG carrier.

The vessels operate on a closed loop regasification system with an intermediate loop, which complies with U.S. requirements and entails a minimal impact on the environment. Closed loop systems have no intake/discharge of seawater in the regasification process, which means that they do not harm the marine ecosystem by either taking in marine life into the plant or discharging cold water affecting the existing life. Also, this system ensures no risk of pollution from potential leaks in the seawater pumps and regasification system reaching the marine habitat.

Both vessels have been classed with DNV's Clean Notation and also have the classification society's Green Passport, covering all environmental issues throughout the vessels' lifecycle from construction to recycling.

Another characteristic that sets these vessels apart is the fuel system. The SRVs are both tri-fuel. This concept means that they are capable of being fuelled by marine diesel oil (MDO), heavy fuel oil (HFO) or natural gas. Dual fuel engines when running on natural gas are more environmentally friendly than engines that run on HFO as they eliminate sulfur oxide (SOx) and particulate matter (PM) emissions.

The regasification boilers onboard the

SRVs are gas-fired and have low nitrogen oxide (NOx) burners and both vessels are equipped with selective catalytic reduction (SCR), keeping emission below 5ppm. The SCR units fitted on the power generators reduce the NOx emissions of the vessels and by a very healthy margin - 0.2g/kWh while the current IMO requirement is around 13g/kWh. The oxidation catalysts installed on the power generators reduce the CO emissions to below 0.165g/kWh. By comparison, the current EU requirement for diesel engines (road traffic) is 4g/kWh. Höegh LNG also invested in an advanced biocide-free silicone-based anti-fouling system, developed by International Paint, an environmentally friendly coating solution which helps reduce fuel costs and reduces carbon output.

## STRENGTHENED TANKS

LNG vessels are typically classified by their cargo containment designs and Höegh LNG has chosen what are believed to be the 'strongest membrane tanks ever built' - reinforced GTT MkIII containment tank design with a capacity of 145,000 cu. m.

The GDF Suez Cape Ann and GDF Suez Neptune are fitted with state-of-the-art regasification skids by Hamworthy for a total maximum output capacity of approximately 21 million standard cubic meters of natural gas per day. The vessels are also capable of operating as standard LNG carriers.



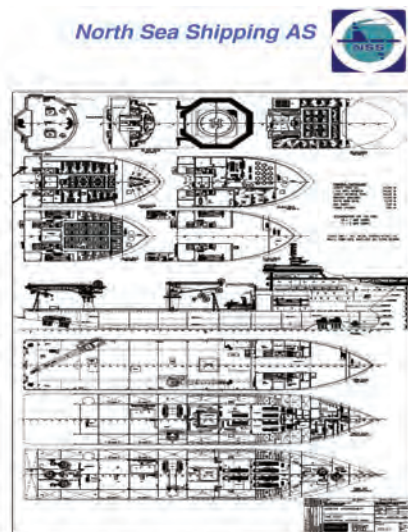
## SEAWAYS 20

*Multi-Purpose,  
DP2 Tug & OSV*

The Multi-purpose tug and offshore support vessel, Seaways 20, designed by Robert Allan Ltd. of Vancouver BC, and built by Keppel Singmarine Pte Ltd. Shipyard in Singapore has been delivered to its owners, Seaways International. This unique vessel is the latest of the Robert Allan Ltd. Rampage series of Offshore Support Tugs (OST) which was initially conceived to fill a gap seen in the offshore market for a high-performance, multi-function tug for towing, anchor-handling and for other many offshore support duties. Propulsion machinery comprises a pair of MaK GM 25C diesel engines; each rated 2970 kW at 750 rpm, each driving a Schottel SRP 3030 Z-drive with a 3400 mm diameter CP propeller in a nozzle. This combination delivered a rated Bollard Pull of more than 100 tons. A free running speed of 14.4 knots was achieved on trials. Maneuverability is enhanced by a controllable pitch type bow thrusters, Schottel STT2 FP, electric motor driven, rated at 500 kW each. The vessel is equipped with a DP2 system. Seaways 20 was assigned a Green Passport and ENVIRO+ notation by ABS. The vessel will implement required procedures to deal with ballast water, sewage, and garbage management. Seaways 20 is equipped with a Fi-Fi 1 system comprising two fire pumps, each rated 1600 cu. m./hr. and driven by the main engines through a front PTO. There are two combination water/foam monitors, each rated 1200 cu. m./hr., as well as a complete deluge system, fed via a branch of the FiFi system.

Owners .....	Seaways International
Builder .....	Keppel Singmarine Pte Ltd.
Length, o.a. ....	55m
Breadth, molded .....	15m
Depth, molded .....	7.3m
Draft, load Line .....	6.4m
DWT, loadline.....	1075 tons
GT.....	1715
Machinery .....	2 x MaK GM 25C diesel engines
Z-drive .....	2 x Schottel SRP 3030
Speed.....	14 knots
Classification.....	American Bureau of Shipping

# M/V NORTH SEA GIANT 160 m, 21,000 kW DP3 Vessel



Delivered by **Metalships & Dock** (Vigo, Spain) to Norway's **North Sea Shipping AS** in early 2011, the **M/V North Sea Giant** really matches her name, as the vessel measures 160 x 30m and is powered by **six GE 3500 kW main engines** in unison with six Leroy 3500 kW generators delivering a total of 21,000 kW. M/V North Sea Giant was **designed by Sawicon of Norway** and is touted by the owner as the most advanced DP3 vessel in the world.

M/V North Sea Giant is a subsea construction vessel built for cable laying, pipe laying, dredging and ROV support,

as well as well intervention, module handling & coiled tubing intervention. Designed to accommodate 120 (but upgradable to 199 with 58 single cabins, and 31 double cabins onboard) everything onboard is designed with a focus on redundancy.

The vessel features six generators split up in three zones, and with six separated engine rooms, meaning it can maintain DP3 ops with one system out of service.

M/V North Sea Giant is also equipped with one of the largest active heave compensated offshore crane on the market, the Hydramarine 400T knuckle boom crane type HMC4841, featuring 3000m of single line wire. On the aft of the vessel is a 50T active heave compensated crane with 2000m of wire.

The vessel is built for deep and ultra deep waters, and is designed to hold station via its 3 x 3800 kW Voith Schneider

aft, and 2 X 3800 KW forward propulsion units, in addition to a 2000 kW Rolls Royce tunnel thruster forward. Kongsberg supplied the Auto DP3 System.

It is equipped for flexibility, as its 7.2 x 7.2 m moonpool can easily be extended to 7.2 x 12.7 m. It is also equipped with 2 WROV protected with separate indoor ROV hangar.

The ship is constructed with DNV Clean Design and NAUT OSV class.

#### M/V North Sea Giant Main Particulars

Length, o.a.	160.9m
Length, b.p.	144m
Breadth	30m
Depth, Main Deck	10.7m
Draft, max	7.5m
DWT	12460
GT	23014
Deck Load	8800T
Class DnV +IA1, HELDK, DYNPOS-AUTRO, EODK(+), COMF-(V3), NAUT-OSV, CLEAN DESIGN	
Main Deck Open Area	2900 sq. m.
Fuel Oil	2000 cu. m.
Freshwater	1000 cu. m.
Main Engines	6 x GE 3500 kW
Main Generators	6 x Leroy 3500 kW
Emergency Engine	600 kW
Main Propulsion	3 x Voith Schneider 3800 kW
Forward Thrusters	2 x Voith Schneider 3800 kW
	1 x Rolls-Royce Tunnel Thruster 2000 kW
Crane	1 x Hydramarine 400T Knuckle Boom
	1 x Hydramarine 50T Knuckle Boom
Anti Rolling System	Voith Schneider
DP System	Kongsberg
Entertainment	SeaTel
Incinerator	Detegasa
Freshwater Generator	Alfa Laval
Radar	JRC
ECDIS	Telchart
DGPS & GPS	Saab
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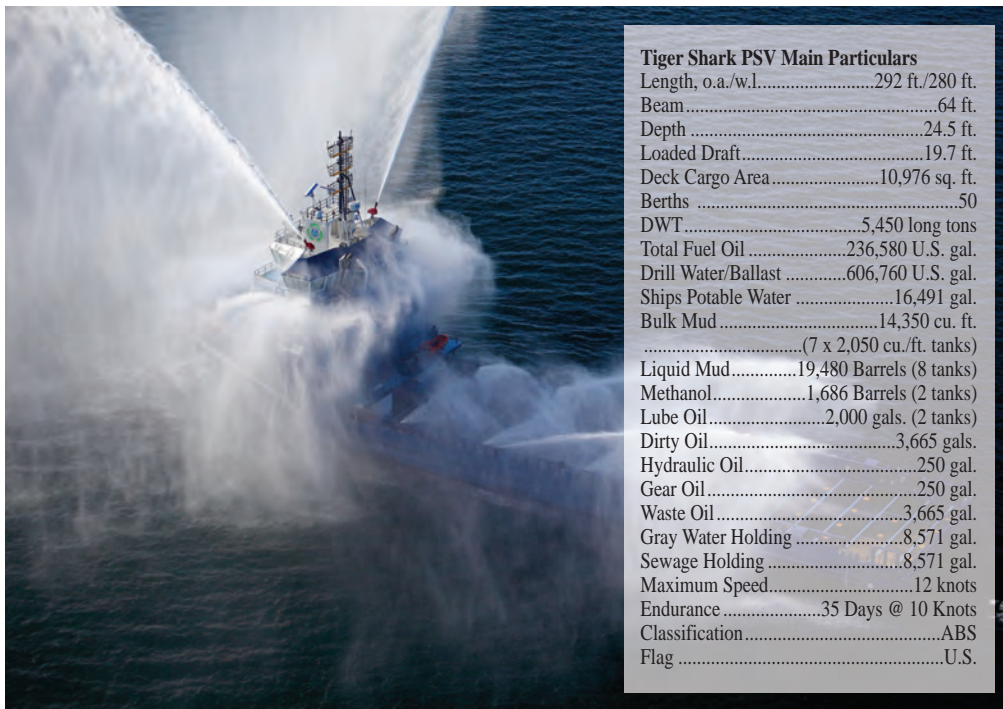
## TIGER SHARK CLASS PSV

