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Marine News

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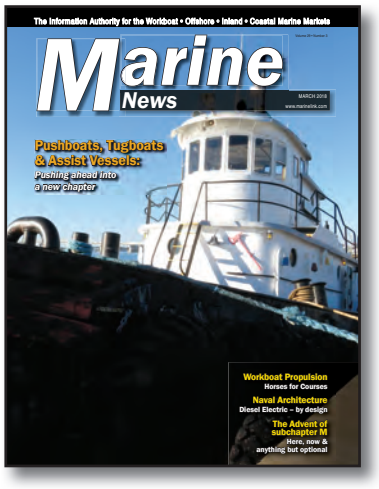
ON THE COVER

Old or new, every towboat will need to comply with the subchapter M towboat rules. How you get to the Promised Land is up to you.



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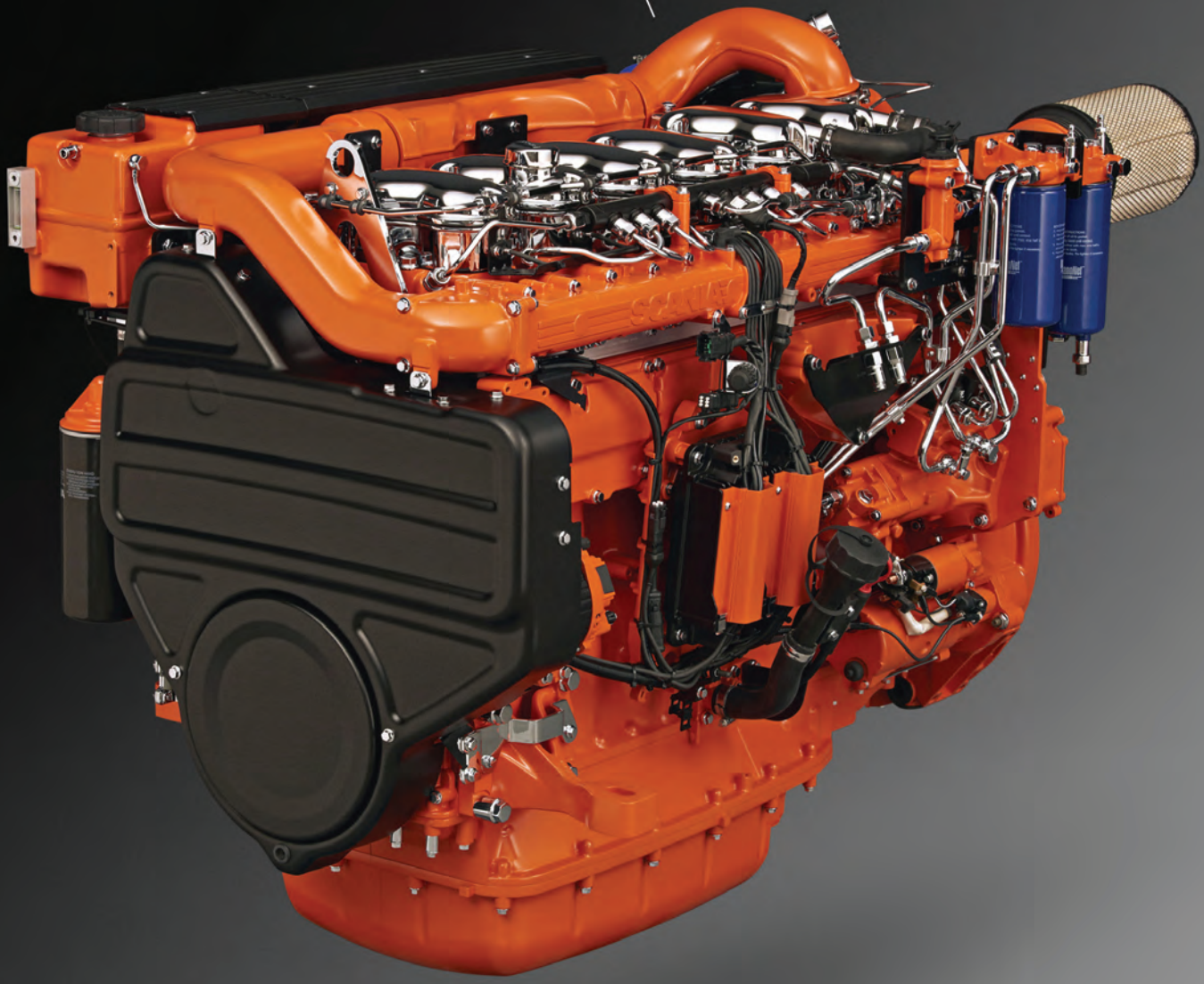

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Well into the New Year, the North American brown water market finds itself in the midst of a 'good news/bad news' scenario. Where you as an equipment OEM, vessel operator, vendor and/or boatbuilder fit into that complicated equation, of course, depends on where you sit. For those stakeholders firmly situated in the ferry sector, it has been a good run – and it isn't yet over. In the offshore energy support arena, the malaise continues but a glimmer of hope has emerged with higher oil supported by encouraging global demand. Similar stories abound in all sectors.

Separately, the so-called $2.9 billion VW Environmental Mitigation Trust settlement is the subject of increasing scrutiny on the marine side of the propulsion ledger. Workboat operators now ponder the possibility of repowering existing tonnage with more environmentally friendly engines (in part) on somebody else's nickel. With some operators are skating on razor thin margins to begin with, it is worth a closer look. Unfortunately, however, the scrutiny of what emanates from your stack isn't the only regulatory issue facing some workboat operators. That's because the subchapter M towboat rules, long awaited, are now officially here.

This month's edition brings the nation's estimated 5,500 vessel-strong towboat sector right up to speed on all things 'subM.' *Everything you wanted to know but were afraid to ask?* It's all inside, starting on page 14. Industry subject matter expert Pat Folan provides an in-depth look at how we got to present day, what that means for you and your operation and what's likely to come in the near term future. We follow that up with some additional real world advice from ABS; the U.S.-based IACS classification society that also finds itself deeply immersed in the fray as father time quickly eats into 2018.

Speaking of 'hot' sectors, the past 18 months have seen a fair bit of recapitalization in the North American fishing fleets. Those who didn't build new tonnage look to repower, and when they do, they want reliability, low cost-of-ownership, service, support and more bollard pull. No problem, said engine OEM YANMAR, whose aggressive push into the North American commercial engine markets was punctuated just this year by its first repower job in the Pacific Northwest. It turns out that fishing vessel operators want it all – and that's exactly what YANMAR and its new local West Coast distributor, Northern Lights, provided. That story kicks off on page 38.

With the first quarter of 2018 almost in our choppy, roiled wake, it remains to be seen as to whether a robust, broader economy can carry the transport sectors – in particular, the marine industries – along with it. For my part, and respecting the time honored Keefe family tradition of *'buying high and selling low,'* I'll refrain from any lofty predictions. However, and with offshore wind lurking quietly on the back burner, you just never know what will transpire. That said; the marine industry has an uncanny way of reinventing itself every few years. This time will be no different.

Joseph Keefe, Editor, keefe@marinelink.com

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Kunkel


Odegard

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Sebastian


Toohey

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Towing Industry Safety:
AWO & USCG Joint analysis – By the Numbers

For 17 years, three measures have been used to track overall trends in safety and environmental protection. While not all-encompassing, the measures are considered useful indicators of towing industry trends. The measures are:

- *Crew fatalities per 100,000 towing industry workers.*
- *Gallons of oil spilled from tank barges per million gallons transported.*
- *The number of vessel casualties (overall or by incident severity).*

This report contains towing industry data and measures for calendar years 1994 to 2016. This report also includes summary statistics on crew member injuries, which the National Quality Steering Committee began tracking in 2006, for calendar years 2006 to 2016. This annual effort – now in its 17th year – is a worthwhile effort and the Coast Guard and the American Waterways Operators do a fine job interpreting the data. So, we asked, how are we doing? *You decide.*

Crew Fatalities: In 2016, there were eight operational towing vessel crew fatalities – up from six in 2015. The 15 deaths reported to the Coast Guard aboard towing vessels in 2016 also increased from 10 in 2015. Seven other deaths were due to existing medical conditions and accidental overdoses. Of the eight crew fatalities, one casualty accounted for three deaths, when a towing vessel allided with a barge at a construction site. The largest number of crew fatalities is attributed to falls overboard (77 of 158, 49%). The next largest group of fatalities is attributed to asphyxiation (25 of 158, 16%). While the 2016 projected crew fatality rate per 100,000 FTE is nine, there were only eight operational crew fatalities, one less than 'model' projections. The crew fatality rate is calculated using the "Mercer Model", developed with AWO-funded research. The denominator for this rate is derived from the number of towing vessels in operation, as reported by the U.S. Army Corps of Engineers (USACE).

Oil Spill Volumes: According to Coast Guard records, 32,202 gallons of oil was spilled as a result of 64 tank barge pollution incidents in 2016. The largest spill was the result of an allision between a tank barge and a dock in Port Isabella, TX, 24,948 gallons of ultra low sulfur diesel into the channel. This spill accounted for 77% of the total volume spilled in 2016. Notably – and to industry's credit, just three incidents accounted for 97% of the total volume of oil spilled from tank barges in 2016. Moreover, the amount of oil spilled is on three year downward trend, but still remains well about the 17-year nadir (2010) when just 919 barrels escaped inland marine transportation carriers. *There is room for improvement here.*

The [projected] oil spill rate for 2016 is approximately one gallon of oil spilled per 2,160,000 gallons transported, or 0.42 of a gallon spilled per million gallons of oil transported. The tank barge oil spill rate is calculated using Coast Guard spill data, along with data from the U.S. Army Corps of Engineers. In 2015, the amount of oil transported by barge increased by 1.1 billion gallons; a 1.0% increase over 2014. The 1.0% increase in the amount of oil transported by barge and the decreased amount spilled in 2015 resulted in a decrease from 2.6 to 1.9 in the oil spill rate. The oil spill rate continues to be relatively low considering the volumes transported, and the fact that oil transportation volumes by barge have steadily increased since 2011 (a 22% increase over the last 5 years). The environmental footprint of the U.S. inland barge industry continues to improve. *That's good news.*

Severity of Vessel Incidents: A vessel incident is defined as one involving a towing vessel or barge engaged in carrying freight. Towing vessel incidents include ALL reportable marine casualties that involve a towing vessel or barge involved in freight movements. In 2016, there were 1,231 towing vessel incidents. There was a 12.8% increase in investigated incidents from 2015 to 2016. The number of medium and high severity incidents remains fairly consistent over the years. That said; some previously reported low severity incidents are no longer required to be reported due to Marine Casualty Reporting Navigation and Inspection Circular (NVIC) 15-01. Notably, and between 2014 and 2016, there has been a 42% reduction in all Reportable Marine Casualties reported to the Coast Guard. Over the same period, the towing vessel industry experienced only a 32% reduction in reported incidents. Moreover, from 2015 to 2016 the total number of reported towing vessel incidents and the combined number of medium and high severity incidents increased equally by 12%. *It will be interesting to see if the advent of the subchapter M towboat rules brings measurable improvement to this important metric.*

Crew Member Injuries: In 2005 the Coast Guard began documenting injury severity with each incident investigation. In 2016 there were 100 injuries involving 98 incidents, down from 109 injuries in 2015, involving a crew members on board towing vessels or barges. In 2016 there were no injuries that met the critical severity threshold. Also, between 2015 and 2016 there was

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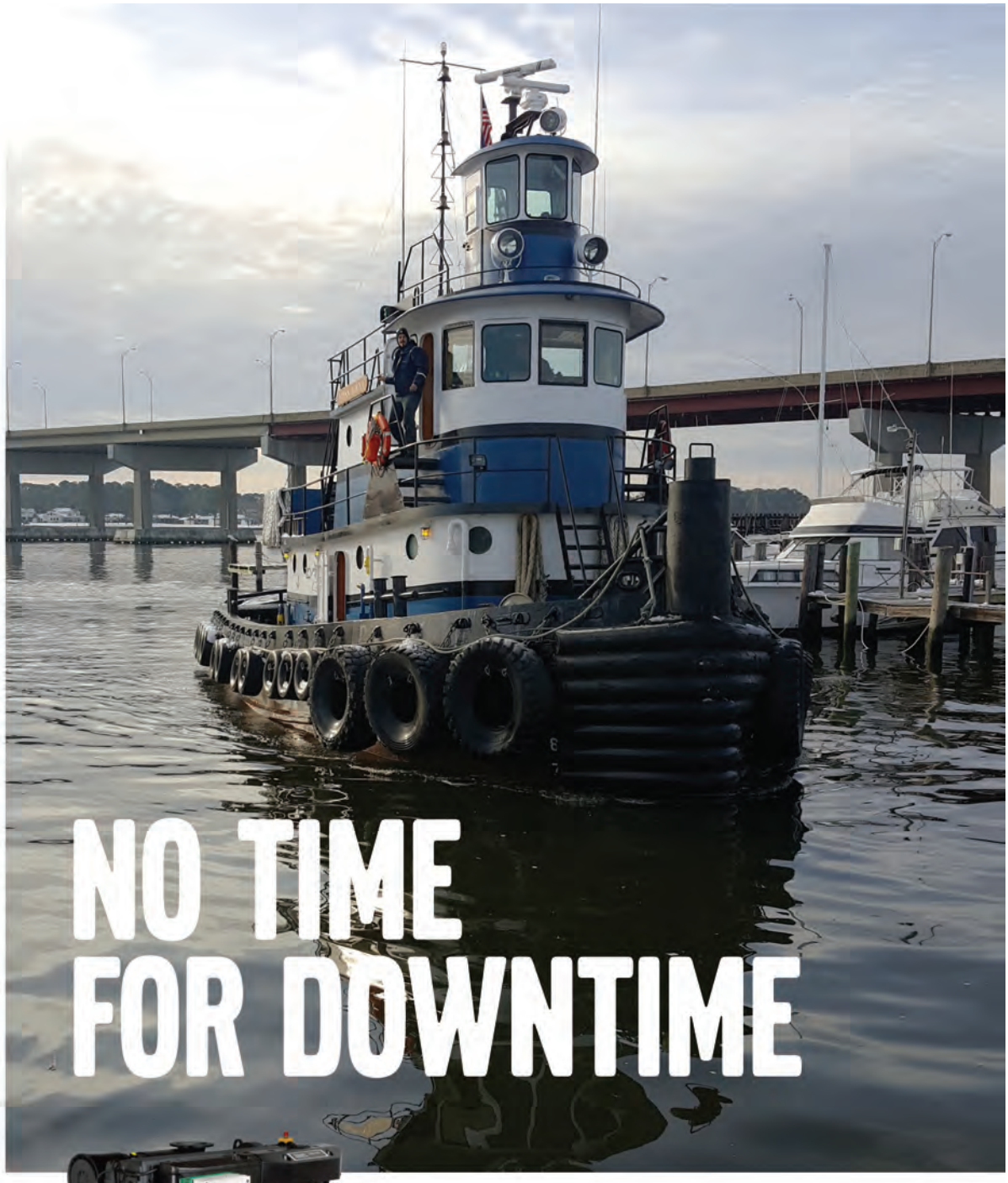

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a small decrease (-1.8%) in the "most significant" category, combining serious, severe and critical in nature. On the other hand, there has been a slight increase in minor and moderate injuries over the past 2 years. In this sector, accident types most associated with injuries in the most significant category include a fall onto surface, line handling incidents, being crushed between objects, and being struck by moving object.

Chart 4 - Crew Fatality Rate per 100,000 FTE[2]

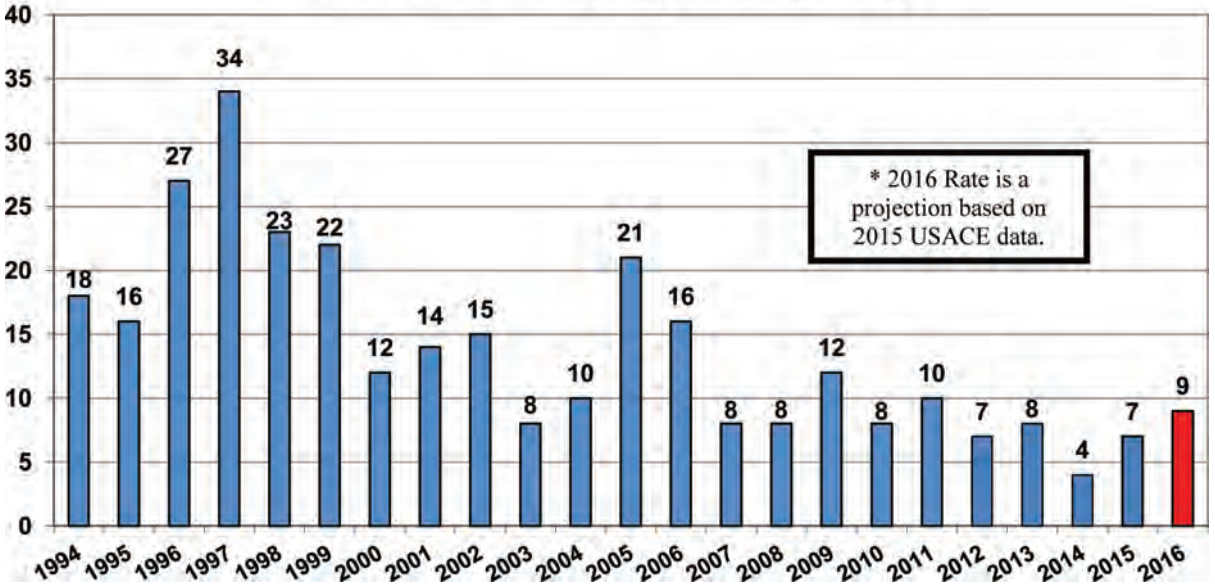
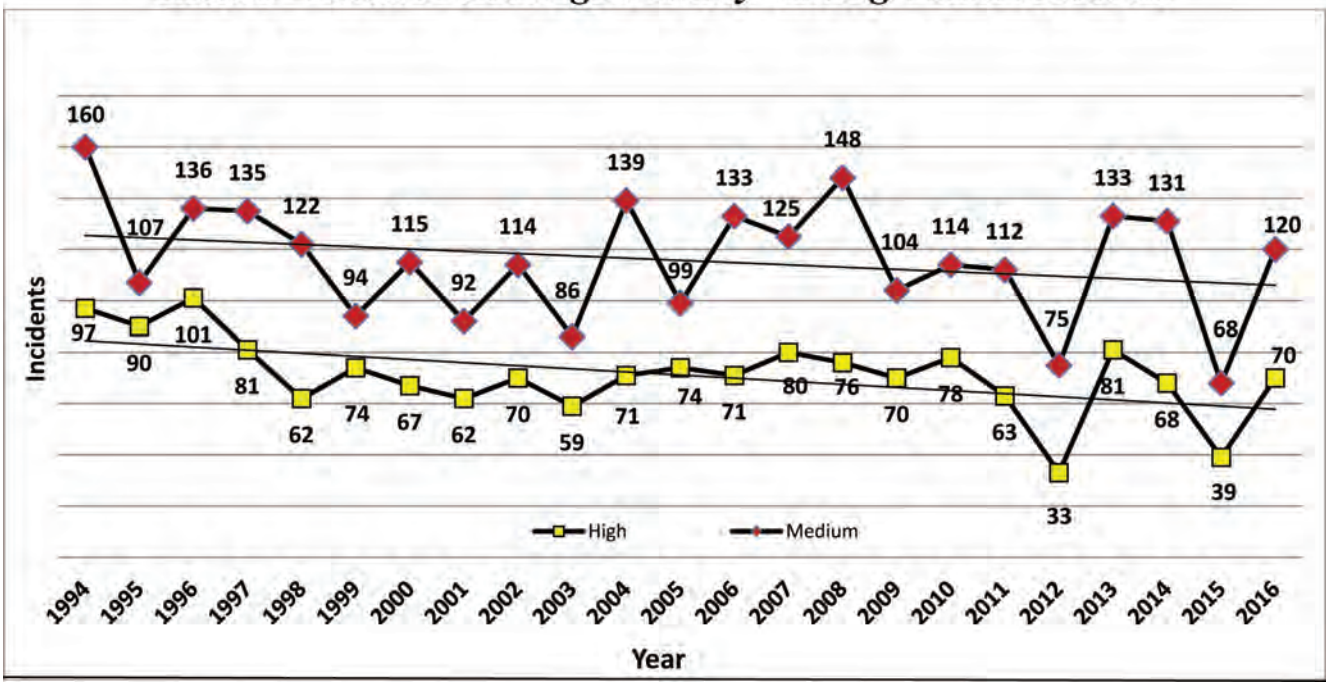


Chart 8 - Medium and High Severity Towing Vessel Incidents



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On June 20, 2016 the U.S. Coast Guard published in the Federal Register new towing vessel regulations that establish requirements for the design, construction, onboard equipment, and operation of U.S. towing vessels. Where are we on the deadline / implementation timeline?

