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MARITIME REPORTER AND ENGINEERING NEWS

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AUGUST 2013

Shipyard Edition

Offshore Wind
The $19.8B Opportunity

Hydrogen Fuel Cells
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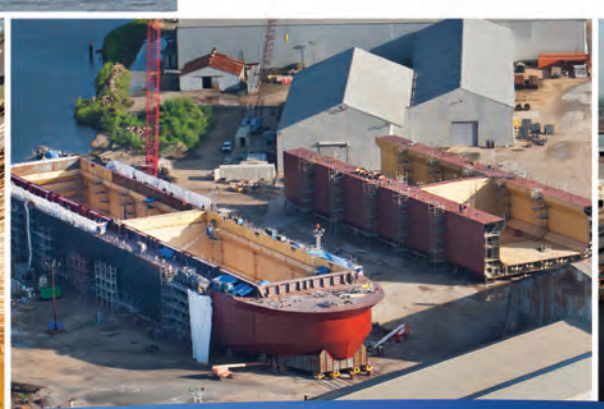

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New Drydock

In January, Vigor signed an agreement to build the largest floating drydock in the United States, which will allow Vigor to service larger ships ships, up to and including any of the cruise ships operating on the West Coast and Military Sealift Command's Lewis and Clark-class dry cargo/ammunition ships. Shipyard coverage in this, MR's "Shipyard Edition," spans 23 pages and starts on page 34.

ON THE COVER

Gulf Copper's Port Arthur facility recently rolled out three new CALM Buoys for SOFEC, a significant new line of business for the yard.

Story is on page 34

(Image: Gulf Copper / SOFEC)

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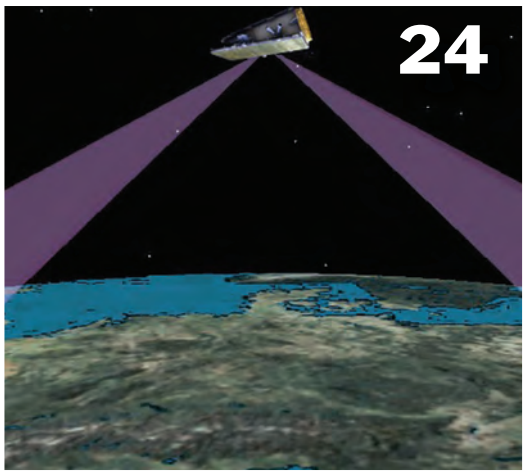

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Building it Better

My dad was a tool & die

maker for General Motors for more than 30 years, is of German descent and is one of the finest woodworkers you will ever meet. Self-taught and self-sufficient, when he was a kid he and his brothers did not waste time playing (or having) video games: they built a boat; they built anything.

While unfortunately, for me, the ability to deliver professional quality engineered solutions has decidedly skipped a generation, I literally grew up in a manufacturing environment, and my career over the past 20+ years has given me a front row seat to some of the best (and yes, some of the worst) manufacturing operations in the world. I am the embodiement of the saying: *"Those who can, do; those who can't, write about it."*

With that as a backdrop, the August "Shipbuilding Edition" is a perennial favorite, as it affords us an expanded opportunity to dig in and explore marine construction operations near and far. Ship and boat yards, whether a small builder on a muddy patch of the Mississippi River or one of the gleaming factories of the Far East, are fabulous places to gather insights on the current conditions and future direction of the maritime market. It is true that the industry historically does a poor job balancing supply and demand (particularly in certain sectors, ie. containershipping), striking the right balance between the number of vessels available and the rates to support them. Shipyards are in a constant battle to attract and maintain a qualified, technically proficient and efficient worker base, all the while battling price wars.

Our cover story, Gulf Copper's Port Arthur facility delivering the first batch (three of five) of mammoth Catenary Anchor Leg Mooring Systems - or CALM buoys - for SOFEC is a nice example of how one builder has expanded its business line of marine construction and brought home new business. Depending on final outfit, the buoys are 230 to 260 tons, and the project was of particular interest for our pages as both the yard and the customer were quite candid in discussing not simply the success of the project, but discussing the inevitable challenges encountered and how these challenges were overcome.

The CALM buoys are but one example of many high-tech, high-spec marine construction projects in the works covered in our pages this month. And while the nature of advanced technology that goes into modern vessel construction, operation and training makes today's vessels arguably superior in many ways to those produced only a generation ago, take it from someone who has a dad in the manufacturing know: new technology delivers many advantages, but hard work, attention to detail and adherence to solid, proven engineering principle never goes out of style.

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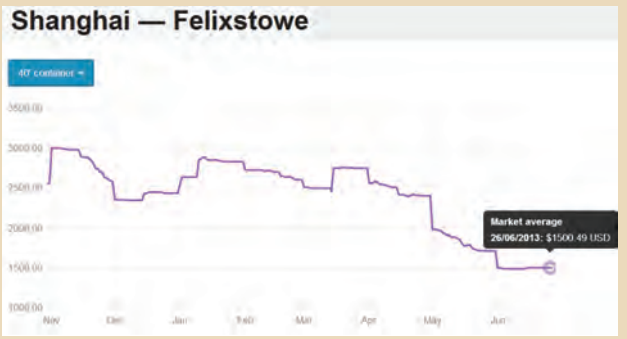
Down, not out

Containershipping rates continue to fall

The market index for Asia to North-Europe is still on the decline, and the average for a 20-foot saw a 19% drop since May 26 compared to the June 26 price comparison service for sea freight, Xeneta reported. The market average for a 40-foot in Asia to North Europe performed similar with a 20% decline in container shipping rates in the same period. The rate pressure is higher than ever with the announced general rate increase on July 1, where ocean carriers are attempting to push GRI's up to $1,000 per 20-foot container – the highest increase ever. The rates are expected to rise from today's levels, as the average prices for trade lanes like Shanghai to Rotterdamis as low as $877 per 20-foot and $1,488 per 40-foot, last tracked on June 26. Compared to May, that's a 13% decrease on 40-foot and 10% decrease on 20-foot.

"We saw in March after the GRI was released that the prices held steadily for a couple of weeks, but dropped significantly in the beginning of April. So it's pure guesswork to say how long prices will hold with ocean rates being as volatile as they are," said COO of Xeneta, Thomas



Sørbø."The lowest rate we've seen per today is less than $500 on Qingdao to Le Havre for a 20-foot container."

Xeneta's market index also reported that the average rate for a 40-foot container, on several other key trade lanes like Shanghai to Felixstowe, was at $1,500 and Tianjin to Antwerpen was at $1,583.These two trade lanes are just a small part of the growth Xeneta has seen with its 2,300 port pairs and it continues to grow as more shippers and suppliers take part.

xeneta.com

MARAD: $9.46M Shipyard Grants

The U.S. Department of Transportation's Maritime Administration (MARAD) announced $9.46m to help improve 12 shipyards in 10 states.

The grants are provided through the Small Shipyard Grant Program. Acting Maritime Administrator Paul 'Chip' Jaenichen made the announcement at Jeffboat, LLC, one of the grant recipients, located in Jeffersonville, Indiana. For this latest round of awards, MARAD received 113 grant applications requesting $96 million in assistance, exceeding the $9.46 million made available for the grants.

Jeffboat, LLC, received an $845,817 grant. The Jeffboat facility has four production lines that are used for the construction of barges ranging in size from river hopper barges to 52,000 barrel tank barges. The grant will allow Jeffboat to adjust the width and orientation of one of its vessel lines, helping the facility to enhance efficiency.

The following 12 shipyards will receive grants:

- **All American Marine**, Bellingham, Wash. – $999,100 for overhead cranes, welding machines, CNC router, scissors lifts, painting area upgrades, ventilation upgrades.

- **Blount Boats**, Warren, R.I. – $680,272 for metal working equipment, engineering software, big top portable work shelter, material handling enhancements.

- **C&C Marine and Repair**, Belle Chasse, La. – $999,920 for a 220-ton hydraulic crane.

- **Chesapeake Shipbuilding Corp.**, Salisbury, Md. – $559,686 for industrial gas system, compressed air system, mobile crane.

- **Conrad Orange Shipyard**, Orange, Texas – $686,539 for shipyard electrical upgrades.

- **Dorchester Shipyard, Inc.**, Dorchester, N.J. – $945,800 for a new floating dry dock.

- **International Ship and Repair & Marine Services**, Tampa, Fla. – $980,260 for a 275-ton crawler crane.

- **Jeffboat, LLC**, Jeffersonville, Ind. – $845,817 for redesign and modernization of the existing vessel line three.

- **Lyon Shipyard**, Norfolk, Va. – $779,168 for computer numerically controlled (CNC) lathe.

- **North Florida Shipyard**, Jacksonville, Fla. – $459,160 for waste water treatment and recycling system.

- **Seacraft Shipyard, LLC**, Amelia, La. – $1,100,000 for a marine travelift.

- **Thames Shipyard and Repair Co.**, New London, Conn. – $422,264 for flow UHP system.

By the Numbers

Renewables to Surpass Gas

A new report from the International Energy Agency (IEA) predicts that power generation from hydro, wind, solar and other renewable sources worldwide will exceed that from gas and be twice that from nuclear by 2016, via its second annual Medium-Term Renewable Energy Market Report (MTRMR).

40%

is the expected global growth rate for renewable power through 2016

According to the MTRMR, despite a difficult economic context, renewable power is expected to increase by 40% in the next five years, and renewables are now the fastest-growing power generation sector and will make up almost a quarter of the global power mix by 2018, up from an estimated 20% in 2011. The share of non-hydro sources such as wind, solar, bioenergy and geothermal in total power generation will double, reaching 8% by 2018, up from 4% in 2011 and just 2% in 2006.

Even as the role of renewables increases across all sectors, the MTRMR cautions that renewable development is becoming more complex and faces challenges – especially in the policy arena.

Norshipping

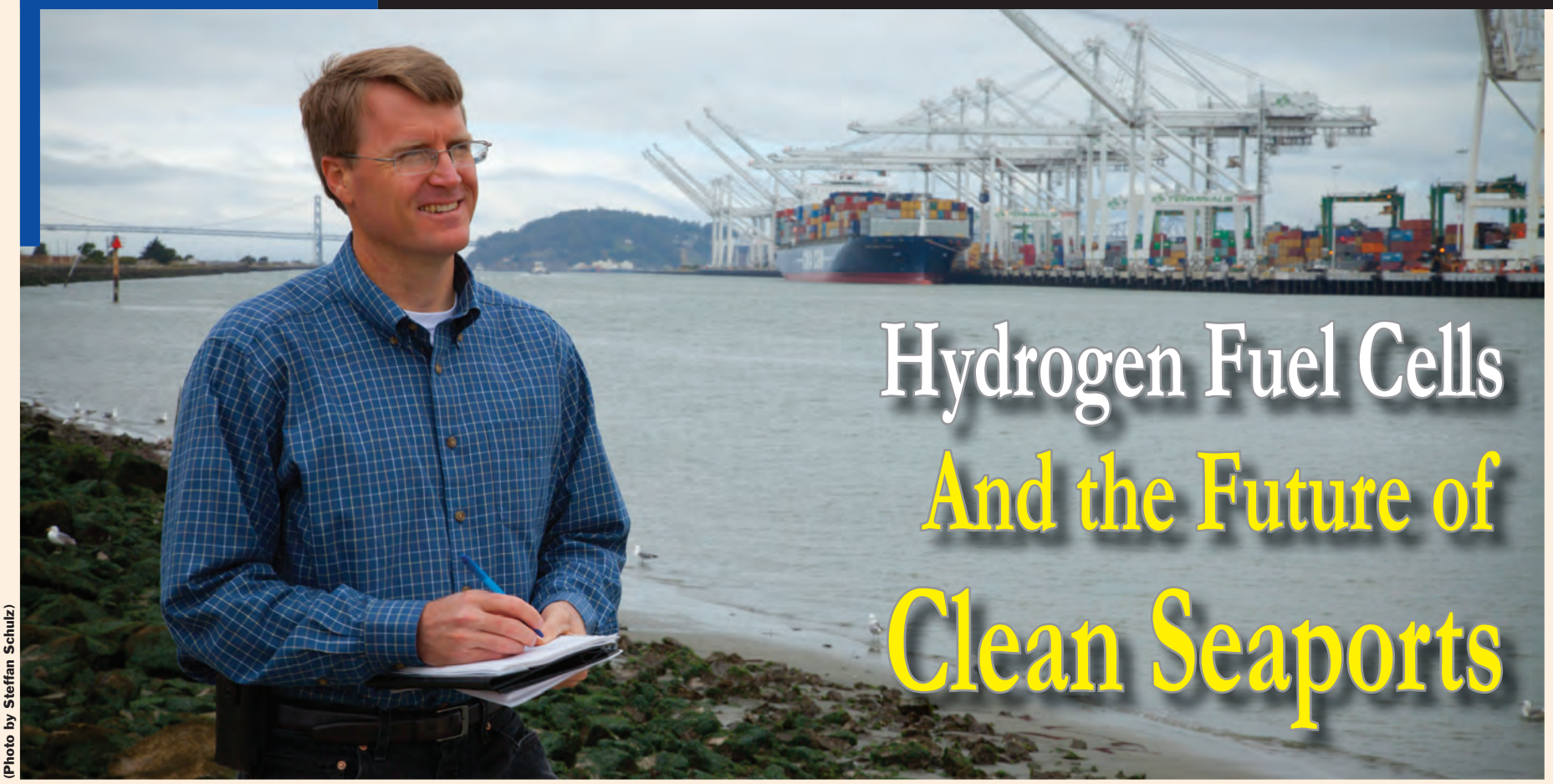
Earlier this summer in Oslo the global shipping community came together for Norshipping, a bi-annual event that has evolved into one the largest and most influential exhibitions and conferences serving the global maritime community.

14,870
Visitor entries at exhibition

31,510
Delegate entries at exhibition, including visitors

1,037
Number of exhibiting companies.

200
Approximate number of receptions and social events



(Photo by Steffan Schulz)

Hydrogen Fuel Cells And the Future of Clean Seaports

Sandia National Lab studies the use of auxiliary hydrogen fuel cell power to docked and anchored ships.

Sandia National Laboratories researcher Joe Pratt stands near the Port of Oakland, one of the west coast ports he studied to learn whether hydrogen fuel cells are a viable power source for docked ships.

Hydrogen fuel cell technology is already powering mobile lighting systems, forklifts, emergency backup systems and light-duty trucks, among other applications. Now, researchers at Sandia National Laboratories have found that hydrogen fuel cells may be both technically feasible and commercially attractive as a clean, quiet and efficient power source for ships at berth, replacing onboard diesel generators. The Sandia study was completed for the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy (EERE).

Evaluating Fuel Cell Barges

The study evaluated a simple fuel cell strategy that consists of mounting a hydrogen-fueled proton exchange membrane (PEM) fuel cell on a floating barge. Supplying a container ship with average power and run times (1.4 MW over 48 hours) requires four 40-ft containers, two for the fuel cell and two for hydrogen fuel storage, which could readily fit on a typical flat-top barge. For ships requiring less power, such as tugboats, a single container housing both the fuel cell and hydrogen will suffice, according to the Sandia study.

To evaluate the feasibility of the fuel cell barge strategy and analyze potential deployment options, Sandia's Joe Pratt visited ports on the U.S. West Coast and in Hawaii. He gathered data from two U.S. Department of Transportation Maritime Administration facilities and the ports of Long Beach, Calif., Los Angeles, Calif., Oakland, Calif., Portland, Ore., Tacoma, Wash., Honolulu, Hawaii and Seattle, Wash.

"While Sandia has previously examined the potential for hydrogen and fuel cells in other applications, this is the first study of a maritime environment," Pratt said.

A common alternative to auxiliary diesel engines is a practice called "cold-ironing," in which a vessel at berth connects to a source of electricity on the shore.

But grid-based cold-ironing is complex and costly, and most ports lack the infrastructure needed to meet the power needs of multiple ships at berth.

Those costs can run up to $5-10 million or more per berth, said Pratt. The Port of Oakland is installing 11 berths on six terminals at an estimated cost of about $70 million.

Perhaps more importantly, switching to grid-based power doesn't eliminate emissions; it merely shifts the emissions to the source of electricity.

Electricity supplied by a hydrogen fuel cell thus could become a new form of cold-ironing.

Deployment Options & Economic Benefits

The hydrogen fuel cell barge bypasses the need for electrical infrastructure, and also has the capability of being moved from berth to berth as needed and to anchorage points to power vessels that are waiting for berths. "In California, ports are already installing the necessary infrastructure for cold-ironing because of the regulations introduced a few years ago," said Pratt. "So hydrogen fuel cell auxiliary power has the opportunity for greater impact elsewhere. While this was an unexpected finding, we discovered other locations and applications for hydrogen fuel cell power."

For example, ports in Oregon and Washington, grid-based cold ironing infrastructure is limited or nonexistent. Using a hydrogen fuel cell to power container ships at berth has attracted interest for its potential economic and environmental benefits, Pratt said.

Hawaii's Honolulu Harbor in Oahu had a different need. Much of the cargo is unloaded and then reloaded onto barges for distribution to the other islands. As the barges have no power, they carry diesel generators to provide power to refrigerated shipping containers.

"You can replace the diesel generator with a hydrogen fuel cell without changing the operations. It's just a power source in a box, a shipping container in this case," said Pratt. Hawaii ports aren't facing the same emissions regulations as California ports, but the potential savings in fuel cost is attractive for the company operating the inter-island transportation service, along with anyone else suffering from high fuel expenses.

The study's basic fuel cost analysis showed that at today's prices hydrogen, at about $4 per kilogram, with a fuel cell is cost-competitive with maritime fuels using a combustion engine. Subsequent analysis has shown that when generators are frequently producing less than maximum power, such as in the Hawaii application, the efficiency advantage of fuel cells compared to the combustion engine is widened. Even hydrogen at $5 per kilogram can potentially save tens of thousands of dollars per year for each generator.

"Fuel cost is only part of the total economic picture," Pratt said.

He is now developing a detailed plan for the Hawaiian interisland transport barge application. "A successful deployment of the containerized fuel cell on a floating platform in a typical marine environment will be useful not only in this particular service, but also because it validates the concept for the larger, container-ship-sized application," Pratt said. "It's challenging on many levels, but technically feasible with potential worldwide commercial impact."

Alion Ramp Makes for Safer Ship-to-Ship Transfers

The ability to readily transport personnel and equipment from one ship to another is vital to the success of many U.S. Navy operations, particularly when it comes to seabasing. But tumultuous waters and weather conditions can make the transfer process extremely difficult, placing both the crew and mission in harm's way.

Under contract of the Office of Naval Research, Alion Science and Technology began work on a solution to make the process safer, inventing the Transfer At Sea (TAS) system, an actively controlled ramp to help neutralize Mother Nature's effects on ship to ship transfers.

The uniquely-designed system counteracts the forces of waves and weather to function in choppy and turbulent seas with waves as high as 2.5 meters and winds as fast as 21 knots.

Under current procedures, navy crew – often lugging gear and equipment – must trudge across an unstable bridge connecting two vessels that are rising, falling, rocking and twisting at dissimilar rates.

So how does Alion's TAS system work? Pivoting at its bases to counter the forces of rough seas and weather, the ramp reduces rolling and pitching to make transfers a steadier operation.

"The key to our solution is the active technologies Alion developed, which include an articulating platform and a sliding foot," said Pete Flemming, VP and Manager of Ship Design Operation at Alion.

"These components automatically compensate for the varying movements of the two ships. This allows the use of a structurally-efficient ramp with mitigated motions, even in Sea State Four conditions."

Scaled versions of the ramp have been put to the test, first as a 1/12th scale model, then at quarter size. The success of the quarter scale real-world trial (which can be seen on Alion's YouTube channel, www.youtube.com/user/alion-media) "proved the viability of the system," according to Alion, and warranted construction of a full-size demonstrator, scheduled to begin testing in September 2013.

If the ramp achieves its goal, it will

make transferring, personnel, cargo, equipment – or anything for that matter – safer, Alion believes, ultimately pushing the Navy one step closer toward efficient seabasing.

And though the TAS system was initially created for the Navy, Mr. Flemming noted the potential for its future outside of the military sector. "There is a definite need for a similar system for commercial vessels," he said. "[The ramp] could be used to transfer cargo from ships that are too large for a port to smaller vessels or could even be used to move cargo or people from ships that have lost power."

But maintaining focus on the present goal, Mr. Flemming said, "Those uses are a long way off. The Navy is our priority."

From ShipConstructor to SSI

A significant change that is more than skin deep

On the sidelines at Norshipping 2013 in Oslo, Maritime Reporter caught up with Darren Larkins, a 14-year veteran of Ship Constructor, serving the last two years as CEO. The topic: the evolution of the company from that of an engineering tool supplier to a more consultative role, an evolution culminating in the changing of its name from Ship Constructor to SSI.

By Greg Trauthwein, Editor

Why the rebrand from Ship Constructor to SSI?

Traditionally our core business has focused around ShipConstructor which is an engineering tool focused on the shipbuilding core disciplines. Our business over the last 10 years has transitioned quite a bit into the offshore business and an increased focus on services … the consultative implementation of engineering tools. We've really been focused on changing our image to that of total business solutions. So we decided it was time to change the external face of the company to better represent what we are today.

What was the driver for the change?

I don't think that there's any one driver in particular. I would say that it is wanting to appear in the marketplace as the company that we truly are today. We don't just drop product off at the doorstep; the shipbuilding industry is not about that. It needs trusted advisors; we know the business of our clients and we can provide more than a product.

What has been the biggest challenge?

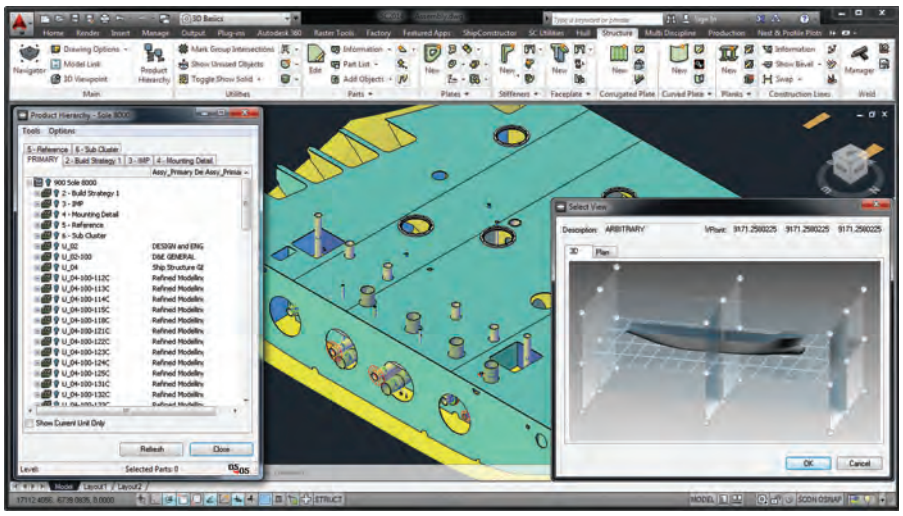
The biggest challenge has been internally, getting our people to not just see it as a white wash, but to see it as the next evolution of the company. When I started with the company we were four or five people, and we're now about 60 plus with another 60 in our sales channel worldwide. Getting people who have been here long term to recognize the type of company we have evolved to has been a challenge.

In today's market, where do you see opportunity?

We believe our software is the most scalable in terms of implementation. It is the fastest to implement and easiest to use. We have had great success in the emerging markets; for example Brazil is a real hotbed of activity for us. We have had more than our fair share of success there, and I think this is because our software can be picked up by people who have very little background in shipbuilding, very little experience in 3D CAD tools; and it provides a running start.

How are you penetrating the Brazil market?

Almost all of our sales are done through third-party resellers that have both industry and cultural experience in the markets they serve. For example in Brazil, our partner there has a long history of implementing document management and engineering management solutions in Brazil. His father, who he runs another business with, has been in the shipbuilding industry as an engineering manager and now runs a business that works with the commissioning of FPSOs and offshore platforms, and he has political connections. So having that engineering and software focus in the son; and the shipbuilding and political connections in the father; as well as the cultural background with both, has ultimately been the key to our success.



Are there any projects going on in Brazil right now?

Absolutly. EAS, the largest shipyard in the southern hemisphere is a ShipConstructor client, and all of the Suezmax tankers have been done with the ShipConstructor software. We have about six or seven recent clients, from yacht builders to larger shipyards.

We have an EAS case study on our website which explains how EAS had to build up its engineering team from no engineers in Brazil capable to engineer a ship; they had to build a production workforce from no one who had

built a ship. They [literally took people from the sugar cane fields] in their off-season and taught them to be a production workforce, and built a shipyard and implemented a new production tool in IT. All of this was done in a course of three years.

And what about opportunities beyond Brazil?

India is a market that has its own challenges as well as potential. A lot of the factors that apply in Brazil also apply in India. In Vietnam there is a lot of opportunity, which has been made a bit tougher with political issues. Malaysia is looking ripe for us as well. Also, the workboat segment in general is prime territory, driven by the oil and gas boom.

So it sounds as though you are essentially diversifying the company to other sectors.

One of our key benefits is we think shipbuiliding, we know shipbuilding and we're not moving away from that one iota … that is core to our business. But we can do other things.

Can you summarize for us: When the change is made, when someone looks at the new SSI, what do you want them to see, to think?

Our new tagline is "Empowered Engineering." What we mean is it's not empowering engineering to do more, it is empowering engineering within an organization to allow the engineering data and processes from engineering to have a bigger impact on the organization. We do more than just tools for engineering.

ShipConstructor 2014 Released

With the release of its new ShipConstructor 2014 software, SSI said it has enhanced ShipConstructor's user experience to promote more efficient workflow. New products have been added to the software suite containing improved capabilities for the design and construction of piping systems along with enhanced capabilities for the reuse of design work. Most noteworthy of all is a new product called MarineDrafting which allows 2D approval and workshop drawings (in DWG format) to be created directly from the 3D model while remaining associatively linked. These new products along with numerous enhancements give users the ability to increase productivity and add new deliverables to their current service offering. P&ID DesignValidation allows for the checking and validation of the ShipConstructor 3D pipe model against 2D schematics generated in standalone P&ID software including AutoCAD P&ID. The validation is performed using neutral formats to allow clients more flexibility in the choice of P&ID software. PipeLink allows the piping systems within a ShipConstructor project to be used within other business processes and applications. This is accomplished through an export to the PCF format from within a ShipConstructor production drawing.

In a world of 3D design and manufacturing, many activities still need to be supported with 2D drawings during design and throughout the shipyard. Using shipyard standards, MarineDrafting allows the creation of 2D approval and workshop drawings directly from the 3D model.

www.ssi-corporate.com

Geometry at the Heart

Computational geometry is at the heart of much of MARIN's day-to-day business

Christian Veldhuis is project manager at the Ships department of MARIN, the Maritime Research Institute Netherlands. MARIN offers simulation, model testing, full-scale measurements and training programmes, to the shipbuilding and offshore industry and governments.

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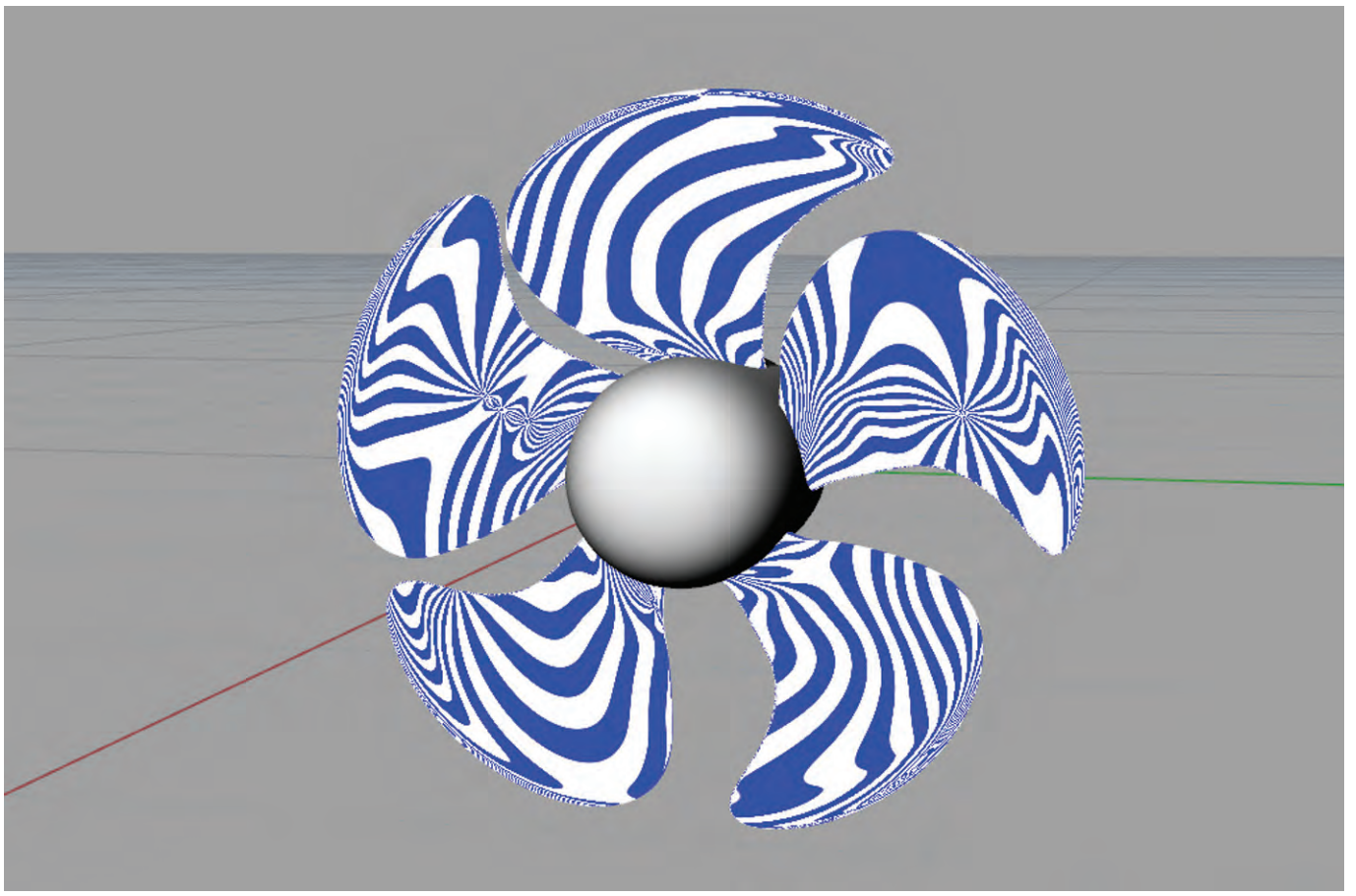
www.marin.nl



Computational geometry is at the heart of much of MARIN's day-to-day business, which includes the hull, appendages and propulsion design and optimization, to the milling of models and detailed CFD calculations. And computational geometry is also set to play a key role in longer-term research and development carried out by MARIN, its clients and partners.

In 2012, MARIN started a new, long-term project to update and expand its geometry capabilities for hulls, appendages and propellers. The aim is to enable designers, CAD and CFD users to model and optimize their designs effectively and interface them with the outside world: from geometry input to analysis, (CFD) calculations and model production.

New propulsion design tools

New tools were developed to design propellers and to generate suitable propeller geometry for panel and RANS codes. First, the well-known Rhinoceros 3D modelling suite was selected as the basis for the new CAD tools. Because Rhino has a lot of out-of-the-box features, MARIN could focus on adding value and MARIN-specific functionality. MARIN was able to develop multiple plug-ins for Rhino that are capable of reading and writing various propeller formats, showing the geometry on the screen and enabling the designer to manipulate the propeller design. Accurate representations of propeller geometry could then be generated for detailed calculations using MARIN's unstructured and unsteady RANS code ReFRESCO.

Hull lines

MARIN's existing hull lines' design tool "Geometry Modelling of Ships" (GMS), which has been in development for over 20 years, will also get a complete overhaul. Over the coming months and years, more and more functionality will be re-implemented and expanded as Rhino plug-ins using the current capabilities in GMS as a basis. Hull fairing, as applied in GMS, is one of these unique design capabilities that allow MARIN to design hundreds of hulls a year. There are simply no other tools available that give a designer such speed when drawing and fairing a hull. The existing knowledge and methods will be preserved in the new tools but further expanded with new, even more efficient hull drawing and fairing functionality.