### First of Three 292-ft. DP2 PSVs

Eastern Shipbuilding Group launched the first of three 292 ft. Tiger Shark-class Platform Supply Vessels (PSVs) for Harvey Gulf International Marine, LLC. The Harvey Supporter is scheduled to be delivered in December 2011. The Harvey Supporter is a DP II SOLAS-classed AC diesel-electric, twin Z-drive PSV measuring 292 x 64 x 24.5 ft. The vessel features four Cummings QSK60-DM 16-cylinder turbo-charged Tier II diesel generator engines that are rated 1825 kW at 1,800 rpm. Main propulsion is provided by two Schottel SRP 2020 FP Z-drives with nozzles rated at 2,500 kW at 1,025 rpm each for a total of


6,704 hp. Schottel also provided two STT 4 fixed pitch tunnel thrusters rated at 1,180 kW at 1,170 rpm each with direct coupled electric motors. The vessel will be capable of a maximum speed of 14 knots with a cruising speed of 12 knots.

Total below-deck capacities of the PSV include 275,000 gallons of fuel, 636,976 gallons of drill water, 19,500 BBL of liquid mud, 14,350 cu. ft. of bulk mud, 1,700 BBL of methanol and 17,191 gallons of potable water. The highly technical wheelhouse features the latest technology in Navigation and Communication equipment. All three vessels will be ABS classed.




Tiger Shark PSV Main Particulars	
Length, o.a./w.l.....	292 ft./280 ft.
Beam.....	64 ft.
Depth.....	24.5 ft.
Loaded Draft.....	19.7 ft.
Deck Cargo Area.....	10,976 sq. ft.
Berths.....	50
DWT.....	5,450 long tons
Total Fuel Oil.....	236,580 U.S. gal.
Drill Water/Ballast.....	606,760 U.S. gal.
Ships Potable Water.....	16,491 gal.
Bulk Mud.....	14,350 cu. ft.
	(7 x 2,050 cu./ft. tanks)
Liquid Mud.....	19,480 Barrels (8 tanks)
Methanol.....	1,686 Barrels (2 tanks)
Lube Oil.....	2,000 gals. (2 tanks)
Dirty Oil.....	3,665 gals.
Hydraulic Oil.....	250 gal.
Gear Oil.....	250 gal.
Waste Oil.....	3,665 gal.
Gray Water Holding.....	8,571 gal.
Sewage Holding.....	8,571 gal.
Maximum Speed.....	12 knots
Endurance.....	35 Days @ 10 Knots
Classification.....	ABS
Flag.....	U.S.

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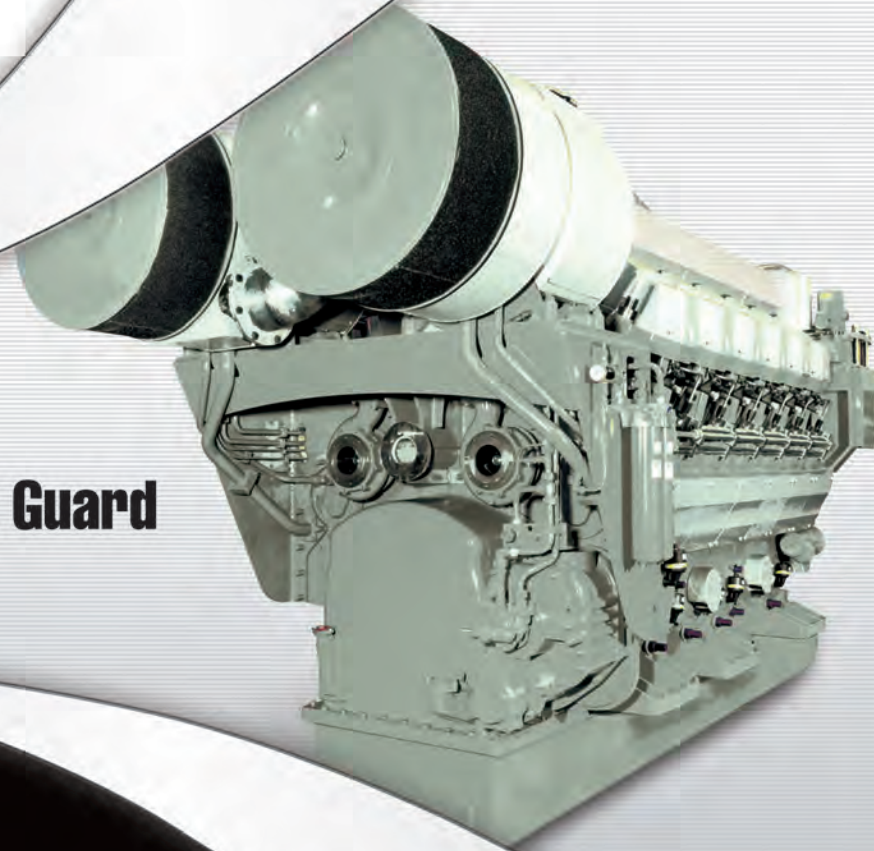


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## TUGELA

7,900 unit LCTC



The 7,900 unit large car and truck carrier **Tugela** built at **Hyundai Heavy Industries Co., Ltd.** (HHI) was delivered to **Wilhelmsen Lines Shipowning Malta Ltd.** on July 4, 2011. The vessel measures 229 x 32.26 x 34.7m, with a design draft of 10.3m. It is propelled by one MAN B&W 8S60ME-C8 engine, developing 19,040kW at 105 rpm, enabling it to sail at a service speed of 20.3 knots and burn approximately 69 tons of fuel per day courtesy of its electrically controlled engine.

The shaft generator installed in the propeller shaft line can generate the electric power of about 1,100 kW covering electricity that one set of generator has to take charge of, thereby contributing to the reduction in CO2 emission as a result of reduced running time of generator engines which burn more fuel during sea going. An integrated propeller rudder system can offer increased propulsive efficiency saving 3% of propulsion power.

Fuel oil tanks are constructed in double hull structure to protect the fuel oil tanks from external damages and to avoid any oil outflow from damaged tanks. The vessel's layout is arranged with 13 separate car decks including five liftable decks and her five liftable decks with huge clear height and bigger uniform load and axle load are highly beneficial to heavy car loading. The vessel is furnished with a wider stern ramp ensuring the enhanced loading efficiency. Permanent ballast of about 2,200 tons increases the stability and can achieve the high loading capacity at within the beam restriction of 32.26m. Total vehicle capacity is around 7,900 standard cars and deadweight is 28,800 tons at the summer load draught of 11.3m.

The Ship is classed by Det Norske Veritas, +1A1, Car Carrier RO/RO, E0, MCDK, BIS, NAUT-OC, TMON, F-AMC, CLEAN.

#### Main Particulars

Length, o.a.	229m
Length, b.p.	217.1m
Breadth, molded	32.3m
Depth, molded	34.7m
Draft, designed	10.3m
Draft, scantling	11.3m
Deadweight at design draft	22,260MT
Deadweight at scantling draft	28,830 MT
Main engine	Hyundai-B&W 8S60ME-C8
Ship's speed	20.3 knots

## SEEB VLCC

The VLCC **SEEB** was delivered by **Daewoo Shipbuilding & Marine Engineering to Oman Shipping Company (OSC)** in October 2011. The vessel has a continuous upper deck without forecastle, a raked stern with bulbous bow, a transom stern with open water type stern frame, a semi-balanced rudder and a fixed pitch propeller directly driven by a slow speed diesel engine. It is built with four longitudinal bulkheads and transverse bulkheads and has five pairs of side cargo tanks, five center cargo tanks, two slop tanks and wing and double bottom tanks. The pump room is located immediately forward of engine room. The engine room has been separated from the cargo spaces by means of FO tanks and pump room. The propulsion machinery has been located under the main deck aft, and the vessel's propulsion power is provided by a **Wartsila 7RT-flex82T** marine diesel engine directly coupled to a fixed pitch propeller through a shaftline. The main engine is installed in dedicated spaces in the engine room with a steel partition wall and, where necessary, openings to be provided for access and maintenance. The steam generating plant consists of two oil-fired auxiliary boilers and one exhaust gas economizer. The exhaust gas economizer uses waste heat from the main engine exhaust gas. The electric power generating plant consists of three diesel generators and one emergency generator. The living quarters, including the navigation bridge, are located on the main deck aft. A six-tier deckhouse provides accommodation for 50 and the vibration levels in living areas are designed to be especially low.



