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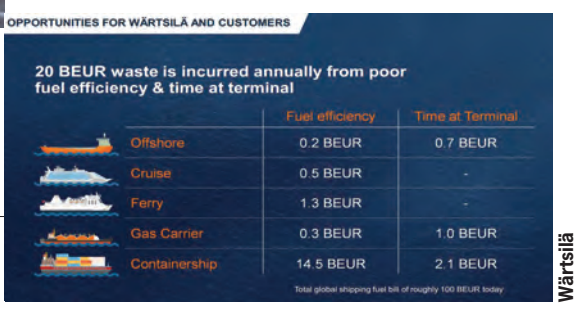

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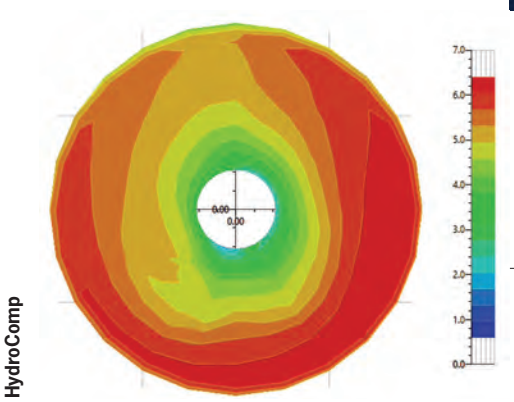

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THE COVER

The Digitalization Dilemma
As maritime enters a new wave of technology adoption, the future is the convergence of data, connectivity and analytics.

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MR sits with the founder of Ocean 5 Naval Architects.

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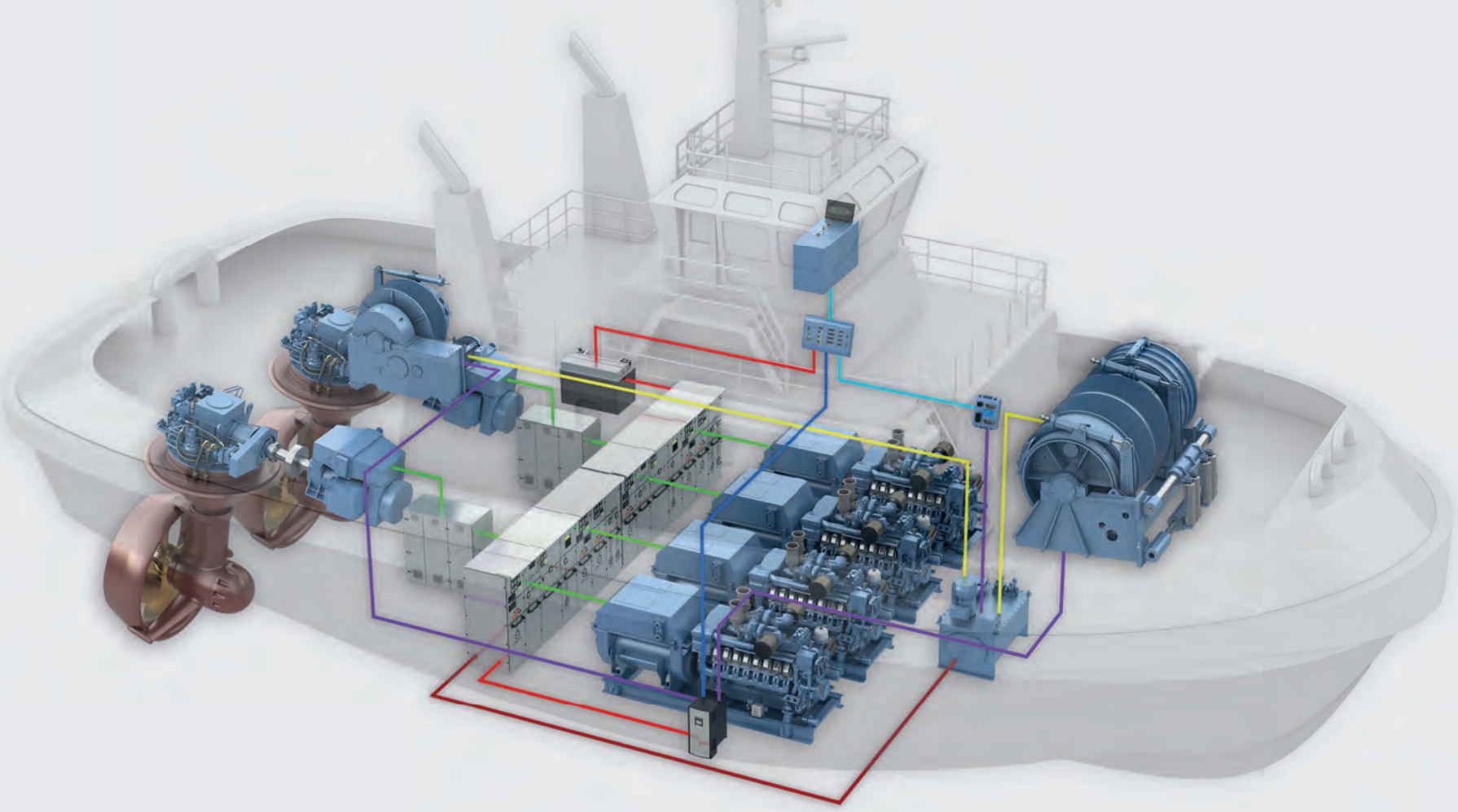

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The Digital Path

“To be a top performer, you must embrace technology,” said Søren Meyer, Chief Strategy Officer, Maersk Tankers, speaking at the Marine Money Week conference in New York in June.

Meyer was referring to the industry-wide digitalization evolution currently underway in the tanker shipping sector, as part of a panel discussion with Frank Coles, President, Transas Group, Wartsila Voyage Solutions; and Scott G. Borgerson, Ph.D., CEO, CargoMetrics Technologies LLC. Coles, whose firm Transas was acquired by Wärtsilä earlier this year for $246.5 million as the driver for its Voyage Solutions business, simply says: “Forget about the future … the future is now.”

Just as we were sending this edition to press, the announcement came that Kongsberg had struck a deal to purchase Rolls-Royce Commercial Marine, which at the time of the announcement was valued at about $662 million. The final sale price will be resolved at a later date, and to be clear the deal does not include Bergen engines or the Rolls-Royce Naval business. The sale is hardly a surprise, as earlier this year Rolls-Royce signaled its intention to sell this business unit.

Mergers & Acquisitions are common fodder across all industries, but the recent uptick of M&A in the maritime sector should signal that the abyss is near, or just passed, and collectively the global maritime market is looking at brighter financial times.

Specifically the trend toward the bigger getting even bigger continues, as size and scale becomes more important than ever as ship owners and operators simultaneously digest a historic and prolonged down cycle, all the while facing a laundry list of technological hurdles, from the final adoption of Ballast Water Management Systems to the new global cap on sulfur coming in 2020, and in tandem with the persistent beat of environmental regulation controlling emissions and the march toward (eventual) decarbonization.

Central to this edition is Henrik Segercrantz’ offering, “Trending Digital,” starting on page 32. Segercrantz is a long-time friend and contributor, having served the maritime industry in a professional capacity for more than four decades. Based in Helsinki, he has direct access to many of the leaders in the push toward digitization, ie. Wärtsilä and its growing portfolio of companies, systems and products.

#BTC100

About this time a year ago we initiated the project to publish the “100th Anniversary Edition” for Bouchard Transportation Company, a 68-page magazine dedicated to the five generations of BTC leadership, starting with Captain Frederick Bouchard in 1918. Sitting in this position for now more than a quarter of a century, I can say without hesitation that digging into the historical past of any maritime company is a fascinating endeavor, starting with our own archives of hard bound copies of “Maritime Activity Reports” from 1939. The historical digging on this project was neither short nor easy, and I offer my sincere gratitude to Regina Ciardiello – who many of you may remember served as a managing editor with MR in the late 90s and early 2000s, for her tireless efforts in interviewing a broad spectrum of generations across the maritime industry, then seamlessly delivering a 100-year synopsis for the anniversary edition. My thanks also to the Bouchard family, who offered our staff exclusive access and insights to the family business, entrusting us with the task of putting together a keepsake historical piece. (Note: The BTC supplement was mailed with select copies of this edition. If you did not receive one, simply drop me a note on trauthwein@marinelink.com and I’ll be happy to forward a copy.)

Gregory R. Trauthwein
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Let's Make a Deal

Kongsberg CEO **Geir Håøy** (right) and **Tristan Halford-Maw**, Deputy Director, Rolls-Royce.

John Whalen/HII

Kongsberg Buys Rolls-Royce Commercial Marine

Earlier this year Roll-Royce signaled its intent to shed its commercial marine business, and as the July edition of Maritime Reporter & Engineering News was going to press the deal was done when Norwegian giant Kongsberg stepped up and announced the deal to buy Rolls-Royce Commercial Marine.

The deal, pending clearance by regulatory authorities, is expected to be completed in the first quarter of 2019, and while a final sale price is not yet announced, the stated value of the Rolls-Royce Commercial Marine to be sold at just under $662 million. The transaction is structured as an acquisition by KONGSBERG of the marine products, systems and aftermarket services businesses carried out by subsidiaries of Rolls-Royce plc. The transaction does not include Bergen Engines nor Rolls-Royce's Naval Business.

The deal is significant on a number of fronts, particularly in regards to the consolidation of smaller players into larger, more powerful organizations that are able to provide a more complete offering, particularly in tying together traditional hardware with emerging data-driven products and applications. But perhaps even more so, the deal is a signal to the commercial marine industry at large that the prolonged, global slump in maritime is at or just above the abyss, with many executives seeing the proverbial 'light at the end of the tunnel,' pegging 2019/20 as the start of the rally up for the coming five years.

"The maritime industry has over the last years experienced demanding market conditions and even though there is still uncertainty we expect the market to be facing growth with technology and innovation being key drivers," said Eivind Reiten, Chair of the Board, KONGSBERG. "For more than 200 years KONGSBERG has been a pioneer for high technology industrial development with a long term perspective. The acquisition of Rolls-Royce Commercial Marine is in line with our growth ambitions."

© Herbert Boettcher 2018

Photo of the Month

Headed out to Sea

Cap San Antonio is passing a river at night on the way to the open sea.

Herbert Boettcher took this photo for Hamburg Süd when he travelled on the container ship Cap San Antonio from Europe to South America and back to Hamburg. Boettcher started with his worldwide long time project Seamotion in 2004. Boettcher is a German professional photographer working worldwide for shipping companies to create photos of merchant ships with his unique visual language. He has been working as a graduate designer for more than 20 years and has already received numerous awards for his applied and free photographic work.

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VGP

Vessel General Permit Update

About the Author

Dennis L. Bryant is with Bryant's Maritime Consulting, and a regular contributor to Maritime Reporter & Engineering News as well as online at MaritimeProfessional.com. t: 1 352 692 5493
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The Vessel General Permit (VGP) falls under the National Pollutant Discharge Elimination System (NPDES) of the Federal Water Pollution Control Act (FWPCA), better known as the Clean Water Act. It is administered by the US Environmental Protection Agency (EPA), an agency not well known or understood by the maritime industry.

For years, the EPA had adopted a policy of broadly exempting discharges into the water that were incidental to normal operation of vessels. That changed after environmental advocacy groups prevailed in a judicial challenge. The first iteration of the VGP entered into effect in 2008 and remained in effect until replaced by the current iteration in 2013. That second iteration is due to be replaced in December 2018, but the proposed replacement has yet to be shared with the regulated community.

Incidental Discharges

The VGP program establishes requirements relating to 27 types of vessel discharges for the purpose of minimizing their impacts on surrounding waters. All commercial vessels of 79 feet or more in length being operated as a means of transport must comply when operating in US inland and coastal waters (including the US Great Lakes) inside the US territorial sea (3nm). Vessels of less than 79 feet must comply with the ballast water discharge requirements. The VGP requirements include best management practices (BMPs) for each of the 27 discharges, as well as requirements for corrective actions, inspections, recordkeeping, and reporting.

Complicating matters, the NPDES allows individual states and Native American tribes to establish additional water quality standards that are included in the VGP. These standards, which vary from state to state and tribe to tribe and are often more stringent, create additional headaches for vessel operators. For instance, several states include various ballast water treatment standards and requirements. Some of these requirements have been deemed unachievable and have been successfully challenged in court.

The VGP itself is a general permit issued under the NPDES program. Vessels do not receive an individualized copy of the permit and it is not mandatory to keep a copy on board. However, the EPA recommends that a copy of the VGP be kept on board the vessel for reference and to ensure that all requirements are being met.

Under the EPA regulations, the operator of a facility is generally responsible to compliance with environmental requirements. If a covered vessel is in the care or custody of an entity other than the owner for a period of time (such as being under charter), it is recommended that the agreement specify which party is responsible for compliance with applicable requirements under the VGP.

Vessels that are 300 or more gross tons (GT) as measured under the International Tonnage Convention measurement system or have more than eight cubic meters (2,113 gallons) of ballast water capacity are required to submit a Notice of Intent (NOI) using the EPA's eNOI system to receive coverage under the permit. Smaller vessels covered by the VGP program are still required to maintain the appropriate records including a copy of the Permit Authorization and Record of Inspection (PARI) form and make it available upon request.

Overlap

Many of the BMPs may overlap with standard marine practices, making them mandatory. Others are new to most vessels and operators and require incorporation into standard operating procedures. In addition, the VGP program has paperwork aspects that will require special attention. The paperwork aspects are important as they are the means to demonstrate compliance if requested by the EPA or an authorized agent, such as the U.S. Coast Guard.

Compliance with the VGP does not relieve entities of compliance with other existing laws and regulations. Other potentially overlapping requirements include, but are not limited to, the following administered by the US Coast Guard: (1) ballast water management; (2) oil pollution prevention; (3) sewage discharge; (4) the Act for the Prevention of Pollution from Ships [implementing MARPOL provisions]; (5) the Oil Pollution Act of 1990 [OPA 90]; and the Clean Hull Act.

Recordkeeping, Reporting & Inspections

Numerous records must be kept to comply with the VGP. These include owner/operator and voyage information, a voyage log, records of any violation of any effluent limit and corrective action taken, a record of routine inspections and any deficiencies or problems found, analytical monitoring results, a log of findings from annual inspections, a record of any specific requirements given to the vessel by the EPA or state/tribal agencies, and additional maintenance, certification, and safety exemption claims.

Certain discharges must always be reported, including ballast water release, spills that endanger health or welfare, spills of oily materials, and a report of annual noncompliance. An annual report is also required for all covered vessels.

While the amount of record keeping is potentially onerous, the EPA does state that it does not intend to require separate records from that which is already required by the Coast Guard. Rather, vessels can harmonize their recordkeeping practices, where appropriate, so that records are not unnecessarily duplicative. For example, information can be logged with maintenance records, the ship's log, in existing ISM/SMS plans or other additional recordkeeping documentation already maintained by the vessel. Also, records may be kept electronically.

If any of the effluent discharge limits in the VGP are violated, corrective action must be taken. This includes an assessment investigating the nature, cause, and potential options for eliminating the problems. Depending upon the extent of the problem, the VGP provides deadlines for resolving the issues and failure to take corrective action within the specified time period is another permit violation. The VGP contains a full description of the corrective action process. The allowed time for minor changes is two weeks, for major changes requiring new parts three months, and for major renovations before relaunching from the next drydocking. A record must be kept of all corrective actions.

Various types of inspections are required under the VGP, including routine visual inspections of all accessible areas of the vessel in order to verify that effluent limits are being met. A more comprehensive annual inspection must be conducted once every 12 months that must focus on areas likely to generate harmful pollution or violate effluent limits. Drydock inspections are also required. Special monitoring is also required for select cruise ships and vessels with experimental ballast water treatment systems. The findings of each routine visual inspection and annual inspection must be documented in the official ship logbook or as a component of other recordkeeping documentation.

Conclusion

As previously stated, the current version of the VGP program expires in December 2018. The EPA has yet to share its proposal for the next iteration, as of mid-June 2018. Court decisions lead one to expect that the new program will add new requirements. On the other hand, recent EPA actions in other areas lead one to expect a reduction in requirements. Time will tell, but the window is narrowing and covered vessels may have to scramble to adapt to the changes.

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SUB M

July 20, 2018 & Beyond

The bottom line is 46 CFR Subchapter M is drastically changing the landscape of towing operations within the United States. Some impacts we have identified and other will come to light as time passes.

About the Author

Captain Andrew Kinsey, Senior Marine Risk Consultant, Allianz Global Corporate & Specialty

As the Subchapter M compliance deadline approaches on July 20, 2018, I have had the chance to discuss these new laws and their impact with a variety of Assured's with diverse backgrounds and widely varying commercial tug operations.

From my experience, there is still a great deal of confusion regarding the compliance requirements relating to Sub Chapter M. In addition, a major central point that has emerged is the need for proactive communication – both internal and external to company operations – in order to identify and comply with these legal requirements.

Regarding External Communications, Owner/Operators need to know how the U.S. Coast Guard in their district is approaching enforcement of these laws as well as informing the Coast Guard how they are working to comply with them. An important step in effective communication with the Coast Guard is to understand what questions they have already answered. No one likes answering the same question twice.

The first step before contacting your local OCMI should be to visit the United States Coast Guard Towing Vessel National Center of Expertise's Frequently Asked Questions (FAQs) website (https://www.dco.uscg.mil/tvncoe/) and sign up to be notified for updates. This is where you can find answers to questions such as when you have to drydock. Will hull gauging be required (maybe) and can you still have doubler plates (depends).

Another highly recommended resource prior to reaching out to your OCMI is to review what your individual vessel requirements will be in order to comply with the requirements of Sub M. This information can be obtained by using the Inspected Towing Vessel Decision Aid – TugSafe (https://www.dco.uscg.mil/Our-Organization/Assistant-Commandant-for-Prevention-Policy-CG-5P/Traveling-Inspector-Staff-CG-5P-TI/Towing-Vessel-National-Center-of-Expertise/TugSafe/) , which will generate a detailed list of what you need for a specific tug to prepare for an inspection or survey and can be accessed on any computer, tablet or smart phone.

Armed with this knowledge, you will be better able to discuss your personal compliance issues with your local Coast Guard personnel. Remember, July 20, 2018 is the date when 46 CFR Subchapter M, Parts 140-144 will be implemented.

Your compliance with these laws is required regardless of which compliance option you have selected or whether your vessel has received its Certificate of inspection (COI). Don't wait for the Coast Guard to come to you, be proactive and protect your business and your livelihood.

An important point for Owner/Operator to remember is that they are responsible for submitting the paperwork for requesting the initial COI. This is USCG form CG-3752A. When completing this form, remember to include "Persons in Addition to Crew" to the proposed manning levels.

You may not think this applies to you, but what about the occasional need to have additional personnel onboard? Think about crew changes or the need for tech reps or repair personnel. It is very important that the COI accurately reflects the trade, service and manning of the vessel. Understand what you are filling out.

If you have questions verify with the Coast Guard before submitting.

Internal communication is critical to any Owner/Operator of a Towing Vessel as we move ahead, regardless of which compliance option is chosen. In many cases, articles have focused on the TSMS Option, but even if a company pursues the Coast Guard option, increased crew involvement in the regulatory process and addition of Safety Procedures will be required. Commercial Towing Vessels' new designation as Inspected Vessels will introduce Owners and Operators to a new world of regulatory concerns.

In addition, Subchapter M will continue to bring about a cultural shift within the U.S. Towing Industry. Keys to successful operations moving forward include the need to keep accurate record keeping of all training conducted, to maintain effective communications with the local Coast Guard Officer in Charge of Marine Inspection (OCMI) and to rigorously comply with these regulations that are now law. Your employees need to be aware what is required; this applies to office personnel as well as those on the boats.

This need for all hands involvement will only grow as the next Subchapter M deadline approaches. The Health and Safety Plan outlined in 46 CFR 140.500 will occur on July 22, 2019, and applies to all Towing Vessels. The regulations define a number of Health and Safety Hazards that need to be identified and mitigated. Training Requirements also need to be addressed.

A key first step in complying with this regulation is to know and understand what is being required by the regulations and how these issues are currently being addressed by your company. By having the personnel who will be involved in implementing the procedures and conducting the training, actively involved in developing the Health and Safety Plan, you have the best chance of developing something that will actually benefit all parties involved rather than just checking the box.

You know your operations better than the Inspectors and Surveyors who will be visiting the vessel. Use the combined knowledge of your company to develop a Health and Safety Plan that accurately reflects your operations and assists you in being a safer and more productive operation. This has to be done, but why not make it benefit your operation rather being an additional reporting burden.

