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Marine News

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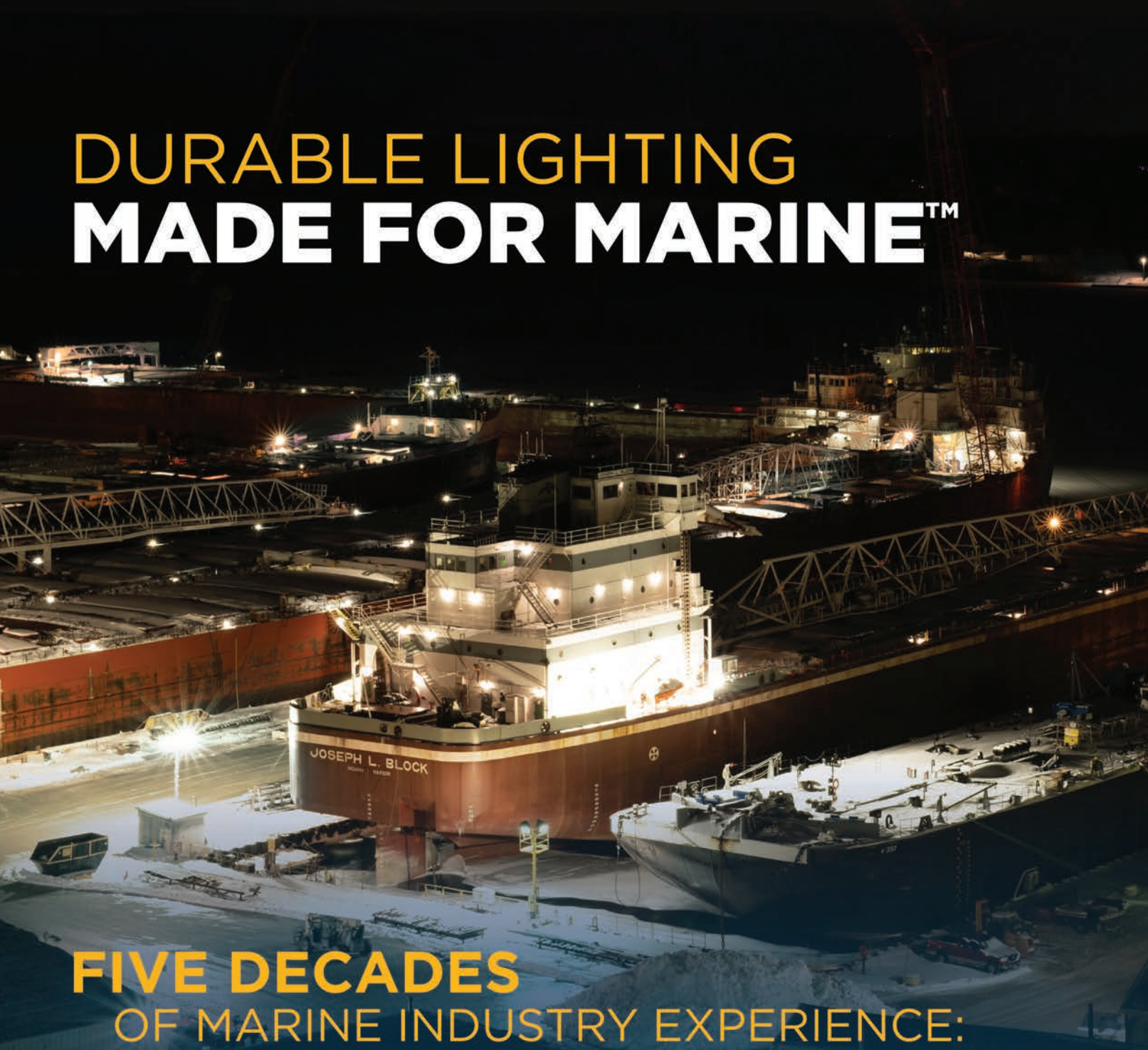

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ON THE COVER

This year's annual *MN100* edition arrives during one of the most interesting and yet difficult periods that the domestic workboat and brown water sectors have ever seen. The staying power of domestic stakeholders, navigating the ups and downs of the market, is nevertheless remarkable. The breadth and quality of entries in this edition is proof enough of that.

Image Credit: Inland Marine Service

Features

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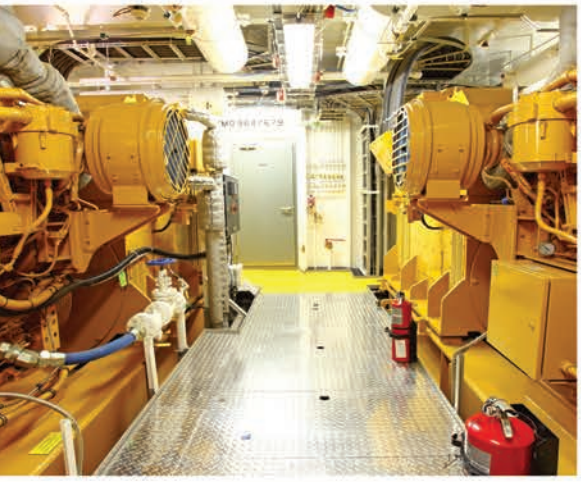

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Staying power.

That's what it takes to make it, 'on the waterfront.' In the iconic 1954 film of the same name, set on New York's competitive waterfront, dock workers struggled for work and eked out a living under the toughest of conditions. Similarly, today's maritime industry is powered by some of the toughest and smartest professionals to be found anywhere, all working towards the same goals in an increasingly difficult, if not somewhat different version on the modern version of those rough and tumble docks. Many, like you, perhaps, have been at it for decades.

Indeed, this year's version of ***MarineNews'*** annual look at the very best of the North American maritime industry – our **MN100** list – boasts many firms that are celebrating significant anniversary milestones. And, that's important. As this list took shape, I took that into consideration – because it takes staying power to make it in our little corner of the globe's greater economy. The ups and downs and unpredictable business cycles that characterize the marine industry is no place for the faint of heart. On the other hand, for those who can sustain their business model through all of the inevitable troughs and crests that the waves of business bring, the rewards are many.

If I've said it once, I've said it 100 times; the **MN100** can be (and typically is) one of the most challenging editions of the year to assemble. It is also my favorite, primarily because it allows me the opportunity to dig deeper into a large swath of companies that serve and compete within this b-to-b genre. At the same time, believe it or not, it is also one of the most valuable editorial efforts that I make time for. And, while most if not all ***MarineNews*** editions have specific editorial calendar bullets to hit, this one runs the full gamut on the waterfront – the collective North American waterfront.

In this year especially, the entries for our **MN100** were numerous, impressive in their delivery and left me with the dilemma of finding space for the very best 100 firms, while unfortunately also leaving a large swath of (worthy) contenders to try again in 12 months. To that end and as always, the buck stops at my desk. That said; if you didn't populate an entry form to apply, then you couldn't expect to be included. This is therefore an appropriate time to thank everyone who took the time and effort to participate.

This year's long awaited and much coveted **MN100** list of companies features many first timers, a raft of perennial stalwarts and perhaps, some surprising inclusions that, nevertheless, once you've read their stories, you'll understand why they are featured in the pages to follow. Take the Cape May-Lewes Ferry, for example.

In the past year alone, the Cape May-Lewes Ferry made history by promoting three women to rank of Captain in the Marine Department. These three female Captains are doing more for the industry than just oversee the safe navigation and operation of the vessel; they serve as a symbol that the role of piloting a ship is a female-friendly role with ample opportunity for those looking for a long-term, stable and rewarding career path.

Women make up only an estimated two percent of the global maritime industry. In the U.S., the statistics are a little better, with less than eight percent of ship and boat captain operator roles held by women. Still, for a female to have the opportunity to train up to ship captain is considered "unique." In the maritime 'year of the woman,' then, the Cape May-Lewes Ferry stands out as a leader, certainly worthy of top 100 consideration. And, on the often male-dominated rough and tumble waterfront, it takes staying power to rise to the top. These deserving Cape May-Lewes Ferry employees certainly have checked that box.

Separately, The Apprentice School at Huntington Ingalls Industries' Newport News Shipbuilding division celebrated its 100-year anniversary just last month. That's bigger news than

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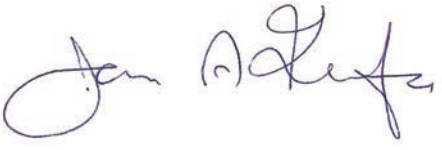
you might otherwise think. The Apprentice School accepts about 225 apprentices per year. The school offers four- to eight-year, tuition-free apprenticeships in 19 trades and eight optional advanced programs. Over the last 100 years, The Apprentice School has produced more than 10,800 graduates who have designed and built ships for the U.S. Navy. Today, the school currently enrolls 850 students. "The Apprentice School is one of our national treasures," said Latitia D. McCane, director of education at The Apprentice School. She's right. For these reasons and many others, The Apprentice School is the perfect embodiment of what it takes to make the **MN100**. That also translates to *staying power.*

Also in this edition, industry heavyweights such as Metal Shark Co-Owner and CEO Chris Allard and Admiral Karl Schultz, Commandant of the United States Coast Guard remind us that leadership is a key component of staying power on the water. As the most visible icons of the dynamic organizations that they lead, both men will modestly tell you that success is defined by a team effort, with the entire crew pulling in the same direction towards a lofty goal. Nevertheless, their individual stories provide real insight into why they are both prominently featured in this edition.

Perhaps the only 'constant' on the North American shallow draft waterfront is 'change' itself. Those who roll with the punches, change and adapt to shifting marine requirements, will always come out on top. We believe that the increasingly wider range of firms competing in the ***MarineNews*** markets is ample proof of the total market itself. This annual task, without a doubt, is a valuable exercise, immersing me deeper into the industry that I serve. As I rank scores of entries from every niche of the marine industry, some might find that to be tedious. To the contrary, this is something which ultimately provides a better understanding of the markets.

Just as importantly – perhaps as much or more for you as it is for the ***MarineNews*** editorial team – this also the time of year that we assemble the Editorial Calendars that guide the direction of our coverage in the year to come. The **MN100** list has always helped to provide the course correction that allows me to provide more meaningful and up-to-date analysis for our market-leading BPA audited readership.

'On the Waterfront' was a relatively low budget film, and unlike some of our long tenured, **MN100** marine firms, it was shot on location in just over 36 days. You and your team have been around a lot longer than that. And yet, the film's somewhat depressing message transcends its waterfront setting, serving to remind us that it isn't always easy on the waterfront. But, this year's **MN100** winners know what it takes to make it, on the waterfront. It's called ***'Staying Power.'***



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CHRIS ALLARD:
Co-Owner / CEO Metal Shark

A naval architect and graduate of the Webb Institute, Co-Owner/CEO Chris Allard introduced the engineering-centric approach that has fueled Metal Shark's growth; driving innovation and transforming the company from a regional builder to a globally recognized industry leader. Under Allard's direction, Metal Shark has successfully captured over $500 million in government and military contracts while expanding into the commercial sector and becoming one of the largest suppliers of high speed ferries.

Today, at three fully self-contained facilities in Alabama and Louisiana, Metal Shark manufactures vessels in aluminum, steel, and fiberglass, with current capabilities supporting production for vessels up to 300' in length. Somehow, Allard and Metal Shark are always on the leading edge of any new boatbuilding development.

Probably the biggest recent announcement for Metal Shark was its acquisition of the assets of Horizon Shipbuilding, which brought a 35-acre Alabama shipyard into its portfolio, bolstering steel shipbuilding capabilities and facilitating our entry into multiple new markets. The firm's launch of Sharktech Autonomous Vessels was another highlight. The first Sharktech effort was in partnership with ASV/L3, clearly a leading name in the space. At the same time, the US Coast Guard RB-S program continued in force, with over 320 units in service by the end of 2018. In 2018 alone, the firm delivered over 200 vessels to operators in a range of markets including US and foreign militaries, passenger vessels, and others.