Shipbuilder	Daewoo Shipbuilding & Marine Engineering Co., Ltd.
Owner/Operator	Oman Shipping Company(OSC)
Flag	MALTA
IMO number	9500716
Length o.a./b.p.	333m/320m
Breadth, molded	60m
Depth molded to main deck	30.5m
Draft, scantling/design	22.5m/21m
Gross	164,350
DWT, design/scantling	290,800MT/318,000MT
Speed, service (85 %MCR output)	15.6 knots at the scantling draft
Cargo capacity, Liquid volume	356,000 cu. m.
Daily fuel consumption (tons/day) Main engine only	104.2
Classification	DNV
Main engine(s)	Wärtsila 7RT-flex82T
Cargo cranes/cargo gear	Cargotec, 20 ton
Cargo tanks	15
Cargo pumps	3 x Shinko, 5,500 cu. m./h x 150 mTH (each)
Cargo control system	Nakakita, Emerson
Water ballast Treatment System	OceanSaver; 2 sets x 4,000 m3/h
Complement	46
Bridge control system	Kongsberg
Fire detection system	Consillium
Radars/IBS	Kongsberg
Waste compactor	LOIPART, Model IP500

## DRILLSHIP BICENTENARIO

Daewoo Shipbuilding & Marine Engineering (DSME) delivered **Bicentenario**, the latest delivery from in the series of sixth generation drilling rigs. This unit has been built after taking into consideration of the lessons learned from previous vessels. Main features of the unit include:

- The 6th generation drilling rig for ultra deep water-depths (10,000 ft.) and drilling depths down to 35,000 ft.;
- Exploration and appraisal drilling in combination with test production;
- Drilling of production wells;
- Drilling and completion of subsea wells with installation of templates, pull-in operations and well intervention services;
- Work over and maintenance;
- Operational variable deck and column payload approximately 9,500 tons;
- Offline casing building in parallel to drilling operations;
- Station keeping by DP system as per DNV DYNPOS AUTRO and IMO DP class 3 rules
- 160 persons accommodation;
- Helicopter landing platform for type SIKORSKY S-61/ S-92



### Bicentenario Main Particulars

Type.....	Drillship
Owner/Operator.....	Grupo R/Pemex
Builder.....	DSME
Flag .....	Panama
Length, o.a./b.p. ....	119.2m/108.8m
Breadth molded.....	78.08m
Draft, design.....	23m
GT .....	42,885
Displacement .....	56,169 tons
Lightweight.....	30,171 tons
DWT, design.....	25,997
Speed, service.....	7.6 knots
Bunkers, Diesel oil .....	260 cu. m.
Water ballast .....	24,642 cu. m.
Propeller(s) .....	Flowserve
Diesel-driven alternators.....	Caterpillar 3616 DITA
Alternator make/type .....	Converteam
Crane .....	Liebherr Werk Nenzing GmbH
Mooring equipmen .....	Rolls-Royce
Hatch covers .....	SEBO TECH.Co.,Ltd.
Remote valve control system.....	Damcos(Emerson) with Converteam
Complement .....	120
Bridge control system.....	Converteam
Fire detection system .....	Tyco with Honeywell
Radars .....	FURUNO

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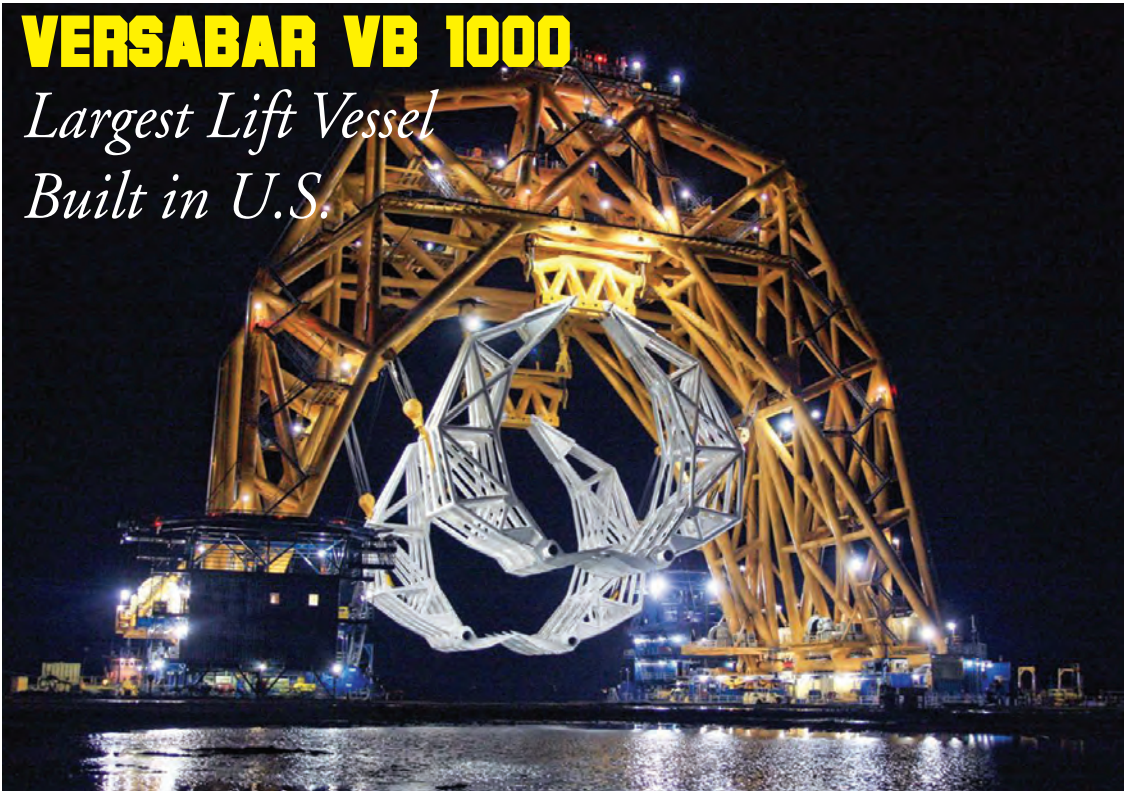
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Launched in late 2010 at **Gulf Marine Fabricators** in Ingleside, Texas, with a **rated lift capacity of 7,500 tons** the **Versabar VB 10000** is not only the largest lift vessel ever built in the U.S., but also the most unique. It's two 240-ft. tall lift gantries are joined to twin 300 x 72-ft. cargo barges to form a catamaran. The gantries are connected to the barges by patented articulated pins which decouple barge motion from the gantries. Its four 2,000-ton heavy lift blocks are paired with custom-engineered 400-ton hydraulic winches which may be operated independently or in a synchronized manner. With the catamaran configuration and the multiple lift blocks, the vessel offers excellent stability and motions in

an offshore marine environment, essential for the single-piece large lifts for which it was designed.

The vessel is equipped with a Class 3 DP system consisting of four 1,000 hp thrusters in each barge which enable it to maneuver on site and hold station in any water depth over 35 ft. It has capabilities in the areas of underwater debris retrieval, topside decommissioning, and jacket removal and reefing. In 2011, an innovative grapple enabled the vessel to reduce diver exposure by performing topside retrievals from the seabed with a minimum of underwater preparation. Including its 2011 campaign, the VB 10000 has already performed more than 40 offshore lifts.

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## Bath Iron Works Lays Keel of DDG 1000



BIW welder, Carl Pepin, second from left, with members of the Zumwalt family including Ann Phillips, left, James G. Zumwalt and Mouzetta Zumwalt-Weathers, at the keel laying for DDG-1000, the first ship in the planned three-ship Zumwalt class of guided-missile destroyers.

On November 17, 2011, General Dynamics Bath Iron Works celebrated the keel laying of Zumwalt (DDG 1000), the first ship in the planned three-ship Zumwalt class of guided-missile destroyers. The keel unit is the 4,000-ton, heavily outfitted mid-forebody section of the ship, which was moved from the shipyard's Ultra Hall construction facility onto the building ways in late October. The ship is named for ADM Elmo Zumwalt (1920-2000), regarded as the father of the modern Navy. He served with distinction on destroyers during WWII in the Pacific and later oversaw littoral operations during the Vietnam War. In 1970, he was named the youngest-ever chief of naval operations. He applied his vast knowledge of sailors and ships to modernize the U.S. Navy, introducing major policy changes to boost morale and create greater efficiency while also conducting a campaign against racism and sexism throughout the fleet. A special steel plate containing the initials of ADM

Zumwalt's four children, daughters and ship co-sponsors Ann Zumwalt and Mouzetta Zumwalt-Weathers, LtCol James G. Zumwalt, USMC (Ret.), and Elmo Zumwalt III, now deceased, was prepared for the ceremony. The co-sponsors authenticated the laying of the keel by striking welding arcs onto the steel plate, assisted by Carl Pepin, a 33-year BIW welder.