If a company has chosen the Coast Guard option for Subchapter M compliance, the company still has to produce procedures to address Health and Safety Hazards. Required training will need to be conducted as well as records maintained.

The bottom line is 46 CFR Subchapter M is drastically changing the landscape of towing operations within the United States. Some impacts we have identified and other will come to light as time passes. However, these regulations are not going to go away, nor can they be ignored. For many operators, this will result in new administrative and record-keeping requirements regardless of the compliance option chosen.

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John Canada, President, Ocean5 Naval Architects

Images: Ocean5

CANADA

John Canada founded Ocean 5 Naval Architects in 2007, arguably the worst time in history to start a maritime company as the industry was just entering the worst downturn in a generation. But more than 10 years later, and with the industry still in recover mode, Canada and his company are still standing. Ocean5 has become synonymous with sportfish, luxury, performance and composite high speed small craft naval architecture, and the company's international presence is founded on patrol craft, mega yachts and performance boats including a 30-m custom yacht designed in Holland and built in Turkey.

BY GREG TRAUTHWEIN

The Ocean5 Stuart Boatworks 27-ft. Technology Demonstrator is a first of its kind in innovative use of hull space, technology integration and green energy.

You started this company in 2007, the start of a tumultuous time in maritime history. What did you see in the market at that time?

Number one, there was a need, because not every company can employ a degreed and qualified naval architect. When you are building custom yachts it is important that after you spend the the time and money designing and building your masterpiece, that when you splash it in the water it floats and performs as intended. It takes a certain expertise to pull that off, and while the builders need it, sometimes they can't afford to hire someone full time. This was an opportunity to support a number of builders and a number of yards, doing what I do best.

As we discussed, 2007 was an 'interesting' time to start this business.

Yes, it was the wrong time to start the business. We had a strong showing of recreational clients on the recreation and yacht side, and it fell off a cliff. About 25% of the builders, at least, went out of business. First the projects dropped off, and then the companies dropped off. So we diversified, partnering with Tampa Manufacturing, helping them with their patrol boats.

To me it's impressive that you started the company then and that you're still here. What's the key to survival?

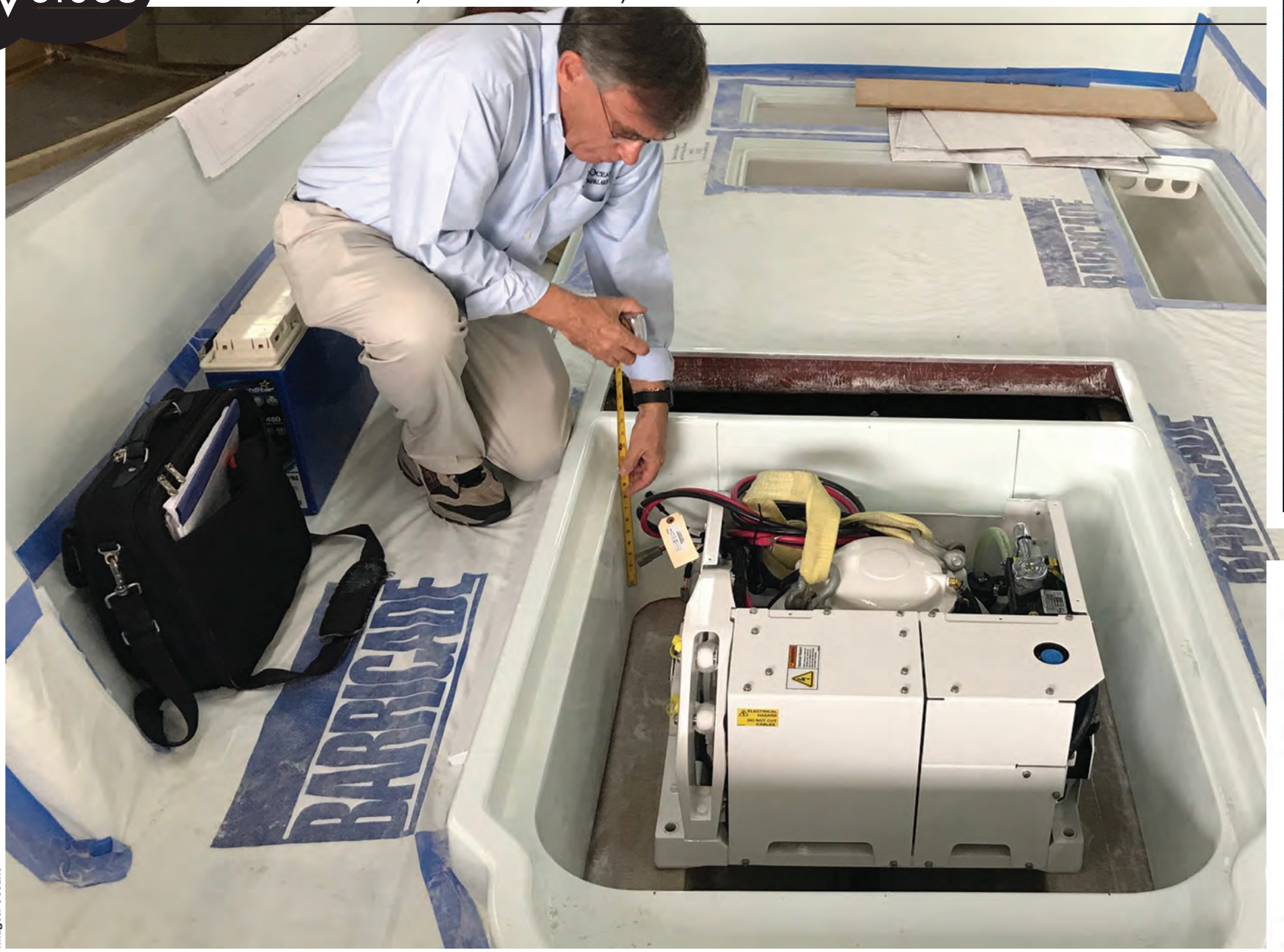
It is diversification, and also choosing your clients wisely. If you're not the "best fit" for a client, refer them to somebody else. We each have our role in how we support the industry, and just like doctors, you go to the right doctor for whatever ails you.

For those unfamiliar with Ocean 5, give us a brief overview on your size and scope.

Right now we are seven people in a small office overlooking the St. Lucie River. Simply put, we love boats, we live and breathe boats, boats of all kinds and of all sizes. Today we are pretty tied up in the recreational market, kind of where we started with the company in 2007. We're involved with wake boats and with appendages to drive large wakes so that people can surf behind the boat. We've got a new 64-ft. custom sport fish design that will be built here locally, a cold-molded/composite hybrid, high speed craft.

Voices

John Canada, President, Ocean5 Naval Architects



Images: Ocean5

Installing the innovative **Seakeeper gyro stabilization system** on a 27-ft. boat posed some interesting challenges.

And then we just finished a boat for Sea Ray.

We are also involved in some interesting smaller projects, such as one where we were working on airplane floats with innovative lift features so that the aircraft can take off faster.

With the broad portfolio of business, what do you count as your core competency?

Most people hire us for hull design, structures design and refit structural design. They want a hull that's going to perform, so it's up to us to do the math, to get the weights and the LCGs right, and to get the hydrostatics right.

When you look at the markets you serve, where do you see opportunity today?

Certainly the (increased use of outboard engines) are continuing to grow. We seem to get involved with a lot of projects where "alternative propulsion" is involved whether it was (three outboards powering the new SeaRay), or it was IPS when it came out. We are integration specialists for new hardware, from engines and drives to stabilizer fins and gyro stabilizers. We implement these systems on these tiny boats where people said, 'you can't do that, it's too heavy or the power draw is too large.' But we do it.

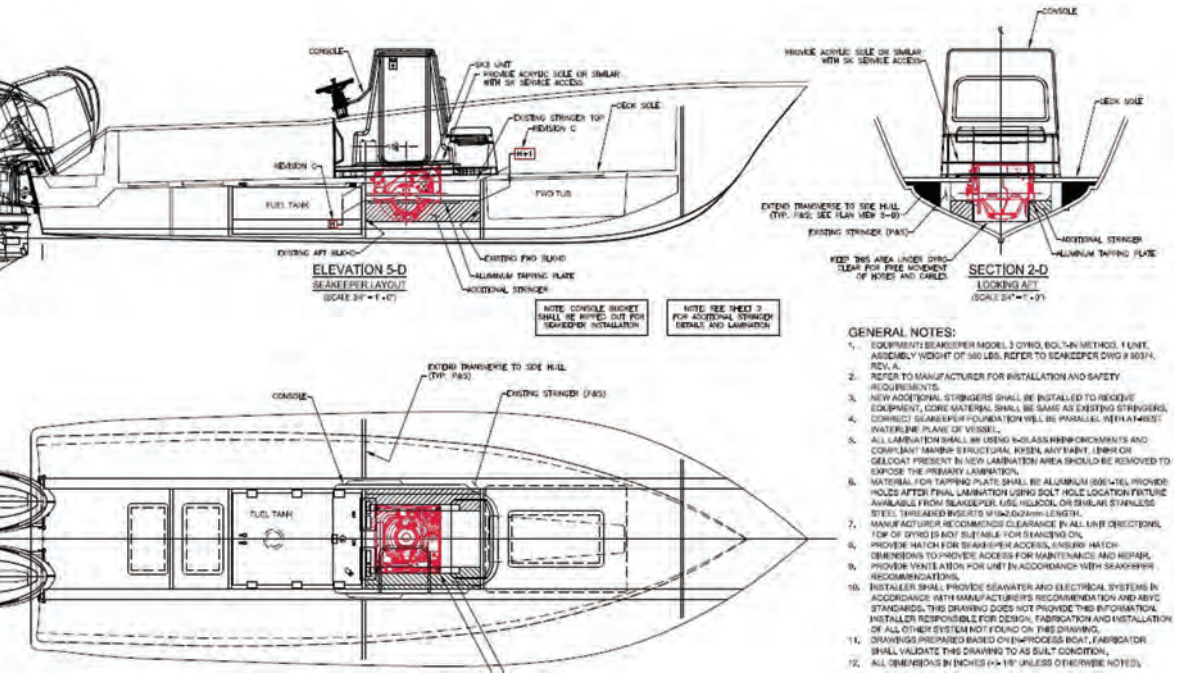
So can you point to one project that you think best speaks to your organization's capabilities?

In the pipeline is a 64-foot sport fish that we're developing. These are custom yachts, and they go far and above and beyond (existing boats). There's a lot of specialized, integrated systems that people really don't recognize, but it's their passion to have this fishing boat that has the most advanced features you can get.

We understand that you have a new technology demonstrator boat that premiered at the Miami International Boat show this year.

The Ocean5 Stuart Boatworks 27-ft. Technology Demonstrator is a first of its kind in innovative use of hull space, technology integration and green energy. It debuted at the Miami show, and it did a few things. Number one was the dynamic positioning and station keeping, so you can have this virtual anchor with the Sea Star Optimus 360 system, and that gives you the joystick, as well. In addition, that one coupled with the Garmin also gives you autopilot without an auto helm. But really, it was the idea of the virtual anchor with the gyro stabilizer. Those two coupled together will allow you to run offshore, hold your position over a reef, have the stabilizer on so that you can actually fish in the ocean in a small boat.

Images: Copyright Forest Johnson, Courtesy: Ocean5



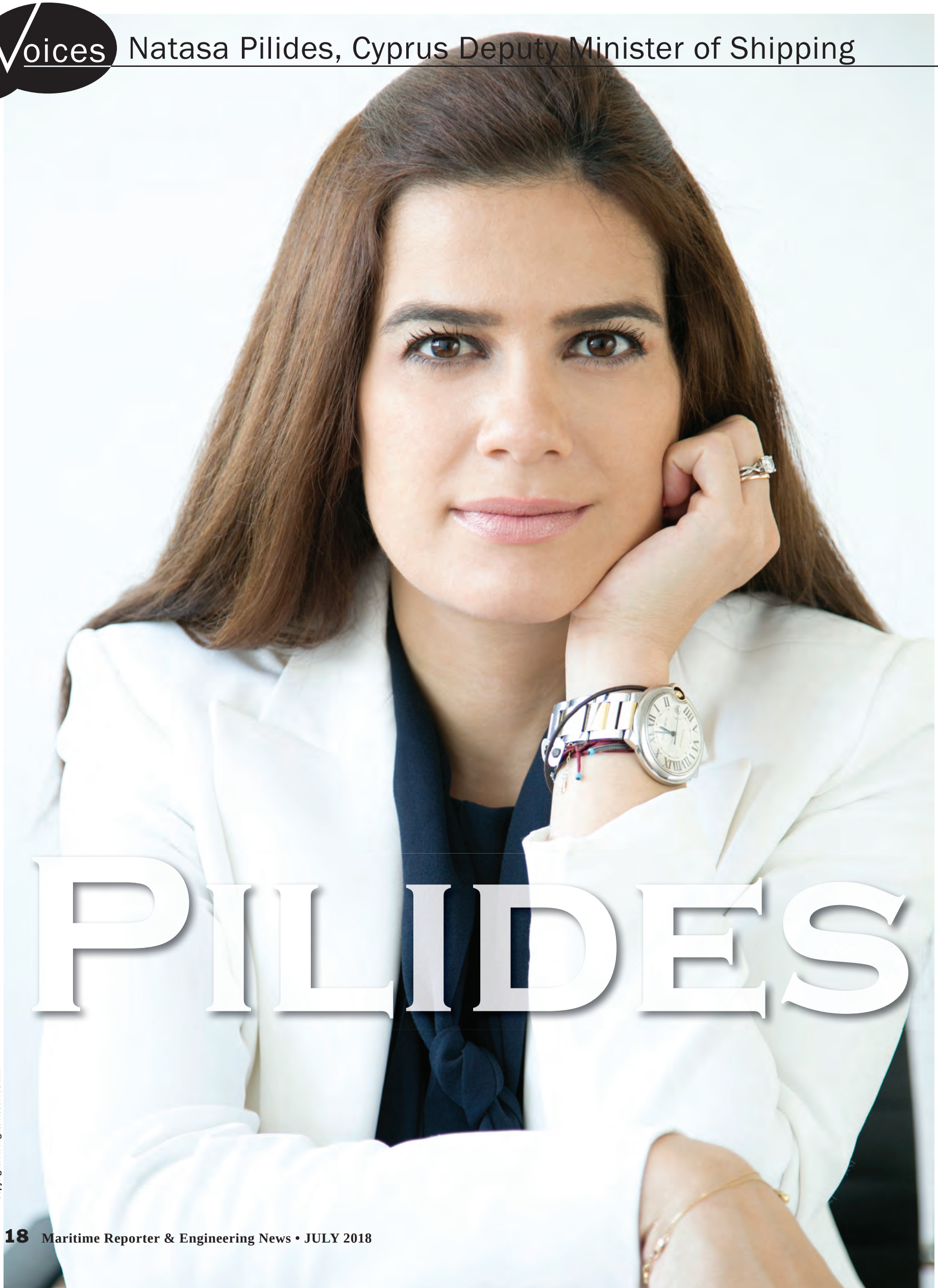
That does sound incredible. I've been bounced around many times on the ocean.

Also, it's all DC powered. So that was really a first – coupling the two together with no generator in a boat of that size. But it meant that we had to have a dedicated battery bank for the Sea Keepers – also just the weight of the Sea Keeper itself, which is underneath the cockpit. In order to compensate for the weight of the Sea Keeper, the boat is infused, so it's got a lighter-weight hull, stringers, and deck. In addition to the weight of the Sea Keeper, we had to design a foundation to take the loads. So there were new stringers that were put in the boat, aluminum tapping plates, extra fiberglass reinforcement. We had the battery bank with twin 480 AGM batteries that are about 120 pounds apiece. So at the end of the day, you're looking at adding about 800 pounds to a 27 foot boat.

So as the business of designing boats and ships continues to evolve rapidly, what technology do you see as the most transformational and helping you do your job more efficiently?

I'm still waiting for it. I'm still waiting to have CFD on my desktop computer and my laptop. You know, the ability to make it affordable, to make this your virtual tank test. It's gone (from tow tanks) into CFD, but it's still ridiculously expensive. So not every naval architect can have this sitting on their desktop. But you look at it, and that is our most powerful tool. So we have FEA, we have really advanced surfacing and modeling tools, and hydrostatic tools. And the one thing that I'm really looking to have is CFD running on my laptop.

Ocean5 balances consumer work with commercial and military craft.



PILIDES

Natasa Pilides, Cyprus Deputy Minister of Shipping, has held this newly created political post for only three months, but already she has big plans to facilitate the growth of her country's stature in world maritime circles. In Athens at Posidonia we sat with Pilides to discuss her plans for the development of Cyprus' blue economy.

BY GREG TRAUTHWEIN

While dubbed "deputy" minister, make no mistake that Natasa Pilides is in charge, reporting directly to Nicos Anastasiades, the president of Cyprus who asked her to take on the challenge. "I was director general of the Cyprus Investment Promotion Agency – 'Invest Cyprus' – which is responsible for the promotion of Cyprus and to make Cyprus more business friendly," said Pilides. "Shipping was in our mandate as one of the main sectors of focus." After that post she become the Deputy Minister, a cabinet position to allow shipping to voice opinions and proposals directly to the president. "That's a really positive development that is something that shipping has wanted for a very long time," a development that was voted in unanimously. "This shows the commitment of everyone in Cyprus to the (shipping) sector. Shipping is an important sector (to the country), and (the position) was attractive to me because Cyprus is a good performer in shipping; we're proud of the cluster that is building up and it's a great opportunity to expand it."

The Path Ahead

Pilides' plate is full, as she is responsible for all matters maritime: strategy and policy for shipping sector, as well as the integrated maritime policy, and within that spatial planning for maritime "which extends beyond the scope of just shipping. The goal is to keep it as focused as possible, to have a very clear mandate and effective implementation."

But part of the job in creating a new path is understanding exactly where you are.

"Shipping and ship management activities contributes about 7% to the economy in terms of gross domestic product (GDP), and it employs about 5,000 people in Cyprus onshore and about 55,000 seafarers, but beyond that we know the impact of maritime on the economy is actually quite a bit more, because the amazing thing about shipping in Cyprus is it is growing so quickly."

The word in Cyprus on maritime is 'growth,' a collective effort led by government and including commercial and recreational sectors, as well as building the blue economy, too.

"We're really trying to promote our 'blue growth,' encouraging students to take up maritime careers," a plan which includes the recent establishment of three new maritime academies to train cadets, with first graduates coming in 2019.

"As a Deputy Ministry we monitor and approve the schools and the courses, but we also give scholarships and financial support to cadets," said Pilides. "Beyond the three maritime academies, all of the universities – five private and three public in Cyprus – nearly all have maritime focused curriculum."

But as anyone knows, shipping is a multifaceted endeavor with many arms, and bringing the finance to bear has also been critical to building the path toward a bigger maritime economy in Cyprus.

"What really helped is that more and more banks in Cyprus have decided to expand into shipping," said Pilides. "All of the major banks are involved and committed, recruiting teams from abroad for training. We also have a relatively new (since 2013) package of legislation to do with investment funds. We've had our first shipping funds registered in Cyprus recently, and there is interest for many more. There is also plans to introduce some more legislation that will make the framework even more favorable for investment funds, and hopefully that will be another area of growth."

The Blue Economy

While shipping and ship management are core tenants of any maritime economy, the buzzword of today is 'Blue Economy' as true growth counts on independent and collaborative growth among various sectors that touch maritime.

For Cyprus, ideally located in the Mediterranean Sea, a key starting point is tourism both on

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Maritime Cyprus had a big presence at the recent Posidonia 2018 exhibition in Athens, Greece.

on land and at sea, investment to attract more yacht and sailing activities.

"Cyprus is an island nation, and a lot of importance comes with tourism, seas and yachting," said Pilides. Limassol Marina on the west side of the island became operational in 2014 and represents a large investment which helped to dramatically increase the number of yachts sailing in and around Cyprus. "We have plans for several more marinas, a lot going on that will connect the island by sea," said Pilides. "We also have plans to create more specific spatial planning to do with fisheries, commercial activities, as well as tourist project investment. Generally there is a lot of interest in hotel renovation."

While attracting the building of tourism and entertainment facilities to help bring in the global yachting community is one aspect, Pilides is taking a holistic look at the entire blue economy sector for her country.

"The goal is to expand the cluster in every single aspect; we're not just looking at bringing in more ships under the Cypriot flag, we are interested in more companies expanding here, choosing Cyprus as a location for offices and headquarters. We have many companies that are currently expanding their presence here," said Pilides. "We're hoping to attract new companies, as well as help our current client companies expand."