For Allard, who always has his eyes on the ball, the Jones Act is another area of note. He told ***MarineNews***, "We monitor Jones Act issues closely and support efforts to keep the Act in full effect. Whether or not politicians or the public agree with the Act, the simple fact is that a wholesale repeal would end shipbuilding as we know it in the United States. As a taxpayer, that's not something I think is best for our country."

Allard and Metal Shark have done a good job of spacing their revenue stream across multiple sectors. Their version of diversification involves multiple markets, vessel types, customers, and production locations. As much as this approach adds complexity, it also mitigates risk. Metal Shark also competes internationally. Allard explains, "We export a great deal, with FMS being a key portion of that, but certainly not all. We are blessed with dozens of repeat international buyers. Our use of technology has helped us bridge the gap in cost, but at the end of the day the customers buy the product for the quality and service."

For Allard, the work is an ongoing effort. Looking to the future, Metal Shark continues to push and rely on modern software and management tools to organize the operations. The automation of cut file and drawing creation continues, as does IoT implementation, such as cloud-connected welding machines. And, says Allard firmly, "Robotic welding, and other more advanced manufacturing techniques, will be the only way for US yards to retain any competitiveness in the world shipbuilding arena."

The Case:

ABB believes that modern ships will be built on the foundation of electricity. This expands their range of viable energy sources beyond traditional fuel to, for instance, batteries and fuel cells. The electrical backbone, integrated with automation and control systems, will also transform the industry from merely connected operations to collaborative and automated operations.

The Company:

ABB is a pioneering technology leader with a comprehensive offering for digital industries. With a history of innovation spanning more than 130 years, ABB is today a leader in digital industries with four customer-focused, globally leading businesses: Electrification, Industrial Automation, Motion, and Robotics & Discrete Automation, supported by its common ABB Ability digital platform. ABB's market-leading Power Grids business will be divested to Hitachi in 2020. ABB operates in more than 100 countries with about 147,000 employees. The firm has provided electric and hybrid systems on board vessels for more than 110 years. In fact, today, well over 1,300 ships employ ABB's electric system. In the shallow draft segment they offer electrical, hybrid, propulsion and automation solutions for such vessels as towboats, dredges, tugs, marine construction and ferries. Niagara Falls tour operator Maid of the Mist recently ordered two new passenger vessels sailing on pure electric power, enabled by ABB's technology. https://new.abb.com/marine

The Case:

ABS is one of the world's biggest classification societies, serving both the global marine and offshore sectors. The Houston-based organization is one of the founding members of the International Association of Classification Societies.

The Company:

As leading providers of classification services to the global offshore and marine industries, ABS's more than 4,500 employees are driven by the mission to promote the security of life and property, and preserve the natural environment. The ABS team offer technical support throughout the concept design, approval and construction, and provide asset-lifecycle services. An unwavering commitment to quality service distinguishes ABS as a leader among class societies and a trusted partner to clients and members for the life of their assets. The safety record of the ABS-classed fleet illustrates that commitment to safety leadership, consistently outperforming industry averages for Overall Serious Casualties and Hull & Machinery Casualties.

ABS continues to develop innovative products and services that address the key challenges of digitization and connectivity, cyber security risks, performance optimization, the reduction of operating costs and environmental compliance. At the heart of this expansion of ABS's capabilities is technology – remote data-collection devices, drones and crawlers, wearables, advanced sensors and satellite connectivity – all of which have reached a maturity that allows ABS to make class less intrusive for clients, monitor industry safety trends and share information to enhance data-driven research and class services.

For the U.S.-based brown-water fleet, the past two years saw the implementation of the most comprehensive safety and environmental legislation in the sector's history, the U.S. Coast Guard's (USCG) Subchapter M regulations. ABS has been at the forefront of independent technical support for that important regulatory rollout, with oversight of about a third of the vessels affected by Sub M. In fact, the first vessel owners to receive USCG COI's demonstrating SubM compliance, on all three U.S. coasts were ABS clients. www.eagle.org

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All stats from 01/23/2019

ALPHATRON MARINE

The Case:

The inland department at Alphatron has experienced rapid growth since its establishment. The collaboration with JRC has resulted in a number of different models of river radars. The development of innovative products has led to innovation in inland waterways.

The Company:

Alphatron Marine is a world-renowned supplier of integrated bridge solutions, representing major industry brands and manufacturer of unique complementary products to the Japan Radio Company Ltd (JRC) portfolio. With the full support of Centers of Excellence, one of which is in Houston, the combined synergies bring quality and innovation to owners, operators and shipyards, redefining the future of ocean, offshore and river navigation. Alphatron offers custom-made products for the inland market, focusing on navigation and communication, comprised of a modern, turnkey wheelhouse with a full navigation package. Alphatron makes use of an extensive network of dealers, based domestic and abroad, to provide you with optimum service; anytime, anywhere. www.alphatronmarine.com

APPLETON MARINE, INC.

The Case:

Appleton Marine, Inc. has been supplying marine deck machinery since 1971. The company is a turnkey package provider of cranes and other deck equipment. Appleton Marine has long-tenured employees that are highly capable of providing technologically-advanced, heavily-engineered products.

The Company:

Appleton Marine's robust designs perform in the harshest conditions, with many still in service after 30+ years. Appleton Marine takes great pride in providing excellent global aftermarket sales service and support. Appleton supplies cranes, winches, windlasses, capstans, hose reels, and other special systems, and can combine all gear into cost effective turnkey solutions. All Appleton Marine deck machinery is proudly manufactured in the USA. Notably, Appleton Marine offers "Open-and-Inspect" and rebuild services for its own equipment. The USCG has taken advantage of this cost saving service and is rebuilding multiple cranes and winches for various vessels. With this market segment combined with an offshore market that continues to gain traction, Appleton Marine is on pace for another record growth year. www.appletonmarine.com

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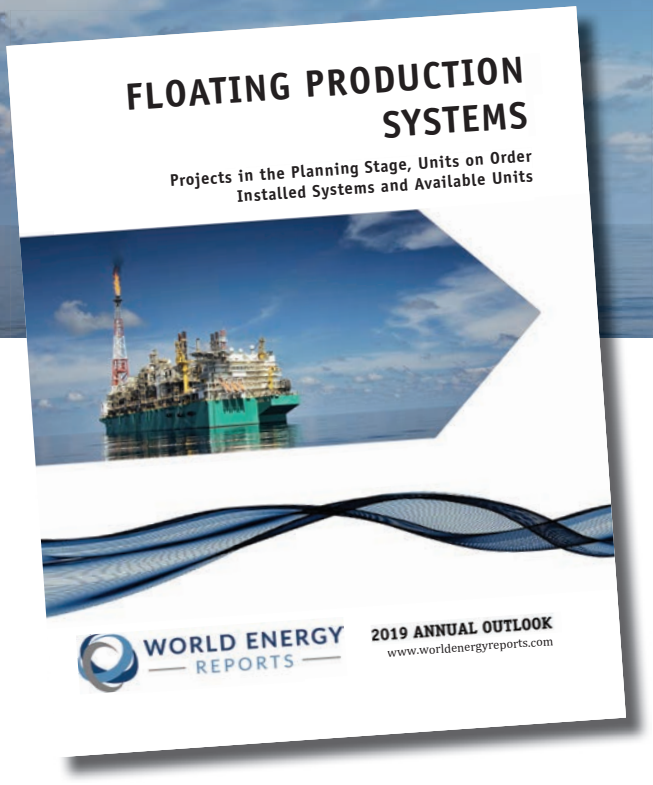

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CAPE MAY-LEWES FERRY: Women on the Water

Women make up only an estimated two percent of the global maritime industry. In the U.S., the statistics are a little better, with less than eight percent of ship and boat captain operator roles held by women. Still, for a female to have the opportunity to train up to ship captain is considered "unique." However, as predictions are being made that there will be a shortage of more than 140,000 deck or ship officers worldwide by 2025 (BIMCO/ICS), we will see more accomplished women take the helm and lead the industry forward. In fact, that's already happening.

In the past year alone, the Cape May-Lewes Ferry made history by promoting three women: Meghan D. Palmer of North Cape May, and Melissa Velli and Sharon Lyn Urban, both residents of Cape May, to rank of Captain in the Marine Department. These three female Captains are doing more for the industry than just oversee the safe navigation and operation of the vessel; they serve as a symbol that the role of piloting a ship is a female-friendly role with ample opportunity for those looking for a long-term, stable and rewarding career path.

As Captains, Palmer, Velli, and Urban have earned all the requirements and qualifications to lead the entire vessel and crew, with each possessing a United States Coast Guard (USCG) Inland Masters License of unlimited tonnage and USCG First Class Pilot upon the Delaware Bay License of unlimited tonnage. Both Urban and Velli joined the Cape May–Lewes Ferry marine department as Ordinary Seamen in 1997 and 2003, respectively. They rose through the ranks – up the hawsepipe – serving as Able-bodied Seaman and Mate prior to their recent promotions. A graduate of the U.S. Merchant Marine Academy, Ms. Palmer was hired at the Ferry in November 2011 as a seasonal Able-Bodied Seaman. In addition to a Bachelor of Science degree in Logistics and Intermodal Transportation, Ms. Palmer also earned an Ocean's Unlimited Tonnage Third Mate's License during her time at the Academy. In April of last year, Ferry history was made with the first all-female bridge crew navigating across the Delaware Bay with Captain Sharon Urban and with Melissa Velli serving as Pilot, and Helmsman Paulette Nickels.

According to Heath Gehrke, Director of Operations for the Cape May-Lewes Ferry, women are breaking barriers in the maritime industry. He explains, "They can have a successful career in seafaring while living a lifestyle that allows them to have a family and be home at night. As the industry experiences a large portion of the workforce approaching retirement, and local hires become more difficult to find, we must welcome this new talent with open arms." And, Cape May-Lewes Ferry has done just that.

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ALL AMERICAN MARINE

The Case:

All American Marine is a leading innovator in aluminum vessel manufacturing. From hybrid electric vessels to ultra low-wake, hydrofoil-assisted vessels, AAM continues to be on the cutting edge of what's next in the maritime industry. Builders of one of the greenest vessels on the planet, Enhydra, the firm is excited to show potential customers what's next on the horizon.

The Company:

All American Marine began operations over 30 years ago by specializing in building aluminum fishing vessels used from California to Alaska. Recognized for craftsmanship and high quality, All American Marine has attained exclusive North American building rights with Teknicraft Design, Ltd. in Auckland, New Zealand. Unique design characteristics ensure high-speed travel, ultra-low wake, and industry-leading fuel efficiency. AAM is at the forefront of aluminum vessel design and manufacturing. AAM guides clients through each step of the process, delivering value on a vessel that is truly unique to its specific application. Increased production capacity and a highly skilled and growing workforce allows AAM to produce high-quality vessels at a fair price. From lithium-ion powered vessels to the leading edge in catamaran and monohull design and production, the future is bright for aluminum vessel manufacturing.

AAM recently delivered the Reliance, an ultra-low wake passenger ferry for Kitsap Transit. AAM also recently launched its sister ship (the 3rd Rich Passage class vessel, including the Rich Passage I), the Lady Swift as well. Both are 118 passenger, hydrofoil-assisted catamarans that will serve as high speed passenger ferries for Kitsap Transit. Construction is underway on a 72' research vessel for Duke University, as well as a 73' research and patrol vessel for the Texas Parks and Wildlife Department. The latter featuring a revolutionary RHIB deployment system. Construction is also underway for a 77.5' passenger catamaran for an undisclosed client. www.allamericanmarine.com

BAE SYSTEMS

The Case:

BAE Systems is a leader in electric and hybrid transportation and has been at the forefront of clean power and propulsion for maritime applications with the introduction of low emission vessels into the market. In the coming years, BAE will continue to invest in and pioneer new technologies to improve its systems. Those next generation systems will give customers an edge and push the limits of what is possible to be more efficient and extend battery range.