The DDG-1000 Zumwalt-class destroyer is the U.S. Navy's next-generation, guided-missile naval destroyer, leading the way for a new generation of advanced multi-mission surface combat ships. The ships will feature a low radar profile, an integrated power system and a total ship computing environment infrastructure. Armed with an array of weapons, the Zumwalt-class destroyers will provide offensive, distributed and precision fires in support of forces ashore. Bath Iron Works is the lead designer and builder for the program which employs approximately 5,500 people.

## DDW Wins Groundbreaking GOM Conversion Contract

Drydocks World signed a Contract with Singapore based AET, a global leader in petroleum shipping, for two Tanker-to-Modular Capture Vessel (MCV) conversion projects. AET is converting these vessels as part of the Marine Well Containment Company's (MWCC) well containment system. MWCC is a not-for-profit, stand-alone organization with 10 member companies ExxonMobil, Chevron, ConocoPhillips, Shell, BP, Apache Anadarko, BHP Billiton, Statoil and Hess. The conversion will be implemented at the Drydocks World - Dubai facility. The conversion shall allow the tankers to continue to operate normally as tanker in the US Gulf of Mexico, with capability to be deployed as MCV within shortest possible time. The first vessel is expected to arrive at the yard in December 2011 and the second vessel in February 2012. Each project will be completed within a period of nine months. Each vessel will handle about 100,000 barrels of liquid and about 200 million standard cu. ft. of gas per day. The MCVs are capable of operating at depths of 10,000 ft. The vessels will be equipped with new state-of-the-art containment system provided by Marine Well Containment Company. Conversion scope includes installation of four off power generators, four off retractable type azimuth thrusters one tunnel thruster, Dynamic Positioning, Pipe racks on deck and supports for Process Module, Flare tower, turret etc.



Ali Bin Towaih, VP Business Development, Administration & Strategies of DDW with Hor Weng Yew, President & CEO of AET at the contract signing.



# Damen to Launch New PSV Series



Damen Shipyards unveiled its new Platform Supply Vessel (PSV) at Europort 2011 and has plans to launch a complete PSV range in the next few months. The PSV 3300 E3 is a dedicated supply vessel to transport supplies to oil and gas rigs and is specifically designed to perform safely in adverse weather conditions. The first two vessels will be built at the renowned Damen shipyard in Galati, Romania. Delivery is scheduled for early 2013.

Damen's new vessel series will range from the smallest PSV of 1,500 dwt to the largest of approximately 6,500 dwt. The new range of vessels is expected to launch in the first quarter of 2012. Although the series of vessels are primarily designed as PSVs, the platforms can also serve as a basis for other offshore support services such as diving support, drilling or well stimulation. The vessels can also play a role in oil recovery and firefighting operations.

A unique design with a sleek bow makes the PSV 3300 E3 a distinctive vessel. The vessel boasts a large 700 sq. m. main deck and can carry 10% more cargo than Damen's former PSV. Even though it has a larger cargo capacity, the new vessel will have improved speed performance with the same engine size, facilitating significant savings in fuel costs and emissions. This vessel follows on from the Damen PSV 3000 of which nearly 20 have been built so far.

The company dedicated significant resources on R&D and model tests of the new 80m vessel. This resulted in a modern hull with lower resistance and extremely good seakeeping behavior. Mark Couwenberg, one of the ship's designers, describes the vessel as a "sea truck" because it offers efficient, reliable and safe logistics at sea.

He stresses that the new vessel type has benefited from design input from the PSV 3300's Norwegian client and from operational studies carried out on Damen PSV 3000 vessels operating in the North Sea. "We examined the logbooks and asked the crew to fill in questionnaires. We really looked at how these vessels were being used and all of this input was fed into the new PSV 3300 design. This added to extensive experience that we had already built up from our designs for the Brazilian market, where more than 15 of these vessels are operating to the full satisfaction of their owners."

"We have spent considerable time on extensive

Length o.a.	80.1 m
Length b.p.	75.3 m
Beam, molded.	16.20 m
Depth molded.	7.50 m
Draft, summer	6.15 m
Deadweight, summer	3310 ton
Deck area	725 sq. m.
Deck load (@ 1m above deck)	1400 t
Speed (@ 5m draft)	13.6 kn
Main engines	Diesel-Electric, 690 V, 60 Hz
Propulsion power	2x1500 ekW
Propellers	2x 2400 mm, FPP, Azimuth in nozzle
Bowthrusters	2x 735 ekW, 1750 mm, FPP
Main gensets	2x CAT 3512C, each 1352 ekW at 1800 rpm
	2x CAT C32, each 994 ekW at 1800 rpm
Emergency genset	1x CAT C-09, 238 ekW at 1800 rpm
Anchor mooring winch	2x electric-hydraulic
Capstans	2x each 5 t pull
Deck crane	1x 7.5 t at 10 m (harbour)
Tugger winch	2x each 10 t pull
Fuel oil/Base oil pumps	2x 150 m³/hr at 90 m head
Fresh water pumps	2x 150 m³/hr at 90 m head
Drill water pumps	2x 150 m³/hr at 90 m head
Liquid mud/Brine pumps	2x 75 m³/hr at 85 m head
Dry bulk compressor	2x 75 t/hr at 90 m head
Hydraulic power packs	3x 390 l/min at 240 bar
Firefighting	2x diesel driven pumps, 1800 cu. m./hr.
	2x fire monitors; water spray system

#### Classification

Lloyd's Register, 100A1 Offshore Supply Ship, SG 2.8 (MUD tanks);  
Fire-Fighting Ship 1 (2400 m³/h) with water spray, Oil Recovery, \*IWS,  
EP (I, O, P), WDL (5 t/m2 Aft to fr 75) LMC, UMS, DP(AA), NAV1,  
IBS, CAC 3

..... Descriptive Note: Green Passport

CFD studies to investigate and optimise the hull shape. A model of the resulting hull has been tested at Marin to verify the results," he said. The slender hull reduces fuel oil consumption, not only in calm water but especially in rough seas. Slamming has been reduced to very low levels, which results in improved comfort and safety for the crew, vessel and cargo. Safety and comfort have been given a high priority in the new vessel. Accommodation is designed to the current standards in the 24/7 offshore industry and each cabin has access to the Internet, radio and television. The vessel provides a very safe working environment, especially on deck but also in all other working areas. The Damen mind-set during the design process is to reduce the impact vessels have on the environment and to build ships according to the Damen E3 principles that take into account the needs of the planet, the people operating the ship and the owner's need to make a profit: Environmentally friendly, Efficient in operation and Economically viable.

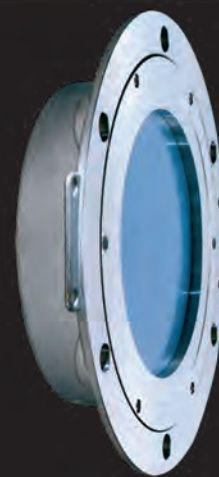
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**NEW CFO FOR RICKMERS**

Dr Ignace Van Meenen has taken up the position of Chief Financial Officer (CFO) of the Rickmers Group effective October 1, 2011. Dr. Van Meenen takes over as CFO from Dr Moritz Mittelbach, who left the organization at the beginning of the year after 10 years of service.

**ZARMATI TO RETIRE AS CEO OF COSTA CRUISES NA**

After nearly 43 years in the cruise business, Maurice M. Zarmati is retiring as president and CEO of Costa Cruises North America, effective November 30, 2011. He will remain with the line as a senior consultant on Costa's worldwide sales, marketing and passenger-traffic initiatives. Zarmati, 65, became president and CEO of Costa Cruises North America in March 2008.

"Maurice was there at the beginning of Carnival Cruise Lines and was one of a trusted core group of individuals who built that brand into the largest, most popular cruise line in the world," said Micky Arison, chairman and CEO of Carnival Corporation & plc. "In a career spanning more than four decades, Maurice was known for his exemplary performance, loyalty, leadership and sense of humor. We appreciate his many contributions at both Carnival and Costa Cruises."

**WELCH NEW CEO SE ASIA**

IHC Merwede appointed Denis Welch as its CEO for South East Asia. He will be responsible for helping the company to reinforce its regional identity and expand its Asian-centred operations – which are focussed on its offshore and marine activities. IHC Merwede President Govert

**CUMMINS NAMES BUSH GM**

Cummins Inc. has named Jenny Bush General Manager for the Commercial Marine Business. She will be responsible for all commercial marine business activities for the Engine Business Unit (EBU) globally, including business development and support. She will be located in Charleston, S.C., and will report directly to Mark Levett, VP of the High Horsepower Engine Business.

**XL ESTABLISHES INLAND MARINE FIELD OPS**

To put its marine insurance experience closer to their clients, agents and brokers, the Marine insurance unit at XL Group plc (NYSE: XL) announced additional underwriting appointments further establishing its inland marine field operation. XL's new Inland Marine Field team includes Michael Perrotti, Senior Vice President, Marine Field Operations based in Cleveland, Ken Mueller, Regional Vice

President in Atlanta, and Ryan Faris, Marine Underwriter in New York. According to Richard DeSimone, President of XL's US Ocean and Inland Marine unit, "New York, Cleveland and Atlanta are key trading hubs. With these appointments, we're putting our inland marine underwriting expertise out in our key markets and in closer proximity to our clients. Now, brokers and businesses in these regions have direct access to XL's local underwriting expertise which can also tap into our global insurance network as they need it."