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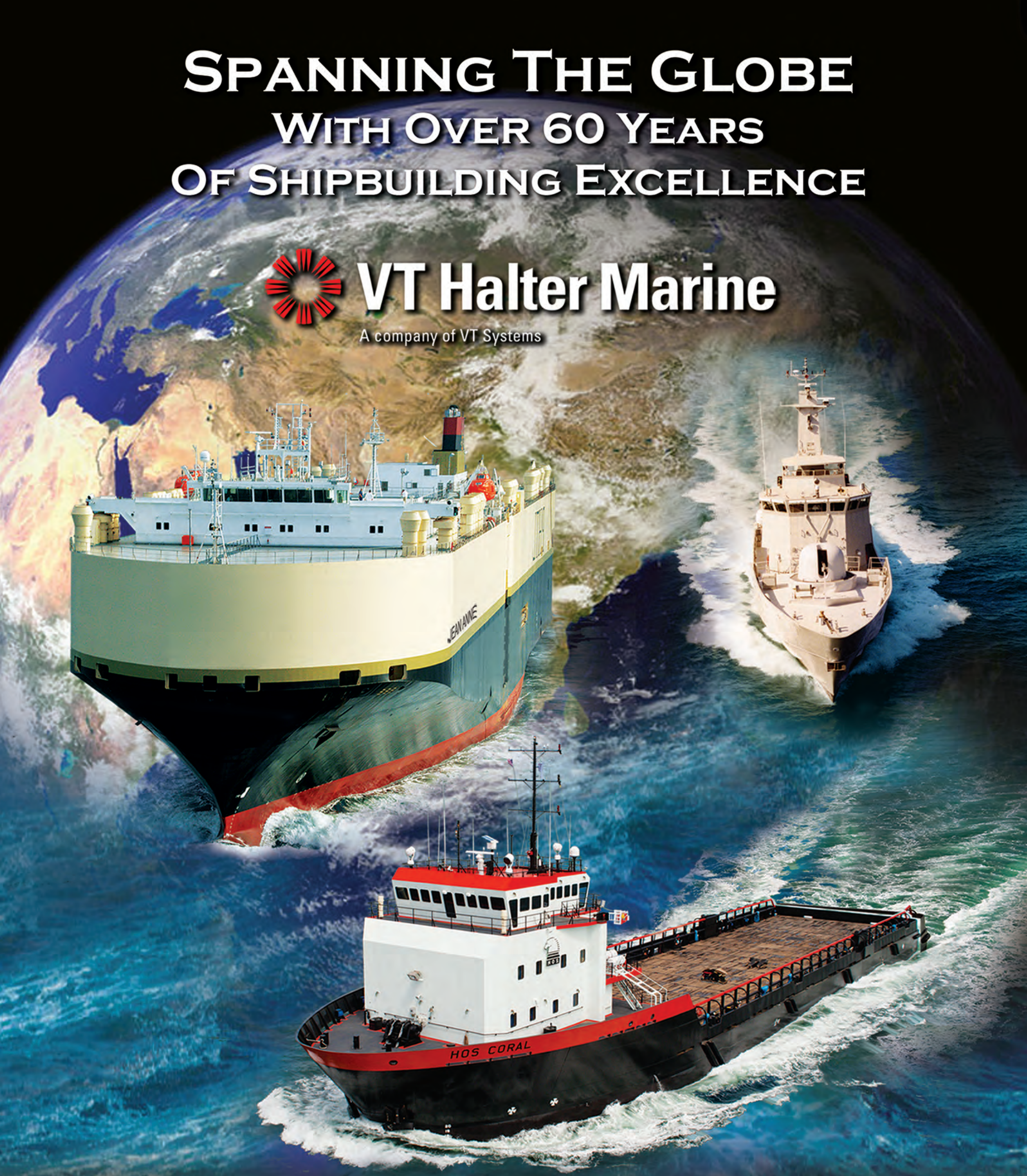

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Training Challenges

As Training initiatives increase, so too does pressure to do them well

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(Photo by Transas)

Last month more than 250 attendees gathered from more than 50 different countries for the Transas SimUC Conference, kicking off in Linthicum, Md., at the MITAGS Training facility, then moving to the Calhoon MEBA Engineering School for the balance of the agenda.

The maritime industry faces a huge challenge with regard to timely and proper training of merchant mariners and other individuals within the industry. The industry is changing rapidly. These changes are driven partly by regulation, but more so through technological advances and economic pressures. Ships are evolving. The individuals who operate and maintain those ships must learn new methods of performing their duties in order to keep up.

No government mandates the use of containers for shipment of cargo, but the taskmaster of economic competition has driven almost all shippers and carriers of many cargoes to adopt their use. The industry had to relearn cargo handling to accommodate that revolutionary change.

Likewise, no government mandates the use of azimuthing thrusters to propel ships. They have been found, though, to offer important advantages to many types of vessels. As with containerization, adoption of this new technology brought with it new training requirements. The list could go on and on.

Certain changes, though, are driven by regulation, particularly with regard to environmental protection measures. Double hulls, ballast water management, air emission controls and the electronic chart display and information system (ECDIS) stand out as examples.

Another primary reason that training presents such a challenge for the maritime industry is the basic business model utilized by many companies. Crew members are acquired through agents and management companies. Few crew members, particularly among the unrated personnel, stay long with one ship or one company. The crew has a continual turnover. Even experienced mariners, who may have sailed on tankers or containerships or another particular type for most of their careers seldom sail on the same ship for very long. As a result, these mariners are constantly working in new environments. The owners and operators of ships expect that every new crew member that reports aboard is fully able to perform all of his or her assigned duties, but that owner or operator seldom is involved in the training process.

When new equipment, such as ECDIS, is installed on a ship, the technical representative of the manufacturer provides basic training and familiarization to crew members, such as deck officers, who will be operating the device. The representative also provides an operator's manual. This is barely adequate for those particular crew members. It does nothing for the replacement crew members. Courts have ruled that just having an operator's manual available on the bridge is inadequate – the owner/operator must ensure that the crew member charged with operating a particular device has been provided the training required to properly operate it. ECDIS is a good example, because each model of each make of the ECDIS is different. The displays are slightly different from model to model. The control panels are different. The capabilities are different. To make matters more complex, each model is subject to continual upgrade. Being proficient on one model does make a person proficient on all models.

The Seafarers' Training, Certification and Watchkeeping (STCW) Code, as amended by the Manila Amendments, provides, at Section A-I/14.2:

The company shall provide written instructions to the master of each ship to which the Convention applies, setting forth the policies and the procedures to be followed to ensure that all seafarers who are newly employed on board the ship are given a reasonable opportunity to become familiar with the shipboard equipment, operating procedures and other arrangements needed for the proper performance of their duties, before being assigned to those duties. Such policies and procedures shall include:

.1 allocation of a reasonable period of time during which each newly employed seafarer will have an opportunity to become acquainted with:

.1.1 the specific equipment the seafarer will be using or operating;

.1.2 ship-specific watchkeeping, safety, environmental protection, security and emergency procedures and arrangements the seafarer needs to know to perform the assigned duties properly; and

.2 designation of a knowledgeable crew member who shall be responsible for ensuring that an opportunity is provided to each newly employed seafarer to receive essential information in a language the

seafarer understands.

For U.S.-flag vessels, the U.S. Coast Guard addresses the ship-specific requirement with two regulations. For all U.S. commercial vessels, the Coast Guard requires that:

> *Each credentialed individual must become familiar with the relevant characteristics of the vessel on which engaged prior to assuming his or her duties. As appropriate, these include but are not limited to: general arrangements of the vessel; maneuvering characteristics; proper operation of the installed navigation equipment; fire-fighting and lifesaving equipment; stability and loading characteristics; emergency duties; and main propulsion and auxiliary machinery, including steering gear systems and controls. 46 CFR § 15.405.*

The USCG regulation for vessels subject to the STCW Convention (46 CFR § 15.1105) is more specific, but to the same effect. One difference between the two USCG regulations relates to the wording. The general regulation is addressed to and places the burden of familiarization on the individual seafarer. The STCW regulation is addressed to and places the burden of familiarization on both the individual seafarer and the seafarer's supervisor. Crew changes almost always occur in port. Because port calls now are measured in hours rather than days, it is difficult to see how owners, operators, masters, and individual mariners meet their professional and legal obligations for shipboard familiarity prior to assuming duty. One change that might be adopted, albeit expensive, would be for the relieving crew member to join the ship at the port call prior to the port call at which the relieved crew member departs. Another would be for the port call to be extended – again potentially expensive. These expenses, though, are much less than the costs of an onboard accident or marine casualty that could have been avoided if the oncoming mariner had received the required familiarization before assuming duties. My limited research has failed to disclose a case where an owner or operator has been found liable for a marine casualty due to failure to provide the required shipboard familiarization, but such liability will eventually occur (if it hasn't happened already). The requirement for shipboard familiarization is professionally sound. Owners, operators, and masters should adopt the prudent approach and provide their crew members with a fair opportunity to properly perform their duties.

Some owners and operators do an excellent job of ensuring that their shipboard and shoreside personnel are properly trained – and my hat goes off to them. In my admittedly limited experience, though, these are in the minority. Many owners and operators set training standards for their managers and crew suppliers, but don't carefully examine the new crew members proffered to determine whether they actual measure up. Gaps in training, particularly with regard to shipboard familiarization, are widespread. Economic pressures in the past few years have resulted reductions in many training efforts. This development is short-sighted and will lead to higher costs in the future.

Maintenance & Certification

Critical to the Safety of Life at Sea

The off-load marine hook is found on many workboats and military vessels and is used to launch fast rescue craft and other similar small manned boats from the deck of a ship using a davit or other similar launch and recovery system (LARS). These hooks offer operators the split-second release control often needed at sea and include a self-locking feature, which prevents accidental release while under full load.

When all applicable equipment is in good working order, the nature of launching a manned small boat from an underway larger vessel while at sea is a dangerous task in and of itself and has resulted in many injuries and fatalities throughout maritime history. If this critical load bearing equipment is not kept in perfect working order, it serves to significantly increase the chance of an accident and potential injuries or fatalities during the launch and recovery procedures. Although proper training on the use of launch and recovery equipment plays a key role in minimizing the potential for an accident, the focus of this article is on the equipment involved in the launch and recovery process in general and on the maintenance trends that I have seen develop regarding off-load marine hooks in particular.

As the director of the testing and certification program for Eagle Products' hooks, I have noticed an alarming trend develop in the many hooks that we have processed. The first and most disturbing trend is the apparent lack of regard for the IMO mandated five-year testing and recertification cycle. More than half of the hooks that I have seen come through our facility for testing and recertification are grossly out of date. When testing and recertification are left up to the responsible party(s) for a vessel, a lack of knowledge on the five-year testing and recertification cycle often drives these hooks far into the out-of-date status.

Although an out-of-date hook may look fine on the outside, often there are hidden issues that cannot be seen which affect the potential performance of this key piece of critical load path safety equipment. Structural issues such as microscopic cracking or hidden wear on locking pins, metallurgical issues such as hydrogen embrittlement as well as relentless corrosion issues each contribute to hidden weakening of the hook. Particularly troublesome are crevice corrosion and pitting corrosion, which occur predominantly on portions of the mounting bolts that are hidden from the naked eye and create the potential for catastrophic failure of the hook.

Another alarming trend is improper hook maintenance. Top on the list is the use of grease to lubricate the working parts of the hook such as the locking pin mechanism, the positive lock, the latch and the rotating hook part. Grease should never be used on these hooks because of its tendency to collect particulate matter and become dry and caked up within the workings of the hook where it acts more like an adhesive than a lubricant. Many of the hooks we have serviced are gummed up with old grease to the point where the locking pin mechanism is only marginally functional. It is imperative that the locking pin be able to move freely within its confines for the hook to maintain the load that it was designed to hold.

Moving down the list of maintenance items, the lock pin spring and the latch spring need to be changed in all Cranston Eagle hooks every 30 months as per the manufacturer's requirements. This is a simple process that can be undertaken in the field by ship's personnel, yet it is rarely done. I have seen tired, worn and deformed springs that have not been attended to since the hook was originally manufactured. A faulty or tired lock pin spring can jeopardize the ability of the hook to maintain the load that it was designed to support if it does not fully push the locking pin into place.

Some of the other issues that I have found to be fairly common include frozen or stiffly moving hook parts, substituted sub-par non-OEM parts, highly frayed and improperly tensioned release cables as well as structural damage to the hook body itself.

I have worked my way through these issues to point out the fact that these critical pieces of safety equipment are not being properly maintained, with the goal to raise awareness within the industry.

It is up to each organization with a fleet of vessels to set up its own maintenance schedules, which they generally do very well. Including off-load marine hook maintenance at the top of that list is critical to the safety of the crews of our ships. For U. S. government vessels including the Coast Guard, the Navy and NOAA, the added hurdles of wrestling with reduced budgets, postponed maintenance availabilities and the cuts associated with the sequestration add a new level of difficulty to most vessel

1. This hook's locking pin mechanism was caked with dried grease and debris. 2. The heavy pitting on this mounting bolt was hidden from view while the bolt was installed on the hook. 3. This hook has been mounted on the test beam in preparation for load testing. 4. A Cranston Eagle 60-APR-456-C3B model hook after cleaning, testing and certification have been completed.

maintenance tasks. The critical safety systems and hardware, however, must remain on the top of the list of maintenance items and not be overlooked during these difficult times.

The five year load testing and recertification process will effectively take a tired old marine off-load hook and renew it to a hook that is like new and is safe and fit for its intended duty. The renewal process begins with a preliminary dye penetration test to check for hidden cracks. The hook is then completely torn down and all parts are thoroughly inspected for damage or excessive wear. Following the tear down, the hook body undergoes a three step cleaning process including a degreasing, bead blasting and vibra-polishing using a ceramic bead medium. Other major components such as the locking pin, latch, positive lock components and mounting and assembly bolts are degreased and cleaned by hand. The hook is then rebuilt to factory specifications. When the hook is rebuilt, the locking pin spring, latch spring, rollers, pull cable, positive lock bushings, nylock nuts, cotter pins and all instructional label plates are replaced automatically with new OEM parts.

After the hook has been reassembled, it is mounted on a purpose-built test fixture for load testing.

The load testing for the Cranston Eagle hooks is a critical process undertaken by an engineering team of the highest caliber. Delta P Subsea Systems, Inc. works in partnership with Delta T Systems and is responsible for the load-testing portion of the hook renewal process. David Dupont, VP of Engineering for Delta P Subsea Systems, is in charge of the load testing process.

The load that each hook will be pull tested to is equal to 2.2 times the safe working load (SWL) rating of the hook. Each load test is witnessed and signed off by a DNV or other class society official. Following the load test, the release tension for the pull cable is tested to ensure that the force, which is required to open the hook, falls within the acceptable range as per the manufacturer's specifications.

Upon completion of the load testing, the hook will undergo the second dye penetration test by a certified technician. The dye penetration test is critical for exposing any cracks or faults in the critical load path components of the hook that are not able to be seen by the naked eye. The hook is then shipped back to the vessel along with a full certification report and is ready to be installed on the vessel for another five years of service.

This "call to action" is for the responsible party for each vessel that utilizes marine off-load hooks to inspect their hooks immediately to make sure that they are within their five year certification window and in good working order. The stakes are far too high to overlook this critical piece of load-bearing hardware.

Michael Gabriel is director of the testing and certification program for Eagle Products' hooks. In January of 2011, Delta T Systems, Inc. located in Riviera Beach, Fla., took on the role of the U.S. agent for Cranston Eagle (DBA Eagle Products Ky), a Finland-based manufacturer of off-load marine hooks.

The Busy Signal

As maritime markets perk up, so too does the satcom sector

As maritime markets continue to recover and interest and investment in advanced communication systems picks up steam, Tore Morten Olsen, Head of Maritime Services at Astrium Services, says the focus now shifts now from simple connectivity to providing specific business solutions at sea.

By Greg Trauthwein, Editor

While the evolution of communications at sea has had its fair share of starts and stops, largely driven by overriding economic conditions of the day as well as the stale notion that communications costs are an expense versus an investment, Tore Morten Olsen, Head of Maritime Services at Astrium Services, is witnessing a sea change in attitudes, particularly from the stable of global maritime leaders that recognize the inherent value propositions with building a solid communication infrastructure across a company's stationary and mobile assets.

"I think it is important to realize that the maritime market is not just one market," said Olsen. "We have seen continuous strong growth in the high-end segments (upstream oil and gas, offshore service vessels, dredgers and cable layers, cruise and ferry, to name a few) over the last few years, both in terms of the number of units and in terms of the bandwidth and services that they apply on board. Today it is about more bandwidth, more services and fewer dollars per bit."

It is no secret that certain sectors of the general merchant markets have had a rough road to recovery in the wake of

"The worst thing you can do to this generation is cut their internet accesss. Today's generation of crew has an expectation of access, and the owners have to move."

Tore Morten Olsen, Head of Maritime Services at Astrium Services, *emphasizing the renewed importance of providing maritime communication solutions to attract and retain crew.*

the global financial meltdown of 2008. "The first quarter of this year has been very nice in terms of order intake," said Olsen. "The growth has been slow single digits in that market, but with underlying increase in bandwidth consumption for those that have the services. Now we see a lot of vessels migrating from traditional existing services into broadband."

Drivers for Connectivity

Traditionally, shipowners are of the mindset that communications are a cost rather than investment, and Olsen readily admits that proving the case of increased efficiency and economic benefit is rarely a straight path. "I think we have tremendous potential, but the real benefit is hard to justify in advance because it requires a different mindset in the way that they operate their vessels," said Olsen. "And there is no way that I, as a satellite communications person, can tell a shipowner how to operate their vessels. That's not my job."

What Olsen can do is rely on his top line clients to lead by example. While he contends that companies increasingly are turning to higher capacity communication solutions, he said minority percentage – approximately 20% – have adopted the solution. "There is still a lot of room for growth."

While ship automation (ie. "smart ships") tend to grab the spotlight, Olsen said one of the main drivers for services today are crew requirements. Providing crew amenities was particularly popular in the years up to 2008, when competition for crew was most fierce. However, this competition was dulled in the period 2009 through 2011 when the shipping industry navigated its leanest years and crew retention was not a top line concern. That is starting to change.

"The worst thing you can do to this generation is cut their internet accesss … today's generation crew has an expectation of access, and the owners have to move." In addition to crew services, Olsen said that there are several drivers to increased maritime communication service use, including a proliferation of machine-to-machine applications; legislative-driven issues such as secure cargo handling, CCTV for safety and oil spill monitoring; as well as simply leveraging the new onboard IT infrastructure for savings not yet realized, such as reducing phone costs, as Simon Møkster Shipping has done. "He [Simon Møkster Shipping] doesn't look at his fleet of vessels as a fleet of vessels anymore, he sees each as a branch office," where he can do everything at sea that he could do at headquarters. To do this, you need a certain bandwidth and throughput to run the applications, Olsen said.

An Industry in Flux

But as the shipping industry turns, so too does the maritime communication business, and Olsen said that years of consolidation and a vast increase in the number of competitive solutions has left the market, at times, confused.

"I think we [the satellite communications sector] are masters of making it difficult for the customer as an industry. Everybody has the best system in the world," Olsen said. "The philosophy of Astrium is simple: We are agnostic to connectivity; we want to make sure there is a consistent user experience across the connectivity, making it easy and future proof. Shipowners today are worried if the system they buy today will still be the best system in five years."

Being a part of the Astrium brand goes a long way in helping to assure existing and potential customers, particularly as the company is able to explore and leverage assets across the corporation, such as its network of earth observation satellites, to create value for maritime customers. "This is a capability that Astrium as a group has, and we are trying to leverage since the acquisition of the competence that sits elsewhere in Astrium to bring more value to maritime."

At the end of the day, Olsen and his team are focused on bringing to the market tailored maritime solutions, not simply connectivity products. "Now you have more than 100 broadband suppliers in the market; 10 years ago there were four or five of us, and everybody has their own specialty, but focused on the connectivity," he said. "We need to move from there and focus on what brings value to the vessel independent of the connectivity."

While he admits price is an important factor in any business, he doesn't believe price wars are a solid long-term strategy for success. "There is always somebody that will be cheaper, but we are not willing to jeopardize the quality of our product for a lower price. Near term you may take revenue hits, but long term it is a solid strategy."

Vizada XChange v 2.3

When talk turns to investing in the business with Tore Morten Olsen, Head of Maritime Services at Astrium Services, it inevitably comes to the company's XChange interface, which is positioned by Astrium as a seamless interface regardless of connectivity, for business and crew applications.

Earlier this year it rolled out some key upgrades to XChange, which now offers a range of new features to facilitate permanent remote access, allow smartphone usage onboard and provide improved VoIP capabilities. Users will benefit from a range of new features with XChange v 2.3 - specifically developed upon market demands.

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Artist's impression of NovaSAR satellite operating in Maritime mode © SSTL

Satellite Radar

Providing Persisent Maritime Surveillance

by David Beard

*With the ocean moving more than 90% of world commerce, keeping it secure is of vital importance – yet our ability to monitor activity at sea is somewhat more challenging than on land given the vastness of the oceans. Also many maritime monitoring systems rely on ships to 'opt-in', that can leave potentially risky blind spots in our picture of maritime traffic. This article, derived from a presentation that **David Beard** of the Defence Science and Technology Laboratory gave at the recent DMC and NovaSAR International Conference, discusses the U.K.'s need for a persistent maritime surveillance system with global reach, and explains how a new low-cost space radar system could help plug the holes in our vision.*

The Earth is called the Blue Planet for good reason with the sea covering 71% of its surface. Our interconnected, globalised society is now more dependent on the ocean – and therefore potentially more vulnerable to disruptions arising from it – than at any previous time in history.

The ocean is an economic and environmental resource, a regulator of weather and climate and most of all, the pre-eminent means of transport for both digital communications and physical goods. Approximately 95% of the world's telecommunications are carried via undersea cables and 90% of the world's commerce moves by sea. The world merchant fleet is made up of more than 50,000 vessels over 500 gross tons, 103,000 plus vessels over 100 gross tons and many more smaller craft. Add to this number some 21,000 ships in the world's fishing fleet, and it becomes clear that achieving satisfactory oversight of maritime traffic represents a major challenge.

It is a challenge that a trade-based nation like the U.K. must take up, however, in order to safeguard our strategic interests. Maritime trade supplies 90% of our goods and 50% of our energy needs. U.K. sea trade is projected to be worth circa £700 billion by 2017.

But maritime trade routes are proving increasingly vulnerable: the World Bank estimates piracy off Somalia has imposed a hidden tax on world trade, costing the global economy around $18 billion annually – not to mention some 3,741 crewmembers captured during pirate raids. 50% of the world's oil travels through seven major sea chokepoints and fear of a closure alone could trigger a significant oil price spike.

In addition, the U.K. needs to monitor around 858,000 square kilometres around the British Isles, as well as the maritime areas around several Crown Dependencies and Overseas Territories in the Antarctic, Caribbean, Mediterranean, South Atlantic, Pacific and the Indian Ocean. Maritime trade needs to be secured within these waters – including provision for search and rescue – while also protecting against illegal activities including drugs, weapons or people smuggling, illegal fishing and pollution.

Add in the requirements of military situational awareness – serving maritime force protection and early warning, as well as enforcing United Nations arms embargoes – along with support for humanitarian activities such as evacuating U.K. citizens and monitoring refugee movements, it adds up to quite a comprehensive shopping list of needs for maritime security applications:

- **In defined maritime areas of interest across the world**
  - Detect, track, recognize and identify all ships and boats
  - Detect pollution and attribute to a ship or boat accurately
  - Detect and map presence of sea ice and shallow water obstacles.
- **Find, fix, track and monitor activity of specific ships globally.**

In summary, what is required is persistent regional wide-area maritime surveillance, with global reach.

Is such a capability realistically and practically attainable? Perhaps surprisingly, the answer is yes. To begin with, several cooperative ship reporting systems already exist, notably the Automatic Identification System (AIS) mandated by the International Maritime Organization. Introduced primarily for collision avoidance purposes, the maritime equivalent of air traffic control, AIS transponders are carried on a mandatory basis by all large commercial and passenger vessels, continuously broadcasting vessel information including ID, type, position and course, destination and cargo.

Nowadays websites of many ports allow AIS-based tracking of maritime traffic in real time – though VHF-based AIS transmissions are horizon limited so further offshore remains a blind spot. But it turns out that AIS signals propagate into space. AIS-based global ship tracking has been demonstrated by various satellite missions as well as a test receiver on the International Space Station.

Other ship reporting systems complement AIS, including the explicitly satellite-based Long Range Identification and Tracking (LRIT) system and the Vessel Monitoring System (VMS) for fishing vessels. But while there are many ways of recognizing and tracking cooperative vessels, that still leaves non-cooperative vessels out of the picture – and it is these vessels that

Leading the Pack

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may warrant further investigation.

So how about harnessing satellites for direct visual ship detection as well? Standard optical Earth observation satellites cannot deliver because most of the world's sea areas are often covered by cloud. There is a suitable alternative however: satellite-based radar. While optical satellites – like standard cameras – rely passively on reflected sunlight, space-based radar systems actively illuminate the Earth's surface with a microwave beam then record its resulting backscatter – effortlessly peering through clouds or local darkness. Radar satellites, therefore, chart surface texture rather than reflected light, with manmade structures shining back more brightly than natural surfaces, the straight metal surfaces of ships shining compared to the surrounding ocean (while wave-dampened oil slicks typically appear darker than rougher seas). A standard radar image comes in black and white, although multiple signal polarisations can be combined to add 'color' to a scene – typically possessing added value in detecting both the vessel itself, for example, as well as the wake it leaves through the water to deduce its velocity and direction.

For sharper imaging resolution these synthetic aperture radar (SAR) systems mathematically combine the returns from multiple beams as the satellite moves along its orbit, permitting multiple imaging modes combining various different image areas and resolutions. While in medium-resolution SAR mode a ship might appear as a bright dot, a higher resolution mode might cast light on its type, although ship identification cannot be achieved through SAR imagery alone. As well as identifying oil spills, SAR is also sensitive to land features and sea ice, as well as supporting shallow bathymetry.

Radar satellites have been in service for more than four decades. Due to high power requirements, radar satellites tend to be large van-sized platforms with wide solar wings. Usually, they also come with a high price tag, typically in the hundreds of millions of dollars.

But the state of the art has changed, to a point where it is both technically and financially feasible for a radar satellite constellation to become an important source of maritime situational awareness for the U.K. The U.K.'s Guildford-based Surrey Satellite Technology Ltd (SSTL), a leading developer of cost-effective small satellites for more than 30 years, has developed a new radar satellite platform called NovaSAR that will provide affordable and high performance radar imagery.

With manufacture currently underway, the 3m by 1m, 400 kg-mass satellite is a fraction of the size and cost of standard radar satellites, with a solar panel on its Sunward side and a radar antenna pointed Earthward. Its avionics are derived from SSTL's successful family of Disaster Monitoring Constellation (DMC) Earth-observing satellites, owned by various national government customers but collectively operated for rapid global coverage.

SSTL has achieved this technical breakthrough by leveraging advances in the terrestrial electronics industry to fulfil operational requirements cost-effectively. So, for instance, NovaSAR employs S-band radar as the best compromise enabling a compact antenna combined with affordable amplifier systems. Airborne tests of an S-band SAR instrument have shown an imaging performance comparable to radars operating at higher frequencies, such as X-band.

Its development part-financed by the U.K. government, NovaSAR incorporates a specific Maritime Surveillance mode, with a typical swath width of 750 km at 30 m spatial resolution (capable of shifting down to 6-m resolution 'Stripmap' mode on follow-up passes) covering up to 8.8 million square km of ocean daily, in all weather. Multiple satellites would allow regular passes, occurring every few hours rather than days. The utility of NovaSAR will be boosted further by flying an AIS receiver on the same platform to identify vessels and swiftly pinpoint any anomalous vessels with inaccurate or missing AIS signals.

These coincident space-based radar and AIS intercepts will be combined with other data sources through an already-operational ship tracking system called TELESTO, which serves to construct a maritime situational picture automatically. Developed by Dstl, TELESTO, is providing the national data sharing framework which supports the work of a number of government departments including the National Maritime Information Center (NMIC) and the Royal Navy.

Opened in April 2011, the NMIC is a cross-government center staffed by specialists from the Marine Management Organization, Maritime and Coastguard Agency, Serious Organised Crime Agency, U.K. Border Force, Metropolitan Police, Ministry of Defence and the, Foreign and Commonwealth Office. These stakeholders give an insight to the varied uses NovaSAR imagery can be put to, regarded as a fundamental ingredient in maintaining and enhancing the U.K.'s maritime situational awareness. And if a picture is really worth a thousand words, NovaSAR imagery of jewel-like ships strung along our waters may well incidentally raise public consciousness of the pivotal role of sea trade in the U.K.'s national security and prosperity.

David Beard BSc CPhys MInstP

As Dstl lead for space, David provides technical expertise and capability advice to U.K. MOD on space policy, strategy and programs of relevance to defense, including NovaSAR.

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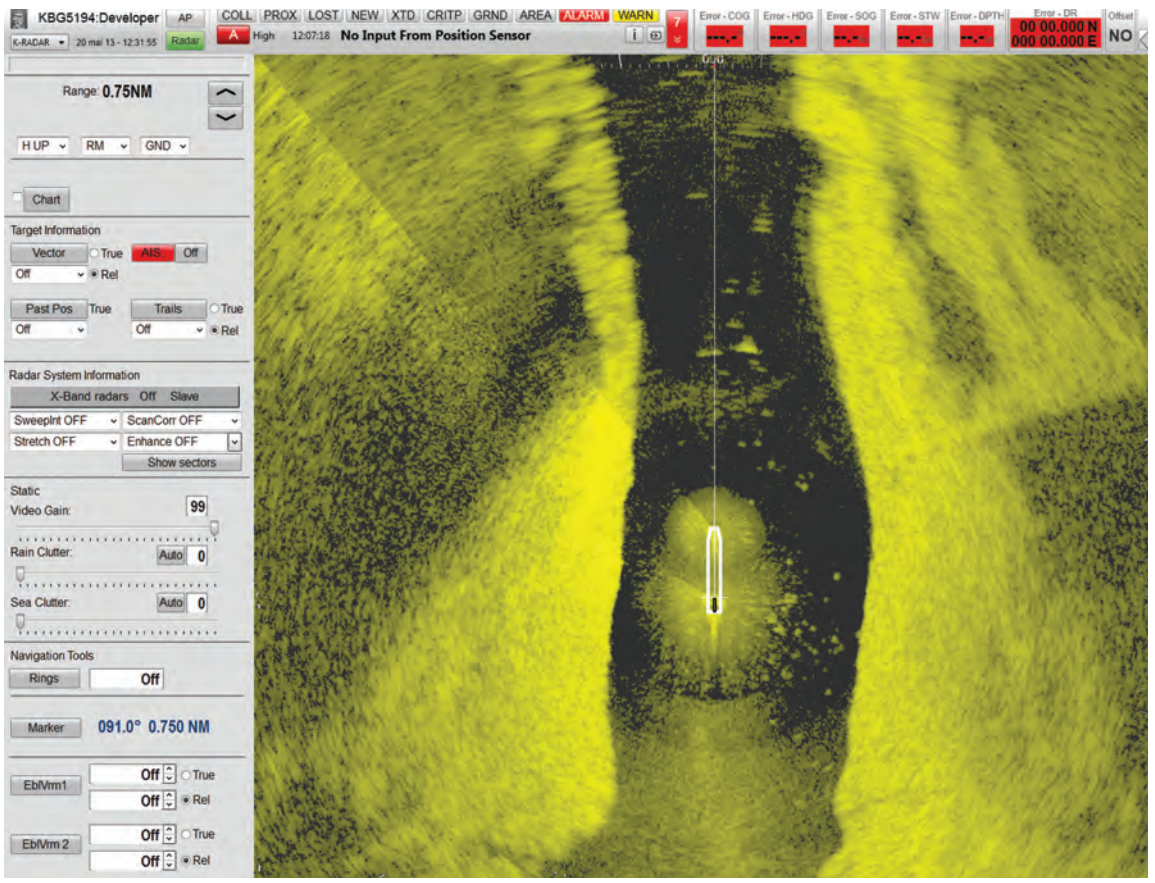


Kongsberg's New Radar Solution

Kongsberg Maritime presented a new solution for the distribution of Radar data on board ships. Using an Ethernet based LAN is a significant addition to Kongsberg Maritime's K-Bridge Integrated Bridge System and, according to the manufacturer, is capable of improving safety and navigation through enhanced Radar functionality. The system is currently undergoing Type Approval testing at DNV, with first customer delivery in Autumn 2013. The LAN topology is based on a newly developed Radar Interface Network (RIN) unit to be located at each antenna, connected to the Multi Functional Display (MFD) units on the K-Bridge by a Local Area Network (LAN). It provides enhancements in how Radar data is presented, made possible because of the digital network, improved signal processing and automatic Radar and picture tuning. Images from several Radar antennas can be viewed on the same screen including the possibility to view both X-band and S-band data in the same image.

www.km.kongsberg.com

KVH, Jeppesen Offer IP-MobileCast Content Delivery Service

KVH Industries plans to launch a new IP-MobileCast content delivery service that will deliver Jeppesen's entire ENC and Professional+ chart databases to mini-VSAT Broadband customers.

Based on ongoing cooperative efforts between KVH and Jeppesen, it is anticipated that this new service will enable automatic delivery of electronic charts over a very reliable satellite delivery service, eliminating the time-consuming, manual process of physically shipping DVDs containing chart updates to customers' ships. "The launch of KVH's new IP-MobileCast service is expected to offer tremendous value in delivering large files such as chart databases to vessels, because of its anticipated ability to multicast the data to all customers in the satellite coverage area with a single satellite transmission of the file, rather than sending the same file individually to each vessel," explains Brent Bruun, Executive Vice President of KVH's Mobile Broadband Group. "One-to-one transmission of entire chart databases, which can be as large as three gigabytes, would be prohibitively expensive. We're hoping to change the economics by applying a new, more efficient approach to delivering content to ships."

The new IP-MobileCast service is expected to be a complete, end-to-end solution for content delivery. Source data will be encoded to be multicast using proprietary software that is expected to provide advanced error correction, file compression and data validation that together ensure a high level of reliability in file delivery. Data will be delivered, decoded and validated using KVH's onboard CommBox Ship/Shore Network Manager, which is built into the new unified Integrated CommBox Modem (ICM) belowdecks unit standard in all of KVH's new TracPhone V-IP series products. The IP-MobileCast service is being designed to not impact the normal service speeds or airtime plans of mini-VSAT Broadband subscribers, since it will be sent "over-the-top" of service allocated for one-to-one services.

The new IP-MobileCast service is expected to be available to support all of Jeppesen's flexible chart licensing programs, including traditional direct licensing, cost-effective dynamic licensing, and OpenENC Pay-As-You-Sail (PAYS) service by the end of 2013, subject to ongoing cooperation and final agreement between the parties. KVH and Jeppesen are already developing new ways to deliver navigation content to vessels, and will continue to work together to offer innovative new services that will help vessel owners meet the regulatory and economic challenges of the 21st century.

www.jeppesen.com
www.minivsat.com/vip

ExxonMobil Upgrades Cylinder Condition Monitoring Program

ExxonMobil Marine Fuels and Lubricants upgraded its marine engine condition monitoring program. The MobilGard cylinder condition monitoring (CCM) program now has the functionality for onboard oil samples to be compared against ExxonMobil's database of nearly 100,000 test results, helping operators to protect and optimize the performance of their engines, the company siad.

"The upgrade of the MobilGard CCM program comes at a time when engine builders continue to push the boundaries in developing next generation models, and some marine operators are retrofitting older engines with fuel optimization kits," said Steve Walker, Global Field Engineering Services Manager, ExxonMobil Marine Fuels and Lubricants. "With the introduction of new models and adaptation of older engines, comprehensive engine condition monitoring programs are going to be key to help monitor these engines in operation going forward."

The MobilGard CCM program includes taking regular cylinder oil scrape down samples from the scavenge drain system. Two tests are carried out on the sample, which analyze the two key parameters of iron content and total base number (TBN) in the oil, using onboard measurement units.

The concentration of iron in the scrape down oil provides an indication of an engine's liner wear rate. The TBN level demonstrates if the engine's liners are being protected from the effects of the acidic products of combustion, or are in danger of suffering from corrosive wear.