When discussing Cyprus as a location with shipping, tech and financial companies, Pilides believes Cyprus has an obvious advantage. "I think Cyprus combines many ingredients that you can find in many other places, rarely can you find them in one place like Cyprus," said Pilides. "The human capital, the quality of people that you can find here is important. There's a high quality of life, a cheaper cost of living and our flag is a very high quality flag."

Location, finance and people are individually strong threads, woven together by strong government support to create the fabric that is Cyprus maritime.

Cyprus Facts

Capital:	Nicosia
GDP:	$31.19B (2017 est.)
% GDP from Maritime:	7%
Population:	1,221,549
World Rank, Population:	159
Median age:	36.8 years
Land Area:	9,251 sq. km.
World Rank, Land Area:	170
Coastline:	648 km
Highest point:	Mount Olympus 1,951 m
Merchant Marine, total:	1,022
By type:	
bulk carrier 307, container ship 183, general cargo 164, oil tanker 57, other 311 (2017)	
World Rank, Merchant Fleet:	24
Major seaport(s):	
Larnaca, Limassol, Vasilikos, Famagusta, Kyrenia	

Source: CIA World Factbook

Voices Professor Asgeir Johan Sørensen & the Path Forward on

Ocean Autonomy

BY ELAINE MASLIN

Marine autonomous systems working independently and in connected systems are fast becoming a growth sector within the ocean industry space, including the oil and gas industry.

The emergence of new marine autonomous systems appears to be a weekly occurrence. As costs have reduced in numerous areas, from sensors to satellites, some of these systems are also coming within the grasps of ordinary citizens, as well as ocean scientists, looking to unlock the secrets of the deep.

Part of the drive for these systems, in the oil and gas industry at least, is to reduce use of manned surface vessels, which are costly to operate and emit fumes, at best.

A goal set for Norway's Norwegian University of Science and Technology (NTNU) is to reduce use of surface vessels by 80% in several oil and gas operations. The NTNU's Center for Autonomous Marine Operations and Systems (AMOS) has the task of finding solutions to meet that goal, as well as targets to increase mapping and monitoring coverage by 10 at a tenth of the cost. Another goal is for "safe marine operations anywhere at any sea state at one tenth of the cost," said Asgeir Johan Sørensen, Professor and Director of AMOS.

Norway has other incentives to produce advanced ocean technologies. The country has ocean areas 5-6 times larger than its land mass, says Sørensen. Its key industries span fisheries, ocean transport and, for the last 50 years, oil and gas. "We are moving now into offshore wind and aquaculture," says Sørensen. "To be competitive, we (Norwegians) always have to have high quality and low cost," which is why firms are exploring use of autonomous systems. "Norway also has a huge responsibility when it comes to governance and management of the oceans, including into the arctic."

Initially, it was work in the oil and gas sector, to avoid risk to divers, that led to Norway to pursue remote operated subsea technologies. It's been more recently that the industry has been looking to develop more autonomous subsea systems, from processing equipment to subsea vehicles, such as pipeline tracking autonomous underwater vehicles.

Within the past year, Norway's Statoil has been working towards subsea resident vehicle concepts, deploying two different remote operated vehicles (ROVs), one from Houston-headquartered Oceaneering (the e-Novus) and one from Norway-based IKM, on multi-week and even month deployments. However, while these deployments meant the vehicles were autonomous in that they no longer needed a support vessel, they were still tethered and operated by staff onshore.

The next step will be vehicles that can operate without a tether, such as Oceaneering's new Freedom concept, which it unveiled at the Subsea Valley Conference in Oslo. It's a resident ROV concept, based on a hybrid vehicle, that would live in a subsea docking station and be able to fly out on missions in either tethered (remote operated) or untethered (autonomous) mode. It would have onboard batteries that would be recharged at its docking station and a tooling "magazine" it could select from. The firm is hoping to perform offshore trials with a prototype, expected to be about 3.3m-long, next year, Arve Iversen, ROV operations manager, said at Subsea Valley.

Much more is being done to develop autonomous systems, however. NTNU AMOS was set up between The Departments of Marine Technology and Engineering Cybernetics at NTNU, working with other international research partners and Norwegian companies, as a Centre of Excellence (CoE) support by Norway's Research Council, from 2013 for 10 years. Since 2013, it has already notched up 53 PhD students and multiple other spin-outs, including drone firm Scout, and BluEye, an observation ROV (deepest underwater commercial drone) company, with Go-Pro style usability. This mix of companies gives an idea of where the research is heading, i.e. interconnected networks of systems.

As well as also working on improving intelligence in systems, such as power systems, making them more intelligent to optimize energy consumption and battery use, AMOS is also looking at swarms and heterogenous systems, involving in air and subsea drones, as well as unmanned autonomous surface vessels, which would reply on satellite infrastructure for communication and connectivity.

Helpfully, the cost of sending up a satellite into space has reduced, to $390,000-$520,000, says Sørensen. "While they have limited functionality and only last 3-5 years, they're important for autonomous systems," he says. "We can use a satellite, send out a drone, working with unmanned ships, for joint operations."

Norway is becoming a testing ground for these technologies, with a number of areas designated as test beds, including Trondheimsfjord in Northern Norway, Storfjord in the northernmost part of western Norway, an area with several ferry crossings deemed suitable for testing and developing sensor technology and management systems, and Horten on the Oslo fjord in southern Norway.

Indeed, Kongsberg, which is working heavily in autonomous shipping, including an "autonomous and all-electric" container ship, the Yara Birkeland, is working with NTNU unmanned, underwater resident "snake" robot spin-out Eelume. Kongsberg is also heavily involved in a number of other projects (having established its position in the autonomous underwater vehicle (AUV) market with the Munin and Hugin AUVs), including the Sea-Kit, a hybrid AUV-ASV, which will sport a Kongsberg K-MATE autonomous surface vessel control system.

But, we need to be careful in how we define autonomy, compared with automation, says Sørensen. "Automation is how you perform well-defined tasks without human intervention. Autonomy is when dealing with an unstructured environment and uncertainty. You typically go in with unmanned systems when there are the three Ds: dull, dirty and dangerous. Autonomous is when we don't have links and that's also why subsea is leading this field. It (a system or vehicle) has to be there on its own and make decisions. Pre-planned missions is not autonomy. It's only autonomy when an unplanned event happens and it has to make a decision."

There are also different levels of autonomy, he says and different approaches. One, the human is still in the loop. Two, management by consent, using teleoperators, a field which started in the space industry because of the time delay in relaying signals.

Three, management by exception. "A lot of oil and gas rigs and offshore installations are on level three, management by exception. On ship there's thousands of signals just to control the power plant. So the system is more or less autonomous. Four, highly autonomous. Sørensen says fully autonomous tends not to be used – the discussion gets rather philosophical.

How autonomy is implemented can also take different forms. Platforms can sense then act, or sense, model, plan and then act. While something like Kongsberg's power management system for dynamic positioning has autonomy, its not so much able to reconfigure and make deliberative choices, says Sørensen, giving an example. Similarly, an unmanned platform isn't autonomous, it's reactive, he says. It could be made more autonomous by introducing deliberative control architecture. Take it another step and the system can learn by sensing and by doing.

Critically, situational awareness needs to be built in, to provide a high level of autonomy. "That's one of the crucial areas that's related to sensor technology," influencing how perceptive of the environment a system can be. "Is it able to perceive and sense information and then start to project that information in to future (i.e. make predictions and act on them)? That's one crucial research areas we are working on."

Examples of this include mapping systems which are able to detect, by themselves, any gaps in the data they have collected and go back and fill them in, during a mission. An intelligent system like this was used to track plankton in

Photo from NTNU AMOS, by Thor Nielsen

Professor Asgeir Johan Sørensen, Norwegian University of Science and Technology (NTNU).

Initially, it was work in the oil and gas sector, to avoid risk to divers, that led to Norway to pursue remote operated subsea technologies. It's been more recently that the industry has been looking to develop more autonomous subsea systems, from processing equipment to subsea vehicles, such as pipeline tracking autonomous underwater vehicles.

the water column, having had to find the plankton in the first place then follow it.

These capabilities will be crucial when systems are working with and around subsea oil and gas systems, which is expected to be one of the main areas where autonomous systems are required, along with ocean science, says Sørensen.

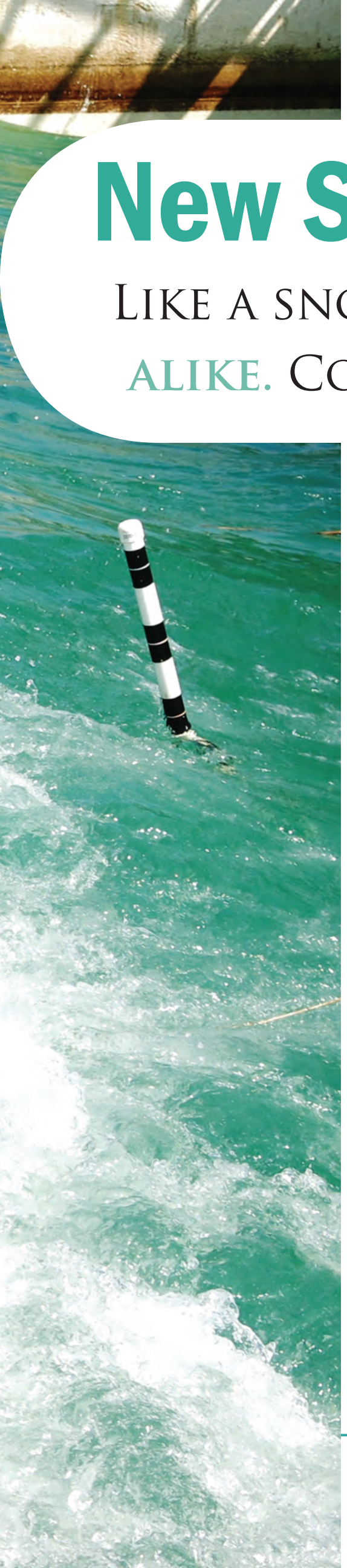
For whatever the purpose, be it oil and gas exploration, renewables or aquaculture development, shipping or ocean science, the range and capability of subsea equipment and ancillary and support systems is expanding by the day, aided by developments in ICT, nanotechnology and even biotechnology (for the snake motion used by Eelume, for example), including new materials, microe-electric-mechanical systems, and big data. As an example, systems are being developed which could sense and distributed forces along the body of an underwater vehicle, in order to compensate for or reduce drag, says Sørensen. He also cites micro to macro actuation and sensing, and machine vision systems using hyperspectral sensing which can take in any wavelength to classify and detect things that we haven't been able to before. The possibilities are vast.

Sørensen also sees a "democratisation" of this space. With cheaper satellites and commercial underwater drones available to the public, "everyone can be an ocean scientist." It's a timely availability of technology, Sørensen says. "Everyone should be aware of the oceans, and how we care for them. Putting plastics in the ocean, we will not get away with that, the public will see it more and more.

"We see there is huge potential for unmanned autonomous systems, from space to the seafloor for mapping and monitoring of the oceans," says Sørensen.

How this world will be ruled and regulated in yet to be answered. There are also concerns about cyber security. But, people also need to look at their business models, says Sørensen. "Where ever you are sitting, I would be worried about my business model. There are changes going on, you need to be awake," says Sorensen.

Image: Ohmsett



New Spill Tech Solutions

Like a snowflake, No two oil spills are alike. Constant vigilance is Required

BY JANE DELGADO

No two oil spill response operations are the same. Each can present new and even tougher challenges for spill responders as they detect, contain and recover spilled oil. Diverse aspects affecting oil spill response operations can be the physical environment, spill monitoring, use of chemical dispersants, and the availability of proper technology for the situation.

Some challenges have been met through research and technology development of techniques for dealing with spills. However, developing new technology can be a challenge in itself since many countries prohibit open-water equipment testing or response training with oil. Unlike smaller facilities that rely on scale models and oil surrogates, Ohmsett – The National Oil Spill Response Research & Renewable Energy Test Facility conducts testing, training and research with full scale equipment using real oil in repeatable simulated sea conditions. Managed by the Bureau of Safety and Environmental Enforcement (BSEE), Ohmsett is committed to helping improve the methods and technologies available for oil spill detection, containment, and removal. It provides the Bureau and other facility users from around the world with a unique oil spill response testing and training environment that simulates real-world conditions in a safe and controlled environment. “Even though Ohmsett is a government operated facility, it is not exclusively for use by U.S. government agencies,” says John Delia, Ohmsett facility manager. “Private companies, foreign government agencies, and universities use the facility to test equipment, evaluate acquisition options, and to validate research findings.”

Ohmsett’s most notable feature is the above-ground concrete test tank measuring 667 feet long by 65 feet wide by 8 feet deep filled with 2.6 million gallons of crystal clear salt water. The facility is equipped with a wave generator, three movable bridges with tow speeds of up to 6 knots, an oil/water chemistry laboratory, and a control tower that is fully computerized for collecting data from various sensors and video cameras for synthesis and analysis.

As the response industry demands more advanced and innovative oil spill technologies, BSEE has supported emerging technology development by funding multiple projects at Ohmsett. Most recently, research included a Geo-Referencing Identification tagging system equipped with a Wave Characterization Module, diminishing slick thickness tests, mechanical recovery of treated but undispersed oil, and remote sensing of oil slicks.

Geo-Referencing Identification tagging system

The ability to remotely track wave conditions during skimming operations could give responders a better understanding of the environment in real-time and improve operations during a spill incident. In an effort to advance these tools, BSEE funded AECOM, of Gaithersburg, Maryland, to develop a Geo-Referencing Identification (GRID) tagging system equipped with a Wave Characterization Module (WCM). When mounted to a skimmer, the tagging system characterizes the motion of ocean waves, tracks the skimmer location, and transmits the information to the operators and to other personnel in remote locations.

“This project will enhance the latest generation of GRID technology and allow local oil spill responders to measure wave characteristics to finesse their skimming operations,” said Karen Stone, BSEE oil spill response engineer. “It will also transmit data to incident commanders during spill operations to allow for real-time operational awareness.”

The AECOM team, led by Ben Schreib, evaluated the GRID system mounted to a skimmer in wave conditions in the Ohmsett test basin. AECOM and their subcontractors, Midstream and Envigia, also developed a free-floating WCM-buoy to calculate wave conditions. During the evaluation, the WCM and GRID tagging systems was attached to a commercially available skimmer and subjected to varying wave conditions, while two WCM-buoys identified wave height, wavelength and period. In order to collect comparative wave data, the two WCM buoys were operated separately in the same area as the skimmer. Through a mesh network over WiFi, AECOM was able to communicate the skimmer position and wave information to a tablet with a custom-made user interface application and via satellite to a web-based GIS interface platform.

A tagging system equipped with a wave characterization module is mounted to a skimmer to track the skimmer location and wave conditions during spill response operations.

Image: Ohmsett

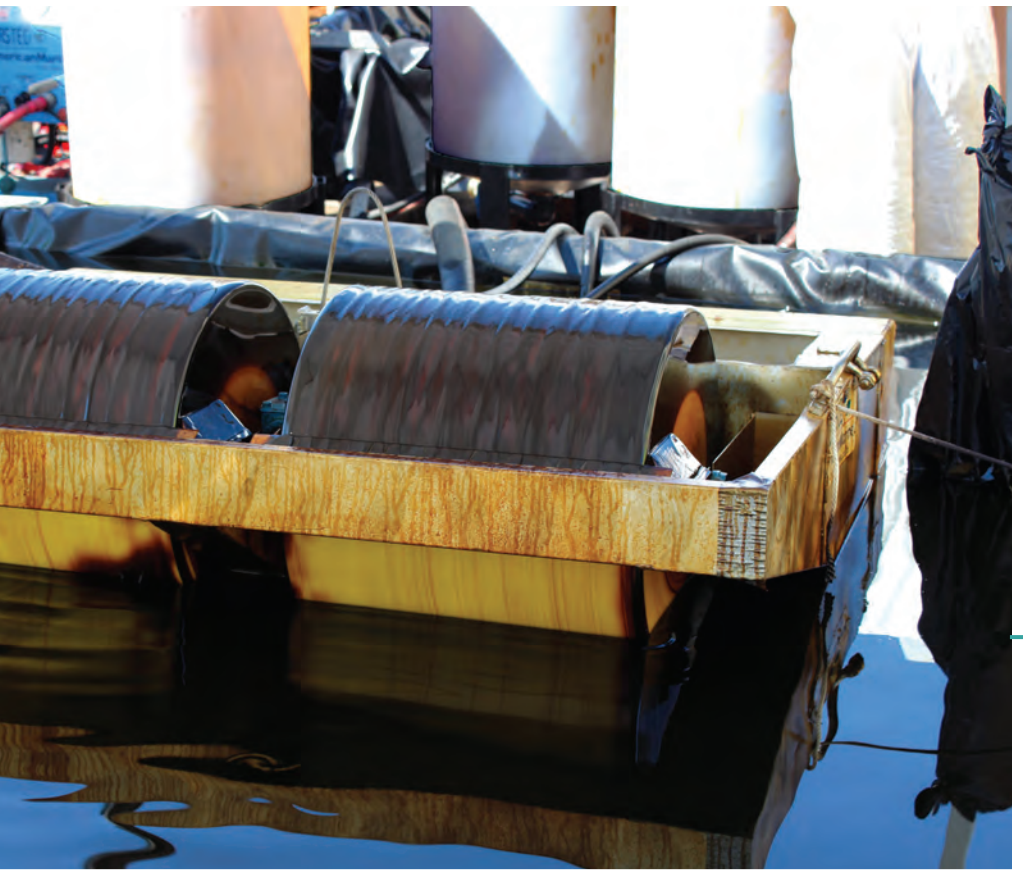


Image: Ohmsett

A skimmer was tested in controlled conditions to evaluate the impact dispersant mixed with crude oil has on skimmer performance.

"We wanted to determine if the algorithms in the GRID units were accurately measuring wave conditions. Ohmsett has a pretty good sense of the exact wave height, length, and period, so we could compare the GRID units to reality," said Stone. "This will allow the AECOM engineers to incorporate a 'correction factor' during certain wave conditions to more accurately measure ocean conditions."

Diminishing slick thickness

During actual oil spill response operations, it cannot be assumed that a skimmer will be recovering oil in a consistent slick thickness. In many cases, it is likely a skimmer would operate in a slick that decreases in thickness. In an effort to obtain basic research data on skimmer performance, BSEE conducted diminishing slick thickness tests on a weir and two oleophilic skimmers. The objective was to evaluate the performance of the skimmers for oil recovery rates and oil recovery efficiencies while recovering oil from incrementally thinner slicks.

"It is important to understand how a skimmer's performance is affected when operating as slick thickness diminishes," says Kristi McKinney, BSEE engineer.

In this test series, the Ohmsett staff used ASTM F2709 Standard Test Method for Determining a Measured Nameplate Recovery Rate of Stationary Oil Skimmer Systems, the standard for testing the performance of stationary skimmers in calm water conditions. The standard calls for testing as the slick thickness decreases from 3 to 2 inches of oil in order to create the ideal conditions necessary to measure a skimming system's maximum performance; however they incorporated various other oil slick thicknesses ranging from 2-inchs to 1/8-inch.

According to McKinney, this series of experiments is the first of its kind and represents a continuation of basic research data associated with quantifying skimmer performance with varying test parameters.

Mechanical recovery of treated but undispersed oil

With the use of dispersants during response operations, there are claims that treated oil that has not dispersed can make traditional containment and recovery more challenging than untreated oil. In response to these comments, BSEE conducted research at Ohmsett to determine whether undispersed crude oil treated with varying amounts of dispersant affects mechanical containment and recovery operations.

During the first phase of the project, two oleophilic skimmers, one with a smooth drum and the other with alumi-

A rotocraft equipped with a thermal infrared sensor captured images of emulsified oil to validate the sensor's capabilities during the NOAA and BSEE funded remote sensing test.

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num discs, were independently tested in controlled conditions.

Using the ASTM F2709 as a guideline, comparative testing of untreated weathered crude oil and treated weathered crude oil was conducted to determine oil recovery rate and recovery efficiency. “Preliminary results do indicate that the performance of both skimmer types was affected by the presence of dispersants in the oil,” said McKinney.

The second phase compared the ability of a boom to contain crude oil and crude oil mixed with dispersant. Using ASTM F2084 Standard Guide for Collecting Containment Boom Performance Data in Controlled Environment, as a guideline, a 50-foot curtain boom was rigged to the main bridge to simulate towing at sea. Oil was preloaded into the apex of the boom which could be monitored in real time using two high definition underwater cameras.

