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February 2015

MARITIME REPORTER AND ENGINEERING NEWS

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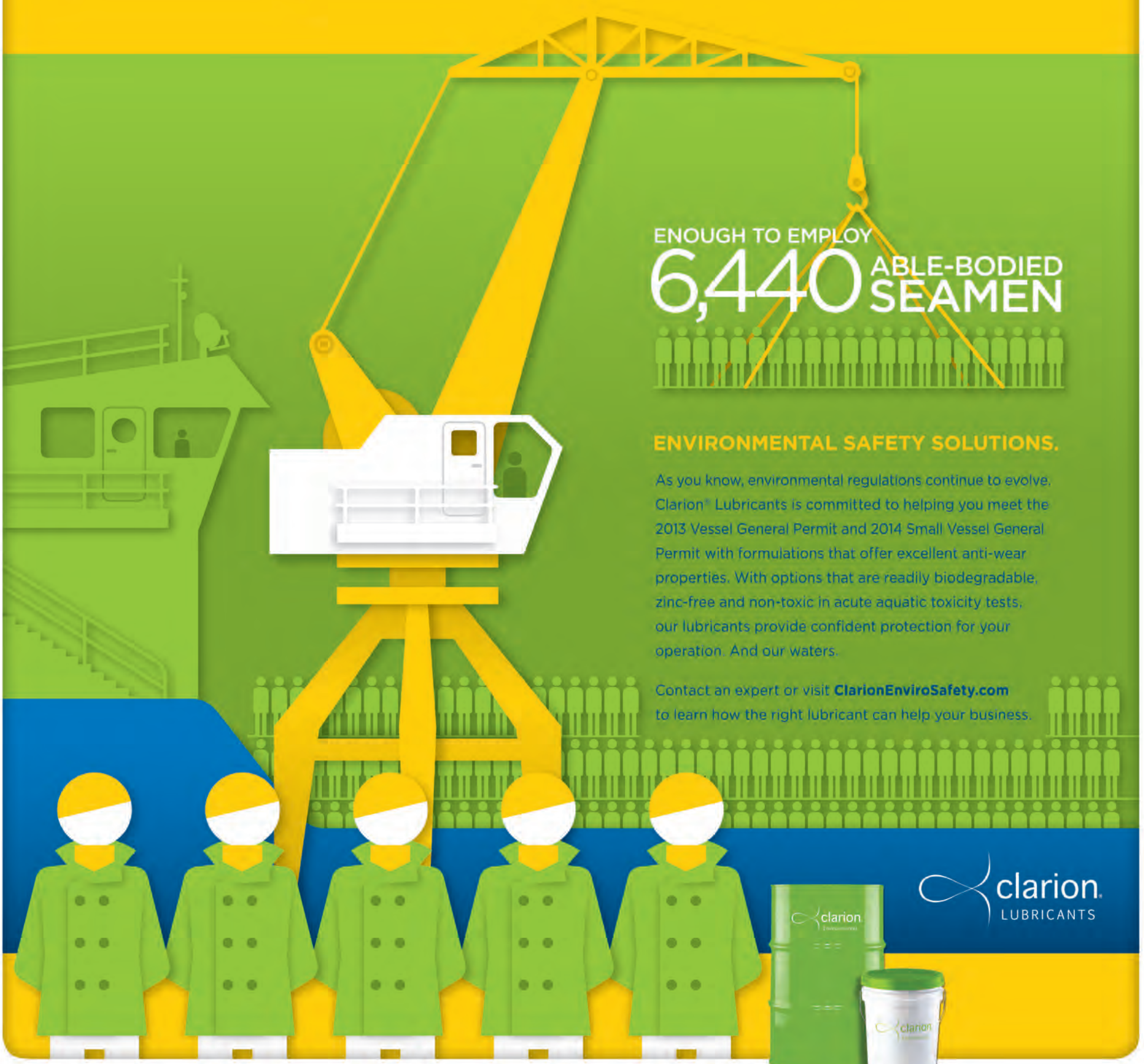

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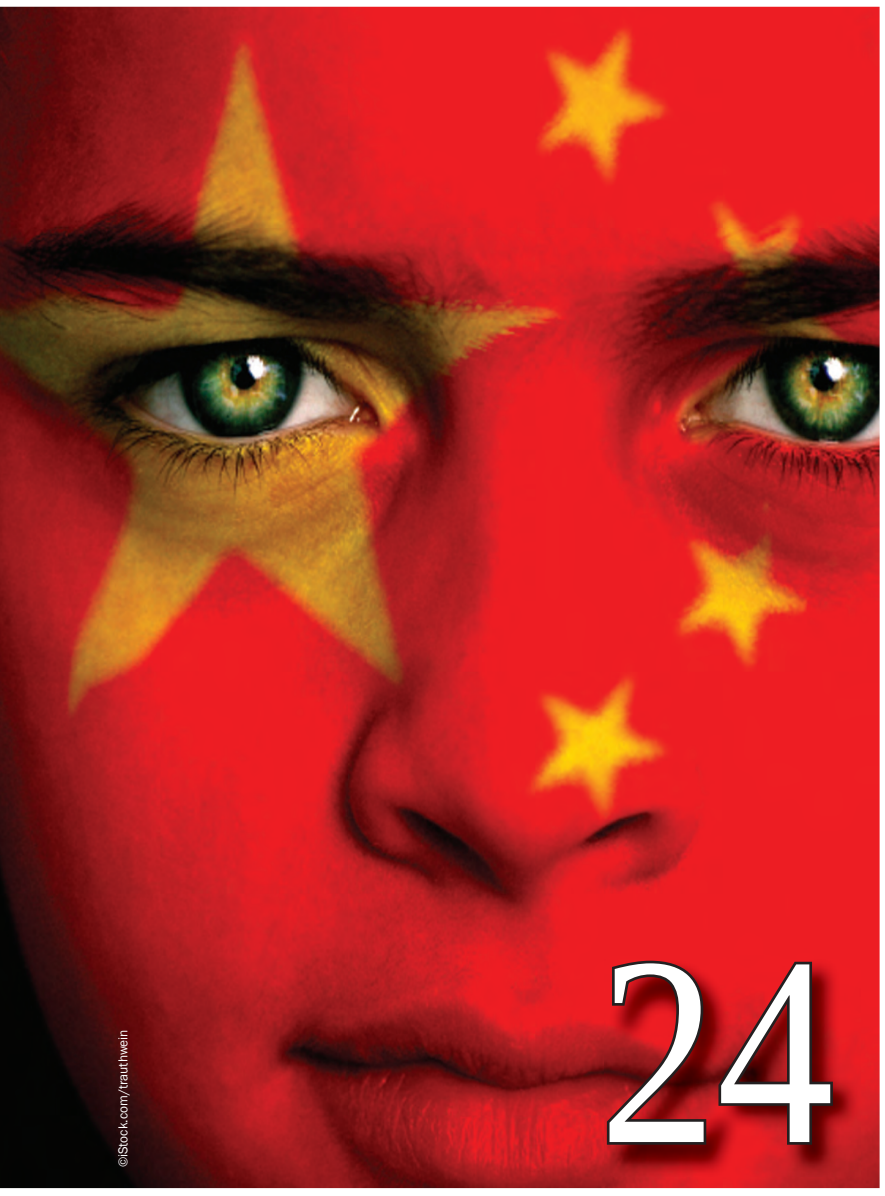
THE COVER

We had the unique opportunity to speak with Josh Harris and Casey McManus, respectively the owner and captain of the Cornelia Marie, a 'star' on the hit cable television show 'Deadliest Catch' regarding their maintenance choices to survive the rigors of fishing the Bering Sea. **Turn to page 10.**

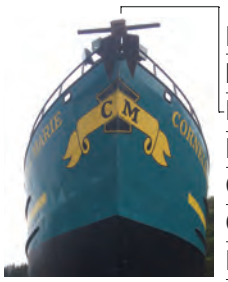
Cover Image: Sherwin Williams/Crew of Cornelia Marie



Cruising China

With the historic deal between Fincantieri and Carnival to build cruise ships in China, explore the present and future role of China in the global cruise shipping sector.

By Patricia Keefe



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Gettin' Crabby *with* Deadliest Catch

GREG TRAUTHWEIN, EDITOR & ASSOCIATE PUBLISHER

As February is our traditional cruise shipping edition, naturally we've selected a fishing boat and two crabs for the cover. But as many of you may already know, that's not just any fishing boat, rather it is the Cornelia Marie, its owner **Josh Harris** and captain **Casey McManus**, stars on the hit cable television show *'Deadliest Catch'* which provides an up close and personal look at the rigors of catching crab in the Alaskan Bering Sea. While fishing vessel coverage is not our tradition, I couldn't resist on this one as it is primarily a coatings story. I had the opportunity to interview this entertaining pair on a recent trip to New Orleans. While I had to omit the most colorful portions of the interview for our pages, the core story on the hunt and selection of a company to coat the boat, and keep it protected in some of the most rigorous maritime conditions you will ever find, is a worthy story starting on page 10.

Turning eyes to the cruise sector, late last year Carnival and Fincantieri announced a deal to start the process to build a cruise ship in China. Obviously the cruise shipbuilding business is held tightly in the clutches of four European yards, and in my 20 plus years in this chair I have seen some spectacular deals to build cruise ships in various world spots, followed by the equally spectacular implosion of said deals when the process to build a fabulous new cruise ship becomes too time consuming, too costly, and simply fails.

Since the cruise shipping industry was born in the early 1970s, ships have grown progressively larger and more sophisticated in accommodation and amenities, and today's ships are virtual floating cities. Building a modern cruise ship is equally dependent on new and emerging technologies as well as accrued experience and old, long-standing relationships, and it simply is not a maritime business sector that is quick or easy to pick up. However, with the muscle of Carnival and Fincantieri involved we were intrigued, so we did the best thing that we possibly could … set the story in the lap of Patricia Keefe who dug in to explore the prospects of a burgeoning cruise business in mainland China. Her story starts on page 24.

Finally, I'm sorry to say I was informed of the passing of George Backwell. George was a trusted and insightful contributor in the overnight hours to our electronic titles, namely *MarineLink.com* and *MaritimePropulsion.com* for many years. George was a retired seafarer – 25 years in command – from England's Westcountry and 'beached' in Thailand. Above all, George was a true gentleman and a friend; and there are never enough of those.

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Joseph Keefe is the lead commentator of MaritimeProfessional.com.

Zeroing in on

Zukunft

The U.S. Coast Guard Commandant addresses a packed Passenger Vessel Association meeting and outlines both the challenges and opportunities facing his organization.

Long Beach, CA: Less than 12 hours after the New England Patriots' late game heroics stunned the Seattle Seahawks in Super Bowl XLIX, U.S. Coast Guard Commandant Admiral Paul Zukunft found himself facing a standing room only audience of Passenger Vessel Association (PVA) delegates, all thirsting to hear what the Coast Guard and the government's regulatory sector had in store for them in the coming months and years. Clearly, and despite some late night celebrations (or tearful regrets), few, if any delegates slept in on Monday morning.

For his part, and as a keynote speaker for this year's annual PVA Convention, Zukunft, talking without notes, neatly led listeners through an informative, 37-minute speech that touched upon where the Coast Guard has been, where it is going and what that meant for the gathered stakeholders.

Conceding that the nation's fifth uniformed service had taken a right turn to take on an overweight maritime security mission in the messy wake of 9/11, he also declared – noting the $1 billion per day commerce passing through the local ports of Los Angeles and Long Beach – that the Coast Guard ultimately has the responsibility to not only protect commerce, but also not to impede it. Those remarks set the tone for what was to come next.

The nation's 25th Commandant also pledged to remain ever mindful of the impact of government regulations on the small businesses which make up a fair share of PVA stakeholders. And with that, he distanced himself and the Coast Guard from pending federal legislation that would change the equipment and the methods that small passenger vessels would be required to handle rescue situations underway. The proposed new rules, which he said had circumvented the Coast Guard, could cost vessel operators hundreds of thousands of dollars for new, out of water survival craft. Beyond this, the proposed regulations – a hot button issue for PVA stakeholders – wouldn't necessarily improve safety.

Along the way, ADM Zukunft outlined what is likely to be a growing laundry list of mission sets for his charges, not the least of which will include the explosion of crude oil shipments (increasing from 2 million barrels annually to more than 50 million barrels) on the U.S. marine highway system. And, while also pledging that he had no intention of letting the Coast Guard "be the speed bump that impedes that commerce," he acknowledged at the same time his responsibilities to make sure that maritime transportation is carried out in a safe and environmentally correct fashion.

In order to do just that, however, he added that the Coast Guard's marine safety mission had to evolve into a career path, and not just a side trip on the way to twenty years of service. Marine safety personnel, he said, would henceforth increasingly spend at least eight to 10 years honing their craft in those roles. Those words had to be music to the ears of a marine community that, to a certain extent over the last decade, has lost faith in the Coast Guard's level of competence in these missions. Putting emphasis to the point, he insisted, "The COI should mean something to passenger vessel consumers." But that won't be an easy task for today's Coast Guard which is increasingly losing experienced marine safety personnel to more high paying private industry positions.

Elsewhere, there are even bigger challenges. Even as the Arctic beckons to oil and gas firms, Zukunft pointed out that a large passenger cruise vessel was already planning a Northwest Passage transit this summer. Oil and gas exploration will also come, he added, when it is economically and operationally feasible. For all of it, the Coast Guard – itself suffering from a paucity of icebreaking capacity – will have to be ready to respond when crisis strikes. It remains to be seen the President and Congress will afford them the necessary dollars to get the job done.

Still relatively new to the Coast Guard's top job, the affable Zukunft nevertheless isn't afraid, in his own words, "to step on the third rail" once in a while. As a case in point, he once again warned of the unintended consequences of recent proposals to revoke the Jones Act. At the same time, he advised the gathered crowd that the Coast Guard must have a relationship with commercial maritime stakeholders, but not necessarily a partnership. "We can't be regulators and partners at the same time," he said.

Following his prepared remarks, we asked Zukunft about the pending so-called subchapter M towboat rules looming for as many as 4,000 previously uninspected inland vessels. Asked if operators could expect closure in this calendar year, the Commandant declined to set a timeline for a final rule, saying simply, "Subchapter M and the ballast water rules are among our top priorities right now."

The presence of the Coast Guard's chief executive at the annual PVA event underscored the important work happening this week in Southern California, but also the Coast Guard's commitment to be a part of that process. And, while some West Coast football fans could be perhaps unhappy with Sunday's final score, no one could say that ADM Zukunft hasn't waded into the commercial waterfront with his sleeves rolled up and his ears open. To that job, he brings surprising candor, competence, and the confidence to believe in what's to come next. That's more than a good start.

– MarPro

Coming in March

In advance of the "State of the Coast Guard" Maritime Reporter & Engineering News editor Greg Trauthwein secured a one-on-one with U.S. Coast Guard Commandant Admiral Paul Zukunft for exclusive insights on the path, direction and speed of the U.S. Coast Guard moving forward.

Coming in the March 2015 edition of Maritime Reporter & Engineering News.

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FIVE MINUTES WITH

"No one is going to take care of your vessel better than you are. Everything that we have is vested in this ... ... if we fail my kid's kids will be broke."

Josh Harris, Owner, Cornelia Marie

'Deadliest Catch'

Protecting Cornelia Marie with Sherwin-Williams

Josh Harris (left) and Casey McManus, a pair of 31-year-olds who respectively own and run the fishing boat Cornelia Marie – made famous on the Discovery Channel's cable television show *Deadliest Catch* – discuss with *Maritime Reporter & Engineering News* their decision to protect the Cornelia Marie with Sherwin-Williams marine coatings.

By Greg Trauthwein

It goes without saying that commercial fishing boats take a beating, particularly the boats working in the Alaska Bering Sea crab business. The *Deadliest Catch* tells real-life stories aboard fishing vessels in the Bering Sea during crab fishing season, a cable television show that draws strong ratings for the Discovery Channel, at times drawing more than 3 million viewers according to *Variety* magazine. Fans of the show likely know very well the story of the fishing boat Cornelia Marie and its colorful crew, led by boat owner Josh Harris and captain Casey McManus. After Harris' father Phil passed away in 2010 from complications following a stroke, Josh was able to put together the deal to buy the fishing boat and build his own legacy with the vessel his father, he and his brother Jake made famous.

The road has not been short, cheap or easy.

"My dad passed away and left this huge hole in our life, and I started trying to figure out how to get the boat … it costs a lot of money," said Harris. "Casey's dad (and Phil Harris' close friend) made a promise that he would do his best to help maintain us."

Today Harris is the youngest boat owner, McManus is the youngest captain and the Cornelia Marie is one of the youngest boats fishing the treacherous Bering Sea of Alaska. But just because the boat is relatively new compared to its colleagues it – and particularly its coatings – routinely take a beating from a combination of weather and heavy fishing equipment slamming into it.

Picking Your Paint

According to Harris, in the wake of his father's death the process to purchase the boat was tough financially given the inflated value of the boat due to the long-running success of *Deadliest Catch*. To that end, he stressed time and again the crucial nature of every financial decision.

"Sherwin-Williams has a great product, and for every dollar that we spend on this boat, it has to count," said Harris. "We are literally pinching pennies to make this happen."

While Harris continued to stress the importance of every dollar spent, simultaneously he discusses the critical nature of a good paint job to the overall health, welfare and longevity of a Bering Sea fishing vessel. "I've seen a lot of different coatings, and for what we have gotten, the Sherwin-Williams product is remarkable. For fishing pots to be able to hit this paint and not simply shatter the

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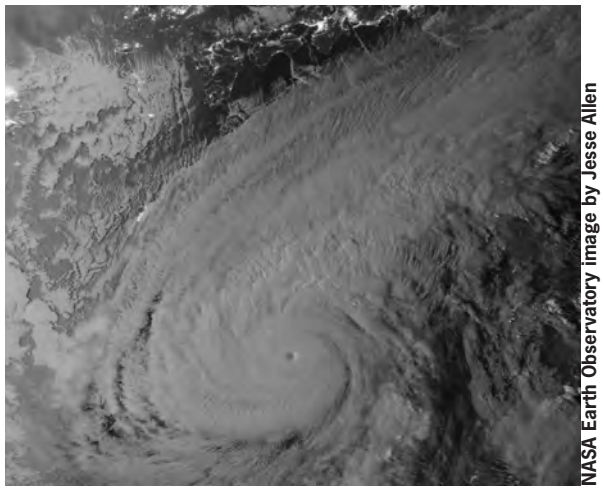
Fishing boats in the Bering Sea take a beating. Here is Cornelia Marine **"Before"**...



NASA Earth Observatory image by Jesse Allen

Left: The crew of Cornelia Marie; **Center:** Nasa Earth Observatory image of Super Typhoon Nuri; **RIght:** Coating the Cornelia Marie with Sherwin-Williams coatings.

paint, it is remarkable."

But make no mistake, the prospect of starring on one of the longest running, highly ranked cable television shows played no small part in the decision made to give the boat a great paint job. "We needed a paint job, it was going on five years. Being on the most popular show on the planet, rolling in with a rust bucket is not the cool thing. You have to look sharp," said Harris.