In addition to the onboard checks on scrape down oil, the MobilGard CCM program includes a range of laboratory-based tests to give further insights into the performance of the oil and engine.

These include oil condition and wear metal analysis. According to the company, all findings are reported in an easy to understand format including historic trend analysis for the engine with advice on how to rectify areas of concern, and opportunities to optimize engine operation.

www.exxonmobil.com

Intellian Launches New VSAT Control Software

Intellian launched Aptus, a new graphical interface based PC software for monitoring and control of Intellian VSAT antennas which it says simplifies use and provides antenna operational data.

The Aptus PC software is compatible with all Intellian VSAT antennas and can also be used on the 3-Axis TVRO systems. The software is connected via the onboard network, allowing for use with either PC through a simple one-click installation.

Straightforward IP connection over the Internet from anywhere in the world and set-up, coupled with the antenna status reporting helps to increase the performance of the antenna as well as debug the system.

There is also an in-built auto-diagnostic function that can connect to the VSAT ACU by serial or USB cable.

www.intelliantech.com

Imtech Demos Remote Access

Imtech Marine and Cobham SATCOM introduced a remote access service which will be delivered by the Imtech Marine 24/7 Global Control Rooms (GTAC, Global Technical Assistance Centres) in Rotterdam, Houston and Singapore, giving direct access to a vessel's Cobham SATCOM communications systems, including current generation SAILOR GMDSS products and satellite antennas.

"Experience shows that remote equipment monitoring and direct access provides significant operational and financial benefits," said Dennis Mol, Director Technology and Competence Development, Imtech Marine. "We can now conduct regular health checks on SAILOR systems from shore, enabling us to conduct preventative maintenance and reduce the time and cost of visiting a vessel for manual servicing. We can also prepare SAILOR products for annual servicing from shore, reducing the time needed on board by up to 75%."

The Imtech Marine GTAC is now able to view in real-time the status of SAILOR systems that are running the Thrane Management Application (TMA). The TMA is a software service made possible by Cobham SATCOM's ThraneLINK network protocol. It is already widely in use as the single-point-of-entry for SAILOR products. GTAC can also carry out health checks on Cobham SATCOM's SAILOR 900 VSAT and the SAILOR FleetBroadband family.

The integration of SAILOR products and the TMA with GTAC is a joint project between Cobham SATCOM and Imtech Marine, whose iShare@Sea philosophy generates optimal network topology to support ship-shore data management through GTAC.

$19.8B Opportunity

Douglas-Westwood (DW) has released the fifth edition of the World Offshore Wind Market publication where we forecast offshore wind installations averaging 3.2 GW per year over the next 10 years. Capital expenditure is expected to hit a peak of €18B in 2016. The market will remain highly concentrated in the Northern European region, particularly in U.K. and German waters. The Chinese market will also grow quickly in the forecast period.

Why Offshore Wind?

Due to low carbon targets and a need to secure new energy supplies, offshore wind has become an important component in the future electricity generation mix for a number of countries, mainly in the European region. Offshore wind developments are potentially attractive to project developers due to a number of factors including:

- The large, untapped offshore resource allows build at utility-scale with installed capacities of 100s of Megawatts (MWs)
- In comparison to onshore sites, average wind speeds are both higher and sustained over longer periods and wind flow is less turbulent, leading to better energy yields
- When implemented as part of a balanced energy strategy offshore wind increases diversity of supply and reduces fuel imports
- When sited far from shore, the theory is that there will be shorter planning timelines in comparison to other forms of renewable energy such as onshore wind.

Dmitry Dovgan
Dovgan has a background in strategic management and business analysis, with a wide experience in the energy industry. Before joining Douglas-Westwood he worked for a major oil & gas service provider and also applied his skills and experience at Scottish Enterprise, Scotland's main economic development agency, where he worked on economic evaluation of opportunities for inward investments and delivered industry analysis in both renewables and the oil & gas sector. Dovgan studied economics in Russia and Germany, and has an MBA from Aberdeen Business School.

www.douglas-westwood.com

Offshore wind projects

The offshore wind project lifecycle can be split into three main phases, these being the initial phase of capital expenditure (Capex), followed by a lengthy period of expenditure to maintain the offshore wind farm (Opex) and then finally, a second Capex phase required to decommission the wind farm.

The initial build phase encompasses all investments and activities related to planning, development, procurement and installation processes, resulting in a fully commissioned, electricity generating offshore wind farm. The duration of this phase can be highly variable but timelines of 10 years are not unheard of.

The Opex phase of an offshore wind farm can last 20 years or even longer, at the end of which the operator may decide to repower or decommission the project. To date, no large-scale offshore wind farms have been decommissioned.

Increasing project scale has been a major underlying trend in the industry. Early offshore wind farms were located in water depths of 10 meters or less and were typically less than 5km from shore. Capacity, water depth and distance from shore have all been increasing since these early projects.

The chart below shows how this trend is set to continue over the next 10 years. For example, the majority of U.K. Round 3 projects are over 30km from the shore and over 1,000 MW in size. In total, the nine designated Round 3 zones represent over 30 Gigawatts (GW) of potential capacity and would require capital expenditure levels of more than £80 billion (€93.6 billion).

Offshore Wind Costs

High cost levels are one of the major areas of concern in this emerging industry. At the present time the cost of energy from offshore wind is significantly higher than for conventional thermal power plants (gas and coal) and even onshore wind.

Due to high cost levels, offshore wind requires financial support, often referred to as subsidies. As a consequence, any uncertainty in this area can cause a slowdown in activity, as is being experienced in the UK. market due to the ongoing Electricity Market Reform (EMR) process being undertaken by the current government.

Evidence of cost reduction is limited although our analysis of upcoming projects indicates that Capex rates may be starting to plateau. Opex rates are more difficult to assess as sustained operational experience is limited and results are opaquely reported.

From a financing perspective the high cost levels and the risks associated with offshore construction, new wind turbine technology and offshore operations, have made it difficult for project developers to tap into new sources of capital. The current reliance on the public sector to provide financial support, both directly and indirectly and on global utilities to self-fund projects looks to be unsustainable in the long-run.

Offshore Wind Turbines

The wind turbine represents the largest share of project Capex and is therefore a focus area for technology development. In the early years, turbines were variations of onshore machines, whereas the latest models are increasingly designed around the specific requirements of the offshore environment. Examples of an offshore-specific approach can include building redundancy into the system and adding air treatment systems to filter the corrosive marine atmosphere.

Building further from shore also allows wind turbine units to be larger than their onshore counterparts. The average power rating for offshore wind turbines is currently approaching 4 MW and this trend is expected to continue in the future, as over 75% of the new offshore wind turbine models announced up to 2012 had a rated capacity of over 5 MW. Although the underlying trend is clear, commercialisation of larger wind turbines has tended to be slower than expected.

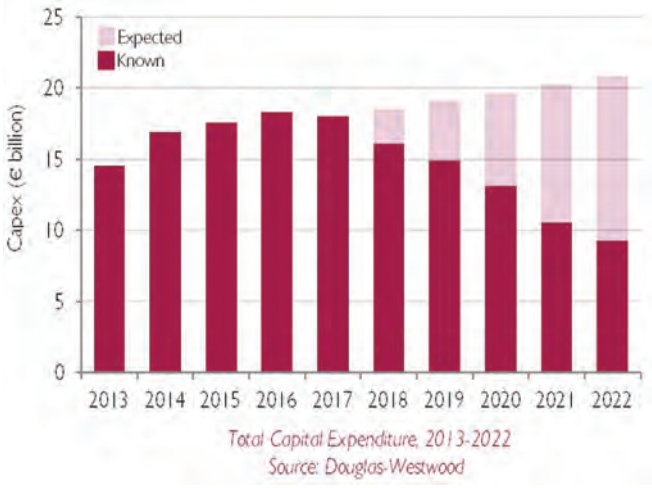
As power capacity increases the dimensions and weights of the major components also increase creating a unique set of challenges for foundation designers, installation contractors and maintenance crews. In the medium term, wind turbine blade diameters will increase from 90 meters to more than 150 meters and the weight of the nacelle (hub unit / generator) will increase from 100 tons to more than 300 tones.

Offshore Wind Installation Vessels

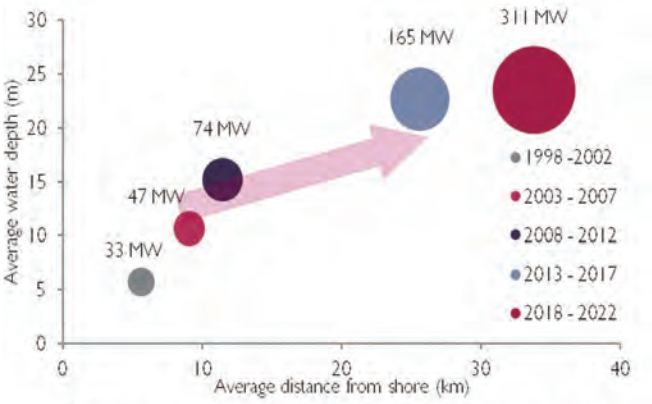
In order to install offshore wind turbines and their associated support structures, installation contractors and even energy companies have been building a fleet of purpose-designed vessels. At the mid-point of 2011 there were almost a dozen wind turbine installation vessels under construction around the world. Consequently, a large number of highly specialized vessels have come to market in recent times in expectation of future growth.

This present phase of intense construction activity is coming to an end, and new vessel orders have slowed down with at least one major installation contractor stating that it has put a hold on its new-build plans due to potential oversupply in the future.

While the most recently completed vessels are similar in concept there does appear to be a smaller subset at the very high end of the market, which have been "future-proofed" to carry out installation of very large wind turbines with capacities of 7.5MW or more. These vessels include the HGO Innovation and Swire's sister ships the Pacific Orca & Pacific Osprey. Project developers feel that



Total Capital Expenditure, 2013-2022
Source: Douglas-Westwood



Projects scale: average project capacity, distance from shore and water depth
Source: Douglas-Westwood

these vessels will be the most highly utilized as the market develops.

Market Forecast

Due to the uncertainties in the industry and the slow growth experienced historically, Douglas-Westwood take a conservative view when undertaking its market modeling, with particular sensitivity placed on the more speculative projects. However, there is a positive upward trend, with significant expenditure expected, which has attracted many of the largest industrial players from those that are already involved in the onshore wind industry to new entrants.

We forecast activity both by country and by a multitude of category areas such as wind turbines and installation vessel requirements. Several highlights from the report are picked out below:

Telieve that due to the strong long-term drivers for new sources of power generation, Capex will be maintained at or exceeding 2016 levels.

Conclusions

The future growth of offshore wind is highly linked to achieving meaningful cost reduction, which would in turn unlock investment from both project financiers and the supply chain. Unfortunately, there is no single answer to cost reduction, and it will only be achieved through a combination of approaches including increased competition in the supply chain, higher reliability levels, new maintenance strategies and optimized wind turbine designs.

There is evidence of new approaches in areas such as contracting strategy and risk sharing between project developers. Several major industrial players including Samsung and Areva are also in varying stages of development of new offshore wind turbines. This development should bring increased competition to an area currently dominated by a single player. Leveraging experience from the established offshore oil and gas sector is another promising development especially in areas such as offshore construction and maintenance activities.

Sevan Drilling's Big Dig

by Claudio Paschoa

Up until 2011, Sevan Drilling was part of Sevan Marine, which builds FPSOs. In 2011 Sevan Drilling was separated from Sevan Marine becoming an independent company. Sevan Drilling was established by Sevan Marine in 2006 for the purpose of building state-of-the-art, ultra deepwater drilling rigs based on the Sevan 650 design, commonly known as the bucket design.

Later the same year, Sevan Marine completed a private placement for the purpose of financing, in part, its drilling business, and an order for Sevan Driller was placed with China Ocean Shipping (Group) Company (COSCO) in 2007.

Sevan Drilling owns and operates two rigs of the cylindrical Sevan design. Both rigs have long-term charter contracts with Petrobras in Brazil for deepwater and ultra-deepwater plays including the pre-salt.

In March 2013, Jon Willmann CFO and Deputy CEO for Sevan Drilling, gave a presentation at the exclusive Hotel Santa Teresa in the hills overlooking Rio de Janeiro. According to Willmann the company has a management and operating organization well positioned for further growth, sans the financial difficulties that afflicted Sevan Marine in 2012.

(Photo: Claudio Paschoa)

Jon Willmann CFO of Sevan Drilling

Willmann explained that its four high-end UDW rigs have a unique and cost effective design and have proven to be safe and efficient for operations in ultra deep waters worldwide, including Brazil, West Africa and the U.S. Gulf of Mexico.

"Sevan Drilling has a perpetual license with Sevan Marine for use of the Sevan design for drilling purposes," Willmann said. "The company has approximately 481 employees based in Brazil, Norway and China."

"This month, Sevan Drilling signed a three-year charter contract for operations in the US GoM with LLOG Bluewater Holding LLC. This rig, now named Sevan Louisiana, is currently under construction at the Cosco Quidong shipyard in China, and will be used for this contract," said Willmann.

The rig is scheduled for delivery in Q4 2013, with operations set to start in January 2014, with a total value of the charter contract in excess of $550m. Willmann also explained that due to this new contract, Sevan Drilling will establish a Houston office to support its GoM operations, where it expects new charter contracts to be forthcoming.

When asked about their relationship with Petrobras, he said "Petrobras has been extremely supportive of both Sevan Marine and Sevan Drilling. Without Petrobras neither company would be in the market today. Petrobras betted on us, awarding contracts without any track record, which is pretty bold and they have been extremely important in developing our company. That said, they do not operate as a charity and are a very professional company. We have had to demon-

(Photo: Sevan)

Sevan Brasil arriving in Rio.

strate operationally that their trust was well placed."

"The Sevan design has some competitive advantages. The motion characteristics are better than those of semi-subs or drillships. This better sea performance equates to longer uptime for the operator. From an environmental perspective, the second factor is that our design has a moon pool, and a semi-sub does not. The risers and the drill strings are protected in this moon pool, whereas in a semi it is just open sea with no protection whatsoever. Our units are also cheaper to build, so we do not need the peak rates to generate returns."

Regarding prospects for the coming five years, Willmann said, "Since November 2011, Seadrill acquired Sevan Marine's stake in Sevan Drilling. Seadrill is the world's most successful operator. There is however a high financial risk associated with Sevan Drilling coming from the fact that we have high leverage. The most important step going forward is to deleverage the company. We are aggressively amortizing the debt that we have today. In addition, rigs three and four have much lower Capex than the previous two and they are exposed to a market with much higher day rates than the first two. Assuming market rates for those two units, this will generate deleveraging for the company and will give us better financial flexibility. If you measure risk by operational leverage: debt to EBITDA, we are aiming to move from a net ratio of more than eight down to three in 2015 when all four rigs are on contract, assuming that all rigs are at market rates. The key will be to get contracts for rigs 3 and 4. Rig 3 is already contracted, so we must concentrate on chartering rig 4. We then have options for a further two rigs from COSCO."

Sevan 650 design characteristics

- Large load carrying capacity
- Low roll and pitch motions
- Simple structural layout – simple to build
- Lower cost to build and operate
- Offers a very stable drilling platform to meet growing need for low cost-efficient operations

Deepwater exploration drilling requirements

- The number of exploration and appraisal wells is expected to rise by 50% within 2020
- Discovered resource volumes are becoming increasingly drilling intensive
- Pre-salt drilling requires much more rig capacity per well
- Leading to a step increase in rig demand while number of wells are fairly flat from 2008 to 2013

Sevan Drilling – Fleet Capabilities

Ultra deepwater capabilites

- Capable of drilling in water depths up to 10,000 feet.
- Upgradable to 12,000 feet.

Storage capacity

- 2.5–3.0 times deck load capacity of a sixth generation semi-submersible unit.

Environmental advantages

- Zero discharge capabilites.
- Double sides – double bottom.
- Drilling through moon pool.

(Continued on page 82)

Gulf Copper Keeps "Calm"

by Greg Trauthwein

Gulf Copper's Port Arthur facility earlier this year completed a unique 10-month project to build the three massive buoys for SOFEC, buoys which will be used to offload liquid product such as diesel or gasoline in places lacking deepwater ports.

In total Gulf Copper received two separate contracts to build a total of five CALM buoys (3 and 2), for SOFEC. The order is of particular interest from the yard's view as it is a new line of business for the company.

The massive buoys pictured here are Catenary Anchor Leg Mooring System, or CALM buoys, and SOFEC is a global leader in the supply of CALM and SALM terminals globally. Each unit weighs in at 230 to 260 tons (depending on the number of heads) and the floating hull of the buoy is tethered to the ocean floor offshore of a storage or processing facility. "SOFEC Inc. has manufactured and delivered a total of 44 CALM buoys to date," said Claude Signori, Project Manager, SOFEC, when Maritime Reporter checked in with him last month. "These have been delivered and installed evenly between Latin America, the Middle East and South East Asia. The demand for CALM buoys has been fairly steady since the early 80s and is expected to remain steady for the foreseeable future. Prior to the arrival of the offshore terminal, vessels were obliged to moor to Jetties in a harbor/port. This would mean the construction of Jetties, the addition of transfer hoses or mechanical loading arms and in most cases the expensive dredging and upkeep of channels to accept the medium to very large vessels used for the transport of liquid hydrocarbons."

CALM

CALM refers to Catenary Anchor Leg Mooring, and the CALM Buoy is a floating hull with a rotating head to which vessels can moor. The CALM buoy falls under the category of a Single Point Mooring (SPM) typically with a turntable positioned above the geostationary hull mounted on a roller bearing. Flexible large bore rubber hoses are used to connect the subsea pipeline to the hull. Similar floating hoses are employed when connecting the buoy to a tanker prior to transferring liquid hydrocarbons. Central to the main bearing is a product swivel which allows fluid to transfer between the geostationary hull and rotating turntable while the moored vessel weathervanes. The primary benefit of a CALM Buoy over a SALM Buoy is ease of maintenance. The mechanical U-Joints of a SALM are removed, and the fluid swivel is located above the water surface. The vast majority of Marine Terminals installed since the mid 1990s have been CALM Buoys because of these design improvements.

While the technology is proven and accepted, demand can be tricky to gauge, according to Signori. "We have seen various increases and decreases that are very difficult to predict. These marine terminals are not market followers since delivery from concept can be 24 months or more. What we do see is a high demand for new refineries and power plants in remote regions where ports are not part of the local infrastructure. It is much less costly to develop a system using a marine terminal than building a new port or harbor."

One advantage of the CALM buoy for the operators is the ability to locate these terminals offshore in a suitable depth of water with an easy installation of the buoy connected to shore to via a pipeline. Another advantage, the environmental signature of an offshore installation is considerably less than a shore side terminal. These two factors, coupled with an expected operating life of 30 plus years will continue to drive the future market, according to Signori. "Also, as developing countries rely on importation of crude or refined product, we continue to

(Images: Gulf Copper / SOFEC)

see an increase in demand. For instance, as India invests in relative remote areas with refineries for their internal needs, the supply of marine terminals to import the feedstock has increased. The same will be true of power plants that rely on liquid hydrocarbons for operation."

A Partner in Gulf Copper

The project was a first for Gulf Copper, and according to Eric Callarman, Gulf Copper & Manufacturing Corp., it presented its fair share of challenges along the way. But he credits SOFEC, their technical expertise, experience and willing to partner to resolve issues as they arose as helping the yard to build its best practices even further.

According to Callarman, challenges started with the schedule which demanded a 10-month production deadline. In addition, it was the biggest fabrication project to date for the Port Arthur facility, and construction far exceeded simple fabrication, involving electrical, mechanical, critical machining and FAT testing. "With the help of our client, we raised our level of quality to meet project requirements. We actually look forward to utilizing this new level of quality on projects moving forward." For example, "we originally thought that the fabrication of the CALM Buoys was going to be the most difficult and time consuming portion of the project but as we started the mechanical and integration portion of this project, we quickly learned that this was actually the most difficult and time consuming." The final challenge is one familiar to most any ship construction facility on every continent: the location and hiring of qualified craftsman to execute the contract. In total Gulf Copper added 50 positions for this project alone. But by the account of the client, all challenges were met.

"SOFEC is very pleased with Gulf Copper's performance," said Signori. "The quality is very good, and financial performance solid. Some of the mentioned challenges appeared in the form of schedule challenges, but these were overcome with hard work and more than a couple long days. Nonetheless, the project met both the Owner and SOFEC expectations.

"We were interested in contracting this work on the Texas Gulf Coast," Signori said. "We were sure the proximity of SOFEC in Houston to a Gulf Coast fabricator would provide an advantage. And given that the local fabrication would support the end user with regards to transportation and importation obligations at the final destination, it was an easy decision to try to work locally. The difficulty would be to choose the right partner. SOFEC selected Gulf Copper based on their solid ship repair and fabrication experience," Signori added. "SOFEC audited the yard and came away certain they could do the work."

Two additional CALM buoys are currently being fabrication at Gulf Copper and will be delivered in December 2013. "There is every reason to believe we will work with Gulf Copper on more projects in the future," Signori concluded

And while the business value of winning this contract and building these complex systems is self evident, Callarman sees a value to the project that will extend to and through the work of Gulf Copper. "The biggest lesson learned from this project is that we thought we were a very good fabricator, and we are, but this project exposed areas of needed improvement," said Callarman. "Everyone at Gulf Copper, and on this project team, really got on board with this project and we made many improvements throughout this project. We are really excited by the improvements that we made and what this will do for Gulf Copper moving forward."

Eastern: Beyond the Backlog

Eastern Shipbuilding eyes bigger prizes while maintaining both quality and an astounding pace of work at their Panhandle locations. For these reasons and more, Eastern is one to watch.

by Joseph Keefe

A sweltering, early July visit by Maritime Reporter to Eastern Shipbuilding Group's (ESG) two Gulf Coast fabrication yards brought much more than the sheer breadth of its business backlog into sharp focus. That's not to say the robust list of ongoing and future work for Eastern isn't impressive. It is. For those who have never visited the conveniently located Florida Panhandle shipbuilder, however, it is difficult to put into perspective just how much upside potential resides in the firm's two Panama City-based yards.

Stretching one mile from end to end, from entrance to the docks, Eastern's Allanton location alone boasts 140 acres of working space and 6,000 feet of water frontage with another 158 acres available for immediate expansion. A shipbuilder's series-build dream location, the amount of apron space and staging areas available for multiple projects is also impressive. Operating multiple lines of construction and in continuous business since it opened primarily as a fishing boat manufacturer in 1976, Eastern's workforce, which includes a staff of 30+ engineering and design professionals as well their own fire department, has swelled to 1,550 employees, up sharply from 1,100 in 1980. With a dock draft of 26 feet and a 32,000 sq. ft fabrication house fully equipped with state-of-the-art processing equipment, Eastern is fully capable of building projects of 670 foot LOA and Panamax beam.

Fully Evolved

Eastern's original shipyard was established for the purpose of constructing commercial fishing boats. At the time, the company's founder and President, Brian D'Isernia, owned a fleet of commercial fishing vessels. D'Isernia entered shipbuilding game after determining that the only way he could get the type of vessels he wanted was to design the vessels, write the specifications and then build them himself. Eventually, others took note of the quality there and by 1980, 26 commercial fishing vessels had been constructed and delivered for a variety of customers.

D'Isernia ultimately decided to diversify Eastern to fulfill any type of custom vessel request, large or small. By 1981, Eastern was delivering Offshore Supply Vessels. Today's ESG portfolio includes the delivery 320 vessels. More importantly, a state-of-the-art product line and fabrication process allows Eastern to build efficiently in series, without sacrificing quality. The growing Eastern portfolio now includes Offshore Supply Vessels, Tugs, Inland Pushboats, Ro-Ro/Passenger Ferries, Inland Transport Vessels, Barges, Fireboats, Research Vessels, Offshore Construction Vessels, High Speed Passenger Vessels, Fishing Vessels and more.

Series Built – for Export, too

According to Steve Berthold, Eastern's

Inside ESG's massive fabrication facility.

Nearly completed Hornbeck and Brevante newbuilds undergo final outfitting.

Vice President of Sales & Marketing, Eastern has delivered 83 inland pushboats since 2001, at a rate of roughly seven per year. Among those are 60 of Eastern's now familiar FMT Canal Class boats, something Steve Berthold characterizes as the longest series build contract in history. ESG, like some other U.S.-based builders, is building for export, too. Proving once and for all that U.S. yards can compete on price and quality, a contract for five DP-2 capable PSV's for delivery to Brazil will saw its first completed vessel in August; on time and on budget.

Room to Grow

On the horizon for Eastern could be any number of projects, not the least of which would be their entry into the U.S. Coast Guard's OPC sweepstakes. With the finalists set to be announced as soon as September, Berthold told Maritime Reporter in July that ramping up to meet that commitment, if chosen, wouldn't be an issue. "That pace won't compare to the pace we are working at now," he said, referring to the 10 hulls already under construction within Eastern's busy yards. Beyond this, he added, "It is the right project for the right firms with the wherewithal to get it done. For Eastern, OPC would remain completely segregated to our other work schemes." And, with another 158 acres in his hip pocket, there is no reason to doubt him.

Included in their backlog of 25+ vessels, Eastern Shipbuilding Group is currently under contract for a total of 16 vessels of similar size and complexity for customers here in the United States and in Brazil. These contracts, furthering Eastern's position as the nation's and largest and busiest OSV/PSV and MPSV new construction shipyard, also send a powerful message abroad: American shipbuilders can compete successfully worldwide. August's delivery of the PSV "Bravante V" is ample proof of that. That delivery, a robust backlog with quality customers, and bigger ambitions, make Eastern "one to watch."

Eastern Shipbuilding Group, Inc. Current Order Book

CUSTOMER	NAME	VESSEL TYPE	SIZE	LAUNCH	DELIVERY
Bravante Group	BRAVANTE V	DP2/PSV DE Z-Drive	284'x60'x 24'-6"	3/21/2013	Aug-13
Bravante Group	BRAVANTE VI	DP2/PSV DE Z-Drive	284'x60'x 24'-6"	8/5/2013	Dec-13
Bravante Group	BRAVANTE VII	DP2/PSV DE Z-Drive	284'x60'x 24'-6"	Dec-13	Apr-14
Bravante Group	BRAVANTE VIII	DP2/PSV DE Z-Drive	284'x60'x 24'-6"	Apr-14	Aug-14
Bravante Group	BRAVANTE IX	DP2/PSV DE Z-Drive	284'x60'x 24'-6"	Sep-14	Dec-14
Harvey Gulf	HARVEY DEEP-SEA	DP2/PSV DE Z-Drive LCV	302' x 64' x 24'-6"	12/7/2012	07/19/13
Hornbeck	HOS RED DAWN	DP2/PSV DE Z-Drive	292' x 64' x 24'-6"	2/15/2013	6/21/2013
Hornbeck	HOS RED ROCK	DP2/PSV DE Z-Drive	292' x 64' x 24'-6"	4/19/13	Sep-13
Hornbeck	HOS RENAISSANCE	DP2/PSV DE Z-Drive	292' x 64' x 24'-6"	6/21/13	Nov-13
Hornbeck	HOS RIVERBEND	DP2/PSV DE Z-Drive	292' x 64' x 24'-6"	Sep-13	Jan-14
Hornbeck	HOS BAYOU	DP2/PSV DE Z-Drive	302'x 64' x 26'	Nov-13	Mar-14
Hornbeck	HOS BLACK FOOT	DP2/PSV DE Z-Drive	302'x 64' x 26'	Feb-14	Jun-14
Hornbeck	HOS BLACK ROCK	DP2/PSV DE Z-Drive	302'x 64' x 26'	Mar-14	Jul-14
Hornbeck	HOS BLACK WATCH	DP2/PSV DE Z-Drive	302'x 64' x 26'	May-14	Oct-14
Hornbeck	HOS BRASS RING	DP2/PSV DE Z-Drive	302'x 64' x 26'	Jul-14	Nov-14
Hornbeck	HOS BRIARWOOD	DP2/PSV DE Z-Drive	302'x 64' x 26'	Sep-14	Feb-15
Hornbeck	TBD	DP2/PSV DE Z-Drive MPSV	302'x 76' x 26'	TBD	Jun-15
Hornbeck	TBD	DP2/PSV DE Z-Drive MPSV	302'x 76' x 26'	TBD	Sep-15
O'Hara Corp.	ARAHO	Trawler Fishing Vessel	194'x 49 'x 36'-7"	Apr-15	Jul-15
FLA Marine	TBD	Canal Class Towboat	90' x 32' x 10'	TBD	Feb-14
FLA Marine	TBD	Canal Class Towboat	90' x 32' x 10'	TBD	Jun-14
FLA Marine	TBD	Canal Class Towboat	90' x 32' x 10'	TBD	Oct-14
FLA Marine	TBD	Canal Class Towboat	90' x 32' x 10'	TBD	Feb-15
FLA Marine	TBD	Canal Class Towboat	90' x 32' x 10'	TBD	Jun-15
Harvey Gulf	HARVEY SUB-SEA	DP2/PSV DE Z-Drive IMR	327'x 73'x 29'-3"	TBD	Jan-16
Harvey Gulf (o)	HARVEY BLUE-SEA	DP2/PSV DE Z-Drive IMR	327'x 73'x 29'-3"	TBD	Jun-16
Harvey Gulf (o)	HARV. INTERV.	DP2/PSV DE Z-Drive IMR	327'x 73'x 29'-3"	TBD	Jan-17

Brasa: FPSO Modules a Specialty

There has been a significant increase in shipyard construction in Brazil in yards large and small alike. Maritime Reporter's Contributing Editor in Brazil visited Brasa Shipyard in Rio de Janeiro and spoke to Philippe Levy, Country Manager for SBM Offshore, who is one of the yard directors. Brasa Shipyard is building FPSO deck modules for integration onto FPSO hulls.

by Claudio Paschoa

"Brasa shipyard was created by Synergy and SBM in order to simplify FPSO module integration for FPSOs leased to Petrobras for pre-salt oil production," said Philippe Levy, Country Manager for SBM. "A holding company named SNV was created, with its assets being the shipyard and the crane barge, with equal shares belonging to Synergy and SBM Offshore."

Since Brasa shipyard is located in the city of Niterói, across Guanabara Bay from the city of Rio de Janeiro, SNV managed to resolve three major bottlenecks at the same location. "These bottlenecks are, the shipyard construction site, a heavy lift crane barge and an integration quayside, therefore allowing us to streamline production, while at the same time eliminating the problem of finding a qualified workforce, by being located within a major city," said Levy. The new company also has a project office in downtown Rio de Janeiro.

Brasa shipyard can be seen on the right side of the Rio-Niterói bridge, just before arriving at the bridge toll booths. The main construction area and office building are located right next to the bridge and across the channel from the integration quay. While walking through the construction area, which has been fabricating 10 deck modules for the Cidade de Ilhabela FPSO, it became obvious that there was a large amount of detailed work going into each module's construction, which demands highly specialized labor and stringent quality control. The shipyard is equipped with six mobile cranes (60-130 ton) and two munck trucks (10 ton), two tower cranes (5 ton) and six forklifts (2.5/7/15 ton), one truck with flat trailer, high standard welding equipment and extensive scaffolding equipment.

"SBM has a long track record in Brazil with a long and varied list of successful projects including loading and offloading terminals, turret mooring systems, and turnkey FPSO units. Over the last 15 years SBM Offshore has operated eight FPSOs in Brazil," said Levy. Until 2008, SBM operations in Brazil comprised two shore bases in Macaé and Vitória, from which seven FPSO units were successfully operated. In 2008 a new design office was opened in Rio de Janeiro.

"Brasa shipyard commenced operation in the second quarter of 2012 with the fabrication of the topsides modules for the FPSO Cidade de Ilhabela, with around 1,600 people directly and indirectly involved in the execution of the project. When completed the modules will be lifted from the yard by the crane barge and transported across the channel

Begining of module construction at Brasa shipyard

(Photo: Brasa)

to the integration quay and mounted in a specific part of the FPSO deck" said Levy. Cidade de Ilhabela will have a processing capacity of around 150,000 bpd.

In March 2013 Petrobras confirmed a $3.5B fast-track order to SBM. This was for two more FPSOs of the same scale as FPSO Cidade de Ilhabela. The units, known as Cidade de Maricá and Cidade de Saquarema are destined for the deepwater Lula Alto and Lula Central pre-salt fields and will be built at a faster pace than the Cidade de Ilhabela FPSO, in order to keep up with Petrobras' production plans for its pre-salt plays. "Cidade de Paraty and Cidade de Ilhabela represent the successful launch of our new Generation 3 FPSOs, building on our trusted performance and unrivalled uptime," said Bruno Chabas, CEO of SBM Offshore.

This decrease in construction time will be possible partially due to the fact that the new builds will be "clones" of the Cidade de Ilhabela FPSO, fabrication and integration of the modules is expected to develop at a accelerated pace now that Brasa Shipyard has a trained workforce with experience in fabricating FPSO modules, along with experience in module integration. "We are delighted to have been selected by Petrobras for this significant project and look forward to starting work on the FPSOs, which are amongst the largest ever built by SBM Offshore. Jointly, the two FPSO's represent the biggest contract ever awarded to us, underlining our unparalleled expertise and leading position in the market for large-scale tanker conversions to FPSOs," said Chabas.

The orders for these two units are the largest ever received by SBM Offshore and will keep Brasa shipyard busy until deliveries are made at the end of 2015 and early 2016. The FPSOs will be de-

(Photo: Claudio Paschoa)

BrasaShipyard.

(Photo: SBM)

FPSO Espirito Santo.

(Photo: Brasa)

Pelicano1 barge crane.

"Brasa shipyard was created by Synergy and SBM in order to simplify FPSO module integration for FPSOs leased to Petrobras for pre-salt oil production. A holding company named SNV was created, with its assets being the shipyard and the crane barge, with equal shares belonging to Synergy and SBM Offshore."

Philippe Levy, Country Manager, SBM Offshore in Brazil

ployed at the Lula fields in the pre-salt, around 300 km offshore Rio de Janeiro. SBM Offshore will convert two double hull sister vessels into FPSOs in China, after these are integrated at the Brasa Shipyard in Rio, they will be moored in approximately 2,300m water depth, each will have a storage capacity of 1.6 million bbls each.