The Company:

BAE Systems' Power and Propulsion Solutions business area has more than 10,000 electric hybrid powered vehicles in service around the globe. The firm continues to innovate and deliver low and no emission solutions for transportation. The need for all electric vehicles is picking up speed. Transportation creates about a quarter of the world's emissions and that number is growing. But while the demand is at an all-time high, electric vehicles have been around for decades. BAE Systems has been plugged into the market for more than 20 years.

As experts in power management, BAE Systems' Power and Propulsion Solutions business area provides electric power and propulsion of vehicles, including boats, buses, and trucks. BAE provides electric, electric-hybrid, and fuel cell electric propulsion of vehicles to reduce emissions, lower operational costs, and decrease maintenance of a vessel. BAE offers three unique solutions to watercraft including: HybriGen Power and Propulsion system for electric-hybrid power of auxiliary loads and propulsion. HybriGen Power provides electric power of auxiliary loads eliminating the need for a large diesel generator. HybriGen Assist can provide a boost of electric power to the engine for high speeds but can also be used to for electric power and low speeds. Recent deliveries and include work for such customers as Kitsap Ferry, Matthew Turner, and Harbor Harvest. www.hybridrive.com

BALTIC WORKBOATS US

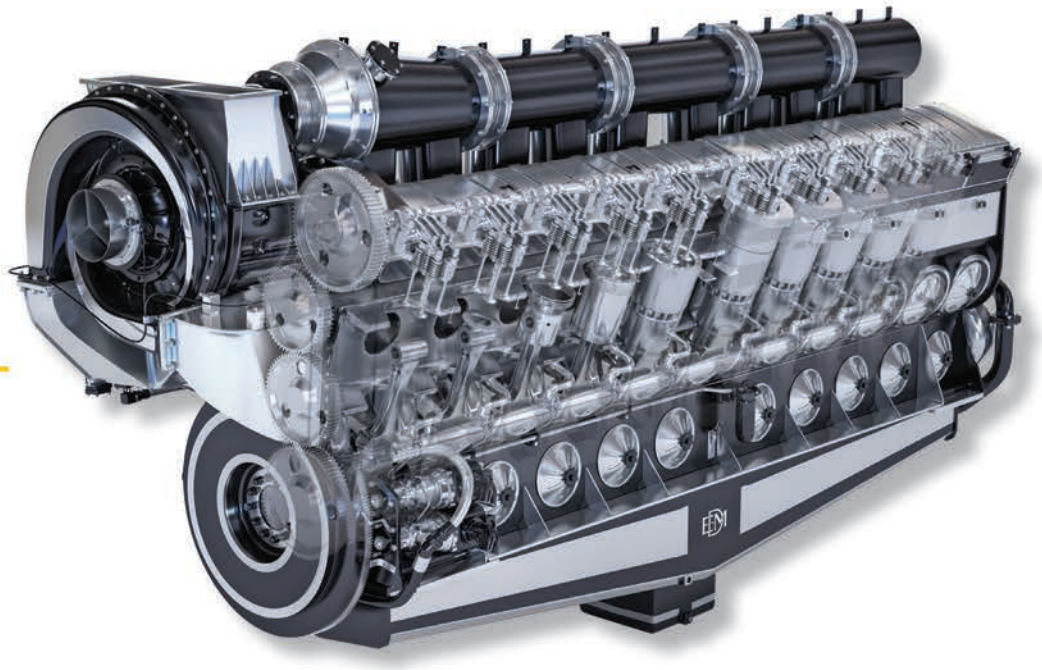
The Case:

Baltic Workboats has been building advanced vessels for two decades, producing vessels that operate in some of the most challenging environments worldwide. The firm focuses on next-generation vessels that are versatile and fuel efficient with integrated safety features and an unparalleled level of comfort.

The Company:

Baltic Workboats is a growing shipyard with modern facilities and a skilled workforce of 200+ people. Over the last 19 years, they have designed, built, and delivered over 200 versatile vessels. Operating under ISO 9001 and ISO 14001 certificates, Baltic Workboats US Shipyard is located in Tampa, Florida. Baltic Workboats portfolio includes pilot vessels, search and rescue, patrol, defense, research, and ferry vessels. The recent delivery of a large-scale multi-role hybrid patrol vessel has established the firm as a builder committed to new technologies, efficiencies and minimal environmental impact. The 150' vessel is capable of running in diesel, fully electric or hybrid modes at speeds over 30 knots. In 2019, the firm completed delivery of an 11 vessel order for 50' Pilot vessels to the Danish Pilots. www.balticworkboatsus.com

Marine Systems, Inc.



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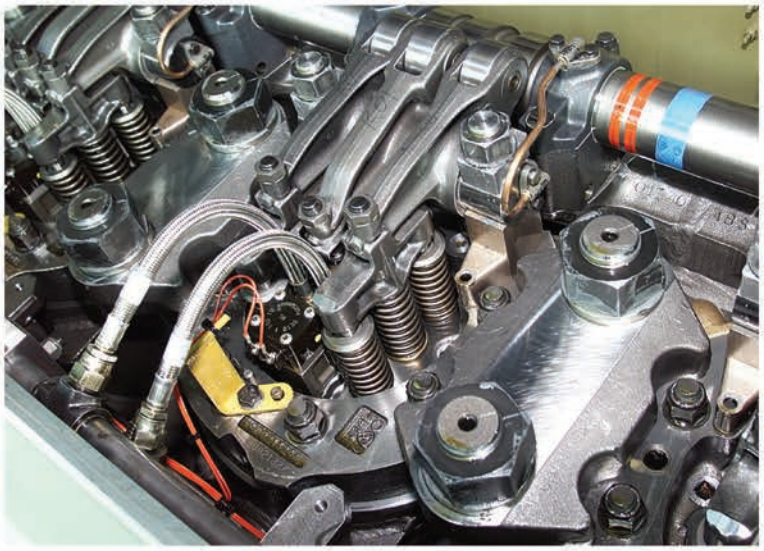

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Downtime is expensive. EMD engines are designed to minimize the amount of time needed for maintenance and repairs in order to maximize your productivity, keeping operational costs to a minimum.

- **Reduced fuel consumption over previous models due to EPA T4F / IMO III technologies and low idle speed.**
- **Easy non-invasive inspection of cylinder components for simple predictive condition-based maintenance.**
- **Simple overhauls to minimize downtime – Power Assembly (head, liner, piston, rod) can be removed and replaced as one unit.**
- **Closed loop dosing control system optimizes (Diesel Exhaust Fluid) DEF usage.**
- **No oil change required between overhauls unless indicated by oil sample analysis.**
- **Lowest life cycle cost per horse power / hours of operation.**

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ESI MARINE SYSTEMS, INC. MSI

BLUDWORTH MARINE


Keal Woodruff, President

The Case:

An experienced shipyard with mobile repair teams that service the Gulf of Mexico from Corpus Christi to Lake Charles, the firm offers the ATB Bludworth System as well as the US distributorship and service arm of Taisai system from Japan.

The Company:

Established in 1998, Bludworth Marine has continually expanded its physical plant locations and the appropriate service personnel to better service an ever expanding customer base of marine vessel owners. Multiple marine repair locations in Galveston and Orange, Texas include a graving dock and two dry-docks up to 3,000 tons. Bludworth Marine services a full range of vessels from inland tugs and barges to ocean ships. Bludworth also offers a full range of services from shipyard and docking vessels to topside repairs on ships and ocean floating equipment. U.S. Gulf and worldwide services can be provided through traveling crews. Bludworth Marine also owns the Bludworth ATB flexible pushing system design and is the U.S. sales and service representative for the Japanese Taisei Engineering Articouple ATB systems. Bludworth Marine recently relocated their headquarters to Galveston. www.vesselrepair.com

BOKSA MARINE DESIGN

The Case:

Boksa Marine Design specializes in full-scale design, engineering and production services to the commercial marine industry and shallow draft market, providing naval architecture and marine engineering for inland marine solutions. Boksa's high-performance towboats and barges are powerful, rugged and maneuverable, designed and engineered for challenging river conditions.

The Company:

Boksa Marine Design is a full-service naval architecture and marine design firm located just outside of Tampa, FL. Boksa provides the desired scope of work, including complete naval architecture, design and marine engineering services for the shallow draft market and inland river marine solutions, as well as providing production engineering or refit engineering for ongoing projects and consulting and project management. Notable recent workboat projects include the tug Yankee, which involved managed engineering for refit and repower, including Great Lakes bulk ATB units and 102-foot hopper barge at Donjon. Boksa Marine Design also performed naval architecture, design and engineering for the R/V WT Hogarth, 98-foot coastal

class research vessel. Additionally the firm's work includes multimission workboats for NorthRiver, WorkSkiff and the Bangladesh Coast Guard. http://BoksaMarineDesign.com

BRISTOL HARBOR GROUP, INC.

The Case:

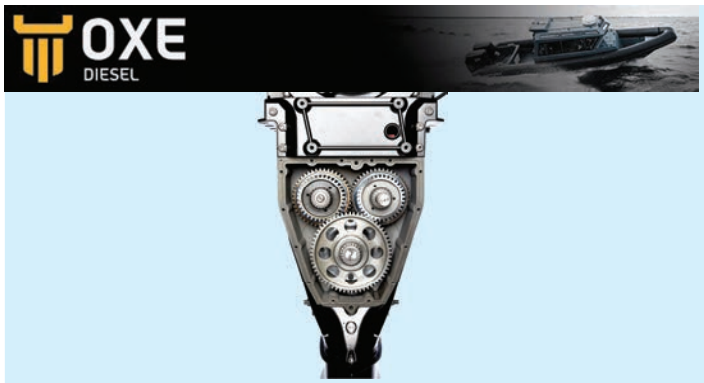
Bristol Harbor Group, Inc. (BHGI) is one of the leading naval architecture and marine engineering firms in the country. Constantly innovating, BHGI has years of experience providing naval architecture, marine engineering, and project consulting services to the marine industry.

The Company:

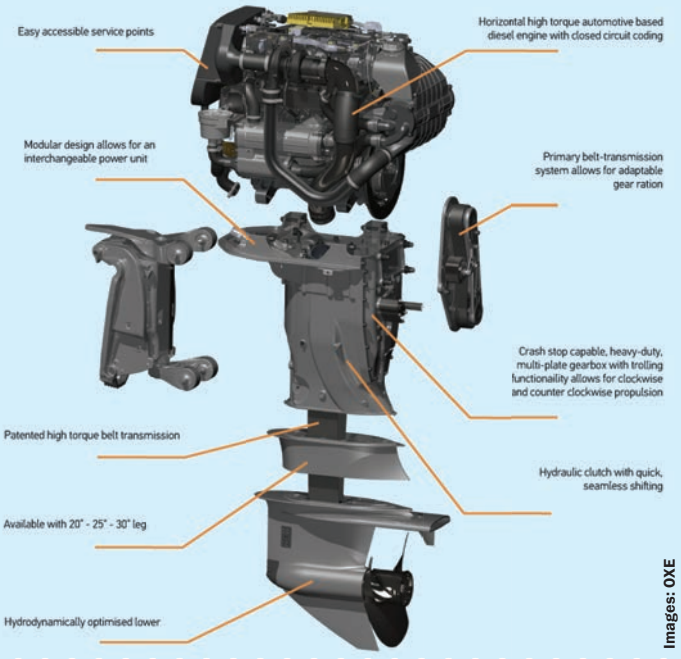
Bristol Harbor Group, Inc. (BHGI) is a full service naval architecture, marine engineering and consulting firm located on the harbor in Bristol, Rhode Island. BHGI has been in business for more than 25 years and have produced numerous designs, to which hundreds of vessels have been built. BHGI specializes in commercial vessel design and consulting and have experience with tugs, barges, Articulated Tug/Barge Units (ATB), passenger vessels, workboats, dredges and floating dry docks. The technical team includes University of Michigan, Webb Institute, and Rensselaer Polytechnic Institute graduates.