**JMS MAKES PROMOTIONS**

JMS Naval Architects & Salvage Engineers (JMS) has named Blake Powell to the position of President. Powell previously served as Vice President. Rick Fernandes, who has been with the firm since its founding, has been named Vice President. Jack Ringelberg will remain on-board as Chief Executive Officer and Bruce Banks, who founded JMS in 1988, remains Chairman.

**HANKINS JOINS DONJON AS VP**

Donjon Marine said that Paul Hankins, formerly President of Donjon-SMIT, LLC, has joined Donjon as Vice President of Operations-Salvage & Engineering Division. Hankins' primary duties will in-



volve Donjon's U.S. Navy Salvage Services Contract, as well as its U.S. Coast Guard Basic Ordering Agreement (BOA).

**WÄRTSILÄ X35 STARTED**

The first of the new electronically controlled Wärtsilä X35 low-speed engines has been successfully started. The running engine was introduced to an audience of invited guests during a ceremony on November 11, 2011 at the Yuchai Marine Power Co. Ltd (YCMP) plant in China. YCMP, a Wärtsilä licensee since October 2009, is a part of the Yuchai Machinery Group. The Wärtsilä X35 is a completely new Wärtsilä engine that, together with the Wärtsilä X40, will cover the small-bore end of the market. It is a segment where Wärtsilä has not been present for a number of years.

**W&O INCORPORATES IN BRAZIL**

W&O Supply, a supplier of marine valves, pipe, fittings, engineered products, valve automation and data management systems, has established operations in Brazil, with the first office located in Rio de Janeiro. The Brazil business is led by Alex Piquer, W&O's managing director for all South America operations.

**GRANDWELD DELIVERS 41M CREW BOAT**

Grandweld Shipyards commemorated the delivery of the second of three 41M crew

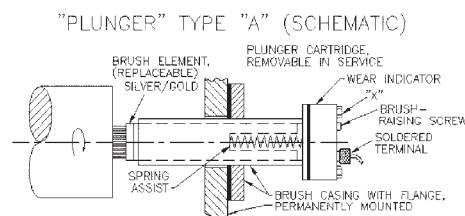
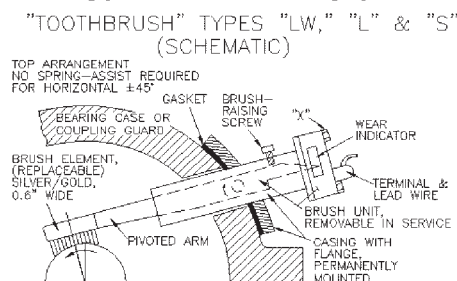
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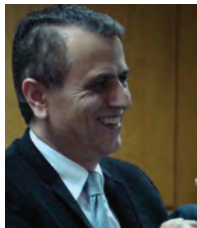
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boats in a ceremony held at Grandweld facility in Dubai Maritime City. This marks Grandweld's seventh delivery in 2011. Global Queen, an advanced version of the 41m crew boat, is the 18th of its type to be built from a series of sister vessels that were initially launched by Grandweld in 2006. This vessel will represent the third generation of its series with enhanced design and superior performance compared to the two previous generations. The vessel has achieved speeds in excess of 26 knots and is equipped with external fire fighting, offshore crane, separate VIP passenger area, and security capabilities.



**Jamal Abki, GM, Grandweld**

cargo vessels) fleet, and it has just taken delivery of four new state-of-the-art open hatch vessels; the company has a current development program consisting of up to ten 50,000 dwt open hatch ships with a new crane design, together with two Supramax vessels.

#### **CLASSNK EARNS AUTHORIZATION FROM NORWEGIAN FLAG**

The Government of Norway officially recognized ClassNK as its newest Recognized Organization (RO) at a special signing ceremony held at the Royal Norwegian Embassy in Tokyo on November 8, 2011.

#### **JOTRON CHOSEN BY NORDEN**

D/S NORDEN A/S selected the Norwegian-based Jotron Consultas AS as its future provider of fleet management software. The two parties have signed an agreement which includes rollout of latest v.4 of the Consultas Fleet Management software suite for fleet and office. The software suite covers the following applications; C-Maintenance, C-Spares, C-Budget and C-Experience onboard, and C-Purchase, C-Budget C-Experience and C-Maintenance (Fleet version) for the office. The deal includes more than 30 ships operated and owned by D/S NORDEN A/S. The new v.4 of Jotron Consultas Fleet Management software represents a direction towards enhanced central decision making processes.

#### **TOLANI SELECTS MARIS VDS**

Tolani Shipping's Singapore arm, Tolani Shipping (S) Pte Ltd, has opted to use the Voyage Decision Support system developed by Maritime Information Systems AS, Norway (MARIS). Tolani Shipping owns a fleet of bulk carriers ranging in size from 50,000dwt to 84,000dwt with an average age of five years.

#### **AMOS FOR GRIEG SHIPPING**

Grieg Shipping Group signed a contract with SpecTec Norway for the supply of AMOS software. Grieg Shipping Group owns 26 OHGC (open-hatch general

## **MAN & Maersk**

### **Innovative Diesel Engine Partnership**

MAN Diesel & Turbo announced the first order for its second generation EGR system, to be applied aboard a Maersk Line container vessel – the 4,500-teu new building #2358. The system will be fully integrated with the vessel's main engine, a two-stroke MAN B&W 6S80ME-C9 type to be built by Hyundai Heavy Industries' engine & machinery division. The EGR system enables the meeting of the imminent IMO NOx Tier-III emission levels due to come into force by January 1, 2016. Søren H. Jensen, Vice President and Head of Research & Development at MAN Diesel & Turbo said: "We have taken an important step forward in the development of exhaust gas recirculation with the release of this second-generation system. This configuration will mirror the final design for our Tier-III NOx EGR engine programme. The main focus has been on integration of the entire EGR system into one unit which is a part of the engine as a charge-air cooler. The EGR unit comprises a cooler, a scrubber, a water mist catcher and a blower unit, and is designed to be fitted on the engine in the same way as a charge-air cooler. Since the first-generation EGR was tested in service, we have achieved significant technical advances as well as improvement in



**Graphic of the second-generation EGR system (orange) integrated with its host engine**

performance. We have optimised the performance of the EGR so that the system recirculates 40% of the exhaust gas so as to meet the Tier-III reduction criterion." The new building #2358 from Hyundai's shipbuilding division is in the C-class series of 22 container vessels ordered by the Maersk Line and will be delivered in early 2013.

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# Shipyard Operations **Lightening the Load**

*Raytheon's "Big Arm" Teleoperation System Demonstrates Real World Robotic Economies for Shipyards*

**By Joe Keefe**

Dr. Fraser Smith of Raytheon is the President of Raytheon Sarcos, part of Raytheon's Integrated Defense Systems business. He's also the chief proponent of a new technology that could revolutionize how shipyards move, store and retrieve bulky, awkward and heavy materials. Raytheon is actively marketing the robotic device now and looking to find follow-on funding to make the product commercially viable. Based on their early findings and performance, they are well on their way to doing just that.

Called "Big-Arm," the Teleoperation robotic system provides a unique solution by closing the "lift gap" between human strength and large-scale material handling equipment. Highly dexterous, intuitive and easy-to-operate, Raytheon's

Big-Arm can safely and easily lift, transport and position heavy payloads (each "arm" can lift payloads up to 200 pounds; the dual-armed system can easily handle 400-pound loads) anywhere in the workspace, while maintaining a "light touch" that allows the user to leverage his or her own fine motor skills.

## **RAYTHEON BIG ARM FEATURES**

Sample Applications: Performance Metrics:

- Palletizing and de-palletizing
- Loading and unloading supplies
- Equipment repairs
- Handling heavy material
- Seven degree-of-freedom arms that have a reach of seven feet
- Advanced technologies to safely augment human performance

- Commercial-off-the-shelf tracked base or custom-tracked/wheeled base
- Reliable, low complexity welded steel, external actuation and plumbing

At a recent, one-week demonstration test at a Virginia shipyard, the futuristic tool not only proved its mettle, but also left a distinct impression on those who got to operate and/or observe the technology in action.