The boom was towed at incremental speeds to determine when first loss occurred. “Runs were also conducted at various speeds with the crude and dispersant treated crude to quantify and compare volume of oil lost due to entrainment,” said McKinney. “BSEE is currently analyzing the data obtained from these tests, and may conduct further skimmer and/or boom tests to collect additional data.”

Remote sensing of oil slicks

Remote sensing has changed the way the spill response industry has taken on the challenge of detecting, monitoring and measuring oil slicks. BSEE recently partnered with the National Oceanic and Atmospheric Administration (NOAA) to evaluate different remote sensing platforms used to assess oil spills. This included accurately monitoring and measuring the thickness of surface oil slicks.

NOAA and BSEE conducted a study to gain a better understanding of the capabilities and limitations of several systems at Ohmsett. The focus of the project was on the identification of oil emulsions from aerial and satellite platforms with a variety of sensors, while simultaneously collecting in situ physical thickness and oil chemistry measurements in a controlled test environment.

For the study, the Ohmsett staff created a large scale emulsified oil slick under natural but controlled conditions and maintained it throughout the evaluation.

The emulsified oil in the tank was viewed from multiple angles and heights with remote sensor systems mounted to the main bridge, an unmanned aerial vehicle, fixed-winged aircraft, and a helicopter.

In addition three satellites equipped with a variety of sensors were tasked to fly over the Ohmsett test tank to capture high resolution remote sensing data with the physical sampling in the evaluation of the emulsified oil slick.

The study allowed the BSEE and NOAA team to gain a better understanding of sensor resolution and the impact of sensor altitude while characterizing surface oil emulsions.

It also provided useful information to judge the most efficient remote sensing technologies and platforms for real-world response and the opportunity to enhance these techniques for future spill response and related damage assessments. A master list of oil spill response research projects conducted by BSEE at Ohmsett can be found on https://www.bsee.gov/what-we-do/oil-spill-preparedness/oil-spill-response-research/master-list-of-oil-spill-research.

David Knukkel,
Founder & CEO, RIMS BV

Photo: RIMS BV

Send in the Drones

Drones increasingly take on the dirty, dangerous jobs in maritime

For our readers not aware, please discuss the size and scope of RIMS BV.

RIMS is a global service provider to help revolutionize maintenance strategies with smart drones and robotic inspections. We offer expertise, as well as the market inspection of enclosed spaces with your drone, (and we have) a lot of experience with inspection of different assets (such as ships, storage tanks, chimneys).

https://youtu.be/o1izuv3bnYw
https://youtu.be/V018lUntvuc

Please discuss your tenure with RIMS.

My name is David Knukkel and I am a Senior Maintenance Consultant/Asset Manager in the Maritime industry (www.knukkel.com) and CEO of RIMS BV (www.rims-bv.com). I have 10 years of sea experience as an officer on container vessels of 2,000 to 8,700 TEU. After coming ashore I spent two years as superintendent for Reederei Blue Star. I worked with Wärtsilä Switzerland as a full maintenance Contract Manager, and afterwards as a Senior Maintenance Consultant for Boskalis and the last couple of years for Smit Lamnalco. In 2015, I founded RIMS, and started to scout new technologies to bring maintenance to the next level and replace high-risk and resource-intensive maintenance activities with smarter drone and other robotic technologies that are more sustainable.

What is the scope of robotic products and services offered?

At this stage we focus on the internal drone inspections, as we believe that in many cases flying inspection tools will win (business) from the crawlers, although the latest have certain advantages like carrying measurement tools. The challenge with crawlers is that the magnetic wheels do not hold on rusty environments, areas which we would like to inspect in the first place to ensure that the integrity is still okay. Nevertheless we made an offer once to use combined inspection tools to inspect dredge piping on board of a vessel.

Do you manufacture your own drones?

We do not manufacturer the technology ourselves, but source it from a manufacturing company in Switzerland. Our expertise is not only flying the drone, but also having all systems and certification in place to support customers and classification surveyors by introducing safer and cost efficient working practices. We have hands-on experience in the industry we are working in, so we also have the expertise with all requirements, either from clients as from class.

Is your company designed to sell product, sell service, or both?

Depending on the operation profile of the customer we can advise whether it makes sense to use our services or keep the knowledge in-house. In most circumstances I recommend to use a specialized service provider, as operating and maintaining expensive and high tech equipment is part of their core business, and they make sure they fully comply with all regulations. Many companies underestimate what is required to keep a professional team in place to do all the inspections.

By industry, can you discuss the diversity of your business today?

We are focusing on inspection of assets in the oil and gas and the maritime industry, as this is our background and have large needs of internal remote inspections from safety perspective. As these assets are usually inspected by rope access, scaffolding and/or cherry pickers we can also reduce the costs by not using these tools anymore. It is good to realize that with rope access, ropes often damage the coating of the areas where they are attached, increasing the speed of corrosion. We see that now also the insurance surveyors ashore for utilities are showing more interest.

Put in perspective your growth forecast for robotic inspection services in the maritime sector.

I expect that the growth goes exponential the coming years. As said the awareness is growing very fast and this time the regulators like the classification societies are upfront of the technology: we have obtained class approvals as remote inspection specialist using drones by Bureau Veritas, ABS, Lloyds, ABS, RINA and KRS. The approval process for ClassNK has started up. DNV-GL does not approve us (yet) as they have their own drone teams in the market using the same technology. It is in the benefits of the surveyors to use this technology so I think that they will be a major driver to bring it to the market. Another trend I see is that many youngsters do not want to go into tanks anymore. The next generation is used to work with tablets and do things remotely; keeping them aligned with the required inspections and the introduction of new technology is a must.

Looking at the maritime and offshore sectors, are there any specific niches where business prospects look particularly good?

Ship and rig owners are our biggest clients, as they will have the biggest benefits by working safer and cost efficient during surveys, vetting inspections, predocking inspection, brokerage inspections, in- and out surveys and so on. We see an increase of shipyards which would like to try to use the technology, but are still unsure of how to fit the new technology into their business profile. We support them with it.

Looking forward, where do you see further developments?

We have a roadmap of new technology to be developed to make remote inspections even more efficient and safer. Technological partners are found, and we are now in the process to attract investors to step in and allow us to make the next steps forward. Think about developments in the area of thickness measurements, ATEX, automated reporting, autonomous flights and so on.

Trending Digital

With digitalization technologies sweeping through maritime, Henrik Segercrantz, Maritime Reporter's correspondent in Helsinki, explores latest developments in the quest to harness the power of 'big data.'

HENRIK SEGERCRANTZ

Wärtsilä's Smart Marine Ecosystem

Wärtsilä continues to build its leadership resume in marine and energy markets, boasting net sales of $5.7 billion last year, supported by 18,000 employees with operations in more than 80 countries. Increasingly Wärtsilä is using 'smart' technologies in its growing scope of products for the maritime industry, from engines, onboard systems and machinery to control and navigation systems.

The group is promoting its Smart Marine Ecosystem, a vision where smart vessels connect with smart ports and beyond to maximize the use of resources and operational efficiency, minimize environmental impact and risk, and achieving highest levels of safety and security. Wärtsilä aims to resolve inefficiencies in the shipping sector resulting from overcapacity, sub-optimal fuel consumption and waiting times at ports and other high-traffic areas through data integration, greater connectivity and cloud-based technology. In March this year it announced its acquisition of Transas for 210 million Euro, a global company offering marine navigation solutions that include complete bridge systems, digital products and electronic charts. "We can now connect Wärtsilä's product portfolio, the biggest in the marine industry, with Ship Traffic Control, Simulators, Navigation solutions and fleet operation solutions from Transas. The combined package will further improve the way a vessel can sail in the most cost efficient and environmental friendly way for our customers," said Roger Holm, President, Wärtsilä Marine Solutions, when announcing the deal. Earlier, in 2015, the acquisition of the Germany based L-3 Marine Systems International (MSI) had been finalized comprising SAM Electronics, Valmarine, Lyngsø Marine, Dynamic Positioning & Control Systems, Jovyatlas Euroatlas, ELAC Nautik, FUNA, GA International and APSS.

Since November 2015, Jaakko Eskola has been in charge of Wärtsilä Corporation as President and CEO.

On *Maritime Reporter & Engineering News'* visit to Turku, Finland, in May, Jörgen Strandberg, General Manager of ANC Advanced Technology Electrical & Automation at Wärtsilä SAM Electronics talked about the Smart Marine process of Wärtsilä, pointing out the many current ways of shipping operation not today optimized for efficiency. "While accounting knows about every dollar and cents across the company nobody knows the true operational sweet spots or assets health across the fleet," he said. He said that a daily

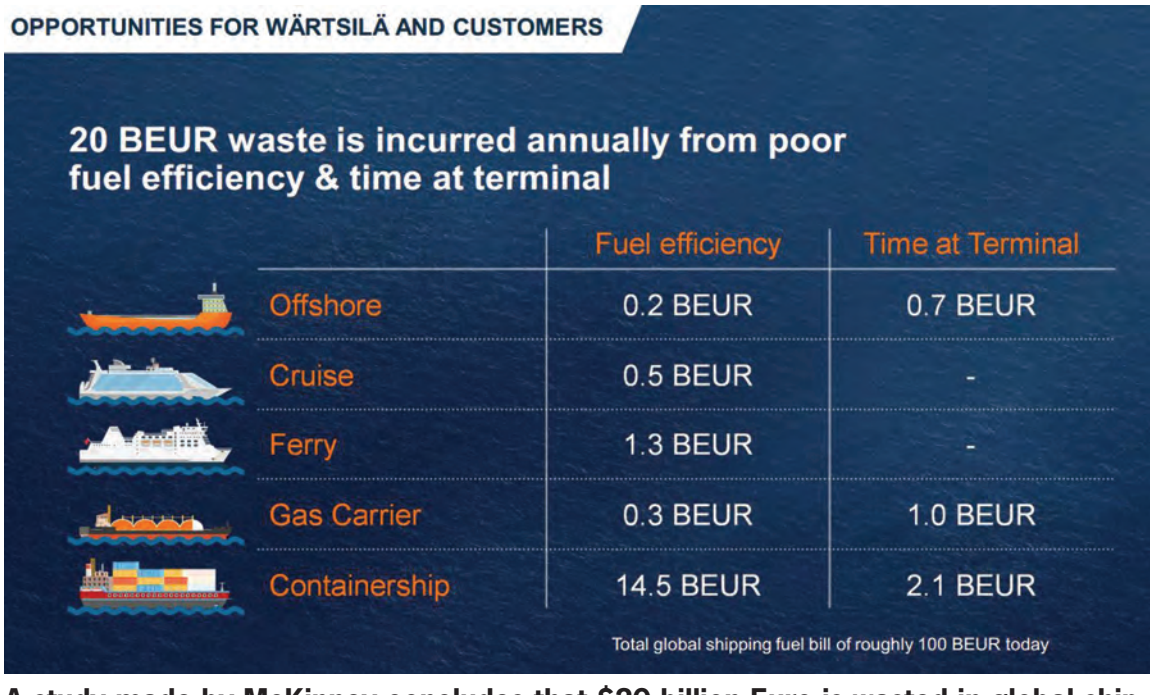
Images: Wärtsilä

Jörgen Strandberg, Captain, General Manager of ANC Advanced Technology Electrical & Automation at Wärtsilä SAM Electronics.

noon report based on manual input is accepted for performance comparison, with the knowledge kept in the head of the captain or management preventing best practice to be shared across the fleet. He said that typically shipping competes only with other shipping companies; the freight to rail, road and air has an overall poor service; ship management has been commoditized; there is financial control instead of technology; and economy of scale is seen as the only viable opportunity.

"Market does not reward quality due to oversupply of ships," he said, illustrating with a study by McKinney that concludes nearly $23 billion is wasted yearly in lost fuel efficiency and time at terminal, in global shipping.

"This provides opportunities for Wärtsilä and customers," he said. "In the future the bridge onboard a vessel will be a virtual land-based maneuvering theater."



A study made by McKinney concludes that $20 billion Euro is wasted in global shipping yearly, in lost fuel efficiency and time at terminal.

Rolls-Royce's Intelligence Awareness System.

Rolls-Royce: Intelligent Awareness

Rolls-Royce has developed an Intelligence Awareness System displayed on a touch-panel, which has four user interface modes. Virtual Reality in 2D and 3D, Augmented reality and Precision mode. The Precision mode displaces accurate distances between the user and surroundings, particularly important when navigating in congested narrow waterways and when docking and undocking. The view can be rotated and expanded. The Augmented Reality mode provides live feed from intelligent awareness sensors. The object detection system identifies both static and dynamic objects. By selecting a vessel, further information is displayed. In Virtual Reality 2D and 3D modes real world data is combined with map data. Vessel speed and heading, are displayed. The information displayed can be modified to best suit the needs. Intelligent Awareness gives much better visibility. "This is the first solution on the way to autonomous ships," says Karno Tenovuo, SVP, Shipping Intelligence, Rolls-Royce, Finland. "It is an advisory solution. We are not planning to go all the way into highest level of autonomy. We will still have people monitoring but they will be on shore=based centers mainly," Tenovuo said. Rolls-Royce has divided its systems being developed into two parts, Intelligent Asset Management, aiming at optimizing system reliability, and Remote Autonomous Operation focusing on navigation and control and how to operate the vessels in future shipping. Rolls-Royce has during last years formed a number of partnerships with companies and organizations such as Google and the European Space Agency to develop various sectors faster and more efficiently.

The vision is to see autonomous shipping first in local shipping and later globally when the regulations have been done. "We believe that a disruption is happening inside shipping right now," Tenovuo said.

In May, Rolls-Royce and Finferries, the Finnish state-owned operator of ferry services in Finland, also announced its plan to jointly develop strategies and solutions to optimize the safety and efficiency of the marine operations through developing the decision support technology and to demonstrate remote and autonomous ferry operations. A key focus will be on the research project SVAN, Safer Vessel and Autonomous Navigation, where the two partners will look to implement the findings of the earlier joint Finnish AAWA research project on developing autonomous shipping. Mats Rosin , CEO of Finnferries, told Maritime Reporter.

DIMECC: Ambitious Autonomous Plans

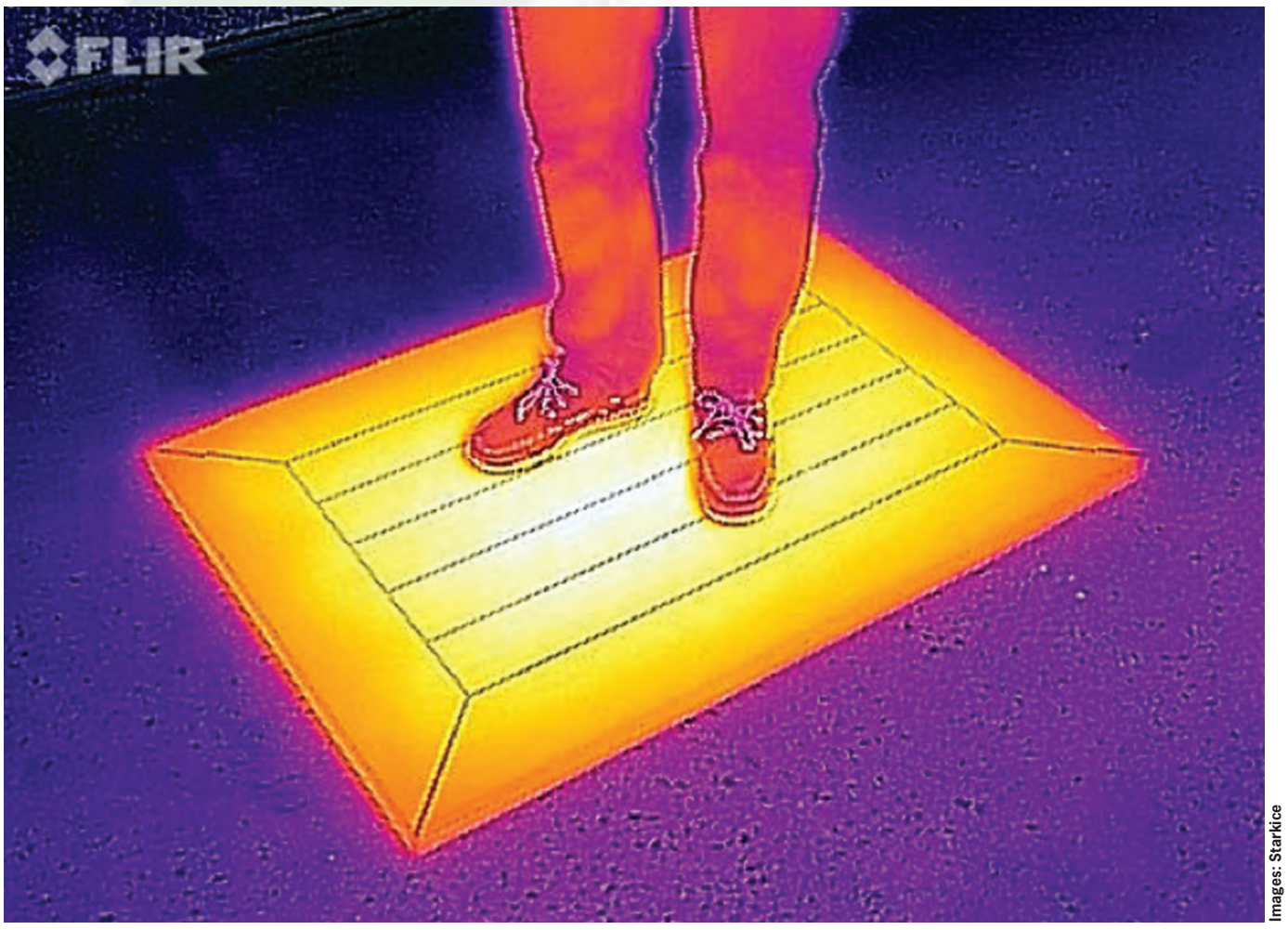
The One Sea Partners within the Finnish DIMECC company, aiming at creating the world's first autonomous marine ecosystem by 2025, was established two years ago by seven companies; ABB, Cargotec, Erics-

Images: Rolls-Royce

Starkice has developed a synthetic heated teak-deck suitable for Arctic Polar vessels.

Images: MacGregor

ESL Shipping's two new bulk carriers are intended for Swedens SSAB's inbound raw material sea transports within the Baltic Sea and from the North Sea. The autonomous cranes have been developed by MacGregor.



Images: Starkice

son, FinFerries, Finnpilot, Meyer Turku, Rolls-Royce, Tieto and Wärtsilä. The partners are engaged in several maritime development and research programs, and in establishing the Jaakonmeri test site, the first autonomous test site for developing autonomous ships, set up outside the west coast of Finland near the city of Rauma. The site covers an area of some 9.6 nautical miles x 3.8 nautical miles and can be rented by anyone developing systems and equipment for autonomous shipping, based on an approved application with some reporting requirements, for example, regarding the equipment to be temporarily installed on the site. No underwater equipment is allowed.

MacGregor: Cargo ID & Tracking

MacGregor aims at reducing inefficiencies in shipping. "Our ambition is to help customers optimize the lifetime profitability, safety and environmental, sustainability of their operations," said Heli Malkavaara, Senior Group Communications Manager at the company. MacGregor is looking more closely at maximizing utilization rates through a number of solutions included in its MacGregor PlusPartner concept, answering the question; 'how can a ship deliver the best return on its investment?'

MacGregor PlusPartner concept is an approach to ship design that considers all parts of the cargo handling system as a whole and works forward from the cargo profile.

Recent solutions developed by MacGregor include systems for smarter breakbulk stowage planning, and an autonomous discharging bulk vessel crane, the first such units to come into operation this year, with three cranes to be fitted onboard Finnish shipowner ESL Shipping's two new liquefied natural gas- fueled ice class 1A handysize 25,600dwt bulk carriers from Sinotrans & CSC Qingshan Shipyard in China.

Starkice: De-icing Services

Aker Arctic Technology owns half of the Finnish company Starkice, specialized in Arctic de-icing systems and consultancy for vessels, platforms and terminals. The Starkice heating elements are controlled using smart sensors, through a control center with graphical display. The system provides a notification about freezing conditions and activates the heating elements when needed, thus saving energy. It also determines where more power is needed and in which areas you can use less heating energy. For example, if ice starts to form on one side of the vessel only, heating is directed there. There are currently some 5,000 Starkice sensors in operation worldwide. Typical applications include decks and passages, stairs, rails, superstructure, hatches, doors, pipes and tanks and helidecks. Starkice Polarpad is a ready made heating element to be fastened on the existing deck using a special made fastening mechanism.