Of note, BHGI was tasked by the USACE to develop a Waterways Commerce Cutter ATON Indicative Design in Support of the USCG's mission to establish, maintain, and operate aids to maritime navigation in federal waterways.

http://bristolharborgroup.com/



CIMCO MARINE & THE OXE Diesel Outboard



Images: OXE

As Trace Laborde, Marine Manager for Laborde Products, says, "The OXE diesel is the complete package, a true diesel engine. It's great for any maritime application that requires fuel efficiency, simple maintenance, compliance with all European and EPA Tier 3 regulations, and unmatched performance." That's high praise, predictably coming from one of OXE's authorized North American distributors, but in this case, the talk is matched by this OEM's proven performance.

The OXE was recently approved by the United States Environmental Protection Agency as the first and only Tier 3 diesel outboard for commercial use. This is important for all maritime agencies; local, state and federal who apply each year for the millions of dollars available for FEMA Non-Disaster Grants in the Port Security category.

With diesel engines – also known as CI engines – the combustion of fuel takes place due to the heat generated by the compression of fuel and air inside the cylinder. CI means 'compression ignition' and is far safer than petroleum ignited by a spark plug, or any other spark.

Pim Polesie, Chief Marketing Officer for Cimco, explained, "The approach was to take advantage of the automotive diesel engine's inherent high performance, substantially increased life and substantially reduced operational cost and compliance with environmental laws and regulations and combine it into a more reliable drive train suitable for the commercial market." The OXE outboard weighs 700 pounds and will sell from Cimco at 43,000 to 47,000 Euros. Cimco recommends service every 200 hours and belt checks at 800 hours. The average weight for a 300-hp gas outboard is 551 pounds.

OXE's technology eliminates beveled gears and transfer shafts, the weakness found in other outboards and inboards. The commonly used dog clutch system used mainly on outboard systems has been substituted with more sophisticated electro hydraulically operated solution, located above the waterline. The gear box makes it possible for the operator to change from left hand to right hand rotation on the propeller by simply opening it up and switching the two gears. This more sophisticated electro hydraulically operated gearbox is water-cooled for operation at load. It makes possible a gear ratio communicated through the throttle that operates like a trolling gear; together eliminating over heating while simplifying continued low speed operation.

The use of the Euro 5 diesel combined with the streamlined engine design reduces fuel consumption by up to 42 percent. The result is an outboard unit of similar size and dimensions to conventional two- or four-stroke petrol outboard for the same power output that is also compliant with the emission regulations established by the Environmental Protection Agency (EPA), European Union (EU) and the California Air Resources Board (CARB) and is certified by IMO Tier II, EPA Tier III and RCD, according to Cimco.

The OXE is engineered for both long duration trolling speed and high performance. On the water, environmentally compliant and versatile enough to appeal to the needs of commercial, government, military and yacht sectors alike, the OXE outboard has something for everyone.

C-HERO / HARKEN INDUSTRIAL

The USCG (SubM) option boats are required to perform a MOB drill for the USCG at the time of COI. In response, the C-Hero MOB system can be an incredibly simple and affordable solution to that challenge. Designed for workboats and barges, the Rescue Davit is a portable lightweight man overboard lifting davit that quickly attaches to a bitt on a boat. The straps and brackets on back of the unit allow customization for any bitt. The davit is light enough (38 lbs) for one person to retrieve and carry into position. It attaches to the bitt in less than 30 seconds. One person on deck can hoist a 158.8 kg (350 lbs) person aboard using the included Harken Industrial 20STA Radial winch (can be upgraded to a 35.2 STA Radial 2-speed winch). The boom is long enough to clear tires and fenders; the worm gear controls the boom swing. Use the Rescue Davit with the VR 12 Rescue Pole, sold separately, to complete the system.

The C-Hero system provides a proven three-minute MOB recovery while underway. The C-Hero Rescue Davit, fruit of smith's labors, is a lightweight portable man overboard system, which consists of a small crane and a self-tailing Harken winch, that quickly attaches to any bitt on a boat. The radial winch in this system provides mechanical assistance that allows a rescue to be performed by a single crewmember. The crane's boom is long enough to clear tires and fenders.

Harken Industrial announced a manufacturing and distribution agreement for the complete C-Hero Man Overboard Rescue System. The system will be manufactured to ISO 9001standards by Harken Industrial in Pewaukee, WI, and distributed by California-based C-Hero in the United States. For workboat operators in domestic waters, that's especially important in light of the new subchapter M rules that now specifically require MOB drills to take place. For the nation's 6,000+ subchapter T, H and K passenger vessels, it could mean the difference between life and death for a struggling passenger. Already in use on Foss Maritime workboats, this proven MOB system comes along at arguably just the right time. www.c-hero.com / www.harkenindustrial.com

CONRAD SHIPYARD

The Case:

Founded by industry pioneer Parker Conrad, Conrad Shipyard is committed to its founding principles of Safety, Quality, Craftsmanship, Integrity, and Service. Now in its 71st year of delivering rugged and reliable vessels, new generations of the Conrad family have followed their founder's advice to "only build vessels worthy of bearing the Conrad name."

The Company:

Conrad Shipyard, established in 1948 and headquartered in Morgan City, Louisiana, designs, builds and overhauls tugboats, ferries, lift boats, barges, offshore supply vessels and other steel and aluminum products for both commercial and government markets. The company provides both repair and new construction services at its five shipyards located in southern Louisiana and Texas. Diversity of offerings has been Conrad Shipyard's niche. Built at its Orange, Texas shipyard, Conrad delivered the CLEAN JACKSONVILLE, the first LNG Bunker Barge built in North America, in August of 2018. The CLEAN JACKSONVILLE is currently serving LNG-powered vessels in the Port of Jacksonville. As LNG is becoming a more popular fuel choice for marine vessels due to the environmental, economic and safety benefits, Conrad LNG is actively engaged in the development of marine vessel designs and other LNG-related research and development project. Conrad LNG is poised to a leader in LNG-vessel development and construction and continues to pursue LNG opportunities. With five modern and expansive shipyards; an experienced workforce and computerized manufacturing equipment; multi-disciplined engineers; and a management team laser focused on customer satisfaction, Conrad Shipyard is well positioned to provide cost-effective solutions to complex shipbuilding challenges. Conrad Shipyard is committed to delivering high quality marine assets and services which meet all regulatory and contractual requirements. Recent deliveries include the LNG bunker barge Clean Jacksonville (August 2018), the last of four Kapena Class Tugs for Young Brothers (May 2019) and delivery of a Vane ATB (March 2019). www.conradindustries.com

BURGER BOAT COMPANY

The Case:

Burger is building two sets of aluminum hull modules for the first ever all-electric passenger ferries built in the USA for Maid of the Mist in Niagara Falls, NY. In addition, Burger has built research vessels for the Wisconsin DNR and U.S. Geological Survey and passenger vessels used in Chicago.

The Company:

Burger Boat Company is an established shipyard located on the western shore of Lake Michigan between Milwaukee and Green Bay, WI. Burger offers a comprehensive array of services including new vessel construction, refit, repair and maintenance. With a long tradition of constructing aluminum/steel commercial vessels and custom yachts, Burger's team continually meets the most demanding customer requirements. Burger's full-service facility, with eight large heated construction bays, can accommodate vessels to 200' (60m). Burger Boat Company has recently delivered countless vessels, including Aluminum Catamaran hull modules, an Aluminum Explorer Yacht, an 89' Steel Passenger Vessel, a 78' Steel Research Vessel, and many other ferries, yachts, research vessels, and passenger vessels. http://burgerboatcommercial.com

CARVER PUMP

The Case:

For over 60 years, Carver Pump has proudly served commercial and military marine customers. The firm's pumps provide mission-critical services for Navy destroyers and Alaskan fishing vessels alike.

The Company:

Since the firm built its first pumps in 1938, Carver Pump has become recognized as one of the leading centrifugal pump companies, building to demanding global engineering and military standards. One of the first American pump companies to attain ISO 9001, this is your assurance that their commitment to quality includes not only hardware, but also superior customer service, leading-edge R&D, and continuous improvement in everything they do. With pumps ranging from 750-5,000 GPM and heads up to 3,400 feet, the portfolio covers every shipboard service including freshwater, seawater, fuel, oil, sewage, and other fluids. Carver is one of the only pump companies in the United States to build pumps in accordance with ASTM F998, USCG, and ABS (and countless other) requirements that meet commercial marine standards. www.carverpump.com

Andrew Carver, CEO

COX POWERTRAIN LTD

The Case:

Cox Powertrain's CXO300 is the world's highest powered diesel outboard. It delivers a completely new concept in marine diesel engines that has the potential to revolutionize the commercial and professional markets.

The Company:

Cox Powertrain is a world-leading British design and engineering innovator of marine diesel engines developed for worldwide and multi-market applications. Based on the South Coast of England, Cox Powertrain is backed by a solid shareholder base of private and institutional investors. As a result, the company has been able to implement a long-term development program of ground-breaking new products. Led by ex-Cosworth CEO, Tim Routsis, whose background lies in engine development in global automotive, aerospace and marine markets, the company's mission is to deliver a completely new concept in diesel engines that has the potential to revolutionize the marine market. With a strong pedigree in Formula 1 racing and premium automotive design, Cox's highly skilled team of engineers has decades of experience in combustion engines and understand the many difficulties customers are challenged with.

Cox's first ground-breaking diesel outboard performance engine, the CXO300, is the highest power density diesel outboard engine ever developed. As a high power, single fuel engine, the CXO300 delivers the same performance and efficiency of an inboard but with the convenience and flexibility of an outboard. The global launch took place in November 2018 and the firm has made £100m worth of investment to date. www.coxmarine.com

DAVID CLARK COMPANY INC.

The Case:

David Clark Company has nearly two decades of experience providing Wired, Wireless and Digital crew communication system solutions. System installations are ongoing for U.S. Department of Homeland Security and U.S. Customs and Border Patrol interceptors, as well as the U.S. Coast Guard Cutter Boat-Over the Horizon (OTH). The company's business is expanding internationally in new markets including fisheries and offshore service/transport vessel sectors.

The Company:

David Clark specializes in providing communication solutions for high-noise environments. The firm's noise-attenuating headset systems are used worldwide in a variety of critical communication applications by civil and government personnel in the marine, aerospace, aviation, fire/rescue and industrial markets. Over 300 employees are involved in product design, engineering, manufacturing, customer service and technical support at the company's 250,000 square-foot manufacturing facility in Worcester MA. An ISO9001 quality assurance system is designed to meet the most stringent testing standards to ensure product excellence.

David Clark Marine Intercom Systems are installed on all manner of workboats - patrol boats and military craft, off-shore service vessels, tug and tow boats, fire/rescue craft and more. The company's Marine Intercom Systems provide crews with clear communication over engine and wind noise, enhanced situational awareness and safety, and hearing protection. All David Clark marine headsets and systems are designed to withstand the rigors of the harsh marine environment with marine-grade components that resist salt, spray, shock and vibration. Most recently, David Clark Company provided Series 9100 Digital Marine Communication Systems on board a new fleet of cutter boats-large (CB-L) requisitioned by the United States Coast Guard. The new CB-L vessels will replace the current fleet of 36 cutter boats. The David Clark Digital Communication system will be installed on over 45 CB-L craft as part of a contract that extends over five years. www.davidclark.com

CYGNUS INSTRUMENTS, INC.

The Case:

Cygnus Instruments provides to the marine industry the world's first multiple echo ultrasonic thickness gauge that provides true, accurate, verified thickness measurements of hulls, tanks, piping and any other metal structures aboard the ship. These measurements are obtained without removing valuable protective coatings. These inspections can be done either topside or subsea via underwater thickness gauges.