The topside facilities of each FPSO come in at around 22,000 tons, and will be able to produce 150,000 bpd of well fluids and have associated gas treatment capacity of 6,000,000 Sm3/d. The water injection capacity of the FPSOs will be 200,000 bpd each. The BM-S-11 block, where they will be producing, is under concession to a consortium comprised of Petrobras (65%), BG E&P Brasil (25%), and Petrogal Brasil (10%) for 20 years and will be operated by SBM. The FPSOs will be owned and operated by a joint venture company owned by SBM Offshore, Mitsubishi Corporation, Nippon Yusen Kabushiki Kaisha, with other partners including Queiroz Galvão Óleo e Gás S.A.(QGOG), with SBM Offshore in charge of the construction. The FPSOs will be built following local content specifications, with substantial parts of the project management, procurement and engineering services carried out in Brazil.

The majority of the topside module fabrication, integration, and commissioning will be performed at Brasa shipyard.

FPSOs with GTL

SBM Offshore has joined forces with CompactGTL, cooperating exclusively on offshore projects, to provide a solution using a pioneering new technology to be used on FPSOs, aiming at increased productivity while leaving the environmentally aggressive practice of gas flaring behind.

The GTL (Gas-to-Liquid) modular solution converts the associated gas into synthetic crude oil (syncrude), which can be blended with the natural crude oil cargo produced on the FPSO. A commercial demonstration facility has been in operation onshore in Brazil for two years for Petrobras.

This optimized FPSO with an integrated GTL plant can be applied to an Extended Well Test (EWT) vessel or service or on a full field development. This is the only onboard no-flare solution currently available on the market for offshore oil production and eliminates the need for costly gas export or re-injection infrastructure. This solution has been "Approved in Principle" by Det Norske Veritas in February 2012.

Some key goals of the GTL concept design are the ability to minimize flaring by adopting CompactGTL technology for conversion of all surplus associated gas (after fuel removal) into Synthetic Crude Oil (syncrude). This technology maximizes the amount of integration between CompactGTL process and the FPSO topsides process, utilities and marine systems for improved operability and Capex / Opex optimization and allows the GTL process to be eventually extended to full field developments. The GTL plant module on an FPSO is ideally suited for remote, deepwater locations, and typically for fields with low gas to oil ratios.

ASRY: Bucking the Slowdown Trend

By all accounts, Bahrain-based ASRY (Arab Shipbuilding & Repair Yard) is managing to buck the trend of falling revenues and create an optimistic story for the Middle East ship repair industry. It is also resisting the regional trend of falling revenues and increased losses with a 6% increase year-on-year in revenues as well as staying profitable, according to the yard. The secret to the yard's success is actually no secret at all and has been reported previously in these pages. According to Chris Potter, ASRY Chief Executive, key to recent success has been a series of three key diversifications now coming to fruition

"Due to the fact that ship operators repair schedules and scopes are still being kept to a minimum, 2013 will continue to be challenging for any yard that relies solely on ship repair," Potter said. The biggest challenge in the ship repair industry in the Gulf is to expand its market share despite a persistent depression in the industry, while simultaneously responding to more competition from new yards opened in the past two years. Diversification in the foreseeable future is going to be imperative if repair yards are going to stay competitive – gone are the days when relying solely on ship repair was enough."

Striking Out Offshore

The first major diversification for ASRY was ASRY Offshore Services – a division dedicated to rig repair, which accounted for approximately 44% of ASRY's revenues in 2012, and is directly responsible for the yard's unusually buoyant position. The second diversification was ASRY Energy Division, launched in late 2011, which is responsible for the production of specialized barges that will form the basis of unique Floating Power Plants, designed by an ASRY joint venture, ASRY-Centrax. Two hulls for these barges have been completed and launched – making ASRY the first and only Middle Eastern yard to diversify into the power generation field. Finally, the third diversification was ASRY Consulting Services (ACS), launched in 2012, which is a team of dedicated engineers, naval architects and senior yard managers that draw on ASRY's experience to consult on a range of yard-based subjects, including yard operations and management, installation of ballast water monitoring systems and low-sulphur emission systems. ACS is the fastest growing division in ASRY with more than 18 full-time employees, and a full new business pipeline.

By branching out into these new specializations, and multiplying revenue streams, this year ASRY is not only defying the market, but also graduating from a ship-centric repair yard, to a full-service marine optimization complex.

Simultaneously, the yard has continued to invest, with an ambitious $188m expansion project now entering its final phase with the completion of a repair quay wall that brings the yard's repair berth space up to 4km. Along with four state-of-the-art tugs being built in-yard, an offshore layout area, new sewage treatment plant, new desalination plant, and further infrastructure improvements, the company has had the courage to aggressively invest in a weak market and has been rewarded with a market leading position.

Austal USA Powers Ahead

Austal USA has arguably been one of the more progressive and aggressive U.S. shipyards in its investment in technology, facilities and people. Austal USA President Craig Perciavalle took the helm a little more than six months ago, and Maritime Reporter was able to catch up with him recently for insights on pressing matters of the day.

by Greg Trauthwein

You have been in the president's chair at Austal USA for more than half a year; how is your mission different today than from when you were named to the top spot last December?

Honestly my mission has not changed much since December. After smoothly transitioning to the new position, my focus has been to continue providing the team here with the resources necessary to continuously improve and meet our commitments on each of our existing programs. My other mission is on expanding the business. We are fortunate to have a sizable backlog today but my focus is to continue growing the business and increasing our orderbook.

Coming into the position, what were your primary initiatives for the Austal USA operation, and have they changed?

Our primary initiatives consistently remain focused around safety, training, productivity improvements and cost reduction. Having the expansion of our manufacturing facilities essentially complete and in full operation, and having worked through first in class challenges on our programs, we have been able to stabilize our manufacturing processes and really zone in on opportunities for additional improvements.

The U.S. Navy is an important customer to Austal USA; can you give our readers a brief overview of the scope of work you conduct for the Navy?

We are currently under contract to build ships in two different newly-introduced U.S. Navy shipbuilding programs. The Independence-variant Littoral Combat Ship (LCS) is a sleek 127-m aluminum trimaran hullform designed to be the most advanced high-speed military craft in the world. This vessel is a fast, flexible Naval Combatant designed to operate in littoral waters across the globe.

Our second ship of this class, for which General Dynamics BIW is prime, is nearing completion. We also have a 10-ship contract for which Austal is prime, valued at $3.5 billion, of which three are under construction with the first scheduled to be launched by the end of the calendar year.

The Navy has also contracted Austal to build 10 Joint High Speed Vessels (JHSV); a contract worth $1.6 billion. The JHSV class of ships are 103-m aluminum catamarans designed to provide rapid intra-theater deployment/transportation of personnel, equipment and supplies. The vessel has the speed, volume and flexibility to perform multiple missions including but not limited to military logistics, sustainment and humanitarian relief operations at speeds of up to 43 knots. The first two ships have been delivered and are operating on the East Coast, while three more are under various stages of construction at this time.

How has Sequestration materially impacted your business to date? In the future?

Fortunately we have not been impacted by sequestration much at all. In a recent visit by the CNO, Admiral Greenert stated that sequestration would not affect projects already under contract and that has been the case. Going forward, we are confident that our relative low cost but highly flexible and capable solutions to the Navy, along with our ability to continue to deliver quality ships while meeting expectations, will put us in a favorable position with future business.

Austal USA arguably has been one of the more progressive U.S. yards in terms of investment in its operations and shipbuilding technology. That said, how is Austal investing today to ensure its tomorrow?

Overall, we've invested more than $300m in our facility here in Mobile, most of which was completed within the last couple of years. Our focus has been investing in People, Plant and Processes. Quite frankly, we've completely transformed how we build ships and manage our business, with very little, if anything, being done today the same way it was done back in 2008.

Coronado (LCS 4)

USNS Choctaw County (JHSV 2)

With the facility and process growth came employment growth, with significant focus placed on training and skills enhancement. With tremendous help from the State of Alabama, we've developed a top notch training program that has enabled us to grow in total employment from about 800 in 2009 to over 3,500 today. These investments have enabled us to successfully support two first-in-class Navy programs and we feel this has put us in a very competitive position going forward.

For example, June was a very busy month here: we launched JHSV 3; delivered JHSV 2; then laid the keel for LCS 8, showing the manufacturing lines are in full operation.

Business is fraught with challenges every day. What do you count as the top challenges to building and maintaining an efficient, profitable shipbuilding operation?

As can be expected, our primary challenges have centered around the rapid facility and employment growth we've experienced over the past few years while supporting two first-in-class programs. With expansion and employment growth come challenges in maintaining safety and increasing skill base. Fortunately, we've been able to see significant improvements in both these areas despite the growth.

Regarding safety, despite growing total employment from under 1,000 to over 3,500 in just a few short years, we've successfully focused on improving the working environment of our employees as evidenced by receiving the Shipbuilders' Council of America (SCA) award for Excellence in Safety for the fourth consecutive year. This is a direct result of the hard work and intense focus of all of our personnel, as well as their ultimate commitment to each other's safety. Although our safety performance is nationally recognized, our focus remains on continuing to improve and provide our employees with the safest work environment possible.

To help increase our skill base, Austal has teamed up with Alabama Industrial Development Training (AIDT) to develop a 60,000 sq. ft. onsite training facility and program to support our needs. This program is designed to provide an intense training opportunities for all trades; both existing Austal employees who desire to increase their skills for career advancement, and pre-hire candidates to facilitate their ability to rapidly assimilate into the workforces. Austal also recruits 50 to 100 people twice per year to participate in our Apprentice Training Program which has successfully graduated four, four-year classes into our workforce in the last six years.

Craig Perciavalle, President, Austal USA

Yard Activity Increasing

Shipyards around the world are a more than adequate indicator for all matters maritime, and today the indicators are largely positive. While certain sectors of maritime industry remain mired in economic malaise, there are several large pockets of opportunity, pockets that are seemingly growing monthly. The following is a snapshot of some of the more interesting projects in the last six months.

by Maritime Reporter Staff

Damen Shipyards is a driver of innovative design particularly in the offshore sector, and recently its Galati yard delivered the World Diamond, the first of six Platform Supply Vessels for Norwegian offshore owner World Wide Supply, built to an entirely new Damen design. World Diamond was christened by godmother Her Royal Highness Crown Princess Margarita of Romania on June 28, 2013, and according to Arnout Damen, "Delivery of this first PSV3300 represents a new era in Damen's continuing offshore supply vessel story."

Delivery of the new design involved extensive CAD/CAM modeling by Damen Shipyards Gorinchem in the Netherlands and rigorous model testing at MARIN (Maritime Research Institute Netherlands). The 80.1m PSV 3300 has a deck load of 1,500 tons will undertake crew and materials transport to and from offshore platforms but also offers firefighting and oil pollution recovery capability. Equipped with azimuth thrusters and dynamic positioning (DP2), the design is distinguished by slender hull lines to meet challenging conditions and minimize fuel consumption, as well as enhanced crew comfort.

Eastern Shipbuilding Group has been one of the busier shipyards in the U.S. Gulf Coast region, with a full slate of high tech newbuilds across many sectors. It recently christened launched M/V HOS Red Rock for Hornbeck Offshore Services, LLC. The event was held at Eastern's Allanton facility, and attending from Hornbeck was William "Bill" Krewsky, Director of Engineering and Project Management, and Scott Siberski, Manager of Projects, along with 10 senior members and vessel officers of the Hornbeck Team.

Hornbeck's first vessel the HOS Red Dawn was launched on February 15, 2013 and is currently at Eastern completing regulatory and DP-2 trials. Delivery of the HOS Red Dawn is scheduled for mid-June 2013.

The HOS Red Rock is the second of four vessels designated as the HOSMAX 300 series by Hornbeck Offshore and are USCG, ABS, SOLAS, DPS-2, AC Diesel-Electric powered, twin Z-drive propelled OSV's measuring 292 x 64 x24.5 ft. It features four Caterpillar 3516C 16-cylinder turbo-charged Tier III diesel generator engines each rated at 1825 kW at 1,800 rpm. Main propulsion power is provided by two GE Energy furnished Hyundai 2500 kW 690VAC electric motors driving 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 provides two STT 4 fixed pitch tunnel thrusters rated at 1,180 kW at 1,170 rpm, each with direct coupled Hyundai 690VAC electric motors. GE Energy Power Conversions provides the complete system integrated diesel electric package, including the propulsion and thruster drives, motors, control systems, DP system, switchboards, motor control centers, automation and navigation/ communication electronics. The remaining six vessels under contract are 302 x 64 x 26-ft. designated HOSMAX 310 Offshore Support Vessels. STX Canada Marine provided the design for both vessels

There isn't a conversation in the Gulf of Mexico shipbuilding business that can start without mentioning the Bollinger name.

Family owned and operated since 1946, **Bollinger Shipyards** is centrally located in the U.S. Gulf of Mexico, and specializes in new construction, steel fabrication, repair and conversion of a wide variety of military and commercial offshore and inland vessels. Bollinger currently operates ten shipyards, all of which are ISO 9001:2008 registered and strategically located throughout South Louisiana and Texas.

Bollinger's Repair and Conversion services lead the industry with repair facilities located along the Louisiana and Texas Gulf Coast. With eight facilities focused on attending existing tonnage, Bollinger has concentrated on expanding and providing key assets, including drydocks ranging from 400 to 10,000 tons, support services such as machine, armature, hydraulic and wheel shops, as well as pier-side services, along with heavy lift and project lay-down area to attend a diverse customer base.

Over the past 25 years, Bollinger has

FAR LEFT
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CENTER
Eastern Shipbuilding Group It recently christened launched M/V HOS Red Rock for Hornbeck Offshore Services, LLC. The event was held at Eastern's Allanton facility, and attending from Hornbeck was William "Bill" Krewsky, Director of Engineering and Project Management, and Scott Siberski, Manager of Projects, along with 10 senior members and vessel officers of the Hornbeck Team.

established a highly successful business model developing high performance patrol vessels for the U.S. Coast Guard and the U.S. Navy, based on superior designs available in the worldwide patrol boat and naval vessel marketplace. Bollinger has maintained a strong presence in new construction of offshore supply vessels, Ocean going Tugs, OPA'90 tank barges and multi-purpose support vessels for oil and gas exploration and production. A diverse portfolio, Bollinger's offshore supply designs continue to provide an economical alternative that meets and exceeds the regulatory requirements and the demands of the industry.

Planning for the future, Bollinger has announced expansion plans for its Port Fourchon facilities, and is a prime candidate for fleet expansion for the USCG.

U.S. Dakota Creek Industries (DCI) in Anacortes, Wash., is progressing on the construction of the AGOR 27 R/V Neil Armstrong according to plan. A major milestone was achieved recently with the completion of the hull assembly after the stern block was set, followed by the installation of the pilot house. The complex vessels, AGOR 27 and sister vessel AGOR 28 R/V Sally Ride, also well under way at DCI, meet the latest standards in shipbuilding technology, complying with the highest safety standards and providing unprecedented capabilities for advanced oceanographic research. Seattle-based Naval Architecture and Marine Engineering company Guido Perla & Associates, Inc.'s proven design standards offer an economical solution that evolved throughout many years by working with clients in developing the most practical and economical vessel to construct and turning complex ideas into reality.

"DCI is producing vessels of outstanding quality and together, we are meeting our timelines and are on schedule for the launch of AGOR-27 in the 1st quarter of 2014," said Eric Engelbrecht, GPA's Project Manager for these vessels.

Delivery is scheduled for late 2014 for AGOR 27 and early 2015 for AGOR 28.

The shipbuilding prowess of the leading South Korean shipyards needs no introduction, but safe to say the legacy towards providing the latest technology in commercial ships continues at **Hyundai Heavy Industries**, which recently from its Ulsan yard delivered to Dynagas a pair of ice-class membrane LNG tankers. The 155,000 cbm (cu. m.) ships are fitted with GTT Mk III containment systems. Propulsion for the ships is provided by a

U.S. Dakota Creek Industries (DCI) in Anacortes, Wash., is progressing on the construction of the AGOR 27 R/V Neil Armstrong and AGOR 28 R/V Sally according to plan. Guido Perla & Associates, Inc. provided the design.

Hyundai Heavy Industries

Arctic Aurora, the second of two new ice-class LNG carriers for Dynagas built by Hyundai Heavy Industires.

DSME

Built by DSME the Woodside Rogers LNG carrier is equipped with a GE electrical induction-based propulsion solution.

duel fuel diesel generator engine system. Four Wärtsilä-Hyundai diesel engines in each ship, fuelled either by gas or fuel oil, will power two propulsion motors driving a single fixed pitch propeller. Registered in the Marshall Islands, the ships will operate on charter to Gazprom and Statoil.

The ships' bridge design complies with LR's NAV1 notation, which confirms the bridge layout and level of equipment are suitable for safe periodic operation under the supervision of a single bridge watchkeeper. The accommodation arrangements fulfill the new requirements in accordance with the Maritime Labor Convention (MLC, 2006).

Another Korean yard, **Daewoo Shipbuilding & Marine Engineering (DSME),** has been active as usual, and recently signed a contract with U.S.-based Atwood Oceanics, for the construction of a drillship, an option of last year's contract with a value of approximately $570m for delivery at the end of 2015.

The drillship is a DSME-12000 type drillship which was developed using DSME's own technology. It is able to drill down to a maximum of 12km in water up 3,600m in depth and will possess dual derricks so pipe assembly work and drilling operations are possible at the same time. This will increase its effectiveness and reduce working hours by 25% when compared to a single derrick system.

Atwood Oceanics has placed orders for drillships consistently since the first contract in January 2011.

This latest contract puts DSME's secured orders for 2013 at 14 vessels and offshore platforms worth $4.7 billion. By earning 85% of the contracts won through offshore projects, DSME strengthens its competitiveness in the offshore market.

DSME also recently delivered the first electrical LNG carrier to be ordered by Maran Gas incorporating induction-based electric propulsion motor technology from GE's Power Conversion business. The Woodside Rogers was built at DSME's shipyard near Busan, completed sea trials in late April and was delivered to Maran Gas on July 1. It is the first of seven LNG carriers incorporating the GE power and propulsion technology that Maran Gas has ordered from DSME for delivery between now and 2015.

For the Woodside Rogers, GE supplied a complete system comprising of four 9.85-MVA generators, main and cargo switchboards, four transformers, two converters, two 13.26-MW motors and remote control. GE also provided project management, system and equipment engineering, commissioning and assistance for sea and gas trials.

The electric drive system for the Woodside Rogers is powered by tri-fuel engines that run on natural gas, marine diesel gas or heavy fuel oil. The ship operator can choose the mode according to current prices of the different fuels, making the system very cost-effective. In addition, the layout of the tri-fuel engine provides a high level of redundancy, which improves the safety of the carrier avoiding off charters. Fuel consumption and emissions also are lower.

Vantage ordered its fifth drillship, Cobalt Explorer, to be built at **Daewoo** for an August 2015 delivery. The company will issue convertible debt to fund the initial $60 million yard payment. Cobalt Explorer will be one of the highest-spec drillships in the global fleet. To that end it will be able to drill in 10,000 ft. of water and to depths of 40,000 ft. It will be equipped with two seven-ram BOP's and will be capable of dual-activity operations. The Cobalt is the fourth rig VTG has ordered from DSME, and it will have the same equipment on board as its sister ships Tungsten, Titanium and Platinum

Australian shipyard **Incat Tasmania Pty Ltd.** is building for Buquebus what is claimed to be the world's fastest high-speed ferry, Francisco, which is powered by Wärtsilä's axial waterjets and fueled by liquefied natural gas (LNG). The vessel has passed its sea trials and is now ready to commence commercial operations.

The ferry is built to transport passengers and cars between Uruguay and Argentina.

According to Incat, Francisco is now the fastest ship in the world. While there are speed boats that can surpass 58 knots, there is no vessel afloat that can reach these speeds and that is able to carry 1,000 passengers and 150 cars. The ferry will have an operating speed of 50 knots, and in crossing the River Plate (Rio de la Plata) at high speed, the ferry will be able to viably compete with air traffic between Uruguay and Argentina.

Dubai-based **Grandweld** has now completed its move to its new ultramodern ship construction site on the premises of Dubai Maritime City, and with that the shipyard recently celebrated a steel cutting ceremony to signify the commencement of the construction of the first of four new class Crane/Workboats for Kuwait Oil Company (KOC)

The contract was signed in February 2013, to design and build a series of four heavy-duty Crane / Workboat class vessels for Kuwait Oil Company.

These vessels are powered by two 1068kw main engines driving ASD Thrusters. They are designed to undertake tasks such as lifting and moving heavy equipment, oil pollution control, SBM hose handling, FO/FW supply, and other related duties. Each vessel comes with a crane capable of lifting 20 tons at 10 meters radius.

Portugal's Lisnave, Setubal has recently carried out repairs on-board EMAS' 5,096 grt self-elevating lift boat Lewek Leader. The main work scope for this project was to replace the lower part of one self-elevating leg, which has suffered cracking, with new leg sections (four) which includes spud can with 10 ft. The new leg, which will measure 97.5 x 3 m, and spudcan was prefabricated in U.S. and installed at the Mitrena shipyard. The Lewek Leader is a self-elevating lift boat measuring 56.4 x 44.2 x 6.9 m classed by ABS. It is self-propelling and self-elevating, with a large deck area and high capacity cranes (two 181 tons at 9.10 m). The unit, which has accommodation for up to 160, is designed for use in shallow waters up to 65 m. Its propulsion machinery comprises three 1,100 kW azimuth thrusters, a 440 kW bow thruster.

Lisnave also completed general repairs to the 13,688 grt seismic research vessel Ramform Sovereign, owned by Norway's PGS. amform Sovereign was built in 2008 in Langsten, Norway and has re-

Wärtsilä's axial waterjets power the Francisco, claimed to be the world's fastest high-speed ferry and the first fast ferry to utilize liquefied natural gas (LNG) as fuel.

Grandweld's moved into a magnificent, modern shipbuilding facility in Dubai Maritime City

cently undergone her first ever drydocking operation in Lisnave, lasting 26 days. The shipyard performed both marine and technical repair operations, including maintenance and refurbishment. One of the main aspects of the repair involved Rolls-Royce streamer winches, which underwent structural steel upgrade to a bigger tonnage capacity. Work also included installation of new entrance for engine room as well as new drop gates on Deck 4. Major shaft lines and rudder repairs were also performed together with Wärtsilä. Also carried out was substantial hull surface treatment, including a full underwater blasting process carried out, in its majority with robotic ultra-jet hydro-blasting equipment.

Recently the **Damen Shiprepair Brest (France)** returned the Ultra Large Crude Carrier (ULCC) TI Europe to its owners EURONAV (Belgium) after completing a full technical survey and service. The sheer size of the vessel represents a considerable challenge in itself, he says, with the shipyard applying more than 46,000 square meters of silicon paint.

LISNAVE

Portugal's Lisnave, Setubal has recently carried out repairs on-board EMAS' 5,096 grt self-elevating lift boat Lewek Leader.

Damen Shiprepair Brest (France)

Recently the Damen Shiprepair Brest (France) returned the Ultra Large Crude Carrier (ULCC) TI Europe to its owners EURONAV (Belgium).

However, the yard can comfortably accommodate such vessels given that its largest drydock, at 420 x 80 meters, is one of the biggest in Europe.

CTruk plans to unveil the Twin Hulled Offshore Raider (THOR), at the DSEI exhibition in London next month. Designed by CTruk, THOR incorporates a range of high-tech equipment provided by the CTruk CAP consortium. According to CTruk, the result of this teamwork is THOR: a multi-role, reconfigurable and affordable vessel with a range of applications from force protection to disaster relief. THOR has a lightweight composite construction witha top speed in excess of 40 knots. THOR is designed to be fast and suitable for sustained operations over long distances and time periods, the company said, and it can be rapidly deployed via a C17 or A400M and also from a CTruk 50T mother ship.

Scandlines and **STX Finland Oy** signed a Letter of Intent (LOI) for building two new ferries for the route Rostock, Germany – Gedser, Denmark, for delivery in spring 2015. The ferries will be double ended and construction will allow the ferries to be used on the route Puttgarden, Germany - Rødby, Denmark, as well. Each ferry will have a capacity of 1,300 passengers and 72 trucks or 382 cars. The ferries will be operating on LNG, reducing emissions significantly.

The final contract will be negotiated over the summer months.

The Brazilian maritime and offshore market has presented a conundrum of sorts for the ship construction business for several years. On one hand, the demand for new vessels large and small to feed the voracious appetite of offshore oil and gas discovery and recovery has been historic. On the other hand, the high cost of doing business in Brazil and the general exclusion of outside suppliers except under onerous conditions have left more than a few maritime companies questioning the long-term prospects in country, a concept reinforced by recent political and social unrest.

But the building continues, and the Brazilian petroleum industry continues to set new standards for fleet expansion, demonstrated by a project to build 12 aluminum 7,200-hp fast supply vessels to a single order. They are being built at **Estilaleiro ETP Engenharia Ltda.** in Rio de Janeiro for two owners. This contract is a prime example of operating successfully in the region, as the boats are designed by Incat Crowther from its Lafayette, La., office, the construction of these vessels is now well along with the first delivery expected for late 2013 with others to follow through 2014 and 2015.

The 12 boats under construction in Brazil will be 48 by 9.5 m with a molded depth of 4.25 m. They will have 225 sq. m. of deck space with a capacity of 250 tons. An additional 30-sq.-m. covered cargo area will accommodate up to 30 tons. Tanks for 44,600 liters of ship's fuel with another 90,600 liters of cargo fuel are built into the hull. Water for onboard use will be carried in 9,000-liter tanks with additional tanks for 91,000 liters of cargo water tanks.

Four Cummins QSK50-M main engines, each producing 1,800 hp at 1,800 rpm, turning propellers, through Twin

CTruk plans to unveil the Twin Hulled Offshore Raider (THOR) next month.

Disc MGX-6848SC gears with 2.93;1 reduction, will give each vessel a 25-knot top speed and a 21-knot service speed. The vessels will be fitted with a pair of Thrustmaster 30TT150ML 150-hp electric tunnel bow thrusters. A pair of Cummins QSM11 250kW at 1,800-rpm generators sets will provide electrical power. Six of the vessels are being built for the Intertug subsidiary Baru Offshore Navegação while Senior Navegação will own the other six.

A bit closer to home, the Great Lakes Towing Company and **Great Lakes Shipyard** celebrated its 115th anniversary with the delivery of two new 4,640HP FIFI 1 ASD tugs. Designed by Jensen Maritime Consultant, Inc., Seattle, Washington, the tugs AURA and ATLAS were built to the standards of the American Bureau of Shipping.

Founded by John D. Rockefeller on July 7, 1899, the company's founding shareholders were the major industrialists at the turn of the century. Great Lakes Shipyard is a full-service state-of-the-art shipyard specializing in every kind of marine construction, fabrications, conversions, refits and repairs for all types of commercial and government vessels, tugs, supply boats, ferries, barges, "truckable" barges, excursion vessels, dinner boats, research vessels and large yachts, as well as both on-site and off-site topside work of every kind.

On July 24 **Strategic Marine** launched the Jati Six crew transfer vessel for Malaysia's Dinasti Jati Sdn Bhd. The superstructure was built at Strategic's hipyard in Vietnam then shipped to their Singapore yard for technical fittings and delivery. Jati Six is 40m long, classed by ABS, and designed and built to carry up to 58 passengers. It operates with a crew of 10, and it is powered by Cummins KTA engines, delivering speeds up to 25 knots. The larger Jati Eight, which can carry up to 70 passengers, is scheduled for delivery at the end of this year.

Rendering of FSV UT4000, designed by Incat Crowther from its Lafayette, La., office. Twelve will be built at Estilaleiro ETP Engenharia Ltda. in Rio de Janeiro for two owners.

Signal International

With a family of three yards located along the Gulf of Mexico in Alabama, Mississippi and Texas, Signal International offers new construction, rig and ship repair, offshore and technical services.

Marine construction and repair needs are complimented by three dry docks; a 30,000-ton lift rig dock, a 22,000-ton Panamax dry dock and a 4,500-ton lift dry dock.

In Mobile, Ala., Signal Ship Repair (SSR) offers 4,400 ft. of water front along the Mobile River with a maintained channel depth of 44 ft. This facility specializes in ship repair and conversion. The shipyard houses two floating dry docks, one Panamax size dry dock plus one 4,500-ton dry dock.

Most recently, SSR has completed dry docking and repair of the ATB Pat Cantrell and tug Betty Wood, Olympic Shipping's Olympic Intervention IV, as well as Foss Maritime's Delta Mariner.

SSR is also in the final throws of a major conversion on the U.S. Corp of Engineers' dredge Wheeler. Upcoming work includes U.S. Shipping's ATB Petrochem Producer/Galveston and Crimson Shipping's ocean warehouse barge Crimson Tide.

Joe Mayhall, VP Sales and Marketing states that SSR has a healthy backlog of work into the 1st quarter of 2014. "2013 has been a very good year. We continue to have success with new and repeat clients both foreign and domestic. With PSVs and construction vessels increasing in size and deadweight, SSR has found a niche market having the capability to dry dock the larger, deeper draft vessels.

These vessels require higher blocking to work on underwater machinery. As the new tranche of PSVs and CSVs come on line in the Gulf we see that market continuing to grow for us."

Our new construction facility in Orange, Texas has undergone a major transformation over the past several years.

These upgrades include elevating its marine and heavy manufacturing capability to include a new panel line and steel processing facility.

Signal Orange has recently delivered to Kirby Offshore two 20,000-dwt ATBs. The hopper barges are 488 x 90 x 36 ft. The two OTBE designed 6,000-hp tugs are 123 x 42 x 22 ft. In May Signal delivered to McDonough Marine a 300 x 100 x 20 ft. heavy deck barge. McDonough also has under contract to Signal several 260-ft. deck barges as well as a second 300 x 100 x 20 ft.

The Pascagoula, Mississippi facility handles marine fabrication and rig repair.

Along with our 30,000-ton dry dock, Signal maintains a deep hole 500 x 300 x 60 ft. for underwater thruster work as well as space for storage of offshore equipment.

This year the 30,000-ton Dual Carrier/Heavy Lift dry dock has completed several dockings on semi-submersibles and jack-ups while maintaining a healthy backlog of marine fabrication.

Barges for Kirby ATBs.


Olympic Intervention on Dry Dock 1.


Signal Shipyard in Mobile, Ala.


Signal International Texas Yard.

Vessel Ordering Mania – Why?

By Drewry Container Team

The flood of interest in ordering new container vessels is motivated by other factors than supply and demand.

The recent surge in new vessel orders at a time of industry-wide overcapacity suggests that market fundamentals are no longer the main driver. Even when the most recently ordered ships are delivered in 2016, Europe and the U.S. are still likely to be climbing out of recession, which means that capacity in the east-west trades will continue to outstrip demand.

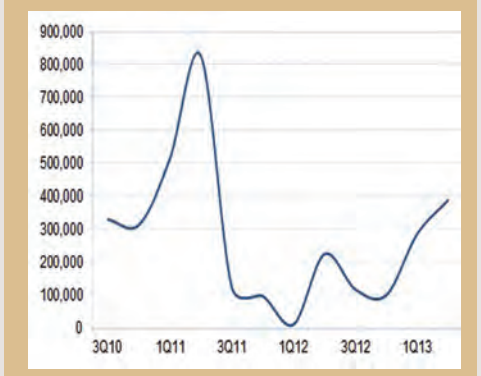
One of the factors behind the surge in orders is plummeting shipyard prices. Smaller carriers now see an opportunity to gain a competitive edge over the big three at last, and have not been slow to take advantage of it. For example, CSCL's recent order for 5 x 18,400 teu ships, the first of which is due for delivery in 4Q 2014, each cost $136.6 million, approximately 26% less than Maersk's 20 x 18,000 teu vessels, which were ordered in 2011, with the first being named only two weeks ago.

The comparison is not exact, as there is a difference in design specification. Maersk's hull is twin screw, whereas CSCL's has only one propeller, and Maersk's vessels also have expensive on-deck cell guides to facilitate cargo operations and improve safety.

The big advantage of the 18,000 teu vessels is its fuel consumption. Compared to the 13,000 teu ships, they are claimed to burn around 35% less per container. As fuel accounts for well over

(Continued on 53)

Vessel Capacity Ordered (teu)



(Notes: 1Q13 includes eight vessels totaling 11,200 teu capacity yet to be confirmed 2Q13: April and May only, but with 28 vessels totaling 69,400 teu capacity in 2Q 13 yet to be confirmed)

(Source: Drewry Maritime Research)

TNG: Talleres Navales Del Golfo

Talleres Navales del Golfo (TNG) shipyard at Veracruz, Mexico was originally developed as a new construction facility, but the shipyard has successfully transferred to ship repair facility with an emphasis on steelwork repair contracts. As a result of recent success in repair operations, the shipyard is currently embarking on a major development and restructuring of the shipyard, with a view to rationalizing the facilities and expanding its repair capabilities.

Despite recent economic turmoil, long term prospects for trade growth, and thereby growth of the fleet and demand for ship repair services, remain good, in the opinion of TNG.

While ships still need to be fixed despite economic conditions, and the fact that so many ships laid-up will need maintenance before returning to full service, ship owners are more than ever focused on cost and survival for a number of years to come. While there is work to be had, maintenance budgets remain tight. Cost control and competitive advantage are likely to be derived increasingly from environmental and efficiency measures. In this regard, TNG has been profitable in the current environment indicating the shipyard has the potential to perform strongly as conditions improve.

Current Market

The level of activity in the Gulf of Mexico's oil industry is increasing at a steady pace, and several major rigs fabrication packages have been awarded and vessel construction, giving TNG the opportunity to grow and diversify its services towards offshore, fabrication, vessel construction and repairs. In the last 12 months, TNG has repaired three rigs, giving the yard expanded experience in this market.

Currently TNG is working on nine projects simultaneously.

- **Two Fabrication Projects,** which entails column rolling for a major jacket for offshore industries, lacing fabrication for previous mentioned project s (1,500+ tons of steel total) and stainless steel pressure vessels fabrication.

- **Five Ship Repair Projects.** Two vessels are currently in the TNG dry docks, one semisubmersible rig in a floating dock (barge) and two afloat projects, and the scope of work includes:
  - Steel renewal in process with a rate of + 120 ton per month
  - Propulsion (CPP) and steering system repairs
  - Propulsion (azimuthally thrust ers) renewal recondition
  - Propeller straightening – Simplex seal renewal
  - Blasting – Painting outside (+ 10,000 sq mtr per month)
  - Tank Coating
  - Piping
  - Machining
  - Electrical works
  - Two Projects on-site. One for container crane maintenance and another to relocate a container crane by means of heavy lift transporters.

www.tnghph.com.mx

(Continued from 51)

half of all voyage costs, it is easy to see why new market entrants can be lured in, including UASC, which is reported to be discussing the price of five of the giants with an Asian shipyard.