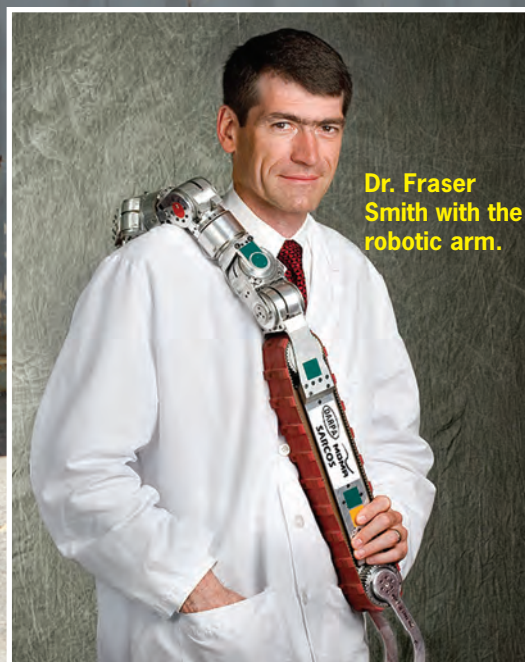
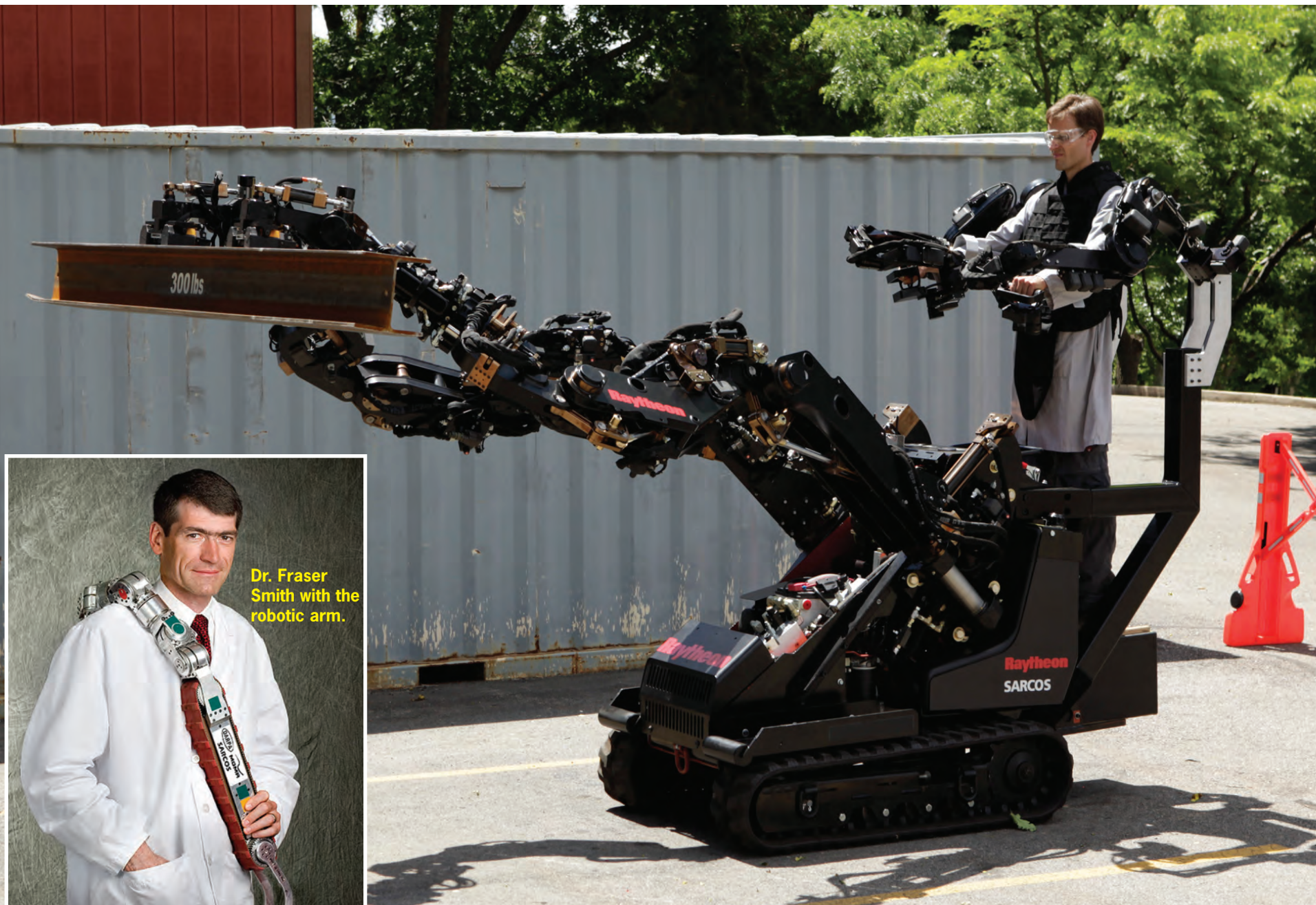
According to Yank Rutherford, director of ship integration and concept of operations with Newport News Shipbuilding, a division of Huntington Ingalls Industries, the tests left senior management "favorably impressed with the technology." Gary Good, Field Engineer for the same shipyard, echoed those remarks in a mid-October interview with Joe Keefe.

The robotic big arm does more than just

lift heavy objects. In a business where efficiency – perhaps more than any other – and time is money, shipbuilding is also dangerous and labor-intensive. And yet, in tests performed at the Newport News Shipyard, "Big Arm" lifted more than 200 pounds deftly, in single lifts faster than human workers could perform multiple moves of far less weight.

And, it more than outperformed an overhead crane performing similar tasks. Beyond this, the device removes the human element from potentially dangerous situations, hazardous atmospheres and virtually eliminates the chance of someone being injured while performing tasks that were previously done via manual labor.

Indeed, Raytheon's Smith thinks that the device could pay for itself over time



**Dr. Fraser Smith with the robotic arm.**

simply through the reduced cost of legal fees, lost man-hours and medical bills.

But Smith reports other benefits, as well. With shipyard inventory control long a headache especially in cramped U.S. yards with nowhere to expand, the need to efficiently stow materials where they can be quickly retrieved – and more

importantly – found, during the building process has always been important.

“Big Arm,” reports Smith, eliminates the need for tracking controls such as RFID trackers by remembering where it put any lift, saving valuable time. And, its ability to numbly stack and place materials in compact areas can more than make

up for inadequate apron space alongside the ship under construction.

Separately, the use of robotics to perform manual labor quickly and safely is increasing, allowing professionals across a variety of industries to focus efforts on more strategic tasks.

Last year, the industrial robotics mar-

ket was \$1.4 billion, compared to just \$615 million in 1995.

Raytheon’s new robotic system, designed to lift, move and handle heavy objects in complex shipyard environments could well be a significant part of that growing equation.

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# Meet the **Cat C175-16** Marine Propulsion Engine

Caterpillar introduces the Cat C175-16 marine propulsion engine which is the latest in a line of high performance engines designed to meet IMO Tier II emissions requirements. The C175-16, with a bore of 175 mm (6.9 in.) and a stroke of 220 mm (8.66 in.), is rated at 2001 – 2168 bkW @ 1600 rpm and 2239 bkW - 2550 bkW @ 1800 rpm, and extends Caterpillar Marine's high-speed engine power range beyond the company's already industry-leading 3516C-HD engine. The C175 engine is already being offered in non-road applications to meet EPA Tier 4 requirements. "The C175 marine propulsion engine has been designed to improve total vessel prof-

itability by providing durability with unmatched power output to ensure our customers can maximize profit in their offshore and commercial operations. It is the new industry standard in terms of hard-working, revenue-producing power," said Bob Hallengren, Caterpillar Marine Power Systems product director. The C175-16 utilizes ACERT Technology, which feature optimized turbocharging and aftercooling to provide reliable maximum power output. The engine also features a common rail fuel system designed to enable low emissions at all levels and requires no aftertreatment to comply with regulations., the C175-16 is highly efficient while pro-

viding increased propulsion output in a high speed engine platform.

[marine.cat.com](http://marine.cat.com).

**With a bore of 175 mm (6.9 in) and a stroke of 220 mm (8.66 in), the C175-16 is highly efficient while providing increased propulsion output in a high speed engine platform.**

**Additional features include:**

- Turbocharged and aftercooled aspiration
- MCS approved monitoring, alarm, and protection system
- Cross-flow head design
- Simplified electrical system



## Transas: New **Anti-Piracy Training Solution**



In response to the piracy threat off the coast of Somalia, Transas has developed an Anti-Piracy solution that will support maritime schools in performing relevant training. The Transas Anti-Piracy package consists of a mothership, a smaller mothership and four fastboats with different speeds. The look of all vessels is typically 'pirate': badly maintained and rusty. The fastboats have four different visual states that can be triggered during running exercise to increase the threat by escalation levels from 'fisher' to 'aggressive pirate' state. The training goal is to help trainees understand what effect their avoidance maneuvers would have and practice in resolution of potential hostile targets, evasion techniques, communication, making contact and engaging. During an exercise, trainees learn how to detect a hostile pirate vessel using ECDIS, radar plotting, AIS information, visual sightings (by fuel barrels on deck, weapons, type and number of crewmembers etc.) and by comparison of target data with known behavioural patterns of pirate vessels. Evasion for merchant ships techniques include avoidance of contacts with potentially hostile vessels or keeping out of range of known hostile vessel's weapons using course and speed changes. Finally, preparations, best angle of approach and practicing of best course and speed decisions are trained for closing and engaging hostile vessels for Anti-Piracy forces. If simulator configuration comprises more than one bridge, both attacked merchant ship and assaulting pirate vessel can be loaded as Own Ship. Pirate vessels as Own Ship can be controlled in a more realistic way to simulate typical attack patterns. This allows the bridge team to understand what effect their avoidance maneuvers would have if scenario is observed from pirate's view.

The Anti-Piracy solution has already found its first users: US Merchant Marine Academy, Malaysia International Shipping Company and Akademi Laut Malaysia already start courses using new Transas development.