Storm Brewing

Weather critical to fulfilling IMO DCS potential and boosting shipping's sustainability says StormGeo

StormGeo believes the upcoming IMO DCS (Data Collection System) regulation can be a game-changer for shipping – enabling a more environmentally and commercially sustainable age of operations. However, according to the global leader in weather forecasting and maritime decision support services, vessels must harness the potential of continual route optimization to realize maximum benefits.

IMO DCS data collection on 1 January 2019. It requires all vessel operators to report verified data relating to fuel consumption, with the goal of giving companies greater insights into fuel use and how to reduce it. The regulation sits alongside the EU's existing MRV (Monitoring, Reporting and Verification) requirement, which logs CO2 emissions from individual vessels operating within and to and from the EU.

"Taken together, these two mandatory requirements mark a significant step forward on the path to sustainability for our industry," states Mike O'Brien, StormGeo's Vice President of Products, Shipping. "The EU regulation makes emissions data from ships publically available, so stakeholders can review environmental performance, while the IMO's act is a move to collect and analyze information from the entire industry.

"This forces operators to undertake introspective examinations of their vessels' impact upon the environment and find ways to improve fleet efficiency. This is a win for everyone. It's good news for the environment and society, and ultimately good for shipowners. It means they can reduce fuel consumption and costs, while capitalizing on improved performance to secure business from customers who, in common with wider societal trends, are becoming increasingly focused on reducing carbon footprints."

To get the full picture of a vessel's consumption and understand how to create optimal efficiencies, O'Brien says weather plays a vital role. According to the IMO, weather routing has the potential to reduce fuel consumption by up to 4%, while ETA services (Just-in-time solutions) can add savings of an additional 5%. This can deliver significant competitive and efficiency advantages in ultra competitive segments.

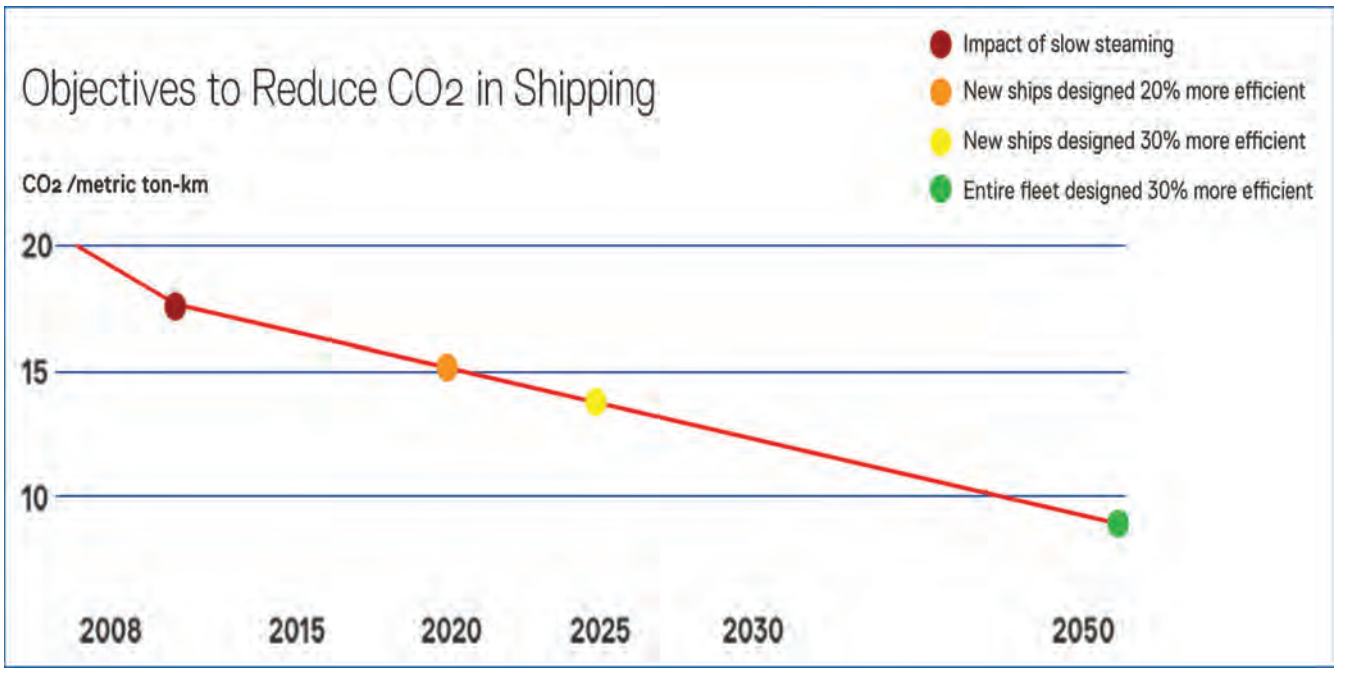
"The benefits for businesses and the environment are plain to see," states O'Brien. "Advanced weather routing and data collection systems on board provide round-the-clock information to the Master, allowing routes to be adjusted for optimum performance, while also giving shore-based teams the ability to deliver enhanced decision support. This improves efficiency, cuts costs and ensures both compliance and reputational value for shipowners in an environment of ever-increasing public scrutiny."

StormGeo provides a portfolio of products to help shipowners enhance their environmental performance. The Bon Voyage System identifies time and fuel-efficient routes, as well as optimizing vessel arrival times to reduce fuel consumption in port, while FleetDSS Emissions measures and reports on actual fuel consumption to ensure regulatory compliance and full understanding of fuel use. The market leading FleetDSS Analytics delivers detailed insights into complete commercial and technical performance and efficiency.

"IMO DCS has huge potential for industry," O'Brien concludes. "It's a good example of a regulation that benefits all stakeholders and, combined with weather routing, can really bolster shipping's commercial, as well as environmental, sustainability. We look forward to seeing it fulfill its potential from the New Year onwards."

StormGeo is one of the world's largest and fastest growing providers of professional weather services. The firm specializes in providing high quality forecasts, innovative products and advanced decision support services to improve operational performance, safety and efficiency.

Mike O'Brien, StormGeo's VP of Products, Shipping



Images: Storm Geo

2018 GREAT SHIPS

Every year, *Maritime Reporter & Engineering News* awards the most outstanding ships built around the world, recognizing Shipbuilders, Ship Owners and Ship Designers as leaders in their field. This edition — the much anticipated end-of-the-year Awards Edition — generates much excitement, as your work is profiled and delivered to the largest audited b2b maritime industry worldwide.

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DEADLINE: NOVEMBER 1, 2018

Piloting Shipping's Fourth Industrial Revolution

While shipping might consider itself a conservative industry, there's nothing old-fashioned about the technology that's driving its progress today.

Vessels today have the capability to gather information and data from a wide variety of sources. This data can inform the crew about the impact of acceleration on the hull, provide updates on lubrication use during slow steaming, and use dynamic positioning to automatically maintain a vessel's position and heading - among many other things. So while shipping might consider itself a conservative industry, there's nothing old-fashioned about the technology that's driving its progress today.

For a long time the core industry drivers for the adoption of new, better, higher-speed communications technologies across global fleets has been a dynamic duo: crew welfare and driving improvements in operational efficiency. These are the obvious benefits of evolving your satcoms infrastructure, just as obvious as providing email and phones for everyone in your offices. This is Business IT 101. Investing in keeping the crew happy will save a lot of overheads on recruiting and training new crew. The numbers seem to prove valid, as was well illustrated in the recent Nautilus Crew Survey. But is it really the key driver?

Will that jumpstart the fourth industrial revolution in shipping as we look towards the challenges that shipowners face over the coming years? Could taking a broader view generate new value creation that will have a tangible impact on the bottom line?

The answer is in the data; in how to efficiently collect it, analyze it, and then scrutinize it to reveal not only the questions we should be asking, but what some of the answers to those questions might be. It is this process that will generate the insight required to optimize operations and deliver the best possible value to customers. The intelligence gleaned through observing the entire operational process and lifecycle in this way will create the space to generate new busi-

Images: Intellian

ness models, new ways of thinking, new services, and opportunities for new markets and avenues of revenue.

If we look only at the connectivity of each vessel as a cost center, then the ultimate aim of optimizing user experience, creating new value, generating new, higher margin revenue and securing our place in tomorrow's business model will remain a significant challenge.

Take a page from the more mainstream IT industry of today. Everyone is talking about convergence. Get standardized, get streamlined, get optimized. And what are the stated benefits? Delivering an easier and faster installation process to reduce your operational downtime and control potential costs associated with laying down this critical baseline infrastructure to enable your digital future.

Intellian, through the innovation behind its v-Series antennas, has played a pivotal role in revolutionizing VSAT, moving it from a cumbersome technology to a viable, convenient communications solution which is at the forefront of pioneering remote management. Key to the success of bringing this to fruition has been creating frequency flexible solutions that future-proof the investment in this technology through an adaptable architecture for compatibility with future satellites, whether they operate on Ku or Ka-band.

Through additional developments including applications for internal use to more accurately diagnose potential issues remotely and apply the correct fix before larger issues arise, field interventions can be reduced, thereby controlling costs and increasing uptime.

It's a given in today's market that big data will have a significant impact on tomorrow's operations. What's less well understood is what's required. If freight forwarders want to be able to identify the state and condition of their cargoes, or reefer operators improve their schedule reliability, they need to have the infrastructure in place to reliably deliver it. Smart technology has already begun to revolutionize shipping, and will continue to bring changes to the industry in the near future. By ensuring that vessels are connected to the digital ecosystem through reliable antenna technologies, shipowners can ensure they are keeping apace with developments today, as well as future-proofing themselves for technological innovations to come. Innovation in the digital space moves fast, and without forward-thinking technologies that continually look to anticipate the next step in the journey towards digitalization and automation, shipowners can quickly find themselves behind the curve, and out of pocket.

When ships can converse with their operators, vessel feedback becomes part of the conversation. Second-guessing from shore is eliminated because speculation is no longer necessary, risk is reduced with greater understanding of real time variables, and reliability improves to the point that it almost becomes a redundant metric. If you want to live in that world, integrated solutions that ensure a seamless path to strong connectivity are the first step. The antenna capacity needed to facilitate this step-change is nearly within our grasp, and Intellian is already driving innovations in antenna technologies that will support future digital applications.

By Paul Comyns, Vice President Global Marketing, Intellian

Maritime Operators & the Digital Transformation

As maritime operators deal with challenging operating conditions, many embrace digitalization as the most reliable way to lower operational costs and improve vessel efficiency.

Images: Intelsat

According to research conducted by Lloyds List Intelligence and Ovum, two-thirds of vessels use digitalization systems onboard. According to the executives surveyed, this is being driven by a desire to improve operating efficiency, with 88 percent already working toward that goal. As part of the process, vessel operators are:

- Integrating onboard equipment and systems;
- Improving ship-to-shore connectivity;
- Integrating onboard IT systems for predictive maintenance;
- Optimizing voyage fuel consumption and navigation;
- Improving end-to-end management of logistics.

A Shift in Thinking

With ship operators increasingly investing in big data analytics to enable route optimization, fuel management and new services, the demand for bandwidth has increased exponentially. And this growth in maritime demand for connectivity comes at a time when satellite broadband connectivity available for mobile VSAT platforms is being dramatically improved. Leading the improvement is the introduction of transformational technology in the form of high-throughput satellites (HTS) and the development of next-generation ground antennas and modems.

For nearly two years, the promise of HTS has been experienced widely throughout the maritime sector. Maritime operators have stopped thinking of satellite connectivity as a necessary expense for crew welfare. Instead, they see it as a means of fully integrating their global fleets with onshore operations. The mindset created by years of having only minimal satellite bandwidth via L-band has completely changed. Today, maritime operators fully embrace the practice of using satellites to gather valuable data for the analysis that can make ship operations more efficient.

Today, maritime operators continue to push the boundaries of what can be accomplished by users of all shapes and sizes, from cruise lines and leisure vessels to commercial shipping, fishing fleets and research vessels. For example, in May, Intelsat enabled Speedcast to set a new world record for satellite bandwidth to a cruise ship, delivering 3.174 Gbps to Carnival Horizon, Carnival's newest mega cruise ship. This unparalleled data rate sets a new standard for the guest experience at sea.

Each of the maritime sectors mentioned has its own unique requirements and customer demands. To help meet the sophisticated maritime requirements that are inherent in digitalization, satellite service providers are demanding specialized tools to help them integrate higher-capacity satellite solutions into their operations. These include tools for seasonal fluctuations in capacity needs, reactive purchasing, the ability to forecast future bandwidth demand for each region, and applications to ensure the highest possible return on any investment in new technology.

The award-winning IntelsatOne Flex for Maritime platform provides those tools. It lets service providers integrate capacity from across the Intelsat fleet – including the next-generation EpicNG HTS, the IntelsatOne global ground infrastructure, and the HTS-optimized iDirect Velocity platform – into a simplified, unified ecosystem.

KVH is Intelsat's inaugural partner for the IntelsatOne Flex for Maritime platform. KVH's maritime broadband network incorporates Intelsat EpicNG satellite services and the IntelsatOne Flex. In the third quarter of this year, Navarino will introduce customer services based on IntelsatOne Flex for Maritime, enabling them to address the widest possible variety of maritime communications requirements. Also, with our commercial agreement with OneWeb for exclusivity in the mobility sector, we will deliver a fully integrated GEO-LEO service. That integrated service will give ship operators and maritime service providers the flexibility and scalability they need, along with the assurance of always-on connectivity wherever it is needed.

With OneWeb, Intelsat will be the only HTS network to have pole-to-pole coverage. This is especially important as the search for new sources of energy takes oil & gas operations to more remote locations on land and at sea, and commercial shipping routes shift due to changes in demand.

Migration to Autonomous Vessels

The desire to reduce operating costs and improve vessel efficiency is leading many maritime operators to examine the benefits of autonomous vessels. Fully autonomous vessels offer many advantages. The most obvious advantage is that crew can work onshore operating the ships remotely, rather than far out at sea in sometimes hazardous conditions. Another advantage is that experts say the ships can be built less expensively because crew spaces can be significantly reduced. More efficient remote operations can also lower fuel use by better route planning. This is an advantage already being seen with connected ships that have navigation and engine-management systems onboard.

The scalability, power and flexibility of Intelsat EpicNG make it uniquely suited to support the growing use of smart ships and autonomous ships – by providing unprecedented seamless, contiguous broadband coverage over the world's most widely trafficked routes.

As more vessel operators transition to the always-on connected ship, concerns about cybersecurity become paramount. Cybersecurity also remains a barrier for the industry when implementing digitalization projects. According to the Lloyd's List report, about one-third of all vessels are operating without any cybersecurity solutions in place. That leaves a large proportion of the maritime vessels in operation at risk of attack by cybercriminals. At Intelsat, we understand that business-critical applications require the highest levels of reliability, availability, and cybersecurity safeguards. Our systematic approach ensures optimal protection, making our end-to-end network infrastructure more secure for any use.

While the development of autonomous ships will lead to fewer crew on board, it is important to understand that crew communications still carry weight and go a long way toward improving productivity.

According to a 2018 report by Futurenautics, there has been a change in mindset among seafarers regarding many aspects of connectivity. Among the report's key findings:

- 92 percent of seafarers said Internet access strongly influences their decision on where to work, up from 78 percent in prior years.
- 95 percent of seafarers' view connectivity as having a positive effect on onboard safety, an increase of 72 percent since 2015.
- 69 percent of respondents view the increasing use of big data and analytics as a positive opportunity for their jobs in the next five years, versus 17 percent who see it as a threat.

It is gratifying to see how maritime operators have widely adopted digitalization solutions to help improve customer experience and increase operating efficiency. As a result of strategic alignment, the right tools from the digitalization toolkit are being chosen, appropriate connectivity services are being sourced, and employees are being trained to the correct standards. This groundwork will help shipping companies generate a better return on digitalization investments.

Intelsat will ensure the right satellite solution is available to optimize the effectiveness of any digitalization toolkit.

Mark Rasmussen leads
Intelsat's Mobility business unit

The VSAT Migration

Shipowners who want to get the value out of data, applications and smarter shipping have realized that VSAT is the new L-Band, says Malcolm McMaster

At Globecomm we spend as much time as possible talking to shipowners about their communications needs. It's always a rewarding conversation because we hear about what they actually do with bandwidth, which gives us insight into what systems and solutions might suit them best. Over the last decade that would almost always mean L-Band satellite systems; but this is changing. These days the conversation might start at L but more often than not it ends at V. VSAT has changed too. From expensive, complex to buy, install and operate, and sometimes quite constrained in actual throughput, VSAT is fast becoming the new L-Band as far as many shipping customers are concerned – simple, affordable and flexible.

VSAT can solve many connectivity issues at a stroke: higher bandwidth, better speed and greater availability to name just three. It's a highly effectively way of increasing capacity and enabling the data to flow, though it does need more attention to bandwidth management and understanding of how to get the best out of applications and processes that drive more connected operations.

Here are five compelling reasons why owners are increasingly interested in Ku-Band VSAT service.

1.) Shipping is Changing

Vessel operators are constantly looking for ways to optimize efficiency, reduce costs and improve profitability, a combination of requirements that requires embracing new technologies while also managing investment risk.

The opportunity afforded by better ship-shore connectivity is the most direct pathway to achieving these improvements, and operators are adopting the tools; data collection and analysis, fleet management and video monitoring.

And at the higher level, enhanced connectivity is able to help owners do what they must do above all: retain their customers.

In a digital business environment, that means providing increasing visibility on vessels, cargoes, arrivals and departures, even carbon and other emissions. Once exotic notions, provision of such information is now the price of doing business for serious operators.

2.) Prices are Lower

To realize the opportunities of smart shipping means overcoming historical resistance to an increased focus – and therefore spending – on communications.

In fact, the majority of maritime communications users these days recognize that not only has the cost of maritime communications fallen consistently for a decade, but that spending on better connectivity can drive value into their operations. To do this takes commitment to understanding business requirements; which services fit what profile and how they can be managed so as to control costs while unlocking the potential of new applications and greater bandwidth.

Costs still need to be managed – there are plenty of examples of owners installing VSAT technology and quickly finding their systems overloaded and their 'unlimited' or 'all you can eat' plans come with caveats. A clear view of usage needs can avoid this issue.

3.) Applications Improve

Perhaps the most important factor in embracing new technology in shipping is to properly understand how enhanced communications can support smarter operations. In most cases, it will mean greater collection of data – whether for regulatory compliance or for performance monitoring.

Traditionally, the data needs of many shipping companies have been small – at least in comparison to other industries. For some basic processes that will continue, but the availability of lower cost bandwidth is driving new applications such as video and real-time voyage monitoring that will increase the data load.

Applications in the front of bridge space – notably navigation charts – are driving the need for bandwidth while at the back of bridge, demand is exploding. Here, the use of fleet and voyage management systems, next generation weather routing and secondary management services are all further increasing demand. In an ever-more connected shipping industry, VSAT also presents the opportunity to leverage asset tracking and remote diagnostics using the Internet of Things, without the constraints familiar to L-Band.

Where once users of L-Band systems would have to choose between business and crew communications, VSAT has the ability to provide that capacity on-demand, responding to short term spikes while always keeping the vessel in touch.

4.) Ships Need Crew

The demand of crew connectivity is stronger still and will continue to grow, even as automation increases in the shipping industry. At a recent shipping industry event, the CEO of a leading tanker company noted that the first question prospective recruits ask its crewing agent is not about the company safety record, but whether there is broadband access onboard ship.

True, there are changes taking place here too – greater automation and use of sensors suggest that crew numbers will fall progressively in the decades to come. As this change happens, most owners agree that they would prefer to minimize crew numbers rather than make the leap into the unknown of autonomous ships.

And even a smaller crew can drive significant bandwidth demand, certainly more than L-Band systems can support, and enough to take a large share of a ship's monthly allowance. Social media, video messaging, web browsing and similar applications are all ways in which crew will access the internet if they have the opportunity.

5.) Security

Cyber security is certainly possible using L-Band, but it is likely that any upgrade to networks, software and hardware necessary to shut the door on scams, malware and malicious hacks will probably also require an upgrade of more than just the email software.

As the old saying goes, if you think safety is expensive, try having an accident. It's critical that operators protect themselves from the risks of cyber-attack and have in place the resilience they need to operate securely.

Globecomm uses its Nimbus Pro smartbox to create private networks over all circuits, something few other connectivity providers can claim. Using private IP and tunneling over controlled networks provides a double layer of security. Using a private satellite network protects the ship's terminal from unauthorized transmissions, and blocking mechanisms provide further protection.

Shore to ship connections are always encrypted using the latest standards and end-to-end connectivity is via a private IP space with no exposure to the public internet. Nimbus also ensures the separation of crew and business networks so a malware infection cannot spread from one to the other.