UASC has also expressed interest in ordering four 14,000 teu vessels. In this respect OOCL ordered six 13,000 teu vessels in 2011, each costing $136 million, and NOL ordered 10 x 14,000 ships in 2011, costing $154m, including the upgrading of ten 8,400 teu vessels, whereas Seapan's order for five 14,000 teu vessels in March 2013 are estimated to have cost just $108m each. The price of K Line's five 14,000 ships, which were fixed shortly afterwards, is not known.

Getting credit for such orders is still not difficult, strangely, despite the ships not always being ordered to meet demand growth. However, the credit is selective for certain companies and ship types. Also, with many ocean carriers being state-supported in some way, banks appear to see their loans as being as good as sovereign debt, so not high risk, even though the current surplus of vessel capacity is already destroying profitability through swinging freight rate decreases.

This means that maintaining the cash flow required to service ship mortgages is increasingly difficult for carriers. Cash-rich non-owner operators, such as Seaspan, Costamare, Technomar, and Capital Ship Management, clearly see this problem worsening, which explains why they have returned to the market in a big way, providing another factor behind the surge (see table).

They have also been using their cash advantage to help owners acquire specialist tonnage, such as the wide-body vessels now favored in South American schedules.So, even where borrowing to fund newbuilds becomes too difficult, carriers will be able to circumvent the problem through leasing or chartering. The container industry, it seems, remains dominated by optimists.

According to Drewry, non-operating owners clearly expect that, as ocean carriers' cash flow gets tighter, the charter market will increasingly be used for newer fuel-efficient vessels, including the wide-bodied 8,000/9,000 units currently gaining currency in South America.

drewry.co.uk

Recent World Tramp Vessel Orders

Company	Date ordered	Vessels	Delivery	Remarks
Enesel	Jul-12	10 x 13,800	4Q 13/2014	Chartered to Evergreen for 10 yea
Zodiac Maritime	Jun-12	10 x 5,000	2014-2016	
CIMC	Sep-12	10 x 9,200	2014	Chartered to CMA CGM
Aeolos Management	Nov-12	2 x 6,800	2014	
Seaspan	Jan-13	5 x 14,000	2015	Chartered to Yang Ming
Seaspan	Jan-13	4 x 10,000	2014	Chartered to MOL
Technomar	Feb-13	2 x 6,900	2015	
Oaktree Capital (Rickmers)	Mar-13	8 x 5,400	2H 14/2015	
Oceanbulk/Oaktree Capital	Mar-13	6 x 9,000	2015	To be confirmed
Aeolos Management	Apr-13	2 x 9,000	2014	
SinOceanic Shipping	May-13	10 x 8,800	2015/2016	
Ship Finance Intl	May-13	4 x 8,700	2014/2015	
Costamare	Jun-13	5 x 9,000	2015	To be confirmed
CP Offen/CMA CGM	Jun-13	3 x 16,000	2015?	To be confirmed

(Source: Drewry, Various)

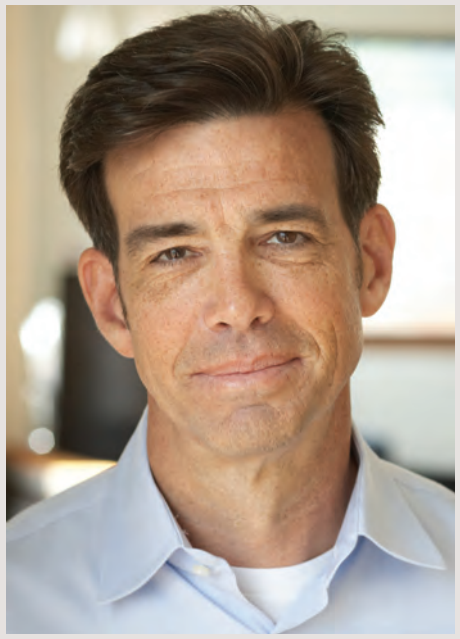
Vigor Industrial

Vigor Industrial has emerged as a leading consolidator of shipbuilding prowess on the U.S. West Coast, and the company continues to invest in new capability and infrastructure. “Over the past year there has been a marked increase in vessel fabrication opportunities of all kinds, including for ferries, tugs, barges, and fishing vessels,” said Vince Piscitello, VP of Sales, Marketing and Business Development. **Earlier this year Vigor signed an agreement to build the largest floating drydock in the United States, and construction is currently underway.** The new drydock will allow Vigor to service larger ships, up to and including any of the cruise ships operating on the West Coast and Military Sealift Command’s Lewis and Clark-class dry cargo/ammunition ships. Vigor’s Alaska Ship & Drydock is also underway with a number of improvements in cooperation with the Alaska Industrial Development and Export Authority and other partners. Less than a year ago, the Ketchikan yard opened a new 70,000 sq. ft. ship assembly hall, and a new $10 million steel fabrication shop is currently in the works.

While investment in facilities and machinery is essential in today’s modern shipyard, leaders in the field such as Vigor recognize the value of workforce development and retention, and a central value at Vigor is “Jobs Matter.” Much more than a simple slogan though, the shipyard launched two initiatives: Harbor Island training center: an industrial skills training center at its Seattle shipyard; and Pathways to Manufacturing, where Vigor provided seed money for a pilot program that helps high school students learn both in-demand industrial manufacturing skills in addition to “soft skills” such as job interview techniques and public speaking.

A few of the recent vessels to grace the building and repair ways at Vigor facilities include:

- **Olympic Class 144 Car Ferries** (Seattle): Washington State’s two newest ferries, the Tokitae and the Samish, are 362.5 x 83 x 24.5 ft. draft; 144 vehicle ferries currently under construction at Vigor’s Seattle shipyard. The Tokitae will remain pier side as teams finish final work including painting, outfitting of passenger areas and system testing. The Tokitae is set to be completed in early 2014 and the Samish is scheduled for completion in early 2015. Scheduled completionis 2014 and 2015 respectively.



“Looking ahead, we expect to see increasing demand for new build and major refit projects as the economy improves and more customers look to upgrade their fleets,” said Vince Piscitello, VP of Sales, Marketing and Business Development. “Some of the major growth areas over the next year include commercial fishing, offshore oil and gas, and tugs and barges.”

- **F/V Arctic Prowler-Longliner** (Ketchikan): Alaska Ship & Drydock is currently fabricating the 136 x 41 x 26.25 ft., 16,300 cu. ft. freezer Arctic Prowler freezer longliner. Designed by Jensen Maritime consultants, the Arctic Prowler will fish for Pacific black cod in Bering Sea and Gulf of Alaska. It’s powered by two 1000-hp MTU main engines, with three 300-kW generators. The Arctic Prowler is the first vessel to be constructed in ASD’s new 70,000 sq. ft. assembly hall. It is scheduled for completion this fall.
- **Split Hull Hopper Barge** (Portland): This 242 x 54 ft., 4,050 cu. yd. dump barge is being built for American Construction Co. It will be used to dredge 770,000 cu. yds. of material from Aberdeen’s inner harbor. The barge features an advanced sealing mechanism to prevent leakage in environmentally sensitive areas. It is scheduled for completion this fall.
- **Iliuliuk Bay Deck Barge** (Portland): Constructed for Harley Marine, the 250 x 70 ft. Iliuliuk Bay Deck Barge was designed to accommodate a 230 ton lift capacity Manitowoc 4100 crawler crane. The vessel will transport cargo between Dutch Harbor and Akutan, and is scheduled for completion this fall.

Vigor’s new floating drydock will reportedly be the largest in the U.S.

Tokitae, a 362.5-ft. Olympic Class 144 Car Ferry.

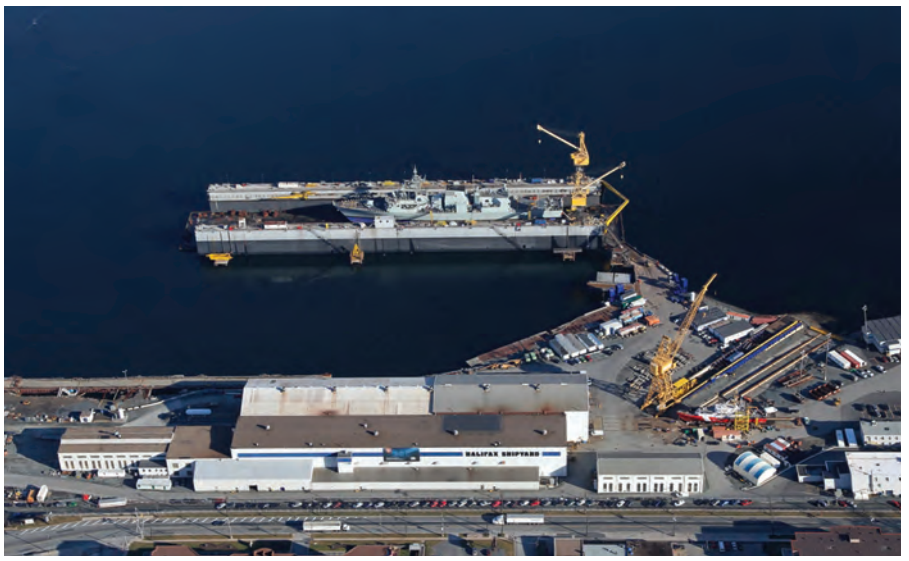
Vigor’s Seattle Shipyard.

Irving Plans for the Future

Irving Shipbuilding is currently focused on the 30-month AOPS Project Definition Contract of the National Shipbuilding Procurement Strategy (NSPS) program, signed on March 7, 2013. Together with its Tier 1 subcontractors, Irving is working to produce a detailed AOPS ship design that delivers best value to Canada while ensuring it meets the 2015 deadline to cut steel on the first ship. Ongoing projects for Canada also require continued focus. The shipyard has successfully delivered four of nine high-tech mid-shore Hero-Class patrol vessels for the Canadian Coast Guard and will complete this $194-million contract in 2014. Our $549-million contract for midlife refits on seven of Canada's Halifax-Class frigates also continues through until 2017, with two vessels complete and two underway.

With a view to the larger, more complex NSPS Canadian Surface Combatant program, Irving Shipbuilding is busy investing an estimated $300 million in modernizing its primary facility, Halifax Shipyard. "It is why I returned to Irving Shipbuilding in 2012; to build the best shipyard in North America and to grow and develop our workforce to meet the demands of the new technologies and facilities," said Matt Reid, Executive Vice President, Operations for Irving Shipbuilding. "Having spent 50 years in the shipbuilding industry, beginning in Scotland and spanning both Canada and the U.S., I realized the opportunity to build a state-of-the-art facility from the ground up only comes along once in a lifetime. We are committed to a design for manufacturing strategy to allow us to meet our customer's priorities; cost performance and on-time delivery." The upgrades at Halifax Shipyard will be ready for cut steel for the first AOPS vessel in 2015, and will allow the company to more effectively and efficiently carry out that program.

Irving Shipbuilding's proven history of successfully building 80% of the Canada's current combatant fleet, priming Canada's Halifax-Class frigates and building the Maritime Coastal Defence Vessels and Mid-Shore Patrol Vessels on time and within budget, combined with the combatant vessel projects in the shipyard today and now AOPS, have and continue to demonstrate the yard's capabilities. "Our employees are excited for the opportunity Canada has given them and the confidence in their ability to succeed," added Mr. Reid. "We are also very pleased to be welcoming our new President, Kevin McCoy, a former U.S. Navy Vice Admiral with extensive shipbuilding and ship repair experience." The time and effort being invested in the construction of new facilities, build-strategy, design, manufacturing and processes as well as our human capital will ensure Irving Shipbuilding successfully creates and maintains the Shipbuilding Center of Excellence that Canada has chosen to establish in Nova Scotia, Canada.



Top: Irving Shipbuilding's primary facility, Halifax Shipyard, with three Canadian Halifax-Class frigates in for service.

Right: Matt Reid, Executive Vice President, Operations, Irving Shipbuilding.

Below: Midshore Patrol Vessel #1 for the Canadian Coast Guard, the CCCG Private Robertson, during sea trials.

Maintaining the Ship of Mercy

by Eric Haun

International faith-based organization Mercy Ships has used ships as traveling hospitals since 1978, providing health services to millions of people from the world's poorest countries. Gathering praise from figures such as Nelson Mandella, Desmond Tutu, Jimmy Carter, George W. Bush and Tony Blair, the organization and its work have had a vast impact globally with more than 2.42 million direct beneficiaries to date and an estimated cumulative work bill near $1 billion.

Funded primarily through private donations, Mercy Ships is now operating its fourth vessel, Africa Mercy. Built in 1980, the vessel began her career as a Ro/Ro rail ferry for the Danish State Railway System and was purchased for $151 million by Mercy Ships in 1999. By 2007, the ship was completely converted into a cutting-edge surgical hospital, giving Africa Mercy the title of largest nongovernmental hospital ship on the planet. The extensive overhaul provided capacity for up to 484 crew/staff, five operating rooms, five wards, labs, x-ray suite and other ancillary service spaces; but most importantly, the refit offered capability to help countless patients throughout Africa's deprived coastal regions.

"Through the use of the hospital ship, Mercy Ships delivers world-class surgical interventions, most not available in the countries we serve," said Don Stephens, Mercy Ships President and Founder. The unique mobility of the state-of-the-art specialist surgical hospital provides medical attention ranging from tumor removal and orthopedic repair to cleft palate reconstruction and dental care. Thanks to Africa Mercy, people who would not otherwise have access to such treatments can receive professional care in a controlled, clean and safe environment; roughly 7,000 surgical procedures are performed aboard the ship annually.

But as with all vessels of this scale, yearly maintenance helps keep the Africa Mercy fully operational for 10 months of the year. In June, the vessel made her third visit to Astican Shipyard in Las Palmas, Gran Canaria for scheduled repair and upkeep. There, Africa Mercy received "significant upgrades," said Ken Berry, Mercy Ships Director of Marine Operations, including improvements to the ship's engine and navigation and functional interior refurbishments.

Because the ship is 33 years old, many of its parts have become outdated and increasingly difficult to maintain. Astican

Africa Mercy alongside at a repair berth in Astican Shipyard, Las Palmas, Gran Canaria for brief annual upkeep period of repairs and modernization.

Photo credit: © Mercy Ships/Ann Berry)

replaced the ship's original main engine lube oil purifiers with new purifiers supplied by Alfa Laval and added eighty meters of new piping to support installation. Similarly, the older X-Band radar is no longer supported by the manufacturer, Berry said, so a new Kelvin Hughs Ltd. manta digital radar unit was installed by the ship's technical crew with crane support from the yard.

On the inside, much needed capacity was added to the hospital's surgical operations as one operating room was transformed into a post anesthetic care unit, increasing ward space by 20%. Tennessee-based All Parts Medical supplied Africa Mercy with a newly refurbished GE VCT lightspeed 32-slice CT scanner for its x-ray suite. The yard also installed 600 sq. m. of Sika poured epoxy flooring to replace worn linoleum in the vessel's wards and exam rooms.

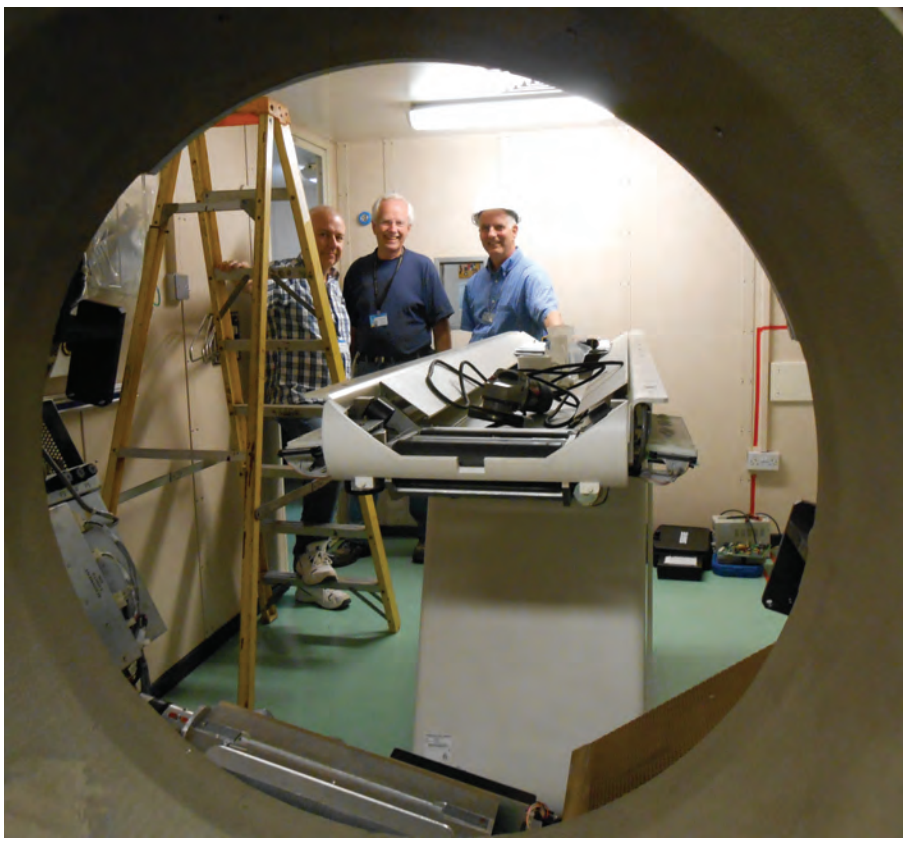
Following its annual maintenance phase, the newly upgraded Africa Mercy will sail to Pointe Noire, Republic of Congo, Stephens said. There, the crew will begin a 10-month field service as it continues to bring hope and healing to the world's poor.

The success of Africa Mercy has led Mercy Ships look toward expansion of its fleet with a newbuild. "Provisionally named the M/V Atlantic Mercy, this ship will more than double Mercy Ships' capacity to serve underdeveloped countries as well as provide far more medical training capacity," Berry said.

For more information or to donate, visit www.mercyships.org

Installing a new Kelvin Hughes Ltd Manta Digital Radar unit onboard the Africa Mercy.

(© Mercy Ships/Michelle Marx)



(Photo credit: © Mercy Ships/Ann Berry)

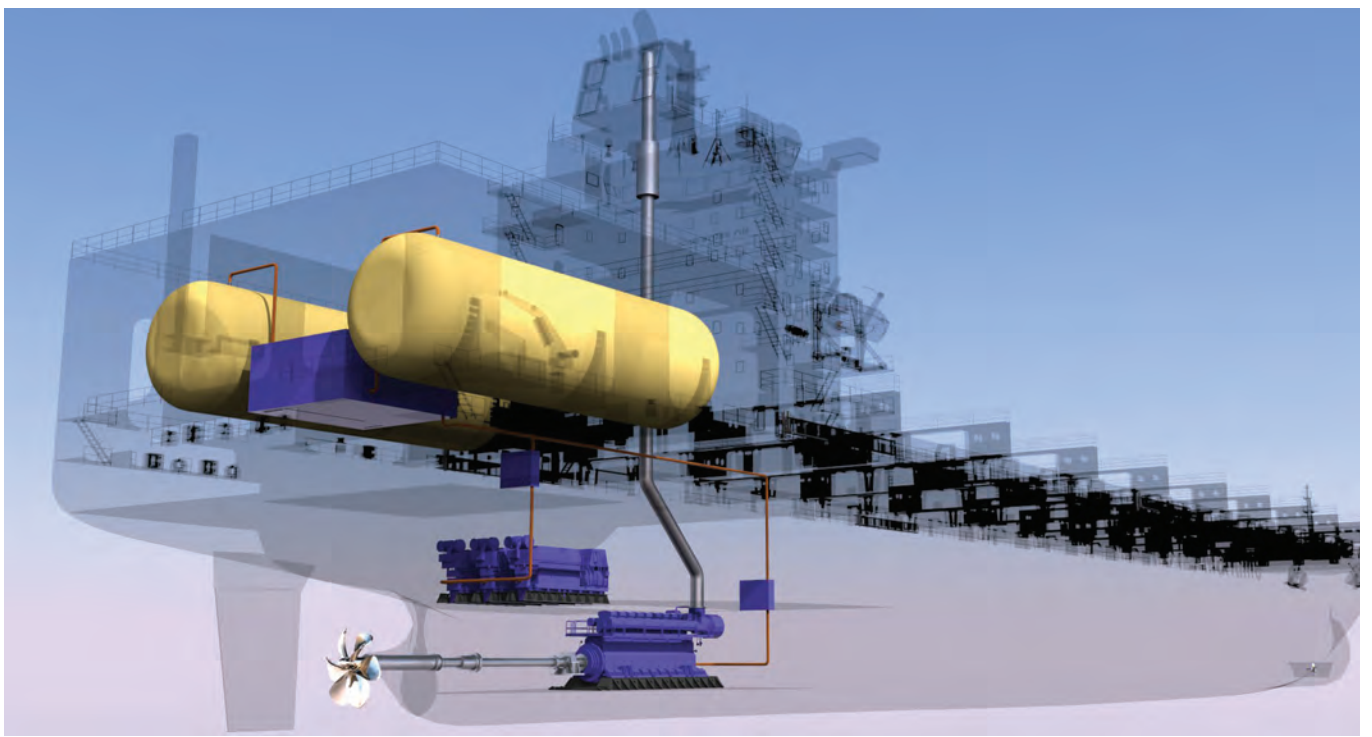
Above: Tom Velnosky, Bio-Med Engineer, Roger Nowicki, Project Manager and Ken Berry, Director of Marine Operations of Mercy Ships, preparing to remove the old CT Scanner.

Left: Justin Ray, Design Engineer, and Ken Berry, Director of Marine Operations of Mercy Ships moving the scanner through the passageway into the lead shielded x-ray suite.

Reducing Ship Operating Costs

By Jim Rhodes and Frank Soccoli

Rhodes is president of Rhodes Communications, Inc., a public relations and marketing company specializing in the maritime industry. Soccoli is president of Soccoli Associates LLC, a maritime industry consultancy. They are the co-producers of the annual SHIPPINGInsight Fleet Optimization Conferences.



TOTE, NASSCO and MAN Diesel & Turbo are leading the way towards big commercial ship integration of LNG as fuel.

While there are indications that the shipping industry is starting to emerge from the doldrums of the last six years, signals remain mixed. Moore Stephens reported in June that shipping confidence has risen to its highest point since 2010. Indeed, there are signs of a new wave of speculative ordering of new tonnage, propelled by bargain-basement prices from shipyards desperate to fill slots and a reported influx of capital from private equity sources. A primary driver for the surge of orders is the improvements in fuel efficiency of new ship designs over older ships. On the other hand, in the same month, Moody's Investor Service issued a negative report for shipping, predicting continued depressed freight rates for at least the next 18 months due to persistent over tonnage in most segments. Moody's estimates that aggregate industry Earnings Before Income Tax, Depreciation and Amortization (EBITDA) for publicly held shipping companies will decline by 5-10% this year.

The mix of anemic shipping demand, over tonnage, low freight rates, rising fuel costs, tight credit from marine bankers and high costs of environmental compliance to meet new regulations makes for a poisonous cocktail to shipowners. The fall into receivership of STX Pan Ocean, South Korea's largest bulk ship operator, is a sign of the times. It's not likely to be the last. Several other shipowners are said to be insolvent and teetering on the verge of bankruptcy. Interestingly, there are reports that certain German banks are offering high-interest "payday loans" against the scrap value of older vessels as a last resort for distressed ship owners who have exhausted their working capital and are unable to obtain financing to continue operations.

The delivery of the first Maersk giant Triple E 18,000-teu containership, coupled with rumors that other container lines are designing even larger ships, into a market already overcrowded with too many ships chasing too few cargos, may be a big gamble that will pay off enormously in terms of market share, but will certainly not help ease the persistent over tonnage. The crystal ball may be murky, but one thing is clear. Shipowners must reduce the cost of operating ships to survive in the coming years.

The first place to start is with fuel, which accounts for 40-50% of a vessel's operating costs. As the Emission Control Areas (ECA) continue to expand, that percentage is likely to rise even higher due to the higher cost of low-sulfur fuels. Ship owners have adopted numerous methodologies to reduce fuel consumption, such as slow steaming, advanced hull coatings, better weather routing and asset management strategies, which have yielded notable benefits. Shipowners are increasingly looking to alternative fuels or hybrid propulsion systems to reduce their rising fuel bills. Liquefied natural gas (LNG) offers considerable benefits over other fuels meeting the ECA requirements for reduced emissions.

Focus on LNG

LNG as a marine fuel is still in the early developmental stages. At the beginning of the year, it was reported that there were 37 LNG-powered vessels in operation (not including dedicated LNG carriers that use "boil-off" gas for ship propulsion). That number will rise to 65 in the next few years based on current orders. A recent DnV study projects 1,000 LNG-fueled ships to be in service by 2020. Most of the current LNG- powered ships are ferries and short-sea carriers, operating on relatively short fixed routes in regions where LNG bunkering is readily available, mostly in Scandinavia. The potential benefits from LNG are impressive. LNG can reduce SOx emissions by 90-95% and CO2 by 25%, according to industry estimates. In the U.S. market, LNG currently sells for about one half the price of other ECA-compliant fuels. There's plentiful supply of untapped LNG deposits that are now being developed, especially in America, Russia, Qatar and Australia. Even after the increased costs of extracting, transporting, storing and bunkering LNG are factored into the equation, LNG will almost certainly continue to maintain an attractive price advantage over conventional marine fuels.

On the other hand, it is more expensive to build new LNG-fueled ships or to convert existing ships. One study estimates the cost for a new LNG-powered ship to be about 20-25% higher than an equivalent vessel with traditional fuels. Payback periods for conversion to LNG are said to be three to seven years. This analysis is based on the assumption of an adequate LNG bunkering infrastructure in place at ship sailing ports.

Barriers to Entry

There lies the rub. The biggest barrier for widespread adoption of LNG at this stage is the lack of a worldwide bunkering infrastructure. Other inhibiting factors for LNG include a lack of LNG-specific training for shore and ship-based staff, as well as the absence of international standards for bunkering with LNG. There are also concerns about methane burnoff during bunkering, causing CO2 release into the atmosphere and increased engine knocking from varying methane number in LNG fuels.

Despite the challenges, a number of forward-looking shipowners are already placing their bets on LNG. Tote, Inc. rocked the industry when it announced it

was ordering two new LNG-fueled containerships for its Jones Act fleet from NASSCO, as well as converting two of their existing ships to LNG, citing a 40% increase in fuel costs to meet the ECA requirements. Interlake Steamship Corporation has likewise announced a plan to convert its Great Lakes fleet to LNG, and Rolls Royce announced at Norshipping a contract with Bergen Tankers to convert a product tanker to LNG engines. DNV has reportedly given approval in principle to the design of an LNG-fueled 14,000-teu containership in a joint industry project involving Daewoo Shipbuilding, CMA-CGM and Bureau Veritas. A CMA-CGM spokesman was quoted in the press as saying the first ship could be built within five years, assuming the ready availability of LNG bunkering. Fuel suppliers and ports are also working to meet the demand for LNG bunkering facilities. Shell is said to working to provide LNG fueling terminals in the Great Lakes to support the converted Interlake ships. Other companies, including Maersk Lines Ltd. and Crowley Maritime are also working to develop bunkering infrastructure on a larger scale. Stockholm has demonstrated successful ship-to-ship LNG bunkering, and Antwerp recently bunkered an LNG-powered barge by truck. Antwerp is also said to be putting out tenders for an LNG bunkering vessel. While ship-to-ship LNG bunkering may be the best short-term solution, there is a need for shore-based bunkering facilities at major seaports around the world to sustain widespread adoption of LNG as the marine fuel-of-choice.

Focus on Fleet Optimization

The 2013 SHIPPINGInsight Fleet Optimization Conference will provide a forum for examining the challenges, solutions and best practices for reducing operating costs and improving ship efficiency. The second-annual conference will take place in Stamford, Connecticut, October 22-24, 2013. The agenda includes a solid list of moderators and speakers, including senior executives from 15 major shipowner companies. The keynote speakers are Anthony Chiarello, president and CEO of Tote, Inc., and Yasushi Nakamura, executive vice president of ClassNK.

Given the intense industry focus on the potential benefits of converting to LNG, a dedicated LNG workshop is being added to the Fleet Optimization Conference this year. It will take place immediately following the main conference, and is open to all registered delegates. The workshop will take the form of a less formal round-table discussion including shipowners, classification societies, regulatory bodies, engine manufacturers, bunkering companies and other industry experts to take a deeper look into the issues, challenges, solutions and best practices for LNG propulsion.

To view the complete agenda and register for the 2013 Fleet Optimization Conference, go to

www.shippinginsight.com

Anthony Chiarello, President and CEO of Tote, Inc., is the featured Keynote Speaker at the SHIPPINGInsight Fleet Optimization Conference, October 22-24, 2013.

MR DIGITAL

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

Marine Diesel Engine

New Dual-Fuel Engine in MAN Portfolio

A new dual-fuel marine diesel engine variant from MAN Diesel & Turbo, the ME-LGI, runs on liquid gas fuels – methanol, LPG, dimethyl ether (DME), and (bio-) ethanol as well as other, low-flash-point fuels – building on the manufacturer's successful LNG /HFO dual-fuel ME-GI low speed engine plant introduced last year.

MAN developed the ME-LGI engine in response to interest from the shipping world in using alternatives to heavy fuel oil. Methanol and LPG carriers have already operated at sea for many years and many more LPG tankers are currently being built as the global LPG infrastructure grows; in themselves a ready market once a suitable dual-fuel engine became available.

Sure enough, the new engine, unveiled on July 1, 2013 was snapped up as MAN signed a Letter of Intent with Vancouver-based Waterfront Shipping for the installation of four MAN ME-LGI engines which will run on a blend of 95% methanol and 5% diesel fuel.

Waterfront Shipping, a wholly-owned subsidiary of Methanex Corporation, has a fleet of eighteen double-hulled deep-sea bulk chemicals and clean petroleum products tankships, including methane. With a viable, convenient and economic fuel already on-board, to exploit a fraction of the cargo to power a vessel made immediate sense, with the added benefit of a reduction in exhaust gas emissions.

Methanol is a sulphur-free, clean-burning fuel and MAN Diesel & Turbo sees a far wider market potential for it as a bunker fuel apart from its obvious attraction as the fuel of choice for the specialised methanol tankship. They say they expect all their existing MAN B&W two-stroke engines to be retrofittable – in a cost-efficient manner – for operation according to the LGI concept on either methanol or LPG, adding that they are already working towards a Tier lll-compatible ME-LGI version of the engine.

The New Engine

The ME-LGI concept is an entirely new concept that can be applied to all MAN Diesel & Turbo low-speed engines, either ordered as an original unit or through retrofitting. Two concepts are key:

- The engine's 'ME-' prefix indicates that the new engine benefits from well-proven electronic controls that also encompass the fuel being injected by a so-called Booster Fuel Injection Valve.
- This fuel booster, specially developed for the ME-LGI engine, ensures that a low pressure fuel-gas supply system can be employed, significantly reducing first-time costs and increasing reliability.

"With increasing fuel prices and upcoming shipping regulations, we identified the need to develop an engine that can enable ships to run on alternative fuels with environmental benefits. The ability of our ME-LGI engine to run on a sulphur-free fuel offers great potential," according to Ole Grøne, Senior Vice-President, MAN Diesel & Turbo SE.

The four G50ME-LGI units are targeted for the end of 2013, with engine delivery to follow in the summer of 2015.

Excerpted from a post n MaritimePropulsion.com
by George Backwell, Thailand

DSME, MDT Begin Gas Fuel Revolution for Ships

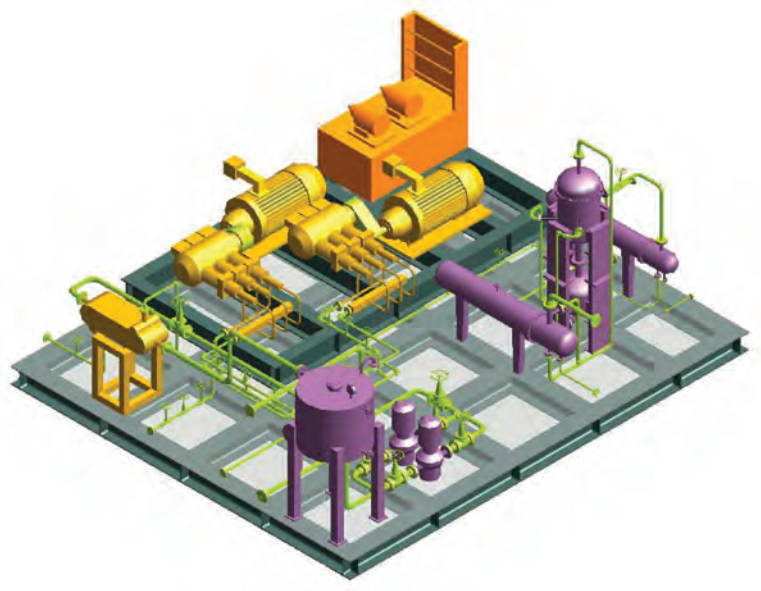
On July 29, 2013, Daewoo Shipbuilding & Marine Engineering announced the patent license contract with MAN Diesel & Turbo for DSME high pressure-fueled gas supply (HP-FGS) system. Under the contract, MDT will use DSME HP-FGS system patents and licenses for its LNG propulsion based commercial vessel projects.

MAN Diesel & Turbo is the world's largest engine licenser in commercial shipbuilding area, with more than 80% market share in two-stroke marine engine market. Considering that the MAN Diesel & Turbo ME-GI engine is the only two-stroke LNG-fueled engine for commercial vessel until now, this patent contract is expected to bring out great ripple effects to related industries. When the ME-GI engine was first introduced in the industry in early 2000s, the high pressure gas compressor system was attempted to be used as its FGS system. Since the compressor system consumes much power and occupies large space, however, the ME-GI engine had a hard time being commercialized in the marine field. But the development of the high pressure pump-based FGS system by DSME is now contributing to the building of recent several LNG-fueled ships with the radical improvement in the power and space efficiency.