McManus knows the rigors of keeping a fishing boat properly coated, as he has a history and strong ties to the Trident fishing fleet. "We've gone through every paint manufacturer that there is, and if you bounce pots off it, other coatings are brittle, they break and it rusts. With the polyurethane that we put on the Cornelia from Sherwin, a pot hits it and it just scuffs. You still get a mark, but the steel is still protected. And that's what matters to us; in the environment that we fish in, you cannot afford to let your boat get cancerous (with rust)."

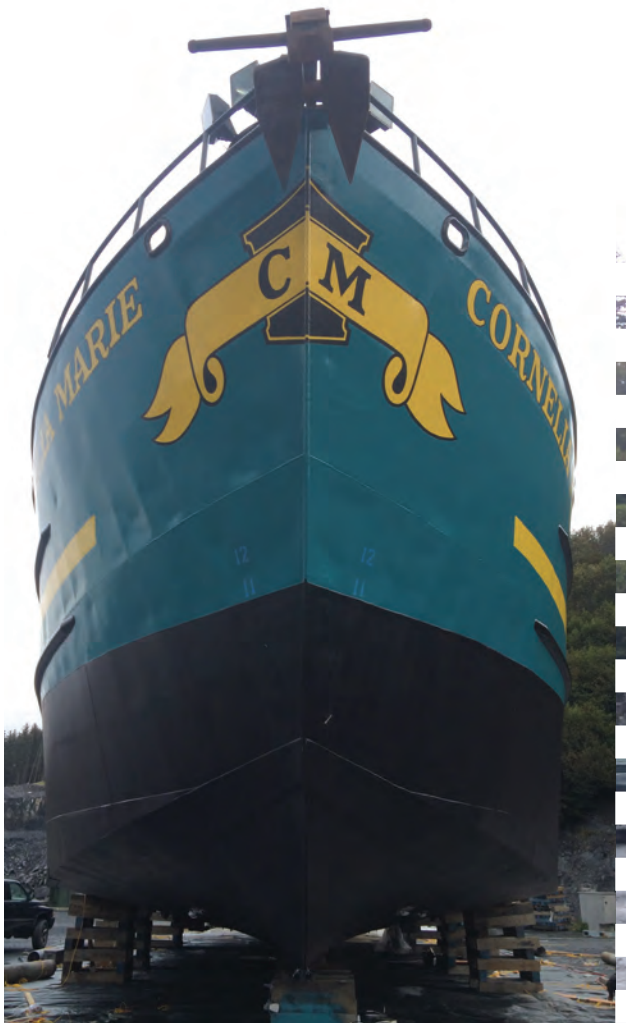
The boat, crew and coating were put to the test last year when it fished as Super Typhoon Nuri churned, a massive storm in late 2014 which generated wind speeds to 125 mph and a low pressure of 910 mbar. While the Cornelia Marie didn't get caught in the heaviest part of the storm, it operated in 40 ft. swells, with a few waves above 50 ft., for more than 12 hours, returning to port and finding that its wave wall had been bent.

"When you're out in heavy weather, the steel on the boat bends and contorts, and the paint usually hardens to the steel … but this stuff flexes with the steel and it doesn't just snap off."

McManus agreed: "I've worked with a number of coating and marine applications, and I've never seen anything like it. I had worked with Sherwin Williams for more than 10 years with as a port engineer project manager. They come by and drop the paint off themselves, they pull it off the pallets themselves to make sure you got everything you've ordered, and they talk to you about mixing and applying the paint. They check the weather, the humidity, and give advice on when to paint the boat. They work with you to ensure everything works right. It's not just the product, the follow up is incredible, and they want to make sure that it is done to their specs and that it's performing as you expect."

Harris concluded: "We work our tails off. We're not made of millions of dollars. We came from nothing and we've created this into something, and we're so close to an operation that is close to making money. Anything that has to do with that boat, we ask what is the long-term impact. We have to do everything smartly, because if we don't we will fail."

F/V Cornelia Marie
Length 129
Breadth 29
Depth ..... 10.5 ft.
Built 1989
Shipyard ..... Horton Shipyard, ... Bayou LaBatre,
• When built it was 105; it was lengthened in 1995 to 129 ft.



... and **"After"** she was coated with Sherwin Williams marine coatings.

Seafarers ... Get Some Rest!

With global focus on the mariner courtesy of MLC2006, reinforced by a number of high profile catastrophic maritime casualties that are directly linked to "the human factor," preliminary results from the Paris MoU should be disturbing at the least.

Preliminary results from the Concentrated Inspection Campaign (CIC) on STCW Hours of Rest, carried out between September and November 2014 in the Paris MoU region show that:

- 16 ships (14% of detentions during CIC) were detained over the 3 month period as a direct result of the CIC for deficiencies related to hours of rest.

Main areas of concern are hours of rest not being recorded properly and watch keeping personnel without sufficient rest.

14%

16 ships (14% of detentions during CIC) were detained over the 3 month period as a direct result of the CIC for deficiencies related to hours of rest..

In recent years there has been a growing concern regarding hours of rest for watch keeping personnel. Supported by PSC inspection results and a number of incidents, the Paris and Tokyo MoU, as well as other MoUs, decided to organize a joint campaign to verify a list of 10 selected items against the STCW requirements. The CIC questionnaire was completed during 4,041 inspections.

"Insufficient rest of watch keeping personnel has already caused several incidents over the past years," said Secretary General Richard Schiferli. " It may be the cause of fatigue, which can have major consequences for safety and the environment. 2 watch systems are particularly vulnerable in this respect."

During the campaign most inspections concerned general cargo/multi-purpose ships with 1,207 (30%) inspections, followed by:

- bulk carriers with 948 (23%) inspections,
- container ships with 407 (11%) inspections,
- chemical tankers with 375 (9%) inspections and
- oil tankers with 325 (8%) inspections.

"Insufficient rest of watch keeping personnel has already caused several incidents over the past years," **said Secretary General Richard Schiferli.** " It may be the cause of fatigue, which can have major consequences for safety and the environment."

Eleven (70%) of the detained ships were general cargo/multipurpose ships, 3 (19%) were bulk carriers, 1 container ship and 1 other ship type.

Analysis of the recorded deficiencies shows that most deficiencies relate to hours of rest not being recorded correctly in 449 cases (11%), watchkeeping personnel did not have sufficient rest in 203 cases (5%) and bridge lookout not maintained in 101 cases (3%). A total of 21 inspections revealed that the manning level was not in accordance with the Minimum Safe Manning Document.

The flag with the highest number of CIC-topic related detentions was Moldova with 3 CIC-topic related detentions.

The inspections showed that a total of 1268 ships were operating with a 2 watch system for the navigational watch and 13 of these ships were detained.. The CIC was a joint campaign with the Tokyo MoU. Others co-operating MoUs have followed the same routine during the campaign.

The detailed results of the campaign will be further analysed and findings will be presented to the 48th meeting of the Port State Control Committee in May 2015, after which the report will be submitted to the International Maritime Organization.

Floater Orders 2014

25 Units Orders in 2014:

10 FPSOs, 1 Barge, 4 FLNGs, 7 FSRUs & 3 FSOs

BY JIM MCCAUL

The overall number of orders is similar to the average ordering pace over the past 10 years, during which an average of roughly 25 production and storage floaters were ordered annually.

But the ordering pace by type unit is quite different. FPSO orders in 2014 were 25% below the 13.5 average ordering pace over the past ten years – and in 2014 no orders were placed for Spars, TLPs or Production Semis, which between 2004 and 2013 averaged 3.5 orders per year.

Offsetting these declines were gains in orders for FLNGs and FSRUs. Between 2004 and 2013 the ordering pace for LNG liquefaction and regasification units averaged three units per year. The number of ordered placed in 2014 for these type units was more than three times this average.

Orders placed during the year are shown below. The unit EPC contractor/lessor is in parentheses.

FPSOs (10)

- Kaombo CLM (Saipem)
- Kaombo GGC (Saipem)
- Deep Producer 1 (TH Heavy)
- Catcher (BW Offshore)
- Armada Ali (Bumi Armada)
- Libra EWT (Teekay/Odebrecht)
- Madura BD (Bumi Armada)
- Front Puffin (Rubicon)
- Tartaruga MV 28 (Modec)
- Petrojarl 1 (Teekay)

FSOs (3)

- Nong Yao (Omni)
- Rubicon Vantage (Rubicon)
- Fois Nautica Tembikai (EA Tech)

Production Barge (1)

- Jangkrit Barge (Saipem/Hyundai)

FLNGs (4)

- PFLNG 2 (Samsung/JSC)
- Hilli (Keppel/B&V)
- Exmar LNG Barge (Wison)
- Gimi (Keppel/B&V)

FSRUs (7)

- K Godavari Regas Barge (Wison)
- Exmar Regas Barge (Wison)
- Hoegh Gallant (Hoegh)
- Moheshkhali Island (Excelerate)
- Jebal Ali #2 (Excelerate)
- Hoegh Cartagena (Hoegh)
- Hoegh Speculative (Hoegh)

Impact of $45 oil and the Petrobras Investigation

The huge drop in oil/gas prices and ongoing financial investigation in Petrobras have combined to create a perfect storm in the deepwater sector. Oil company capital budgets are being trimmed to offset the downturn in revenue and investment decisions are being deferred until oil pricing rebounds – and the investigation involving Petrobras is impacting its ability to order new production floaters.

This perfect storm is clearly causing anxiety throughout the deepwater supply chain. However, in our view, it is not a repeat of 2008/09, when the global financial collapse caused oil prices to crash and floater orders to dry up for 12 months. Unlike six year ago, the deepwater market will not come to a standstill in 2015.

Lower oil prices obviously decrease near term cash flow and impact the ability to fund capital spending. But the price at which oil can be sold when the project comes on line – not the current price – is what determines projected return on investment. Deepwater projects take two to four years to come on line following the investment decision. The expected price post start-up of the facility is what really counts.

No one expects oil and gas prices to remain at the level they have dropped to over the past few months. The futures market, for example, is pricing crude three years out at $20 more that the current spot price.

The longer term outlook is what ENI took into account when in late January it sanctioned start of the $6 billion project to develop the Sankofa oil/gas field offshore Ghana. This produced the first FPSO order in 2015.

Demand and supply fundamentals have not really changed. What we have is a short term out-of-balance in supply and demand. This will self-correct. The question is when (not whether) prices will rebound to a higher level.

As for Petrobras, the company will sooner or later resolve its financial and contracting issues. Petrobras is a powerful company with 14 billion barrels of proved oil reserves. It is a technology leader in the deepwater sector. The issues that caused the implosion will be resolved and the company will get back to focusing on its business plan to grow oil production.

For starters, Petrobras will likely soon lift the constraints imposed on who can bid for contracts. Prohibiting virtually all of its major local suppliers (plus SBM) from bidding on new contracts is hurting Petrobras as much as (maybe more than) the targeted companies. Common sense dictates it's time to get on with normalizing business.

2015 Outlook for Floater Orders

More than a dozen floating production projects in the advance planning stage have reasonable likelihood to move to EPC contracting for production facilities within this year. These projects are likely to produce orders for three to five FPSOs in Brazil, two FPSOs in Africa, an FLNG in Africa, a production semi in the GOM and several FSOs in SE Asia – all within 2015.

Details for 2015 expected orders are in the January IMA/World Energy Report.

But the pressure on reducing project cost will be intense over the next year at all levels of the floater supply chain – and, as workload slows, the balance in negotiating power in EPC contracts will tilt in favor of field operators. This will force suppliers to be more flexible in pricing, cause profit margins to fall and require expenses to be trimmed wherever possible.

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Unfamiliar Ships

Maritime Training & Education is a Lifelong Pursuit

BY DENNIS BRYANT

The theme for World Maritime Day 2015 is Maritime Education and Training. Education and training is a lifelong pursuit. It does not end when you graduate from a maritime academy or school, receive a certificate, and get your first job. Not only do you have to gain more knowledge and skill to get a promotion, you have to gain more knowledge and skill just to retain your current position. This is particularly true for those serving at sea. Equipment on ships is regularly upgraded. Most mariners change ships with alacrity – and each ship is different.

ISM Code

On 6 November 1991, the IMO assembly adopted Resolution A.680(17) entitled "IMO Guidelines on Management for the Safe Operation of Ships and for Pollution Prevention". While not mandatory, the Resolution established standards for measures that owners and operators should implement to reduce the risk of marine casualties. The concept was to identify steps necessary to safeguard the shipmaster in the proper discharge of his or her responsibilities in regard to maritime safety and protection of the marine environment. The Company was identified as responsible not only for ensuring that its ships were adequately manned for the trade in which they were engaged, but also for ensuring that ship's personnel have the proper knowledge of the technical aspects of the ship and its operation as necessary for performance of their duties, and receive the necessary training for familiarization with the particular ship or equipment.

This concept that 'familiarization with the particular ship in which the seafarer was engaged' was a Company responsibility had not previously been articulated. Back when ships were more basic and less technical, ships (at least those in the same trade) were very similar. The equipment on the bridge of one ship was generally the same as that found on the bridge of other ships. By 1991, that was beginning to change. GPS was becoming common, but was not yet ubicuquous. Electronic charts were being introduced, but were still considered experimental. AIS was truly experimental. The IMO recognized that, as ships became increasingly differentiated, it was important that seafarers be made aware of the particular characteristics of the vessel to which they had been assigned, even if that concept was not mandatory.

In 1993, when the ISM Guidelines became the ISM Code, the 'familiarization' provision was reworded to:

The Company should establish procedures to ensure that new personnel and personnel transferred to new assignments related to safety and protection of the environment are given proper familiarization with their duties. Instructions which are essential to be provided prior to sailing should be identified, documented and given.

The 1994 Conference of Contracting Governments to the International Convention for the Safety of Life at Sea (SOLAS) 1974 adopted a new chapter IX on Management for the Safe Operation of Ships, with the effect that the ISM Code, including the ship familiarization provision, became mandatory on 1 July 1998 for passenger ships, including passenger high-speed craft; oil tankers; chemical tankers; gas carriers; bulk carriers; and cargo high-speed craft of 500 gross tonnage and upwards, regardless of their date of construction.

The ISM Code was adopted for the United States by means of section 602 of the Coast Guard Authorization Act of 1996 (codified at 46 U.S. Code, Chapter 32 – Management of Vessels) and became mandatory for covered US-flag vessels on 1 July 1998. The ISM Code was implemented for the United States by means of a new Part 96 to title 33 of the Code of Federal Regulations – Rules for the Safe Operation of Vessels and Safety Management Systems, promulgated as a final rule on 24 December 1997.

STCW Convention

The International Convention on Standards of Training, Competency, and Watchkeeping for Seafarers, 1978 (STCW Convention) reflects the increasing challenges with regard to seafarers. When first adopted, it utilized the standard terminology for crew members on board commercial vessels, such as deck officer and engineer officer, with terms such as officer in charge of a navigational watch appearing only occasionally. Radar was the only means of electronic navigation specifically mentioned.

The 1995 Amendments

The first comprehensive amendments to the STCW Convention were made in 1995. The terms deck officer and engineer officer were largely consigned to history. The use of simulators as a training tool was formally recognized and the ship familiarization provision was added. Many of the details were moved to a new STCW Code. Part A of the Code became mandatory, while Part B consisted of recommendations (best practices). Flag administrations were also required to inform the IMO concerning measures taken to ensure compliance with the Convention.

The Manila Amendments of 2010

The STCW Convention and Code were changed again in 2010 by means of the Manila Amendments. In addition to recognizing various increased complexities, a number of wholly new provisions were added. Measures were added to address the risk of fraudulent certificates of competency and to closely monitor flag administrations' compliance with Convention. Requirements relating to hours of work and rest and for prevention of drug and alcohol abuse were strengthened. Specific requirements regarding training in and use of such technology as electronic chart displays and information systems (ECDIS) were added. Use of electro-technical equipment and dynamic positioning systems were recognized, with training and certification standards defined for the first time. Guidance was added relating to personnel serving on board ships operating in polar waters. Security training was mandated. Distance learning and web-based learning were recognized as alternative or supplementary approaches.

Regulation I/14 (originally dating from 1995) now states, in pertinent part:

Each Administration shall . . . hold companies responsible for the assignment of seafarers for service in their ships in accordance with the provisions of the present Convention, and shall require every such company to ensure that . . . seafarers, on being assigned to any of its ships, are familiarized with their specific duties and with all ship arrangements, installations, equipment, procedures and ship characteristics that are relevant to their routine or emergency duties and the ship's complement can effectively co-ordinate their activities in an emergency situation and in performing functions vital to safety or to the prevention or mitigation of pollution.

The STCW Code, in the mandatory Section A-I/14, contains detailed provisions for implementation of this responsibility for familiarization, including the requirement for written instructions to the master, allocation of a reasonable period of time for newly employed seafarers to gain the necessary familiarity, and designation of a knowledgeable crew member who will be responsible for ensuring that an opportunity is provided to each newly employed seafarer to receive the essential information.

In the non-mandatory Section B-I-14, the STCW Code recommends that companies should provide ship-specific introductory programs aimed at assisting newly employed seafarers to famil-

Ship owners and operators cannot assume that each newly-assigned mariner is fully familiar with the ship or with the equipment that he or she will have to use to perform required tasks. **There is a legal obligation for owners and operators to make newly-assigned mariners fully familiar with their vessel ...**

iarize themselves with all procedures and equipment relating to their areas of responsibility. That section further recommends that the master should take steps to implement the company instructions.

The STCW Convention and Code (as amended in 1995) were implemented for the United States by the U.S. Coast Guard interim rule promulgated on 26 June 1997 and entered into effect on 28 July 1997. The pertinent provisions are now codified in Title 46, Code of Federal Regulations, Subpart J – Vessels Subject to Requirements of STCW. Section 15.1105(b) provides:

On board a seagoing vessel, no person may assign a shipboard duty or responsibility to any person . . . unless [that person] is familiar with it and with all vessel's arrangements, installations, equipment, procedures, and characteristics relevant to his or her routine or emergency duties or responsibilities, in accordance with STCW Regulation I/14.

Generally

The ISM Code and STCW Convention and Code provisions regarding the vessel familiarization requirement are basically the same, although the STCW Convention and Code includes greater detail. Both have been adopted by the United States and have been implemented and are enforced by the U.S. Coast Guard. Both have been adopted by the vast majority of national governments. Thus, it can fairly be said that the vessel familiarization requirement is universal.

Nonobservances

Experience has taught us, though, that the practice of vessel familiarization has not been universally applied. Investigations following marine casualties commonly include findings indicating that one or more seafarers on the unfortunate ship was unfamiliar with an important piece of equipment or an important procedure. Matters rarely go any further.