The short, easy answer is all towing vessels that fall under Sub M will have to be in compliance by July 20, 2018.

Tug & Barge Solutions
Safety & Compliance Solutions for the Towing Industry

The tougher part of the deadlines is the Certificate of Inspection (COI) in 2019 for multi-vessel companies. Many smaller companies have not thought about the TSMS certificate deadline prior to the COI or the vessels stretching past 2019. And, it's worse still for the one boat companies – July 2020 is coming fast and many of the one boat companies that I speak with have not considered their options.

The regulations were considered and developed by the Towing Safety Advisory Committee (TSAC) with input from the commercial towing vessel industry. In fact, industry pushed for the rules to be passed and implemented. Is industry in general happy with what they got?

Generally, yes. But the devil is in the details. It appears that Third Part Organizations (TPO) will err on the side of caution because they don't want to miss something that the USCG catches so they are looking deep and most people, companies and vessels aren't ready for this type of scrutiny. When you have been operating a vessel that was never built to a standard, in a segment of the industry like dredging, and soon you will be inspected as if you were carrying nuclear warheads, your world is turned upside down. The TPOs and USCG will have to apply common sense and understanding and the operators will have to up their game. It'll be an interesting decade.

The Coast Guard recently listed the approved list of 8 Third Party Organizations. You and your firm are not among them. Given your experience and background in this sector, why is that?

Tug & Barge Solutions decided early on that we wanted to try to help small companies make it through Sub M. The partners all have come from small towing companies and we feel that our strength lies in our decades of towing vessel experience and understanding of the pressures on these companies and their personnel. We are unique in that two of the three of us are licensed mariners and two of the partners still operate a towing company. We are able to work with a large number of companies, vessels and crews to help them achieve compliance. We also get to help to help the mariners achieve higher levels of safety and that's rewarding.

Do the operators who have been longtime AWO RCP members have a leg up when it comes to SubM compliance on those who did not belong? If so, why?

Only the ones that have taken the RCP and made it their own. Quite a few companies have the RCP and can pass the audits but don't truly live it. Our interaction with the TPO for Ivy Marine's TSMS Certification Audit was for more detailed than the previous RCP audits that we had been through. And that's in no way meant to disparage AWO RCP. The RCP brought the industry to where we are today. Prior to the AWO RCP, it was the 'wild west.'

In terms of equipment, is any aspect of the rules proving to be especially expensive? If so, tell us which one and why.

Section 143.225 requires that the operator monitor and control the amount of thrust. The USCG is looking for a shaft tach, why? The TPOs are saying the same, why? It shows the 'disconnect' between industry and regulators. As a tug captain, I monitored the thrust by the tach, throttle and visual means. Running a boat is as much about feel as anything. I knew that if I pushed the throttle control ahead a bit, what the boat would do. I could see the RPMs if I had to and most importantly I could look out the window and see what was happening. I could feel what the boat was doing, how it was reacting. What does a shaft tach do for me? It will show a different reading from the engine tach, but it won't matter. It won't make the vessel operations safer. Just more equipment and wiring mandated by someone who has never run a boat.

143.230 requires alarms. A lot of the older boats don't have the alarms and retrofitting will cost time and money. Most of the small older boats I walk on do not have low hydraulic level alarms. I guess it's nice to know when the hydraulic fluid leaks out but you're going to find out immediately anyway. The alarm will just be an annoying sound as you realize the steering isn't working.

143.250 (d) requires that any piping that penetrates the hull below the waterline be fitted with an accessible valve as close to the hull penetration as is practicable. Why would the keel coolers need this? By the time you realize you have a hole in the keel cooler it's too late to prevent the coolant from running out. In a worst-case scenario if you rip the cooler off, what's the valve going to do?

143.400 (b) requires that installed electrical power sources must be capable of carrying the electrical load of the vessel under normal operating conditions. This is being interpreted as requiring a load analysis by TPOs. This is causing the small operators heartburn.

Steel work: this may be the toughest part of Sub M. Most operators have no idea what their vessels were originally built with. If you just take the bottom and side plates, what was the original thickness? If you don't know that, how can the USCG or TPO gauge the wastage. Will the current gauging become the new baseline? This is where I hope that common sense comes into play. We tried to tackle that with TSAC Task 13-07. The USCG accepted the report, but still hasn't issued much guidance.

You've talked about the need leadership and change of culture on inland waterways in order to make the implementation of subchapter M really work. What will this entail and are we any closer to getting that done?

I see a small change in the attitudes of crew members on board. The reality of the law with the looming deadlines is forcing captains to re-evaluate their attitudes. It's not a sea change yet, but it is happening. Oddly enough, when we roll out HelmCONNECT software with the company TSMS we see a better performance rate with recordkeeping than we ever saw on paper. It doesn't complicate their lives and they can do the required "paperwork" quickly. It's the one case where the cell phone or tablet onboard has helped. My disappointment has been in management. I see companies where management is not fully behind the TSMS and that makes it tough. Fortunately, the crew members recognize the importance of it and are stepping up.

Do you see more consolidation for the inland marine business in the near future? If so, what's driving that? Is it low freight rates, subchapter M, something else or a combination of all of the above?

I think Sub M will drive some of the consolidation. Products will still have to be moved, harbors dredged, and docks built. The small guy who is struggling with Sub M may find that their operation is ripe for acquisition.

What keeps you up at night? What can be done about it?

One thing I think a lot about is the way this law will stifle small towing vessel company growth. It will be very hard for someone to buy a tug and jump into business. A SubM ready vessel will be very expensive and before you can turn the wheel you have to have the TSMS in place and certified and the COI for the vessel. Sub M will change the face of our industry.

In the cargo survey/marine consulting business, it is difficult to represent ship owners and cargo interests without eventually developing a conflict of interest. Would you say that the Sub M audit and implementation game is a good analogy? Can you both implement TSMS systems and perform audits as well?

We had to structure Tug & Barge Solutions so that the

implementation and audits are separate. We have enough employees so that the TSMS writer is not the auditor of it, nor are the field personnel who are implementing it. We feel that our service is particularly helpful for the small operators who don't have the resources and/or ability to put a TSMS together, roll it out and then audit it and the vessels. The different set of eyes that our auditors offer the customer, also work for us. They help us continually improve the TSMS and related services.

46 CFR Subchapter M applies to all U.S. towing vessels 26 feet in length or more and U.S. towing vessels less than 26 feet moving barges carrying oil or hazardous material in bulk. All told, the rule impacted as many as 5,000 vessels. Some stakeholders predicted that the rule would drive some operators out of business. Has that happened to any great degree?

Yes. I know of a few companies that have already thrown in the towel and see more that will not come through Sub M. As a business that is centered on helping the small operator, it is tough to walk into a company and see that they can't make it. But there are companies that have never invested in their equipment or people and they only drag the rest of us down. The herd will be culled.

The SubM rule was implemented, in part, because the Coast Guard and government research showed that towing vessels account for a significant percentage of all vessels involved in collisions, allusions, groundings, commercial mariner deaths and injuries, and as much as one-third of discharge incidents greater than 100 gallons into navigable waters (2010 – 2014). Many of these operators were AWO Responsible Carrier Program (RCP) members to begin with. What difference, then, will SubM make?

There will be no difference overnight, but over time I believe we will get better. Unfortunately, cell phones won't help. We speak a lot about distracted operations at the captain's level but it is far worse at the deck level. We are too connected to the world and every little problem at home (or aboard) is magnified by social media. The average attention span is 8.25 seconds. That's .75 seconds less than a goldfish's attention span. So, as we develop policies and procedures we must take this into account. Training sessions must work with this, too. And some aspects of the job require acute attention to detail. Especially when it comes to drills. The other part of this is the arrival of 'millennials' in the workforce. They are not motivated by the same things that the boomers were. A 2015 Gallup poll found that only 28.9% of them are engaged at work. They look for more collaboration, frequent, open communication and do not like structured hierarchies. That's not our industry. Both sides will have to change to make it work, but without the structured hierarchy, the boats wouldn't function. And Sub M mandates the master's responsibility and Authority. The things that made the industry appealing for me (personal challenges, rising through Master to tug ownership, navigational and vessel operations) don't seem to work with the millennials. But, we'll get past all the issues and I think become a safer, more efficient industry.

U.S. towing vessels have two options when it comes to being inspected for compliance with Subchapter M regulations. They can create – or enlist help in doing so – a Towing Safety Management System Option (TSMS). Or, they can go through the Coast Guard Inspection Option. This option may be seen as the most cost-effective option, but will it provide the same level of compliance as the TSMS option? What do you see as the best path?

We believe that the TSMS option is the only path to achieving higher levels of safety on the boats. The USCG option is the low bar – they only care about checking the boxes related to the condition of equipment. It'll be no different than tank barge inspections. Safety factors in tangentially because you need to have life rings in good condition, but they are not looking at the underlying safety program within a company. The USCG requires a Health and Safety Plan but they have given no guidance on how it will be audited and how they will audit the required Sub M records. TSAC was against this option because it doesn't enhance safety and we take the same position.

Does the coast Guard have the resources to attend and inspect every vessel if all ~ 5000 of these vessels opted for the USCG option?

I think that remains to be seen. I know of two companies that will use the USCG option and the USCG is asking everyone what option they will choose in order to plan for the future. But they are not getting any additional resources and they seem to be in the dark about many parts of Sub M. They lag behind the TPOs because they do not understand our industry. Their marine experience is on government-maintained vessels that do not perform the functions of our industry. Couple that with the fact that most people in our industry do not want them on their vessels, they are bringing up the rear. And they are the enforcers. The TPOs are being exposed to the oddities on our vessels. Companies engage them and pay them for advice. I think for most TPO auditors, the small towing company vessels are a shock to them. If you spent your life around classed vessels or petroleum transportation, then the boat that's moving rocks will look different. But at least they are getting the experience.

Typically, classification societies are recognized and/or authorized meet the requirements of a TPO. These classification societies are approved by regulation to perform certain work as a TPO without further Coast Guard approval. Organizations other than recognized and/or authorized classification societies that conduct TPO functions for towing vessels must be Coast Guard approved. What does that entail?

Because we chose not to pursue that route, I don't really know. But we are looking at all the class societies and TPOs to see how they operate and how they fit within the industry. We have customers spread across the towing spectrum, from Boston Marine Transportation that goes through multiple SIRE inspections per year to Holden Marine Towing that works in the dredge world and has never had a third-party audit. The management, vessels and crews are very different at each company and our goal is to evaluate all the TPOs to find the right fit for each. Class surveyors worry me because they are used to looking at inspected vessels, built to a standard and crewed by mariners that are part of the ISM culture. What will they do when they hop on a towboat built in a yard in the bayou from sketches on a bar napkin? The same holds true for the TPOs. They all probably can audit, but can they understand the industry? Will they apply common sense, or will it be black and white? Hopefully, common sense prevails because the regulation isn't black and white.

One of the big complaints that the inland (and workboat) industry has with today's regulatory environment is that often – but not always – regulations made for blue water are pushed down onto the so-called brown water industry, without regard for whether they actually fit. Has the Coast Guard gotten better over time with these sorts of decisions?

I see problems both ways. Not enough coastal companies were involved in the rulemaking, so we had a lot of brown water input into SubM. The USCG then took their knowledge of blue water and stuck it in there. I think there will be many appeals and hopefully TSAC will be tasked in the future with refining the regulation.

SITREP: Subchapter M

No matter what route you take, time is marching on and that means compliance requirements, inspections and audits are just around the corner.

By Paul Hite,
Senior surveyor and auditor with the American Bureau of Shipping (ABS)


Hite

This July, major sections of the Subchapter M regulation will enter into force as the towing industry begins the process of certifying as many as 5,700 U.S.-flagged vessels that fall under the remit of the new safety and environmental standards. Demand for technical support from third-party organizations (TPO) such as ABS has been escalating rapidly as more and more vessel owners start to build or bring safety management systems (SMS) into compliance with the U.S. Coast Guard-driven mandate.

Deadlines & Options

July 20 is the deadline for the sections (*Parts 140-144*) of the phased-in regulation that set requirements for operations, lifesaving, fire protection, machinery and electrical systems (and equipment), as well as the construction and arrangement of the vessel. TPO activity levels are increasing daily, with requests for surveys and vessel audits having spiked in response to the Coast Guard's recent opening of the application process for Certificates of Inspection (COI).

In a nutshell, vessel owners have two paths to Sub M compliance: they can design/modify a bespoke company Towing Safety Management System (TSMS) to the requirements of Subchapter M and have it certified by a TPO, or they can opt for certification and regular inspections by the Coast Guard.


Credit: ABS

The vast majority of owner/operators have chosen the TSMS route. The Coast Guard has actively encouraged the TSMS option, a strategy that is driving the current strong demand for TPO support. But there are still a surprising number of companies that have chosen neither their compliance option nor partner. For them, the clock is ticking.

ABS, which regularly provides technical oversight for about 2,000 of the towing vessels subject to Sub M regulation, has recently issued TSMS certificates for a number of companies and is helping others to update their safety-management systems. We have also been conducting surveys of vessels to determine their individual levels of compliance.

Given the Coast Guard's guidance, the TPO community expected the vast majority of towing companies to choose the TSMS option, and this has proven true. But the USCG route to compliance is still proving popular, particularly among smaller companies that may not have a safety management system already in place.

Looming Large in the Center Porthole

The towing industry has about 5,700 vessels that qualify for inspection under Subchapter M. The vessels using TPOs will be inspected by the Coast Guard every five years, while those choosing Coast Guard inspections will be inspected each year. Their COIs will be renewed on a five-year schedule.

Owners and operators opting to go the Coast Guard route can expect the first inspection – the one that will ultimately generate a vessel's inaugural COI – to be comprehensive; diving into almost every aspect of its operation, safety processes and structural integrity. Theoretically, each annual inspection could be as comprehensive, but the Coast Guard's Officer in Charge, Marine Inspection – typically referred to as the OCMI – has some discretion on the scope of subsequent inspections.

ABS has advised owners with smaller fleets that operate


46 CFR Subchapter M Timeline
June 20 2016
•Subchapter M Published.
July 20 2016
•Subchapter regulations effective, but most of Parts 140-144 delayed for 2-years or after vessel is issued a COI.
•All vessels must comply with watertight and weathertight requirements of 46 CFR 144.320.
July 20 2017
•Vessels built on or after this date are considered "new vessels" and a COI is required before entering service. 46 CFR 136.110
July 20 2018
•Parts 140-144 implemented, with exception of Health and Safety Plan, Pilothouse Alerter System, Towing Machinery requirements.
•Towing Vessel Bridging Program decals no longer valid.
July 22 2019
•25% of a company's fleet must have a valid COI except for companies with only 1 existing towing vessel. 46 CFR 136.202
•Towing vessel owner or managing operator must implement a Health & Safety Plan. 46 CFR 140.500
July 20 2020
•50% of a company's fleet must have a valid COI. 46 CFR 136.202
•Companies with only 1 existing towing vessel must obtain a COI.
July 19 2021
•75% of a company's fleet must have a valid COI. 46 CFR 136.202
July 19 2022
•100% of a company's fleet must have a valid COI. 46 CFR 136.202
Year 7 to Year 11
•5 years after issuance of initial COI, existing vessels must comply with 46 CFR 143.450 (Pilothouse Alerter System) and 46 CFR 143.460 (Towing Machinery requirements).
July 20 2027
•Subchapter M Implementation is Complete.
June 22, 2016
CVC-1

Credit: ABS

within a limited geographical area to consider the Coast Guard option, especially if they believe the inspection schedules are manageable. That's because the Coast Guard requires 90-day's notice for inspection, so owners need to be confident that their vessel will be within the OCMI's jurisdiction at the scheduled time.