The Company:

Cygnus offers a variety of hand held digital thickness gauges that range from extra heavy duty to the world's first gauge certified intrinsically safe for use in potential hazardous atmosphere without the fear of causing an explosion. The MK5 family of gauges offers simple to use standard models and models that have multiple echo, echo-to-echo and single echo measuring modes, A-scan presentation data logging and B-scan. There are underwater hand held gauges for divers and ROV models with depth rating of 500, 2,000 and 4,000 meters. There is also an ultrasonic leak detector for detecting leaks in hatch covers. Cygnus introduced this year a new FMD (Flooded Member Detector) for the offshore industry. This is a state of the art ultrasonic gauge. www.cygnusinstruments.com

Bob Kunkel

HARBOR HARVEST: Shortsea, Environmentally Correct Shipping Arrives

The Captain Ben Moore is the third in a series of 65-foot aluminum catamarans built by Derecktor and powered by BAE Systems hybrid technology. The vessel was built for Harbor Harvest, a Norwalk, CT, based company set on changing the way fresh produce and foods are transported around metro areas. The forward-thinking vessel will carry goods from regional family farms across Long Island Sound, relieving traffic congestion and reducing emissions. The vessel has a top speed of 15 knots and boasts 300 square feet of open cargo space, 100 square feet of covered space and 140 square feet of walk-in refrigerated space. Total capacity is an impressive 12,000 pounds of cargo, equaling three to five full truckloads.

Today, the federal government is finally giving the issue more than lip service. With freight levels expected to increase by more than 40% over the coming decades (Marad projections), a series of 2019 Marad grants saw $6.8 million awarded for three shortsea projects. $1.8 million went to Harbor Harvest and its newly launched service linking Long Island with southern Connecticut (circumventing the worsening I-95 and I-495 snarl in the NYC metro area).

Shortsea shipping expert Bob Kunkel and his nascent Harbor Harvest operation envision collaboration with trucking companies to obviate the metro area highway bottleneck delays. Harbor Harvest benefits from a subtle but important change in criteria necessary to obtain designation as a Marine Highway; services hauling palletized or individually packaged cargo are now eligible. This broadened mandate comes as transport paradigms for local distribution are shifting, with greater emphasis on the 'last mile' delivery.

DETYENS SHIPYARDS

The Case:

As one of the major commercial ship repair yards on the US Southeast Coast, Detyens Shipyards is perfectly positioned to service both blue water and brown water fleets. The firm's location in the deep water port of Charleston, South Carolina offers deep draft repair berths, graving and floating dry docks along with all the services you would come to find at any modern ship repair facility.

The Company:

Celebrating over 50 years of service to the maritime community, Detyens Shipyards, Inc., located in the historic city of Charleston, South Carolina is busy building a tradition of quality workmanship at a reasonable price. Family owned and operated since its inception, the company has continually emphasized customer service, family values and safety in the workplace. Hard work, dedication and the goal to provide economical ship repair services is the benchmark behind the Detyens Shipyards Creed, "Customer before Company, Employee before Owner, Family before Self, and Safety Above All." Specifically, Detyens Shipyards facility offers three (3) graving docks and with a capacity of up to Panamax. In addition to the docks, the facility also offers modern, enclosed shops for all crafts; eight 56-ton gantry cranes (on a continuous rail system); four tower cranes; rail access and over 8,000 feet of deepwater pier space and a floating dry dock for smaller vessels. Detyens Shipyards continues to increase its capacity with modern equipment and facility upgrades.

Recently completed repair/conversion work includes no less than 7 USNS hulls and projects as well as work for McAlister, Vane Brothers, Bouchard and myriad dredge assignments.

www.detyens.com

DERECKTOR

The Case:

Derecktor has now built three hybrid drive aluminum catamarans; one for the Norwalk CT Aquarium, another for The City University of New York and one for Harbor Harvest, a fresh produce shipper. This makes the firm a leader in the world of commercial marine hybrids.

The Company:

Derecktor Shipyards was founded in 1947. Starting with a waterfront shop and a handful of skilled craftsmen, Bob Derecktor began building boats and launched the company that continues to thrive today. Among the first to embrace aluminum construction in larger vessels, Derecktor pioneered its use in the U.S., developing innovative techniques along the way. As vessels grew in size, so did the company with a major facility in Dania Beach, FL and the expansion of the New York yard throughout the 1970s. Recently, the Derecktor-built Captain Ben Moore entered the water with a quiet splash, a fitting launch for a vessel conceived and built to run silently on clean, efficient hybrid power. The third in a series of 65-foot aluminum catamarans built by Derecktor and powered by BAE Systems hybrid technology, the vessel further establishes Derecktor as the U.S. leader in commercial hybrid vessel building. www.derecktor.com

Paul Derecktor, CEO/President

DLBA, A DIVISION OF GIBBS & COX

The Case:

DLBA has built a state-of-the-art design team ranging with experience as project managers, naval architects, engineers, 3D modelers, and designers. While DLBA prides itself on staying ahead of the advancements in marine technologies, these developments have required DLBA to collaborate with experts, and to regularly work as a member of a team rather than as a sole entity.

The Company:

DLBA was founded in 1988 as a naval architecture and marine engineering firm specializing in the technical development of high-performance marine craft. Founder Donald L. Blount left a legacy of high-performance designs introduced to the maritime world ahead of their time. The firm offers consulting services for the design, evaluation, testing, and construction management of motor yachts, custom sport fishing and production boats as well as commercial, military and paramilitary vessels.

In addition to their work with cutting-edge new technology, the firm remains focused on supporting mainstream commercial designs such as a recently completed 70' Kayak Support Vessel, which was under construction by Moran Iron Works, the Champion's Auto Ferry 80' double-ender detailed design, and Ribcraft 9m, 11m, and 12.5m RIBs. https://dlba-inc.com/

DOMETIC

The Case:

For over 50 years, Dometic has engineered reliable products for the global marine industry. The firm invented marine air conditioning, and continues to make it more powerful and compact through award-winning innovations that meet the demands of any application. Dometic also offers a complete range of ventilation systems, sanitation systems, and watermaker products.

The Company:

Dometic products make life on the water more productive and the firm boasts a large worldwide sales and service network. Products include air conditioning, ventilation, air purification, water purification, and sanitation. Compact, modular, and shell-and-tube chillers are customized for up to 2.4 million BTUs of climate control. An air-cooled chiller system is perfect for shallow-draft boats. This is why Nichols Brothers Boat Builders put Dometic systems on 3 of their projects, and Kirby Tugs put another two on theirs. The 2018/19 launch of the Dometic VARCX variable capacity chiller with titanium condenser coils is a significant milestone. A durable solution for a range of commercial vessels, the VARCX combines two features; corrosion-resistant titanium and variable capacity technology for energy efficiency. www.dometic.com

DMW MARINE GROUP

The Case:

In the past year DMW has been to Bahrain, Egypt, Korea, Shanghai, and most US shipyards to service and install new cranes. These include the M20 for the US Navy, an M65 on a new all electric boat, M95 for a University research vessel and a special man riding unit in Korea.

The Company:

DMW Marine Group has been supplying marine cranes, of all types, to the military, offshore petroleum producers and service providers, oceanographic survey and research vessels, aquaculture, yachts, police and fire departments, etc. for over 30 years. DMW offers more standard models and sizes available, in all configurations, than any other supplier. Customization is the firm's strength. The Knuckle Boom marine cranes defines the ever trusted workhorse of DMW's product line. The DMW Marine Group knuckle crane series create a diverse line of cranes for application in the Luxury Yacht, Oceanographic, Workboat, Oilfield, Coast Guard or Military industries. These cranes can also be further customized for use in these most demanding of work environments. All of the cranes in the Knuckle Boom line offer several key features that make them powerful solutions for the marine work environment. The most notable of these features include fully foldable cranes for safe and secure storage, when space is limited. Articulated booms provide dexterity for accurate, safe, and efficient material handling. Telescopic booms allow for extended bow free reach, even under heavy loads.

Recently commissioned projects include an M20.90A1 knuckleboom on a small U.S. Navy vessel, and an M65.20A3 knuckleboom on an all electric aluminum vessel at a New England Shipyard. Recent work includes a start up of a new M95.20A3 knuckleboom for the University of Minnesota's research vessel and new orders for two cranes; one for the Alaskan Fish & Wildlife as well as the Alaskan Fish & Game. www.dmwmarinegroup.com

EASTERN SHIPBUILDING GROUP, INC.

The Case:

CAT 5 Hurricane Michael hit the Panhandle of Florida on October 10, 2018. Eastern Shipbuilding resumed operations 24 days later on November 2, 2018. Thank you for all the prayers, support, supplies, donations, meals served, the generous Go Fund Me donations and our resilient workforce and their families. With Deep Admiration and Respect, Joey D'Isernia President.

The Company:

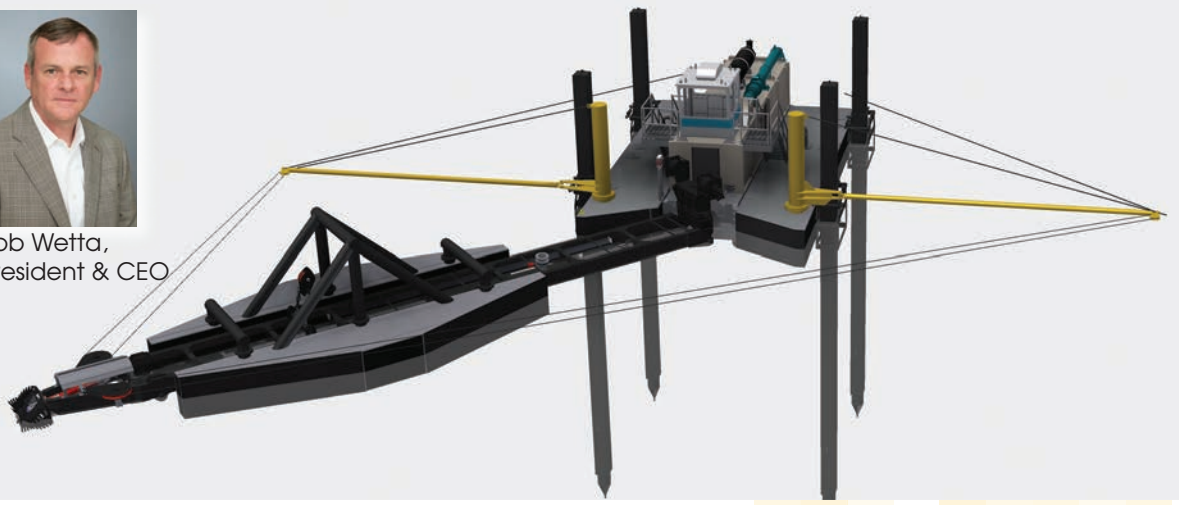
Eastern's proven shipbuilding expertise allows the firm to successfully build and deliver any type of vessel that Client's require; on time and on budget. As Eastern moves into the future, it looks forward to continued diversification and growth of its portfolio of vessels. At Eastern, each employee starts and ends the day with the same goal in mind; work safe, work smart, and prove to the shipbuilding industry, our clients, and ourselves that you can't do any better than an Eastern built vessel. Eastern is currently one of the largest employers in Bay County, Florida, with a workforce number that varies based on the number of vessels under construction. Many key superintendents and foremen running the shipyard have been employed at Eastern over 15 years. Eastern's Owners and Management Team, combining 400+ years of experience, are on site daily, allowing them to be personally involved in every aspect of each vessel's construction.

Eastern Shipbuilding's diverse portfolio of over 350 vessels includes OSVs, MPSV's, offshore construction vessels, diesel electric vessels, dredges, ATB's, offshore tugs, Z-drive harbor tugs, inland towboats, ro-ro/passenger ferries, barges, fireboats, research vessels, fishing vessels, military craft and more. It operates two new construction and repair shipbuilding facilities, both located in Panama City, Florida, spanning 326 acres and a workforce of over 800 employees.