[www.transas.com](http://www.transas.com)

## Rhotheta RT-202 MOB Device



The RHOTHETA RT-202 radio direction finder (RDF) is used by the U.S. Navy, German Rescue Organization DGzRS, pilot boat organizations and other users around the world to provide MOB protection. The RT-202 detects emergency beacons transmitting on 121.5 MHz and has a built-in training frequency to keep crews well trained. When an emergency beacon is activated, the RT-202 points to the victim in the water. RHOTHETA provides several types of RDFs and PLBs for commercial fishing, diving, marine contractors, offshore oilfield operations, as well as land based search and rescue (SAR) and Vessel Traffic Service (VTS) facilities. RHOTHETA's top-rate staff is committed to provide excellent service to their clients. Their vast experience will provide your business with the consultation it needs regarding MOB, SAR and VTS solutions.

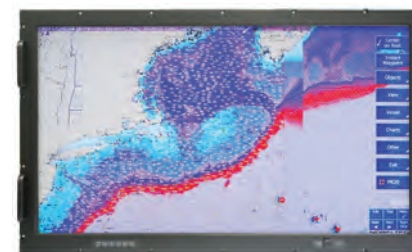
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## OMEGA: Wi-Fi Wireless Sensor System wSeries

Omega's new wSeries wireless transmitters for analog voltage and current, temperature, humidity and barometric pressure, communicate on a standard 802.11 b/g Wi-Fi network which is an ideal and economical solution for facilities with an existing Wi-Fi network as well as a new installation. The wSeries sends alarms through text message or email if variables go above or below a set point that you determine. The CE compliant product features a NEMA 4 (IP65) Enclosure. Price starts at \$195

[www.omega.com](http://www.omega.com)

## 47-in. Marine Display



Comark received Type Approval on its 47-in. Series of MDU Marine Displays from the American Bureau of Shipping (ABS). The MDU47 uses a 47-in. diagonal, LED backlit, 1920 x 1080P high-resolution LCD, designed to withstand the harshest environments. All electronics are conformal coated. A projected capacitive touchscreen option is available, and a fully integrated computer featuring Core i5 / i7 processing.

[www.comarkcorp.com](http://www.comarkcorp.com)

# Restech Throws Maritime *a (Pneumatic) Lifeline*

Restech Norway AS, established in 1989 with its main office located in Bodø, a city above the Arctic Circle in Norway, has carved a unique niche in the maritime safety front, devising a family of Pneumatic Line Throwers (PLT) that are designed to retrieve runaway ships as well as rescue sailors overboard, and pretty much everything in between.

The 22-year-old company's PLT line-up is innovative in that it does not use explosions as a means to propel its projectile; rather compressed air is employed to ensure that the system is able to be used in most every maritime rescue situation.

"The applications are many, and quite frankly more than we know," said Petter Olsen, the company's sales manager, who promoted the system at this year's NorShipping 2011 in Oslo, and pointed out some of the more obvious uses (mooring, line pick-up, emergency rescue) as well as some of the more obscure, such as its use in whale tagging.

One of the efficiencies of the Restech PLT system is that once an owner has the Base Unit, they have access to all the projectiles at a reasonable price.

- For customers seeking lifesaving only, the choice is simple: Rescue 230.
- For mooring and general line transfer only, the recommendation is Mooring 75 or Mooring 150.
- For smaller vessels, patrol boats and MOB rescues, the Mini PLT is a handy tool.

## HISTORY OF THE "LINE THROWER"

Getting a line from ship to ship, ship to people in need or for mooring purposes has been a necessity since humans started modern sailing at sea.

Methods used have varied from hand thrown "monkey-fists", to spring loaded devices, canons, rockets and compressed air.

It was first a device for the life saving volunteers and there is told many dramatic stories about saving lives at sea. One thing is though for sure, many lives have been saved and many boats retrieved thanks to line throwing devices.

Today, line throwing devices are commonly used for the following:

- Rescue: people or boats in distress
- Work: Mooring, towing, ship to ship, messenger lines
- Security: Stopping speed boats, entering boats or houses etc.
- Fire brigades

In general there are two types of line throwing devices on the market today that complies with IMO/SOLAS regulations.

- The pyrotechnical type, which uses gun powder as propellant.
- The pneumatic type, PLT, which uses compressed air as propellant.

## THE RESTECH WAY

In touting its solution, Restech points to the economy, easy of use and maintenance and overall December 2011

### SELECT PRODUCTS FROM RESTECH



#### PLT Rescue 230

The PLT Rescue 230 is a big model which is mainly suited for vessels larger than patrol size. The PLT Rescue 230 is designed to meet the demands of Solas/IMO regulation 74/83, and recognized by Det Norske Veritas (DNV), Notified Body No: 0575 (EU-Approval No: MED-B-2416), and similar organisations in other countries as line-throwing appliances onboard ships.

#### PLT 150

The PLT 150 is a line thrower for mooring and general line transfer. Made from plastic with a rubber tip to damp the impact. It has an internal floating chamber. The projectile does not carry the line inside; therefore a line has to be attached to it. The shooting range will depend on the weight of this line. Typical range with 5mm HMPE is approx. 100 meters. Shooting range with 3.2mm nylon is up to 150 meters.

#### PLT Mini (pictured above)

The PLT "Mini" is a handy line thrower for smaller rescue and patrol boats. Several types of projectiles. Can be used with CO2 or air. Offered is a rescue projectile containing 90 meters of line with strength 1500N.

E-mail: [restech@restech.no](mailto:restech@restech.no)

safety of its system.

The PLT's are designed to be economic in that all parts are re-useable, and filling of compressed air from the ships high pressure compressor is the only cost. In addition, training is performed at no cost.

The system is designed to be safe in that there are no explosives, sparks or flames. It can be used in oil and gas environment without danger. The storage and logistics are easy to attend to as very few restrictions apply.

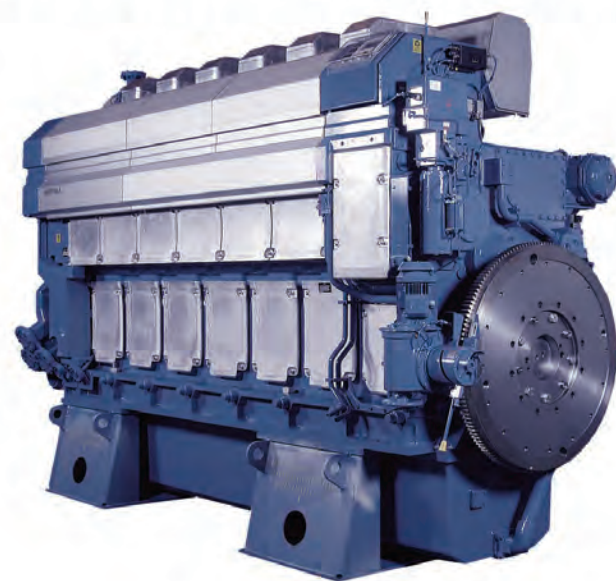
In addition, the system is designed for long-life, able to be stored for extended periods, and easy to maintain. Made of stainless steel, anodized aluminum and plastic, the system has undergone and passed severe temperature, salt and humidity tests as described in Solas regulations for line throwing appliances.

[www.marinelink.com](http://www.marinelink.com)

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## Cobham to Launch Sea Tel FX FleetBroadband

Cobham will introduce its Sea Tel FX line of FleetBroadband products, scheduled for availability in March 2012. Sea Tel FX line will consist of a complete suite of FleetBroadband products with Sea Tel FX 500 being the first to enter the market, followed by the FX 250 and FX 150 in due course. These products will include a comprehensive range of ad-

vanced user terminal features. The development of the Sea Tel FX line builds directly on Cobham's position as the strategic launch partner contracted by Inmarsat for the forthcoming Global Xpress services.

[www.cobham.com](http://www.cobham.com)

## Detecting Metal Particles in Lubricating Oils

The AMOT Metal Particle Detector

(MPD) alerts operators to perform oil condition checks to determine machinery health status. It is an on-line continuous wear debris monitor that signals the presence of metal particles in lubricating oils. Timely detection of metal particles ensures reliable machine conditions and maximizes asset availability by avoiding unnecessary downtime. In addition, metal particle detection can verify filter system performance and failure, confirm system flushing, detect high corrosion and abra-



sion wear, identify improper machine repair, eliminate sampling errors and confirm corrective maintenance.

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## Voith Expands its Radial Propeller (VRP) Series

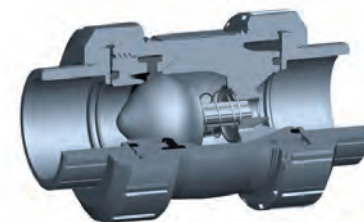
Voith Marine expanded its portfolio to include propulsors for Semi-Submersible Platforms. The new Voith Radial Propeller is designated as VRP 38-45, which stands for a diameter of 3.8m and an input power of 4,500 kW. With its compact design, the latest Voith propulsor targets the drilling vessel market, i.e. vessels equipped with a drilling tower or floating platforms with six or eight propulsion units. A dynamic positioning system on these vessels allows work to be carried out on the platform under almost any weather conditions - a requirement for which the VRP has been developed.