Most of the multi-jurisdictional towing-vessel operators with large, modern fleets are well advanced in their Sub M compliance activities. But some of the smaller operators not presently operating under an approved safety-management system are just coming to terms with the adjustments that will be necessary to comply with the new regulations.

For one, Sub M requires them to implement a recognized health and safety plan (**as per 46 CFR 140.500**) by July 22, 2019. For some, the associated requirements for tasks such as recordkeeping, incident reporting and the new rules around personal protective equipment will entail a significant shift in company culture. Subchapter M was drafted after extensive industry consultation, and in the knowledge that structured safety programs ultimately pay dividends to the owners who employ them.

Most regulations, especially ones that are as comprehensive as Subchapter M, compel operators to go through a natural period of interpretation and adjustment. In that context, the discovery of deficiencies with respect to compliance is a relatively common occurrence as they adjust their fleets and work practices to the new regime.

What Can You Expect?

With about four months left until Sub M Parts 140-144 enter into force, here are some common, garden-variety deficiencies that ABS is seeing (not necessarily in order of frequency):

Beyond discovered deficiencies; another compliance issue that frequently arises pertains to the clarification of the manning requirements posted on the COI. As this is to be determined by the OCMI, the TPO is not permitted to suggest safe manning levels for towing vessels. Hence, vessel owners going the TSMS route are encouraged to consult Marine Safety Manual Volume III and their local OCMI to establish this.

Looking Ahead

With some deadlines for compliance mere months away, the rush of business at national shipyards has been less pronounced than some had expected. From the TPO standpoint, activity levels have been steady for both new construction and repair work. The slower related activity levels at the yards are likely the result of recent clarification from the Coast Guard stating that vessels would not require a drydock credit and/or internal structural examination prior to being issued a COI.

Owners of towing vessels that operate in salt-water environments for more than half of any 12-month period must dry dock their vessels every 2.5 years after they are awarded their initial COI. Vessels not exposed to saltwater over a similar period must dry dock once every five years after obtaining the COI. So while the yard's Sub M-related activity may be quieter than anticipated at present, expectations are for a significant rise in related activity levels 30 months after the COIs are issued.

The keel-laying deadline for new vessels has passed and shipyards that are building vessels subject to Subchapter M must now meet the requirements for design verification. ABS is also providing this service for multiple owners and shipyards around the country.

Maximum Allowable Working Pressure is not indicated on the ship's pressure vessels
Vessels operating inside the boundary line are unable to display proper navigation lights and day shapes
Vessels operating on rivers not carrying visual distress signals
Main fire-control panels located in the engine room, and not at the operating station, as required
Engine room piping not color-coded
Vessels do not meet the two-hour requirement for emergency-lighting batteries
No positive means to close openings (e.g. for ventilation) into the engine room
No RPM gauges on or nearby required machinery (as per 46 CFR 143.230 (c))
Inoperable valves for remote fuel shut-off
Lifejackets not marked with the vessel's name in block capital letters

Disconnect From River to Washington

By Michael J. Toohey, President/CEO, Waterways Council, Inc.

Toohey

Just before the anticipation of good things to come on Valentine's Day, on February 12, the inland waterways transportation industry was left feeling disappointed and puzzled after the release of the long-awaited Trump Administration infrastructure principles, and then the release of President Trump's FY 2019 budget request.

During the Presidential campaign, then-candidate Trump said he would undertake a $1 trillion infrastructure initiative that would focus on a wide array of projects, from sewer systems to bridges to Veterans Hospitals to rural broadband expansion.

President Trump visited the Ohio River on June 7, 2017, and talked of the "dilapidated system of locks and dams that are more than half a century old," and said, "capital improvements of the system, which [are] so important, have been massively underfunded. And there's an $8.7 billion maintenance backlog that is only getting bigger and getting worse ... citizens know firsthand that the rivers, like the beautiful Ohio River, carry the life blood of our heartland." His visit was historic, and was cheered by those committed to the inland waterways transportation system, its carrier, shippers, laborers, manufacturers, energy providers and others, and for the first time in a long time, there was a true spirit of hopefulness.

In his visit to the river, President Trump described how, "Together, we will fix it. We will create the first-class infrastructure our country and our people deserve." At the State of the Union address at the end of January, where the President mentioned "waterways," he announced that his Administration would undertake an even larger plan – a $1.5 trillion initiative – to repair America's infrastructure.

But the optimism felt by the inland waterways carriers and shippers quickly turned to disappointment when the actual infrastructure proposal was released on February 12, as it recommends modernizing the waterways transportation system by authorizing the Federal Government (likely the Corps of Engineers) and "third party service providers" to impose and retain tolls or lockage fees on the lock and dam system. It also recommends eliminating the role of the Federal government to construct, operate and maintain the Nation's waterways by transferring that responsibility to non-Federal public or private entities. Since the founding of the United States, the Federal government has played a role in operating and maintaining the inland waterways because the system is a national treasure, and does not belong to one state or entity.

The Administration's infrastructure proposal seems less that "together, we will fix it," and actually more like commercial operators and shippers are the only ones who will be expected to fix it, and to pay significantly more for the Nation's waterways transportation system, despite being just one beneficiary of the lock and dam system."

Currently, commercial waterways operators – just 400 companies across the entire national system – are the only beneficiary to contribute 29-cents-per-gallon diesel fuel tax to a dedicated Inland Waterways Trust Fund, matched by General Treasury Funds, that pays for the costs of construction and major rehabilitation of the system. Other system beneficiaries – recreational boaters, commercial fishermen, and those who benefit from hydropower generation, municipal and industrial water supply, flood control and national security – do not contribute to waterways improvements, although they utilize and rely upon the lock and dam system. In some cases, recreational boaters utilize the locks even more than the commercial sector.

At the end of 2014, through the advocacy of Waterways Council, Inc., (WCI), inland waterways carrier and shipper members successfully advocated for a 45% increase to the diesel fuel tax deposited into the Inland Waterways Trust Fund for increased investment to the system. Inland waterways carriers pay the highest tax of *any* surface transportation mode in the nation.

While WCI is grateful that there is attention being paid to waterways infrastructure, if the Administration's infrastructure recommendations are adopted, the Inland Waterways Trust Fund would be responsible for operating and maintaining the inland navigation system at an estimated cost that is eight times that of current Trust Fund revenue/income. This is simply unsustainable and would cause a modal shift, drive traffic off the waterways to other modes that are already capacity constrained, and impact our Nation's competitiveness in world markets.

Issued on the same day as the Administration's infrastructure principles, the President's FY2019 budget request to Congress was equally disheartening, as it proposes to cut more than 22% of the U.S. Army Corps of Engineers' Civil Works funding to $4.78 billion, down from the FY2018

Senate Appropriations Committee's funding level of $6.16 billion.

The FY2019 budget requests a paltry $5.25 million of the $114 million collected in revenues in 2017 from the Inland Waterways Trust Fund with only the Olmsted project to be funded (at $35 million to its completion, expected this year). The budget estimates that the Trust Fund will collect $104 million in FY2019. The balance/surplus in the Inland Waterways Trust Fund is estimated to balloon to $340 million, if this budget were to be accepted. Work at the other three priority navigation projects under construction – Lower Mon in Pennsylvania, Kentucky Lock in Kentucky and Chickamauga Lock in Tennessee – would cease and workers would be laid off if the President's budget were adopted.

The FY2019 budget also proposes a New User Fee on Inland Waterways. The proposal would establish a vessel user fee to supplement existing revenue from the $0.29 per-gallon diesel fuel tax to help finance the users' share of anticipated capital investment projects, as well as 10% percent of the cost of Operations and Maintenance (O&M) – historically a Federal responsibility – activities on the inland waterways. This proposal would seek to raise approximately $1.7 billion over a 10-year window.

The FY2019 budget proposes $2.07 billion for O&M, a cut from the FY2018 Senate Appropriations Committee funding level of $3.52 billion, with $760 million going toward the inland waterways.

On the harbor maintenance front, the President's budget request for FY2019 would reduce, by around half-a-billion dollars, the Harbor Maintenance Tax rate, from $1.6 billion collected into the Harbor Maintenance Trust Fund currently to around $1.1 billion "to better align estimated annual receipts from the tax with recent appropriation levels for eligible expenditures from the Harbor Maintenance Trust Fund. Reducing this tax would provide greater flexibility for individual ports to establish appropriate fee structures for services they provide, in order to help finance their capital and operating expenses on their own," according to the Administration budget documents.

This FY2019 budget request represents a clear disconnect from the encouraging rhetoric made by President Trump about the inland waterways in the State of Union address and at during his historic visit to the Ohio River last June. If accepted, this budget, like the infrastructure proposal issued earlier today, hamstrings America's ability to compete in the world, and could virtually eliminate the cost-competitive advantage the waterways provide to shippers.

Carriers, and shippers like American family farmers, energy/petroleum and coal producers, cement and construction material companies, and many others who rely on the waterways to ship their products around the U.S. and the globe, would be saddled with massive increases that will deter freight from the waterways. This has the potential to negatively affect our agriculture trade balance, increase traffic congestion on our highways and railways, and impact our environment.

WCI looks forward to working with the Trump Administration and with Congress to develop an equitable and meaningful infrastructure plan, and to see full and efficient funding provided for the U.S. Army Corps of Engineers. Without these, modernization of our critical waterways infrastructure may be just something that was talked about, while our Nation's competitive advantage in the world gets locked out. We can and *must* do better.

Inland Towboats and Diesel Electric Propulsion

Diesel electric technology, as part of a comprehensive engineering design process, should be considered by the inland towboat sector.

By Joshua Slade Sebastian, P.E.

Sebastian

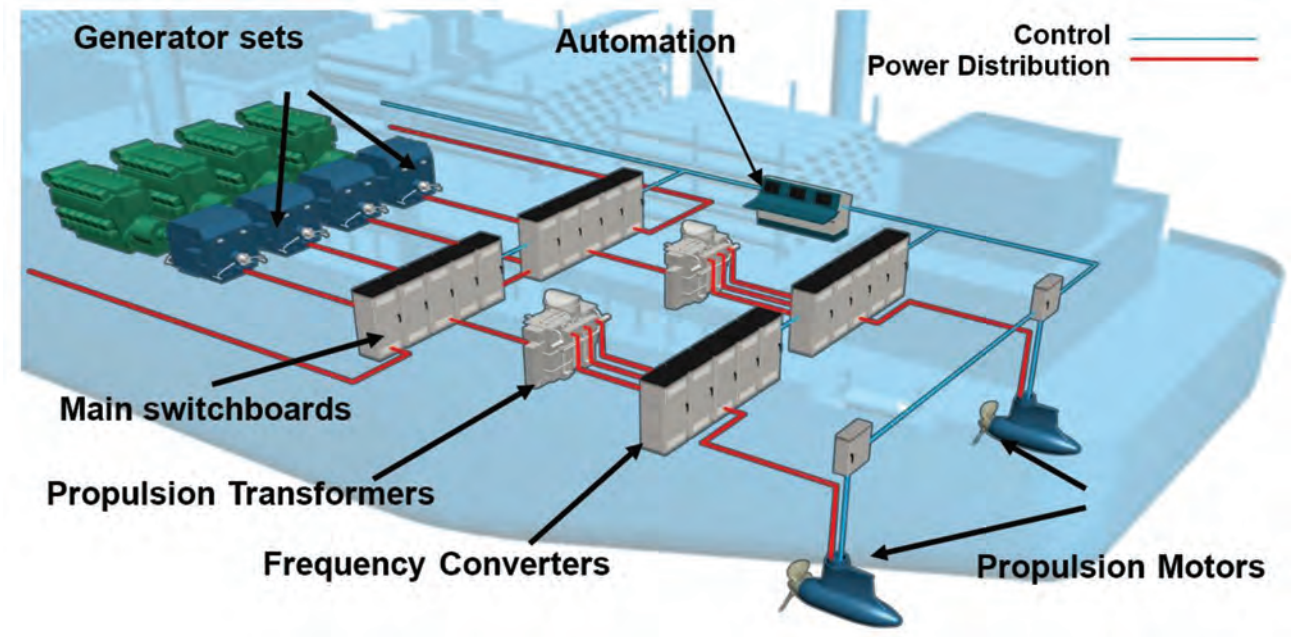
Diesel electric propulsion is not a new concept. Like azimuthing drives, its application to the inland marine market has lagged other areas of the marine industry. Diesel electric has gained traction in industries where fuel economy and redundancy of propulsion systems for safety is paramount. In particular, vessels like passenger ferries and offshore supply vessels have enjoyed the benefits of the diesel electric systems. The inland towboat industry shares many of these concerns, and would benefit from the consideration of diesel electric technology as part of a comprehensive engineering design process.

In early 2017, The Shearer Group, Inc. (TSGI), together with the marine division at ABB, embarked upon the study of applying diesel electric technology to the inland marine industry. TSGI originally researched diesel electric propulsion for towboats around 2007, but at that time the technology and price did not make it a feasible option for the market. However, in the last few years, some fundamental industry changes have shifted the equation, making diesel electric a viable option when planning for a new towboat.

What is Diesel Electric Propulsion?

Simply put, diesel electric propulsion is a concept that uses an electrical power plant consisting of multiple power generators that develop electrical power to the propulsion plant via the use of electric motors. The electrical propulsion system consists of generators, an electric distribution system, variable frequency drives, electric propulsion motors, and a control system.

Mechanical diesel driven systems provide superior efficiency in a very narrow range of operations, typically above 60% MCR. As such, it is important to determine the total operational cycle of the engines over a long course of time. Diesel electric improves efficiency of a vessel's propulsion system by broadening the range of optimal operations and providing more overall efficiency in ranges outside the opti-



mal range of a mechanical drive system.

Under the umbrella of diesel electric propulsion, there are several variants that exist on the market today:

Hybrid (PTO/PTI)

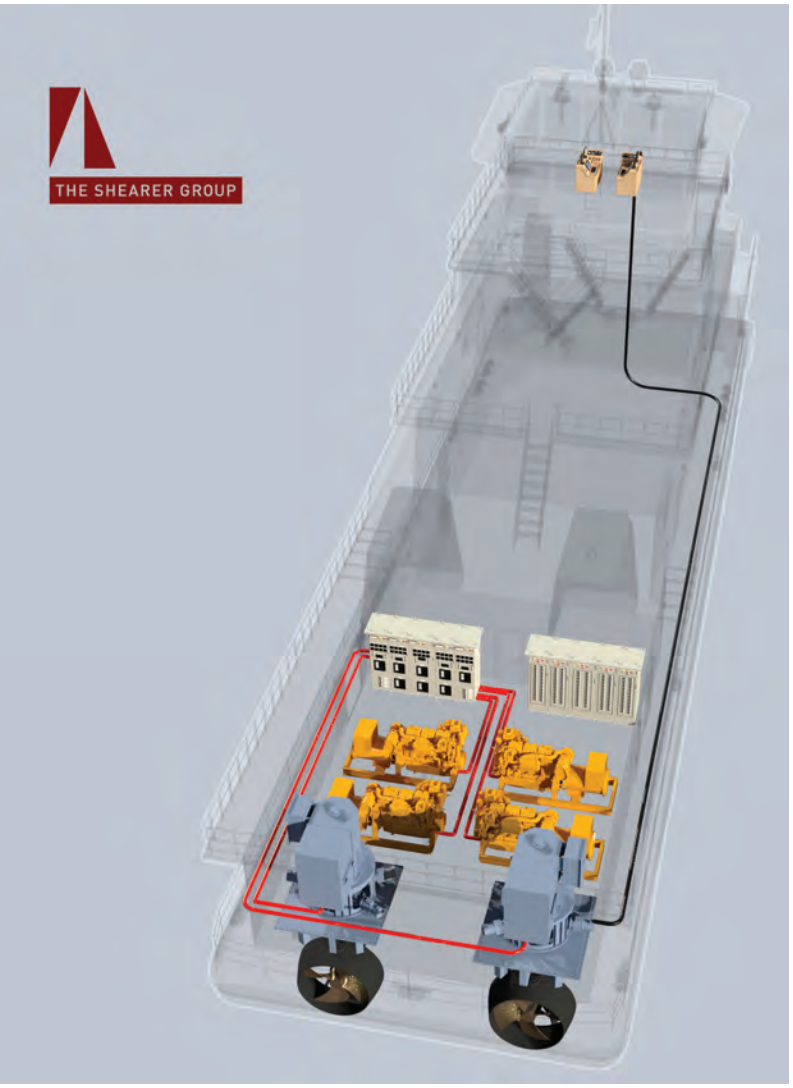
Hybrid systems make use of a mechanical shaft line with a power take off and power take in (PTO/PTI), combined with an electrical generation system. This system combines the benefit of direct drive propulsion through a gear box with the flexibility of a 'power boost' from the ship's electrical system, but also allows for the main engines to run more efficiently by providing electrical power to the ship when the power is not needed for propulsion purposes. When more power is needed, the generators act as motors supplying additional power to the shafts via the PTO/PTI. During lower power operation, the main engines can be clutched out and the vessel can operate on the electrical motor alone, or the main engines can supply propulsion power and also power the PTO/PTI for supply of electrical power for auxiliary loads.

A/C System

The A/C diesel electric system is the most traditional and common diesel electric system on the water today. It consists of an electric power plant with several generators providing power for all of the loads on the vessel; propulsion, auxiliary, and hotel. Power from the switchboard is provided to the propulsion motors via variable frequency drives in order to allow the motors to operate at virtually any shaft RPM.

D/C System

The D/C diesel electric system is very similar to the A/C system but provides some improvements in certain areas. The AC current from the generator is rectified to DC at the generator and distributed directly through the switchboards. The DC current is then inverted back as necessary to provide AC power to the propulsion and hotel loads. Direct Current systems are smaller and lighter in general, with fewer parts inside the switchboards. DC based propulsion systems provide the most benefit when combined with some type of energy storage where the DC grid can allow the batteries to provide instant power response to the ship's electrical system.



Diesel Electric with Energy Storage

When diesel electric systems are combined with energy storage, the benefits of diesel electric systems continue to improve. For typical marine application, the use of Lithium Ion batteries (Li-ion) can help add spinning reserve, peak shaving, and zero emission operations to increase the overall efficiency of the vessels.