DSME has already prepared for FGS systems since 2007 and is internationally holding intellectual properties on the technology. In May 2011, DSME has completed HP-FGS system integration test with ME-GI engine at the MDT Copenhagen research center. In 2014, DSME will provide its FGS system to NASSCO for TOTE's 3,100 TEU world first LNG-powered containership.

These containerships will be constructed at NASSCO shipyard, and they are now being designed by DSEC that is a subsidiary of DSME. This design will include DSME's patented HP-FGS system and ME-GI dual fuel slow speed engine.

"DSME will provide designing, engineering, commissioning and training services about FGS system to licensees" said Mr. Brandon Jung, who is CTO & senior executive vice president of DSME. He added "The core technology of DSME FGS system is highly esteemed among not only the related industries but also the entire country."



One Scrubber for all Main, Auxiliary Engines

By Peter Pospiech, Germany, posted on MaritimePropulsion.com

Norway's Clean Marine says it offers a patented exhaust gas cleaning system (EGCS) to meet upcoming regulations on sulphur emissions. "For vessels sailing in European waters and other emission control areas (ECAs), a maximum sulphur limit of 0.1% will apply from 2015," said CEO Nils Hoy-Petersen. "The Clean Marine system will clean both sulphur oxides (SOx) and particulate matter emissions from main and auxiliary engines as well as boilers." The EGCS is said to be the only system currently on the market with true multi-stream exhaust gas handling. This means that all exhaust sources on board are served by one common EGC unit without encountering an increase in back pressure, Clean Marine said. In addition the system can be retrofitted and installed, with slight modifications, in the existing funnel design.

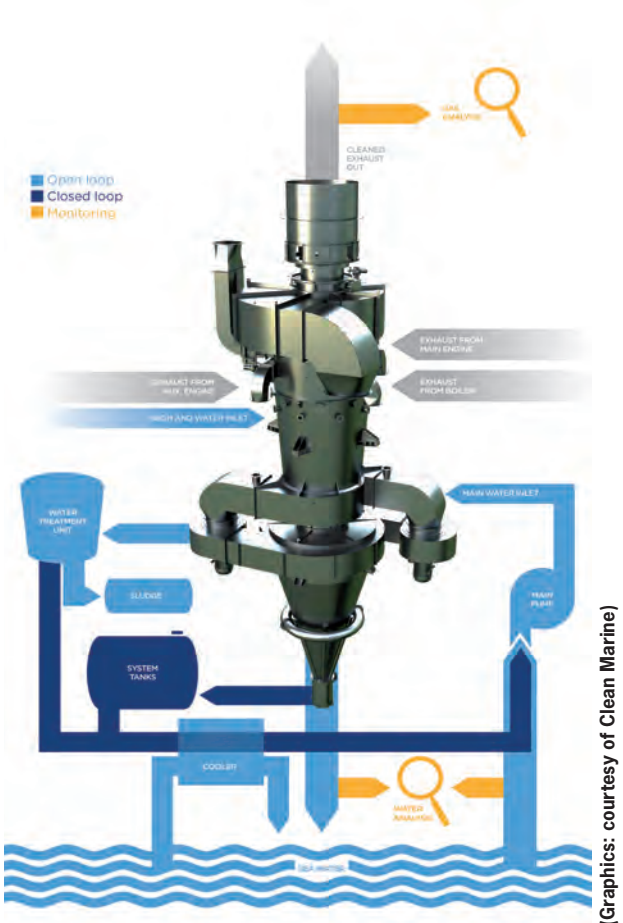
Two fans and a gas recirculation mechanism integrated into the EGC unit ensure that pressure at the common gas-meeting point is maintained at ambient level, irrespective of the amount of exhaust fed to the system.

The advanced vortex chamber (AVC) is another vital part of the Clean Marine EGC unit. This high-speed cyclone has outstanding separation efficiency and achieves a high sulphur and particulate matter (PM) trapping efficiency at minimum cost, according to the company. Clean Marine says it offers a proven hybrid system that can operate in both open-and closed-loop mode. It uses caustic soda in both modes, which means vessels can operate in all types of water (including low-alkaline and saline water) in either mode and without loss of efficiency. Furthermore, the use of caustic soda enables the Clean Marine EGCS to meet the current pH limit for washwater discharges with good margin, it noted.

The Clean Marine EGCS is easy to operate and monitor and is also a cost-efficient option, especially for vessels with many exhaust sources, as the one EGC unit simultaneously serves several combustion units.

Assuming a conservative $300 per metric ton price difference between marine gas oil and high sulphur fuel oil, and 100% of operations inside an emission control area (ECA), Clean Marine says payback time would be about a year.

A Clean Marine EGCS is operational and fully certified on the bulk carrier M V Balder, and the company recently signed a contract with Samsung Heavy Industries and AET for two shuttle tanker newbuildings. Installation of the EGC units is scheduled to take place during 2013 and 2014, and Samsung will deliver the state-of-the-art tankers at the end of 2014 and beginning of 2015, respectively.



Graphics: courtesy of Clean Marine)

Wärtsilä X40 Engine Passes Type Approval Tests

Wärtsilä said that its X40 two-stroke engine passed its Type Approval Test (TAT) carried out in Zhuhai, China, at Wärtsilä's licensee Yuchai Marine Power Co. Ltd. (YCMP). In passing the TAT, the engine is verified as having fulfilled all classification society requirements, and will be fully introduced to the market following its sea trials, which are now being undertaken. A feature of the testing was meeting the SOLAS (Safety of Life at Sea) standards. With a single engine powering the propeller, the engine must be capable of continuous operation under all conditions.

The Wärtsilä X40 as well as the Wärtsilä X35 engines feature Wärtsilä's second-generation version of its electronically controlled common rail system with time controlled fuel injection. The Wärtsilä Generation X Engines feature a higher stroke to bore ratio thus achieving lower engine speed and lower brake specific fuel consumption (BSFC). With this technology the fuel injection for each cylinder, as well as the cylinder lubrication, is controlled by a single module to provide excellent fuel efficiency and reliability as well as lower operational costs. The engine also incorporates the state-of-the-art UNIC-flex control system, which is based on Wärtsilä's UNIC (Unified Controls) platform. The Wärtsilä X40 and Wärtsilä X35 cover the small-bore end of the market. The engines will be used for smaller bulk carriers, product tankers and container feeder vessels. It is a segment where Wärtsilä is making its presence increasingly felt after not having been present for a number of years.

www.wartsila.com

Caterpillar to Acquire Berg Propulsion

Caterpillar Inc. signed a definitive agreement to acquire Johan Walter Berg AB, including its core brand of Berg Propulsion, a manufacturer of mechanically and electrically driven propulsion systems and marine controls for ships. **With the acquisition, Caterpillar will transition from selling only engines and generators to providing complete marine propulsion package systems.**

Headquartered in Öckerö Islands, Sweden, Berg has designed and manufactured heavy-duty marine thrusters and controllable pitch propellers since 1929. Its proprietary systems are employed in maritime applications throughout the world that require precise maneuvering and positioning.

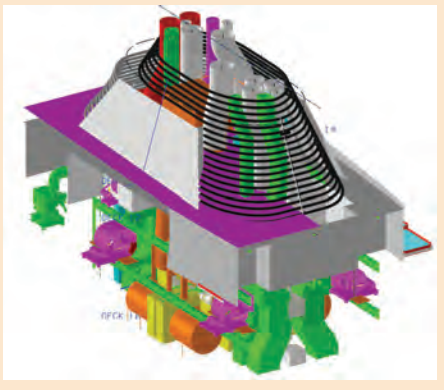
"Berg is one of the most highly regarded brands in the marine industry," said Tom Frake, Caterpillar vice president with responsibility for the Marine and Petroleum Power Division. "Our team will now be able to provide worldwide Caterpillar support to marine operators for a complete, optimized propulsion package, including bow thrusters, gear boxes and shaft alternators." Berg will become part of the Caterpillar Marine and Petroleum Power Division.

The deal is expected to close in the third quarter 2013.

MAN Engines to Power Italian Cruise Ships

MAN Diesel & Turbo will supply eight engines for the diesel-electric propulsion of two cruise ship newbuildings to Fincantieri Cantieri Navali Italiani S.p.A. It will deliver the engines in cooperation with Alfa Laval who will supply accompanying exhaust-gas-treatment systems (PureSOx) for sulfur-oxide removal. Each ship will be powered by two MAN 9L32/44CR + 2 × MAN 12V32/44CR engines, providing a combined output of 23,520 kW in a diesel-electric propulsion arrangement. The engines will operate with MAN Diesel & Turbo's common-rail injection system, suitable for both heavy fuel oil and distillate fuels.

"By combining MAN's efficiency-leading 32/44CR engines with the PureSOx exhaust-gas-treatment system, these super-luxury cruise vessels can fulfill the increasingly stringent global requirements for permissible sulfur-oxide emissions in the most economical manner possible," said Sokrates Tolgos, MAN Diesel & Turbo's Head of Cruise & Ferry Sales. "This especially applies to the demanding limit of 0.1% sulfur fuel equivalent in Emission Controlled Areas (ECAs)."



The two new vessels are bound for Viking Ocean Cruises, sister company of Viking River Cruises. With a total passenger capacity of 936 and a crew to passenger ratio of approximately 1:2, the ships are destined to serve the segment demand for small, super-luxury vessels. Delivery of the two newbuildings to the ship owner is scheduled for early 2015 and early 2016, respectively.

Alfa Laval's PureSOx system is designed to remove more than 98% of sulphur oxides from a ship's exhaust gas through washing it with seawater (open-loop system), or freshwater (closed-loop system), or a combination of both (hybrid system), which enables the vessels to comply with IMO regulations by using heavy fuel oil instead of expensive, low-sulfur marine gas-oil.

Because of the typically stringent space requirements that exist for technical equipment aboard cruise ships, the more compact 'multiple inlet' PureSOx system design has been chosen where the exhaust gas from each engine pair is cleaned in a single PureSOx system.

Wärtsilä Launches More Powerful 34DF Engine

Wärtsilä has developed its dual fuel technology and introduced a more powerful version of its Wärtsilä 34DF engine. Available since 2003, the Wärtsilä 34DF is mainly used in the LNG-fueled offshore support vessel market, particularly for tugs, ferries, RoRo, RoPax and workboats. The new and upgraded version of the Wärtsilä 34DF engine increases the efficiency in both liquid and gas operating modes and offers a power increase up to 500kW per cylinder. This increased output means that the Wärtsilä 34DF now covers a power range from 2.9-8 MW. In addition to the increase in power, fuel economy is also enhanced, especially when operating in liquid fuel mode. When operating in gas mode, the Wärtsilä 34DF engine is already compliant with IMO Tier III regulations without any secondary exhaust gas purification systems. Also when fueled by gas, the SOx and CO2 emissions are notably reduced, and smokeless operation is attained. In liquid fuel oil mode, the Wärtsilä dual-fuel engines are fully compliant with the IMO Tier II exhaust emissions regulations set out in Annex VI of the MARPOL 73/78 convention. The engine is able to operate efficiently and economically on low sulphur fuels (<0.1% S), making it suitable for operation in emission-controlled areas.

Schottel Celebrates CPP Milestone

German propulsion giant Schottel looks back at five decades of controllable-pitch propeller (CPP) development.

CPPs have been developed and produced on the Baltic coast of Germany since 1962 – initially in Rostock, and then in Wismar from 1964.

The first units were manufactured for 86 freezer-trawlers of type Tropik for the Soviet Union. Four additional types were produced for GDR fishery vessels. The first years of controllable-pitch propeller production in Wismar centered on systems with a power rating of 1,930 kW for 199 freezer-trawlers of the Atlantik type, and in total, 230 controllable-pitch propeller systems were delivered to the end of 1969. From 1970, CPP systems of the second generation were implemented, with simplified kinematics and a reduction in the number of parts. A total of 195 vessels of the type Atlantik Supertrawler were fitted with this propeller (2,850 kW, 3.4 m diameter).

In 1975, systems with an input power of 8,250 kW (5.3 m diameter) were manufactured for bulk carriers, and later also for Multi-Bulk Container freighters, for delivery to the Federal Republic of Germany.

Later additions to the production range were controllable-pitch propeller systems for trailer vessels, ferries and large freighters with constant-speed operation for shaft generators. In 1995, the most powerful controllable-pitch propeller system ever manufactured to date, with 15,000 kW and a diameter of 5.2 m, was supplied for a passenger-carrying container ship.

In 1999, Schottel acquired the then WPM Wismarer Propeller- und Maschinenbau GmbH and has built on the existing expertise in the development of controllable-pitch propellers. Major developments came from the new parent company in western Germany. A state-of-the-art manufacturing facility with highly qualified employees has been built up, and the company's portfolio now includes controllable-pitch propeller systems of up to 30 MW, used in wide ranging applications, from conventional freighters to fast ferries and powerful tugs. In 2012, five-bladed controllable-pitch propellers for fast vessels were brought onto the market, designed for applications with requirements for a lightweight construction in combination with high power ratings, for example military vessels or yachts.

Schottel SCP controllable-pitch propeller systems of the 5-X series are available with power ratings from 1,000-20,000 kW.

They are based on the proven design principles of the standard systems but offer an even higher power density and a weight reduced by up to 15 percent while retainingreliability and robustness. The propellers have been optimized in accordance with the latest state of the art in hydrodynamics and structural mechanics and are characterized by improved efficiency, reduced pressure pulses and structurally optimized hubs. At the same time, the simple and maintenance-friendly design and functional principle of the classic Schottel CP propeller systems have been retained.

Schottel SCP controllable-pitch propeller systems of the 5-X series are available with power ratings from 1,000-20,000 kW.

Gigantic Gear Unit Technology

Gigantic multi-engine ship's gearboxes in the world's biggest ferry boat

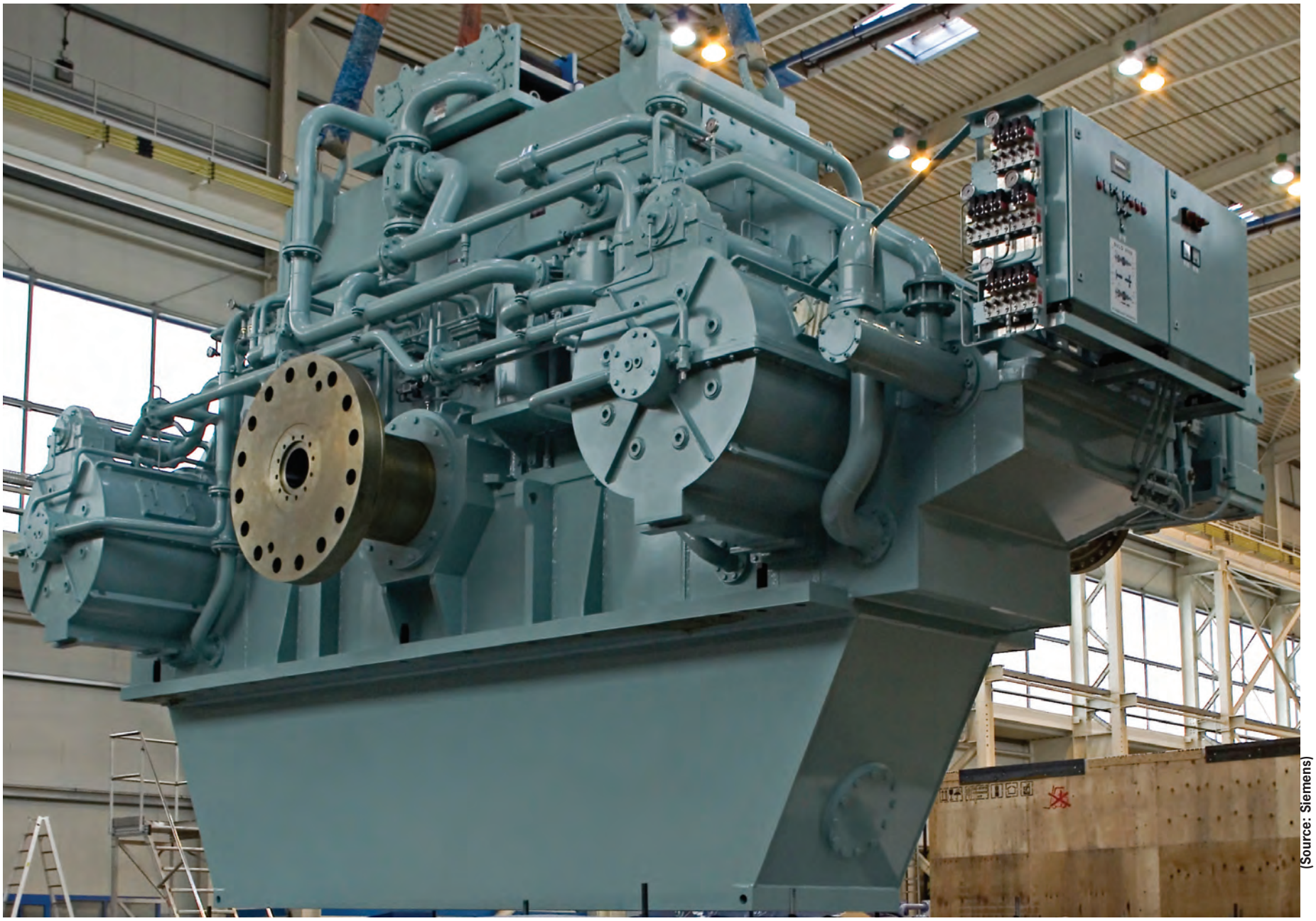
By Ralf Meyersieck, Mechanical Drives, Siemens AG

Gigantic records are set by land, sea and air. For them to be set, modern high-tech solutions are needed that in the right combination make the impossible possible. For example, one insider calls gigantic ferry boats "cruise ships with car decks." By that he is referring to their size and the comfort that size brings with it. The biggest ferry boat ever built was launched in South Korea in 2012. Going along with it was the German-made standard gearboxes that in size, performance and quality are far from just standard. In 2012, the world's largest ever means of transporting motor cars and commercial vehicles was added to the list of gigantic record-holders, as the world's largest ferry boat.

Low-Vibration Gearbox Tech

Daewoo Shipbuilding & Marine (DSME) shipyard built a gigantic ferry that put everything built to date in the shade. This ocean giant (DSME newbuild number 7511, dubbed Hannibal), which can carry 3,200 passengers accommodated in first-class cabins and 1,060 vehicles, was built for the Tunisian state shipping company CoTuNav and today runs the route between Tunisia, Italy and France.

Important for guests' comfort is that during their time aboard, engine noise and vibration is kept as low as possible, which is one reason the decision-makers chose a Flender Navilus GVLQ 2500 by Siemens for the propulsion gearbox, a multi-engine ship's gearbox optimized for low noise and vibration



(Source: Siemens)

Fig. 1: For the world's largest ferry boat which was put into operation in 2012, Siemens built two twin-engine propulsion gearboxes which together deliver 57,600 MW of motor-power to the adjustable propellers.

signatures courtesy of its layout and design. The two propulsion gearboxes by Siemens were built at the Voerde facility in Germany.

Another advantage is the redundancy that can be achieved with the gearbox with regard to propulsion. On Hannibal, four common-rail diesel engines generating a total output of 57,600 kW provide the primary drive. Each pair of engines transmits the required power to the relevant propulsion drive with adjustable propellers via a type GVLQ 2500 gearbox. Because of the combined power of the two diesel engines each of the two gearboxes thus transmits an output of 2 x 14,400 kW.

Multi-Engine Solution

A concept of this kind with four engines and two propellers offers passenger ships a good combination of safety and comfort. On one hand, single- or twin-engine drive enables different speeds to be run on the propulsion drive. In the case of the Hannibal, these are speeds of 514 rpm or 139.9 1/min. On the other, a multi-engine solution of this kind offers especially high servicing flexibility. After all, an ocean giant cannot just be parked on the open sea.

With a breadth of 7.35 m, a height of 4.92 m and a length of 3.7 m these units weigh 89 tons and are thus the largest ship gearboxes ever built at Siemens's Voerde/Friedrichsfeld location. Even transport to the shipyard in South Korea was a masterpiece of logistics.

Fig. 2: A typical feature of the Flender gearboxes by Siemens is that they are standard-fitted with its own oil-supply system.

Another feature of the Siemens gearboxes is that they are equipped with a top-mounted oil-supply system and an attached monitoring system for unsupervised operation. In addition, the propeller thrust bearings are built into the gearbox. For operation that means that the gearbox housings are designed to be especially torsion-free, thus ensuring a faultless tooth mesh in all conditions – such as, rapid changes of load while running in bad weather.

Multiple-Disk Clutches for Easy Service

Multiple-disk clutches enable the engines of the twin-engine gearboxes to be engaged and disengaged. Because of the power boost, the Hannibal can reach a maximum speed of up to 27.5 knots. During servicing, one engine can be flexibly disengaged, while the other remains engaged and drives the ship. The second important function of the multiple-disk clutches consists in using the power take-off (PTO) outputs integrated into multi-engine gearboxes.

A PTO enables power to be generated onboard the ship with a generator. Thanks to these primary PTOs, the ship's engineering team can maintain generator operation on the PTO, even when the propeller is disconnected. In the case of the Hannibal, however, this feature was not required, because the ship has its own power plant to feed its main supply.

The example of the world's largest ferry boat, which links the two continents of Africa and Europe on a line between Tunisia, Italy and France, reveals two things: The need to transport large quantities of goods and large numbers of people is unchanged. At the same time, the limits of what is technically feasible and what is economically sensible are pushed further out.

For gigantic records like these to be set, reliable and efficient drive solutions like the Flender Navilus GVLQ 2500 gearboxes by Siemens used here are needed.

(Source: Siemens)

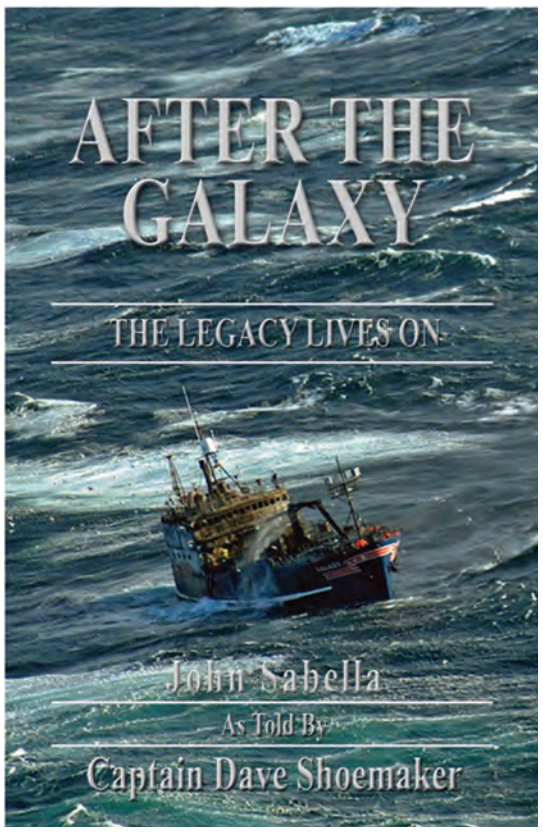
Fig. 3: The design of the Navilus GVLQ 2500 large gearboxes is especially torsion-resistant, thus ensuring that the gear pairs mesh consistently well, particularly when running through rough seas.

Ralf Meyersieck is with the Mechanical Drives business unit of Siemens AG.
www.siemens.de/navilus

(Source: Siemens)

Fig. 5: With dimensions of 7.35 x 4.92 x 3.7 m and a weight of 89 tons the transport of the two type Navilus GVLQ 2500 multi-engine gearboxes alone is a masterly piece of logistics. (Source: Siemens)

“After the Galaxy”



After the Galaxy
by Dave Shoemaker

The eBook is available for iPad, Kindle, Nook or other eReader:
www.johnsabella.com/detail.lasso?title=650979
Email: info@johnsabella.com

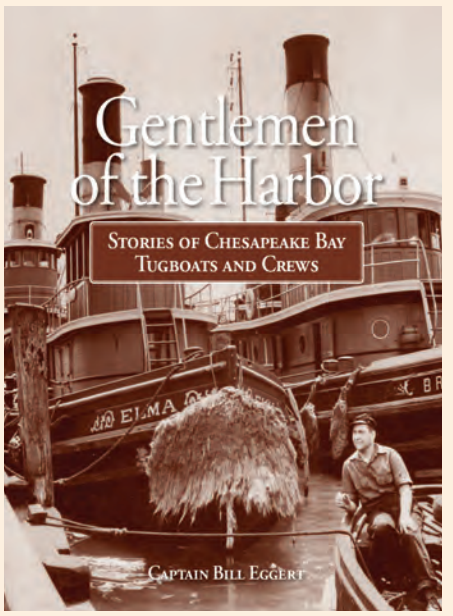
He said, “Captain.”
And I said, “What Mirek?”
“Are we going to die today?”
“Yes, Mirek. We’re going to die.”

Four men huddled on the bow of the burning, 190-ft. fishing vessel Galaxy as the crippled boat foundered on one of the world’s cruelest oceans. Captain Dave Shoemaker was seriously hurt. After the backdraft explosion, he made several desperate attempts to enter the smoke-filled wheelhouse, find a radio and issue a mayday call. Each foray left him puking and gasping, smoke searing his lungs and contact with the steel bulkheads charring his flesh and igniting his clothing. After each attempt, he climbed through an escape hatch onto the roof of the wheelhouse, gasping for air. When he regained the ability to speak, he exhorted his crew in a desperate effort to quell their rising panic.

Seventeen men and one woman fled the inferno in the house and mustered atop the shelter deck at the stern. Clad in t-shirts and sweatpants or pajama bottoms, many in stocking feet, they clustered helplessly in the sub-Arctic wind and watched the advancing flames. Protected only by a railing with three steel bars, they would have been 34 feet above the water at the dock. As the vessel surged over the crest of a 20-foot sea, they soared as high as the roof of a five-story building. Trapped between a wall of fire and a relentless ocean, they were terrified.

There were four more men on the foredeck, isolated from the others by the conflagration consuming the superstructure, and three men in the water.

Captain Dave Shoemaker’s account of the crisis on the Galaxy ranks as one of the great stories of sea survival.



Gentlemen of the Harbor

Stories of Chesapeake Bay Tugboats and Crews

by Captain Bill Eggert

Captain Bill Eggert spent 20 years working in Baltimore Harbor running charter boats and water taxis. All that time, he dodged tugboats guiding huge cargo ships and tankers in and out of the industrial port and tugs towing barges piled high with everything from coal to sugar. In that time, he came to know these legendary boats and the men who captain and crew them. Now he shares their history in his new book, Gentlemen of the Harbor: Stories of Chesapeake Bay Tugboats and Crews.

“Tugboats evoke an emotional response,” Eggert writes in the foreword, and the rest of the 80-page book does just that through well-researched historical vignettes illustrated by crisp black-and-white photographs. Many of these photos were taken by Hans Marx, the award-winning Baltimore Sun photographer. Others have emerged from the Sun archives. These blend well with the contemporary images by the author.

He held a 100-ton Coast Guard Merchant Marine Officer’s certificate. He served in the U.S. Navy as a petty officer on the destroyer USS Bigelow (DD-942) and the guided-missile cruiser Albany (CG-10).

To order copies visit:
www.gentlemenoftheharbor.com

GL on Retrofitting Solutions

Enhance Performance, Cut Costs

A new manual from Germanischer Lloyd (GL) provides owners a handy, simple visual on how a suite of retrofitting solutions directly affects the economics of their operations. A driver for the publication is the fact that today’s newbuildings consume up to 20 to 30% less fuel than vessels built only three to five years ago, leaving owners searching for solutions to remain competitive.

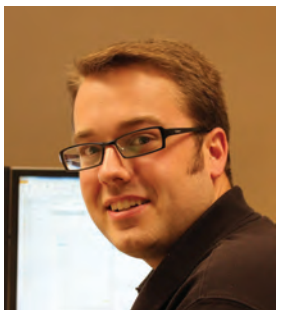
The manual looks at how technical, operational and managerial solutions can increase the energy efficiency of existing vessels. It contains a number of possible options, background information on the technologies and important considerations for their implementation, as well as a chart which indicates the potential of the retrofit measure for each ship type in respect to its age, the required investment, payback time, ease of execution required planning time.

Over 30 technical measures suitable for energy efficiency retrofitting, grouped into such categories as hull and superstructure, propeller and rudder, main and auxiliary engine, supporting systems, energy consumers on board and capacity enhancement and outlined and assessed. Potential savings are often found in adapting a vessel to a vessel’s current, rather than design, operating profile.

www.gl-group.com


Capt. White


Dr. Ulrich Dohle will Head Tognum


Jankowski


Hawtrey

White Named ACL Director of Marine Operations

American Cruise Lines (www.americancruiselines.com) announced that Captain Andrew White has joined the company as Director of Marine Operations.

Captain White joins American Cruise Lines after his recent retirement from 27 years of service in the U.S. Coast Guard. Thirteen of those years were spent on Coast Guard cutters on both the East and West Coasts of the United States, as well as the Caribbean Sea. His last Coast Guard shipboard command was the 378-foot cutter Gallatin out of Charleston, SC.

His last assignment for the Coast Guard was as Chief of Current Operations for Atlantic Area, running operations from the Rocky Mountains to the Persian Gulf, including direct oversight of the Coast Guard's East Coast cutter fleet.

Captain White is a graduate of both the United States Coast Guard Academy of New London, CT, and the U.S. Marine Corps Command and Staff College.

SAFE Boats Announces New President & CEO

SAFE Boats International (SAFE) said that Mr. Dennis Morris has joined the organization as President and CEO. Morris brings with him an extensive background in Business Development and International marketing within the defense industry and experience leading large and small businesses. Before joining SAFE Boats International, Morris held the position of President and CEO of Allen-Vanguard Corporation, a leader in providing solutions for defeating terrorist and extremist threats. The company's offerings include counter threat services and equipment in support of security forces in more than 100 countries, including the bomb suit featured in the film "Hurt Locker."

Concurrent to Dennis' arrival, SAFE Boats co-founder and CEO Scott Peterson has transitioned to the position of Chairman of the company's Board of Directors.

Dr. Dohle to Lead Tognum

As announced in April, Dr. Ulrich Dohle takes up his new duties as Chairman of the Executive Board and CEO of Tognum AG. He succeeds Joachim Coers, who has left the company after nine years at his own request. In his new role, Dr. Dohle will not only take on the typical duties of a CEO, such as corporate communication and strategy, but will also be responsible for R&D and quality management. In April, the Supervisory Board extended Dr. Dohle's contract until December 31, 2015. He has been on the Executive Board of Tognum AG since 2009, previously holding the position of deputy CEO and CTO.

One priority of the Executive Board's work will be to expand operations worldwide. At the same time, cooperation with Rolls-Royce and Daimler is to be intensified. New in the product portfolio are medium-speed engines and system solutions from Norwegian subsidiary Bergen Engines, which recently became a member of the Tognum Group. These serve to complement MTU engines and drive systems, MTU Onsite Energy distributed power generation systems, and injection systems from L'Orange.

Tognum to Invest $22.5m into Research Center

Tognum will expand its Research and Development Center at the MTU Aiken Plant. The company's investment of $22.5 million will result in ten new jobs at the facility and will double the center's development capacity with the addition of two new test cells for off-highway diesel engines. "The expansion of our MTU Aiken Plant is part of our global growth strategy to invest in our plants and in R&D," said Dr. Ulrich Dohle. "In the medium term, the plant expansion enables us to prepare for the planned volume growth."

The Research and Development Center at the MTU Aiken Plant features advanced technologies that aid in the design of cleaner, more efficient and more powerful versions of the MTU Series 2000 and Series 4000 off-highway diesel engines. Construction of the new engine test cells is scheduled to begin next month. It is anticipated that the project will be completed by March, 2015.

EBDG Seattle Continues Staff Growth

Elliott Bay Design Group (EBDG) welcomed two new additions to its Seattle team: Engineer Kurt Jankowski and Designer Justin Jones.

Jankowski comes to EBDG with broad education in naval architecture and marine engineering in addition to experience in boat and ship construction. Jones is a dynamic, rising CAD Designer and Industrial Designer who comes to EBDG with strong leadership, organizational and management skills.

Gibdock Brings in First Technip Ship

Gibdock secured its first dry docking contract from Technip. Wellservicer, a multi-role diving support vessel with subsea lift capability, has undergone an intensive and relatively complex class renewal docking at the Gibraltar yard, and has been delivered back to Technip, ready for work.

The 111.4m long, 9158-gt DP-class 3 Wellservicer arrived at Gibdock on May 6 and was undocked on June 17. After several days of afloat repairs and sea trials, she returned to the yard for mobilization work, before leaving for her next assignment in Canada. The main scope of work included an extensive overhaul of the ship's three tunnel thrusters and three azimuthing thrusters, which were removed to the yard's workshops, disassembled and put through a rigorous maintenance program before rebuilding. Gibdock engineers worked in close collaboration with Technip's supplier, Rolls Royce.

It also included removal of the two small deck cranes and their replacement with two brand new five ton capacity units. This required deck plate modification, including work to under deck stiffeners.

Anthony Foxx is sworn in as U.S. Secretary of Transportation by Judge Nathaniel Jones with wife, Samara, and children, Hillary and Zachary.

Chiarello

Carlson

Hawtrey

Armstrong

Foxx Sworn in as 17th U.S. Secretary of Transportation

Charlotte Mayor Anthony Foxx was sworn in as the nation's 17th Secretary of Transportation by Judge Nathaniel Jones in a private ceremony at U.S. Department of Transportation headquarters on July 2, 2013. As Secretary of Transportation, Foxx leads an agency with more than 55,000 employees and a $70 billion budget that oversees air, maritime, and surface transportation. Prior to his confirmation, Foxx served as the mayor of Charlotte, N.C., from 2009 to 2013. Foxx received a law degree from New York University's School of Law as a Root-Tilden Scholar, the University's prestigious public service scholarship. He also earned a bachelor's degree in History from Davidson College.

TOTE CEO Chiarello Honored

TOTE, Inc. President and CEO Anthony Chiarello was honored by The Navy League of the United States with the Vincent T. Hirsch Maritime Award at the organization's annual convention and Sea Service Awards Luncheon in Long Beach, CA. The Vincent T. Hirsch Maritime Award, named for a patron and past president of the Navy League, was presented to Chiarello in honor of his achievements during his more than 30 year career with maritime organizations and "contributions to protecting and growing the privately-owned U.S. – flag merchant fleet, for the United States national security and economic prosperity."