The end of L-Band?

Perhaps not quite yet. There will be a need for L-Band at least as long as GMDSS services use it for mandated safety services, and most if not all VSAT installations still use L-Band as back-up at present.

And the above should not be taken to indicate that Globecomm Maritime is about to stop providing L-Band solutions. They remain a core offering alongside VSAT and hybrid 'near-shore' LTE-based options.

But think of it this way. The effect of technology is sometimes a function not of its impact when it is released, but when it has become part of the fabric; once the kinks have been worked out, the price has settled and the infrastructure is in place to support the services and applications that run on it.

Few if any people would really trade their smartphone for the cellphone that gave them only expensive phone calls and texts, cool though that seemed at the time. VSAT is that smartphone, and there is no turning back, its time is now.

By Malcolm McMaster, President, Globecomm Maritime

The Maritime Industry's Largest
Social Media Presence

Maritime Reporter is a member of the Marine Media Network of websites, publications, and social media sources for news, editorial and information including the Maritime Network, the commercial marine industry's largest dedicated Linkedin group.

63,523
Facebook Page Likes

MARITIME REPORTER AND ENGINEERING NEWS

130,096
Linkedin Group Members (industry's largest)

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Twitter Followers

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Page	Likes
Marine Electronics	33,528
Marine Technology Reporter	55,692
Maritime Global News	26,157
Maritime Jobs	46,011
Maritime Logistics Professional	30,947
Maritime Propulsion	22,477
Maritime Reporter & Engineering News	63,515
World Energy News	49,498

All stats from 01/02/2018

1. C&C Delivers for Marquette

Belle Chasse, LA-based C&C Marine and Repair delivered to Marquette Transportation Company the m/v Chris Reeves, the second of three new 6,600-hp, 160- x 50-ft. triple-screw Z-drive tugboat. Chris Reeves is being delivered just three months after the first tugboat in the series, m/v Cindy L. Erickson, which was delivered by C&C Marine and Repair on February 16, 2018.

The m/v Chris Reeves was designed by CT Marine, a unique design that includes three Cummins QSK60-M main engines that are paired to three Steerprop SP25D azimuthing z-drive thrusters. The triple azimuthing Z-drive configuration allows for optimal speed, power and maneuverability. In addition, the Z-drives operate at lower engine loads to boost fuel efficiency. The third tugboat for Marquette Transportation Company is scheduled for delivery in August, with the fourth optional tugboat scheduled for delivery in December.

2. Rotterdam & Beagle

June 13, 2018 was the naming ceremony of Damen-built tugs Rotterdam and Beagle, a ceremony that took place in the Port of Rotterdam during Kotug Smit Towage's annual 'Maatjes-party' (Herring with friends, a traditional Dutch event to mark the beginning of the herring season). The new boats are currently operating in the Port of Rotterdam. Rotterdam is an ASD Tug 2913 with a bollard pull in excess of 80 tons. Beagle is an ATD Tug 2412 Twin Fin. With its 72 ton bollard pull, it combines a compact package, plenty of power and maneuverability, too.

3. Tractor Tug for Svitzer

The first 70-metric ton bollard pull version of Robert Allan Ltd.'s TRAktor 2500-SX tractor tugs was delivered to Svitzer A/S. Built by Sanmar Shipyards in Turkey and christened Svitzer Vale, it is the second TRAktor 2500-SX to be delivered, designated by Sanmar as its Deliçay class. To allow for a high bollard pull in this length hull, the beam is relatively wide for the length. To prevent potential directional stability issues, the stern of the hull features the StRAke stabilizers developed by Voith and Robert Allan Ltd. Main propulsion consists of a pair of Caterpillar 3516C diesel engines each rated 2,100 bkW at 1600 rpm driving Rolls Royce US 255 FP P30 azimuthing drives through straight line carbon shafts. The electrical plant consists of three identical Caterpillar C 4.4 diesel gensets, each with a power output of 86 ekW, 50 Hz, 400 V. FIFI 1/2 capability is provided by a Fire Fighting Systems SFP 250x350 XP horizontal centrifugal pump, driven off the front of starboard main engine. A remote operated monitor model FFS1200/300LB with 1200/300 cu. m./hr. sea water/foam capacity if fitted on the starboard side.

Deck machinery features a DMT Model TW-E250KN, double drum, frequency controlled electric drive towing winch with tension and length indication, constant tension. Ship-handling fenders at the stern consist of an upper row of 800 mm diameter cylindrical fender and a lower course of W-fender. 300 mm D-rubber lines the shear strake. And 300 mm thick W-fenders are fitted at the bow.

4. U.S. Navy Workboat Large

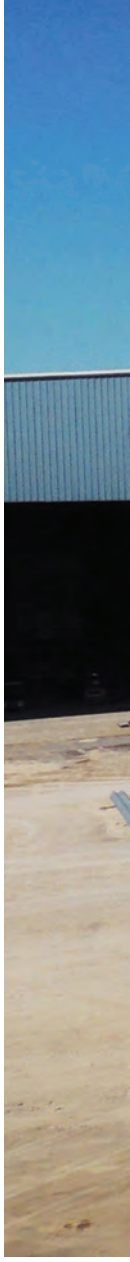
From powerful seine skiffs for the Alaskan fishery to sturdy and practical crew boats for the safe transfer of workers on marine construction jobs, Snow Boat Building has been attracting attention on the West Coast. Based in Seattle, the firm is known for its quality aluminum fabrication and general commercial boat repair. Recently it won a contract to build a 40 x 17-ft. U.S. Navy Workboat Large. The small heavily built steel vessel with aluminum superstructure will be operated by a crew of two and have capacity for up to five passengers. It will have a capacity for a 3,100 pound total payload. Propulsion power will be a pair of Cummins QSM11 mains each developing 455 mhp at 2100 rpm. This power will give the vessel a bollard push of 22,000 pounds or a speed of nine knots.

5. Daniel K. Inouye

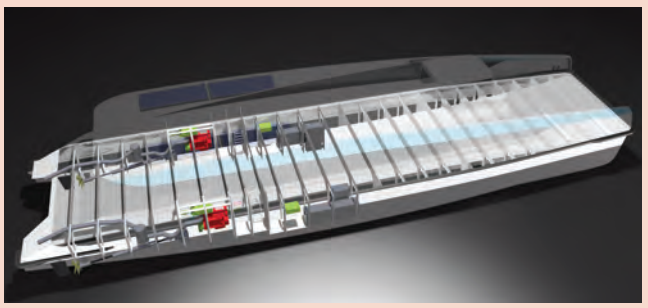
First of two ships built in Philadelphia for $418M

Matson and Philly Shipyard, Inc. (PSI), christened the largest containership ever built in the U.S. in a ceremony at the Philly Shipyard on June 30. The new vessel is named Daniel K. Inouye in honor of Hawaii's late senior U.S. Senator, who was a longstanding supporter of the U.S. maritime industry and its important role in supporting Hawaii's economy. It is the first of two new ships being built for Matson by Philly Shipyard at a total cost of approximately $418 million for the pair, and the first of four new vessels that Matson will put into its Hawaii service during the next two years.

Built to serve Hawaii and with LNG-compatible engines, the 51,400 metric ton, 850-ft. long, 3,600-TEU ship is Matson's largest ship and the largest containership ever constructed in the U.S. It is also Matson's fastest vessel, with a top speed of nearly 24 knots. This is Matson's first "Aloha Class" containership, and in addition to fuel engines it features double hull fuel tanks, a fresh water ballast systems and a fuel efficient hull design.



Damen & Svitzer



New Eco Ferry Design

BMT 'Eco Ferry' Sports BAE Systems Hybrid Drive

BMT launched a new hybrid ferry design, the 31m, the 149-passenger 'Eco Ferry' with a top speed of 20 knots. "Greener ferry systems have to be the future and we're extremely excited to be launching this new hybrid design," said John Bonafoux, MD, BMT. "In our recent case study of an example river commute in New York, the 'Eco Ferry' engines are completely off for 63% of the time. That's a huge saving on fuel consumption and emissions, not to mention engine hours and maintenance." BMT has recent hybrid experience gained in several superyacht projects, experience it leveraged for this project.. Working in collaboration with BAE Systems, the Eco Ferry uses the 'Hybrid-Drive' system. When the upper end of power is needed, the diesel engines are there to support, keeping the batteries topped up at the same time – all of this happening seamlessly and automatically. The vessel's 160kWh ESS (energy storage system) can also be further charged while alongside and by a solar array on the boat.

Cummins/Haig-Brown

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CHRIS REEVES

MARQUETTE TRANSPORTATION

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C&C Marine & Repair

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Robert Allan Ltd.

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Interesting Launch for Interesting Tugs

Cummins / Haig-Brown

The ownership of the Canadian firm Island Tug and Barge has changed with the purchase by the U.S. parent company Tidewater Inc. The firm is now known as Island Tug. The second tug, with the hull and superstructure completed and with the Cummins K38s installed still requires more work, was also launched in early May of 2018. The vessels were built in a warehouse on the Fraser River. With no launching facility and a railway track between the yard and the steep bank of the river, it took some innovative heavy lifting. At the yard, Self-Propelled Modular Transporters (SPMTs) were moved under the tug. They then rolled it over wooden beams laid overtop the railway tracks and on onto the 12,000 dwt barge Dynamic Beast moored in the river.

The launch job was contracted to Mammoet and Dynamic Heavy Lift to RoLo the tugs. Both tugs were loaded onto Dynamic's 330 by 120-ft. barge which has a 900-ton Manitowoc M-1200 Ringer crane mounted on a 60-ft. diameter ring as well as a 230 Ton Manitowoc 4100 crawler crane. This delicate but massive RoLo operation was completed over the weekend and the barge, with the two tugs on deck, was towed down the river and around to the Port of Vancouver, BC ready for a Monday launch.

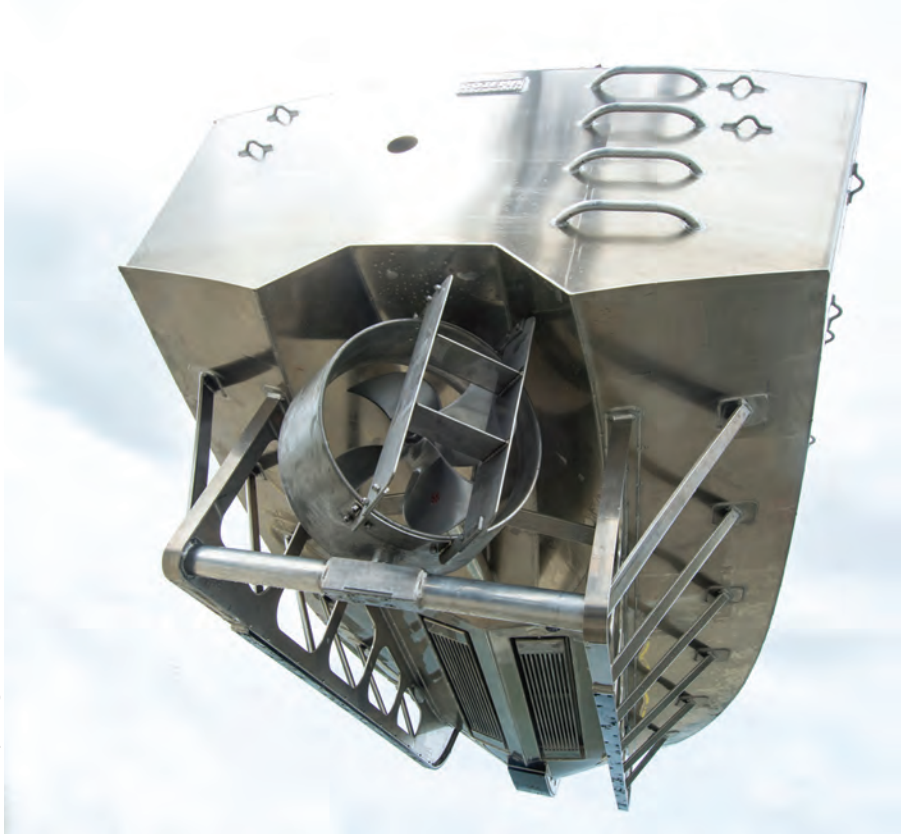
Lifting two 384-ton tugs, even with a 900 ton capacity crane is no casual task. The Dynamic Heavy Lift crew put in a long day's work preparing and setting the heavy cable straps according to a meticulously drawn diagram and set of specifications. These included a series of three heavy spreader bars, each at right angles to the one above, supporting four double slings the extended under the 384 ton tug's hull at precisely determined positions. This divided the weight evenly.

By mid-afternoon all was in place. A final safety check and procedural conference was called and about 20 men gathered in a circle to review roles and responsibilities. A detailed check list was run through and a designated signal man, Darin (Dawg) Ellis, was identified. He would talk to the crane operator, Bob Miller, who had been restlessly prowling his huge red machine checking and rechecking details while positioning the huge spreader bars for the crew.

After a couple of final adjustments the word went to the crane operator to take up all the slack and begin the lift. Finally light showed between the wooden blocks set on steel pillars and the huge tug was airborne. As had been planned the tug was lifted high enough to clear all equipment on the barge deck and finally over one end of the barge.

With crew members steadying the tug by lashing down heavy mooring lines the tug was steadied about 20 feet above the waters of Burrard Inlet and, with the crew that built her watching, she began a stately descent. The built crew, who had been given the day off to watch their masterpiece meet the water, took selfies and smart phone pictures of the tug as she touched the water. Then they jumped aboard before all the weight came off the slings to make sure that all was as it should be below decks.

Finally, after the all clear was given, the boat was lowered to her marks. It would be towed over to the owner's dock where finally details of her completion were dealt with prior to sea trials. If there was relief from stress on the part of the Mammoet and Dynamic Heavy Lift crew they didn't show it. With quiet professionalism they began getting the rigging ready for the lift of the second tug.



Cummins / Haig-Brown

Alaska Power Skiff

Photos: (Top left) The underside of the skiff shows the skids for bringing the skiff aboard, the steerable nozzle and the twin keel coolers.

(Below) Builder Dirk Rozema and owner Swen Gildnes admire the new skiff.

Dirk Rozema's grandfather Alle was building wooden power skiffs with gas Chrysler Crown engines a few years after he arrived from the Netherlands in 1949. After his son, Clarence, joined the family's Bayview, Washington business, they tried a few diesel powered steel skiffs around 1970. Excessive weight on the steel skiffs soon led to aluminum skiff. Rozema's first aluminum skiff would have been delivered in the mid-1970s.

The lightweight of the skiff assured that all future seine skiffs for Alaska's 58-ft. limit seiners would be aluminum. Today the sight of a seiner with a big skiff resting on its skids and sitting on the seiner's stern, like a duck on its mother's back, has become a familiar sight along the Pacific coast of America.

While the design concept is well proven there continue to be incremental modifications as owner-operators, like Swen Gildnes, test the limits of their skiffs. "I don't want my skiff man to throw the line from the skiff to the guy on deck," he says of a frequent occurrence when the line from the skiff end of the net is passed up to the seiner. "With the steering console back by the tow post this happens. If there is a miss the line goes in the water and we have to retrieve it which slows us down and breaks the rhythm of the set."

Gildnes' solution was elegantly simple, move the wheel and controls to the bow, which is the first part of the skiff to reach the seiner. Swen points out that he is not to first to have done this but it is not the usual form. These forward controls allow the skiff to easily pass a line up to the deck before going smoothly and quickly out under the towline at the stern of the seiner. As he does this he releases the shackle on the end of a towing strap that runs from the end of the 3 and ¼ strip by 150 fathom net to a metal quick release clamp on the skiff's tow-post near the stern. The release is via a hydraulic assist controlled by a button on the forward mounted console.

Dirk and Swen grew up together and Dirk's dad built skiffs for Swen's dad. There is a lot of community and trust between the two men. It is the perfect balance of tradition and innovation. Rozema builds three sizes of skiff; 20 x 11, 18 x 10 or, its latest model, like the one for Swen, 19 x 10-feet. "It has just a little more boat behind the tow post," explained Dirk.

The new skiff weighs approximately 7,800 pounds with its engine, a Cummins QSB 6.7L 305 bhp at 2,600 RPM with a Twin Disc MG5061-SC at 2.43:1 reduction. The engine turns a 27.75-inch propeller in a steerable cast aluminum nozzle. Rozema has the nozzle cast and machined for a 0.25-in. thick stainless steel band that they insert inside the 28-in. nozzle around the path of the prop tips. The nozzle increases the thrust by about 30% and helps make up for the reduced efficiency and drag of the big skids required to allow the skiff to be pulled up on the stern of the seiner and to provide a net guard. The skids are covered with a strip of neoprene to aid the lift as well. Aluminum struts are welded in place along the skids for additional strength. Keel coolers are mounted in the protected space between the struts.

While the underwater assemblage reduces the efficiency, Rozema estimates that the 19-ft. 305 bhp skiff/tow-off boat still has about 6,000 pounds of bollard pull.

The new power skiff will be teamed with Swen Gildnes' 55-ft., 600-hp seiner Northern Spirit. It will replace an older skiff powered by a 250-hp Cummins 6B. The skiff is fitted with a new device known as a Skiff Tracker that transmits, through an antenna, to the chart reader of the seiner, the skiff location, heading, speed and depth of water. "This is primarily for the foggy days, but our skiff is often right in on the beach so as not to let any salmon get by," Swen, who fishes out of Cordova, Alaska, explained.

Cummins / Haig-Brown

‘Black Box’ to Crack Down on Emissions

The Danish Maritime Association (DMA) has been examining new ways to use digital solutions for collecting and sharing data on ships’ sulfur emissions. Digitalization, DMA says, could be the key to better emissions enforcement. Danish company Litehauz, working under the DMA led EfficienSea2 project, has recently developed a solution similar to the black box found on airplanes, but for transmitting sulfur emissions data to vessel owners and relevant authorities on land. The aim of this new technology is to make emissions monitoring more efficient. Current efforts in most countries are based on physical inspection and fuel sampling, which DMA believes could be streamlined for a tighter enforcement net. Litehauz’s digital solution was recently put through its paces aboard a vessel in the Baltic Sea. The next step, DMA said, is to join forces with other authorities and industry to determine how best to apply this new technology in the real world.

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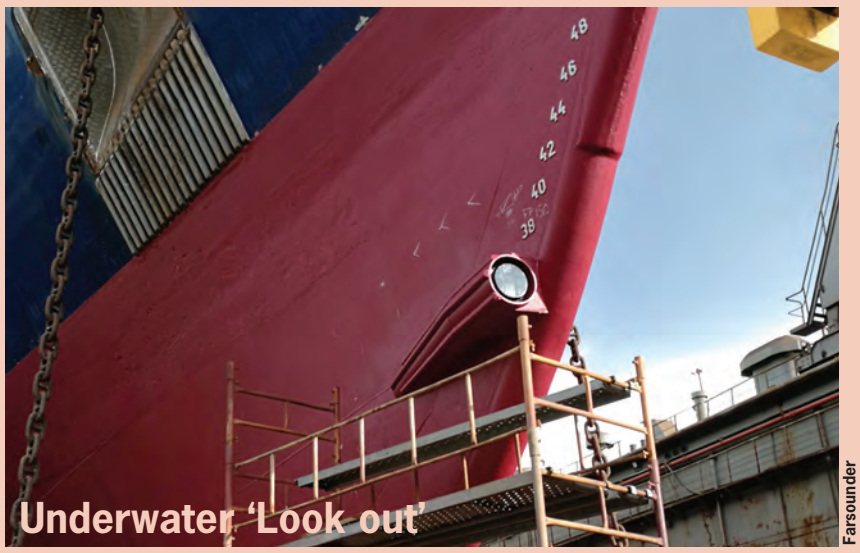


Underwater ‘Look out’

Farsounder

120m Superyacht Sports Farsounder

Marel Electronics, FarSounder’s dealer in Greece, recently commissioned a FarSounder-500 on a refit project of a 120m superyacht. Marel was contracted to supply, connect, integrate, and commission the system. Chalkis Shipyard in Greece mounted the sonar directly on the hull per the drawings provided by the ship’s naval architect under the guidance and with the assistance of the FarSounder technical team.

“With a FarSounder-500 aboard, bridge officers expect to increase the ship’s safety when approaching coastal shallow water areas” said Kyriakos Alexopoulos of Marel Electronics. “Up to now, they had to rely on tenders and divers to check the seabed and waters ahead.” Navigating officers who use the FarSounder-500 are able to see a live, intuitive, 3D image of what is beneath the surface ahead of the ship. As an additional safety measure, operators can set automated alarms to be alerted of danger before it is too late. The FarSounder 3D Forward Looking Sonar with no moving parts is a simple addition during the refit process and integratable with many bridge systems.