How Diesel Electric Fits into the Inland Market

To date, most of the focus on diesel electric has bypassed the inland towboat market. However, TSGI has been working with engineers from ABB to develop and fine tune the diesel electric towboat design concept. The impetus for this design effort is the typical towboat's operational profile. When we asked owners how they operate their vessels, most believe they are between 80%-100% load nearly 100% of the time. In reality, we found that actual engine data from vessels operating on the rivers was quite different.

Instead of operating at over 80% loads the majority of the time (as previously thought), we found that the operational profile of the vessels we investigated spent far less time above 80% load than originally thought. For a number of operators on various parts of the inland rivers, the actual towboat spends most of the time below 50% total power, with short peaks above 80%. This invites opportunity for diesel electric to provide positive impacts on the operational costs associated with running a towboat on the inland rivers.

Vessel operation profiles are very important in determining the suitability of a diesel electric system for a particular vessel. Both sample profiles represent real operational data over the course of 365 days of operation for different vessels.

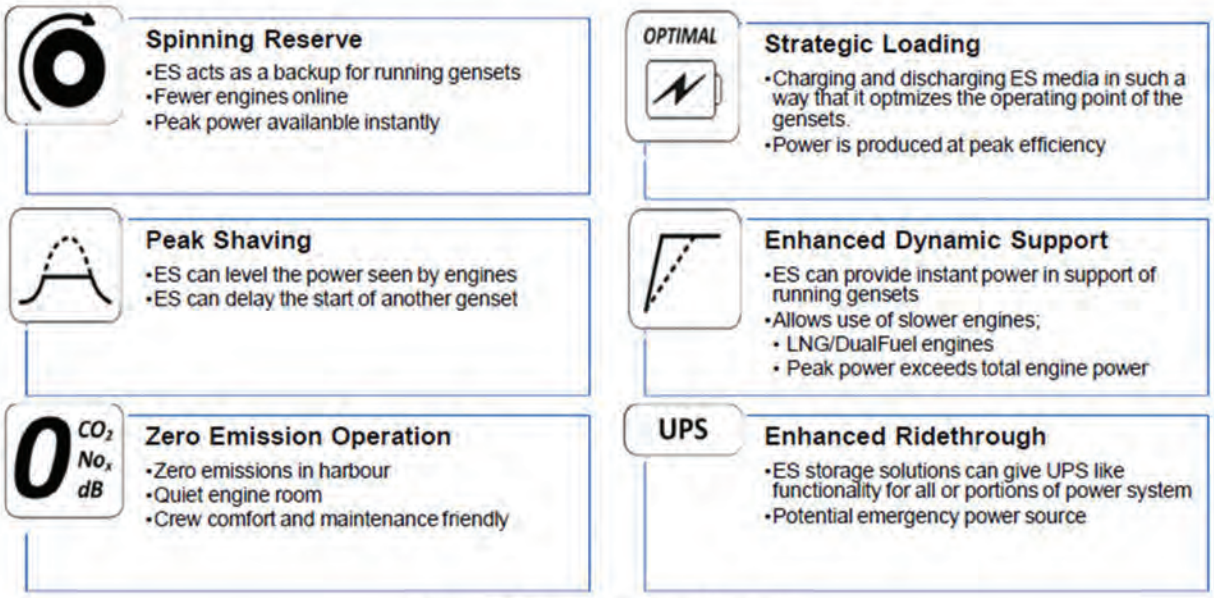


Figure 6 Energy Storage Benefits

Diesel electric propulsion provides these savings from a variety of benefits. Propulsion machinery for each 2400 HP towboat is listed below:

Typical 2400HP Machinery:
Prime Mover: 2 x 1200HP
Tier IV Engines
Generator: 2 x 200kW
Tier III Generators

2400HP Diesel Electric Machinery:
Power Generation: 4 x 800hp
Tier III Generators

For the mechanical towboat, at any engine load from idle to 100% you are running at a minimum three (3) engines to maintain full maneuvering plus the house electrical load. The diesel electric however is running an optimized number of engines. From idle to about 25% load only one engine is required to be running to provide propulsion to two shafts plus the house electrical load to the vessel. Only at much higher loads (typically > 80%) does the diesel electric lose some of its efficiency gains over the mechanical propulsion system.

Beyond Fuel Savings

Diesel electric propulsion systems also provide benefits beyond fuel savings. During the design process, consideration should be given to items like redundancy of propulsion systems, urea consumption and storage, and engine maintenance.

The diesel electric also shines with respect to redundancy and safety. With any engine able to provide power to either propulsion motor, an operator can minimize the impact of a prime mover failure. On a mechanical system, the loss of a prime mover results in the loss of 50% of the propulsion and an entire shaft. On the diesel electric towboat, the loss of a generator set only results in the loss of 25% of the maximum available power while still being able to provide power to both shafts. Similarly, with the loss of a generator on a mechanical system, the vessel now has no back-up for house and auxiliary loads. The diesel electric system can keep providing power with multiple back-ups for the electrical generation.

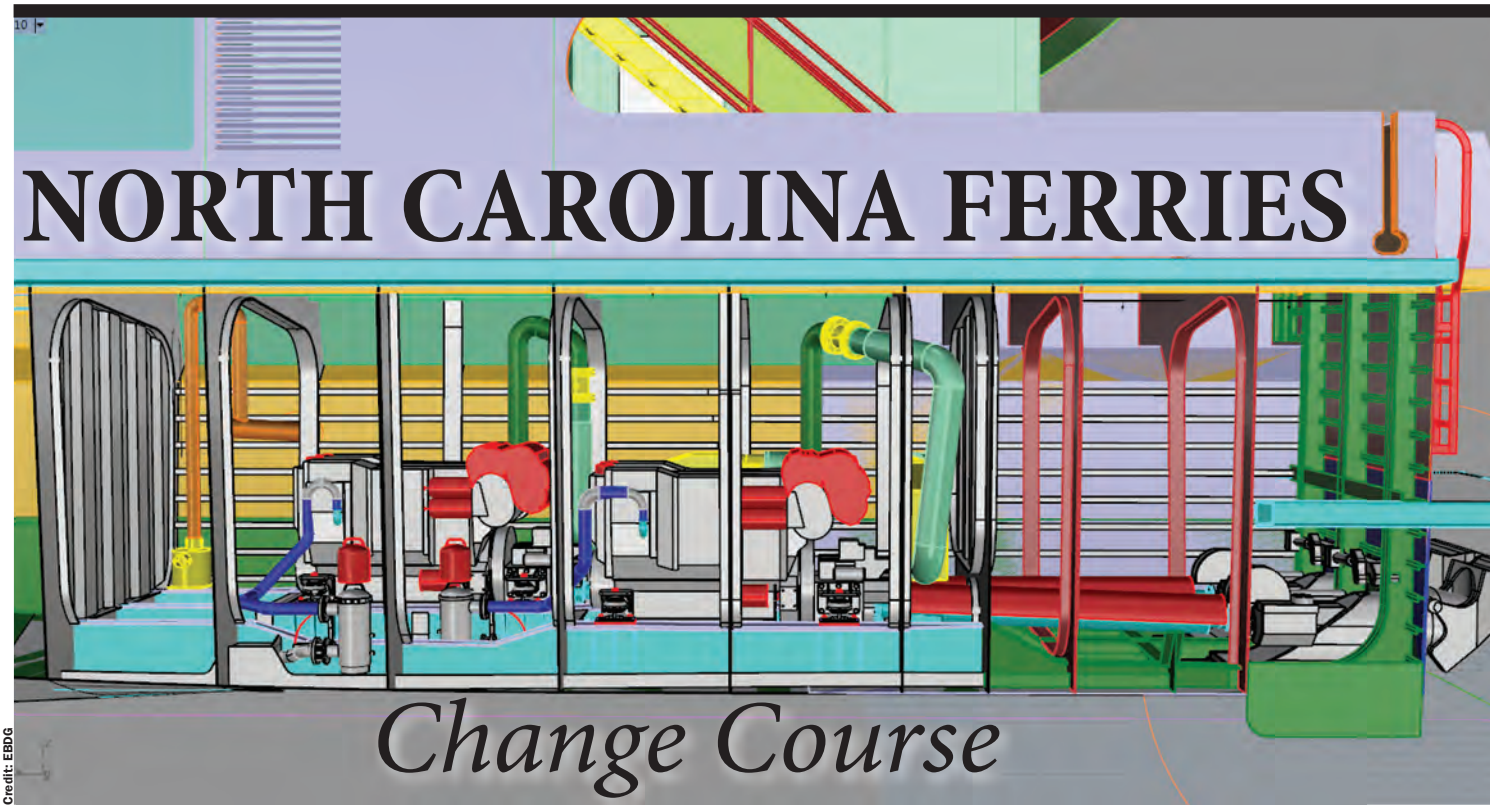
Using multiple Tier III generators removes the requirement for Tier IV engines, which use SCR or EGR technology to meet emissions requirements. If a vessel is using urea for SCR, with a typical DEF dosing rate of 5%, a new vessel design has to accommodate a urea tank, the SCR, and the additional exhaust piping.

Another benefit involves engine maintenance schedules. By reducing the number of engines running to an optimal number, diesel electric propulsion reduces the number of engine hours spent at partial loads. A vessel that spends 40% of its operation time at less than 50% propulsion load can keep hours on two engines instead of three when compared to a mechanical driven system. And, because the vessel only has one type of engine on board, the number of spare parts for both the vessel and shore side support can be reduced.

Is Diesel Electric for You?

Diesel electric, just like azimuthing drives, may or may not be the best solution for all operational profiles on the river. It does, however, offer distinct advantages in many scenarios and should be considered as part of the overall decision making process when designing a vessel. Benefits extend beyond just operational cost savings by also providing increased operational safety and redundancy for towboats.

Joshua Slade Sebastian, *P.E., is Engineering Manager at The Shearer Group, Inc. (TSGI). TSGI would like to thank the Marine Division at ABB for assistance with the electrical design of the concept diesel electric towboat and providing some of the technical information for this article.*



Credit: EBDG

FOR THE FUTURE

Shoaling shifts NCDOT's propulsion needs, prompting a sea change. Thrustmaster waterjets step in to carry the day.

By Joseph Keefe

In Swansboro, North Carolina, boatbuilder U.S. Workboats (formerly Armstrong Marine) is assembling the linchpin of NCDOT's business plan for its future Outer Banks ferry services. Separately, in both Hatteras and Ocracoke, crews are preparing to break ground on new parking additions and visitor facilities.

The Ocracoke Express passenger ferry project – made necessary by the shifting and unpredictable shoaling on North Carolina's Outer Banks – will, starting this summer, change forever the way tourists and visitors get to and from these national treasures.

In a nutshell, the Ocracoke Express passenger ferry is a new service from NCDOT designed to alleviate summertime congestion issues on the existing Hatteras-Ocracoke car ferry route. Passengers will be able to make a reservation and walk onto a ferry that will take them into the heart of Ocracoke Village in just over an hour, bypassing the waits that often occur on the vehicle ferries.

LOCAL CHALLENGES: PROBLEM SOLVED

With a projected delivery date for late June 2018, the changes will come not a minute too soon. That's because Hatteras Inlet is a very dynamic body of water. It has changed many times – and dramatically – over the past 15 years, said Jed Dixon of the North Carolina Ferry Division. Dixon, speaking at the annual PVA Convention in Savannah, explained, "The route previously run by the NC Ferry has to change because of severe shoaling. Now they have to go out and around the whole inlet system to get to Ocracoke Island. This shoaling has created real hardships for our operations."

Also according to Dixon, dredging efforts by USACE had been unsuccessful because of the nature of the shoaling in the area and weather patterns. In fact, and in 2013, a multi-million dollar dredging project was undertaken. "And the day they finished it, we couldn't get a ferry across it – it filled in that fast," said Dixon, who insists, "We need to start working outside the box to see how we can do

business differently." The historic route was four miles; the new 'horseshoe' route is about 8 miles. And that has had a real impact on operations. For starters, it increased the cost of labor and fuel by $250,000 per month.

Presently, the horseshoe/outer route forces NC Ferry to go from 52 departures per day to 42 departures per day, using the same number of vessels. And it doubled the transit time for this route between Hatteras Island and Ocracoke Inlet to one hour. The local impact was significant – local business and tourism was down because NC Ferry transport numbers were down – and the system couldn't move as many people and vehicles daily. It was suggested that NC Ferry start a passenger only route. The solution was a high speed ferry from Hatteras to Silver Lake Park.

Today, NC DOT only runs car ferries; they don't have a high speed ferry. Fortunately, and in this case, the state received $5 million from the federal government, in part because much of the area in the Outer Banks that passengers visit is also federal land. The $9 million price tag therefore is being underwritten by the Federal Lands Access Program grant with the balance being an appropriation from the General Assembly.

CRITICAL DESIGN PARAMETERS

According to Elliott Bay Design Group (EBDG) naval architect Brian King, the ferry's intended service conditions demanded attention to many parameters. As such, he told ***MarineNews***, the boat was extensively '3D modeled' during the design phase. And, he said, stability, ocean conditions, speed and reserve buoyancy were of paramount concern. In particular, the ferry was designed by EBDG to have an exceptionally higher freeboard (+18") than most conventional harbor fast ferries. Also with a nod towards the new offshore routing, NC Ferries dictated that it be constructed more robustly. A long fetch into waters at places along the route makes the prevailing weather quite challenging.

NCDOT Passenger Vessel at a Glance …

LOA: 92'	Maximum Speed: 32 KT	Endurance: one day of service
Beam: 28'	Cruising Speed 28 KT	Fuel Capacity: 2,200 gallons (95%)
Draft: 4'	Engines = Cat C18, 803 HP x 4	Generators = Northern Lights 40 kW x 2
Gears: ZF	Passengers: 127	Local engine Distributor: Gregory Poole

Beyond those challenges, the vessel's design specified water jets because NC Ferry needed 28 KT in sustained speeds because of the new, longer routing and the need to return to a schedule of full service departures. Finally, and of no less importance, the use of waterjets was necessary because of the local silting, shoaling and turbidity of the sound waters. In this case, Thrustmaster's Waterjets won out over a well-known competitor, in part, because of US-build requirements (with federal money involved in the funding).

Jordan Tilton, Sales Manager, Waterjets for Thrustmaster of Texas, says that there was far more to it than that. While the initial plan had been drawn for a more familiar name in the market, Tilton says that the Thrustmaster decision just made good business sense. "We looked at our performance curves and theirs, and while our competitor didn't meet the buy America clause, honestly, the 170HP Jet that is being installed on that boat is actually a little bit larger in diameter (by about 30mm), so it is actually a better load carrying jet, just in terms of diameter. Also, the fact that we had local support here in the United States had a lot to do with it. We service everything out of Houston."

Thrustmaster of Texas, perhaps better known for its larger thrusters in the offshore energy markets, bought the U.S. manufacturing and licensing rights for its waterjet designs back in August of 2014. In part, that savvy move had a lot to do with diversifying its product lines in the face of morbid offshore energy markets. Today, Doen is still its own entity in Australia and Thrustmaster regularly works with and consults their engineering teams regularly.

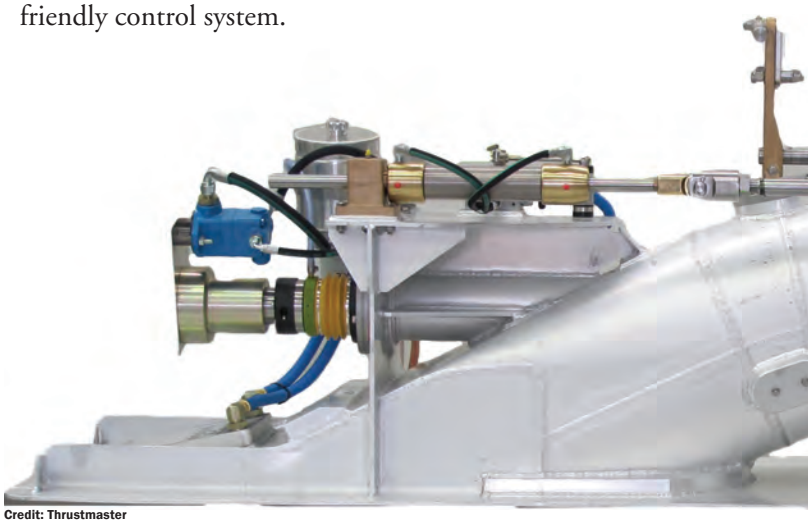
Doen has been in business for 40 years – all over the world. A proven brand, the Thrustmaster version of these sturdy waterjets is manufactured right here in the United States. In fact, and for those operators who might not be as familiar with that name, there are actually as many as 400 Doen waterjets in the US Navy's 11 meter rib fleet – but people just don't know it.

The Thrustmaster 170HP jet is of very simple build. All internal components are stainless steel – the impellor and driveshaft – on the outside, marine grade aluminum. Addressing the local North Carolina Outer Banks conditions, Tilton told ***MarineNews***, "In terms of shallow water and turbidity, we have a lot of boats in Alaska; specifically in places notorious for rocks and silt that can be sucked through intakes. We've never had an instance there where we couldn't refurbish an impellor to its original specs."

According to Tilton, in the short time since Thrustmaster acquired the Doen designs, it has sold and installed more than 40 in North America. And he said his firm had

"a few projects on drawing board." Fully compatible with all gears and whatever engine is in front of it, in this case the four waterjets are driven by C-18 CAT's in a quad 803 arrangement through ZF gears – the latter component reportedly chosen, in part, because of its weight savings. The vessel is certified to EPA tier 3 emissions standards.

Finally, the four Thrustmaster Waterjets steer 30 degrees port and starboard and they are reversible. Multiple Joysticks in the wheelhouse and on the wings for docking round out a very complex and, at the same time, user-friendly control system.



Credit: Thrustmaster

Credit: NC DOT

COURSE CORRECTION WITH WATERJETS

Sometimes, it just isn't possible to beat Mother Nature. When dredging couldn't do the trick, NCDOT turned to a different kind of ferry, a new and improved business plan, and a propulsion system ready for all challenges. American-built Thrustmaster waterjets will soon be solving NCDOT's transport problems in the unpredictable and unforgiving waters off the Outer Banks. And, if that solution can work there, then there probably aren't too many more workboat challenges it can't handle anywhere else.

THE EMISSION REGULATIONS – *"It aint easy being Green"*

**All images courtesy of Robert Kunkel*

Nor is it getting any easier to understand when, how and why to comply.