Recent deliveries and work include cutting steel on NYCDOT Staten Island Ferries, the USCG Offshore Patrol Cutter, a contract with FMT for four Inland Pushboats, another with Bisso Offshore for Z-Drive Tugs, and myriad other contracts and deliveries to a wide range of diverse customers. www.easternshipbuilding.com

DSC DREDGE, LLC

Bob Wetta,
President & CEO



The Case:

DSC is a world leader in custom dredge design and manufacture. DSC is a leader in new dredge technology including two new patents received in 2019 for advancements in dredge design and efficiency.

The Company:

DSC Dredge designs and manufactures high quality, durable cutter suction dredges. DSC Dredge helps customers make THE RIGHT CHOICE. Quality, Innovation, Service, Commitment and Customization are key DSC attributes which explain why customers choose to work with DSC. DSC Dredge operates from three manufacturing facilities located in Reserve, LA, Poplarville, MS, and Greenbush, MI. DSC is celebrating 25 years under its current ownership. The firm announced a groundbreaking partnership with DRAGFLOW in May 2019, combining the products and expertise of both firms into a truly global approach. www.dscdredge.com

ECOCHLOR, INC.

The Case:

Ecochlor, Inc. has developed a proprietary ballast water treatment system that has been specifically designed to safely and economically eliminate the worldwide transfer of aquatic invasive species. The impact of the Ecochlor BWMS in ending the wide-spread environmental damage in our oceans is limitless.

The Company:

Ecochlor was founded in 2001 with the sole purpose of commercializing patents for a superior ballast water management system (BWMS). The company installed its first commercial system in 2004 and has since installed 55 BWMSs with orders for an additional 250. The system is well-suited for midsized to large vessels, and Ecochlor installs, services and supports its systems worldwide. The effectiveness of the Ecochlor BWMS is not impaired by variations in salinity, temperature, turbidity, organics, and vibration. The energy required for power is very low and there are no treatment or neutralization requirements with the Ecochor system on discharge. In August 2017, Ecochlor was the 5th BWMS manufacturer to receive USCG Type Approval. As of July 2019, Ecochlor reference list tripled from the year before with more than 300 installations completed or retrofits scheduled between 2019-2024. www.ecochlor.com

ELLIOTT BAY DESIGN GROUP

The Case:

This year, Elliott Bay Design Group (EBDG) expanded to the East Coast by opening an office in New York and teamed with AMD Marine Consulting Designs to be their exclusive North American vessel design representative. EBDG delivers designs that are better to build and better to operate.

The Company:

EBDG is a full-service, employee-owned company with offices in Seattle, New Orleans, Ketchikan and New York. The firm provides naval architecture, marine engineering and production support services to owners, operators and shipyards across the country. EBDG's extensive project portfolio spans a number of vessel types, including barges, tugs, offshore vessels, ferries, passenger vessels, and workboats, and encompasses unique projects from lofting art installations and high-end yacht hulls to one-off service vessel designs and structures. The partnership with AMD Marine Consulting expands EBDG's repertoire of available vessel designs. AMD specializes in multi-hull designs ideal for the high-speed ferry market as well as military, paramilitary vessels, fisheries patrol and rescue vessels. With a

dozen newbuild passenger/vehicle ferries in the works, collectively being built at myriad yards coast-to-coast, EBDG is also actively involved in the conversion of the Jumbo Mark II ferries to hybrid technology for Washington State Ferries. www.ebdg.com

HARVEY GULF INTERNATIONAL MARINE

The Case:

Harvey Gulf's commitment to service, safety and environmental protection is unmatched. In addition to having one the industry's best safety records, Harvey Gulf was the first operator of LNG-powered OSV's and a US-based LNG Vessel bunkering facility. Harvey Gulf has since contracted to install battery power systems on vessels and operate LNG-ATB's for transport and bunkering of LNG. Harvey Gulf has done this while maintaining an exemplary downtime record.

The Company:

Harvey Gulf International Marine, LLC is a global marine transportation company that specializes in providing fast supply, offshore supply and multi-purpose support vessels for deepwater operations in the Gulf of Mexico and abroad. Headquartered in New Orleans, Louisiana with a full service operations shore base facility in Port Fourchon, Louisiana, Harvey Gulf has international presence with offices in Mexico City, Ciudad del Carmen, Trinidad, Colombia and Guyana. Harvey Gulf's modern and technologically advanced fleet of 60 vessels operate upon industry leading safety performance and best in class operational excellence. www.harveygulf.com

Sean Fernstrum, President

R.W. FERNSTRUM & COMPANY

R.W. Fernstrum & Company set the standard in marine heat exchangers over 70 years ago, building a reputation focused on innovation. Today, its commitment is to continual improvement, ensuring customers have quality, reliability, and the latest in cooling technologies. Fernstrum's product offerings have grown through strategic partnerships to meet the growing demands of the marine market. Over the years, Fernstrum has grown into a worldwide organization with dozens of representatives across six continents. Focusing exclusively on marine cooling, this family-owned business has built a respected reputation throughout the industry for exceptional quality and service. In a nutshell, R.W. Fernstrum & Company is the global leader specializing in the engineering, manufacturing, and supplying of keel coolers.

The firm came to fruition in 1945 when Robert W. Fernstrum patented the first rectangular tube keel cooler for the United States Army and Navy. During World War II, the U.S. Navy encountered engine cooling problems with their landing craft and required a new closed circuit cooling system. After intense research, Mr. Fernstrum developed the basic keel cooler design that is still used today. The GRIDCOOLER Keel Cooler has evolved over the years into a line of keel coolers that offers nearly limitless variations to fit a particular application. Each solution is engineered to meet the requirements of the engine, vessel, and operating conditions. Active in all sectors of the workboat and brown water sectors, Fernstrum is also active in wind and tidal energy projects. Notably, R.W. Fernstrum & Company received ISO 9001:2015 certification in May (2018).

On the ***MarineNews*** *MN100* top company list for six consecutive years, no other firm perhaps has as much respect in the world of workboats. They do one thing and they do it well. R.W. Fernstrum is the global leader in engineering and manufacturing of marine heat exchangers. With 70 years and four generations of experience in the marine industry, this firm has continued to play a role in applications that are getting attention across the industry. Fernstrum creates the product line others try to copy, and they continue to innovate today through product evolution and partnerships with other companies.

Recent deliveries for the firm include outfitting a towboat for Waterfront Services; 6 towboats with Master Marine, and contracts that include a tug with VT Halter for Q-LNG; 12 tugboats with C & C Marine; 4 tugs for Foss Maritime with Nichols Brothers Boat Builders with options for 6 more. In fact, with the advent of the USCG subchapter M towboat rules, the firm is busier than ever, servicing an important market sector that finds itself under increasingly tough regulatory scrutiny. Through it all, R.W. Fernstrum is there.

FINCANTIERI BAY SHIPBUILDING

The Case:

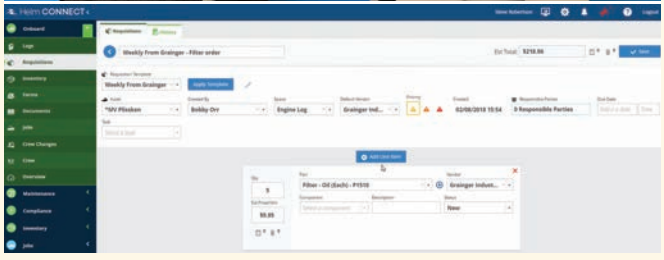
Fincantieri is committed to the same personal relationships they've enjoyed with customers for 50+ years, while also bringing new business to the Great Lakes. The firm has delivered several new construction and conversion projects over the last year and signed three new contracts that are extremely different in nature. Fincantieri is the 'go-to' yard in the Midwest that can build anything; no project is too great or small. The firm's Midwestern employees' hard work also earned ISO 9001 Certification.

The Company:

Fincantieri Bay Shipbuilding traces its history of building quality ships back to 1918, and is an industry leader in the construction of articulated tug-barge units and OPA 90-compliant vessels. A feature that sets the shipyard apart is the diversity of its portfolio. Fincantieri Bay Shipbuilding has multi-disciplined in-house engineers and a wide portfolio of proven, time-tested designs to meet the needs of customers. Equipped with a large 1,154 foot by 140 foot graving dock, a floating drydock with 7,000-ton weight capacity built to U.S. Navy certification requirements, and a 170-ton lifting capacity to meet the most demanding requirement, the yard's workforce averages more than 20 years of construction experience.

Over time, the yard has constructed Articulated Tugs and Barges (ATBs), Container ships, Dredges, Ferries and tour boats, Offshore Support Vessels (OSVs, Polar Icebreakers, Self-unloading Carriers and more. FBS has also completed 14 engine repowerings which are more energy and emission efficient, ranging from 1,000 foot vessels to passenger ferries and tugs. Last December, Fincantieri delivered an Articulated Tug Barge unit to Kirby Corporation; the third the yard had built and delivered to them. The firm also delivered a converted barge to Port City Marine Services. A 495-foot freight barge with new cargo holds, trunk deck and bow, and a new cargo unloading system, the unique conversion project took 21 months to complete. Another notable contract specifies the building of a 639-foot Great Lakes bulk carrier, the first to be built in more than 35 years for the Interlake Steamship Company. https://fincantieribayshipbuilding.com

HELM OPERATIONS



The Case:

Helm CONNECT is the fastest-growing asset management and operations platform, adding more than 1,000 vessels per year since its launch. The system currently has over 4,000 vessels from 170 companies worldwide, including seven of North America's top ten marine operators, as well as the largest OSV operator in the world.

The Company:

Since 1999 Helm Operations has been developing Helm software to help workboat companies better organize their operations and optimize their business intelligence. Helm CONNECT is developed for ease of use by crews and engineers and puts all of your maintenance and compliance-related information at your fingertips, giving you operational visibility and accountability throughout your fleet. Their brand promise is to connect the marine industry like no other technology company, and Helm strives to make its software, service and culture reflect that promise. Helm CONNECT is a powerful, flexible and easy-to-use software platform that assists companies in managing vessel maintenance, regulatory compliance (including Subchapter M), operations, personnel management and more. By effectively digitizing and streamlining workflows and records management, Helm CONNECT enables new standards in efficiency and reliability, saving operators time, money and resources. www.helmoperations.com

HS MARINE PROPULSION

The Case:

Fleet owners, operators and shipyards rely on the unparalleled engineering that HS Marine Propulsion provides along with world-class propellers that optimize their vessels' performance.

The Company:

HS Marine Propulsion was established to provide the very best in propellers and hydrodynamic engineering for America's working fleet. The firm utilizes state-of-the-art Computational Fluid Dynamics (CFD) software in conjunction with decades of experience to deliver class-leading service to a long list of repeat clients. The engineered designs that HS Marine Propulsion develops are manufactured by Hung Shen Propeller and sold exclusively through HS Marine Propulsion and their network of dealers. HS Marine Propulsion manufactures marine propellers up to 160 inches in diameter in Manganese Bronze, Nickel-Aluminum-Bronze and Stainless Steel. The firm develops fixed-pitch propellers for conventional shaftline vessels, propellers for Z-Drive units and blades for CPP systems. HS Marine Propulsion has recently provided engineering services and propellers for Kirby ATBs built by Master Boat Builders, pushboats built by C&C Marine and Repair, a pushboat built by Intracoastal Iron Works and Vane Line Bunkering Push Boats built by Chesapeake Shipbuilding. http://hsmarineprops.com

Sean Berrie, CEO

HUMPHREE USA

The Case:

Humphree is at the forefront of marine stabilization technology with a rapidly growing presence in the US workboat industry. Humphree's interceptors and fins counteract roll and pitch movements, and its computerized pitch, trim, list and active ride control provide a stable ride, improved maneuverability and reduced fuel consumption.