New Radar Solution for Indonesian Marine Police

Rutter announced the delivery of 11 sigma S6 Small Target Surveillance (STS) systems to the Indonesian Marine Police through PT MultiIntegra of Jakarta, Indonesia.

Faced with the need to monitor activity and enforce laws in a vast coastal marine environment, adoption of the sigma S6 system by The Indonesian Marine Police represents a great improvement in their ability to detect and identify small craft illegally performing transshipments from larger vessels when AIS is not present.

sigma S6 STS systems easily integrate with existing on-board navigational radars identifying hard to discover targets that would be otherwise not be detected, a capability that will allow Indonesian Marine Police to more effectively enforce marine law. Long-range cameras, used in concert with the Rutter systems, aide in identification of the objects detected by the Rutter systems.

The Indonesian Marine Police operate out of Jakarta and conduct surveillance and enforcement in Indonesian seas, chiefly in inshore areas. They are primarily responsible for enforcing compliance with maritime laws and regulations, and other civil responsibilities including immigration and drug prohibition. There is known to be a high degree of non-compliant behavior in the Indonesian marine environment. Providing surveillance vessels with enhanced patrol equipment, including sigma S6 high definition radar imaging technology, is a strategy to address this problem.

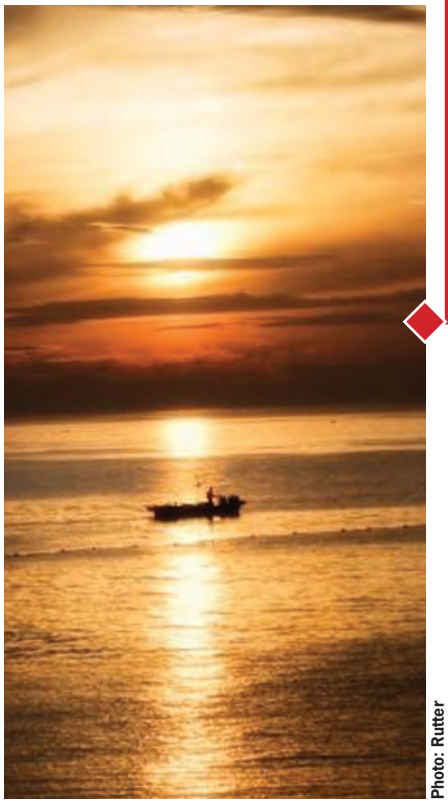


Photo: Rutter

GateHouse Delivers Online AIS Display System

The Maritime and Port Bureau of Taiwan chose GateHouse Maritime to deliver the software side of its new national AIS system. The system is currently being installed and is estimated to be fully functional this September. The solution GateHouse is providing will be accessible from any computer with an Internet connection and a standard web browser, well-suited for the many users with needs for maritime information and ideal for distributing maritime data to a number of users in different locations.

The Taiwanese maritime domain consists of many islands and lighthouses, and some of these are out of reach for shore connectivity. One of the key features in their new system is developed for the situations when an AtoN is too far away from direct connectivity from shore. With the AtoN chaining feature, other AtoNs that are within coverage from shore can be set up to retransmit a message to the AtoN furthest away – essentially forming a chain of transmitters from shore to the AtoNs without direct connectivity. Specifically, the software takes care of generating, encrypting and transmitting messages that configure an AtoN for sending out virtual AtoNs – using the chained AtoNs for the transmission.

GateHouse


Photo: RockFLEET

RockFLEET Vessel Tracking System

RockFLEET vessel tracking system to be integrated with Blue Sky Network's cloud-based SkyRouter fleet management and operation portal. Rock Seven agreed on a partnership with Blue Sky Network, a provider of mission-critical, satellite-based fleet management, tracking, and operational analytics solutions. SkyRouter, Blue Sky Network's cloud-based portal, offers tracking, remote communications, and fleet management capabilities on any internet-connected device, including Android and iOS devices. SkyRouter's key attributes include real-time tracking and mapping worldwide 24/7, global two-way email and SMS messaging, dynamic alerts, automatic report generation, and customizable geofencing. With SkyRouter as the command center, a comprehensive range of handheld, portable, and installed devices is available to address the specific requirements of clients.

'PortBin' for Marine Clean-Up

SpillTech of Sandefjord, Norway has developed an automated waste collector, dubbed PortBin, that is helping to solve pollution problems by collecting waste from the water surface. The waste collector works on the principle of weir-type skimmers. It creates a suction on the water surface that allows it to collect waste in a 30-liter container, which is emptied manually when needed. PortBin is currently being used by local port authorities in Oslo, Sandefjord, Kristiansand, Bergen, Stord, Kragerø, Trondheim, Bærum and Copenhagen. Also, SpillTech is collaborating with private sector organizations and industry partners to explore further applications of its technology in international markets.

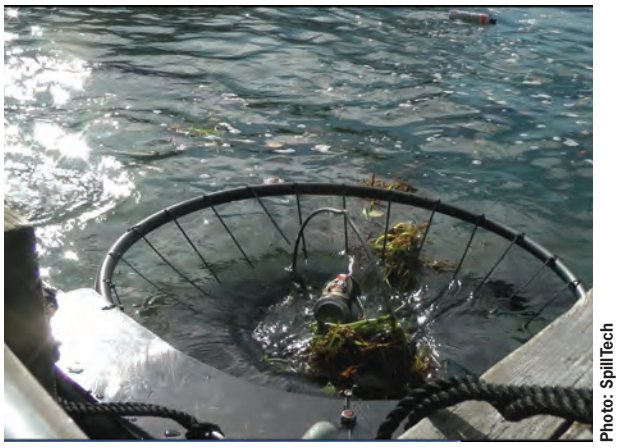


Photo: SpillTech

SuperYacht Summer

By Court Smith, VesselsValue.com

The summer season in most of Europe has been off to a sunny and warm start, which has many longingly wishing to spend time at sea.

Those with access to the privileged world of Superyachts will be looking forward to getting underway and traveling the world. It's a great time to be a yacht owner, but the follow-on is that due to the increased utilization, the number of willing sellers typically drops. This leads to a slowdown in the sale and purchase activity and can be a good time for yacht brokers to look at taking their own summer breaks. This seasonal slowdown provides the perfect time for market watchers to sit back and look at the activity over the busier winter season transactions.

The Monaco Yacht show normally initiates the busiest market window. Large Motor Yachts (up to 499 GT) have made up most of the transactions both by count and value.

The high asset values in the Mega Yacht markets led to well over $800mn in vessels changing hands. Sailing enthusiasts generated more transactions, but for substantially smaller units, and in turn a lower overall valuation changing hands.

Italian built yachts took the pole position for traded values from October 2017 to the present, followed by Netherlands and U.S.-based yards. The most expensive sale during this time window was the Andromeda (107m), which was reportedly sold for $136.9mn dollars putting Norwegian builders in the top spot for mega yachts. The number of US built yachts was the highest though, leaving Italian built units slightly behind.

The prime yachting season may be discouraging deals right now, but prospective buyers will be doing their homework now ahead of the Monaco Yacht show this coming September. Understanding the market and knowing numbers/trends from the previous year can help prospective buyers in their investment decisions.

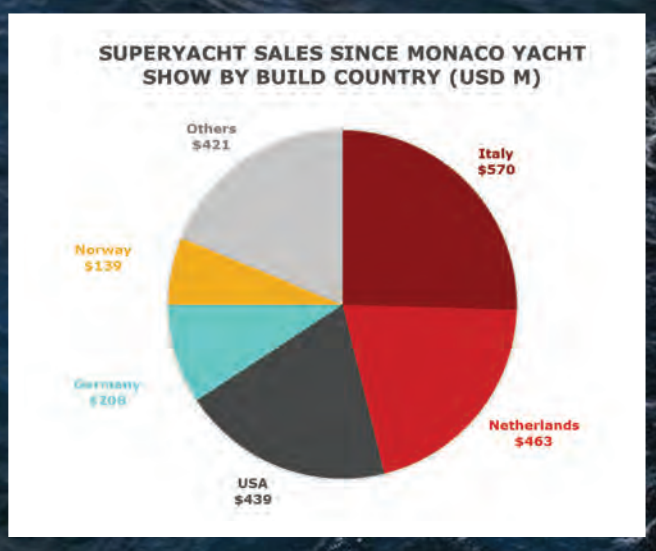


Photo: Ocean King, Chioggia, Italy

Jacques R. Saadé

Founding President, CMA CGM Group

In 1978 he began with four employees, a single ship and maritime service between Marseilles and Beirut ...

and by 2005 it was the world's third largest shippping company

The maritime industry lost one of its luminaries last month when CMA CGM Group announced the death of Jacques R. Saade, Founding President of the CMA CGM Group, on June 24, 2018 at the age of 81.

Life in Maritime

Jacques R. Saadé dedicated his life to CMA CGM, making the group into a world leader in the maritime transport of containers, developing the company in more than 160 countries, while maintaining the family dimension with its values. After having left Lebanon to protect his family for Civil War, Jacques R Saadé founded the Compagnie Maritime d'Affretement (CMA) on September 13, 1978, anticipating major developments in world trade and convinced that the container would have a determining role in world maritime transport. He began with four employees, a single ship and only one maritime service between Marseilles and Beirut. Then began the company's extraordinary development. In 1983, he sent his first ships beyond the Mediterranean and had them cross the Suez Canal. In 1986 he launched a service linking North Europe to Asia. In 1992 he opened CMA's first office in Shanghai, persuaded that China would become the world's factory. He combined vigorous internal growth with strategic acquisitions allowing him to strengthen the company's presence on key markets: CGM in 1986, ANL in 1998 and Delmas in 2005. In 2006, the company became the third largest container shipping company in the world. With strong ties to the city of Marseilles, where the Group was founded, Jacques R. Saadé built the CMA CGM Tower in 2006, the new headquarters of the Group and now a symbol of the city of Marseilles.

Jacques R. Saadé was a recognized industry leader with a worldwide reputation. In 2013 he received one of the highest decorations of the City of Hamburg, the Admiralitäts-Portugaleser. He also received an Honorary Doctorate from the American University in Lebanon, as well as Lebanon's National Order of the Cedar. In 2014 Jacques R. Saadé received an award from the Association of the Mediterranean Chambers of Commerce and Industry (ASCAME) for encouraging the economic development and conveying a positive image of the Mediterranean Basin, as well as promoting peace and tolerance worldwide.

In 2015, he is conferred the title of Commander of the French Legion of Honor by the President of France. The following year he was named Commander of the Ordre National du Mérite Maritime. On 7 February 2017, on his 80th birthday, Jacques R. Saadé, appointed Rodolphe Saadé to the position of CEO of the CMA CGM Group and then appointed him Chairman of the Board of Directors on the 24th of November, the same year.

Entrepreneur

After graduating from the London School of Economics in 1957, Jacques Saadé took over the family business the following year. In 1978, he moved to France, where he set up the Compagnie Maritime d'Affrètement (CMA). Anticipating major developments in world trade, and convinced that the container would have a determining role in these changes, he opened CMA's first office in China, in Shanghai in 1992. China quickly became the most important market for CMA, which became the number one container shipping company in France.

From 1996 to 2008, Jacques Saadé pursued the Group's expansion via external growth. In particular he acquired Compagnie Générale Maritime (CGM) when it was privatized in 1996, then merged CMA and CGM, whichled to the birth of the CMA CGM Group in 1999. This acquisition, a turning point in the Group's history, was the first step in a series of targeted acquisitions that would contribute to positioning CMA CGM Group as a world leader in the shipping industry: Australian National Line (ANL) in 1998; DELMAS in 2005; Cheng Lie Navigation Co., Ltd. (CNC); U.S. LINES in 2007; T MacAndrews; and COMANAV.

Thus, in 2005, the CMA CGM Group became the world's third-largest shipping company.

His long-term vision of the industry is also reflected in the construction of an efficient fleet of vessels, equipped with the most innovative technology. To build the CMA CGM vessel fleet, Jacques Saadé decided early on to invest in large containerships while being particularly attentive to environmental issues and climate change. In this regard, in 2005, the Group set itself the goal of reducing CO2 emissions per container by 50% by the year 2015.

In June 2013, and for the first time since 1962, it was the President of the French Republic, François Hollande, welcomed by Jacques Saadé, who inaugurated the CMA CGM JULES VERNE, flagship of the CMA CGM fleet at the time.

Today, the CMA CGM Group, of which Jacques Saadé is the Chairman of the board, is a leading worldwide shipping group.

CMA CGM serves more than 420 ports with a fleet of 494 vessels. In 2016, it carried more than 18.95 million TEUs. Present in 160 countries on five continents via a global network of 755 agencies, the Group employs more than 30,000 people worldwide, including 4,500 in France.

With his strong attachment to Marseilles, the company's birthplace, Jacques Saadé decided to build the CMA CGM Tower in 2006, which would be the new Head Office. The architect Zaha Hadid, winner of the 2004 Pritzker Architecture Prize, was entrusted with the design of the new building. Nerve center of the company, overlooking the port of Marseilles, the 33-story CMA CGM Tower is the Group's command and control center and workplace for 2,400 employees since 2011.

Obituary courtesy CMA CGM

Software Solutions

Advancing engineering design, shipbuilding, navigation and fleet management

Edited By Tom Mulligan, Science & Technology Editor

In his latest technology review article, Tom Mulligan reports on recent launches of software systems that support maritime operations, including systems to advance ship design and support shipbuilding operations; systems that monitor the health of seafarers; navigational systems; asset monitoring systems; and new fleet management systems.

The Auros NX Connector allows users to access and incorporate knowledge stored by the Auros software system directly into their workflow (ie. CAD).

Graphic: Auros Knowledge Systems

Auros Knowledge Systems

Auros has developed Auros, a software system used by global manufacturing companies to ensure their products are designed in compliance with the latest standards and requirements consistently across locations and manufacturing facilities. The software has more than 36,000 active users across a range of industries and was recently selected by the U.S. National Shipbuilding Research Program (NSRP) to be implemented at four naval shipyards to provide knowledge, through CAD, to advance first-time quality of ship design. With Auros, all types of knowledge can be maintained and delivered, including regulatory requirements, design standards and guides, customer requirements, best practices, and lessons learned.

Auros maintains a company's engineering knowledge in a single active knowledge database that automatically provisions the required and relevant knowledge into existing engineering workflows when and where it is needed. As the knowledge is applied, Auros assesses its application and documents whether the design is compliant, providing traceability of the design evolution.

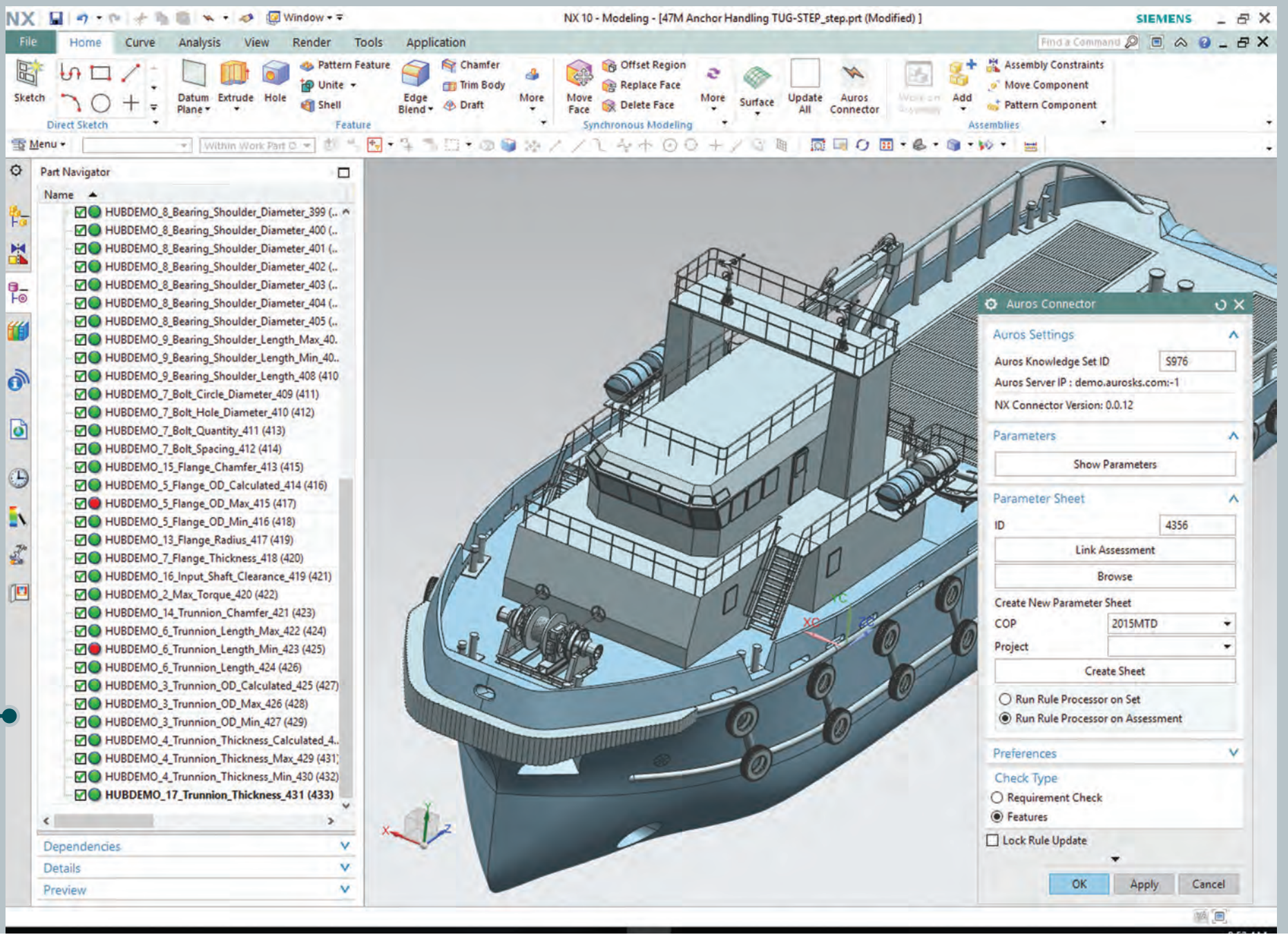
Through Auros, companies have eliminated recurring design flaws, aligned product design with their manufacturing capabilities, and established an integrated approach to capture and advance their engineering knowledge. The software replaces the disconnected and ineffective knowledge repositories that typically exist in an engineering organization, including spreadsheets, data files and documents and, because knowledge is delivered to engineers automatically, Auros eliminates the need to search for knowledge to make quality decisions, and avoids those situations where engineers are unaware of relevant rules or requirements.

www.aurosks.com

Tero Marine: TM Docking

TM Docking from Tero Marine has been developed to simplify and support all types of docking and other maintenance projects, such as pit-stops, new builds, re-fits and long periods at anchor. The tailor-made module, which is fully integrated with the other TM Master applications, can cover all the central tasks involved in major projects from early planning to execution and reporting.

Docking projects are often planned many years in advance of their execution. TM Docking lets the user define the initial project itself, either by creating a new project or basing it on an earlier docking. In the period leading up to the vessel arrival at the dockyard, the user can add to and edit the jobs, with the facility to lock the descriptions to protect important information. Any type of job can be attached to the project, irrespec-



TM Docking: Support Workflow in Docking Projects.

Image: Tero Marine

Deviated well bore displayed with facies generated by machine learning in the PowerLog Ecosystem from CGG GeoSoftware.

Photo: CGG GeoSoftware

tive of whether it is a typical docking job or a routine maintenance job. Due to the full integration of the docking module with the PMS module in TM Master V2, jobs can be transferred with just a press of a button. Advantages of TM Docking include:

- **User Defined Detail Level**

When the Job Lists are complete, TM Docking simplifies the task of canvassing offers. The module generates complete specifications and allows the user to send these to chosen contractors as a basis for RFQ. Once the offers have been returned and imported, TM Docking organizes and presents the competing offers.

- **Order Control**

TM Docking keeps an overview of all orders, with status and the details that are easily available, giving control and management needed.

- **Reporter**

Docking is supplied with a selection of pre-defined reports. These can be edited as required and tailored to specific needs. Custom reports can also be arranged on request by agreement.

www.teromarine.com

DP Assurance Software

Marine, offshore and engineering consultancy Global Maritime and Unisea AS, a software and consultancy house focused on the maritime sector, have won a five-year contract to provide dynamic positioning (DP) assurance software solutions to the 147-vessel shipping fleet of Norwegian offshore service and supply ship company SolstadFarstad. Global Maritime and Unisea said that the new software solution would make the implementation and documentation of DP testing easier, avoiding vessel downtime while at the same time improving crew knowledge and experience. The software will be integrated with SolstadFarstad's current on-board software.