By Robert Kunkel

Whether your marine operation is a major corporation or a family "mom & pop" company, the type of fuel you now burn or for that matter what emanates from your stack each day after the burn has now become a major source of confusion. As Kermit the Frog once said, we will now know what its like to be green.

NEW SLANT ON AN OLD TOPIC

Some believe the discussion is a new subject. It is not. Those of us that work the oceans, rivers and sounds for a living always had a concern of how much fuel we burn and what the quality of that fuel was. We did not need to be tagged 'ECO.' We worked for efficient combustion simply because it affected our bottom line. When it comes to a diesel combustion engine or for that matter, a propulsion boiler, most of us have at some point in time cracked open the upper deck door to see if we were pushing black or white smoke. The decades of that business efficiency have now been driven into a regulation that controls the quality of our emissions. And make no mistake about it, at some point in time you *WILL* have to comply.

Many previous industry articles have addressed Tiers one, two or three (EPA or otherwise). Others have defined the difference between EPA standards and the International standards of the IMO. Many owners and operators struggle to understand the installation of and difference between 'scrubbers' to meet SOx standards versus 'SCR' or 'EGR' to meet the latest NOx requirements. Add to that discussions of converting to Liquid Natural Gas (LNG) and being 'LNG Ready' and the list of questions grows longer each day.

"Many owners and operators struggle to understand the installation of and difference between 'scrubbers' to meet SOx standards versus 'SCR' or 'EGR' to meet the latest NOx requirements. Add to that discussions of converting to Liquid Natural Gas (LNG) and being 'LNG Ready' and the list of questions grows longer each day."

REAL WORLD EXPERIENCE

We provide construction and repair supervision at Alternative Marine Technologies (AMT). In recent projects ranging from 50,000 & 25,000 deadweight product carriers at our Hyundai South Korea office, all the way down to 185,000 barrel U.S flag Articulated Tugs and Barges, we have seen how these new regulations have not only created confusion in purchasing and installation but also in commissioning and delivery trials. These experiences only add to the growing discussion.

It starts with a January 1, 2016 deadline to "lay a keel" or a keel "block" that moved your emission requirements from IMO Tier II to IMO Tier III. Working on foreign flag new construction post compliance date, we were interested in inspecting an IMO Tier III large two stroke engine to see how compliance with the regulations could be met. Visiting many of the major licensees, we found NO Tier III main engines under construction. All of the engines in the test beds were IMO Tier II. Simply put, there were loopholes around the regulation and without a proven method of NOx compliance available to meet IMO Tier III, most if not all owners contracted were willing to take advantage of that loophole. We continue to question how compliance with these emissions will be monitored until such time Class or Flag are capable of reviewing actual emissions from the stack.

Separately, and in the U.S domestic market, we watched the confusion continue in the smaller engine market of 130kW to 600kW. Manufacturers serving the workboat, tugboat, offshore and domestic barge markets provide smaller generator engines, cargo pump prime movers

GE V 250 EPA Tier 4 during sea trials

and propulsion. Under domestic EPA requirements, the engines are required to meet EPA Tier III. That said, if the vessels completing the installation travel outside U.S waters and then attempt to return to the U.S. ECA they must meet IMO MARPOL Annex VI, Tier III Regulation 13.5.1 under the provisions of 13.5.2.2, as enforced under US Law in 40 CFR Part 1043.

Here, we see the real problem: there are no 130kW to 600kW engines manufactured worldwide that meet those IMO Tier III emission requirements. That said; if you want to trade in the U.S. ECA you must comply. It is interesting to note that these engine sizes are not required to meet the next EPA Tier IV because of their size. Regulators speak to "aftermarket" compliance with SCR and again what looks to be a simple answer is not. With such a limited market, none of the 'family' engines have been tested for compliance with SCR installed.

We recently provided service to a client who was building an ATB unit here in the United States. In this particular build, seven engines on the barge were affected and the Owner was looking beyond a "Jones Act" trading limit. The Builder in turn has asked for an exemption based upon Annex VI of the MARPOL Protocol, Regulation 13 allows for certain exemptions to IMO Tier III. Under Regulation 13 - 5.2.2, which states:

> ***"The standards set forth in paragraph 5.1.1 of this regulation shall not apply to a marine diesel engine installed on a ship with a combined nameplate diesel engine propulsion power of less than 750kW if it is demonstrated to the satisfaction of the Administration that the ship cannot comply with the standards set forth in paragraph 5.1.1 of this regulation because of design or construction limitations of the ship."***

Upon delivery, the U.S. Coast Guard and the Class required the barge and tug to comply. The exemption request is under discussion. The barge is not "self propelled."

TIER IV EPA COMPLIANCE

In the larger medium to high-speed engines, we have been very satisfied with the General Electric V250 using EGR compliance to meet these emission regulations. Pur-

chase, Factory Authorized Tests and installation moved along well and without problems. Trial issues effecting normal Class testing and construction occurred as a direct result of tier compliance. When taking an ATB tug outfitted with two GEV250 propulsion engines out on initial sea trials, we were required by Class to complete a normal "crash astern" test. Those who have attended this trial test or for that matter spent time in the wheelhouse will understand the definition of "crash."

To complete this test with a combustion engine, the reversing procedure whether direct reversing or by clutch and declutch requires the engine to start or quickly climb above idle while overcoming the forward motion of the vessel and the propeller dynamics associated with that movement. Prior to the regulations under discussion being in effect, large amounts of fuel were "dumped" into the engines to allow them to produce enough power to overcome that inertia. That "fuel dump" is no longer allowed and as a result we witnessed a new definition of "crash."

Our first trials resulted in multiple engine stalls and failures. With idle speed and clutch-timing adjustments, the stall was overcome. The next set of trials resulted in a "crash" period extending five minutes before an astern bell was answered and a Captain who quickly and loudly offered his opinion. Three trials later, that period was reduced to roughly two minutes by continued discussions with the clutch manufacturer and increasing the engine starting rpm to the maximum allowable limit. In the wheelhouse and as the throttles were pulled back to simulate the emergency crash astern; suffice it to say, it was a long two minutes.

We have, over time, witnessed purchase, installation and now trials in both foreign and domestic construction. From our experience, expect to see continued adjustments as these regulations take effect and the associated propulsion power moves into operation. The decision to comply is not an easy one.

__Robert Kunkel,__ President of Alternative Marine Technologies, previously served as the Federal Chairman of the Short Sea Shipping Cooperative Program under the Maritime Administration and the USDOT from 2003 until 2008. A past Vice President of the Connecticut Maritime Association, he is a contributing writer for __MarineNews__. A graduate of the Massachusetts Maritime Academy, Kunkel sailed as a licensed engineer and continued his career in ship construction at NASSCO and Hyundai Heavy Industries, among others. He is a senior member of the Special Committee on Ship Operation with ABS and an elected member of the NCB.

Bollard tests underway on the Cape Reliant following its repowering with a YANMAR engine.

*All images courtesy of YANMAR

Cruising Into Alaska with Power to Spare

YANMAR only recently arrived in the Pacific Northwest with its mechanical 6AYAM-ET diesel engine. It looks like they are here to stay.

By Joseph Keefe

In November of last year, YANMAR America and its guests officially opened the YANMAR EVO//CENTER in Acworth, Georgia. Situated on 50-plus acres of land in Cherokee County, the new 50,000 square foot facility features six state-of-the-art product training labs with classroom and hands-on space, three classrooms, multiple meeting rooms, office space, a 250-seat auditorium, and myriad other amenities and features.

The event was probably the most recent, visible manifestation of YANMAR's steady march into the North American markets. Equally important and occurring thousands of miles to the northwest at about the same time, YANMAR was beginning the installation of its first 6AYAM-ET mechanical engine in the Alaskan fishing markets. A retrofit contract, the advent of YANMAR in Alaska was as much a milestone as was the opening of the EVO//Center. That's because both events signaled in no uncertain terms YANMAR's commitment to North America and its crowded workboat engine OEM market.

"The key to that market is listening to the customer and finding out what they need, and then putting a solution together for them. Our particular product in this case was a 6AYAM-ET mechanical. The customers up in Alaska really like the concept of mechanical versus electronic. We needed to show them that our engine was easily serviceable and they currently had an electronic engine."

– Terry Wallace, Division Manager, Commercial Marine

Meet YANMAR: Introducing the 6AYAM-ET

YANMAR's market penetration around the globe is well known. The firm supplies engines to a host of land-based equipment manufacturers and the firm is equally well-known for its reliable sailboat engines. But, YANMAR's commercial group split off from the recreational side more than three years ago.

The Asian markets – not surprisingly, for a firm that began in Japan in 1912 – represent YANMAR's biggest penetration on the marine side today. The fishing boat sector, tugs, and ferries have been the firm's commercial sweet spot. According to Terry Wallace, YANMAR's Division Manager, Commercial Marine, YANMAR is having success on this side of the big pond, as well. "Ferries – the 6AY is a nice engine for that market, as well. The Ultramar ferries running out of Cancun use YANMAR engines – installed over the past two to three years. We're also doing a lot of business with the shrimp fleets on the Pacific side of Mexico. It [the 6AYAM-ET] is almost a 'drop in' replacement for some of the old Detroit engines. It has the same footprint; not off by more than two inches."

In fact, as much as 90 percent of YANMAR's business with this engine represents repower jobs due to its smaller footprint, which makes it easy to 'pop in.' And, when the owners of the Alaska-based fishing vessel Cape Reliant knew that they needed a new engine for their vessel, they liked what they saw when it came to YANMAR's 6AYAM-ET.

Selling Itself: the 6AYAM-ET

When it comes to the Alaskan fishing community, reliability and ease of maintenance are everything. Terry Wallace explained further, "The key to that market is listening to the customer and finding out what they need, and then putting a solution together for them. Our particular product in this case was a 6AYAM-ET mechanical. The customers up in Alaska really like the concept of mechanical versus electronic. We needed to show them that our engine was easily serviceable and they currently had an electronic engine."

Yes, says Wallace, YANMAR's entry into this sector is a simpler engine and costs less to maintain. But, the real selling point may well be that these engines are made for the marine sector only. "It's not a truck engine. These are purpose-built marine engines. They don't have to be sent somewhere to be marinized," adds Wallace. That purpose-built policy includes everything from conception, casting and production.

Moreover, the YANMAR 6AYAM-ET engines are not assembly line built. As 'cell' production units, one technician can and does build a single engine. Ultimately, the customer knows that this isn't just another assembly line standard block and they can see who built it. And, that builds in trust. That could translate into a 5-month lead time on an engine order, but YANMAR has base engines ready to go at all times to counteract the possibility of a backlog.

Cost of Ownership, Ease of Maintenance

Proprietary ceramic liners – YANMAR's Silicard liners and ion plate rings – all provide excellent stability in the consumption of lubricating oil, even in heavy load applications. This also promotes good liner resistance in the cylinders and the rings. That adds up to significant savings on life cycle costs; as much as four times the lifespan of liners as compared to the competition. Said Wallace, "Our general rule of thumb – for overhaul – we use a proprietary ceramic liner instead of a cast iron liner. This gives us a 60,000 hour service interval in continuous duty operation."

Beyond this, and if a vessel did experience a cylinder problem, you can work on one head without breaching any of the others. The engineer could simply close one cylinder and blocks off the fuel injector – and because YANMAR employs all individual heads – get home on five cylinders.

"We're able to do a really good job with our mechanical engines because we have a more geometrically positioned fuel injector with multiple ports, so you get a finer atomiza-

tion of the diesel so the fuel is being burned more efficiently," said Wallace, adding quickly, "And, on a YANMAR engine, if there is an injector problem, the vessel's engineer can unscrew the tip, clean it out and put it back together.

Separately, the purpose-built engine boasts a huge oil pan – good for 500 hours of service – or more than twice the standard maintenance interval. Adding to that kind of reliability, YANMAR owns its own gear company, Kanzaki, and is one of the few engine OEM's that can offer both the gears and the engines. Wallace points out, "Those gears are built specifically for those engines. For owners, they can get the same guarantee on the gears as the engine – and he's talking to just one person or OEM." For marine operators or boatbuilders, they can choose any gear they want to interface with the YANMAR engine, but it's nice to know that a turnkey solution can be had, if desired.

Cape Reliant

The many features and advantages of the YANMAR marine engine could well be enough to sway even the most particular buyer, but not in the case of the Cape Reliant's owners. Because YANMAR, in this market at least, is a relatively new entry, this time, that simply wasn't enough. Cape Reliant's principals wanted assurances that parts and service, in the unlikely event that emergency work had to be done, could be had in a prompt fashion. And, YANMAR answered the call.

In the last year alone, YANMAR ramped its inventory in the United States by more than $4 million in spares, to include engines and gears. "They were sold on the efficiency and long lasting nature of the engine, but they [the customer] were worried about parts," said Wallace, adding, "So we agreed, for this project, to stock parts in Alaska (Anchorage). We own them, but it gave them peace of mind and it shows our commitment to the market – we're not going away. We can fly those anywhere from Anchorage and we're doing training for the local distributors and holding seminars for the dealers. This will involve our proprietary 3D training tool."

The three-owner consortium had actively considered at least three other engine brands but eventually settled on the YANMAR. They weren't disappointed when they did. Together with YANMAR's newest addition to their distributor arsenal, Northern Lights, they jointly handled local interface during the installation and commissioning. The repower event went smoothly.

Operating as YANMAR's West Coast and Alaska representatives only within last year, Northern Lights made sure that as YANMAR dipped its toes into these cold Alaskan waters, all went as planned. For his part, Northern Lights Technical Service Representative Scott Dyball told ***MarineNews***, "During sea trials, I was impressed with the smooth, quiet and powerful nature of the engine."

Separately, Jody Cook, one of three Cape Reliant owners, echoed those sentiments. "The YANMAR engine is working perfectly. We're not even us-

ing all power. Today, we're towing a much bigger net, getting great speed and nothing is heating up." Beyond this, he insists, "We got great support from YANMAR. Now, we've got so much power, we could've built a bigger net."

The last part is especially important. That's because the Cape Reliant, at least in Alaskan waters, competes against an influx of now larger boats being allowed into the region to fish. But, Cook's boat, which also fishes in another area during different seasons, is limited to being 58 feet in length. Today, the extra bollard pull from the YANMAR repower is everything.

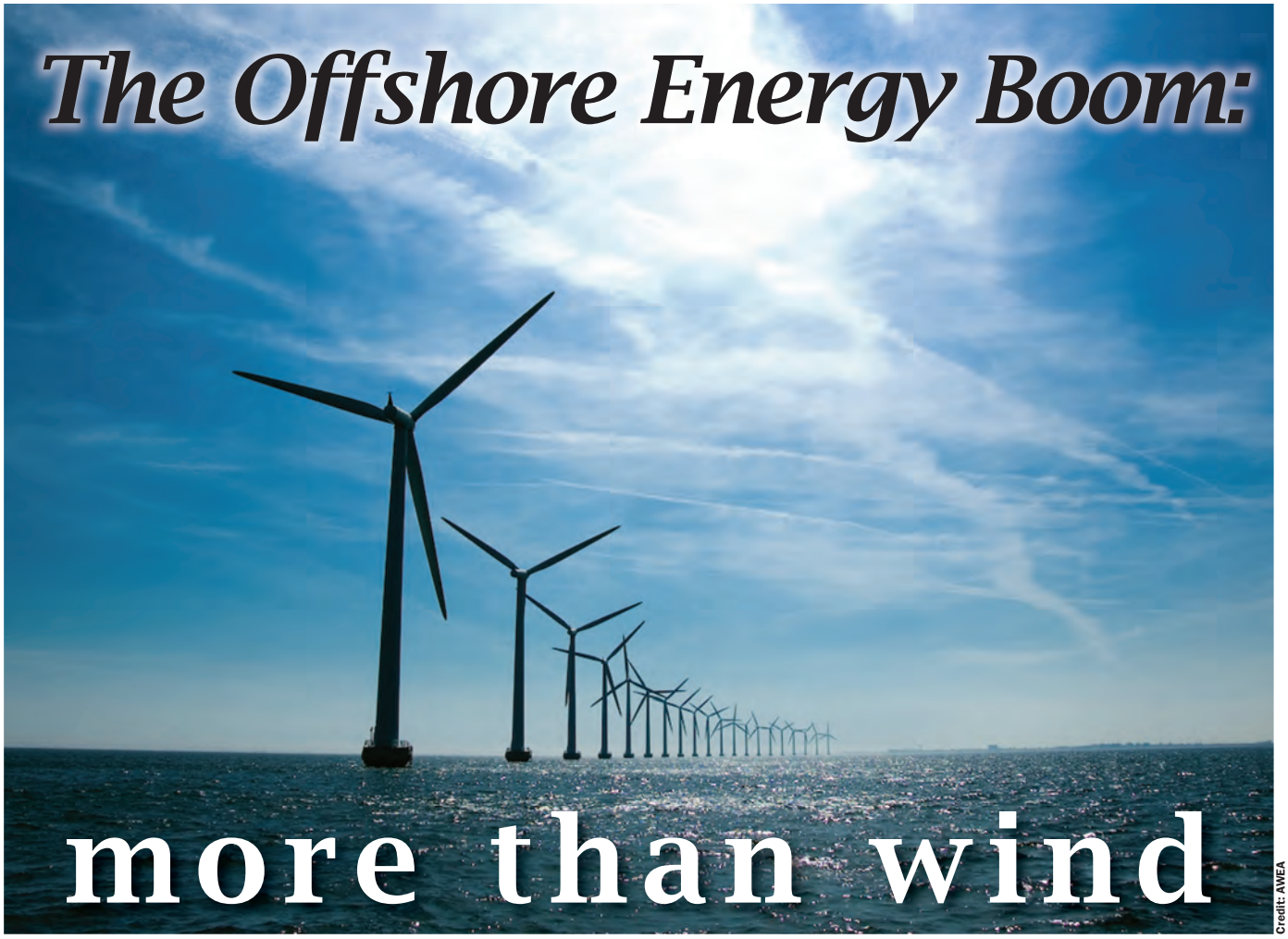
With the Cape Reliant's repower commissioning only taking place in mid-January at the Platypus Marine yard in Port Angeles, Washington, YANMAR has already sold a second engine to another Alaskan fishing boat – a friend of this owner – also through Northern Lights. Wallace added that his firm had two more purchase orders, potentially for March. The second boat – the Enterprise – is scheduled to be repowered in Alaska in March, in much the same way that Cape Reliant had its upgrade.