TOTE, Carlile Make Appointments

TOTE Logistics Inc. parent company of Carlile Transportation Systems announced several new company positions.

- John Armstrong has accepted the Vice President, Logistics position for Carlile Transportation Systems, Inc.
- Gene Carlson has accepted the Vice President, Trucking Operations position with Carlile Transportation Systems, Inc. Gene previously held the position of Vice President of Special Projects for Carlile. In his new position Carlson will be overseeing the Heavy Haul, Equipment Repair and Maintenance, Line Haul and Bulk Departments.
- Linda Leary has accepted the Vice President, Commercial Development position with TOTE Logistics, Inc., Carlile's parent company. Linda's new role will be overseeing the Sales and Marketing Department of Carlile, TOTE Logistics, Inc. and Spectrum.
- Geoffrey Hawtrey has accepted the Vice President, Support Services position with TOTE Logistics, Inc., Carlile's parent company. Geoffrey will be working with the Carlile, TOTE Logistics, Inc. and Spectrum IT Departments to develop and implement strategies, policies and initiatives needed to support the corporate vision and achieve the organizational goals.
- Jeff Palmer has accepted the Controller position with TOTE Logistics, Inc., Carlile's parent company. Jeff will be overseeing the company's accounting and finance department, working with Judy Eckart, Carlile Controller, to streamline processes, develop budgets, reduce expenses and keep revenue growing.

U.S. Diplomat Named IEA Deputy Executive Director

Kenneth J. Fairfax, a career diplomat in the U.S. State Department currently serving as U.S. Ambassador to Kazakhstan, has been designated for the post of Deputy Executive Director of the International Energy Agency. Fairfax will take up his full duties at the end of September 2013. He will succeed Richard H. Jones, another former U.S. career diplomat who has served as Deputy Executive Director since October 1, 2008.

Chet Morrison Names New Marine Construction GM

Chet Morrison Contractors recently announced the hiring of industry veteran Michael Brown as General Manager of Marine Construction. Brown has 35 years of experience in the commercial diving industry, most recentlyan eight-year tenure as Vice President and General Manager for EPIC, the commercial diving business unit of TETRA.

Brown is an active member of several industry associations and committees, including the National Offshore Safety Advisory Committee (NOSAC) where he is serving a three-year term as Offshore Diving Representative. He has also served on the board of directors of the Association of Diving Contractors International (ADCI) for more than 20 years and during that time has served four terms as President and 16 years as Chapter Chairman of the Gulf Coast for ADCI.

New Director of Center for Maritime Policy and Strategy

Capt. Richard W. Sanders, Ph.D., a member of the Permanent Commissioned Teaching Staff at the U.S. Coast Guard Academy and professor of chemistry, has been named Director of the Center for Maritime Policy and Strategy, or CMPS, as of June 1, 2013. Sanders is a 1987 honors graduate of the Academy and received his doctorate in chemistry from the University of Connecticut in 2002. Previously, he has served as the Associate Dean of Academics, Chair of the Department of Science, and Chief of the Chemistry Section.

Captain Van Gurley Retires

Capt. John "Van" Gurley retired from the U.S. Navy on July 12 in a traditional Navy ceremony at Stennis Space Center after 26 years of active duty service.

A native of Orlando, Fla., and Mississippi Coast resident for nearly the past decade, Gurley most recently commanded the Naval Oceanography Operations

Watson to Join ABS

ABS said that James A. Watson, Director of the Bureau of Safety and Environmental Enforcement (BSEE), will join ABS as President and Chief Operating Officer of the Americas Division on September 2, 2013. In this role, Watson will have operational responsibility for activity in North, South and Central America and the Caribbean. Watson will take over from Robert Gilman, who will move to the ABS Group (ABSG) of Companies as Senior Vice President and Head of Technical Inspection Services within the ABS affiliated company, ABSG Consulting. As Director of BSEE, Watson has been responsible for promoting safety, protecting the environment and conserving resources through the regulatory oversight and enforcement of offshore operations on the US Outer Continental Shelf.

Before becoming BSEE Director, Watson served as the US Coast Guard's Director of Prevention Policy for Marine Safety, Security and Stewardship, where his responsibilities included commercial vessel safety and security, ports and cargo safety and security and maritime investigations. He was designated as the Federal On-Scene Coordinator for the government-wide response to the Macondo oil spill in the Gulf of Mexico in June 2010.

Leary

(Photo: U.S. Consulate General)

Fairfax

Brown

(U.S. Navy photo by Jenni Ervin)

Rear Adm. Brian Brown, commander, Naval Meteorology and Oceanography Command, (right) presents Capt. Van Gurley with a certificate of retirement commemorating 26 years of naval service during a ceremony held July 12 at Stennis Space Center, Miss.

Command (NOOC) at Stennis Space Center until a change of command immediately prior to his retirement ceremony. During the change of command, Rear Adm. Brian Brown, Commander, Naval Meteorology and Oceanography Command, hailed Gurley's command of the NOOC, saying his "strategic vision and operational expertise" propelled the organization to "new levels of excellence."

Retired Rear Adm. David Titley, prior Commander, Naval Meteorology and Oceanography Command, served as guest speaker for the retirement ceremony. He praised Gurley's ability to think strategically and overcome challenges, as well as the lasting impact of his career.

New Senior Manager at Bollinger

Bollinger Shipyards, Inc. announced the appointment of Richard K. Murphy as a senior manager working on Coast Guard and other governmental programs. Murphy joins Bollinger Shipyards following a very successful 30-year career with the United States Coast Guard, culminating with the rank of Captain. His most recent assignment was Commanding Officer, U.S. Coast Guard Yard, Baltimore, Md.

ClassNK to Expand in Europe

The announcement was made during a press conference held during the Nor-Shipping 2013 exhibition, and was highlighted by a special signing ceremony which saw four renowned Northern European owners officially transfer nearly a dozen vessels to ClassNK. The new expansion which includes new offices already established in Klaipeda, Lithuania, and Ebeltoft, Denmark will see ClassNK open new offices in Bergen, Norway; Würzburg, Germany; and Helsinki, Finland; with future offices planned in Ukraine and Sweden.

The addition of offices represents a 25% increase in the size of ClassNK's network in Europe, an expansion made necessary by the growing number of European owners who are classing their vessels with the Society.

ClassNK's recent growth has been led by German owners and Norwegian who have together transferred nearly 100 existing and newbuilding vessels totaling more than 2.5 million gross tons to ClassNK since the beginning of 2012. The ceremony in Oslo commemorated the official transfer of three existing bulk carriers from Orion Bulkers GmbH & Co. KG, two bulk carrier newbuildings from Johann M. K. Blumenthal GmbH & Co. KG, one existing tanker from Medallion Reederei GmbH, and five bulk carriers from Norway's Stove Rederi AS to the ClassNK register.

Styrk Bekkenes CEO of Harding

Since new owners took over Schat-Harding and Noreq in June, Styrk Bekkenes, chief executive of Noreq, has been appointed CEO of Harding – a new large joint company for the development and production of life-saving equipment.

Harding will have more than 900 employees in 30 different locations worldwide. Its head office will be at Seimsfoss in Kvinnherad.

The new owners, spearheaded by the investment fund Herkules, wish to further develop the best life-saving equipment from Schat-Harding and Noreq.

Murphy

ClassNK signing ceremony in Oslo.

Bekkenes

Fjord Line wins enviro award.

Fjord Wins Enviro Award

Fjord Line won an environmental efficiency award for two passenger ferries -- Stavangerfjord and Bergensfjord -- during NorShipping. The ferries will be the first international service passenger ferries in the world to run on pure LNG engines. Both vessels are equipped with LNG based power and propulsion systems delivered by Rolls-Royce.

This includes four Bergen gas engines for each vessel, powering a Promas integrated rudder and propeller propulsion system. The vessels are currently in the final stages of construction at Bergen Fosen shipyard. The use of gas fueled engines means that Nitrogen Oxide (NOx) emissions are reduced by about 90% while Sulfur Oxide (SOx) and particulates emissions are negligible.

www.Rolls-Royce.com

Liebherr Grows New Zealand Market Share

A recent order from the Port of Lyttleton is the latest in a series of contracts that has seen Liebherr Container Cranes expand on an already significant presence in New Zealand's North and South Islands, the company said. The Port of Lyttleton's most recent order for a super post panamax ship to shore crane and four straddle carriers, will see the number of Liebherr straddle carriers in the Port of Lyttelton grow to eight and brings the total number of ship to shore cranes at the port to three. Trade at the port has seen significant growth in recent years with latest reports indicating this trend is set to continue.

Meanwhile, the Port of Tauranga on New Zealand's North Island has recently taken possession of a new Liebherr super post panamax ship to shore crane and three new Liebherr straddle carriers. The cranes took centre stage in a ceremony to celebrate the opening of a 170 m new wharf extension in Tauranga's Sulphur Point Wharf.

Maritime Design to assist on LNG vessel construction

Jim Konopasek, president of Maritime Design, Inc. since 1983 has recently completed and attained certification from the American Bureau of Shipping in the design and construction of LNG carriers at the ABS Shanghai, China office. Maritime Design, Inc. offers to assist Jones Act vessel owners and operators in conveying their small scale LNG fleet needs through early development to construction.

NYSED Awards SUNY Maritime $1.8 Million

The SUNY Maritime College was awarded $1.8 million in grants from the New York State Education Department (NYSED)as part of the federally funded 21st Century Community Learning Center Program.

The College will receive two grants over the course of three years (2013-2015), to deliver after-school STEM (Science, Technology, Engineering and Math) enrichment programs in two high schools in the Bronx: Banana Kelly and Jane Addams High School for Academic Careers. Only 125 grants were awarded in New York State and SUNY Maritime received two of them.

Bestobell, W&O Enter Deal

Bestobell Valves, part of the President Engineering Group (PEGL), has named W&O Supply, a global supplier of marine pipe, valves and fittings, valve automation, and engineered solutions to the marine and upstream oil and gas industries, as its exclusive distributor for Bestobell Valves in North America.

Through this partnership, Bestobell Valves, headquartered in the United Kingdom, and W&O, headquartered in Jacksonville, Florida, will offer Bestobell Valves' LNG cryogenic valves for Liquid Natural Gas (LNG) fuel applications as a solution for marine companies throughout North America.

Bestobell Valves' deep experience in supplying valves for LNG systems, com-

ECO to Add 40+ Vessels

The Edison Chouest Offshore (ECO) global family of companies announced plans to enlarge its fleet and expand its terminal facilities in support of its customer base.

The Chouest newbuild order book contains more than 40 vessels, a vast majority to be constructed at its four U.S.-affiliate shipyards: North American Shipbuilding (Larose, La.), LaShip (Houma, La.), Gulf Ship (Gulfport, Miss.) and Tampa Ship (Tampa, Fla.), as well as its Brazilian shipyard, Navship.

ECO's worldwide fleet now approaches 250 highly specialized offshore service and support vessels. The largest portion of the newbuild program contains 17 vessels, with options for an additional 20, in a new class of 312 x 66 x 26-ft. new generation, clean design, diesel-electric platform supply vessels (PSV).

This class features a new hull form that was designed to maximize deadweight while significantly reducing hydrodynamic resistance, thereby improving fuel efficiency. The result is a vessel that offers a deadweight tonnage in excess of 6,000 LT, the capacity for over 22,000 barrels of liquid mud, over 2,000 barrels of methanol and 14,450 cubic feet of dry bulk. Carrying the new class moniker of NA312E CD VE (Very Efficient), these vessels offer a cargo delivered to fuel used ratio that is significantly better than other PSVs operating in the Gulf of Mexico.

These vessels provide accommodations for 51, as well as class notations for firefighting, dynamic positioning, unmanned engine room operation, special purpose ship safety, workboat habitability and storage and discharge of recovered oil. The vessels also comply with the new International Labor Organization (ILO) standards for vessel design and crew standards. The Chouest newbuild program also includes two new high ice class AHTS vessels for Arctic service, currently being designed. The vessels will mark the fifth and sixth icebreaking vessels in the ECO fleet, making Chouest the largest designer, builder, owner and operator of icebreaking vessels in the U.S. industry. Additionally, Chouest will build four subsea construction vessels, slated for service in the Gulf of Mexico market. Features include ROVs from Chouest affiliate C-Innovation, as well as a 400 MT AHC deepwater crane.

Port Expansion

Chouest affiliate C-Port 3 is currently under construction and slated to feature an additional six covered slips to transfer cargo and provide support to deepwater offshore support vessels. The multi-service terminal is slated to be operational by March 2014. In addition, the design process has begun for C-Port 4 in Fourchon, which could contain as many as nine additional covered slips, reinforcing ECO's role as the preeminent terminal support provider in the deepwater Gulf.

The Chouest purchase this year of the C-Terminal facility in Port Fourchon, featuring 2,000 linear feet of bulkheaded waterfront property, provided another innovative loading and storage solution for Chouest customers. The company has announced plans to expand the C-Terminal worksite, adding to its expansive outside storage area, warehouses, bulk, cement and barite plants, and fuel, water, mud and drilling fluid sales.

bined with W&O's large footprint and strong connections in the North American market, make this a wise business pairing for both companies.

Northrop Grumman to Supply Steering for USN Destroyers

Northrop Grumman Corporation won contracts totaling $14.4 million by prime contractors General Dynamics Bath Iron Works and Huntington Ingalls Industries to supply the steering gear system for three new DDG 51 Class Arleigh Burke destroyers.

de Cuir Named Virginia Offshore Wind Coalition Chairman

Rutherfoord said that Charles R. de Cuir, Director of Rutherfoord's Maritime Division, has been named the 2013 Chairman of the Virginia Offshore Wind Coalition (VOW).

VOW is an industry group comprised of developers, manufacturers, utilities, localities, and businesses that support the development of the offshore wind industry in Virginia. Members are active on both the potential development and supply chain aspects of offshore wind projects.

Bergen Engines Becomes New Tognum Subsidiary

As of July 1, Norwegian engine manufacturer Bergen Engines AS becomes part of the Tognum Group. Following the acquisition of Tognum AG by the joint venture of Rolls-Royce plc. and Daimler AG, the former Rolls-Royce subsidiary Bergen Engines was merged into the Tognum Group. With that Tognum, the propulsion and power solution specialist, adds medium-speed diesel and gas engines with power outputs up to 10 MW to its engine portfolio.

Imtech to Provide Air Conditioning and Ventilation on EGV Bonn

Imtech Marine provided the German Navy vessel Einsatzgruppenversorger (EGV) Bonn with engineering, material delivery, installation and commissioning of the innovative HVAC-system, the hot and chilled water plant, the refrigerating plant for provision- and waste-cooling as well as the chilled water units.

The EGV has been ordered by the German Federal Ministry of Defence in December 2008 and has been delivered to The Federal Office of Bundeswehr Equipment, Information Technology and In-Service Support (BAAINBw) on 26 June 2013.

Imtech Marine implemented a number of notable innovations for the German Navy on board the EGV. In the fresh air supply of the modular air filtration unit for example, Imtech implemented a humidity control with a compulsory emptying of chillers and heaters in case of freeze alarm, in order to protect the system.

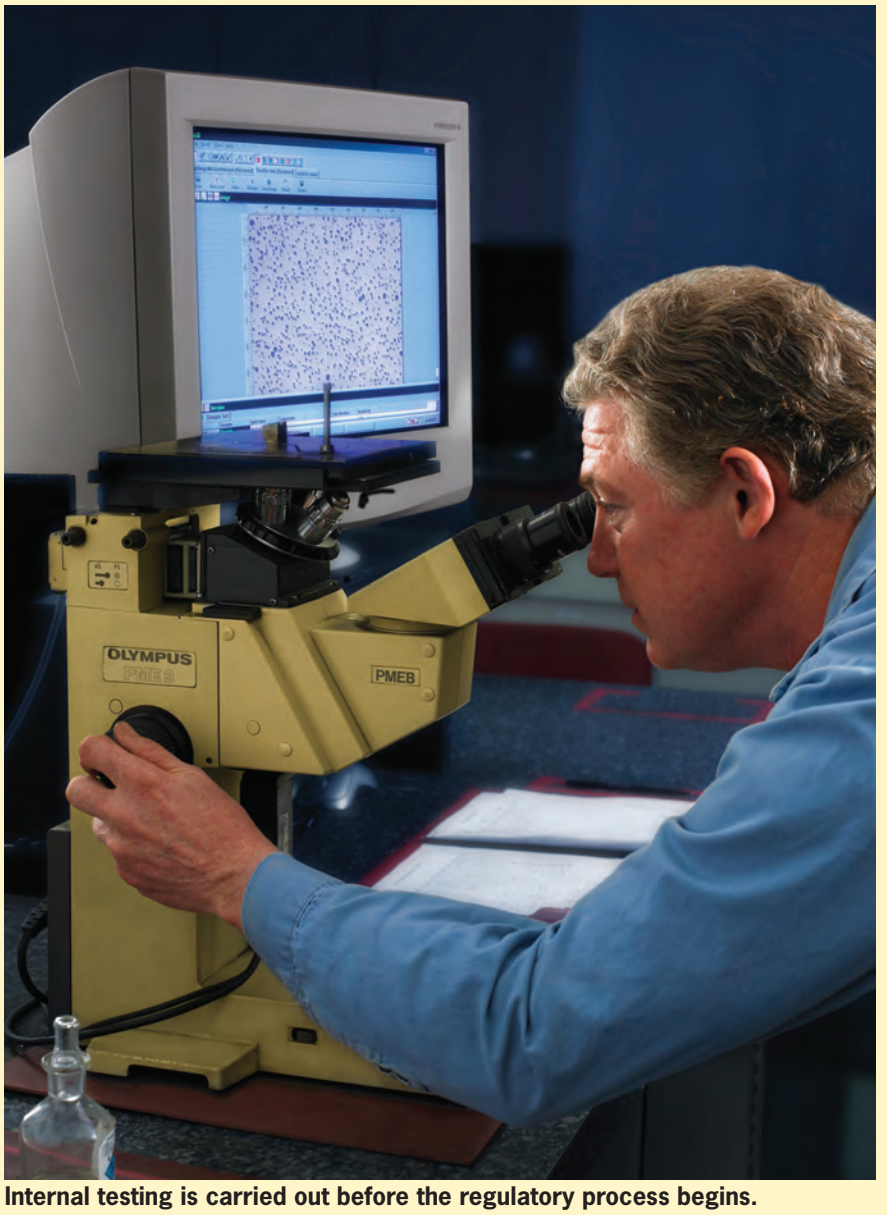
Testing Times for Seaworthy Products

For shipbuilders, Type Approval by the International Association of Classification Societies (IACS) is a key criterion in the selection and installation of products and systems for a wide range of shipboard applications. For manufacturers, meeting IACS standards is a major factor in the design, development and qualification of products to ensure the highest levels of safety, fitness for purpose and reliability Len Swantek, Director of Global Regulatory Compliance at Victaulic, outlines the regulatory Type Approval process for its pipe-joining products from design to post production and explains the importance of maintaining high standards for quality and performance.

Len Swantek is Director of Global Regulatory Compliance at Victaulic.
www.victaulic.com

Of all the market segments where Victaulic mechanical pipe joining products are used, the maritime industry is one of the most strictly regulated. Product testing carried out here is among the most challenging and diverse of all markets and industries – and rightly so. Products need to withstand a wide range of forces and loading conditions generated by vibration, temperature fluctuations, pressure surges, movement resulting from wave motion, not to mention exposure to weather and seawater that pose a constant threat for corrosion of metallic components. If a piping system were to be compromised at sea, it could have serious consequences for the vessel, crew and passengers.

For the maritime market, there are 13 classification agencies within the IACS organization. Victaulic submits new products for design assessment, performance evaluation and Type Approval to a large number of these. The agencies in this group are American Bureau of Shipping (ABS), Bureau Veritas (BV), China Classification Society (CCS), Croatian Register of Shipping (CRS), Det Norske Veritas (DNV), Germanischer Lloyd (GL), Korean Register of Shipping (KRS), Lloyd's Register of Shipping (LR), Registro Italiano Navale (RINA), Polish Register of Shipping, Indian Register of Shipping, the Russian Maritime Register of Shipping and Nippon Kaiji Kyokai (ClassNK). IACS sets the minimum standard for all of the classification agencies. However, each individual agency may add requirements as needed for a particular system or on a discretionary basis for a critical application. This leads to some variation between agencies, resulting in further challenges during the testing and qualification process.



Internal testing is carried out before the regulatory process begins.

Regulation is a highly complex and costly business for most manufacturers. With a large range of grooved-end couplings, fittings and valves used in many onboard piping systems, Victaulic has a number of different products in the approval cycle at any given time. Each model and size is subjected to a number of both short- and long-term tests. Additionally, each manufacturing location will be subjected to periodic audits to ensure product quality and consistency is being maintained. Both processes - product testing and factory production control auditing - require considerable management and coordination to meet both agency requirements and customer / market demands.

Getting the groundwork right

Victaulic is a design-focussed company that drives industry trends. Its engineers are involved in research and development year round, evaluating new ideas and working on prototypes that often find their way into unique maritime applications. Since Victaulic invented the grooved piping system more than 85 years ago, it has pioneered many new designs to solve market problems and make products more robust and yet economical to install.

But before the company can even begin the regulatory process to obtain Type Approval, a tremendous amount of time is allocated to research and development and internal testing. The product development process can easily extend over 18 months and entails design, modeling, construction and internal testing of prototypes. The process also includes making adjustments as needed to ensure the product can meet both agency requirements and the established ratings for temperature, pressure, end load, vibration, fire exposure and other possible service conditions. Concurrent with this is process development to assure consistency of global manufacturing to a wide range of international standards.

Once a new design is finalized and the

manufacturing controls are worked out, rigorous internal prequalification testing is carried out in preparation for regulatory Type Approval testing requirements. Victaulic replicates known scenarios that could be encountered, applying process technology and even re-engineering products as necessary.

External assessment

Once the product passes internal testing, Victaulic initiates the external assessment process by sending a comprehensive data "package" to each agency that will issue its own unique Type Approval Certification. The information includes application forms, detailed product specifications, manufacturing drawings and any performance data already validated by one of the IACS members within the past five years. The specific approval objectives along with a test proposal outline is also provided for the agencies' technical review. The components of this package must be accurate and complete, and can take weeks and often several months to compile.

Mechanical bolted couplings are generally understood by the agencies to have pressure holding capabilities that meet or exceed the performance ratings of flanged, welded or threaded systems. This makes the review process a bit easier, yet each system application being applied for will be examined individually, along with any limitations or restrictions imposed by the IACS standards. The agency engineering review process is typically completed within a four- to six-month period for any given product category.

Following the design review and acceptance of the proposed test plan, the agency will advise the scope of testing required and the number of test samples that will need to be prepared. At this point, the difficult and time-consuming task begins to coordinate all of the required testing with a number of independent laboratories which are accredited by one or more of the participating IACS members.

To facilitate performance testing, product samples, pipe of various specifications and other related equipment must be sent to the appropriate test facilities. This is another time-critical operation – as any delays on the part of a manufacturer could result in a lost position in the testing laboratory's queue. At this stage, documentation must already be available in multiple languages for examiners to assemble equipment themselves, based on an assumed level of skill equal to that of the end user. The testing process can take many months and occasionally more than a year to complete.

The approval authorities are also concerned with the manufacturing and assembly locations of specific finished parts or sub-assemblies. Victaulic manufactures in multiple locations globally to optimize supply chain logistics. However, this can greatly increase costs, as each location must be certified and audited, both for the initial Type Approval certification as well as part of an ongoing surveillance program required to maintain valid certification. In the event of a nonconformance at this late stage a manufacturer risks losing valuable time to market.

Manufacturers like Victaulic can only go to market when they have secured all necessary Type Approval and manufacturing certifications. Once complete, only then can results be reviewed and data fed back to the research and development teams.

Audit management

Audit management is the final phase in the regulatory cycle. This phase starts when a Type Approval is officially released and only ends when the product is no longer produced. Through various follow-up procedures and factory production control audits, manufacturing procedures are reevaluated annually on a set schedule that coincides with the term of validity for each Type Approval certificate.

Auditing is important, since the governing IACS standards are updated on a periodic schedule. These standards are likely to become ever more stringent following the analysis of forensic evidence from equipment failures, accidents and other events at sea. Manufacturers may have little advance notice of pending revisions to these standards and often need to act quickly to keep pace and maintain a competitive position in the market.

Therefore clear understanding of the most up-to-date requirements is vital to the successful completion of the approval cycle and managing time to market.

Responding to customer demands

On occasions approval may be required for a specific application which is not part of the normal Type Approval scheme. In one such example a customer wanted to use Victaulic products on hydraulic winching equipment, which required an extremely heavy load capability to lift chains and anchors up from the ocean bed at a depth of 200m.

In a case like this, a manufacturer must refer to the approving authority to identify specific tests that would be needed to gain special approval – either as an addition to the existing certificate or through a separate approval. The administration, time and cost implications of such programs are evident.

Sharing responsibility

Victaulic views its role in the regulatory process as going beyond simply respecting the rules. Having direct involvement in developing and shaping them is equally important. With over 85 years experience in the mechanical joining of piping systems and related components in a wide range of materials including steel and stainless steel, aluminum, ductile iron, PVC and HDPE, Victaulic is a world leader with a strong message that is being heard globally on many codes and standards committees. Additionally, the company has a department dedicated to regulatory compliance, with oversight responsibility for product specifications, testing and certification, factory production control auditing, codes and standards development and customer related input to these processes.

Victaulic invests heavily to achieve product and service excellence and sees regulation as an area of responsibility where it can contribute to the construction of safe, efficient and durable maritime piping systems. The company's philosophy is to create a set of meaningful tests that are rigorous enough to replicate known field conditions, yet realistic enough for manufacturers to conduct in a reasonable timescale without undue complexity and cost.

Ultimately, product conformity brings peace of mind to ship builders, operators and owners. The safety and reliability of vessels at sea depends on it.

Grooved mechanical joints explained

The mechanical pipe-joining system begins by cold forming (roll grooving) or machining a groove (cut grooving) into the pipe end. The piping connection is secured by the ductile iron coupling which houses a resilient, pressure-responsive elastomer gasket. The coupling housing fully encloses the gasket, reinforcing the seal and securing it in position as the coupling engages into the pipe grooves. The mechanical joint creates a triple sealing characteristic that utilizes compressive forces from the initial gasket installation and coupling assembly, which is further enhanced when the internal system pressure is applied. This feature enables the assembled joint to accommodate a wide range of pressure applications from full vacuum to the coupling's maximum positive pressure rating.

Grooved technology is used for class 2 and 3 piping systems and for class 1 systems outside category A areas. Typical applications include ballast, sea and fresh water cooling, lube oil, fire and deck wash, and bilge systems. The technology is also used for class 1 and 2 FiFi systems on tugs and support vessels.

Victaulic mechanical couplings are currently categorized as 'Slip-on Joints' within the various classification societies' rules. Although the couplings are quick and easy to secure with just two nuts and bolts and a single wrench, they should not be overlooked as a reliable pressure- and end load-restraining device. The couplings themselves are cast of durable ductile iron in accordance with ASTM A-536, and are more than capable of handling the full thrust loads generated during pump operation and maximum system pressures to 34 bar. The fact that systems utilizing these products do not require external restraint in itself defies the term 'slip-on'. Whilst the standards categorization may not seem properly aligned with the product performance capability, maritime users of bolted mechanical couplings are fully aware of the strength, durability and long-term serviceability they afford to the designer, owner and ship operator.

Manufacturing locales are subject to audits to ensure quality and consistency.

The Importance of Clean Dry Compressed Air for an Air Plasma Cutting System

By Jim Colt, Applications Technology Manager at Hypertherm

For consumable parts a typical shielded plasma torch has an electrode, a nozzle and a shield. Many other torches are unshielded with an exposed nozzle and an electrode.

The two consumable parts in any plasma torch that wear most rapidly are the electrode and the nozzle. The electrode is the negative side of the plasma arc; the material being cut is the positive side. The torch nozzle is at positive potential at the beginning of each cut in order to get the pilot arc started (an arc between the electrode and the nozzle that is forced through the nozzle orifice by air pressure), then, if the torch is within striking distance of the plate the arc transfers from the nozzle to the plate, and at this point the nozzle is electrically "floating," and the function of the nozzle is to constrict and create the cylindrical shape for the arc, as well as to increase the velocity of the arc.

The plasma arc in an air plasma torch has a temperature in excess of 25,000 degrees Fahrenheit. The nozzle, made of copper for excellent heat transfer (which melts at less than 1100 degrees Fahrenheit) uses some advanced technology that internally swirls the air flow, which slings cooler molecules to the surface of the nozzle bore, which insulates the nozzle from the high temperature arc, allowing the nozzle to remain solid. The electrode has an insert made of Hafnium (an earth element), a great emitter of electrons and holds up well in an oxygen rich environment (air is 20% oxygen) so it becomes the arc attachment point.

Under the high temperature conditions inside a plasma torch, the electrode hafnium emitter eventually evaporates, ultimately the cut quality will change and the torch will start misfiring. The nozzle bore also erodes, changing the shape and energy density of the arc, also affecting cut quality. Shielded torches have a shield that electrically isolates the nozzle from touching the plate and more advanced shield designs dramatically improve nozzle life and cut quality through increasing the energy density of the arc and super cooling of the nozzle exit bore.

When the nozzle orifice becomes eroded and out of round, cut speeds will slow down and cut edge angularity will suffer. You will get more dross, and eventually the torch will not cut at all. When the electrode hafnium wears to a certain depth (differently affected on different torch designs) it will also affect cut quality and will eventually stop working.

With a hand torch, often you can run consumables until near failure as your hand can tip and change speeds to accommodate the changes in cut quality associated with consumable wear. On a mechanized torch, consumables often get changed sooner as cut quality is often more closely monitored on cnc cutting applications.

Better quality torches that are well engineered will produce better cut quality as well as dramatically longer consumable parts life, making for a more precise cutting process with a much lower cost of operation. The best engineered plasma torches today can easily achieve between 500-1500 starts on a single set of consumable parts, with hundreds of feet of metal cutting achieved.

How does air get contaminated?

Unfortunately, the life and performance of an air plasma torches consumable parts can be affected by a few different factors such as air inlet pressure, air purity, amperage, cutting techniques as well as surface condition of the plate being cut (in some cases). In this article we will discuss the effect on consumable parts life and cut quality that can be caused by contaminants in the compressed air supply.

By looking back at the description above of the temperatures and the balancing act of gas flow physics that occur inside the plasma torch, I still wonder (after 35 years in this business) how the consumables last for more than a few seconds of cutting. In reality, a plasma torch is a true design marvel that allows us to use an ordinary, safe, nonflammable gas mixture (air is roughly 20% oxygen and 80% nitrogen) combined with a DC electrical power source to produce a high temperature arc that will melt virtually any metal in its path. Internal air swirl patterns are created, starting pilot arc current is accurately produced, controlled and timed, and ramp up and ramp down amperage in today's systems are microprocessor controlled to ensure that the torch and consumables are adequately cooled while maintaining a high level of energy density to get the cutting job done.

A typical compressed air system involves a motor driven compressor and an air storage tank (known as a receiver). There also is an air delivery system that consists of pipe or hose that is designed to adequately deliver compressed air at the correct flow rate and pressure to the plasma cutting system. The pressure and flow rate will vary depending on manufacturer and model of the plasma system, so the compressor and plumbing system must be sized properly to deal with the plasma system being used.

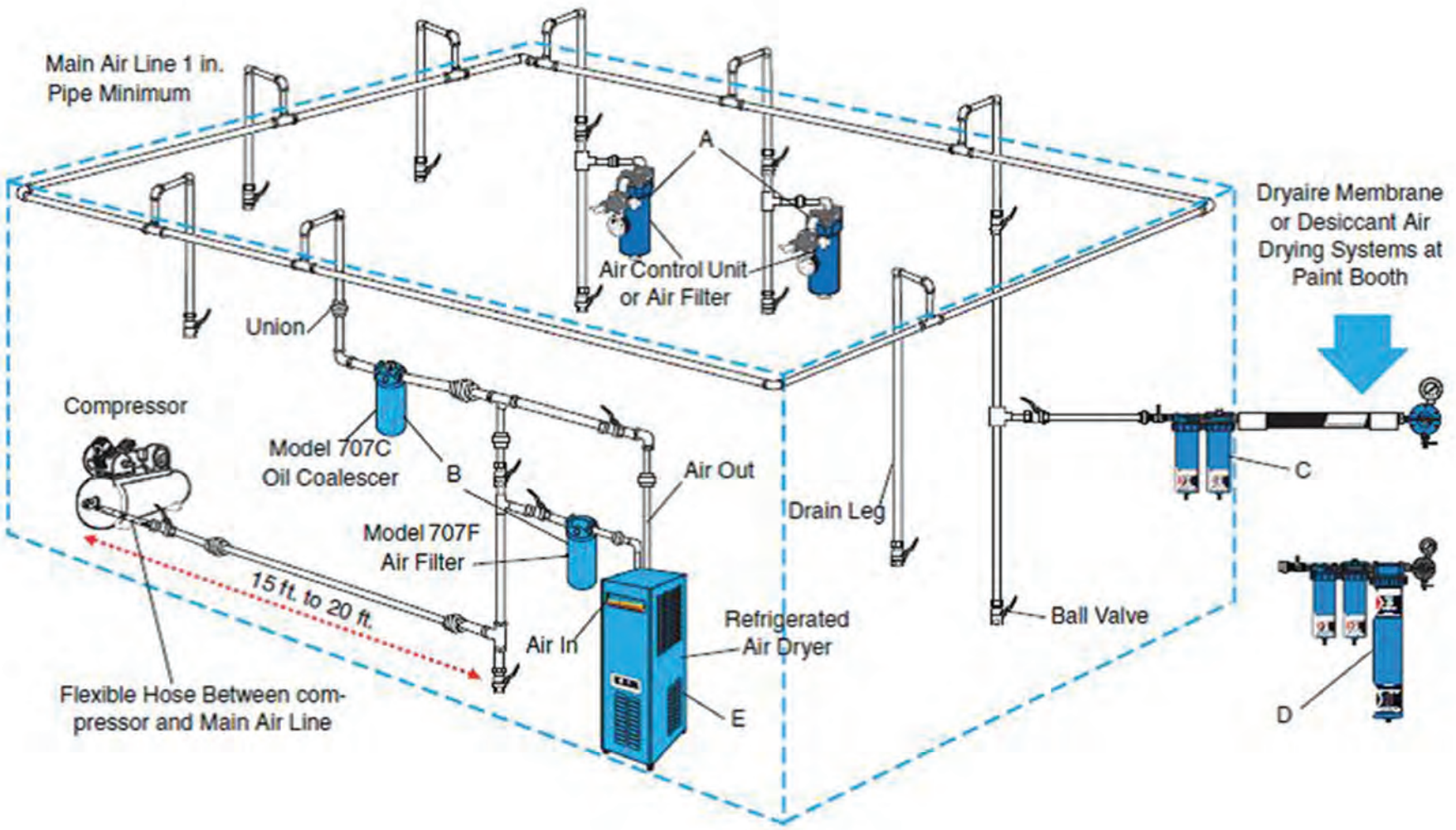
The compressor simply takes the same air we are breathing and runs it through a pump (usually a piston type compressor pump) that delivers the air to the receiver and increases its pressure. In most cases the compressor increases the air pressure from atmospheric pressure to somewhere in the range of 90-135 psi. By increasing the pressure of air, a much higher volume (as measured in cubic feet) can be stored in the receiver, which makes the system more efficient.