The Company:

Humphree was established in Sweden in 2002 by a team of hydrodynamic engineers and marine engineers active in the field of high-speed marine propulsion and ship hydrodynamics since the early 1990s. Their goal was to use their experience in hydrodynamics, electronics and digital controls into ship stabilization packages that would be easy to use and install. The US operation was established in 2012 to provide improved sales and service for the rapidly growing market for Humphree products in the Americas. Humphree's product line includes interceptors, fins and computerized stabilization controls. Primary market segments are passenger ferries, pilot launches, water taxis, wind-farm support vessels, commercial fishing vessels, fire-fighting boats and military patrol craft. In late 2018, Humphree introduced its new HLS series interceptors for large and planing vessels from 170 to 350 feet. Major deliveries and programs in the US commercial marine market during the past year included the new IPS-drive Virginia Pilots 55-ft Chesapeake class launch and a new water-jet propelled boat for the Southwest Alaska Pilots, both built by Gladding Hearn. https://humphree.com/

FURUNO USA, INC.

The Case:

Furuno is celebrating its 70th Anniversary as a leading manufacturer of Marine Electronics. Furuno designs and manufactures a variety of electronics for small trailer boats all the way up to aircraft carriers. With over 200 products, Furuno has something to fit every navigational need for any size vessel.

The Company:

Since its inception in 1948, when the world's first fish finder was commercialized, FURUNO ELECTRIC CO., LTD. has been responding to the needs of the maritime industry through developing various types of marine electronics. Today, FURUNO is a total marine electronics manufacturer operating on a global scale with a great many loyal customers. The product line consists of Radars, Fish Finders, GPS Chart Plotters, Autopilots, GMDSS, Sonars, ECDIS, AIS, Satellite Communications Equipment, GMDSS, VDR, Loud Hailers and more. These products are offered through a technical network of more than 500 dealers in North America, supported world-wide through the Furuno worldwide service network. Furuno is known worldwide for the durability and reliability of its products, as well as outstanding customer service. All products are built to commercial grade specifications, which allows them to last longer than most consumer electronics. Furuno's business vision is to achieve better safety, security and comfort to bring about a society and sea navigation that considers the needs of people and the environment.

Since successfully commercializing the world's first fish finder in 1948, Furuno has met customer needs by developing and marketing various types of navigation and communications equipment. Today, Furuno offers equipment to ensure safety, peace of mind, and higher efficiency for a wide variety of marketing including merchant vessels, fishing vessels, workboats, recreational boats and government vessels. www.FurunoUSA.com

GLADDING-HEARN SHIPBUILDING, DUCLOS CORPORATION

The Case:

Since 1955, Gladding-Hearn has been synonymous with pilot boats, having built more launches (90) operating in this hemisphere than any other shipyard. In 1978, the yard joined forces with designer C. Raymond Hunt to build the first launch with a deep-V hull, soon to become the industry standard. In 1977, the shipyard delivered America's first Z-drive tractor tug. An Incat Crowther licensee since 1987, Gladding-Hearn became the second shipyard in the country to build high-speed passenger catamarans and has built the majority of fast ferries on the East Coast and Great Lakes (43). In 2014, the shipyard built the first pilot boat application of Volvo Penta's IPS drives in the United States. For more than a decade, Gladding-Hearn has maintained a healthy backlog of orders even during the industry's most austere times. Nearly 90 percent of Gladding-Hearn's business is from repeat customers.

Recent high-profile projects include the delivery of a 113'/320 passenger high-speed catamaran ferry to Rhode Island Fast Ferry. This is the second passenger catamaran built for the operator. 2018 also saw delivery of a 75' pilot boat to the Southwest Alaska Pilots Association, retrofit of Brandywine, one of the first Chesapeake class launches built in 2003, and delivery of the eight Gladding-Hearn launches to the Virginia Pilots Association. The shipyard is part of the Vigor Shipyard's team selected by the US Army in 2018 to build a fleet of 38 high-speed landing craft (MSVL).

The Company:

For almost 65 years, Gladding-Hearn Shipbuilding has built steel and aluminum commercial vessels. Located on seven acres on the deepwater Taunton River in Somerset, Mass., the family-owned and operated shipyard counts more than 424 vessels built as proof of its longevity and vessel reliability. A total of 40 customers own 128 Gladding-Hearn vessels. With in-house naval architecture and engineering capabilities and a cross-trained workforce, Gladding-Hearn is well-known for applying some of the most advanced shipbuilding techniques that rival many bigger yards, while still providing the personal customer service of a smaller yard. www.gladding-hearn.com

HYDROCOMP, INC.

The Case:

Propellers are the dominant source of detrimental ship-generated radiated noise, but the mechanism of propeller-driven noise is not well understood. Hydrocomp's new maritime sustainability initiative is leading the way to mitigate URN and its effects on the maritime community, especially marine mammals. The firm helps naval architects effectively address URN and emerging technologies so naval architects can address client/project sustainability objectives early in the design. The firm is celebrating 35 years in 2019.

The Company:

HydroComp provides a broad range of technical services to companies large and small. The firm's propeller designs can be found in most sectors of the marine community including submersibles, the AUV/UUV communities and other waterborne equipment. From ship operation and duty-profile analysis, including fuel consumption and carbon footprint to underwater radiated noise models, HydroComp is developing the next generation of smart, sustainable ship design. NavCad is still HydroComp's flagship product, with users in all corners of the world. In addition to NavCad, HydroComp's software products include PropExpert, PropCad, and PropElements – programs for propeller sizing & analysis, propeller CAD, resistance and powering, sea-trial & analysis and forensic analysis. www.hydrocompinc.com

INLAND MARINE SERVICE

The Case:

Inland Marine Service is the largest inland vessel management company in the US. IMS is a leader in safety compliance and in the industry as a whole, constantly seeking new and innovative ways to exceed client expectations. IMS continues to focus on service, safety, and relationships with 30 years of consistent growth.

The Company:

Inland Marine Service is one of the largest vessel management providers in the U.S. Their shoreside teams specialize in relieving "pain points." The company's many services include vessel management, planned maintenance, compliance management, harbor services, training, safety, and marine insurance. With highly trained and motivated marine crews, they enjoy a reputation for getting the job done safely, on time and within budget. With 30 years of experience on the river, they are committed to providing customers with secure, reliable, timely and cost effective solutions. IMS also offers first dollar insurance coverage, wherein, IMS assumes all liabilities associated with daily operations of each vessel. As an AWO approved marine management company, IMS is also proud to lead the industry in compliance excellence. IMS's mariner-friendly compliance programs are immediate, approved and certified in the changing regulatory worlds of the Responsible Carrier Program, TMSA, and SIRE. http://inlandmarineservice.com/

KLÜBER LUBRICATION

The Case:

Klüber Lubrication develops efficiency-boosting marine lubricants to help vessel operators achieve organizational objectives in cost reduction, improved safety, improved environmental compliance and increased operational uptime. These lubrication solutions maintain their performance characteristics in the demanding marine environment while significantly extending maintenance intervals and the service life of components.

The Company:

Klüber Lubrication is one of the world's leading manufacturers of specialty lubricants, offering high-end tribological solutions to virtually all industries and markets worldwide. Most products are developed and made to specific customer requirements. During its more than 80 years of existence, Klüber Lubrication has provided high-quality lubricants, thorough consultation and extensive services, which has earned it an excellent reputation in the market. The company holds all common industrial certifications and operates a test bay hardly rivaled in the lubricants industry. Klüber's list of application specific lubricants includes a complete range of biodegradable gear oils, traditional high performance synthetic PAO and PAG gear oils, highly adhesive specialty gear greases, and efficiency generating bearing greases. www.kluber.com

The Best on the Inland Waters

Pushing ahead to the future, each of these four marine operators sets the pace for the entire industry, in their own unique way. Growth, efficiencies, the environment and industry know-how all play a part in those ongoing strategic efforts. Within this article, Tom Ewing takes a look at just four of our 100 best firms on the North American waterfront.

By Tom Ewing

Tug CLEVELAND

Campbell Transportation Company

Kirby Corporation

Houston-headquartered Kirby Corp has been active buying fleets over the past few years. Since the beginning of 2016, Kirby has spent $953 million on vessel acquisitions. Kirby now operates 1,066 inland tank barges; that's out of a total of 3,817 barges on the water, a market share of 28%. In April, its market capitalization was around $4.5 billion. All of that makes Kirby an enviable giant across any sector of the U.S. merchant fleet.

There's a strategy behind these big money moves. By using capital markets and banking access to finance takeovers, Kirby has sharply reduced the age of its inland tank-barge fleet, which in turn lowers maintenance costs to the benefit of margins. Kirby's inland barges' average age was 24-25 years throughout 2000-08, and has fallen ever since, down to just 13 years in 2019. Compare that to national numbers: In 2008, the average age of US tank barges was 23 years, just below Kirby's average age. Today, the average age is 16 years, three more than Kirby's.

Interestingly, Kirby's share of the inland tank-barge market has remained stable. While it is 28% today – a significant two-year gain, from 22% in 2017 – Kirby had 30-32% of market capacity in 2002-08. Financial analysts, though, don't see that as a weakness because market share is not the same as financial returns from richer, but not necessarily bigger, investment decisions. Randy Giveans, an analyst with Jefferies Group LLC, an investment and financial services company, called a 30% market share the "sweet spot" because "if (Kirby) owned 50% of the market, they'd be competing against themselves for a lot of cargoes and a lot of fixtures."

The size and scale of Kirby's fleet provides operational advantages. Giveans, with Jefferies, cited "contracts of affreightment" (COAs) as an example. A smaller company, say with 200 barges, would encounter more difficult logistics trying to move their equipment to where it's needed, when it's needed. A 1,000 barge resource base is likely to be more distributed geographically, making it easier to

Tug OHIO

"We have a strategy in place to balance the commercial requirements and age of our open hopper fleet. We need to meet the requirements of our power generation customers and we continue to look for opportunities to add or replace open hopper barges."

– Peter Stephaich, Chairman and CEO, Campbell Transportation Company (CTC)

CTC MV Jeffrey A Raike (3,000 HP) with an integrated tow near Cincinnati.

meet commitments for capacity and timeliness.

Another advantage: expansion adds tugs. Kirby now has plenty of in-house power. It does not need to charter tugs, an important strength when the market is strong and charter costs go up.

Finally, according to Giveans, Kirby's scale gives at least some pricing power. Kirby's well-timed acquisitions have paid off. Growth can't just depend on buying other companies. But it can surely build as markets recover and the right capital equipment investments are in place, ready to go.

Canal Barge Company

Canal Barge Company, Inc. (CBC) is a family-owned, independent marine transportation company headquartered in New Orleans, founded in 1933. Today, CBC is one of the most diverse marine transportation companies in the US.

Since the late 1980s, Canal Barge has been applying their logistical 'know how' to the deck barge division and in the last 10 years, the company has accelerated the development of additional and unique expertise in project cargo – the transport of singular, oversized units – equipment and machinery that cannot be fitted into containers, for example, or moved in a standard RORO operation.

Mike Little is VP Business Development for Canal Barge. Little said the project cargo market expanded in the past year because of new petrochemical investments, particularly, for CBC, the construction of Shell's new cracker plant, in Monaca, PA, on the Ohio River, about 20 miles north of Pittsburgh. Little said that the Canal Barge team was involved with the cracker project from the start. "We were asked to consult with their project management team during the front-end engineering and design (FEED)," Little said, starting in 2013. CBC has been critical for the construction of the Shell plant, one of the largest such projects in the nation.

"Providing high-quality project cargo services has put our name out there," Little commented. "Construction contractors may have rented barges from us to help manage their services," Little said, "but they may not have known that we offer a full suite of logistical services as well."

Nine people work on CBC's project cargo team. Work starts with a "voyage plan" and a ton of research. Planning covers "every known vertical bridge clearance, lock maintenance schedules, and seasonal considerations," Little explained. Prior to departure, CBC's team gets real world experience and insights from the captain assigned to the trip.