Founder's Spirit

At a time when the need to go 'green' is spurred primarily by regulatory mandates and the push to achieve greater fuel economy is often driven by the 'bottom line,' YANMAR has already lived by those tenets for more than a century. It was YANMAR founder Magokichi Yamaoka who said in 1937, "To conserve fuel is to serve mankind." That kind of philosophy was rooted in the island mentality of a place where most natural resources – fuel to be specific – had to be imported. Established in 1912, the firm in 1933 became the world's first manufacturer to develop a practical and economical small diesel engine.

For YANMAR, then, the desire to build an efficient and clean burning engine is also cultural. Terry Wallace, perhaps, sums it up best when he says, "Much of their consumables – food, oil, steel, raw materials – comes from somewhere else. So, when they create something, it has to last a long time, and it has to be efficient." That sounds a lot like the Alaska frontier. If so, then YANMAR will probably fit right in. In fact, they are already there.

The Offshore Energy Boom: more than wind



Credit: AWEA

Domestic offshore wind also promises to generate demand for new, efficiently propelled support vessels.

The U.S. offshore wind farm industry, now in its infancy, is on the verge of a massive growth surge, and the boom will be felt throughout the American maritime industry. The U.S. Office of Energy Efficiency and Renewable Energy reported last year that there is a "robust pipeline of projects to ensure growth in the country's nascent offshore wind market," with 28 projects totaling over 23,700 megawatts (MW) of potential capacity currently under development. While these projects are concentrated mostly on the Eastern seaboard, others are also under development in the Great Lakes, the West Coast and Hawaii.

The first to come online was the Block Island field, which is now said to be producing electricity for 17,000 homes. Others will follow soon. In February, New Jersey's new governor, Phil Murphy, announced plans to bring 3,500 MW of offshore wind capacity online by 2030, and New York is moving to procure at least 800 MW of offshore wind capacity through two solicitations in 2018 and 2019, with a total of 2,400 MW by 2030.

The coastal wind farms and their supporting shoreside infrastructure will be a tremendous boost to the U.S. maritime and port industries. New York has said it will invest $15 million in port infrastructure and training of workers for the new jobs to be generated. A recent study, "U.S. Job Creation in Offshore Wind," published by the Clean Energy States Alliance, claims that eight gigawatts (GW) of offshore wind capacity, developed along the northeast coast from Maine to Maryland, will create some 40,000 full-time jobs by 2028, growing to 86 GW supporting

"Offshore wind farms will require a fleet of specialized support vessels, and Volvo Penta is ready to answer the call with our proven IPS technology. We have a great deal of real-world experience in this sector and excellent relationships with naval architects, shipyards and operators. We believe we are well positioned to meet the demand as the North American market opens over the next few years."

– Ron Huibers, president of Volvo Penta of the Americas

160,000 full-time jobs by 2050.

The American Wind Energy Association (AWEA) said, "U.S. offshore wind will clearly be an American industry, drawing on the wealth of expertise in the U.S. offshore oil and gas and onshore wind sectors. It will also benefit both of those sectors, boosting an overlapping supply chain and jobs that extend from the East Coast to the central U.S. and Gulf of Mexico."

Windfall for Support Vessels

U.S. workboat builders, still suffering from the glut of idle OSVs, are eagerly eyeing the emerging market for specialized wind-farm support vessels – all of which will be Jones Act protected – that will be needed to service the offshore wind farms.

For guidance on boat designs and operating experience, they're looking to Europe, where there are said to be more than 400 wind-farm crew and service vessels currently in operation. To learn more about these vessels, ***MarineNews*** caught up with Volvo Penta at a recent trade event. Volvo Penta speaks from experience, since the company has a very strong market share as one of the top suppliers of propulsion systems for these specialized craft in the European market.

Ron Huibers, president of Volvo Penta of the Americas, told ***MarineNews***, "Offshore wind farms will require a fleet of specialized support vessels, and Volvo Penta is ready to answer the call with our proven IPS technology. We have a great deal of real-world experience in this sector and excellent relationships with naval architects, shipyards and operators. We believe we are well positioned to meet the demand as the North American market opens over the next few years."

Challenges

Jens Bering, vice president of marine sales for Volvo Penta of the Americas, spoke to ***MarineNews*** about the special challenges for builders and operators of wind-farm vessels, which operate under some of the world's most difficult conditions in the North

Sea. They must be able to work 24/7 in high winds and heavy seas delivering crew and materials quickly and safely to the offshore towers without wasting time and fuel. When transiting to and from the wind farms, top speed is an important consideration, since the service technicians are 'on the clock' when transiting, and a smooth ride ensures they won't be seasick when they arrive at the towers. On station, it's a big challenge for the operator to nose up to the turbine towers and hold position in turbulent waters when transferring technicians and supplies.

Bering said that Volvo Penta's IPS has been found to be the ideal solution for these vessels. "When compared to standard shaft drives, IPS consistently produces 30-40 percent longer cruising range, 15-20 percent higher top speed, 20-35 percent reduction in fuel consumption, 20-35 percent less CO2 emissions, and 50 percent lower perceived noise levels. The pods also provide higher torque and faster acceleration, as well as higher bollard pull of approximately four tons per pod unit, so it will not lose grip in high seas. In addition, IPS provides safe and predictable boat handling, especially with its standard joystick controls."

Njord Offshore is a good example. The UK-based company operates a fleet of 15 crew transfer vessels (CTVs) of 21 and 26 meters. Six of its 26 meter CTVs are powered by a Volvo Penta IPS900 Quad installation.

Tom Mehew, director at Njord Offshore, explained the rationale, saying, "We've been using Volvo Penta's IPS900 Quad system in our 26m CTVs for over a year now. We, and our customers, require speed, maneuverability and efficiency combined with high static bollard push. In addition, we also look for reliability and redundancy to maximize the uptime for our clients. The advantages of the IPS have been fully proven. The joystick controls are intuitive, the control response times are fast and accurate, which ultimately makes docking on a boat landing in rough weather easier and safer – we also have a dynamic fender system to reduce the load on the boat landings during these conditions."

"For boatbuilders, IPS is also easier to install, taking about 50 percent less time than inboard shafts, and is easier to service," said Bering. He cited a study conducted by BMT Nigel Gee in June 2015, comparing propulsion options for a 26m vessel. IPS scored higher than fixed pitch, controllable pitch, waterjet and linear jet systems, in terms of bollard pull, efficiency, maneuverability and redundancy. The slightly higher initial cost of IPS is more than offset by the dramatic improvement in life-cycle costs, according to the study.

Huibers pointed out that protecting the environment and preserving natural resources are core values for Volvo Penta. "It's important to all of us at Volvo Penta to be in a position to make a contribution to creating a truly sustainable energy source for the future of our globe."

Credit: Volvo Penta

Exhaust Economizers: a Silent Contributor to Green Technology

Next generation economizers are being introduced by Ulmatec Pyro. This will carry on the history of 35 years of heat recovery from ship's exhaust – a technology that's still unknown for many in the marine industry.

By Sveinung Odegard

Those Painful Losses

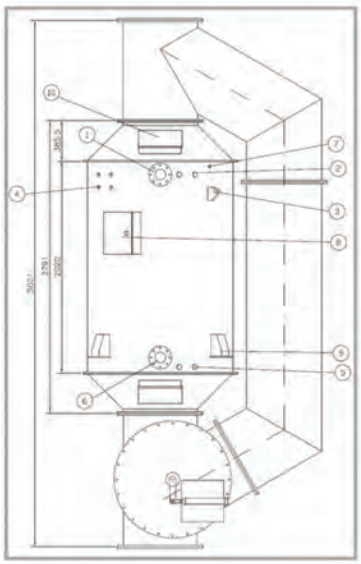
You can't ignore Waste Energy Recovery Systems if you want to participate in discussions about efficient marine designs. That statement is based on the fact that most diesel engines on board a vessel still operate on an efficiency scale in the 30 percent range. The remaining 60-70% represents losses, converted into heat. That being said; there are also engines that have efficiency factor in the 40's. Larger engines, and slow to medium speed engines have efficiency rates in the upper forties, but only at optimal and steady load scenarios. And, that's a challenge to achieve for any vessel.

The efficiency numbers lead to the painful rule-of-thumb that for each 1 kW of usable power, another 1.5 - 2 kW of heat losses are created as well. It becomes clear that using diesel power for electrical heating is not recommended from an efficiency point of view. Electrical heating is therefore practical only at the dock, connected to shore power. On the other hand, active re-use of wasted energy while at sea can improve the vessel overall efficiency significantly.

Capture and Re-use

Heat losses can be captured, and re-used as energy for many types of applications. But there are still more engines at sea without recovery systems than those who have them. Among those with systems installed, majority of them are based on jacket water cooling systems, even though the exhaust heat typically represents more potential energy.

There are technologies for recovering the exhaust heat. Ulmatec Pyro is a company that started making Exhaust Economizers already in the early 80's. The Economizers have been proven to be reliable and long lasting, as they tend to stay operational throughout the vessel's lifetime. A robust, efficient and simple design with few moving parts has been the recipe for extraordinary long lifetime of the units. Many of the units goes through a complete lifecycle of 30+ years without any major retrofit, which probably explain why the products does not necessarily get the attention they might deserve.



Previous models of the Exaust Economizers had external by-pass for allowing free exhaust flow when needed.

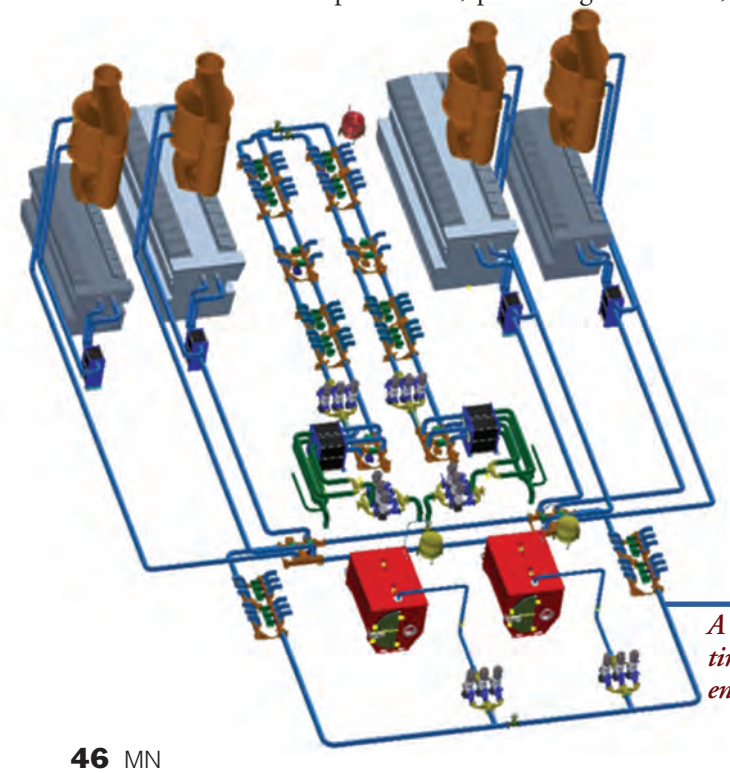
The new generation of Ulmatec Pyro Exhaust Economizers have the by-pass function built into the unit. Making it easier for shipyards to install, and reducing overall footprint of the unit.

How it Works

The technology is quite simple; the exhaust is distributed and allowed to freely flow through multiple pipes submerged in water. The circulating water surrounding the pipes absorbs the heat from the exhaust and transports it into the Waste Heat Recovery System. Despite the desire for simplicity, a control system is needed to ensure a healthy engine. The unit will manage the back pressure, exhaust outlet temperatures, and ensure all conditions are within OEM requirements. Ulmatec Pyro's Exhaust Economizers also have a by-pass function, enabling free flow when engine conditions call for that, or if there is no need for more heat. A new generation of the Economizer is recently being launched. One of the new built-in features includes a by-pass. This will ease the shipyard installation work significantly, compared to the external bypass fitted on older generations. Beyond this, the built-in bypass will reduce the overall footprint of the unit.

Double Down

When recovering heat from both jacket water cooling and exhaust, a tremendous amount of energy is then made available with virtually zero increase in fuel consumption. Total amount of heat recovered would in that case have potential to be more than the power taken out of the engine. That can be called a 'double down.' And there are vessel types that actually are capable of utilizing this huge amount of heat. Fishing vessels operating in cold water are excellent examples of vessels with high demand for energy. The heat is used for fresh water production, processing of the fish, accommodation, de-icing, sanitary water, tank heating and many other purposes. But fishing vessels are not the only one. Any vessel operating in temperate climate zones, having large accommodation, producing fresh water or for any other reason require heat on board will see the benefits.



Short Payback Times

A well designed Waste Heat Recovery System will have short payback time. That, however, depends largely on vessel design, engine types, and operational profile. For many cases, amortizing this cost will take one to two years of operations. If any additional heat is needed beyond what a Waste Heat Recovery System can deliver, a direct diesel burner represents better alternative than electrical heating.

"We don't have an exact count of the early units," says Palmar Bjornoy, Managing Director of Ulmatec Pyro, adding, "If we include the units we have delivered for shore plants, and other tailor-made units, we have surpassed 500. The first units were made in the early 1980's. And many of those units are still operating. Typically, they typically stay onboard producing heat throughout the lifetime of the vessels."

Ulmatec have also delivered units to the Offshore and Onshore industry as well. Troll Research center in Antarctica is the southernmost unit, and Kings Bay in New Alesund the northernmost. For Offshore projects, the new Statoil's new drilling rigs, Askeladden and Askepott, are good examples of Heat Recovery Systems. They have 4 Exhaust Economizers installed on each platform.

Workboats: a good fit

The concept is a good fit for applications, especially in the workboat markets. Indeed, the use of this technology can be sized quite far down in capacity, as long as there is a vessel that needs heat. Inland water transportation and smaller ferries, for example, can especially benefit. On the other hand, slow speed engines typically used in larger containerships and the larger cruise vessels are above Ulmatec's range.

The F/T Northern Glacier, built in 1983, is still running at full capacity. Based out of Seattle, it spends most of its time in Alaskan waters. The original Exhaust Economizer is still on board, contributing to significant fuel savings. Separately, the Norwegian Coast Guard NoCGV Svalbard uses the heat for de-icing, watermakers, accommodation and sanitary water among other things. This vessel was built in 2001, and still patrols Norwegian Waters.

A complete system will balance recovery and consumers at any time. If heat demand for any reason is larger than recovered from engines, a diesel heater in standby will kick in to ensure capacity.

Looking ahead, the new British research vessel, RRS Sir Attenborough will have no less than five Exhaust Economizers on board, together with a complete Waste Heat Recovery System. As the vessel is planned for research in polar areas, environmentally friendly heat is essential.

Centralized Heating System

Typical heat recovery configuration for multiple engines is a centralized heat recovery system that automatically takes the heat from the engines. It can also use the energy to preheat engines in standby, allowing for a quick start. Intelligent flow control is managed through a patented control system that monitors consumers and heat contributors. As heat demand rises, the system will increase flow to transport more energy from the source to the consumer side of the system.

More Heat Than Needed?

With a fully recovery system, that might be the case for some. But as the drive for more efficient vessels continue, new products constantly emerge with focus on re-using the heat losses. As these products become more common, many vessels will have real opportunities to save even more fuel, and improve the efficiency of their vessels.

One such product is produced by Climeon, a company that turns heat into clean electricity. Another, Gadcooler, has an absorption system which uses waste heat to generate all or a portion of refrigeration needed by a passenger ship. Ulmatec's Pyro heat recovery systems focus on identifying, capturing and recovering the heat losses. The captured energy will be distributed to any consumer capable of taking advantage of the heat.

Ulmatec has roughly 500 exhaust economizers in its reference list, and has nearly 100 vessels with its complete Waste Heat Recovery System. It's a product that fits in well, from OSV's, Ice Breakers, Expedition Cruise and downwards – or in other words – your workboat.

Sveinung Odegard is the North American Representative for Ulmatec Pyro. He graduated from Bergen Maritime Academy in Norway with a major in Marine Electrical Engineering. Working on maritime projects worldwide throughout his career, he moved to Seattle in 1993.

Dellner Brakes: *Serving the Inland and Coastal Waterways Markets*

Dellner provides a range of clutch and braking products for the inland (brown water) and coastal workboat markets. From topside deck equipment to propulsion applications, these myriad applications include:

- ***Dellner Gummi USA Type FM, FKT and FK pneumatic drum clutches/brakes***
- ***Dellner Brakes SKD, SKP and EMD disc brakes***
- ***Dellner Brakes 'Stopping, Turning, Locking' (STL) devices and systems***

Dellner products are used in a wide range of workboats including tugs, fishing boats and coast guard vessels. Major customers include US Seafoods, Trident Seafoods, Pesca Azteca, Frabelle Fishing, Western Rivers, ARTCO, Campbell Transportation, Moran Towing, Crowley Maritime, Excell Marine, Hunter Marine, Canal Barge, Andrie, Foss Maritime, Kirby Corporation, Sause Bros and Seaspan.

Swedish-based braking manufacturer Dellner Brakes acquired US brake and clutch specialist Gummi USA in September 2017. The enlarged business is now working seamlessly together under one umbrella and the company's US stock and distribution operations have been consolidated to the Dellner Gummi USA facility in Houston, Texas. In January, Dellner Brakes expanded further with the acquisition of German industrial braking manufacturer Pintsch Bubenzer.

Dellner Gummi USA products are ABS Type Approved and can also be delivered with ABS Unit Class Certification. Dellner Brakes continuously updates their product line and has introduced the Dellner Brakes all electric STL (Stopping, Turning, Locking) system – reportedly the first of its kind in the world.

Deck Machinery

Brakes are also needed to stop and hold deck machinery such as winches, cranes and tensioning systems like cable or pipe laying equipment. For these purposes, customers can choose from Dellner Gummi USA FKT pneumatic drum clutch/brakes or Dellner Brakes' spring applied / hydraulic or electric pressure released SKP disc brakes.