An exception was the 7 November 2007 allision of the COSCO BUSAN with the Delta Tower of the San Francisco-Oakland Bay Bridge and subsequent oil spill. Investigations by both the U.S. Coast Guard and the National Transportation Safety Board (NTSB) noted that the master and deck officers (all of whom were newly assigned to the ship only 24 hours prior to departure on this voyage) were unfamiliar with pertinent provisions of the ship's Safety Management System (SMS). On 13 August 2009, Fleet Management Limited, operator of the COSCO BUSAN, entered into a plea agreement with the US Department of Justice (DOJ) admitting its failure to provide vessel familiarization to the crew regarding bridge procedures, bridge team management, the ship's Electronic Charting System, or voyage passage planning prior to the ship's departure on this voyage as required under the ISM Code. In addition to paying a substantial fine, the company entered into an agreement to conduct internal audits of its safety management system and to hire an outside and independent third party audit to review the company's safety management system as applicable for navigation, crew familiarization and training.

Conclusion

Ship owners and operators cannot assume that each newly-assigned mariner is fully familiar with the ship or with the equipment that he or she will have to use to perform required tasks. There is a legal obligation for owners and operators to make newly-assigned mariners fully familiar with their vessel prior to assuming their duties. The day of the departing mariner passing his or her replacement on the gangway is past. Governments will increasingly hold owners and operators responsible if there is a casualty or spill due to a mariner's unfamiliarity with the ship.

The Author

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New Study to Provide Insight into

Passenger Ship Comfort

BY ROB GRIN

Comfort is considered to be a crucial factor on board passenger ships as it largely determines passenger satisfaction, on board expenditure and passenger return levels. However, comfort is subjective as people are very different. Where one passenger complains about discomfort, the other may hardly notice anything.

Passenger comfort is determined by a large variety of factors including the interior design of public spaces, temperature and smell. However, within the context of MARIN's services, we will limit ourselves to the hydrodynamic aspects that might influence comfort. Within the cruise and ferry team; powering, manoeuvring and sea keeping specialists join forces and work together to assess the hydrodynamic behavior that influences comfort i.e. ship motions, heeling angle during manoeuvres and the propeller and slamming-induced vibrations and noise. This article focuses on the sea keeping related to passenger discomfort.

Ultra Large & Ultra Luxurious

In the last decade there has been a clear trend towards either ultra luxurious cruise ships or ultra large cruise ships. Luxurious ships typically have a gross tonnage (GT) of less than 50,000 and the number of passengers is often fewer than 500. These cruises are often to exclusive destinations worldwide, and they call at smaller ports. Due to the relatively limited size of these vessels, the ship motions play an important role in the comfort levels.

This is in sharp contrast with the ultra large cruise ships, which have a gross tonnage of more than 100,000 and a passenger capacity of over 4,000 passengers. These cruise ships typically offer one to two-week cruises to popular destinations in the Caribbean and the Mediterranean. Due to the size of these ships, the ship motions are negligible in most weather conditions. Therefore, sea keeping related discomfort is more likely to arise from slamming induced vibrations and noise. Another major trend concerning passenger ships is the cruise ferry concept. The size of these ships is often close to that of ultra luxurious cruise ships, whereas the passenger space is similar to that of ultra large cruise ships. When compared to cruise ships, these cruise ferries have a short voyage duration and are sailing on a fixed route.

Accelerations are caused by the combined ship motions (surge, sway, heave, roll, pitch and yaw). The discomfort experienced, as a result of these accelerations, relates to seasickness and disruptions during all kinds of on board activities.

Accelerations

Seasickness does not necessarily imply vomiting (the 'limiting' case that should be prevented in any way) but more importantly, it is the sense of feeling unwell, as this drives passengers to stop certain activities. Seasickness is mainly caused by vertical accelerations but the horizontal accelerations and the combination of both are also important. As criterion the Illness Rating (IR) is applied, which has been developed within the EU COMPASS project.

Ship motion induced disruptions relate to the reduced ability to keep one's balance while standing, going up the stairs and dancing etc. As criterion the 'effective gravity angle' (EGA) is adopted. It is dominated by the accelerations in the horizontal plane, although the vertical accelerations contribute as well. The EGA is not only a direct measure of people needing to look for support to stand still but also for instance, when glasses start to slide or tip over.

Increasing Knowledge

Typical phenomena that might induce vibrations and noise are bow flare and stern slamming. Bow flare slamming occurs mainly when sailing in steep seas from the bow quarter, while stern slamming typically takes place at low or zero speed in relatively low seas (or in high head seas conditions). These conditions might occur at anchor in exposed areas or during a port approach. The best measure of discomfort due to slamming induced vibrations seems to be the Vibration Dose Value (VDV).

Although the above-mentioned criteria cover a large variety of sea keeping aspects, it is important to further increase the industry's knowledge about actual passenger ship operations and how they are influenced by ship hydrodynamics. Which powering, manoeuvring and sea keeping aspects cause reduced passenger comfort or even the cancellation of activities such as the closure of promenade decks/swimming pools or even shows? To answer some of these questions, MARIN decided to start a two-year research program. Cruise and ferry operators, yards and consultants are invited to share their experiences.

The Author

Rob Grin is Senior Project Managers of the Ships department of MARIN, the Maritime Research Institute Netherlands. MARIN offers simulation, model testing, full-scale measurements and training programs, to the shipbuilding and offshore industry and governments.

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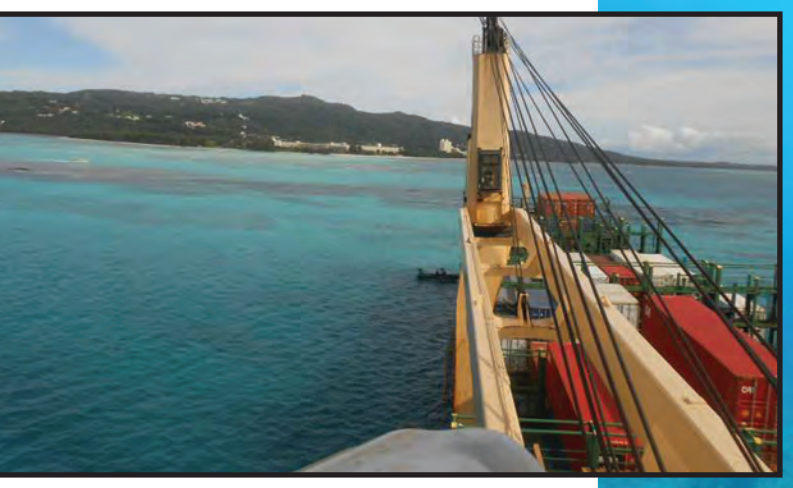
On the hardware side, T&T boasts one of the most extensive response networks in the world. Prepositioned throughout the Americas, Singapore and Hamburg, the company owns and maintains an inventory of fast-response firefighting systems, inert gas generators, nitrogen generators, high capacity pumps, ship-to-ship (STS) systems, anti-pollution and diving systems. These specialized portable assets are complemented by a global network of tugs and support vessels ready to meet any emergency challenge. In response to the Oil Pollution Act of 1990 (OPA 90), T&T embarked into a campaign to develop the best casualty response system in the United States. As a result, T&T estimates it garnered more than 60% of the tank vessel market, including most vessel operating oil majors. The system has already been successfully put to the test more than 30 times. Last year, T&T Salvage and its strategic response partner, Cabras Marine, successfully refloated a 17,000 ton fully cellular containership that went aground near Micro Beach in Saipan, Northern Mariana Islands. The prompt action of the Hamburg based vessel owners resulted in the immediate activation of their OPA 90 Vessel Response Plan (VRP) and T&T Salvage as its pre-contracted salvage provider. Tugs, pollution response gear, specialty pumping gear and a 12-strong T&T-Cabras Marine team was dispatched to manage the salvage operation. What began as a typical grounding response quickly turned into anything but when the initial dive survey turned up a World War II era torpedo and unexploded mines around the vessel. The salvage operations were immediately suspended and the vessel crew was evacuated until an Explosives Ordinance Disposal (EOD) team could be activated to assess the risk. Upon inspection of the casualty site, the EOD team made the initial determination that the devices did not pose a serious threat; however, there was yet another twist in store for the salvage team as severe weather was now approaching the island and threatening the vessel. Salvage Master, Albert Dai, knew a refloating attempt needed to be made immediately. With no time to waste and with the support and agreement of the Unified Command led by the USCG Federal On-Scene Coordinator, the Salvage Plan was promptly approved by the Unified Command. The Salvage team and vessel crew quickly returned to the vessel, and after reducing the ground reaction, the vessel was safely maneuvered to deep water with the assistance of three tugs. Oil Spill Response Operating Company (OSROCo) also had personnel and equipment on standby for immediate response, in the event of any oil spill during the refloating process. Once afloat, the vessel was shifted to a safe berth where an underwater inspection of the hull was carried out. There were no injuries and no pollution during this potentially dangerous operation. “This was not your usual walk in the park…the USCG provided outstanding support leading to a positive outcome,” said T&T’s Project Manager DeeAnn Ebanks. T&T Salvage, is a member of Teichman Group, committed to serving the emergency response needs of the shipping and energy industries under the highest standards of safety and quality.



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Cruise Industry Seeks Fortune in China

Credit: Meyer Werft

Quantum of the Seas under construction at Meyer Werft shipyard.

Builders, Operators Teaming to Fill Voids In Rapidly Growing Chinese Market

By Patricia Keefe

After an uneven couple of years punctuated by struggling economic factors worldwide, maturing markets and some highly publicized accidents and illnesses, the cruise industry is hoping to find a little "double happiness" from the rapidly growing Chinese market – enhanced profits and renewed market growth for both operators and builders.

For its part, the Chinese government is betting on a triple payout: it hopes to serve a growing middle class (estimated at a potential 300 million market) and its desire for cruising vacations, to float its own liners and domestic operators and, to expand opportunities for its financially struggling shipyard industry.

To do this will require, most importantly, ships, the newer the better, and lots of them. The market is currently served by 52 cruise liners of varying capacities and older vintages, with the potential to carry 2.17 million passengers across 1,000 cruises, according to the Cruise Lines International Association (CLIA).

To significantly boost that capacity in as timely a manner as possible – cruise ships typically take two to three years to deliver – will require partnerships between the more experienced European cruise shipbuilders and operators and Chinese shipyards and authorities, such as the ones struck separately over the last three months by the world's largest cruise liner company, Carnival Corp., with the largest cruise ship builder, Fincantieri S.p.A.; with China's largest shipyard, China State Shipbuilding Corp. (CSSC); and with state agency China Merchant Group, which is focused on transportation, infrastructure, financial services and real estate development. Also in the mix, a recently announced partnership between Royal Caribbean, the second largest cruise line operator, and C-Trip, China's dominant travel agency with 10% of the market. Even Japan is getting in on the action, with orders for two newbuilds from the AIDA Cruise line arm of Carnival.

The partnerships in China are preliminary agreements aimed at accelerating the development and growth of the cruise industry there, via projects such as building the first domestically sourced cruise ships in China, to building up and out the country's port and terminal infrastructure, and to creating domestic cruise line operations.

Financial Fireworks

The prize here is stack-blowing market growth and seemingly unlimited opportunity. For starters, the United Nations World Tourism Organization, claims that Chinese tourists became the world's biggest travel spenders in 2012, paying out a cool $102 billion, and ranked them number one globally in spending in 2013. The Chinese Ministry of Transport (MOT) is committed to developing the Chinese cruise market, and has been projecting that it will become the second largest after the U.S. in a mere couple of years, growing at a faster rate than North America and Europe. MOT also predicts

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> The Chinese have proven themselves to be very capable at engineering, and capable of learning very fast. But cruise shipbuilding is a very challenging business to get into. Because of the type of specialized ship this is, and the extremely tight deadlines necessary to meet customer demand on delivery, this is not something you get into easily with success. For example, the logistics it takes to keep the product on schedule and on multiple tracks presents a very steep learning curve, and is the type of experience you probably can't afford to learn on your own. It could prove extremely valuable to Chinese shipyards to partner with others that have had success.
>
> – Bud Darr, Senior Vice President Technical and Regulatory Affairs, Cruise Lines International Association

China will reach 4.5 million passengers by 2020, or representing about 50% of global cruisers by some estimates.

The Asian Cruise Association (now a part of CLIA) took a more tempered view of the market last year, estimating that the overall Asian cruise market, which totaled 1.3 million passengers in 2012, could nearly triple to 3.8 million in 2020, including 1.6 million from China.

By any measure or estimate, the Chinese cruise market is on the verge of exploding, a fact not lost on the international players plying the China trade. Also enticing, is the fact that Chinese guests pay more for their typically shorter itineraries.

Since 2013, cruise operators have responded by doubling the number of ships and increasing the number, routes and timing of their cruises. As a result, even in its early stages, that demand has already produced a measureable, and growing, positive impact on the earnings of Carnival and rival Royal Caribbean, so much so that Carnival plans to base a fourth vessel, the 2,978-berth Costa Serena, in China this year, and last year moved its COO in country as a sign of both its commitment and the market's importance. The company expects to carry 500,000 cruise passengers in China this year. UBS Global Research analysts Robin Farley estimates China will be about 6% of Carnival's deployments in 2015.

Last April, the Royal Caribbean said its sales in China have doubled over the past five years, though it did not provide specifics.

That apparently was sufficient to convince the company to take the unprecedented step of committing its newest vessel, the 4,180 berth Quantum of the Seas, to be based in Shanghai by the spring.

"Royal Caribbean's decision to base Quantum of the Seas full time in Asia is a huge step forward – this is a ship leap-frogging the existing product," exclaims Ted Blamey, principal of Chart Management Consultants, Australian –based global experts in cruise tourism and strategy, and a producer of market research for industry groups like CLIA and the former Asian Cruise Association.

"And Carnival's decision to move its COO to China speaks volumes about its intention to be a serious player in the Chinese market," he adds.

Credit: Meyer Werft

State-of-the-art brdige on Quantum of the Seas.

A Slow Boat to Market Growth

The government may want to build a vacation market, and the cruise industry may be salivating at the huge untapped potential of the Chinese market, but growth will be stymied by capacity – there simply aren't enough ships to meet demand. And even if more liners could be redeployed from other more sedate global sectors, it wouldn't be enough. And it also might not be pleasing to an increasingly sophisticated and status-conscious client base: they don't want warmed over, outdated ships, which until recently are often what they got. The days of limping old vessels to a once backwater market are over. The situation begs for new builds, but China's shipyards aren't up to the task. Cruise ships are very complex and the design, workmanship and variety of activities and number of state rooms aboard a typical cruise ship is far more intricate than the types of vessels being turned out today at most Chinese shipyards.

Even Japan, which has arguably more sophisticated shipbuilding skills, has had a less than glowing experience in the cruise market, dropping in and out over the years.

And yet cruise liners could be a boon to China's shipyards. While not lacking in orders, they are lacking in profitability and overrun with capacity, so much so that banks have reportedly tightened access to credit to all but China's biggest shipyards even as other shipyards have been closing, forcing the government to launch a program to reform the sector –creating a so-called "white list" of shipyards eligible for assistance from the state. Cruise liners done right, are both profitable, and in demand. There's that Double Happiness again.

However, "It will take many years, in my view, before a cruise client will trust a Chinese shipyard to build the entire ship," says Chart Management's Blamey.

A situation that again, signals opportunity to Europe's cruise ship builders, which besides having honed the requisite skills needed to build quality liners, also have the production side down to a science.

"Excluding the AIDA project [now underway] at Mitsubishi, we are down to three companies with four yards – STX France, [Germany's] Meyer Werft, and then [Italy's] Fincantieri. They have really gone through a long period of learning what the criteria are needed on the cruise ship end and the logistics involved, to keep those yards viable. It's a real testament to the experience gained in making the yard efficient in productivity," says Bud Darr, CLIA's senior vice president of technical and regulatory affairs.

Ironically, in most sectors of shipbuilding, Asian competitors in China, Korea and Japan

> The Chinese can lay the hull more cheaply than anyone else, and I think there is a widespread belief that the Chinese will eventually build cruise ships at a high level of quality and at a lower level of cost. So shipyards like Fincantieri might be thinking, 'Let's get in on the ground floor, let's be there first.'
>
> – Ted Blamey, Founder and Principal, CHART Management Consultants Pty. Ltd., referencing Fincantieri's November agreement with Carnival to explore a joint venture to construct ships for the Chinese market.

loom as a cheaper, often bigger, threat to business. Even though Meyer Werft GmbH and Fincantieri SpA share the bulk - 72% - of the European order book through 2017, including 24 cruise liners with space for 76,161 passengers, contracts placed in Japan and possible orders in China, "represent a threat to Europe's continued preeminence in cruise shipbuilding," according to a CLIA Europe June market report.

The probable loss of cruise new builds to Asian shipyards would be a blow to European shipyards, which have already lost other business to their cheaper, typically mammoth and increasingly sophisticated competitors in Korea, Japan and China.

This time though, we may see these shipyards fight back in a manner of speaking, by taking the "if you can't beat 'em, join 'em," or at least partner with them, route.

"The Chinese have proven themselves to be very capable at engineering, and capable of learning very fast. But cruise ship building is a very challenging business to get into. Because of the type of specialized ship this is, and the extremely tight deadlines necessary to meet customer demand on delivery, this is not something you get into easily with success. For example, the logistics it takes to keep the product on schedule and on multiple tracks presents a very steep learning curve, and is the type of experience you probably can't afford to learn on your own. It could prove extremely valuable to Chinese shipyards to partner with others that have had success," says CLIA's Darr.

Blamey foresees a situation where at least in the early years Chinese shipyards would build the hulls and handle the assemblies, but partner with experienced cruise ship builders to provide components like state rooms, fittings, some machinery etc.

"The Chinese can lay the hull more cheaply than anyone else, and I think there is a widespread belief that the Chinese will eventually build cruise ships at a high level of quality and at a lower level of cost. So shipyards like Fincantieri might be thinking, Let's get in on the ground floor, let's be there first,' " says Blamey, referencing Fincantieri's November MOU with Carnival, in which the Italian cruise ship builder agreed to explore a joint venture to construct ships for the Chinese market.

The MOU could be a model for the typical partnership with Chinese shipyards. While Carnival will provide "the visions, definition and overall specifications" for the ship's design, Fincantieri would provide its product expertise and other "specialist services" to augment and guide CSSC.

"This agreement . . . testifies our determination in pursuing a strategy that increasingly establishes [us] as a global and reference player in the sector, with a strong presence in all markets that can ensure the future of our business," said Fincantieri's CEO, Giuseppe Bono, in a press release.

Survival Strategies

The phrase "reference player" speaks to Blamey's thoughts on why Fincantieri would want to help an eventual behemoth of a competitor. Building ships by stitching together prefabricated sections and parts produced by other partners is common in shipyards today. The strategy cuts costs and speeds production, sure, but in the case of the Chinese cruise market, it is also a way to provide access to the skillsets the Chinese do not yet possess. And if the market takes off as expected, down the road there will likely be plenty of orders for Fincantieri – and its European competitors - with or without working with a Chinese shipyard. In the meantime, Fincantieri can build relationships by sharing its expertise.

It's not clear what STX or Meyer Werft's China strategies are, but the German shipyard recently lost two newbuilds to Mitsubishi Heavy Industries Ltd., despite having built a seven ships for AIDA between 2007-2013, the largest at 71, 304 tons . The cruise operator's next two ships, which will weigh in at 125,000 gross tonnage, will be built in Japan, which has a checkered history in cruise builds. But it's cheaper, significantly so, and as such drew protests from Fincantieri and STX when the deal was announced in 2011.