IRISS: E-Sentry Connect

Intelligent Asset Monitoring

E Sentry Connect is the next-generation intuitive asset information tagging system from IRISS and uses near-field communication (NFC) contactless smart card technology that allows smart phone devices with NFC to easily access critical data relating to the equipment being inspected. The NFC tag is fitted to IRISS CAP and FlexIR Windows and allows instant access to all critical data relating to electrical equipment and IR inspection through a free IRISS android-based app. The system is designed to operate on two platforms: a standalone system or a subscription-based cloud system, allowing historical data back-up and complete access to the current status of all assets utilizing E Sentry Connect tags.

Historical inspection data recorded to the E Sentry Connect Tag is uploaded to the cloud and plotted in trend graphs for future reference. These data can be used by administrators to manage, and even predict, when assets may require maintenance, or can be used to deploy temperature monitoring systems. Multiple data sets can be recorded to the same tag, for example temperature, pressure, decibels etc. This facilitates multiple CBM inspections data collection with a single tag.

The main benefits of the new software are: low implementation cost using existing smartphones; low technology risk using proven NFC technology; ease of use by simply tapping the tag; automated maintenance record keeping; and no need for paper or spreadsheet inspection reports.

www.iriss.com

Arundo: Data Analysis

Industrial analytics specialist Arundo Analytics has added its Arundo Enterprise software to DNV GL's Veracity, an open and secure platform facilitating exchange of services, datasets, application programming interfaces (APIs), applications and insights, to improve the platform's data analytics streaming capabilities. The objective is to enable owners and operators of vessels and floating installations to deploy and manage enterprise-scale machine-learning applications and integrate advanced analytics into business decision systems and processes. Potential applications include real-time equipment anomaly detection and predictions to improve fuel performance, safety and other factors across a wide variety of scenarios.

A critical component of such advanced analytical solutions is the deployment of Arundo Edge Agent, a software system for streaming data and performing local computations and analytics in intermittently-connected environments such as marine vessels or remote sites. With this software deployment, Veracity users will be able to ingest data from ship control systems or run analytics autonomously on local systems. Users will then be able to deploy machine-learning applications and other advanced analytical models within Arundo Enterprise in Veracity and work on a variety of operational issues such as equipment maintenance, energy consumption or logistics and scheduling. The software addition coincides with Arundo firming up its presence in the Nordic region following the company's opening of a new operations center in Stockholm, Sweden in May of this year, while in a further recent development, Arundo announced in April a partnership with global subsea services provider Acteon Group to deliver machine-learning models for subsea applications on the Arundo Enterprise platform.

www.arundo.com

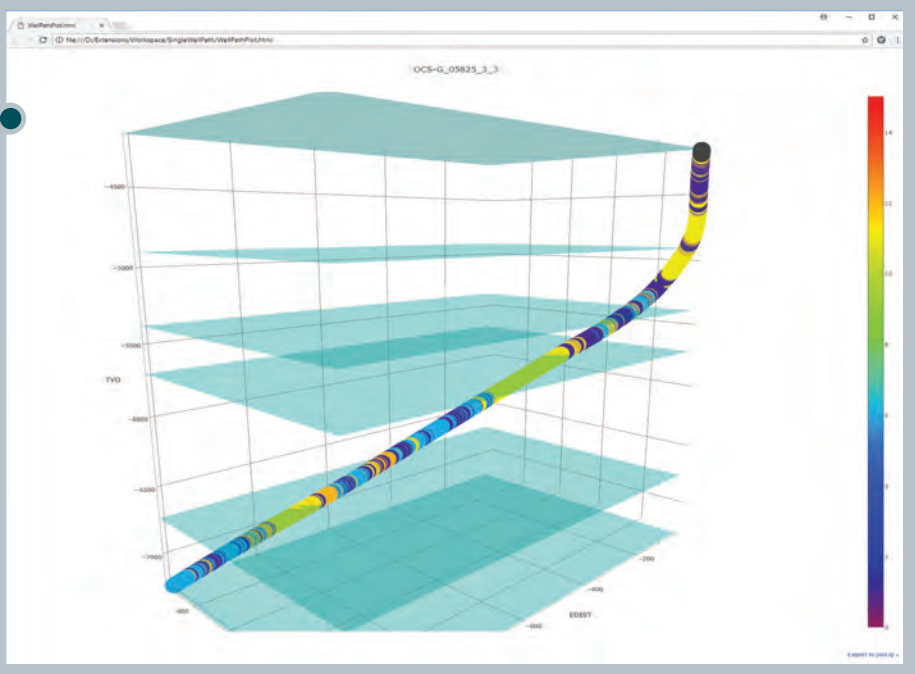
Crew Health Management

Hanseaticsoft, a provider of cloud-based software for shipping companies, is to participate in collaboration with the Institute for Occupational and Maritime Medicine (ZFAM)/University Medical Center Hamburg-Eppendorf, Peter Döhle Schiffahrts-KG and KG Reederei Roth GmbH & Co in the 'e-healthy ship' project, an EU-funded initiative with the overall goal of optimizing health management on board container and merchant vessels. The project also aims to improve health care for workers on the high seas, further develop onboard health promotion, and facilitate the implementation of health and safety regulations.

By developing and using innovative

IRISS E Sentry Connect: Next-gen intuitive asset information tagging system utilizing near-field communication contactless smart card technology for easy access to critical equipment inspection data.

Photo: IRISS



IT technology, Hanseaticsoft will test, evaluate and improve and further develop the networking of established maritime information systems to meet the health and well-being needs of seafarers and protect personnel resources on ships operating in the port of Hamburg, Germany. To achieve these goals, an interdisciplinary team consisting of scientists in occupational and shipping medicine, software developers and shipping companies will analyze and survey the needs of seafarers on board four vessels and conceptualize the e-health platform, as well as test the usability of the platform on board ships and finalize its contents. Based on the findings, an interdisciplinary concept for e-health management and for further suitable interventions will be designed in order to produce an e-health platform that will support and relieve nautical officers in providing medical care for crew members.

www.hanseaticsoft.com

Improved Propeller Design

HydroComp PropElements from Durham, New Hampshire based HydroComp, Inc. is a software system for detailed propeller design and analysis that allows users to capture the performance of a propeller 'on-the-hull' with unique wake-adapted propeller design codes. PropElements can be used to solve for optimum distributions of pitch and camber, or to analyze existing performance for a given geometry. The 2018 release of PropElements includes a full wake field analysis that replaces insufficient assumptions made when actuator disks are used as simplified propeller surrogates in CFD calculations.

'Hull-Propeller-Drive-Engine' computational simulation is complex and requires substantial resources, making simplified alternatives an attractive option and, if the scope is narrow enough, analysis of 'Hull-Propeller' with thrust from the actuator disk provides sufficient information. In addition, 'Drive-Engine' consideration is needed for towing, acceleration and maneuvering, making prediction of propeller torque a critical component. The wake field velocities generated by CFD can be transferred to PropElements to solve for propeller performance simulation, and body forces and velocities are then easily transferred back to CFD through API scripting. PropElements' geometric data modeling simplifies 'extruded parent foil' representation and derives radial distributions (chord and thickness, pitch and camber, rake and skew) from an imported 3D STL file. While saving time and eliminating the need for a costly specialist, coupling PropElements with CFD delivers critical fidelity with the efficiency of an actuator disk.

www.hydrocompinc.com

BASS Fleet Management

Norwegian fleet management software company BASS has launched BASSnet Fleet Management Systems version 2.10. BASSnet 2.10 has been optimized for integrated, powerful performance on a fleet-wide basis. Significant enhancements have been made to key modules in the software and customer insight has been prioritized at every stage of the software development process.

The enhanced Fleet Management features of BASSnet 2.10 allow for fleet-wide central management of equipment data: a new 'Equipment Setup' feature allows users to create and manage a library of machinery equipment by maker and model and also contains 'Standard Instructions', 'Materials' and 'Documents' files that can be shared across a fleet, enabling users to easily obtain an overview of how a particular piece of equipment is used 'fleet-wide'.

These Fleet Management features are closely integrated with the BASSnet Maintenance & Materials module, which allows for high-level planning, scheduling and execution of a chosen maintenance regime against individual vessels or the whole fleet. This module is also fully integrated with BASSnet Risk Management, ensuring quality and safety while supporting the need for work permits, safe job analyses, risk assessment, and event reporting.

In addition, the BASSnet Document Management module provides a powerful 'Document Management System' to facilitate the paperless office concept. With this feature, users can efficiently manage and distribute statutory and company documents across a fleet and offices, with the ability to implement a quality management system by accessing and attaching documents at each transaction level.

Seamless integration between BASSnet Projects (Dry Docking) and BASSnet Maintenance, BASSnet HR Manager System, BASSnet Procurement and BASSnet Financials allows customers to monitor fleet-wide projects with efficiency and transparency. In addition, enhancements in the BASSnet Procurement Contract Management and e-Invoice Management features, in concert with the BASSnet Projects module, provide users with tighter control in managing budgets.

For those looking to master vessel operations, BASSnet Operations allows comprehensive management of vessel particulars with electronic log entry, and includes features for management of work and rest hours and certificates. In addition, this module provides user-friendly environment management features with in-built logic to ensure vessel compliance with the EU MRV (Monitoring, Reporting, Verification) Regulations for monitoring carbon emissions.

www.bassnet.no

Cloud-Based E-Commerce

Greek shipowner Pleiades Shipping has become connected to the SeaProc e-procurement hub: the company's fleet management system, ABS Nautical Systems, has been linked with SeaProc's trading platform to greatly increase transaction efficiencies and improve data collaboration with its suppliers.

Pleiades Shipping operates a fleet of 14 Panamax, Aframax and chemical/product tankers along worldwide trading routes, primarily between North and South America, and the Caribbean and the Far East, transporting crude oil and dirty petroleum products. The company provides chartering services, management of day-to-day operations, crew recruitment and training, insurance placement, the supply of stores, spares and

fuel, financial and accounting services, and dry-docking and special survey commissioning.

iMarine Software is the company managing the SeaProc cloud-based e-commerce solution, which connects shipowners and operators with more than 50,000 maritime suppliers worldwide: the trading platform uses the latest technologies to manage supply chain transactions in a robust, scalable and secure environment hosted by Amazon Web Services. iMarine Software is based in New York, USA and has regional offices in Hamburg, Germany; Istanbul, Turkey; and Manila, Philippines.

www.imarinesoftware.com

TrueProp for Prop Repair

Propellers are not perfect and the main influence on propeller preformance are the geometric deviations between blades. TrueProp Software, LLC has developed its TrueProp software for propeller inspection, evaluation, and repair, enabling propeller shops, marinas, manufacturers and boat owners to assess the quality and smoothness of marine propellers using virtually any propeller scanning device. The software works independently of the the propeller scanning device being used, allowing users to continue using existing propeller measurement equipment or transition to a new pitchometer system. It is the only software of its type that is device-agnostic, thus enabling repair professionals to unify their repair process across a range of devices and expose out-of-tolerance areas, reduce manual effort, increase shop efficiency, and achieve high-quality repair.

www.truepropsoftware.com

The Portable Pilot Unit

Accurate position data, an integral part of piloting ships, especially during confined navigation or critical maneuvers such as berthing/docking, passing locks, narrow channels or ship-to-ship transfer operations, can be obtained through the use of portable pilot units (PPUs), electronic aids to navigation that measure position as well as other sensor data and display it onto the pilot's laptop or tablet loaded with charting software and charts to form an accurate image of a vessel and its surroundings and with predictors where needed.

Depending on the level of independence sought from the ship's own data, position data can either be derived from the ship's AIS with pilot plug based PPU's such as the GyroPilot from Navicom Dynamics or it can be derived from satellite (GNSS) positioning data from PPU's such as the company's GyroPilot Plus, ChannelPilot and HarbourPilot systems.

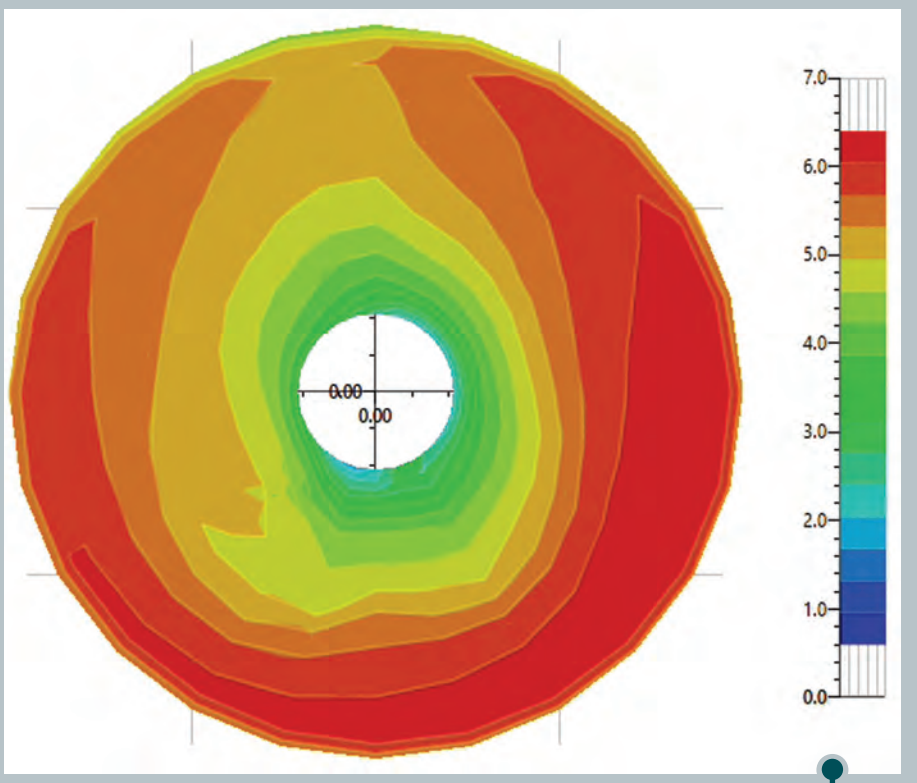
Raw position derived from GNSS satellites via a high-quality receiver is usually accurate to about 2 m (6.5 feet). While this level of accuracy works to support some maneuvers, other ship handling operations require more accurate position data. Corrections can be applied to GNSS receivers to improve their accuracy. These corrections are derived from ground-based base stations that observe differences in calculated position (caused by atmospheric interference and timing errors) and deliver these to GNSS receivers using the following methods:

Satellite-based augmentation services (SBAS) is a freely available satellite-based correction technology made available by various countries but is normally limited in its footprint (usually to the country it is launched from). These geostationary satellites provide corrections to augment the navigation information coming from the orbiting GNSS satellites. With SBAS, position accuracy can be corrected to sub-meter levels.

Dedicated ground-based corrections services such as RTK or DGPS also require a shore-based infrastructure (base stations) to be set up. These base stations provide corrections but can be limited in their range due to transmission protocols and receiver types. With DGPS, position accuracy can be less than 60 cm (2 feet) and RTK position accuracy can be less than 1 cm (0.4 inches) but tends to have a smaller operational area than DGPS.

Privately-owned correction services also exist and are available on annual subscription packages. Major players in this area include Fugro, Trimble and Hemisphere GNSS. The implementation cost is lower than that of a dedicated base station, but operational costs are higher.

http://navicomdynamics.com



The wake field axial velocities generated by CFD can be transferred to HydroComp PropElements to be used in propeller performance sim.

Photo: HydroComp

The enhanced Fleet Management features of BASSnet 2.10.

Photo: BASS

Portable pilot units from Navicom Dynamics source and correct ships' positional data.

Photo: Navicom Dynamics

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Job Location: Storrs, CT, 06269-3252 United States
Contact Director
Email: stanley.nolan@uconn.edu
Storrs, CT, 06269-3252 United State
Description:
UConn's Facilities Operations Department has two job openings for Power Plant Operator Trainees. These positions will receive on-the-job training in order to complete the requirements of a Power Plant Operator 1 job classification within a period of time not to exceed two years. These are permanent, full-time positions, with rotating shifts. Hourly salary is $22.32 and is non-negotiable. A full benefit package including medical and dental insurance is available. These positions may be eligible for weekend and shift differential.
Questions pertaining to these positions should be directed to UConn HR's Services Unit phone number, 860-486-3034.

Ship Repair Estimator
Full Time , Project Manager
Category: Project Engineering / Project Management
Job Location: 1800 Grant Street Tampa, FL, 33605 US
Contact HR Manager
Email: bfernandez@gulfmarinerepair.com
Work Phone : 813-247-3153
1800 Grant Street Tampa, FL, 33605 US
Description:
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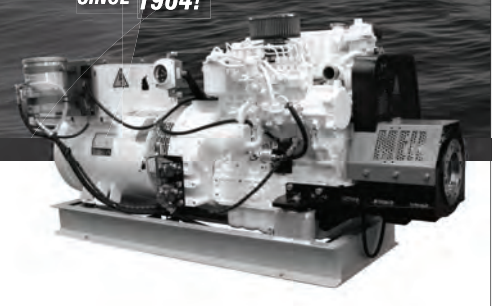

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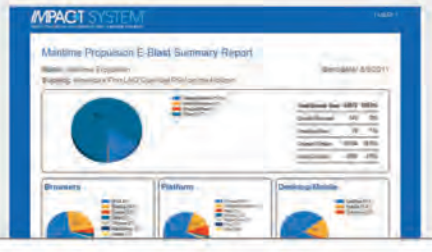

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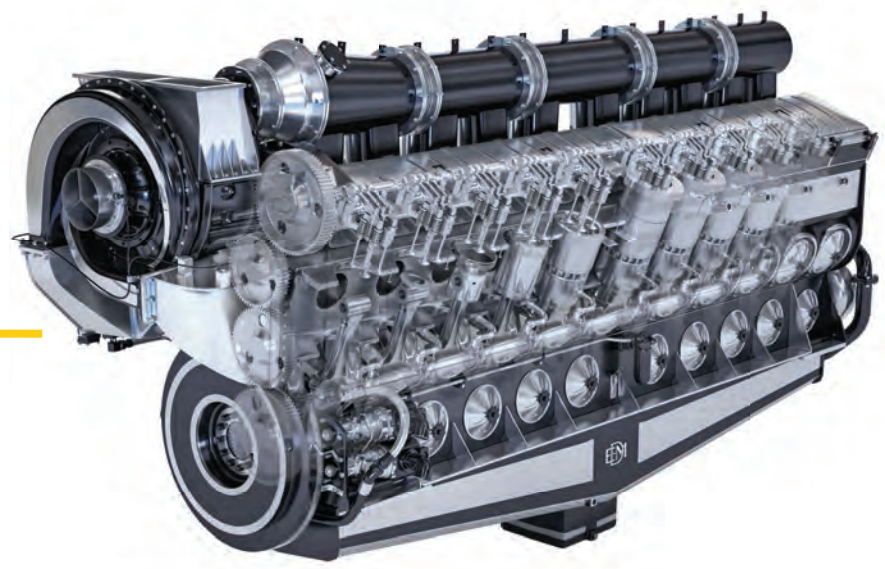

The E 23 (IMO II-EPA T3) and E 23B (IMO III-EPA T4F) are available in 8, 12, 16 and 20 cylinder configurations with power ratings from (1675 hp) to (5500 hp).

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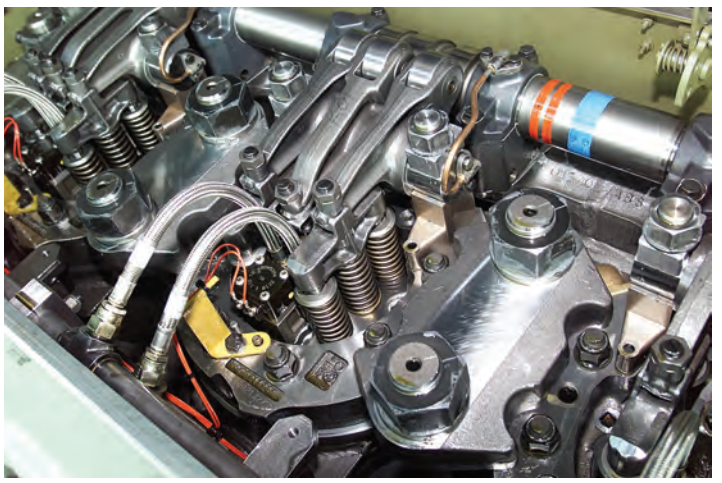

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