The Dellner Gummi USA FKT is well suited for applications with the most demanding equipment where severe clutching and braking is required. This unit's capacity for withstanding high starting loads and sustained slippages distinguishes it from conventional clutches. It incorporates superior design and construction for outstanding efficiency and a long operating life, without needing regular maintenance.

Launched last summer, the SKP 180 is a revolutionary new failsafe brake from Dellner Brakes. It offers outstanding stopping power with a lightweight design at competitive prices, together with a unique modular design that allows customer to scale the product up for additional braking force, according to their needs.

Reverse Reduction Gears

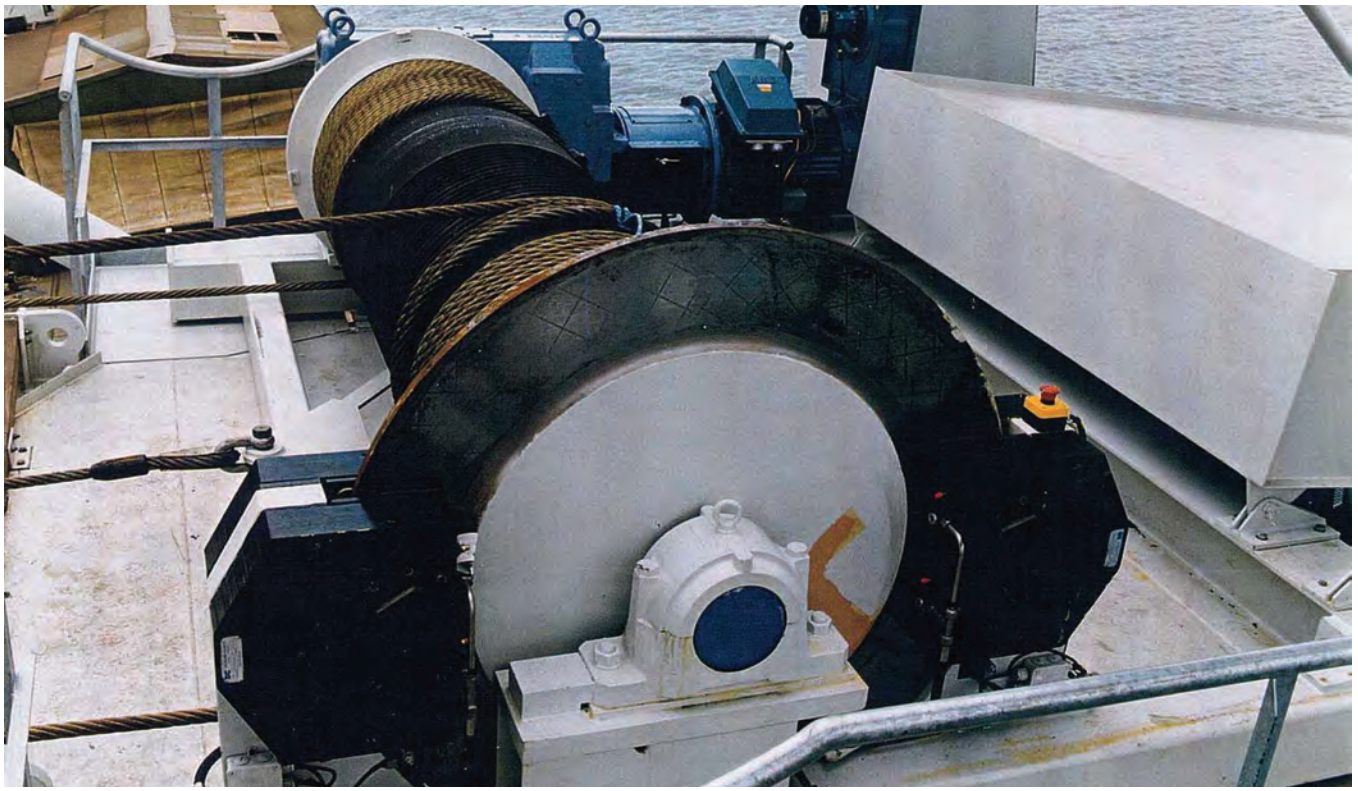
Dellner Gummi USA FM and FKT clutches are used on reverse reduction gear marine applications, facilitating the vessel's ability to change direction. The units provide for fast reversal times and rapid shifting between forward and reverse gears. The FM clutch has been specifically developed for marine applications. In addition to its robust construction utilizing an integral rim and tube design, the FM's ventilated friction shoes and as-molded linings allow for clutch slippage during forward and reverse maneuvering at low speeds, as well as periodic cycling engagements at high speeds.

Propeller Shaft Brakes

Where additional stopping power is needed, shaft brakes are designed to kick in and stop the propeller shaft between disengaging the forward clutch and engaging the reverse. By stopping the shaft, the sequence (from full torque ahead to full torque astern) can be completed more quickly, maintaining the engine's ideal RPM and preventing 'shock-load' where the RPM can slow down and take some 10 to 15 seconds to get back to ideal levels. Dellner Brakes' SKD dual acting brake (available with hydraulic or electric power), the Dellner Brakes EMD single acting electrical disc brake and the Dellner Gummi USA FKT pneumatic drum clutch/brake are all ideal for this purpose.

Locking and Turning Devices for Propeller Shafts

Dellner Brakes provides additional devices for optimum control of the propeller shaft. Their LM locking devices



A luffing and trolley travel hoist for bagged material used by two vessel loaders at Lake Charles, Louisiana. The hoists are fitted with Dellner SKP service brakes with mounting stands installed between the hoist motors and the reduction gears. The brakes were also manufactured with extra protection to prevent corrosion from sea water.

(available with manual operation, hydraulic or electric power) hold the shaft securely in place, even in ship failure modes, with a force that is much higher than a holding brake (125 kN for the LM 20 and 250 kN for the LM 40. These are the two smallest locking devices in the range – the ones most commonly used for workboat applications – but larger devices are available with locking force up to 1,000 kN). Locking the shaft can help to avoid drag, especially in narrow or shallow water and, in a twin propeller or multiple screw vessel, the LM can be used to hold one of the shafts while the other(s) are operating. On coastal waters, the LM can secure the propeller and prevent damage to the shaft and bearings if the vessel is drifting or being buffeted by waves. Dellner Brakes also manufacture turning devices that can be used to turn the shaft when in harbor to exercise water lubricated bearings, help reduce marine growth on the propeller blades and for routine maintenance all without needing to turn on the engines. Turning the shaft through 180 degrees while moored can also stop it bending.

The turning and locking devices can be combined with an SKD disc brake into a full 'stopping, turning, locking' (STL) system, available from Dellner Brakes with a choice of hydraulic or electrical power.

Hydraulic Pump Drives

The Dellner Gummi USA FK pneumatic drum clutch is normally found on hydraulic pump drive applications. **www.dellner-brakes.com**

BAYDELTA'S FIRST HYBRID TRACTOR TUG

Jensen Maritime was recently selected to provide the design for Baydelta Maritime's new 100-foot, Z-Drive hybrid tugboat. It will use Rolls-Royce hybrid technology and represents the first installation of a hybrid system for Nichols Brothers Boat Builders (NBBB), and the first hybrid tug designed by Jensen to enter the construction phase. Scheduled for delivery in the first quarter of 2019, the tug will feature the same ship assist and tanker escort capabilities of existing Valor class harbor tugs, but with multiple operational modes.

The Rolls-Royce hybrid system allows for the vessel to operate direct-diesel, diesel-electric or fully-electric while assisting the large containerships and tankers that operate in U.S. West Coast ports. This concept will save fuel and reduce emissions, while supplying Baydelta with the same power and vessel characteristics needed for their operations. The flexibility provided by the drive system will allow loitering and transit at up to 7-8 knots in electric-only mode, then a bollard pull of 90, or nine short tons, in combined diesel-electric mode.

Notably, the order represents the first hybrid tug using proven Rolls-Royce hybrid technology.

The 100-foot long tug will feature greatly improved towing performance. Rolls-Royce will supply all electric motors, shaft generators and a power management and control system. The Hybrid arrangement provides power to US255 azimuth thrusters with ducted fixed pitch propellers that can be rotated 360 degrees around the vertical axis. This arrangement optimizes omni-directional thrust and maneuverability as well as providing improved crash stop capability.

Rolls-Royce and Baydelta have been working together since 1990s, when the San Francisco-based operator specified its first azimuth thrusters. Since then Baydelta's entire fleet of tractor tugs is equipped with drive units.

Baydelta Maritime specializes in escorts and assists in the San Francisco Bay and is committed to keeping the bay safe and efficient. With the new hybrid tug, this will be the seventh NBBB built tug in Baydelta's fleet; though, the first hybrid tractor tug. In addition to the drive units and hybrid system, Rolls Royce will be supplying the control system and main switchboard, electric motors and their control cabinets.

Baydelta's Hybrid Tug at a glance ...

Class: ABS	**Engines: (2) Caterpillar C3516 C Tier 3 diesel**	**Winches: Rapp Marine**
LOA: 100'	**Engine Distributor: Peterson Power, Portland, OR**	**Fuel: 71,000 gallons**
Beam: 40'	**Z-drive System: (2) Rolls-Royce 255FP**	**Fresh Water: 4,300 gallons**
Berthing: 8	**Generators: (3) CAT C9.3 generator**	**Bollard Pull: 90 short tons**

Kongsberg, RAL to Develop Remotely-operated Fireboats

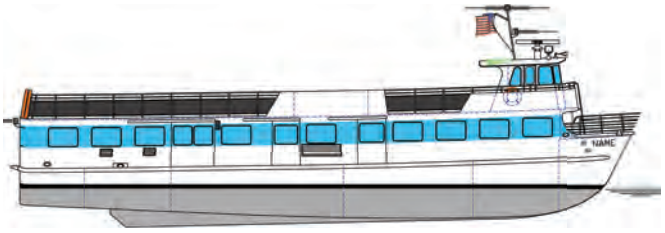
To address the evolving safety and security needs of modern ports, Vancouver based naval architects and marine engineers Robert Allan Ltd., and Kongsberg Maritime are collaborating on the development of a radically new remotely-operated fireboat that will allow first responders to attack dangerous port fires more aggressively and safer than ever before. The un-crewed RALamander fireboat will offer in-close firefighting and 'eye in the fire' capability that keeps marine firefighting professionals out of harm's way. RALamander can serve as a force multiplier with conventional firefighting assets, or be deployed on its own. In common with other KONGSBERG autonomous control systems, the versatile architecture of RALamander's control system will leave the door open to a range of autonomy levels, which are configurable or future-upgradable to suit the operator or port's evolving needs. The first in the series, the 20 meter RALamander 2000, will be equipped with Fi Fi 1 capability with a total pumping capacity of 2400 m3/hr with optional foam. If a burning vessel poses a threat to its surroundings, RALamander can be used to tow it a safe distance by means of its Grapnel Emergency Towing (GET) system.

Metal Shark's New Line of Passenger Vessels

Louisiana-based shipbuilder Metal Shark has partnered with design firm Incat Crowther to develop an entirely new line of passenger vessels. In January, Metal Shark introduced its new "Endurance PV-X" passenger vessel lineup, with 26-meter (150-passenger) and 32-meter (350-passenger) models now available and additional offerings to follow. The welded-aluminum, high-speed, low-wake, catamaran Endurance PV-X models feature proven Incat Crowther hull designs known for their efficiency and performance. The new models have been optimized for comfort, safety, and operational efficiency, offering a range of configurations and optional features designed to suit individual operator requirements. The Endurance PV-X vessels stand out with chiseled, modern lines derived from

Metal Shark's latest military patrol boat designs. Metal Shark's signature pillarless glass pilothouse offers best-in-class visibility from the elevated helm station. The new Endurance PV-X models are intended to allow the company to deliver passenger vessels even faster than before.

Blount Boats to Build Another Fire Island Ferry



Blount Boats has signed a contract with Fire Island Ferries to construct an 85 foot aluminum ferry boat for service between Bay Shore and Fire Island on Great South Bay. This vessel is a sister ship to the M/V Fire Islander (Hull 368) built by Blount Boats in 2013. The triple screw vessel will be built and certified under U.S. Coast Guard, Subchapter K Rules and Regulations. It will be powered by John Deere Model #6135SFM85 diesel engines, 650hp each at 2,100 rpm with 2:1 ZF 550 reduction gears. This vessel marks the 10th boat designed and built by the Blount shipyard for Fire Island Ferries since 1972, a milestone for the two companies. Delivery for Hull 370 is scheduled for May 2019.

Frank J. Basile Passes Away at 93

Basile

Naval architect, marine engineer and industry icon **Frank Basile** died on February 6th. He founded a naval architecture and marine engineering business, Entech, in the mid-1970s and went on to design myriad vessels in the many years that followed. A graduate of Tulane University, Basile was also a naval officer and a WWII veteran. Kimia Jalili, PE, and naval architect at Entech Designs, said in a prepared statement, "I am so grateful for the last 10 years that I've known Frank. I've had the opportunity to work for him, learn from him and share in his friendship as many of us have. His memory will be forever in our hearts. Entech Designs will strive to keep his legacy alive as our founder and mentor." Notably, that legacy continues today with over 600 vessels of his design currently serving the marine industry all over the world. A memorial was held celebrate his life in Houma, LA on Friday February 9th.

Kelleher

Bayley

Beauchesne

Yildirim

Patenaude

Volvo Penta Names Kelleher VP

Volvo Penta of the Americas announced the appointment of **Tony Kelleher** as vice president for customer support and training. Kelleher will support marine and industrial segments within the United States, Canada, Mexico, Central America and the Caribbean. Previously, Kelleher was director of the marine leisure segment with responsibility for OEM and dealer sales and partnership development for North America. He earned a Master of Science degree in Engineering Management from Wayne State University and a Bachelor of Engineering degree from Leeds Metropolitan University.

Seafarers' House to Honor Royal Caribbean's Bayley

Michael Bayley, president and CEO of Royal Caribbean International, has been selected as the recipient of Seafarers' House International Golden Compass Award for 2018. The award is given to those who have achieved distinction in the maritime world, and whose vocation or avocation has been the sea, or those who have ministered to or otherwise assisted seafarers. Bayley has been with Royal Caribbean Cruises for 30 years, working in a variety of shipboard and shoreside positions.

Beauchesne Named CEO at Ridge Global Education

Gov. **Tom Ridge**, the first U.S. Secretary of Homeland Security and former PA Governor welcomed **Ann Beauchesne** as CEO of Ridge Global Education. As senior vice president of the U.S. Chamber of Commerce's National Security & Emergency Preparedness Department, Beauchesne led homeland defense, cybersecurity, and resilience issues on behalf of the business community for more than a decade. Beauchesne also served two terms on the Federal Emergency Management Agency National Advisory Council (FEMA-NAC).

Yildirim Promoted to APC Marine Manager

Advanced Polymer Coatings (APC) has elevated Captain **Onur Yildirim** to the position of Marine Manager. Yildirim will manage the company's marine coatings operations including sales, technical, and after-sales service. Prior to joining APC in 2006, he worked for five years in various roles for Aksay Shipping, based in Turkey, first as a Third Officer, then Second Officer, and eventually Chief Officer on various chemical tankers. Yildirim holds a Bachelor of Science degree from the Istanbul Technical University.

DESCO Hires Maritime & Industrial Sales Director

DESCO Manufacturing announced that **Chris Patenaude** has joined the company to develop their portfolio of national maritime accounts. Patenaude is a NACE Level 3 Certified, Peer Reviewed Inspector with over 29 years of experience in the Coatings & Linings Industry. Most recently, Chris served as Fleet-wide Coatings and Linings Superintendent for Royal Carib-


Miles

Port of Stockton


Aguilar


Griffen

Breakthrough Fuel


Mueller


Dickman


Wong


Morén


Thomas

bean International. He holds a BS degree in Business Administration from Western New England University.

Ports of Indiana Names Miles as Port Director

A former North Carolina Ports executive with Indiana-ties has been named port director for the Port of Indiana-Jeffersonville. **Jeff Miles** will lead port operations and business development at the southern Indiana port. Miles' industry experience includes more than 30 years as a senior-level manager in the port, maritime transportation, and logistics sectors. Miles holds a bachelor's degree from the College of Charleston and a Master in Business Administration from Duke University.

Port of Stockton Elects Aguilar, Griffen as 2018 Leadership

The Port of Stockton announced the election of a new Chair and Vice-Chair for 2018. **Sylvester Aguilar** has been named Chairman and **Stephen Griffen** Vice-Chairman. Aguilar is Senior Vice President and Business Banking Relationship Manager Team Lead for the Mid-Valley Business Banking Offices of Bank of the West. Aguilar holds a Bachelor's degree from the University of the Pacific. Griffen began working at the Port as a longshoreman in 1977.

Breakthrough Fuel Names Mueller as CEO

Breakthrough Fuel introduced **Doug Mueller** as the organization's new CEO. **Craig Dickman**, outgoing Breakthrough Fuel CEO, will take on the role of chairman of the board of directors. Mueller will complete the transition to CEO by the end of first quarter 2018 and continue to serve as president of Breakthrough Fuel.

JAXPORT Names Wong as COO

JAXPORT has selected Frederick P. Wong Jr. as Chief Operating Officer. Wong has more than 20 years of experience in all facets of port operations and since 2014 has been responsible for all cruise, cargo and security operations as Assistant Port Director at PortMiami.

MJP Welcomes Back Morén as International Sales Manager

Marine Jet Power (MJP) welcomes **Nils Morén** as International Sales Manager. Nils originally joined MJP in 1996, during which time he was mainly responsible for sales. Most recently Nils was responsible for sales and marketing for Swedish based Swede Ship group of companies.

Thomas Joins Trojan Battery as President & CEO

Trojan Battery Co. announced the appointment of **Neil Thomas** as president and chief executive officer (CEO). Thomas joins Trojan following a career with Wayne Fueling Systems where he most recently served as CEO, as well as other executive positions. Thomas earned a bachelor's degree in economics from the University of Wales and an MBA from Warwick Business School.

PVA Elects 2018 President & Officers

During the PVA Annual Convention held in January at Savannah, GA members of the Passenger Vessel Association (PVA) elected **Gus Gaspardo**, Padelford Packet Boat Company, St. Paul, MN as PVA President for 2018. A 1982 graduate of St. Thomas Academy, he attended Mankato State University. He joined Padelford as a deckhand in 1984 and obtained his Masters license in 1986. Also elected to terms as PVA Officers for 2018 was **Bob Lawler** (Vice President), General Manger for Boston Duck Tours in Boston, MA. **Colleen Stephens**, President of her Stan Stephens Glacier & Wildlife Cruises, was named Secretary-Treasurer. **Steve Jones** of Gateway Clipper Fleet was elected to the PVA Board of Directors.