In any case, one of the reasons for partnering with the Chinese is that they know their market base. Chinese cruise guests have very different expectations and needs, and those will need to be built into new build ship designs or retrofitted onto to older vessels. Here again, the complexities involved in the latter case should provide the European shipyards with yet another money-making opportunity.

According to UBS' Farley, CLIA's Darr and consultant Blamey, Chinese differentials include:

- ***A preference for new, cutting-edge accommodations. The market has been traditionally served by older vessels as Chinese ventures have purchased second-hand ships and western***

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operators have sent aging vessels into the market. Going forward, this won't do. This is why Quantum of the Seas is expected to give Royal Caribbean a distinct boost in the coming fight for mind space and market share.

- ***Fewer open decks and more interior spaces devoted to more activities – Westerners typically go on vacation to relax. The Chinese, typically, do not. They are also not sun worshippers, and they like to keep busy. They want to do things and then go back and talk about what they did. The Chinese tend to travel in groups, also, so activities and spaces need to be designed to enable them to stay together.***
- ***Fewer bars and western-style restaurants. The Chinese, say Blamey, don't like to drink before dinner, eat with strangers or linger over a meal. They drink to be social, eat in a family group and eat quickly, he adds. At least one cruise operator has already ripped out and replaced its dining room in response.***
- ***More space devoted to high-end retail and gambling - the Chinese are big shoppers and gamblers.***
- ***Shorter itineraries – The Chinese have significantly less vacation time than their western counterparts, and so need short trips. This is true even for retirees. Shorter trips, agree Darr and Blamey, means the cruise lines will have to find more people to sell more cruises to, at generally higher ticket prices. More trips means more servicing and more wear and tear over time.***
- ***Last-minute bookings – the Chinese are famous for booking late, and online, which could negatively impact the ability of cruise lines to sell space and estimate capacity and sale as far in advance as they do in the West.***

Even though Meyer Werft GmbH and Fincantieri SpA share the bulk - 72% - of the European order book through 2017, including 24 cruise liners with space for 76,161 passengers, contracts placed in Japan and possible orders in China, "represent a threat to Europe's continued preeminence in cruise shipbuilding." CLIA Europe June market report.

Many Parts Make Up A Whole

Solving the issue of building up the available stock of cruise liners, and making sure they meet the unique needs of Chinese vacationers, is just the tip of the iceberg when it comes to building out the Chinese cruise market. There are other challenges to be addressed as well. Those ships need places to go. They need to be able to dock, and they have to be serviced in an efficient manner. Passengers need access to terminals and all manner of transport to get to and from their cruises.

"Without infrastructure, you can't operate in a substantial way," notes Darr.

This creates opportunity for cruise line operators, which can further influence the market and build mind share and contacts by also teaching domestic cruise partners the business of cruising, and by helping local and state governments to plan and flesh out the other pieces of the cruising picture – ports, sizeable terminals, efficient movement of passengers and supplies on and off cruise ships, destination activities and other events.

One thing the Chinese are very good at, according to Blamey, is designing and building high-quality infrastructure, and getting it done quickly. It has already begun to modernize some key ports, building out berths capable of supporting cruise ships. "Both Singapore and Hong Kong have recently expanded their cruise ports and many coastal cities in China have developed port infrastructure in the last eight years," observes UBS' Farley. Overall, China has five cruise terminals in operation, but more work needs to be done. So far, it reportedly has three more under construction and another five or so in the planning stages.

Reading the Tea Leaves

What will happen once the Chinese skillset catches up with the West, and when that might be, is anyone's guess, but it behooves European cruise liner builders to get in the game now, to build the relationships necessary for when the elephant in the shipyard is able to stand on its own. In the meantime, there is money to be made in helping the Chinese build their own cruise ships, the possibility of setting up lucrative joint ventures within China going forward, and the potential for enough demand to feed East and West shipyards.

"As potential goes, you have to look at China with a very optimistic eye. Whether or not our industry can succeed in business only time will tell, but you can see the investment in time and resources that will be necessary to bring that to fruition," says CLIA's Darr.

One thing is for sure, the leaders in cruise industry ownership, operation and ship builders have read the tea leaves, and are leading the way for the rest of the industry to work out a peace with their Chinese competitors that, if they play their cards right, will eventually lead to a win for everyone in this game – shipbuilders, tourists, cruise operators, local attractions, the Chinese government, etc. – and launch a lucrative, golden age of Chinese cruising.

Credit: China State Shipbuilding Corporation

On Nov. 21, officials from China CSSC Holding Ltd and cruise ship builder Fincantieri S.p.A sign a Memorandum of Understanding at CSSC's headquarters in Beijing. Under the MOU, both parties will consider setting up a joint venture to build cruise ships for the Chinese market.

Changing fuels to meet ECA legislation is not as easy as it seems

Are you prepared for what's ahead?

If you choose to work with low-sulphur fuels when SOx Emission Control Areas (ECAs) take effect in 2015, you face potentially engine-stopping hazards when it comes to fuel viscosity and lubricity during changeover.

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Efficient Computer Control with KVM Technology

G&D – always available – on land, at sea and in the air.

By Dipl.-Ing. Peter Pospiech

For centuries, mariners have relied on paper maps to navigate the world's oceans and waterways. Today, the computer technology used on board literally controls the vessel. Along with computers, KVM technology enters ships across the world. German manufacturers Guntermann & Drunck GmbH (G&D) were already working on KVM solutions before this technology had a name. The company was founded by Udo Guntermann and Martin Drunck in 1985.

Maritime Reporter & Engineering News asked CEO Roland Ollek how a medium-sized German company has managed it to become part of numerous prestigious shipping projects.

KVM: A New Tech for the Shipping Industry? Please explain.

KVM stands for Keyboard, Video and Mouse and refers to computer ports. KVM products are connected to these – and other – ports from where they extend or switch computer signals. Therefore, KVM is a group designation of a technology, but not a specific brand or company. Over the years, more signals have been added to the transmission range and KVM was enhanced by various management and monitoring functions. The three main product groups are KVM extenders (extending of computer signals), KVM switches (switching of KVM signals) and KVM matrix switches (extending and switching of computer signals).

Why is this technology required on vessels?

KVM is a niche technology within the IT industry and requires much explanation. Let me give you an example to show you how it works: the crew on board a ship monitors multiple processes 24/7. But neither the bridge nor the technical control room provides enough space for sensitive yet noisy, heat-emitting computer equipment. Thanks to KVM, computers can be removed into separate, access-secured server rooms. Robust KVM extender systems bridge the distance between computers and users on the bridge or in the control room. The crew has access to the remote computers in real-time without noticing any latency or loss in quality – without any additional software and independently from any network. But not only users benefit from their connection to the KVM system.

Updates and maintenance work can be carried out directly in the server room without distracting the technical crew from their work. And on top of it, a protected, air-conditioned environment ensures a long life for every product. Installing the equipment in on-shore control rooms work just the same. Our KVM solutions are deployed across all shipping sectors, wherever safety and control matter. Fitting-out general cargo ships or luxury cruise liners and super yachts makes no exception, because KVM is equally important as in any other control room or safety relevant environment.

Additionally it is possible to display any kind of passenger information in real time anywhere aboard the vessel via latency free video extenders. KVM solutions are mainly deployed in wheelhouses, engine control rooms and safety command centers as well as in production and entertainment areas. The heart of the vessel is the wheelhouse, where the captain and his crew need to work fully concentrated in a noise free environment. All relevant information has to be made accessible at any time, unhampered by maintenance work or weather conditions.

Removing all computers into an air-conditioned server room frees up space and reduces heat and noise level at the same time. And not to forget: The computers are safely stored away and protected from unauthorized access. Our solutions unite a lot of knowledge and, ultimately, our customers know that when buying our solutions they buy from the KVM experts. The great feeling of security may be one of our most captivating USP. And security is the most important aspect at sea.

Left:
G&D CEO Roland Ollek: "In the shipping industry KVM equipment can be applied in the most versatile ways."

Top:
The latest Meyer Shipyard delivery, MV Quantum of the Seas, features G&D KVM products.

Right:
Server room of a VanOord dredger: Extremely robust and durable G&D products for special applications fulfill all technical requirements.

Tell us a bit about your company.

We focus all of our energy on our only location in Wilnsdorf, Germany. We try to keep hierarchies as flat as possible. Our employees talk to their team leaders who then talk to the CEOs. Our entire workforce is united under one roof. This has the advantage of being able to keep lines short and flexible; an aspect from which our customers benefit immensely. Currently, about 100 employees contribute to our success.

Fortunately we need to think about how to divide our employees to individual tasks and assignments than vice versa. All our employees have enough work throughout the next years. The exact number of turnover, however, remains an intimate detail we don't want to make public.

(Ollek smiles when he speaks about global market share/export share) Well, as you know, we'd like to keep these data to ourselves. But let me try to explain it in this way: Until 2008, G&D was active almost exclusively in German-speaking and nearby European countries. Since then we've been selling our equipment in many more countries. Now you can find G&D hardware anywhere from Canadian icebreakers to cruise ships in the Mediterranean Sea. Just recently we finished an order by installing our KVM solutions in one of the latest and most modern large cruise ships, the MV Quantum of the Seas.

This first ship of the Quantum class sets new standards in terms of eco-friendliness. It features highly energy-efficient systems, optimized hydrodynamics, heat recovery, an effective underwater paint coating, a state-of-the-art exhaust gas treatment plant (hybrid scrubber) as well as energy-saving LED lighting systems. Sophisticated alarm, safety and communication systems combined with the latest technology in propulsion and navigation is typical for Royal Caribbean cruise ships. The same high standard applies to entertainment and interiors. And G&D KVM is part of it. But not to forget: we had to make sure that our products have been tested and certified according IEC 60945.

IEC 60945?

G&D carefully selected specific products of their portfolio to have them tested according to specification IEC 60945, a particular specification for maritime navigation equipment. Complying with this norm, G&D KVM products are ready to be applied in engine rooms, technology rooms and on ship bridges, IEC 60945 approved G&D KVM solutions qualify for usage alongside navigation and radio communication equipment. The specification includes numerous tests regarding the environment (heat, cold, vibration), security and electromagnetic compatibility (EMC) and meets international standards.

And, in closing this interview, can you share with our readers your wishes for the future?

A stable economic environment, since stability provides the opportunity for future-oriented growth for investing in people and technology.

And I would wish for experienced KVM experts to fall from the sky, because, as you can imagine, finding people who are familiar with such a special technology is not easy.

RCCL Plans to Scrub Emissions into Shape

As new emission standards enter force across the commercial maritime sector, Royal Caribbean has opted to outfit 19 of its ships with scrubbers from two manufacturers. This month we visit with Harri Kulovaara, EVP, Maritime, and Kevin Douglas, VP, Technical Projects/Newbuilds, Royal Caribbean Cruises Ltd., to discuss the reasoning behind the decision.

Photo: Royal Caribbean Cruises Ltd.

AEP inside the stack of a Royal Caribbean Ship.

Make no mistake, the prospect of refitting a modern cruise ship with an advanced emissions purification (AEP) systems, more commonly referred to as a 'scrubber,' is not an easy or quick decision.

Royal Caribbean Cruises announced in late 2014 that it would opt to install scrubbers on 19 of of cruise ships, finalizing a plan that will be, in the words of Harri Kulovaara, "is one of the most complex technical projects that we have ever started."

Keeping in mind that Kulovaara is the long-tenured head of RCCL's new construction program adds perspective to that simple sentence. As most everyone knows, cruise ships have evolved mightily since the industry was born in the early 1970s, and there is little to no space wasted aboard a modern cruise ship, which is literally packed with entertaining amenities and revenue generating spaces. Thus when Kulovarra says that to accomodate the AEP systems – which roughly are the size of a school bus and add substantial weight to the ship – that his team must carve out the space and move equipment, all the while doing as much work as possible while the ship is in service and producing revenue, the complexity of the job starts to take shape.

"Just the amount of water that we need for the system, for example, is enor-

Photo: Royal Caribbean Cruises Ltd.

"Managment must focus on the complexity in relationship (of the new scrubber) to the whole ship. Our mantra is 'we want to get it right the first time.'"

Kevin Douglas, VP, Technical Projects/Newbuilds

"In my mind, this is one of the most complex technical projects that we have ever started."

Harri Kulovaara, EVP, Maritime

Photo: Royal Caribbean Cruises Ltd.

mous," Kulovaara said. "We need to build new water inlets."

While the engineered solution is monumental, the company figured it was a better option than switching to a higher grade of fuel, as the AEP system ensures that the company's ships can travel where they want, when they want, not restricted to high grade fuel availability

RCL contracted two different AEP technology suppliers, Alfa Laval and Wärtsilä, as well as companies to execute the installations, which will start this year and conclude in 2017.

"There is no question that the overall managment must focus on the complexity in relationship (of the new scrubber) to the whole ship," said Kevin Douglas, VP, Technical Projects and Newbuilds. "Our mantra is 'we want to get it right the first time.' So we go through all of the processes that say 'does the tech work, can we install it, can we operate it?"

The refit of the system, which will take approximately eight months per ship, is magnified by the fact that there are several different size and style of ships, operating in various parts of the world, not always in proximity to a shipyard.

"It makes financial sense to develop and install these systems," said Douglas, stressing that "We are not losing cabins, which was a key criteria."

Each ship presents a unique engineering conundrum, as the newer, bigger ships have much more weight and stability, offering a wider choice of placement for the AEP systems including higher up in the ship.

Older, smaller ships present more of a challenge, which Roya Caribbean is confident will be managable.

Kulovaara and Douglas stressed that while the challenge to install the scrubbers is great, it can rely on its well-established and long-tenured connections in the cruise shipping fraternity to lean on for assistance.

As the focus on emissions continues, Kulovaara said that overall energy efficiency of the fleet and its carbon footprint will continue to be driving forces in the ultimate design and outfit of its ships.

"We would love to build all of our ships to be fueled by Liquified Natural Gas (LNG). That would be a very good technical solution. The problem is we don't have the gas available in the areas where we are sailing." *– G. Trauthwein*

USS America

LHA 6 with an Aviation Focus

By Peter Ong

The U.S. Navy's newest Amphibious Assault Ship, USS America (LHA 6) was commissioned on October 11, 2014 at Pier 30-32 in San Francisco. First in its class, the USS America does not have a well deck, unlike her previous counterparts, thus making the USS America an LHA with an aviation focus. The removal of the well deck allows USS America to have larger hangar facilities and more capacity for aviation fuel and munitions. The U.S. Navy points out that, "In lieu of a well deck, the LHA 6 hangar bay was enlarged and numerous aviation-related work spaces and shops were incorporated." She has two aircraft elevators, one each on the port and starboard side behind the superstructure, and her two twin smokestack funnels are angled away to starboard from the flight deck.

USS America is the fourth U.S. Navy ship to bear the name, and the first America-class Amphibious Assault Ship. With a displacement of approximately 45,000 tons fully-combat loaded, a length of 844 ft., a beam of 106 ft., and a draft of 26 ft., the USS America can sail in excess of 20 knots via two marine gas diesel turbines generating 70,000 total bhp. The ship cost about $3 billion dollars and was launched on June 4, 2012. The USS America sailed around South America on her maiden voyage after her launch from Pascagoula, Mississippi with stops in Guantanamo Bay, Cuba, Brazil, Chile, Peru, and Columbia before arriving at her homeport in San Diego, California on September 15, 2014. USS America's sailors and Marines conducted joint-training programs with these South American allies. Her role is to act as flagship for Marine Expeditionary Units and will be capable of supporting the V-22 tilt-rotor Ospreys and CH-53E "Sea Stallions" to transport them ashore. Aviation firepower will be provided by AH-1Z "Super Cobra" and MH-60R "Sea Knight" helicopters, and

AV-8B Harrier jump jets or F-35B Short takeoff and vertical landing (STOVL) stealth fighter-bombers. UH-IY helicopters provide aerial Command and Control. According to NAVSEA, "LHA 6 carries various mixes of aircraft (airplanes and helicopters), with the concept of operations dictating the specific aircraft amounts [carried]."

Depending on the mission, the aircraft complement could be arranged to carry 20 F-35B STOVL fighter-bombers and two MH-60Ss, in essence turning this Amphibious Assault Ship into a small aircraft carrier. Like previous amphibious assault ships, the LHA 6 does not have a skijump at the bow so Harriers and F-35Bs line up at the stern and travel the length of the ship to take off. Her flight deck is constructed of HY100-strength steel, the same high-hardness steel used to build the hull of U.S. Navy nuclear submarines. The deck has been designed to stand up to the high heat of the V-22 Ospreys and F-35Bs' downward facing exhaust nozzles.

The America-class can accommodate 65 officers and 994 enlisted personnel and can carry 1,687 Marines. Since the America does not have a well deck, only those Marine vehicles that could be air-transported via CH-53Es and V-22s are carried. Those air-transportable Marine vehicles include High Mobility Multipurpose Wheeled Vehicles (HMMWVs) and Light Armored Vehicles slung-loaded under a CH-53E, and the M1161 and M1163 "Growler" Interim Tactical vehicles and the Expeditionary Fire Support System (120mm mortar) carried internally by V-22 aircraft. U.S. Navy SEALs can be inserted via the MH-60S. Marine Corps vehicles that are unable to be offloaded by aircraft aboard USS America include the M1A1 Abrams Main Battle Tanks, AAV7 Amphibious Assault Vehicles, M88 Recovery Vehicles, M1 Assault Breacher Vehicles, Medium Tactical Vehicle Replacement trucks and the M777 lightweight towed howitzers, Mine Resistant Ambush Protected Vehicles (MRAP), MRAP All-Terrain Vehicles (M-ATV), and High Mobility Artillery Rocket Systems (HIMARS). These heavy vehicles will not be carried aboard the USS America. The second America-class ship, the USS Tripoli (LHA 7), is under construction and will be a nearly identical copy of the USS America. LHAs following the Tripoli will have a well-deck built in to allow the transport of all Marine armor and vehicles.

The USS America is armed with two 21-cell Rolling Airframe Missile (RAM) anti-missile launchers (6 kilometer range), two eight-cell Sea Sparrow Missile launchers firing the Evolved Sea Sparrow Missile (ESSM) (50+ kilometer range), and two 20mm Phalanx Close-in Weapons Systems (CIWS) with radar and Forward Looking Infrared sensors (1,490 meter range). One RAM and one ESSM launcher is located forward of the bridge while a CIWS is positioned over the bridge for forward coverage. The other RAM is located on the starboard stern corner with the ESSM in the middle of the stern and the remaining CIWS on the port corner of the stern. Seven twin .50cal heavy machine guns line the port and starboard sides for close-in defense against small surface threats. USS America also carries an electronic warfare sensor suite and anti-missile decoy launchers for self-protection.

Austal Delivers

for Militaries ... Near & Far

While Austal USA based in Mobile, Alabama, still accounts for the lion's share of revenue (more than 80%) of the Australian based company, the entire corporation has been making waves of late delivering latest technology to naval fleets around the globe.