[www.voithturbo.com/marine](http://www.voithturbo.com/marine)

## New Generation Cone Check Valve Series

GF Piping Systems introduced the new generation Type 561/562 Cone Check Valve and the Type 591/595 Vent and Bleed Valve Series featuring a new spherical cone shape design that offers improved flow characteristics and leak-proof operating performance. Available in sizes from 3/8" - 4", customers can select from PVC, CPVC, PROGEF Standard, Polypropylene, SYGEF PVDF, or ABS materials to match their plastic piping system. Sealing materials are available in EPDM and FPM. The Type 561 and Type 562 Cone Check Valves incorporate the latest in check valve technology to provide enhanced safety, simplified handling and increased efficiency. Several design elements are at the core of its higher performance operation. The valve's aerodynamic, spherical shaped cone ensures tight closing and 100% leak-proof operation.

[www.us.piping.georgefischer.com](http://www.us.piping.georgefischer.com)





# Maritime Photo Contest

See your image on the cover of the world's largest maritime magazine

Your photo could be on the cover or in the pages of the most widely read publication in the global maritime industry. Enter as many photos as you like, in each of the five categories. Entries can be submitted and viewed at:



[www.maritimephotographs.com](http://www.maritimephotographs.com)

All images must be entered by May 11, 2012 to be considered. The winners will be published in the June 2012 issue of Maritime Reporter and Engineering News, with the Grand Prize Winner featured on the front cover of the magazine.

This contest was established to honor the memory of the late Donald S. Sutherland, renowned maritime photographer and writer, who passed away unexpectedly in 2010.

## Categories:

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For complete contest rules go to <http://www.maritimephotographs.com/rules-and-terms.asp>

## Engine Room Fire Protection

Minimax expanded the high pressure water mist extinguishing system Minifog marine XP for use in engine rooms and cargo pump rooms of up to 8,235 cu. m. volume. With this, Minimax meets the stricter requirements, especially on board

cruise ships. Minimax has experience in fine spray extinguishing technology, which is also known as water mist technology, and now applies this system to new dimensions. The Minifog marine XP high pressure water mist extinguishing system reduces water requirements by 90% compared to classic sprinkler systems, while still offering the same extin-

guishing yield. This offers a range of advantages for ships. For example, it significantly reduces the risk of damages to vessel technology outside of the fire area, passengers protecting optimally and reducing extinguishing water consumption with the same scope of protection. This is possible through the specially developed sprinklers and nozzles which use



water mist to combat fires efficiently whilst simultaneously cooling the area. A further technical development has enabled Minimax to expand its previously used system Minifog marine XP from 3,348 m<sup>3</sup> to engine rooms and cargo pump rooms with a volume of up to 8,235 m<sup>3</sup>, in accordance to IMO 1165 standard.

Especially in passenger shipping, tonnage is increasing considerably. Whereas the largest cruise ship stretched 311 metres in length in 2006, the record holder in 2011 now boasts a length of 360 metres. Accordingly, engine rooms are growing, too. Today's giants of the sea host engine rooms with several diesel engines with more than 80,000 HP in total. Top levels of safety at sea requires a system which can detect fires in their initial phase and immediately extinguish. Only this way can equipment be protected from consequential damage and the cruise continued.

In the protected room, a pipe network is installed with open Minifog nozzles, which are organised in extinguishing areas via selector valves. In the event of a fire, the selector valve opens, the Minifog nozzles convert the extinguishing water into water mist and the fire is quickly extinguished. Minimax Minifog marine XP systems have a range of additional benefits: space and weight are reduced, since the extinguishing water, which is decreased by up to 90% compared to classic sprinkler systems, also functions with pipes, pumps and other components with less mass and space requirements. The lower space requirements for the pipe system also facilitate retrofitting in older vessels. The Minimax high pressure fine spray system Minifog marine XP fulfils the current regulations IMO A800 and IMO 1165 for safe fire protection on seagoing and inland navigation vessels.

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facturing friendly. These designs must meet all necessary internal quality and supplier requirements, be in compliance with all applicable regulatory bodies, and be executed in the most cost-effective manner. Also responsible for creating technical documentation packages and engineering drawings as necessary. Candidate must have the ability to manage a project from its inception at quotation to its completion at delivery and all phases inclusive.

#### Knowledge/Education

- Bachelor's Degree in Naval Architecture, Marine Engineering, Mechanical Engineering, or related discipline required. Master's Degree preferred.
- Consideration will be given for candidates with significant related work experience in lieu of educational requirements.
- Knowledge of ABS, DNV, ABYC and ISO standards a plus.
- NMMA compliance certification a plus.

#### Skills/Experience

- Minimum of 3 years experience in the design & engineering of commercial and/or recreational powerboats.
- 3D CAD experience: NX, Catia, Pro E, AutoCAD/Mechanical Desktop or Rhino preferred.
- Experience with boat related mechanical & electrical systems and shipboard tender interface systems a plus.
- Experience with fire fighting equipment a plus.
- Experience with fiberglass manufacturing processes and aluminum construction techniques.
- Experience with material properties and application selection for metals and composites.
- Proficiency in PC based tools with a focus on Microsoft Office, Lotus Notes, AS-400 and general web based applications.

While performing the duties of this job, the employee is occasionally exposed to moving mechanical parts; high, precarious places; fumes or airborne particles; and toxic or caustic chemicals. The noise level in the work environment is usually moderate.

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#### Development Engineer II

**Job Location: USA**

Development Engineer II  
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#### POSITION SUMMARY

Responsible for generating, developing and implementing propulsion, mechanical, electrical, laminate, and structural system designs on marine products built for commercial and military use. Also responsible for developing new tooling designs as necessary for new product moving forward. This will include use of Computer Aided Design (CAD) software to ensure designs are robust and manu-

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**Digital Systems Engineer**  
**Job Location: USA, Seattle**

Digital Systems Engineer, EMS Band 4

The Washington State Department of Transportation Ferries Division (WSF) is looking for a Digital Systems Engineer who also has a thorough understanding of analogue systems. This position is critical for maintaining vessel reliability and requires the dedication of a calm and

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Outside from emergencies, the incumbent is expected to work on the maintenance, monitoring, and improvement of the digital systems on various WSF vessel classes. They will also enhance and fine tune the existing preventative maintenance plan for these systems and turn it into a proactive tool that includes the mission of the Vessel Maintenance, Preservation, and Engineering department: systems safety, reliability, and efficiency. In addition, this person will be part of a team that develops and evaluates new and retrofit digital systems.

This position requires a self-starter who has the drive and willingness to learn and keep updated on the software and systems side while keeping abreast of developments in the industry. WSF relies on their input regarding improvements and upgrades of existing equipment as well as planning and evaluation of future systems for new vessel construction. We are looking for an analytical thinker who is able to work well with other people of all levels, passes on their knowledge, and establishes a future oriented, sustainable plan with emphasis on the development, training, and maintenance plan for digital systems.

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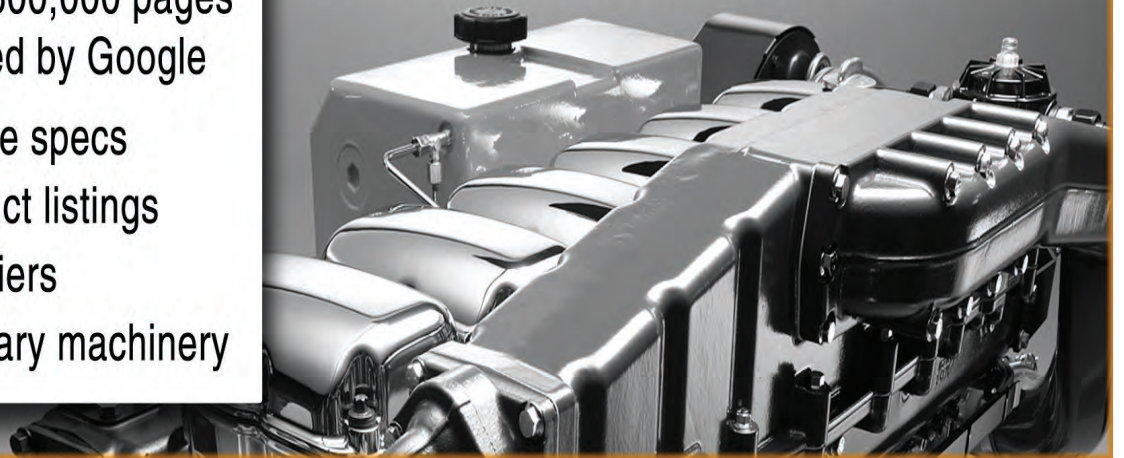
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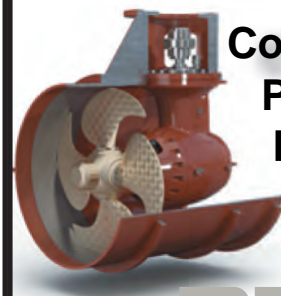
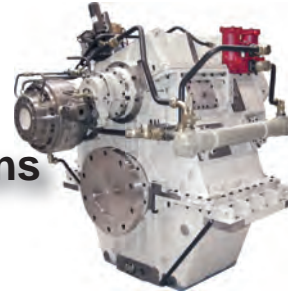
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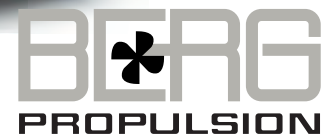
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