Holland & Knight Names Lee as Partner

Eric Lee has been named partner in the Holland & Knight Washington, DC office. Lee brings experience in domestic and international shipping, supply chain services, and logistics. Previously, he served as counsel to a Commissioner at the U.S. Federal Maritime Commission (FMC) and worked in the FMC's Office of the General Counsel. He received his LL.M. in taxation from Georgetown University Law Center, his LL.M. in admiralty from Tulane University Law School, his J.D. from the University of South Carolina School of Law and his B.S. from The Citadel.

PVA


Gaspardo


Stephens


Lee


Coleman

Tidewater


Rynd


Rigdon

Great Lakes Dredge & Dock Corp.


LaVoy


Cyr


Dickerson

Coleman Joins Elliott Bay Design Group

Eric Coleman has joined Elliott Bay Design Group's team of naval architects and engineers, bringing six years of marine experience. Eric's background includes hands-on shipyard experience, production oversight, class and regulatory compliance, and designing for production. He is a licensed professional engineer in Washington State and received his BSE in Naval Architecture and Marine Engineering from the University of Michigan.

Tidewater Appoints Rynd as President, CEO, and Director

Tidewater Inc. announced the appointment of **John T. Rynd** as President and Chief Executive Officer and a member of the Board of Directors effective March 5. He will replace **Larry T. Rigdon** who has served as interim President and Chief Executive Officer since October 2017. Rynd previously served as CEO and President of Hercules Offshore from 2008 through 2016. Prior to his time with Hercules, he spent 11 years with Noble Drilling Services, and prior to that, he served with Chiles Offshore and Rowan Companies. Rynd has also served as Chairman of the National Ocean Industries Association (NOIA).

GLDD Adds to Executive Management Team

Great Lakes Dredge & Dock Corporation announced that **Kathleen Mackie LaVoy** has been elected Senior Vice President, Chief Legal Officer and Corporate Secretary and **Annette Cyr** has joined the Great Lakes team as Vice President of Human Resources. LaVoy joined the company in 2007 as Assistant General Counsel and was promoted to Vice President and General Counsel, Dredging Operations in 2012. She received her J.D. from Northwestern University School of Law and was an associate in the litigation department of the Chicago law firm Winston & Strawn LLP before joining Great Lakes. Cyr has over twenty-five years of human resources experience with both public and private companies. She has a Master's degree in Personnel and Employment Relations and a Bachelor's degree in Political Science and History from the University of South Carolina. Separately, the Board of Directors appointed **Lawrence R. Dickerson** as Board Chair effective February 1, 2018. Dickerson has served on the Board since January 2017 and has over 30 years of operational and commercial experience in the oil and gas industry. Notably, Dickerson spent 34 years at Diamond Offshore Drilling, where he served as President and CEO.

WCI Presents Annual Leadership Award to Senator Mitch McConnell

On February 14, 2018, Senator **Mitch McConnell** (R-KY) received Waterways Council, Inc.'s (WCI) 17th Annual Leadership Service Award for his strong and continued leadership on ports and inland waterways issues. He was presented the award by **Stephen Little**, Chairman of Crounse Corporation. Also on February 14, 2018, recently retired former USACE Chief of the Navigation Branch **Jeffrey A. McKee** received the 2018 Waterways Counsel Award for his diligence and leadership in working with the waterways industry. That award was presented by **Peter Stephaich** (Campbell Transportation Company), Vice Chairman of WCI.

Meidel Joins Crowley Fuels as Alaska VP & GM

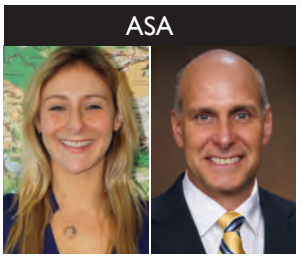
Crowley Fuels announced that **Rick Meidel** has joined the company as vice president and general manager of Crowley's Alaska division. Meidel previously spent 32 years with ExxonMobil in downstream lubricants, retail fuels marketing, refinery optimization and natural gas and co-generation power commercialization. Meidel earned a bachelor's degree in electrical engineering from Washington University.

ASA Elects Officers at Annual General Meeting

The American Salvage Association, at its annual general meeting, elected new Executive and Leadership Committee members. **Lindsay Malen-Habib** of Resolve Marine Group was named as Secretary Treasurer and **David DeVilbiss**, Global Diving and Salvage, was made Vice President of the ASA. T&T **Jim Elliott** of T&T Salvage was elected President. Elliott said: "In the past few months, the salvage industry has demonstrated its incredible capacity, capabilities and resilience, simultaneously salvaging hundreds of ships,


McConnell, Little


Meidel



Malen-Habib Elliott


Roozendaal


Hudson

barges and boats in multiple locations following three hurricane landfalls, all while continuing to effectively meet the US regulatory standards for salvage and marine firefighting."

Cargotec Strengthens MacGregor by Acquiring TTS Group

MacGregor, part of Cargotec, will acquire the major businesses from TTS Group, a global provider of cargo handling equipment and services for merchant and offshore ships for an enterprise value of EUR 87 million. "Combining the strengths of these two companies creates exciting opportunities for innovation and technology development during a time of industry transformation," said **Michel van Roozendaal**, President, MacGregor. Separately, MacGregor also completed the acquisition of Rapp Marine Group (RMG) to strengthen its offering for the fishery and research vessel segment. MacGregor announced to acquire Rapp Marine in December 2017 for an enterprise value of approximately EUR 16 million. RMG employs about 120 people with main locations in Norway, the USA and United Kingdom.

HudsonAnalytix CEO Appointed to American-Caribbean Maritime Foundation BoD

HudsonAnalytix announced that Chief Executive Officer **Cynthia Hudson** has been appointed to serve on the Board of Directors of the American Caribbean Maritime Foundation (ACMF). The ACMF supports the work of the Caribbean Maritime

Coast Guard Ice Breaking

Chiarello

Johansson

University, including raising funds for scholarships, equipment, facilities, and infrastructure.

U.S., Canadian Coast Guards Renew Icebreaking Pact

Rear Admiral **Joanna Nunan**, Commander, United States Coast Guard Ninth District joined **Julie Gascon**, Assistant Commissioner of the Canadian Coast Guard's Central and Arctic Region January 18, to sign an updated Memorandum of Understanding between their agencies concerning Coast Guard icebreaking services in the Great Lakes and St. Lawrence Seaway maritime transportation system.

The renewed United States/Canadian Coast Guard MOU strengthens the mutual commitment for ensuring vital icebreaking operations in the Great Lakes region. The icebreaking MOU authorizes the exchange of personnel on Coast Guard icebreakers. Similar agreements also exist for search and rescue, environmental response, maritime security and marine communications and traffic services.

WFSA's 2018 Conference to be Held in New York

This year's conference, now in its 4th year, will highlight developments bringing profound changes to the ferry sector. This often neglected maritime segment is already seeing great positive impacts from the wave of digitalization and predictive uses of data, sweeping across the maritime world. Improvements in vessel operations and navigation (including AIS) offer profound positive impacts on the lives of millions of passengers – including in developing countries where accidents have been prevalent. The conference will showcase leading edge technological solutions and will include sessions held aboard vessels in New York waterways.

Crowley, Pivotal Ink LNG Supply Contract

Crowley Fuels announced that it has signed another multi-year supply contract with Pivotal LNG to support a major pharmaceutical company's energy needs in Puerto Rico. The contract, executed through Crowley subsidiary Carib Energy (USA) LLC, calls for Crowley to transport LNG from Pivotal facilities on the mainland to the island manufacturer. Crowley's solution entails loading LNG into 10,000-gallon ISO containers at Pivotal's LNG supply source in the southeastern U.S. These ISO containers are then loaded onto Crowley vessels for delivery to Puerto Rico customers.

TOTE Update on Hawai'i Plans

TOTE announced that its plans to enter the Hawai'ian to mainland service are on hold as a result of its Phase 1 technical review of Piers 1 and 2 in Honolulu Harbor. In September 2017, the Hawai'i Department of Transportation earmarked for TOTE access to Honolulu Piers 1 and 2 and exclusive use of the adjacent 45 acres beginning in 2020, to coincide with TOTE's new service to Hawai'i. TOTE subsequently conducted a preliminary study of the site's infrastructure which indicated that upgrades and improvements will be required to accommodate the new operations. Due to the scope and timing of the ugrades and improvements, TOTE will not renew the letter of intent (LOI) with Philly Shipyard that expired on January 31, 2018.

Annual Towing Forum returns to SUNY Maritime

For nearly 20 years, leaders of the tug and barge industry in the region have converged on SUNY Maritime College in the spring to discuss current issues and initiatives facing the industry. This year will be no different; the 18th annual Towing Industry Forum will include presentations about safety management systems, wind farms and their impact on marine traffic, and a federal study regarding route planning and access to East Coast ports, among other topics. The forum will take place from 8 a.m. to 1:30 p.m. Wednesday, March 14, in the Maritime Academic Center on campus. There will be an optional demonstration for attendees in the Bouchard Transportation Co. Inc., Tug and Barge Simulation Center. "The tug barge industry is a vital component of the marine traffic in the Port of New York and New Jersey," said Capt. Eric Johansson, founder of the conference and professor of professional education and training.

YANMAR Launches Smallest CR Inboard Diesel

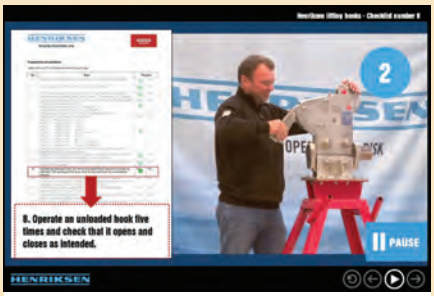
YANMAR is launching a new generation common rail (CR) diesel engines, the compact YANMAR 3JH40 inboard engine. The 3-cylinder 3JH40 is reportedly the marine industry's smallest CR inboard diesel engine, enabling commercial operators to benefit from the performance of electronically-managed CR fuel-injection technology. With minimal fuel consumption, low noise and emission levels, the YANMAR 3JH40 surpasses EPA Tier 3 and EU RCD Tier 2 emission regulations.

www.yanmarmarine.com

Holdfast - Lightweight, High Grip, High-Strength, Floating Line

Holdfast is the ideal blend of strength and grip, utilizing high modulus polyethylene (HMPE) fiber and nylon fibers to deliver a lightweight, high-strength, floating line that grips on H-bitts and capstans where 100% HMPE lines won't. Coated with TEUFELBERGER's proprietary abrasion resistant coating, engineered for higher strength and durability for barge lines, tug pendants, tug winch lines and many other applications, it comes in assorted colors.

www.teufelberger.com



Training for Hook Owners Saves Inspection Costs

An on-line training course that will enable customers to perform annual product inspections has been launched by Henriksen Hooks. Users are now able to undertake an on-line training course that will teach them how to inspect their products for safety-critical defects. They will then be qualified to submit a completed check-list that details the condition of various Henriksen off-load lifting hooks, towing hooks and painter hooks.

www.hhenriksen.com

Becker Flap Rudders Improve Fuel Efficiency, Maneuverability

Becker Flap Rudders have been helping US towboat customers to improve fuel efficiency, maneuverability and saving them time on their long hauls since its introduction to the inland market in 2010. The increased maneuverability realized from the Becker Flap Rudders is particularly advantageous for these long-haul vessels traveling up and down the winding and narrow Mississippi River in the US Inland Waterways.

www.becker-marine-systems.com

Rolls-Royce Battery Packs for PSV's

Rolls-Royce Commercial Marine will deliver a battery-powered energy system for six offshore PSV's. The delivery includes the Energy Storage Container System (ESSU); an upgrade of the existing Rolls-Royce ship design engineering package; an upgrade of the Dynamic Positioning system (DP) and the ACON control system; and the new Rolls-Royce Energy Monitoring system, which will provide a complete overview of energy usage onboard.

www.Rolls-Royce.com

Harrington Hoists' Short Span Lifting Beam

Harrington Hoists' HSSLB Short Span Lifting Beam is available from ¼ Ton through 195 Ton capacities with outside spreads of 12, 24, and 36 inches. Additional sizes, capacities, lift points and hardware are also available. The HSSLB is manufactured to ASME B30.20 & BTH-1 Design Category B Service Class 2, has a fatigue life of 100,001 to 500,000 load cycles and is Proof-Tested to 125% capacity.

www.harringtonhoists.com

5 Reasons to Choose Vesconite Rudder Bearings

Reasons to choose Vesconite rudder bearings include (a.) dimensionally stability in water, (b.) high load capacity, (c.) proven lifespan, (d.) internal lubrication and grease-free operation and (e.) reduced shaft wear (no metal-on-metal wear) and Vesconite's low friction results in longer-lasting shafts. With the world's largest stock range, ready to ship, Vesconite is the answer to your rudder requirements.

www.vesconite.com

P&R Water Taxi signs with MobileOps

MobileOps has signed a deal with P&R Water Taxi in Hawaii. P&R Water Taxi will utilize the MobileOps Platform across its fleet to bolster safety, maintenance, and regulatory initiatives. The MobileOps Platform is a cloud-based subscription solution that includes both a Web Application and an online-capable iPad application called Voyager. MobileOps is easy to use, cost effective, and is backed by robust customer service.

www.mobileops.co

Honda Marine's Redesigned, Improved Outboard Motors

Flagship BF200, BF225 and BF250 motors are now improved with a new design, ease of maintenance and multiple rigging options. The new BF200 and BF225 are powered by a new engine, the proven 3.6-liter V6 engine that powers the BF250 outboard motor. Improved corrosion resistance and decreased maintenance time add up to enhanced reliability and greater ease of use.

www.hondanews.com

Monico's Mobile Messenger (m3)

Monico Monitoring, the provider of preconfigured solutions for protocol conversion, data acquisition, and remote monitoring communication, has released Monico Mobile Messenger (m3). m3 is Monico's latest product that utilizes their expertise in these areas. With a limit of 50 parameters, m3 is the perfect economic solution for customers – like workboats – who only need a small number of parameters monitored.

www.monicoinc.com

Increased Protection for Marine Fiber Optics

TE Connectivity's DEUTSCH high density optical in-line dry-mate connector is a multichannel fiber optic connector from high pressure/high temperature (HP/HT) fiber optic technology, backed by 30+ years of field performance. Designed to withstand harsh offshore environments and ideal for applications that need maximum space and weight savings, it packs 12 to 24 fiber optic channels (FO) in standard versions and up to 48 FO upon request.

www.te.com

Simple Antenna Installation with Glomeasy

Glomex Marine Antennas USA has revolutionized how VHF, AIS, FM and DAB (digital audio broadcasting) antennas are installed. High-performance Glomeasy antennas feature fast-fitting, waterproof FME connectors. There's no cutting or soldering of the coax cable. Ideal for commercial vessels, professional-grade Glomeasy VHF, AIS, FM and DAB antennas are built to last, and available in 3', 4' and 8' lengths.

www.glomex.us

Hubbell Switch Models for Any Marine Application

Quality switches are an important element of any 12V DC electrical system. Hubbell Marine offers 25 models of durable rocker, toggle and push-button switches made specifically for marine use and designed to complement any boat décor. Hubbell Toggle and Rocker Switches meet a wide variety of configurations, such as bilge blowers and pumps, gauges, lights, starters, trim tabs, winches, windlasses and wipers.

www.hubbell-marine.com

Low-Cost Marine Internet Access

With the WebWatch Internet hotspot from Shakespeare, there's no need for expensive satellite antennas and data plans. Ideal for coastal and inland boaters, the all-in-one Wi-Fi hotspot and high-definition television (HDTV) antenna is engineered for increased long-range reception. WebWatch delivers reliable Internet access for up to 32 devices with speeds up to 4G from a nearby Wi-Fi signal or cellular signal.

www.newellbrands.com

Kongsberg's 3D Virtual Application for K-Sim Cargo Simulator

Kongsberg Digital has launched a new 3D virtual application for its state-of-the-art K-Sim Cargo simulator. The system generates high-fidelity visualization for operational training on important areas of the cargo deck, enabling training centers equipped with K-Sim Cargo to deliver even more value to their customers while meeting the industry need to secure the safety and efficiency of cargo transfer operations.

www.kongsberg.com

Stop Paying for Oily Water Disposal That is Almost All Water

Finally: a compact oil water separator (OWS)for workboats, designed to fit small spaces and small budgets. The MINI-Brute OWS will not allow over limits oil discharge and has the USCG approval to back that up. At less than one-third the size and one-half the cost of previous oily water separators, the MINI-BRUTE is purpose built for workboats. MINI is U.S.-built in a quality ISO shop.

www.skimoil.com

Alfa Laval PureBallast 3 BWTS Receives Revised G8 certificate

Alfa Laval PureBallast 3, the firm's ballast water treatment technology, meets the revised IMO G8 testing requirements. DNV GL, acting on behalf of the Norwegian Maritime Authority, issued an updated type approval certificate on 2 February, making Alfa Laval the first supplier compliant with the revised G8 demands. Revised G8 guidelines are more in line with today's stringent U.S. Coast Guard requirements.

www.alfalaval.com/pureballast

CrewWatcher Receives Innovation Award

Weems & Plath's CrewWatcher is an app-based crew overboard alarm system. The system works like a virtual lifeline and is made up of two components: a smartphone application and a small beacon that can be comfortably worn by each crew. Should someone go overboard, it automatically sounds an alarm, provides coordinates of the MOB, time of event, and then guides rescuers back to MOB spot.

https://crewwatcher.com

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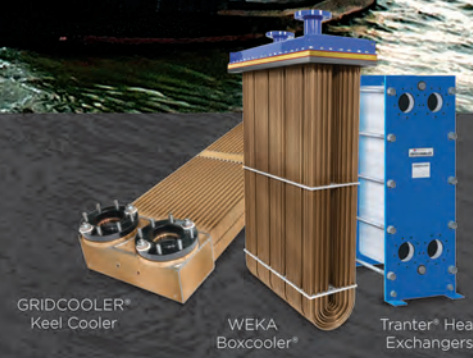

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