Austal USA christened USNS Trenton (JHSV 5) at its shipyard in Mobile, Ala. USNS Trenton is the fifth of 10 Joint High Speed Vessels (JHSV) that Austal has under contract with the U.S. Navy as part of an overall 10-ship block-buy contract worth over $1.6 billion. The 338-ft. catamaran was named Trenton by Secretary of the Navy Ray Mabus, after the capital of the state of New Jersey and the site of George Washington's first military victory during the American Revolutionary War. Trenton will join the four other JHSVs including USNS Spearhead (JHSV 1) which recently left on her second deployment since she was delivered in 2012.

The ship's sponsor, Virginia A. Kamsky, is the Chairman and CEO of Kamsky Associates, Inc. (KAI), a strategic advisory firm with offices in Beijing and New York City. Three JHSVs and six Littoral Combat Ships (LCS) are currently under construction in Austal's Mobile, Alabama shipyard. Austal will launch one ship and send JHSV 5, out on Builder's Sea Trials in the Gulf before the end of January.

Keels Laid for Oman's Naval Ships

Austal Australia completed the keel laying for two 72-m High Speed Support Vessels (HSSVs) for the Royal Navy of Oman. Austal won a $124.9m contract for the design, construction and integrated logistics support of two HSSVs in March 2014, and the vessels are being designed and built at Austal's Australian Shipyard. Both ships are expected to be delivered in late 2016.

Sixth Cape Class Patrol Boat

Austal launched the sixth in-series Cape Class Patrol Boat (CCPB) at its Australian Defense Facility in Henderson, Western Australia. The launch of Cape Leveque marks the third year in a row a CCPB has been launched in the first week of January; preceded by Cape St George (CCPB01) in 2013 and Cape Byron (CCPB02) in 2014.

Cape Leveque is the sixth of eight 58-m patrol boats that are being delivered to the Australian Customs and Border Protection Service (ACBPS) by Austal as Prime Contractor under a design, build and in-service sustainment contract, valued at approximately $330 million. Austal is also contracted to develop and integrate sophisticated electronic systems for command, control and communication. With the vessel in the water, Austal is on target to achieve full vessel completion and sea trials prior to an official naming ceremony and final delivery to ACBPS in mid 2015. Meanwhile the remaining three Cape Class vessels are at various stages of construction and will be delivered progressively through to end of 2015. Cape Leveque is a state-of-the-art maritime defense capability that will play a significant role in protecting Australia's borders from multiple maritime threats. It has been designed to have greater range, endurance and flexibility than the current fleet of Customs and Border Protection vessels as well as the Royal Australian Navy Patrol Boat fleet.

The Cape Class Patrol Boats will be designed to undertake 28-day patrols; sail 4,000 nm before having to refuel.

(Photo: Austal)

Pictures are ...

Top: Virginia A Kamsky (Sponsor) breaks the traditional bottle of champagne to christen USNS Trenton (JHSV 5), the first of several Navy vessels to be christened at Austal USA in 2015.

Middle: Cape Class Patrol Boat - Cape Leveque being launched

Below: Bernard Gorman, Supervisor, Austal, applying the classification society stamp on a 72- High Speed Support Vessel for Oman's Navy.

Answering the Call

By Alan Johnstone

There's a digital disconnect offshore. The communication standards we take for granted on land are cut adrift at sea; hampering data transfer for businesses, while severing individuals' lifelines to social media networks. What's to 'like' about that? ***Frode Støldal****, CEO of MCP, has had enough.*

"We think it's time for a new mobile communications reality," says a steely eyed Frode Støldal from his seat at the Offshore Technology Days conference in Bergen, Norway. "The offshore community suffers, on both an industry-wide and personal level, by having limited access to the modern standards of connectivity that we all take for granted on land. The result is business processes that don't enjoy the levels of efficiency, speed and accuracy they could with higher performance data connections, and crews that don't 'feel at home' when they're at sea. This impacts upon satisfaction and retention levels.

"We can change that," he argues, slowing his pace to emphasize every word as he adds: "good communication unlocks potential." …And Støldal, it seems from his meeting with *Maritime Reporter*, believes his firm has the key.

Faster, further, first

Maritime Communication Partner (MCP) is currently known for its mobile services and solutions in the cruise and ferry segments, where the business, headquartered in Norway with an additional office in Fort Lauderdale, Fla., has a 12-year track record of 'at sea' expertise under its belt. Owned by Norwegian telecoms giant Telenor, MCP operates a proprietary mobile network – CellAtSea – that last year connected some 16 million users, enabled by a collection of over 330 international roaming agreements. It's established, financially strong and hungry for fresh opportunities. Offshore, it appears, is now the main item on the menu. MCP's plan is simple, yet technologically challenging. It aims to roll out LTE base stations in the North Sea, creating a 4G network across the entire Norwegian Continental Shelf (NCS) – the first offshore network of this kind, on this scale, anywhere.

In theory this will connect all operating vessels, platforms and rigs on the NCS to high-speed, reliable 4G mobile services. Offshore crews, workers and businesses will, for the first time, be able to enjoy levels of connectivity directly comparable to those on land.

"MCP and Telenor see offshore as a real 'greenfield' opportunity," Støldal explains, using telecoms terminology for a completely new development market – something that, in an increasingly connected world, is a rarity. "I've been involved in the roll out of 4G on land in Norway (he was formerly Telenor Norway CTO) and the speed and capacity of the networks is revolutionary. 4G enables and enhances innovation, and the offshore community, the eco-system that serves it, and all additional maritime

Talking MCP
Frode Støldal

- Established in 2002
- Owned by Telenor, a major global mobile operator (with 176 million subscriptions)
- Building offshore proposition but already well-established in cruise and ferry segments, providing services to over 170 vessels and maritime assets across the world
- Currently has 16 GSM (2G) installations in the North Sea
- MCP's CellAtSea network recorded 16 million users in 2013
- In the same year data traffic over the network grew by 105%, while the business grew 39%
- Headquarters in Arendal, Norway, additional office in Fort Lauderdale, Florida

MCP aims to revolutionize communications in the offshore sector.

traffic will benefit hugely from that.

"Of course it's ambitious, and a substantial investment in spectrums and infrastructure," he concedes, "but the market demand is definitely there."

Platforms for success?

The scale of those ambitions is seen in the network infrastructure required.

To deliver Støldal's "new mobile communications reality" MCP must install a latticework of 4G base stations and control systems across the entire territory, situating the technology on existing offshore infrastructure, such as oil and gas platforms. This will facilitate high capacity networks (which can be closed/internal for companies transferring business critical information) close to installations and activity hubs, while quality, real-time broadband services can be pushed further to the very remotest parts of operating fields.

"This isn't a completely new proposition for us though," the MCP chief is quick to impart, stating that the firm already operates a GSM (2G) service on the NCS, connecting offshore vessels for firms such as Subsea7, Gulf Offshore and DeepOcean.

But GSM isn't 4G. Surely that incurs new agreements, new technology and a new installation strategy?

"Yes," Støldal admits, "there will be a greater need for new infrastructure, but that's already started moving."

Originally, he explains, MCP had planned to begin LTE roll out in 2015. However, the industry appeal of the service has fast-tracked initial agreements, with the first 4G base station being installed – potentially as you read this – on Shell's Draugen platform, 150 km off the coast of Kristiansund. All work there should be finalised before the end of 2014.

"They (the owners) see the benefits," Støldal opines, "and that openness, that appreciation of the potential here, will help us as we build the network."

But are those benefits worth the costs?

Readers will be able to appreciate that modern business processes and technology will perform better with better channels of data exchange – working together across secure, reliable networks for improved efficiencies and understanding. Similarly, everyone can relate to enhanced personal quality of life through better connectivity, especially if you're reading this online.

However, the words 'mobile at sea' have the ability to strike fear into any cost conscious service consumer. Prices often have a reputation for being on the vertigo-inducing side of high. So, will this service be any different?

Støldal smiles. It's too early, he intimates, to give away exact details of the pricing structure, but it will be in keeping with standard Telenor mobile roaming costs, which, he says, are "very competitive" (Telenor's website shows packages such as Feriesurf EU, which allows 40mb of data a day for $4.38).

"If you compare it to the cost of using satellite services," he continues, "which is the current standard, it's a significant price reduction… just a fraction of the cost.

That will enable companies to rely more on communication, data transfer etc., meaning, for example, they could carry out tasks onshore in the future that have to be done offshore today. There's huge efficiencies there. "I think customers will see the value in that, don't you?"

New frontiers

On the subject of rolling out 4G beyond the NCS, Støldal is equally enthusiastic, yet coy. "If you look at our position in cruise and ferry we're a global business," he states, "and of course we'd like to emulate that in the offshore market. And I think we can. But this is the first project of its kind and we're going to take it step by step to ensure everything is in place and the service is of the optimal quality. "After that," he said, "well, we'll see…"

There'll be plenty of vessel and rig crews globally that should 'like' the sound of that.

Broadband Bandwidth Battles

As Satellite providers battle for market share, the onboard struggle to efficiently maximize bandwidth allocation is also being solved.

The requirement to monitoring critical equipment and at the same time satisfy the increasingly sophisticated demands of today's seafarers all need to be balanced against the cost of bandwidth. The call for both 'big data' and the full range of crew connectivity and entertainment is upon the shipping industry. SatCom providers have responded in a big way, but the myriad choices available to shipowners and operators can be confusing, complicated and needlessly expensive.

Arguably, the biggest problem with selecting a maritime communications provider in today's market is that no two providers do business in the same way. Some own the satellites and sell packages or bandwidth, some rent the bandwidth and sell hardware, some use a network of contract service and sales providers and still others do it all.

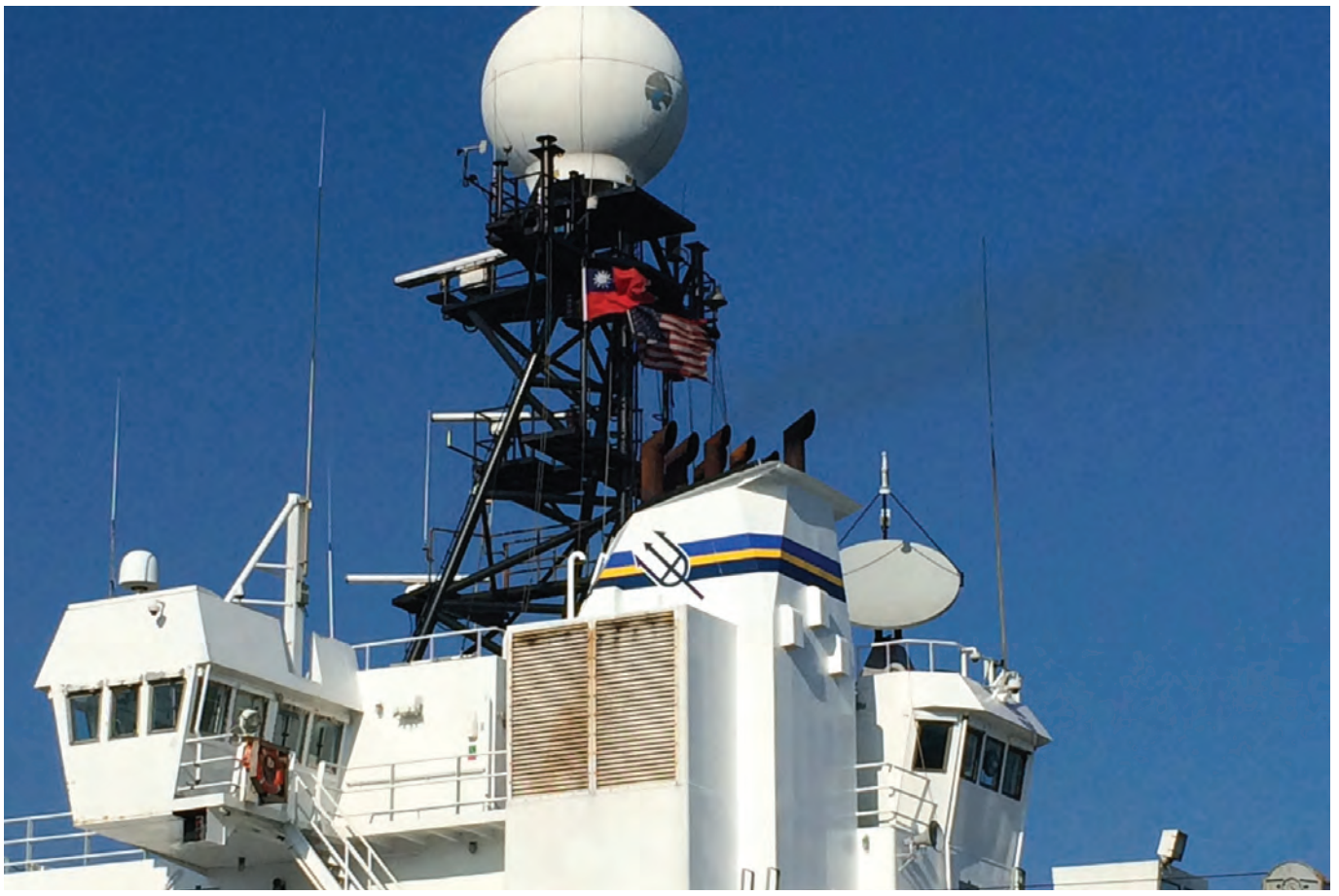
The new wrinkle in the process is the differences in which some send and receive data and information. Even as the advent of the Maritime Labor Convention (MLC) sends operators scrambling to find ways to keep their best people on their vessels, at the same time, performance and efficiency efforts have placed greater demand on the ability to move critical data quickly and cheaply between ship and shore. The marketplace says it can be done. *Maritime Reporter & Engineering News*, with the help of industry insiders, explains how.

Maritime Broadband's Triple Play

Although Maritime Broadband isn't the biggest or best known maritime communications provider, the engineering company's VSAT communication systems for maritime use are quickly getting noticed in a market sector that tends to gravitate towards more familiar names that have been around a lot longer. The New York-based company's flagship product, the C-Bird antenna, represents years of research and development in partnership with shipowners, says Maritime Broadband CEO Mary Ellen Kramer.

"Maritime Broadband has only been in business since 2008. Really, in truth, we're nowhere near the top of the market share list. We've spent the majority of our time developing our solution and honing it. Our solution is a combination – you might call it a triple play, in essence – and we're providing the hardware as well, so it is a turnkey package with a proprietary C Band antenna called C-bird. This comes with an internet subscription that can be taken at various levels of committed information rate." The way that all of that is packaged – and the price point that it comes at – is, according to Kramer, what sets her firm apart.

As the task of providing crew entertainment and connectivity becomes a necessary line item cost in an increasingly competitive market for quality seafarers, the cost and logistics of delivering that data to the vessel has shipowners worried. Maritime Broadband addresses the quandary with its own menu of high quality broadcast television that includes, for example, such channels as CNN or MSNBC, and a 24-hour sports channel. What's different from other providers is that the entertainment system comes in through the same antenna, but uses separate, high quality multi-cast bandwidth. In this case, subscriptions for the internet remain separate.



Separating Business & Pleasure

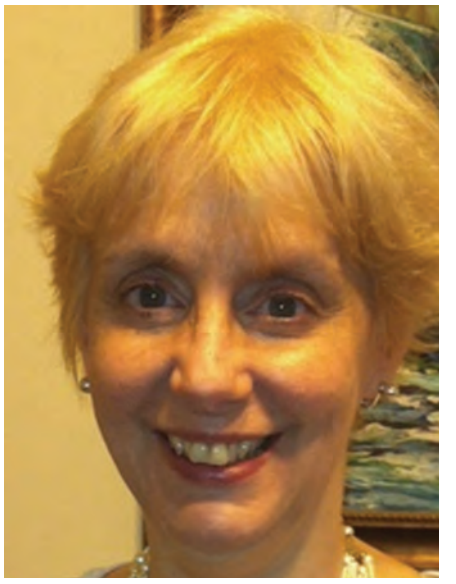
Maritime Broadband uses the same satellite provider (MTN) that provides multi-cast television to cruise ships. Kramer explains, "This is all broadcast television, meaning that it is live, so we're not using IP bandwidth for the television. It's high quality video that's being sent to all subscribing ships via MTN's network. It is simply a matter of whether the customer is a subscriber or not and we can turn it on, if so. One bandwidth is for internet traffic only and the other for broadcast television. It's the same antenna. That's a beautiful thing because the customer does not have to purchase a 'receive only' television antenna. Data and broadcast TV are coming through the same device using separate bandwidth."

Each company has to make the decision of how to set up its business and to find out where their competitive edge lies. For Maritime Broadband, the competitive edge lies in the antenna itself. According to Kramer, companies can enjoy true global coverage using an affordable C-Band option for commercial ships from 70°N to 70°S, with unlimited data. According to Kramer, companies can enjoy true global coverage using an affordable C-Band option for commercial ships from 70°N to 70°S, with unlimited data. "That's a magical combination for ships. There are a number of frequency bands in our maritime world and the most well known service is provided on L-band. Also a 70-to-70 model,

Maritime Broadband

"Maritime Broadband has only been in business since 2008. Really, in truth, we're nowhere near the top of the market share list. **Our solution is a combination – you might call it a triple play, in essence – and we're providing the hardware as well,** so it is a turnkey package with a proprietary C Band antenna called C-bird."

Mary Ellen Kramer, CEO, Maritime Broadband



it involves pay-by-use with subscription limitations. Ku band is the most frequently used bandwidth for maritime companies that want and need more bandwidth, but it's only got a footprint that covers for the most part, the northern hemisphere."

Kramer says that C Band has long been the choice of cruise ships, ferries, oil and gas, the military because it is reliable and not subject to 'rain fade.' She adds, "C-Band is hardy band and is used for many mission-critical applications. We've gone and made it available for commercial shipping with our proprietary antenna." Beyond that, she points to pricing. "Many customers will be faced with paying over $1,100 per month for 250mb per month of data come January 1. Amortizing our equipment over 36 months, plus our lowest-speed service with unlimited data, customers will pay $1,400 per month. We think it is a matter of industry education. Once people know what we can provide and at what price, it becomes a no-brainer."

Ship's personnel can assemble c-bird during a regular port call in just four hours using tools already on board. Kramer explains further, "The beauty of it is that our equipment gets installed by the crew in a regular port call – they don't have to pull down the other antenna, they just put ours up alongside it. In the rare occasions that our C-Bird might not be available, the customer may always revert to their L-band option."

Pricing for the entertainment package is separate, on top of existing service and would be $100 per month for the news station, going up to $500 monthly for 24/7 news and sports. And Kramer says, "The ship's business and crew internet, are on separate networks. Priority first is to voice, then official business of the vessel, and the balance – whatever was not being used – would be allocated for the crew. The crew has an account that they log into."

Maritime Broadband's C-bird

We asked the Maritime Broadband

"That's the difference between our service and others – we're sending a lot of live content continuously. So, in times when you are not in peak demand for your bandwidth, you have a lot of capacity available on your satellite network ... The MLC – making the crew happy part – it doesn't interfere with ship's business."