Unfortunately, many locations on this planet have relatively high levels of moisture or humidity in the air, and when compressing the air into the receiver, the same volume of moisture per cubic foot of air is also stored with the air. The compressor pump creates some heat in the stored air so the air going into the receiver is rather hot as well. High humidity levels and warm air are then stored in the compressors receiver tank. As this warm air travels through the plumbing system on the way to the plasma cutter, the air cools inside the pipes and hoses, when air cools the relative humidity starts to react by condensing, and at this point we have air at 90-135 psi, with aerosol droplets of moisture. When the air reaches the plasma torch there is a pressure drop as the air reenters atmospheric pressure, and further rapid cooling and condensing of the moisture occur, which allows some air and a relatively high level of water to be present inside the plasma torch. On a hot humid day with a compressed air system with no moisture traps or protection, it is not uncommon to see a mist of water spraying out of a plasma torch head while in the test air flow mode (no plasma arc, just air flow). When this occurs, all bets are off in regards to plasma torch cut quality and consumable parts life.

How does the water affect the torch consumables?

As mentioned earlier, the plasma cutting process is a carefully controlled balancing act of physics. An air plasma torch is carefully designed to create the correct flow rate and gas swirl pattern that will provide a good combination of arc velocity, energy density and consumable life. Clean dry air is close to 20% oxygen and 80% nitrogen, and the consumable parts are engineered and precision manufactured to work best with this gas combination. When moisture is added in the plasma torch inner plenum, the gas chemistry changes. Water is comprised of oxygen and hydrogen molecules and as soon as it is subjected to the high temperatures inside the torch it rapidly returns to the oxygen and hydrogen state, which mixes with the air mixture in the torch. The hydrogen and increased oxygen content alter the balance of physics as well as cooling effects in the torch. The electrode's hafnium emitter starts to erode very rapidly in turn damaging the nozzle bore and orifice shape dramatically changing cut quality and wearing the consumable parts at a rapid pace.

Often, there can be other contaminants in compressed air as well. A worn com-



pressor pump may be bypassing some oil by its piston rings, old rusty piping may be allowing particles of rust to get into the torch, and the air intake of the compressor could be near a source of dust that could be pulling other particulates into the mix as well, all of which will affect the process.

Since the relative humidity in geographic locations varies tremendously and also tends to vary seasonally, it is common to see short consumable life and poor cut quality symptoms come and go. In North America the humidity levels certainly increase during the warm summer months, and the volume of calls regarding short consumable life rise dramatically. It is common for the first time plasma owner to not believe that the dramatic performance change could be related to the weather, and often they suspect defective consumables, torch or want to change components in the power supply. Believe it or not, moisture in your compressed air system can have a rather dramatic effect on any plasma cutter that uses air.

Here are other suggestions:

In most low duty cycle small shop or hobbyist plasma cutting applications a simple coalescing filter / particulate filter that is designed to remove small amounts of water may be adequate. Most of these units have an auto drain mechanism that will dump water when it starts to build up in the reservoir. Many plasma cutter manufacturers offer these as accessories for their systems. You can also find these types of filters at automotive stores that cater to the auto body business, as the pressures and flow rates in auto paint spraying operations are similar to plasma cutter requirements.

There are also some replaceable element filters that work well for both particulates as well as water. The most popular is the Motor Guard brand that makes a special housing and replaceable element specifically for plasma cutting. Again, these filters are good for low levels of moisture and low duty cycle operation of your plasma cutter. When the element gets water saturated or plugged with particulate it may allow water to pass or may reduce the flow rate to a point that the plasma system will not operate.

For higher duty cycle operations and or high humidity locations it may be necessary to invest in a refrigerated air dryer. These units are connected to your air line and rapidly reduce air temperature, which causes the water to condense into large particles which are then separated from the air in a coalescing filter with an automatic drain. There are some small refrigerated systems available in the $500-1000 price range. Over time these units will pay for themselves with longer consumable life and better overall cut quality.

Along the line of refrigerated air dryers are self-regenerating desiccant dryers. Don't confuse these with low cost desiccant dryers that will quickly saturate with moisture, rather, these self-regenerating dryers have multiple chambers full of desiccant pellets and are designed for continuous duty. Always use particulate filters after a desiccant dryer so that the absorbing particles cannot get into your plasma system.

Be careful not to "overdo" filtering. I get calls every week regarding plasma systems that shut down (internal pressure switches for protection) automatically as a result of too many filters. Every filter that is installed on an air line will drop some pressure under full flowing conditions.

If there is any doubt, install accurate pressure gauges on the upstream and downstream of filters and monitor these gauges while air is flowing at the torch. The amount of drop will help you monitor the condition of your air filtering system.

Attached is a schematic of a well-engineered compressed air system. Notice the way the air line take offs are all at "risers" in the system, and that there are drains at the low spots in the system. Notice the location of the components such as the compressor, receiver, and the refrigerated dryer? All well thought out with the best possible chances of removing moisture from the system. In most cases the air system does not need to have all of these features, but keep the all in mind when designing yours.

Happy plasma cutting!

Newport News Shipbuilding Orders Largest All-Electric Pipe Bender

Building big ships requires big tools, and Newport News knows a thing or two about both.

Unison has received an order from Newport News Shipbuilding (NNS), the supplier of nuclear-powered aircraft carriers and one of two shipbuilders of nuclear-powered submarines for the U.S. Navy, for an all-electric CNC machine capable of bending large-bore tubing and piping up to eight inches in diameter (219mm OD). The machine will be the first of its type ever built, extending the shipbuilder's range of precision software-controlled bending facilities to include fabrication of larger diameter pipes that previously could only be bent on very high torque hydraulic machines. Unison believes that it will be the largest and most sophisticated all-electric pipe bender ever designed.

NNS, a division of Huntington Ingalls Industries, has more than six years of experience using Unison's all-electric tube benders. The shipbuilder first began using this technology in 2007, when it took delivery of three Unison machines to help fabricate tubing and piping systems for the Ford-class aircraft carriers that were then about to enter production. The first of this new generation of carriers – Gerald R. Ford (CVN 78) – is nearing structural completion.

All-electric benders offer numerous advantages. Their precision servomotor-based motion control means that they can be configured automatically using parts data downloaded from the design database over a network, and are easy to operate and very quiet.

The machine's bending axes are driven by closed-loop servomotors under software control to facilitate fast setup and to provide accurate and repeatable bending performance. This automated approach eliminates operator error and the need to produce trial parts, and minimizes creation of expensive scrap material. It also contributes significantly to manufacturing flexibility and rapid changeover; this is especially important in the shipyard working environment where many of the tube/pipe components are fabricated as needed and often in batch sizes of just one.

Under the terms of the order from NNS, the new machine will be equipped with Unison's unique laser-controlled spring-back measurement and correction system. This ensures bending precision by automatically compensating for the natural tendency of metal pipes and tubes to spring back slightly after being bent, providing a tool that delivers right-first-time manufacturing even when fabricating just one part.

According to Jim Saynor of Unison, "This latest order from Newport News Shipbuilding highlights the flexibility of our bending machine control technology. Through collaboration and the support of our partners in the U.S., Horn Machine Tools, we have gained a thorough understanding of the needs of this prestigious shipbuilder, and have helped and advised them on numerous aspects of pipe and tube fabrication. Our software-based approach to bending control provides a fully scalable solution that can easily be extended to large diameter pipes, such as this order for an eight-inch machine."

The new Unison eight-inch machine is scheduled to be completed in Q4, 2013.

www.hornmachinetools.com
nns.huntingtoningalls.com

(Photo courtesy of Huntingdon Ingalls Industries)

The flight deck of the aircraft carrier Gerald R. Ford (CVN 78) was completed on April 9, 2013, with the addition of the upper bow. The bow weighs 787 metric tons and brings Ford to 96 percent structural completion.

MACSEA Ship Hull Monitoring

Hull and propeller performance degradation can cause a 15-20% loss in vessel efficiency, with a corresponding increase in fuel consumption and GHG emissions. Diligent hull condition monitoring and maintenance can negate these penalties. MACSEA is ramping up its Hull Medic hull condition monitoring service using its published methodology and automated, cloud-based data analytics process. The company is offering its hull condition monitoring analytical services for as low as $495 per month per ship for 10 ships or more. Analysis can be done from data already collected or MACSEA can provide an automated data acquisition system. Additional benefits include measuring efficiency gains from other related energy conservation measures, such as alternate propeller designs and hull coating choices. Hull and propeller performance monitoring systems such as Hull Medic monitor vessel performance over time and provide hard evidence of efficiency gains necessary to build business cases for prudent investment decisions.

www.macsea.com

New Large Capacity Storage Reels

Coxreels, a U.S. manufacturer of industrial-grade hose, cord and cable reels, released its new storage reels selection. These large capacity, all steel reels are designed to hold any wrappable material for hassle-free storage, easy transport and safe operation. According to the company, these new storage reel models have been selected from Coxreels' standard 1125, 1175 and 1185 Series and are built on the strength of these series. The reels come without swivels and risers for storage purpose and feature CNC robotically heavy duty spun and ribbed discs with rolled edged for added strength and safety, and a sturdy all welded steel "A" frame base to handle the most demanding storage tasks on either stationary or mobile units.

coxreels.com

USCG Accepts Hyundai Heavy BWTS

Hyundai Heavy Industries Co., Ltd. (HHI) said that its electrolysis-based ballast water treatment system, HiBallast, was accepted as Alternative Management System (AMS) by the United States Coast Guard. This comes after the company won type approval from the IMO in 2011. The Ulsan, South Korea-based company is also aiming to win the U.S. Coast Guard's approval for another ballast water treatment system, EcoBallast, by the first half of 2014. This system sterilizes seawater by using ultraviolet rays.

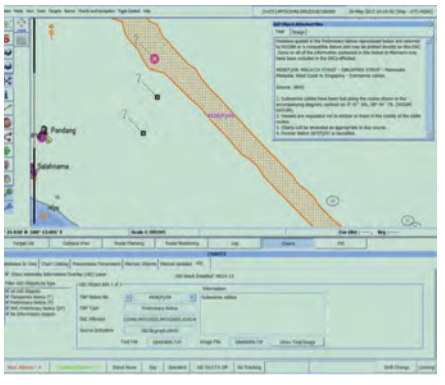
New Powder Coat Paint Booth from Hartzell

Hartzell Air Movement now offers powder coated products. The addition of their new paint booth is designed to increase product consistency and quality control. This new process is also safer on the environment compared to liquid paints since it does not contain any solvents. The new paint booth also improves production efficiency because it has a quicker curing process. Powder coating does not involve additional pre-mixing, stirring, solvent additions, or viscosity adjustments, which means less product variation and better control over quality.

hartzellairmovement.com

Totem ECDIS Now AIO Compatible

Totem Plus, manufacturer of Automation and Navigation systems, announced that Totem ECDIS is now compatible with the ADMIRALTY Information Overlay (AIO). Type approved by DNV, Totem ECDIS provides real-world innovation to the customer. It was the world's first ECDIS to provide Collision Avoidance



in the form of Decision Support Tools; it initiated the 'Shift Change' procedure to avoid ECDIS-assisted accidents and is now also compatible with AIO, provided by the United Kingdom Hydrographic Office (UKHO).

AIO is a free service to ADMIRALTY Vector Chart Service (AVCS) customers and the only service available that includes worldwide Admiralty Temporary and Preliminary Notices to Mariners (T&P NMs) and new ENC Preliminary Notices to Mariners (EPNMs).

www.totemplus.com

MOL To Start Test Operation of NOx-Reducing SCR System

Mitsui O.S.K. Lines, Ltd. plans to install the Selective catalytic Reduction (SCR) system — jointly developed by MOL, Yanmar Co., Ltd. and Namura Shipbuilding Co., Ltd. — on all three power generators of an MOL-operated ocean-going freighter for a demonstration test. This test demonstrates NOx denitration under the actual operation of freighter, to meet the Tier III NOx regulations set by the IMO.

The SCR system received a statement of fact from ClassNK on July 1 verifying that it meets the NOx Tier III emission limit, and its superior denitration performance was confirmed. The system was developed with support from ClassNK's "Joint R&D with Industries and Academic Partners" program.

mol.hu/en

New FleetBroadband Dual Antenna from Cobham

Cobham SATCOM announced a new SAILOR FleetBroadband Dual Antenna solution which has been designed to secure uninterrupted data and voice communications on vessels. The innovative new solution consists of two SAILOR 500 FleetBroadband solutions and a Dual Antenna Control Unit (DACU), which can automatically switch between antennas without loss of connectivity.

With the ability to position two SAILOR FleetBroadband antennas at different locations on a vessel, challenges experienced when a single antenna may become obstructed by superstructure, masts, rigging and other equipment can be overcome.

This makes the SAILOR FleetBroadband Dual Antenna solution suited for specialist vessels using critical IP applications over FleetBroadband, where loss of connectivity could significantly affect the outcome of a costly or hazardous operation.

www.cobham.com

Synapsis for German Containership Newbuildings

Raytheon Anschütz was selected by the German-based shipowner NSC to supply the latest generation of the IMO-certified Synapsis Integrated Navigation System (INS) to a series of 9,000 TEU Containership newbuildings. The new containerships are built by Korea's Hanjin Heavy Industries and Construction's Subic Shipyard in Subic Bay, Philippines and are scheduled for entering service in 2014. The vessels will operate under a long-term charter of Compania Chilena de Navegacion Interoceanica (CCNI). Raytheon Anschütz will supply Integrated Navigation from the Synapsis Intelligent Bridge Control series in accordance with IMO's new INS Performance Standards as specified in MSC.252(83).

The bridge system will consist of four Synapsis Multifunctional Workstations, X- and S-Band Radar sensors, the adaptive and fuel-saving NautoPilot 5300, the new CAN-Bus based NautoSteer AS steering gear control system, and the Standard 22 gyro compass system. The scope is extended with the full package of navigation sensors as well as with the complete radio communication system.

Computer rendering of the NSC's new 9,000 TEU series, vessels outfitted with Synapsis INS.

(Photo: NSC)

Autronica Launches New Gas Detection System

Autronica Fire and Security AS debuted its new gas safety system for liquid and chemical tankers: the new AutroSafe Maritime Gas Panel Solution. It is designed as a safety tool that alerts tanker crews to the accidental escape of hazardous gases from cargo storage tanks. It is based on the gas detection technology and principles developed by Omicron and Autronica Fire and Security since December 2008, under Autronica Fire and Security AS, Division Tønsberg.

The system features AutroNet, an Ethernet-based panel network that connects all panels and sensors through a dual-path, high-speed (100Mbps) redundant system, delivering solid, reliable performance in line with current regulations. AutroNet safeguards communication between panels even if a line fault (break, switch port fault, etc.) is present and any alarms are transmitted safely to all panels because all network traffic is duplicated along two independent network paths.

The AutroSafe Maritime Gas Panel Solution alarm control panel use a communication loop called AutroFieldBus (AFB) to communicate with the gas detection loops, called PowerLoops. AFB length can be up to 1,000 meters and even longer if signal boosters or fiber cable interfaces are used. With up to 64 panels in a single system, 31 PowerLoops per AFB and 15 addressable gas detectors per PowerLoop, this approach supports flexible installation for vessels of all sizes and design. The PowerLoop is a two-wire ring capable of delivering 30VDC/100W and is galvanic isolated from the rest of the system for full electrical protection.

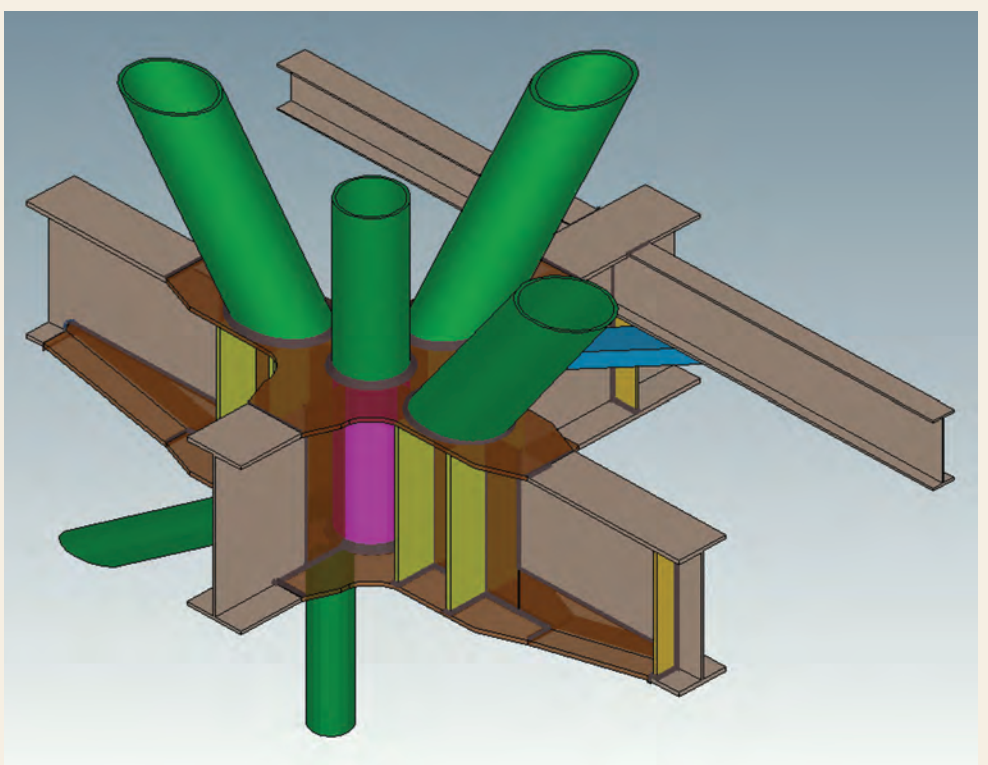
www.autronicafire.com

AVEVA Bocad Offers 30-40% Project Savings

AVEVA released a new products and improvements in its AVEVA Bocad range of structural steel detailing software, designed toincrease structural detailing capability and enable more design standardization and automation. According to the company, by enabling more effective decision-making and increasing project transparency, these new features offer potential project time and cost savings of up to 30-40%. In addition, AVEVA Bocad has benefited from better integration with AVEVA's 3D design products - AVEVA Everything3D, AVEVA PDMS and AVEVA Outfitting. Engineering contractors and fabricators working in the Process Plant and Marine industries will therefore be able to achieve greater productivity and project quality. This can eliminate many sources of errors, leading to time and cost savings.

AVEVA Bocad Steel, AVEVA Bocad Onshore, AVEVA Bocad Offshore and two new products, AVEVA Bocad Tower and AVEVA Bocad Roof and Wall, have been developed to meet demand for sophisticated, purpose-designed software to improve design and fabrication efficiency in these specialist sectors. Using these with the new AVEVA Bocad Steel Interface, AVEVA Plant or AVEVA Marine users can now achieve a much greater level of design integration. Advanced change highlighting and real-time updates enable swift and effective communication between design teams to achieve major time and cost savings.

www.aveva.com/aveva_bocad_steel



Pneumatic Chain Saw with Brake for Use Underwater

CS Unitec introduced a series of pneumatic chain saws for use in underwater applications. Series 5 1028 air saws are designed with a chain brake to stop chain movement during kickback or repositioning of the saw during cutting. These air saws feature two separate lubricating systems that automatically oil the saw chain and motor for easy startup and low-maintenance operation. The saws are suitable for use in hot work areas. The Series 5 1028 saw is available with a cutting capacity of 17", 21" or 25".

Email: info@csunitec.com
www.csunitec.com

New Thorplas-Blue Bearings

Thordon Bearings launched the newest addition to its grease-free polymer lineup: ThorPlas-Blue. The lifetime lubricated bearing formula is capable of operating pressures up to 45MPa (6,527 psi) and is designed to be easily back-fit into virtually all deck machinery applications where greased bronze is currently installed. ThorPlas-Blue was developed as a maintenance-free solution to replaced greased bronze bearings as well as eliminate a source of pollution. There is a high cost consequence to the ship owner when routine maintenance is delayed or greasing is overlooked. ThorPlas-Blue bearings is designed to ensure smooth, reliable operation of all deck machinery, reduce the need for costly periodic maintenance of greased bronze bushings and bring peace of mind knowing seized bearings from inadequate greasing is no longer a possibility. With the elimination of grease, ThorPlas-Blue offers improved safety for the crew members as they do not have to grease bushings in hard to reach locations. ThorPlas-Blue not only has a lower density and thus less weight in comparison to metal bearings, but it also is self-lubricating, which means no grease while eliminating corrosion concerns.

thordonbearings.com

PPG Debuts New Epoxy Anticorrosive/Tiecoat

(Photo: PPG)

PPG Protective and Marine Coatings (PPG) launched SIGMACOVER 580, an innovation in epoxy anticorrosive/tiecoat that is designed to deliver savings and improved productivity at dry dockings. SIGMACOVER 580 is engineered to provide ease of use and economical application characteristics, the manufacturer said. It possesses a practical overcoating window and, with its ability to be applied at temperatures down to 5°C (41°F), offers year round application potential. "SIGMACOVER 580 provides an outstanding spot-repair solution for the dry dock market, due to its unique functionality. It is an epoxy coating for underwater hulls that functions both as an anticorrosive and also as an antifouling tiecoat.

sigmacoatings.com/marine

Gems Debuts New Coolant Level Sensor

The new CAP-300 Series Coolant Level Sensor from Gems Sensors & Controls is a point level sensor that requires nearly zero maintenance; is small in size (two inches in length), tolerates coating and will remain reliable even in the standby mode. Compatible with temperatures up to 257°F (125°C) the capacitive based sensor is suited for the most challenging environments. Available with a variety of mounting types and electrical connections, is easy to install and can handle a supply voltage from 9 to 32VDC. The CAP-300 currently has multiple approvals including CE, IP67, RoHS and IP6K9K.

gemsgensors.com

esrg
ENGINEERING SOFTWARE RELIABILITY GROUP

OstiaEdge Cloud-based Total Vessel Monitoring

ESRG introduces the industrial internet to the marine sector with cloud-based total vessel monitoring and analytics. ESRG's OstiaEdge platform as a service (PaaS), combined with cloud-based data-centers, enable ship managers and owners to have visibility into the performance and health of shipboard equipment from anywhere, including mobile devices. Data is automatically collected, validated and analyzed onboard the vessel and then automatically synched with remote data centers which provide the data, along with automated analytics, in the cloud.

Owners, managers and operators can log in via any internet connected device, anywhere, and use the online automated analytics to understand how the vessel is operating and use that information to make better operations and maintenance decisions. Vessel fuel performance can be analyzed to determine how fuel efficiency has changed over time or compare multiple vessels across a fleet.

ESRG's platform is in line with the broader industrial internet growth, whereby industrial equipment, including diesel engines, generators, ballast systems, emissions systems, navigation systems, etc, generate huge amounts of data that is used to boost efficiency, prevent unexpected failures and ensure compliance.

www.esrgtech.com

Offshore Deepwater Brazil (Sevan)

(Continued from page 33

Operations and uptime – Sevan Driller

95.9% technical uptime
98.9% commercial uptime

- Planned maintenance and marine hull survey completed January.
- Petrobras' "Bad Sonda" rating system: (Scale 1 to 10): 9.3
- Operations and uptime –

Sevan Driller

Sevan Driller achieved a technical uptime of 99.7% in April 2013. In Q1 2013 Sevan Driller had a technical uptime of 72.7% and a commercial uptime of 69.8%.

Sevan Brasil:

Sevan Brasil achieved a technical uptime of 96.0 % in April 2013. Following the settlement of disputed hours related to the repair of an electrical switchboard, the commercial uptime for Sevan Brasil in January 2013 is 80.5%. The technical uptime for January was 97%. In Q1 2013 Sevan Brasil had a technical uptime of 92.4% and a commercial uptime of 95.4%.

Sevan Drilling Operational Update for January 2013

Sevan Driller:

Sevan Drilling performed required maintenance on the dynamic positioning and electrical systems on the rig and the three-year compulsory marine hull survey in January. Sevan Driller returned to a new location in Santos Basin and started required testing of the rig on the new location on 24 January. The required maintenance and inspection work took 5 days longer than originally estimated. Sevan Driller achieved a technical uptime of 73% in January 2013.

Sevan Brasil:

Sevan Brasil achieved a technical uptime of 97.0% in January 2013.

Sevan Drilling Rig no 3:

Construction of Sevan Drilling Rig no 3 (Sevan Louisinana) is progressing according to plan and reached 68.2% overall completion in January 2013. Commissioning of the first systems, diesel generators, was initiated in January 2013.

Sevan Drilling Rig no 4:

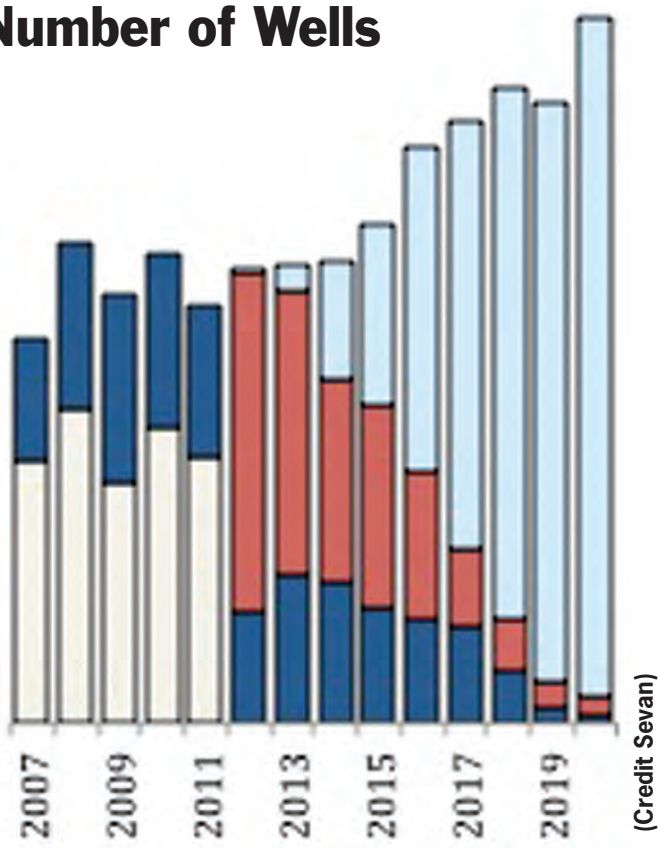
Construction of Sevan Drilling Rig no 4 is also progressing according to plan and reached 54.4% overall completion in January 2013. Lifting of modules up to upper deck is complete and the drill floor, living quarters and derrick will be lifted and integrated to the main hull in March 2013.

Sevan Brasil

The construction of the UDW Sevan Brasil took place at the Cosco Quidong Shipyard. Sevan Brasil is of the same design as Sevan Driller. Sevan Brasil is contracted to Petrobras S.A. on a six year contract for drilling operations offshore Brazil. The Rig was accepted by Petrobras in July 2012 and spudded it's first well on August 31 in Santos basin at a water depth of 1800 m.

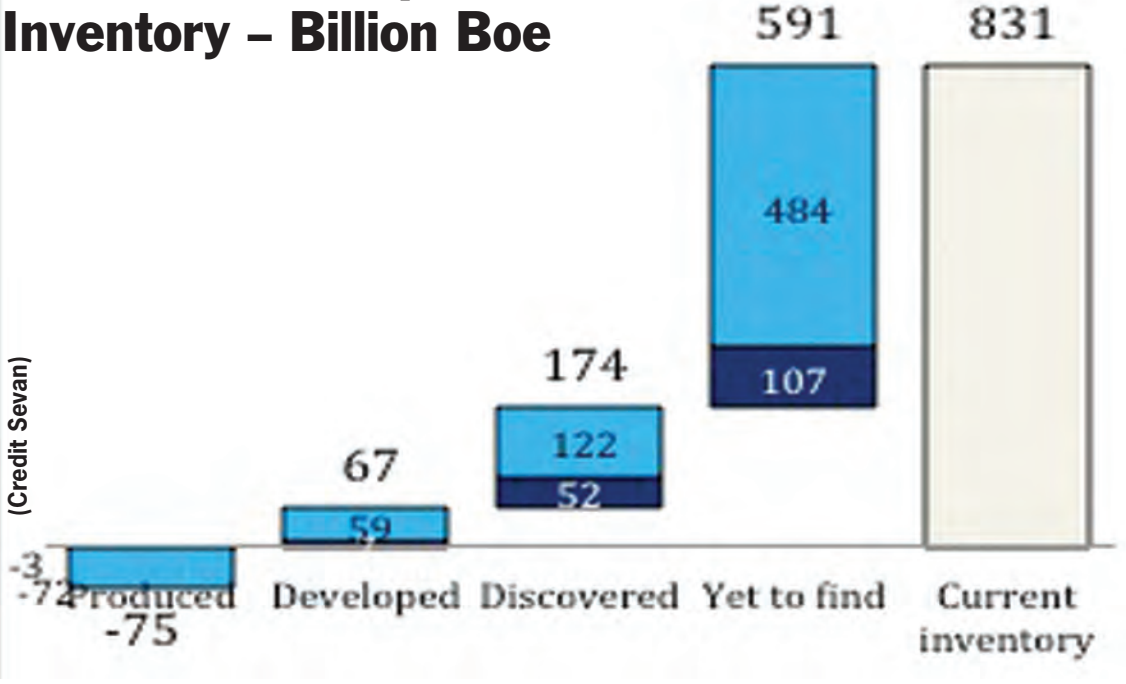
Design:	Sevan 650
Yards:	Cosco Shipyard, China
Client:	Petrobras S.A.
Field/area:	Pre-salt Brazil
Water/Drilling depth	3,000 m / 12,000 m
LOA (Length)	86 m
Breadth	75 m (at waterline)
Depth	24.5 m
Displacement	55,800 mT at 12.5m draft

Number of Wells



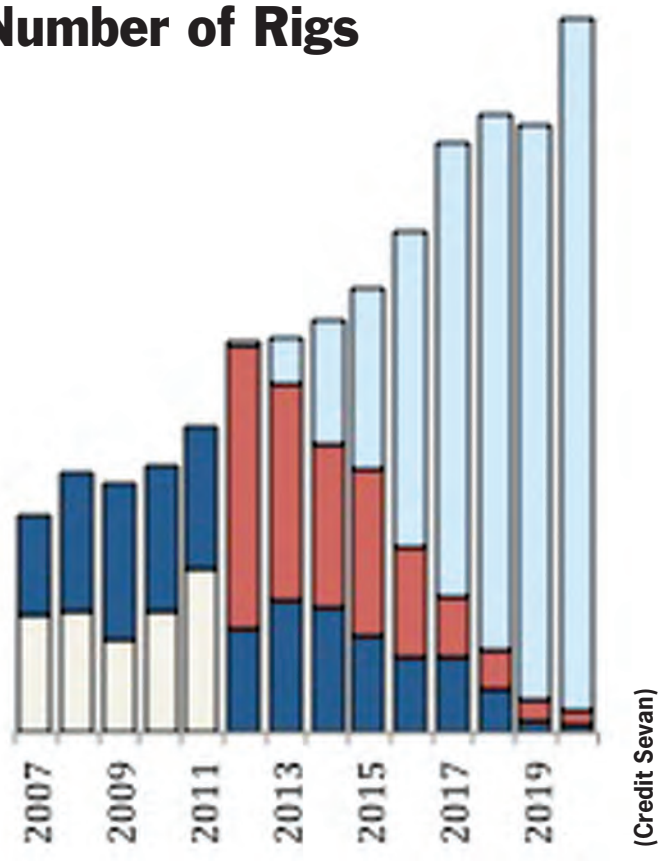
(Credit Sevan)

Global O&G Deepwater Resource Inventory – Billion Boe



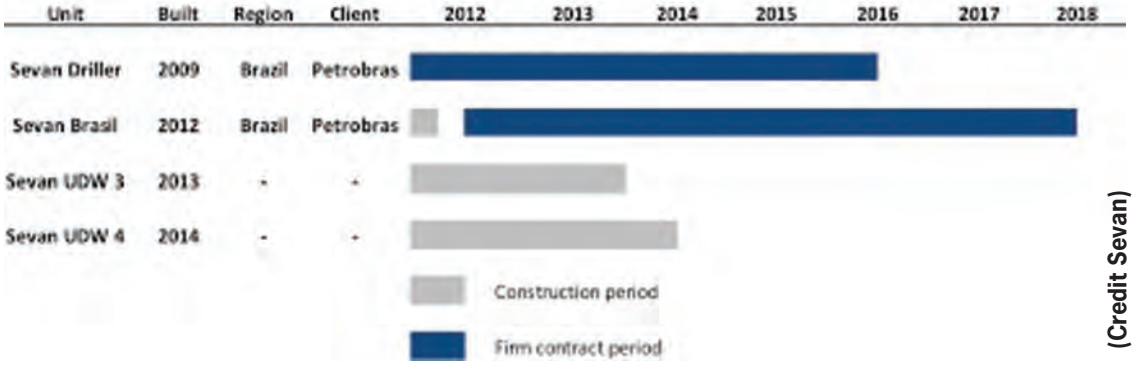
(Credit Sevan)

Number of Rigs



(Credit Sevan)

Existing Rigs on Contracts with Petrobras



(Credit Sevan)

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