Jim Dodez, KVH SVP Marketing and Strategic Planning

CEO if it wouldn't make more sense to go with another service for everything else and Maritime Broadband only for entertainment. Kramer responds, "It wouldn't make sense to go for one, without the triple play." Kramer clearly hopes she can grow the firm's innovative antenna and pricing plans into a bigger market. Today, Maritime Broadband, she says, enjoys its biggest penetration in both the Baltic tanker and global bulk markets. To that end she says, "There is a lot of consolidation in our industry – we'll see where it shakes out. In any case, we are providing value here because the tramp nature of these markets makes global coverage critical, especially for the bulk market. We have no idea where our ships are going next and sometimes, neither do they."

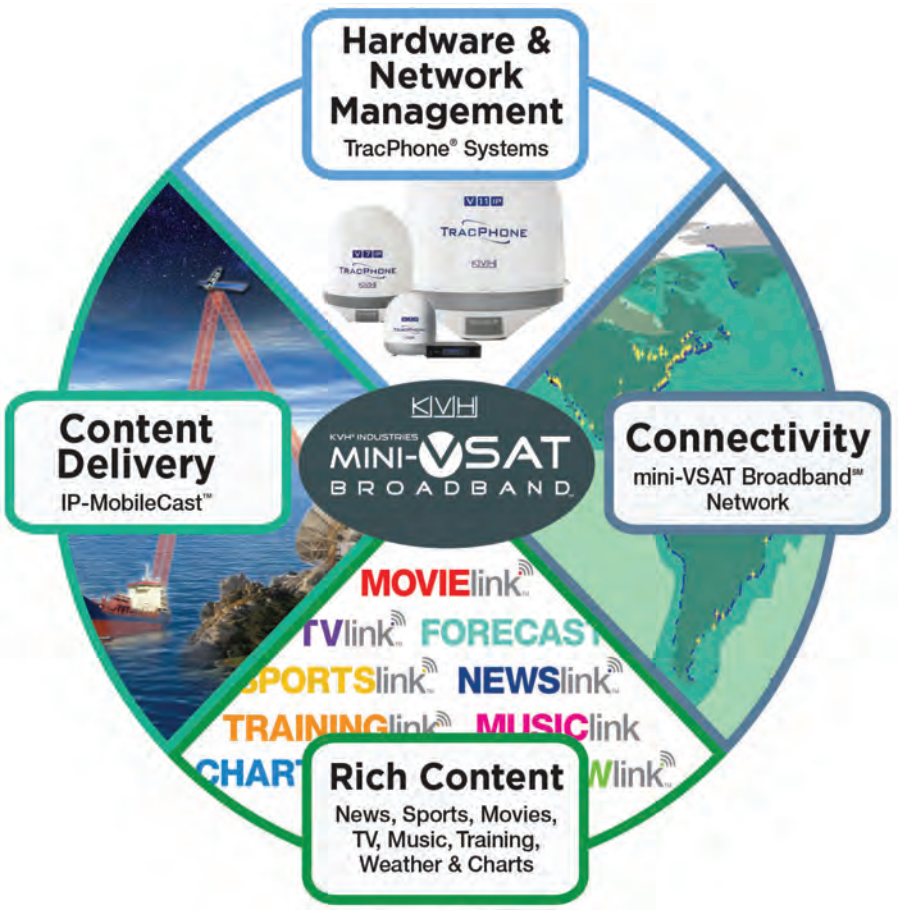
KVH & IP-MobileCast

The news that KVH Industries was increasing capacity on key South American beams probably came as no surprise to industry analysts, who have watched the firm's market share increase to more than 4,000 units in the field on its mini VSAT network. In fact, KVH's mini-VSAT Broadband network is the dominant player in the global maritime VSAT market, with twice the market share of its closest competitor, according to a 2014 industry report by Euroconsult. Nevertheless, KVH and its SVP Marketing and Strategic Planning, Jim Dodez, are hardly satisfied with sitting back on their laurels.

The new KVH IP-MobileCast is the latest and most visible product of that effort. Intended for both entertainment and operations, the service is predictably making its biggest splash on the crew's side of the ledger. At the heart of it is KVH's ability to deliver fast broadband service, with Internet download speeds up to 4 Mbps. And, through the use of what Dodez calls 'multicasting,' high quality licensed content is being moved over a broadband pipe – inexpensively and quickly.

Dodez explains the concept, saying, "We've done a phenomenal amount of work since we first came up with this concept. The actual concept of multicasting content to our customer base has been around since the beginning of our mini VSAT broadband network. But we had to set it up correctly – get the global coverage and technology in place. This involved moving it from the content owner to our hubs, encoding it and setting up multicasting technology in a way that ensures the exact file gets to vessel, because if just digital rights file is incorrect, it won't work correctly. And then, we put the whole thing together into a user interface so that a crewmember can look at it with an iPad or similar device."

Along the way, KVH made two key acquisitions. First, Headland Media, which is now the UK-based KVH Media group, specializes in obtaining commercially licensed content – which it has to be on board commercial vessels. Dodez adds, "MLC and port state inspectors are going to be checking for these kinds of things." The second acquisition was Videotel, a provider of on board training solutions. That's because, according to Dodez, training will be an important part of its package. "Yes, you want to entertain them, you want to provide connectivity, provide communications. But, also provide training resources that they need."



Left: Diagram showing the available options in the new KVH content delivery service.

Top: Crew watching a coccer game.

Middle: The Tracphone VIP series.

MultiCasting in Action

Instead of sending one movie individually, KVH sends one movie to everyone within the satellite footprint at the same time. The old way might entail a request for a movie that takes up as much as 6gb of data. Sending that file a dozen times, says Dodez, is incredibly inefficient. He adds, "You can imagine 100 fleets multiplied by 20 people, and what that would entail in terms of bandwidth. So, we send that 6gb file once to all vessels. They all receive it and it is stored on the media server."

Only those vessels subscribing to the service will be able to unlock the digital rights however. The same applies to e-Charts and training materials. The server knows which data is relevant to the vessel, and discards the rest.

The broadcasts are sent continuously – sending, according to Dodez, as much

as two terabytes per month. Beyond this, he says, "That's the difference between our service and others – we're sending a lot of live content continuously. So, in times when you are not in peak demand for your bandwidth, you have a lot of capacity available on your satellite network. We send data all the time when our network is under-utilized and we prioritize it so we're not competing with the connectivity, but we have a huge amount of capacity that we're able to deliver content on. The MLC – making the crew happy part – it doesn't interfere with ship's business."

It's not all fun and games at KVH, however. Agreements with Transas and Jeppesen for the delivery of electronic charts and AWT for weather and advanced voyage planning round out the high speed, data rich KVH menu. "We're trying to meet the operations and crew morale needs of the vessel. We have some clever technology that allows us to efficiently deliver large amounts of content."

Not surprisingly, KVH will retain the Videotel brand. With a user base of about 11,000 customers, Dodez thinks that KVH will take them to the next step, delivering their content efficiently via multicasting.

Cost: The Bottom Line

The Multicasting entertainment service is sold in three packages, starting at $300 per month. Dodez insists, "The beauty of it is that you take a tremendous strain off your communication solution. And when the crew is using this content, they're not going out on the internet and trying to get it somewhere else.

Operators can look at how much is actually being used and cut back if they need to. And, they can customize their services to the point where they actually might be paying less than they were in the first places without the entertainment content."

At KVH, There are two ways to go: those operators already having connectivity for operations might go with the KVH multicasting solution for the crew to separate and relieve pressure off the operational networks. But, as operators begin to cut back on crew access because of the impact that it has of ship's business, a standalone KVH entertainment solution may just be the ticket. On the other hand, signing up for the total solution will do the exact same thing. That's because, says Dodez, "We never tax the system with the content. So far, most of our entertainment customers are existing customers who use our standard offerings. We're doing very well in the offshore markets."

Divide & Conquer

Both KVH and Maritime Broadband have set out to provide MLC pleasing content for crews, in an efficient and economical fashion, but without impinging on the core business of the ship. Both bring a new twist to a market which is rapidly evolving from one which originally provided simple voice communications for ship's business, into one which can facilitate training, address crew moral issues and have plenty of bandwidth left for ship's business and everything else.

Solving the on board broadband bandwidth problem therefore has become the challenge for users and providers alike. And, the race is on.

Finland Maritime Powerhouse

By Joseph R. Fonseca

Innovation, superior technology and competitiveness are the characteristics that have brought the Finnish maritime industry world repute. Its well-knit maritime cluster responsible for achieving a high level of production has propelled it into prominence in the global market. Extreme conditions during winter have set technological and quality demands on Finnish shipping which, in turn has contributed towards the emergence of a competitive maritime industry in Finland. The Finnish Maritime and Offshore Cluster (incl. Marine industries, shipping and port operations in private and public sectors) is one of the central industries in the Finnish technology industries. The strength of the Finnish maritime industry is based on close cooperation between businesses and research communities, leading to innovations in the field. Around 2,900 globally active companies exist in this Cluster employing nearly 48,000 persons in activities directly related to the maritime sector with the maritime industries alone employing 21,000 people. Today, Finland ranks among the most competitive economies in the world. The country is highly globalized and foreign trade forms an integral part of the business culture. Sixty percent of the total trade is with the European Union. The largest trade flow is with Eurasian countries including Russia, Sweden, Germany, the United Kingdom, Netherlands and China besides the United States of America.

Star Players

To a certain extent it can be considered as a manufacturing hub for high quality ships and other allied marine equipment. The maritime sector boasts of many global brands, products and companies. Based on a strong tradition in shipbuilding and production of marine engines, propulsion systems, specialized integrated solutions and port cranes all playing a pivotal role as a group of core companies responsible for generating these top-of-the-line products and services.

Spearheading the major Finnish-based global leaders are:

- **Wärtsilä Corporation**, offering lifecycle power solutions for the marine and energy markets;
- The **Wärtsilä Ship Power**, providing ship machinery, propulsion and maneuvering solutions worldwide;
- **Cargotec**, with its three production brands in Hiab, Kalmar and MacGregor; and
- **Konecranes** offering cargo lifting solutions for manufacturing and process industries and shipyards, ports and terminals.

Taking advantage of the well-established maritime and offshore cluster, International brands too set up manufacturing bases in Finland successfully integrating specific advantages and characteristics to add value to their products. Among those that have established a significant track record are:

- **STX Finland Oy**, Finland's largest shipbuilding group specializing in

cruise ships, and offshore units. (Recently, MEYER WERFT and the Finnish Government signed a share purchase agreement with the current owner STX Europe. With its 70% stake MEYER WERFT takes industrial leadership of the new company).

• **Arctech Helsinki Shipyard Inc.** owned by Russian United Shipbuilding Corporation (USC) started its operations on April 1, 2011 in Helsinki. It specializes in Arctic shipbuilding technology and other Arctic offshore and special vessels.

• British Rolls-Royce is a leading integrator of technologically complex, mission critical system for ships and offshore oil and gas, merchant and naval vessels. **Rolls-Royce Oy Ab's Rauma** site is one of the world's biggest production units of Azimuth thrusters used for offshore drilling rigs and supply vessels.

• **ABB Marine Systems**, leading producer of electric power and propulsion systems for ships. ABB Marine & Cranes unit develops and produces electricity and automation solutions for ships. Its main product is a true Finnish innovation: electrical Azipod propulsion system.

• **Technip Pori**, subsidiary of the French Technip, a world leader in project management, engineering and construction for the energy industry focuses on offshore construction and drilling rig projects installed all over the world.

The (Next) Boom in Offshore

The future and long-term prospects of offshore industry looks promising, despite the current low price per barrel. The offshore industry, which comprises of more than 150 active companies, experienced substantial growth in exports between 2010 and 2012, which decreased slightly in 2014 compared to the previous year. The total exports of the industry exceeded Euros 1.7 billion in 2014. Technology is the most important offshore industry segment in Finland accounting for over Euros 13 billion, around 70 % of the industry's revenue.

Major players include Wärtsilä, Rolls-Royce, ABB and Steerprop, specializing in propulsion, power and engine technologies. The industry employing around 5,000 persons is known for its high technological expertise and uncompromising quality in offshore as well.

Finnish Shipping

Finnish shipping business has changed over the years. Historically, there have been large Finnish shipping companies with liner traffic even outside of Finland, strongly supported by local industry (such as FÅA/Effoa, Finnlines). However, due to the inflexibility of labor unions, cost pressure and globalization, Finnish industry began to look elsewhere and has increasingly shifted to foreign suppliers. At the same time, shipowners have begun to flag out their vessels to save costs. As a consequence, the percentage of Finnish tonnage handling exports/imports has dropped from 49% in the 1970s to 29% in 2012.

Inland & Coastal Transport

Although gifted with a long coastline and extensive inland waterways, much of the domestic cargo in Finland continues to move by road and rail. The total length of the fairway network of approximately 16,000 km maintained by the Finnish Maritime Administration consists of coastal fairways of 8,200 km and inland waterways of 7,800 km. Efforts have been made to move more cargo through water transport but there has not been any perceptible change.

Bodies of water cover almost 10% of Finland and it is aptly called the Land of a Thousand Lakes.

There are approximately 190,000 lakes in Finland, which is more than those found in any other country. About 180,000 islands are scattered around Finland. Along the coast an estimated 95,000 islands form one of the world's most complex archipelagos which is also Europe's largest. This includes the self-governing province of the Åland Islands, which lie off the south-west coast of Finland.

The efficient and economical running of Finland's vital international transport demands a comprehensive and safe network of fairways.

The mission of the Finnish Maritime Administration is to build fairways so that they intermesh seamlessly with other modes of transport.

In addition to merchant shipping, fairways also serve other shipping services, such as island ferries, fishing and boating.

Denmark Promising Future

One of the world's leading seafaring nations, Denmark has maritime roots stretching back more than 1,000 years. While its history is strong, the Danish market has its collective eyes squarely on the future. In its quest for continued relevance, it seeks to continue delivering innovative technologies, as well as championing green shipping and offshore initiatives.

By Eric Haun

Denmark's maritime sector fosters engineering expertise within shipping and offshore industries, as well as maritime and technological services. The country's shippers, offshore operators and equipment manufacturers rank high among global leaders in terms of quality, competiveness and innovation. According to Danish Maritime, Denmark is home to approximately 1,000 maritime-related businesses, employing some 55,000 people.

Shipping

Shipping is the leader of all Danish industries. By value, Denmark transports roughly 10% of the world's trade and is among the largest operators in terms of total tonnage, earning Danish shipping companies approximately $21.6 billion per year. From small, family-owned businesses to huge international playmakers, the Danish shipping industry has seen considerable growth over the last 25 years, contributing a record-breaking $31 billion in 2013. According to figures from the Danish Shipowners' Association, the size of the Danish flagged merchant fleet in May 2014 was 629 vessels, a cumulative 14.7 million DWT. At the same point in time, the Danish newbuilding program counted 105 vessels on order, 4.7 million DWT.

Denmark's Key Shipping Players

A.P. Moller–Maersk Group - The A.P. Moller – Maersk Group performs in a wide range of business sectors, primarily relating to transportation and energy. Maersk is not only the world's largest containership operator, but through various subsidiaries is also involved in many other shipping-related activities, including ports and terminals, tankers, training, shipyards, offshore drilling, oil and gas, banking and retail.

The Danish are a proud seafaring nation, with global 'household names' including Maersk (below), Norden (top left) and TORM (above).

Photos (starting top left & going clockwise): Norden; TORM & Maersk Line

Shipping and logistics company DFDS was founded in 1866 through the merge of what was then Denmark's three largest shipping companies. Today, DFDS runs a range of shipping operations, from ferries to freight, containers and logistics. Shipping division DFDS Seaways operates 50 freight and passenger ships on the North Sea, Baltic Sea and the English Channel.

Founded in 1871, D/S Norden (Dampskibsselskabet Norden A/S), an operator of dry bulk and tanker ships, is one of Denmark's oldest internationally operating shipping companies. The company operates both owned and chartered tonnage, in total more than 200 vessels, excluding single trip chartered. In addition NORDEN has a newbuilding program with 30 vessels on order (26 dry cargo ships and four tankers).

TORM, presently in its 126th year, operates a fleet of tankers which carry refined oil products such as gasoline, jet fuel, naphtha and diesel oil, additionally operating dry bulk vessels mainly focused in the Panamax segment, primarily transporting grain, coal and iron ore.

Svitzer, now a Maersk subsidiary, has provided safety and support at sea since 1833. Now with 4,000 employees, a fleet of 430 vessels and operations worldwide, the company is a leader within towage, emergency response and salvage.

J. Lauritzen A/S transports dry cargo and gas products around the world through a fleet of more than 150 vessels including short-term charters. The company's business portfolio includes Lauritzen Bulkers (dry bulk cargoes) and Lauritzen Kosan (petrochemical and liquefied petroleum gases), as well as part-ownership of flotel service provider Axis Offshore Ltd. through a joint venture with HitecVision.

Nordic Tankers is a ship owning company operating one of the largest global specialized chemical tanker fleets in the segment below 25,000 dwt. The company operates by owning, chartering in, pooling and having chemical tankers on commercial management.

High Tech Equipment

Denmark is a trailblazer for energy-efficient shipbuilding, design, repair and retrofitting, and produces a variety of high-quality, innovative products, from engines, scrubbers and ballast water treatment systems to ship paint and coatings, navigation systems and safety equipment. Denmark is a hub for green shipping technology. Half of the world's scrubbers are produced in Denmark and one in three containers throughout the world is painted with Danish paint, according to Danish Maritime. Many leading companies devoted to ballast water treatment technology are located in Denmark.

As a global leader in environmental innovation, Denmark recently launched a research project called Blue INNOship, which aims to develop or enhance technologies which reduce emissions and particles from sulphur (Sox) nitrogen (NOx) and carbon dioxide (CO_2)through a focus on ship design and propeller solutions, performance and monitoring, alternative fuel solutions, emission reducing technologies and service/retrofitting.

Denamrk's foothold on the green technology front is one of its greatest strengths, helping the cluster maintain competitiveness in shipbuilding, repair and equipment manufacturing. It is challenged however, by lower production and labor costs elsewhere, mainly in Asia, but also other European nations. Ship repair, retrofit and conversion, markets where Denmark maintains a secure position, are industries in demand.

Offshore

Pioneering wind efforts and oil fields in the North Sea have helped Denmark maintain its role in activities relating to offshore energy. The world's first offshore wind park was established in Denmark in 1991, and today, Denmark relies on offshore wind for roughly 10 percent of its electricity production. At more than 130 vessels servicing offshore wind activities, the Danish-operated fleet is one of the world's largest. Denmark has seen an uptick in growth potential offshore as more wind farms, extended lifetime of oil and gas fields as well as increased demand for decommissioning services provide areas for major development in the Danish sector.

Denmark houses a range of shipping supply companies which specialize in developing business concepts that enhance key offshore processes, from maintenance and supply, to emergency work and transport of personnel, all of which stand to benefit from boosted offshore potential.

The country is also home to a number of shipyards dedicated to offshore oil, gas and wind.

UNIQUE BOATS

Fate of the Google Barge

Photo: Marcon International

After concluding two 3,500HP tug sales on December 30, Marcon International Inc. has started 2015 with three ocean barge sales, and hopes to report on several additional sales before the end of this month. Five 4,500-6,000HP tugs, one 5,150BHP AHTS and two 3,200 – 5,500dwt ocean barges continue to be fixed on previously arranged long-term charters.

The most recent transaction is the purchase by private U.S. West Coast Buyers of the former "Google barge JMC 262" (ex-BAL0001, CIB 721) from Cashman Equipment Corp.

The 260 x 72 x 16 ft. ocean deck barge was built in 2010 by C & C Marine & Repair of Belle Chasse, La., and best known as one of the four proposed four-story "mystery" barges owned by By and Large LLC, a company affiliated with Google. The barges were reportedly being outfitted as floating studios and temporary technology exhibit spaces providing an interactive experience where people could learn about the tech company's newest technology and products. After various questions arose regarding building permits and U.S. Coast Guard safety concerns, the project was put on hold and conversion halted.

The double-raked, ABS +A1 Ocean Deck barge can carry abt. 5,107 long tons on a 12.58-ft. draft and has a 9/16-in. plate deck with a uniform deck load of 5,000PSF. The ½-in. plate hull is divided by six transverse watertight, two longitudinal watertight and one centerline midbody non-watertight bulkheads forming 15 epoxy coated watertight compartments.

36m Crewboat for Brazil

Photos: Incat Crowther

Fast, capable crewboat design and construction continues to be a leading edge niche in the global marine market, with the latest manifestation being the BS Camburi, a 36-m monohull crewboat built in Brazil by Arpoador Engenharia to the Petrobras type P2 specification, for Brazil Supply. Incat Crowther designed the boat.

The vessel's aft main deck features a large open deck, separated for two main purposes. The aft portion, measuring 60.5 sq. m., is dedicated to a man-riding basket. The forward portion, measuring 28 sq. m., is dedicated to cargo, with large cargo rails offering heavy duty protection. The main deck passenger cabin houses 60 seats in a mixture of forward-facing and booth styles.

A bow loading platform is integrated into the design to facilitate passenger embarking and disembarking from offshore facilities. Served by a stair tower aft with direct access to all decks, BS Camburi's wheelhouse features forward and aft control stations. The vessel accommodates 10 crew in five cabins, alongside a galley, crew mess and bathrooms.

BS Camburi is powered via a trio of Caterpillar C32 main engines coupled to Doen DJ290 waterjets. The center engine drives a 600 cu. m./hour fire pump. On sea trials, BS Camburi achieved a top speed of 25 knots, and it has a fully loaded service speed of 17 knots.

BS Camburi Main Particulars

Length, o.a.	118.2 ft. (36 m)
Length Waterline	108.4 ft. (33 m)
Beam, o.a.	24.6 ft. (7.5 m)
Draft (hull)	4 ft. / 1.2 m
Depth	11/5 ft. (3.5 m)
Construction	Marine Grade Aluminium
Ship's Fuel Oil	3,963 gal.
Cargo Fuel Oil	7,925 gal.
Ship's Fresh Water	1,532 gal.
Cargo Fresh Water	7,925 gal.
Black Water	330 gal.
Grey Water	660 gal.
Passengers	60
Crew	10
Deck Area	28 sq. m.
Deck Load	50 t
Deck Strength	2.5 t/sq. m.
Speed (Service)	17 knots
Speed (Max)	25 knots
Main Engines	3 x Caterpillar C32 Diesels
Propulsion	3 x Doen DJ290 Waterjets
Flag	Brazil
Class / Survey	RINA

VT Halter Lays Keel for Crowley LNG ConRo

The keel for the first of two LNG-powered, combination container – Roll-On/Roll-Off (ConRo) ships for Crowley Maritime Corp.'s liner services group was laid during a ceremony at ship-builder VT Halter Marine, Inc.'s facility in Pascagoula, Miss. The keel laying ceremony marked the next step in the construction of Crowley's first Commitment Class ship, which will serve the U.S.-Puerto Rico trade lane, replacing the company's towed triple-deck barge fleet in the South Atlantic trade. The new Jones Act ships, to be named El Coquí (ko-kee) and Taino (tahy-noh), will be built at the Pascagoula facility, with deliveries scheduled for mid and late 2017, respectively. The ship design is provided by Wärtsilä Ship Design in conjunction with Crowley subsidiary Jensen Maritime. The ship will measure 219.5 x 32.3m wide with a draft of 10m, and an approximate deadweight capacity of 26,500 metric tons. Cargo capacity will be approximately 2,400 TEUs, with additional space for nearly 400 vehicles in an enclosed RoRo garage.





RECENT DELIVERIES

Sovcomflot
New LNG Ship

Photo: Sovcomflot

Sovcomflot, Russia's largest shipping company is continuing to develop its potential in the LNG transportation segment, entering into a new long-term agreement with Royal Dutch Shell. On December 16, a naming ceremony was held for the LNG carrier SCF Melampus, the third tanker in a series of vessels to be built under a partnership agreement between Sovcomflot and STX Offshore & Shipbuilding. The first two tankers of the series, Velikiy Novgorod and Pskov, are in operation on long-term contracts with Gazprom, with the design of SCF Melampus a continuation of this project. Atlanticmax LNG carriers have a load capacity of 170,200 cu. m. and are equipped with triple-fuel diesel electric power generation systems. The ships have the enforced ice class 'Ice2' and are designed to operate at low temperatures and in harsh climatic conditions. Sovcomflot will receive the fourth LNG carrier in the series, SCF Mitre, in the second quarter of 2015.

Naming Cermony @
HHI

Hyundai Heavy Industries (HHI) named two 10,000 TEU containerships for a Greek shipping line, Oceanbulk Maritime SA. The containerships measure 300 x 48.2 m with a 24.8 m depth and a service speed of 22 knots. HHI plans to deliver a total of 74 ships including 25 containerships this year. HHI said it has won orders for 154 containerships of over 10,000 TEU since 2005 when it first won orders for four 10,000 TEU containerships from COSCO, China.

Photo: HHI

Custom Yacht for Bocelli

Photos: Vripack

Gamma Yachts delivered the 22.1-m M/Y Libertas, the third in its Gamma 20 'mini' super yacht series. With design by Dutch company Vripack, the yacht has impressive guest space for its length overall as well as excellent fuel efficiency, the builder said. Built and designed in Holland, the yacht combines the precision and technical capabilities of the Dutch with world-class interior furnishings and materials from Italy. Although the traditional threshold for a super yacht starts at 30m in length, Gamma Yachts CEO Guido Bonandrini said that the degree of customization available to an owner in the Gamma 20 is much closer to that of a super yacht than any other vessel in this size range.

"The main elements of the Gamma 20 that are dictated to a client are the hull and superstructure shape; almost all other aspects can be adapted to the client's tastes, much like you would expect on a yacht of a larger size. Particularly to the exterior fly bridge, we have seen major variations in each of the vessels delivered so far. The owner of M/Y Libertas, celebrated opera singer Andrea Bocelli, took the customization even further than the previous Gamma 20 customers," Bonandrini said.

For the yacht's exterior, Bocelli specified a table and sofa to be placed forward the wheelhouse to offer true immersion into the surroundings, particularly when underway. There is also a custom-built diving board on the extended fly bridge to jump off the uppermost point of the yacht, and the hull is painted in a metallic electric blue. The decking comes in teak as standard and there is an optional hydraulic swim platform that lowers into the water at the stern.

Making full use of the volume provided by the bow, the Gamma 20 offers a quarter for two crewmembers plus 170 sq. m. of living space including the lower deck, main deck, fly bridge and walk-around. The addition of a fourth cabin in this yacht increases the accommodation up to nine guests.

Furthermore, the windows in the master cabin have been increased to let in more light. Double-glazing insulates the interior, allowing the piano and recording studio equipment to be used in the main salon. For the interior finishes, the owner chose matte oak paneling with natural oak floors. The galley is outfitted with white Parapan and a grey stained oak flooring.

Andrea Bocelli, who has previously owned several vessels in this size range, comments that the newly delivered Gamma 20 is by far his favorite: "I love the way space has been arranged so that our large extended family can be together, enjoying closeness and intimacy, while at the same time respecting everybody's privacy. A yacht must meet precise needs and be able to make us feel at ease; it must comply with – and express both architecturally and technically – the same priorities as those living on it. Coziness, warm materials, safety, low noise levels and comfort: these were my needs, and they have been fully met. I needed a solid, safe and comfortable boat, and I am very happy with my choice for Gamma 20."

Innovative Chem Tank Design

The 12,500mt Sunrise Hope is reportedly the world's first chemical tanker to use a combination of duplex stainless steel and stainless clad steel in the construction of its cargo tanks.

What is reported to be the world's first chemical tanker to use a combination of duplex stainless steel and stainless clad steel in the construction of its cargo tanks was delivered to Oita-based Hiro Naviera S.A. November 15, 2014 by Usuki Shipyard Co., Ltd., Japanese classification society ClassNK reported.

The 12,500mt chemical tanker Sunrise Hope, owned by Hiro Naviera S.A., will be operated by Nippon Marine Co., Ltd. The eco-ship design vessel is equipped with 14 cargo tanks, all which employ duplex stainless steel technology. Construction of the vessel was carried out in accordance with ClassNK's Guidelines on Welding of Duplex Stainless Steels, which were released in January 2014, marking the first time the guidelines have been used in the construction of an actual vessel.

According to ClassNK, Duplex stainless steel provides greater strength and excellent corrosive resistance in comparison with the commonly used austenitic stainless steel SUS316LN. A bonus: its low nickel composition makes it economical. Although duplex stainless steel technology has been used previously in shipbuilding, ClassNK contends that this marks the first time in the world that a combination of both duplex and stainless clad steels have been used in the construction of a chemical tanker's cargo tanks. It is also the first time that duplex stainless steels have been used in a Japanese shipyard, while the lean duplex stainless steel which contains lower nickel compared to duplex stainless steel have been used in some cases.

Duplex stainless steels consist of a mixture of both of austenite and ferrite phases and offer enhanced strength and corrosion resistance superior to that of commonly used austenitic stainless steels. On the Sunrise Hope, duplex stainless steel KSUS329J3L replaces the commonly used SUS316LN for the bulkheads inside the cargo tanks, while the bulkheads adjacent to the cargo tanks were constructed using stainless clad steel, in which stainless steel and carbon manganese steels have been compression bonded together into a single plate. The stainless clad steel of the ballast tanks also ensures the coating quality of the tanks is protected.

ASD Tugboat Pair Delivered

Photos: Robert Allan Ltd.

The ASD tugs KST Passion and KST Pride were delivered to their owner, Keppel-Smit Towage Pte. Ltd. of Singapore. The two vessels are the first in the new RAmparts 3300AV series of tug designs by Robert Allan Ltd., and were built at the AVIC Zhenjiang Shipyard Marine Pte Ltd., Singapore at its facilities in China.

On trials, KST Pride produced an average ahead bollard pull of 71.5 tons and achieving a maximum speed of 14.03 knots. The vessels have been outfitted to high standards for a normal operating crew of 10. The Master's cabin, Chief Engineer's cabin and a double crew cabin are located on the main deck, and three double crew cabins are located on the lower accommodation deck. Also included at that lower level are the galley stores, laundry and common W/C. The deck machinery includes an electric hydraulic powered escort-rated ship assist hawser winch on the bow, and a towing winch on the aft deck. Open aft bulwarks and a heavy duty aft staple with tow hook are installed on the aft deck to facilitate towing operations. The wheelhouse is designed for maximum all-round visibility with a forward control station providing maximum visibility to forward and aft deck working areas. Main propulsion for each tug comprises a pair of CAT 3516C diesel engines, each rated 2,000 kW at 1,600 rpm, and each driving a Rolls-Royce, US255 fixed pitch Z-drive unit in ASD configuration.

PIRIOU Delivers 53-m FSIV

French boat builder PIRIOU delivered the 11th of its 53 x 10-m Fast Supply and Intervention Vessels (FSIV) to Suisse Outremer AG, to be operated by ABC Maritime AG. Built at the PIRIOU yard in Vietnam, the Karol W was turned over to the owners in October 2014. She is a sister ship to the FSIV Kacey delivered from the yard in May of 2014. The ABS-classed all aluminum boat is distinguished by a plumb bow that is noted for providing an improved performance and comfort at sea. Capacities on the vessel include accommodation for up to 10 crewmembers, seating for 48 offshore workers and two single, owner's cabins, each complete with their own head. A large, 242-square-meter cargo deck is capable of carrying up to 226 tons. With a molded hull depth of 4.4 meters the FSIV has tankage for 135 cubic meters of fuel oil. Four Cummins V-16-cylinder QSK50-M1 main engines provide propulsion. They each deliver 1,342 kW (1,800 HP) to Hamilton water jets. Combined with a pair of 150 kW bow thrusters, and controlled by a Class 2 Dynamic Positioning, the vessel has remarkable maneuvering and station keeping abilities. The combined 5,368 kW (7,200 HP) gives the Karol W to speed of 20 knots loaded and 30 knots light ship.

By Alan Haig-Brown

Photos: Piriou

Virtual Aids to Navigation Mark Research Equipment

Vesper Marine will provide its Virtual Aid to Navigation technology to the French company CGG, a geoscience company that provides geological and geophysical survey and analysis primarily to the oil and gas industry. In its ongoing quest to map the ocean's floors, CGG survey vessels tow an array of cables in the water at a up to a 50 ft. depth, an array of cables that contain seismic energy sources, usually a series of airguns that are fired at regular intervals as the vessel moves along predetermined survey lines. Energy reflected from beneath the seafloor is detected by numerous 'hydrophones' contained inside long, neutrally buoyant 'streamers' also towed behind the vessel.

A typical towed configuration is between 12 and 20 cables and streamers, measuring up to 5mi long with a separation of 328 ft., a massive spread which equates to 3 square miles of equipment under the surface. Previously other ships had no way of knowing that this equipment was in the water, and there historically have been numerous collisions with the streamers resulted in a high loss of both equipment and productivity.

It is hoped that by using Vesper Marine's Virtual AIS Beacons to broadcast positioning data to other ships in the area, CGG will eliminate this loss.

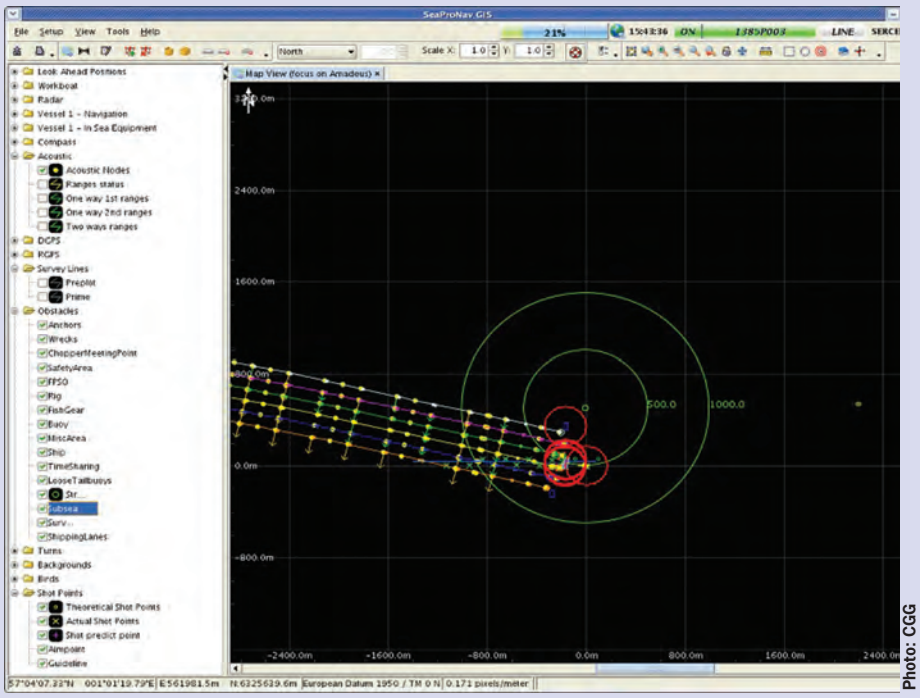


Photo: CGG

The Virtual AIS Beacon

The VAB1250 Virtual AIS Beacon is designed to continually broadcast the positions of the towed equipment via an interface to CGG's proprietary navigation software. The software provides the updated position of the equipment regularly to the VAB1250 identifying points at the front, middle and tail of the spread of streamers and on the outer cables. These points are then displayed on any AIS-equipped ECDIS, chart plotter and radar within a range of approximately 20nm. "We began discussing this project with Vesper Marine in July 2013," said Matthieu Champenois, Field Support Engineer – Navigation & Positioning Department, CGG. "Jeff Robbins and his teams quickly grasped our needs and developed a solution that was suited for this project."

CGG currently has two ships outfitted with Virtual AIS Beacons and has made the decision to outfit all 13 vessels in their fleet. The first installation was completed in December, 2013 on the CGG Symphony. In step with Vesper, CGG developed its own software interfaces between the existing navigation and positioning systems and the beacon. The fully automated system shares an existing VHF antenna on the ship with the radio via a Vesper Marine AIS/VHF splitter. "The second system was installed on the CGG Oceanic Challenger in May 2014 before a job in a location where the vessel traffic reached 120 vessel crossings per day," said Champenois. "As the broadcasted marks appearing on the displays presented an unusual situation for vessels in the area, their bridge officers contacted the Challenger's master in order have a clearer view of the situation and to avoid any collision. This was exactly the intended result."

What is a Virtual Aid to Navigation (VAtoN)

A Virtual Aid to Navigation is created when a signal sent from a transmitter in an accessible location is used to mark a remote point. This mark is displayed as a special feature or hazard on a vessel's ECDIS, chart plotter or AIS display when within range. The ship's onboard equipment is then able to alert crews to the presence of and if they are on a collision course with the marked navigational hazard.

www.vespermarine.com

Photo: Rolls-Royce

Rolls-Royce Permanent Magnet Tech for NCL

Rolls-Royce said that Norwegian Cruise Line selected Rolls-Royce permanent magnet tunnel thruster to upgrade the propulsion package onboard Norwegian Epic. The permanent magnet tunnel thruster is said to offer a significant reduction in noise and vibration, an increase in power output of around 25% from the same size propeller, and is removable underwater eliminating the need for dry docking.

The permanent magnet tunnel thruster design concept comprises a permanent magnet motor in a rim, which drives the propeller in the center. The permanent magnet motor consists of two main parts – a stator that carries a number of electrical coil windings, and a rotor fitted with a number of very strong permanent magnets.

A rotating magnetic field is created by the stator which interacts with the fields of the permanent magnets on the rotor, which generates force to drag the rotor around, providing the mechanical power.

Other benefits of permanent magnet technology include the freeing up of space directly above the thruster where traditional tunnel thruster motors are located, and a symmetrical design that gives equal thrust to port or starboard. It is available in 1600mm and 2000mm diameter.

First ShipArrestor Delivered

Following a full product trial in New Zealand, the Norwegian Coastal Administration (NCA) signed its acceptance of the first of two ShipArrestor systems from Miko Marine, making Norway the first country with a system that gives it the ability to protect its shores from the danger of drifting oil tankers and from the disastrous pollution that can result when they run aground.

ShipArrestor was put through a complete customer acceptance trial in Tasman Bay, New Zealand using chartered helicopters and vessels. The system consists of a large fabric parachute-style sea anchor that is looped by a helicopter onto a ship drifting without engine power. This is achieved without any involvement of the ship's crew after which a line terminating with the sea anchor in a container is paid-out upwind by the helicopter. When the container is dropped into the sea it releases the fabric anchor, a recovery line and a buoy that shows its location. The sea anchor cuts the speed of the ship's drift and consequently increases the time available for a rescue tug to reach the ship and take it in tow before it runs aground and ruptures its tanks.

As designed, when the rescue tug arrives it can lift the buoy on board and use its line to tow the ship to safety. The advanced materials used by the ShipArrestor give it the strength and ability to quickly turn any size of ship, from a trawler to a supertanker, into the wind and halve the speed at which it is drifting. The ShipArrestor was developed by salvage technology specialists Miko Marine, which led a consortium of eight European organizations partly funded by the European Union.

Coppins Sea Anchors Ltd of Motueka, New Zealand joined the team as co-developers of the ShipArrestor in early 2014.

miko.no
kystverket.no

1. The ShipArrestor container is lifted by the helicopter.

2. The ShipArrestor buoy marks the tow line.

3. The ShipArrestor en route to a drifting ship.

4. The ShipArrestor lassoes a target vessel during a trial.

Photo: Jotun

UASC Picks Jotun

United Arab Shipping Company (UASC) reached an agreement with Jotun for the provision of antifouling coatings for 11 new container vessels. Of the 11 ships to be coated with Jotun's premium antifouling range, eight are 14,500 TEU and three are 18,800 TEU capacity vessels. Eight of them will be treated with Jotun's Hull Performance Solution (HPS) system, which combines SeaQuantum X200 paint with advanced measurement technology. This solution will help UASC's vessels achieve up to a 15% hydrodynamic performance gain as well as fuel cost savings, Jotun said. The ships are being built at Hyundai Heavy Industries in South Korea.

AkzoNobel's International Paint's Intersleek

A Sustainable, Slime-Busting Shipping Solution

Produced by AkzoNobel's International Paint business, Intersleek 425 was the first biocide-free marine fouling control technology on the market when it was launched in 1996. With more than 1,000 vessels coated to date, it set a new industry benchmark for marine and environmental performance and paved the way for Intersleek 700 three years later.

AkzoNobel's latest innovation, Intersleek 900, a patented fluoropolymer foul release coating, is designed to deliver an exceptionally smooth, slippery, low friction surface that prevent organisms attaching to vessels sailing faster than 10 knots - including scheduled ships, tankers, bulkers, general cargo ships and feeder containers. According to the manufacturer, these "slime busting" properties save customers time and money at sea; up to $3 million over a five-year period in operating costs, 6,500 tons of fuel and 21,000 tons of carbon emissions for a VLCC vessel.

To date more than 350 vessels have been coated with Intersleek 900, including Cunard's Queen Mary 2. Its success stems from matching the best talent with cutting edge science to meet customers' needs for improved operational efficiency and stronger environmental performance.

SIGMAGLIDE 1290

Cut the Slime

SIGMAGLIDE 1290 is a 100% silicone binder fouling release system that utilizes a dynamic surface regeneration technology. According to the manufacturer, this results in an increased silicone density at the surface to such a degree that slime organisms do not recognize it as a surface substrate and have no chance to settle on it. This significantly extends the effectiveness of the coating. The product is suitable for all vessel types and also when long stationary periods are to be considered such as FPSOs. It also brings benefits for cruise and ferry operators as well as owners of tankers, bulkers, gas carriers, dredgers and containerships.

"SIGMAGLIDE 1290 ensures that our customers can benefit from advanced slime protection and extended fuel savings that go way beyond anything that was previously possible," said Sijmen Visser, PPG's Global Marketing Manager Marine. As fouling doesn't adhere, even at lower speed, SIGMAGLIDE 1290 is also beneficial for the offshore industry where assets are static or for vessels that are slow steaming but still require a high level of fouling protection.


Photo: Bollinger Shipyards

Martinez


Photo: Bollinger Shipyards

Theriot


Photo: Bollinger Shipyards

Phelps

Lougheed

MacTurk


Photo: IMO

Doumbia-Henry


Photo: FleetPro

Sustreanu


Photo:BV

Palaiologou


Photo: HHI

Hicks


Photo: HHI

Ebbs


Photo: BAE Systems

Campbell


Photo: Thome Group

Nortun

Smith Named CEO at Golar LNG
Gary Smith took over as CEO of Golar LNG limited, taking over for Doug Arnell, who stepped down on February 1, 2015.

Bollinger Announces Promotions
Bollinger Shipyards announces the promotions of three key leaders, as Tim Martinez, Scott Theriot and Corey Phelps enter new roles. Martinez will be Executive Vice President of the Repair Division. Theriot was promoted to Executive Vice President of Sales and Marketing. Phelps has accepted the position of General Manager of Bollinger Morgan City (BMC) and Bollinger Amelia Repair (BAR).

Lougheed Joins Willard
Willard Marine, Inc. has appointed Mark Lougheed to its engineering team. Lougheed brings more than 25 years of experience in naval engineering and project management.

MacTurk Retires from Pima Valve
Pima Valve, Inc. said that Marianne MacTurk will retire from her position as Sales Manager. Adrienne Link was appointed to fill that role.

Cummins Leadership Changes
Cummins Inc. announced that Tony Satterthwaite has been promoted to President of the company's Distribution Business Unit, succeeding Vice President and President Pamela Carter who is retiring. Antonio Leitao will assume Satterthwaite's position as Vice President, President - Cummins Power Generation. Both appointees are scheduled to take their new roles April 1.

Sustreanu COO of FleetPro Group
Christine Sustreanu will join FleetPro Group June 1, 2015 as chief operation officer (COO).

Palaiologou New Marketing Director
Paillette Palaiologou was appointed as Bureau Veritas' Marine Marketing & Sales Director within the Marine & Offshore Operating Group.

Two Executive Changes at HII
Huntington Ingalls Industries (HII) announced that William Ebbs has taken on the new role of vice president, federal policy, and Andrew Hicks has been promoted to vice president, legislative affairs. Both will report to Mitchell B. Waldman, corporate vice president, government and customer relations.

Campbell to Lead BAE Systems' Ship Repair Business
BAE Systems has named Joseph Campbell as vice president and general manager of the company's Ship Repair business, effective Jan. 14. Campbell succeeds Bill Clifford, who will retire after a 46-year career in the U.S. Navy and the private sector.

CMA Names Tsakos Commodore
Capt. Panagiotis N. Tsakos, Founder of the Tsakos Group, has been named as the CMA Commodore for the year 2015. Captain Tsakos has dedicated his life to the sea, to the welfare of the people at sea, to caring for and protecting the environment and building a successful commercial shipping company.

Polarcus Appoints Starr as Next CEO
Rod Starr will succeed Rolf Ronningen as Polarcus' next chief executive officer.

Thome Group Appoints New CEO
The Thome Group has announced the appointment of a new Chief Executive Officer, Olav Magnus Nortun, who will take up the position on April 1, 2015.

Webb Welcomes Dr. Daidola
John C. Daidola has joined Webb Institute as Assistant Professor of Structural Engineering.

BV Selects New Offshore Lead
Bureau Veritas has appointed Matthieu de Tugny as Senior Vice President in charge of offshore activities within the marine and offshore operating group.

Steward Promoted at BMT Nigel Gee
Jason Steward has been appointed business development manager of BMT Nigel Gee, a role in which he will support the expansion of business in both new and existing markets, delivering design and engineering services within the commercial, offshore energy, defense and yacht sectors, BMT said.

MCP Inks Mobile, Internet Deal for 33 Carnival Ships
MCP has signed a long-term contract with Carnival Corporation to provide 33 cruise ships with advanced mobile cellular communication services. The agreement provides close to 130,000 people each day mobile voice, texting (SMS) and data (mobile internet) coverage while at sea.

(See related story page 40)

'The Switch'

The Switch, the Finnish advanced drive train provider, is now making waves in the marine industry by winning numerous orders for permanent magnet shaft generators to be supplied to large oceangoing vessels starting this year. The permanent magnet (PM) technology is a game-changer for the very competitive global marine sector thanks to its high energy efficiency over the entire speed range and lowered costs of operation. This gives forward-looking ship owners a new way to cut operational costs while embracing a long-term sustainable approach to their shipping business.

The Switch has teamed up with Finnish system integrator WE Tech Solutions to win its first deals for the PM shaft generators. In November 2014, the first pair of generators passed the rigorous bench test in Vaasa, Finland. These are scheduled for delivery to a new-build RoRo vessel, which is being built in China by Wallenius Lines of Sweden. During the autumn, WE Tech Solutions placed additional orders for PM shaft generators that will be delivered to ship owners in Norway and Denmark. In late January 2015, The Switch received the Lloyd's Register certification for its PM shaft generator.

MARITIME REPORTER AND ENGINEERING NEWS

2015 EDITORIAL CALENDAR

ISSUE	EDITORIAL	BONUS DISTRIBUTION
JANUARY **Ad Close:** Dec 19	**Ship Repair & Conversion Edition** **Market:** Maritime Propulsion: Gears, Thrusters, Waterjets & Propellers **Technical:** Marine Salvage & Recovery **Product:** Marine Electronics Equipment & Supplier Guide **Country Report:** France & Poland	**PVA MariTrends 2015** January 31 - February 3 Long Beach, CA **EuroMaritime** February 3 - 5 Paris , France
FEBRUARY **Ad Close:** Jan 21	**Cruise Shipping Edition** **Market:** Ships of War: Evolution and Future of U.S. Navy Technology **Technical:** Marine Telematics: Data, Tracking and Communications **Product:** Marine Coatings & Corrosion Control **Country Report:** Denmark, Finland & Sweden	**Cruise Shipping Miami** - Mar 16-19, Miami, FL **ASNE DAY** - March 4 - 5, Crystal City, VA **NACE Corrosion** - March 15 - 19, Dallas, TX **Arctic Technology Conference** - March 23-25 Copenhagen, Denmark
MARCH **Ad Close:** Feb 20	**U.S. Coast Guard Annual** **Market:** Training & Education: From Simulation to Distance Learning **Technical:** Oil Spill Response & Recovery **Product:** Marine Propulsion: Green Marine Fuels & lubricants and Emission Technologies **Country Report:** Greece & Turkey	**CMA Shipping 2014** March 23-25, Stamford, CT **Sea-Air-Space** April 13-15, National Harbor, MD
APRIL **Ad Close:** Mar 20	**Offshore Edition** **Market:** Modern OSV Design & Technology **Technical:** Workboat Fleet Maintenance & Repair **Product:** Deck Machinery, Winches and Ropes **Country Report:** The German Maritime Cluster	**Offshore Technology Conference (OTC)** May 4-7, Houston, TX **Workboat Maintenance & Repair** April 14 - 16, New Orleans, LA **Marine Money Houston** Houston, TX
MAY **Ad Close:** Apr 21	**The Marine Propulsion Edition** **Market:** RIB & Patrol Boat Report **Technical:** Workboat Design & Construction **Product:** Satellite Communication Technologies **Country Report:** The Norwegian Maritime Cluster	**Norshipping** - June 2 - 5, Oslo, Norway **Inland Marine Expo** - June 15 - 17, St. Louis, MO **MACC 2015** - May/June, USA **Seawork** - June 16-18, Southampton, UK
JUNE **Ad Close:** May 22	**Annual World Yearbook** **Market:** Maritime Simulation & Training Centers **Technical:** Dredging: Deepening the Channels of Trade **Product:** Pumps, Valves, Pipes & Insulation **Country Report:** U.K. & Ireland	**Marine Money Week** June 16-18, New York, NY
JULY **Ad Close:** Jun 21	**Marine Communications Edition** **Market:** Classification & Ship Registry **Technical:** ECDIS System Review & Report **Product:** Maritime Tools: Welding & Cutting **Country Report:** Italy	
AUGUST **Ad Close:** Jul 21	**Shipyard Edition** **Market:** Offshore Deepwater: Structures and Systems **Technical:** Heavy Lifting Solutions: Maritime Cranes **Product:** Ballast Water Technology **Country Report:** Russia, Lithuania, Latvia & Estonia	**Offshore Europe** September 8 -11, Aberdeen, UK **NEVA** September 22 - 25, St. Petersburg, Russia
SEPTEMBER **Ad Close:** Aug 21	**Offshore Energy Technologies** **Market:** Maritime Security Technology & Technique **Technical:** Maritime Propulsion: Efficient Drivers **Product:** Clean Water Technologies **Country Report:** Spain, Portugal & Brazil	**OTC Brazil** October 26 -29, Rio de Janeiro **GasTech** October 27 - 30, Singapore
OCTOBER **Ad Close:** Sep 21	**Marine Design Annual** **Market:** Ship Classification Societies **Technical:** Marine Firefighting, Safety & Salvage **Product:** CAD/CAM **Country Report:** The Netherlands & Belgium	**SNAME** November 4-6, Providence, RI **Europort** November 3-6, Rotterdam, Holland **Clean Gulf** November 10-12, New Orleans, LA
NOVEMBER **Ad Close:** Oct 20	**Workboat Edition** **Market:** LNG Handling and Transportation **Technical:** Deck Machinery, Winches & Ropes **Product:** Fuels, Lubricants & Additives **Special Report:** Gulf of Mexico Builder & Supplier Guide	**International Workboat Show** December 2-4, New Orleans, LA **Marintec China** December 1-4 Shanghai, China
DECEMBER **Ad Close:** Nov 20	**Great Ships of 2015** **Market:** The Automated Ship: Command & Control **Technical:** Shipyard Automation **Product:** Marine Engine Guide **Special Report:** Korea/Singapore/Vietnam	**Surface Navy Association 2016** January, Crystal City, VA

BUYER'S DIRECTORY

This directory section is an editorial feature published in every issue for the convenience of the readers of MARITIME REPORTER. A quick-reference readers' guide, it includes the names and addresses of the world's leading manufacturers and suppliers of all types of marine machinery, equipment, supplies and services. A listing is provided, at no cost for one year in all issues, only to companies with continuing advertising programs in this publication, whether an advertisement appears in every issue or not. Because it is an editorial service, unpaid and not part of the advertisers contract, MR assumes no responsibility for errors. If you are interested in having your company listed in this Buyer's Directory Section, contact Mark O'Malley at momalley@marinelink.com

ANCHORS & CHAINS

DCL Mooring and Rigging, 4400 North Galvez Street, New Orleans, LA , USA , tel:504 941-4116, fax:504 947-8557, codys@dcl-usa.com contact: Cody Schnuriger, www.dcl-usa.com

AUTOMATIC IDENTIFICATION SYSTEM

Saab TransponderTech AB, SE-589 41 Linkoping , tel:46 13 180000, fax:46 13 182377, info.transpondertech@saabgroup.com

BOAT BUILDING AND DESIGN

Moose Boats, 274 Sears Point Road Port Sonoma Marina, Petaluma, CA , USA , tel:(707) 778-9828, fax:(707) 778-9827, abbie@mooseboats.com contact: Abbie Walther, www.mooseboats.com

COATINGS/ CORROSION CONTROL/ PAINT

Hempel A/S, Lundtoftegårdsvej 91 2800 Kgs. Lyngby , tel:45 4593 3800, fax:45 4588 5518, marine@hempel.com , www.hempel.com

Tri-State Coating and Machine Co. Inc., 5610 McComas Road, PO Box 296, Salt Rock, WV V4W 3S8, USA , tel:1-800-477-4460, fax:304-736-7773, brichmond@tscminc.com contact: Beverly Richmond, www.tscminc.com

COMMUNICATIONS

David Clark Company (Wireless Headset Communication Systems), 360 Franklin Street, Worcester, MA 77060, USA , tel:(800) 298-6235 , www.davidclarkcompany.com/marine

CORDAGE

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

COUPLINGS

Centa Corporation, 2570 Beverly Drive #128, Aurora, IL 48331, USA , tel:(630) 236-3500, fax:(630) 236-3565, bobl@centacorp.com

DRIVESHAFTS

Centa Corporation, 2570 Beverly Drive #128, Aurora, IL 48331, USA , tel:(630) 236-3500, fax:(630) 236-3565, bobl@centacorp.com

FILTERS/FILTER SYSTEMS

UT 99 AG Oil Mist Separators, Schaubenstrasse 5 CH-8450 Andelfingen , Switzerland , tel:+41 52 397 11 99, fax:+41 52 397 11 90, info@ut99.ch , www.ut99.ch/en

INSURANCE SERVICES

WQIS (Water Quality Insurance Syndicate), 60 Broad Street 33rd Floor, New York, NY 18974, USA , tel:1-800-736-5750, fax:212-292-8716

LAUNDRY EQUIPMENT

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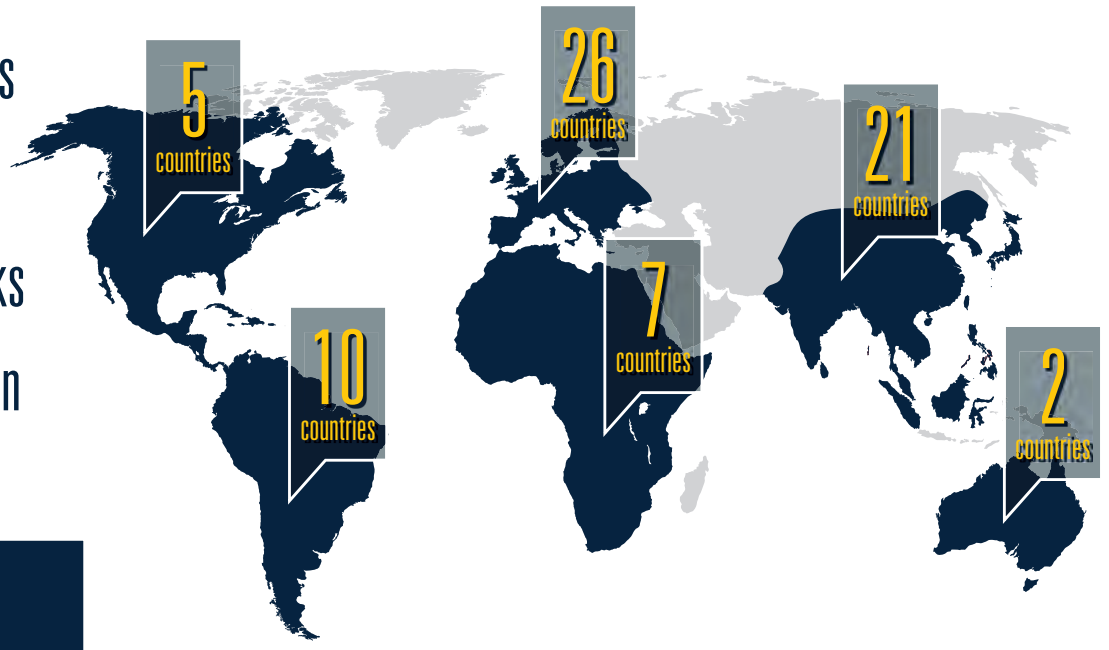

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