This year, though, because of flooding, distance is a lower priority than just access and the ability to establish a schedule and stick to it. Dealing with high water is the top key-learning for Little and his project team in the past year. "We focus now on high water all the time," Little said, calling it the "most difficult thing we've ever done. Learning how to deal with it and execute each delivery safely and efficiently has been critical." Or in other words, valuable lessons for very valuable cargo.

Campbell Transportation Company

Campbell Transportation Company (CTC), based in Houston, PA, has for over 80 years provided a full range of inland waterways maritime services. CTC owns and manages over 1100 barges, towboats and harbor vessels ranging from 200 to 6000 HP, and it operates 17 SIRE approved vessels.

Peter Stephaich is CTC's Chairman and CEO, at the helm since 1995. Like Kirby, CTC is building on recent investments in software, IT, accounting and, of course, vessels. This past year, the company purchased two newer towboats, in the 3000 hp range, part of an overall fleet upgrade. CTC moves a lot of tank barges owned by third parties; those customers demand newer equipment. More broadly, the fleet upgrades mean less downtime and more productivity.

Stephaich said that CTC, like the industry generally, is working to replace older equipment. Part of that turnover results from new emission control requirements and the need to increase operating efficiencies. Another capital focus is on barges. "We have a strategy in place to balance the commercial requirements and age of our open hopper fleet. We need to meet the requirements of our power generation customers and we continue to look for opportunities to add or replace open hopper barges."

Operationally, CTC works to stay ahead of industry and commercial compliance safety requirements, including TMSA (tanker management and self assessment) with major oil companies. The company has also added a planning and analysis department. Its focus: highest performance at peak efficiencies. "You hear the term 'Big Data' in all industries these days," Stephaich commented, adding, "our view is that planning and analysis adds value by providing the tools to optimize our business units.

Another CTC strength comes from top leadership involvement in maritime and waterways public policy issues. Stephaich is involved locally and nationally in numerous industry activities. He is the current chairman of the Waterways Council, Inc. and past chairman of the American Waterways Operators. He is a commissioner and vice chairman of the Port of Pittsburgh Commission. Other CTC executives are similarly engaged.

Operationally, the last 12 months have been a series of contrasts for CTC. The company has been busy, moving a lot of volume, and doing well, Stephaich said. Along the Mississippi, Stephaich said it has been a "very rough year, operationally" because of high water. He noted that in some places along the Mississippi there was no activity, things had just shut down. In addition to moving a lot of liquids, CTC is hauling a lot of coal, steam coal and metallurgical coal for steel plants. "We're busy," Stephaich commented, "this year was relatively easy compared to what other guys had to put up with."

"The whole concept of efficiency and compliance is becoming an issue," Stephaich noted. A company's internal infrastructure has to be aligned with the real-world demands it confronts. "As we grow, we want to get better, not just bigger," Stephaich said. "We are investing in a platform for growth."

Great Lakes Towing Company

By the time you get to your 120th birthday, you've likely got a few things figured out – particularly about staying nimble and forward-thinking in an increasingly complex world. The Great Lakes Towing Company ("GLT" or the "Towing Company"), a marine transportation services operation based in Cleveland, OH, has surely reached that admirable status, with a deep reservoir of experience and business smarts.

Consider that on July 22, GLT celebrated its 120th anniversary with an event central to its core mission and strengths: christening the "Michigan," the third of ten new tugs being built by its shipyard division, known as Great Lakes Shipyard, also located in Cleveland.

There's a lot more to the Towing Company's focus on the future. For GLT itself, the Michigan's debut continues a fleet renewal program started in 2016. Joe Starck is President of the Towing Company, which provides harbor towing services from Duluth to Buffalo. Starck said the company will replace two older tugs with each new one. Of the 10 new tugs being built, at least five are slated for its own fleet. The others are for sale. All of the tugs are being built to the same specs – length 65 feet, draft 9'6", twin MTU 8V4000 M54R EPA Tier III (1,000 HP each

Joe Starck, President, Great Lakes Towing Company

@ 1600 RPM) main engines.

When it started, this was the first such tug construction program designed to meet the Coast Guard's new Subchapter M inspection regulations. The tug design resulted from a partnership, formed in 2014, with Netherlands-based Damen Shipyards, the first US agreement drawing on Damen's Technical Cooperation program. Starck said the tugs are being built to a U.S. flag variant of a proven design, reengineered to meet the operating demands on the Great Lakes and its waterways.

It's particularly noteworthy, again with reference to future operations, that all the new tugs (except for the first one) will use hybrid power. About a year ago GLT signed an agreement with Logan Clutch Corporation to install Logan's "FlexaGen" and "FlexaDrive" hybrid power generation and propulsion systems in the new tugs. Logan's systems provide low level propulsion when power from the main engines isn't needed. The FlexaGen system works seamlessly as a generator, supporting a vessel's energy needs, whenever the main engine is running, resulting in lowered emissions, decreased fuel consumption and genset maintenance.

Public policy had a hand in this, too. Ohio EPA, through a competitive diesel reduction grant program, helped provide funding for the Tier III engines and hybrid propulsion systems. Energy and environmental metrics are primary concerns throughout the Towing Company's operations. Starck said today's environmental climate and ever-increasing regulatory standards dictate that "we augment and complement corporate environmental goals."

As part of the bigger picture, GLT is also an active participant in Green Marine, a voluntary environmental certification program for the North American marine industry. Green Marine has twelve performance indicators, and participants include ship owners, ports, terminals, Seaway corporations and shipyards. GLT is certified both as a Ship Operator and a Shipyard. Starck said Green Marine's open and transparent process – reporting and independently audited results are publicly available – provides a tangible reference for companies to measure improvement and document community-wide environmental commitments.

This is sustainable development – getting ready for the next few decades. Hopefully, another 120 years, as well.

***Tom Ewing** is a freelance writer specializing in energy and environmental issues.*

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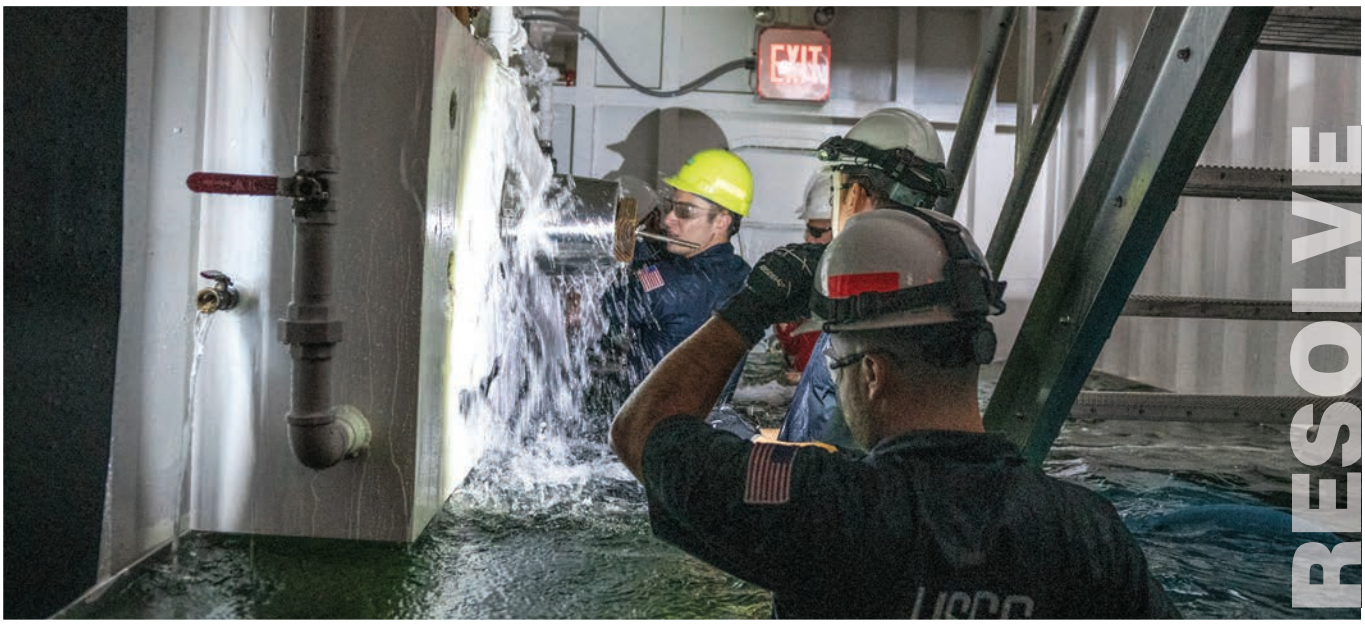
Joseph P. Kennedy, the nation's first Maritime Administrator, said, "You can have a Merchant Marine with first class men even if they sail second class ships, but second class men can't be trusted with the finest ships afloat." Making sure that first class mariners will always be ready to cast off that last line takes training and practice.

By Lisa Overing



Maritime Professional Training (MPT), *Fort Lauderdale, FL*

Training mariners since 1983, Maritime Professional Training (MPT) is a private maritime school whose Fort Lauderdale campuses host 61,000 square feet of classrooms, deck and engineering training labs.

As an ISO 9001:2015 company and a DNV certified training facility with over 200 approved courses for all levels of certification, license and document study programs, MPT's training programs are USCG approved, designed to meet and exceed IMO standards, and are STCW compliant.

In addition to the United States Coast Guard, MPT offers certification and testing for licenses with MCA, Marshall Islands, Bahamas and approved programs for different maritime authorities.

With the main campus on Andrews Street in Fort Lauderdale, training programs also take place at S.M.A.R.T. Center (Simulation for Maritime Assessment, Research and Training), Marine Tech Shipboard Firefighting site, the Sea Survival Training facility, a small-boat deployment training unit, and MPT's fleet of training vessels.

S.M.A.R.T. Center's flagship, M/V Endeavor, features a pilothouse with a 325 degree view, complete engine gauges with display panels and bow and stern thrusters, and three

Marine firefighting training at Resolve Marine Group.

MPT supports Junior Achievement's Marine Industry Pavilion.

fully authentic bridges.

With students from all over the world, MPT's clients include shipping companies, harbor pilots, towing and offshore corporations, military sealift command, cruise lines, commercial marine, oil and gas exploration, passenger vessels and superyachts.

MPT has a yachting division but is not exclusively a yachting school, offering students a variety of career options and training courses designed to meet the requirements of every aspect of the maritime industry, according to Lisa Morley, executive vice president. "We work with each division separately," said Morley. "Some start in commercial marine and go into yachting, or vice versa."

On any given day, as many as 250 students are on MPT's campuses in all fields of study. MPT provides cross-training opportunities in the marine industry for maritime professionals with counseling to choose the right courses for their career.

"Students have the opportunity to network here on campus to learn the whole maritime industry," said Morley. "We have training for megayachts, NASA support vessels, riverboats, the biggest cruise ships, fishing charters, everything. There are so many places to start your career, so many ways to diversify."

For yachting students, MPT provides all levels of training from basic and security to unlimited licenses to work on a boat in all three departments: deck, engine room and interior. The 100T master program runs continually throughout the year with a class every 11 days.

Importantly, and in addition to providing cross-training for career maritime professionals within the maritime industry, MPT reaches out to train retired veterans, retraining them for civilian application of their skills in its military mariner program. MPT is also training future mariners, hosting a career day for teens in a summer camp program run by Marine Industries Association of South Florida (MIASF) and liaises with Junior Achievement (JA) to create awareness of marine industry careers for middle school students in South Florida.

STAR (Simulation, Training, Assessment and Research),

Dania Beach, FL

The primary maritime training provider for American Maritime Officers (AMO), a union of licensed American deck and engine officers, is in Dania Beach, FL at STAR (Simulation, Training, Assessment & Research) Center.

STAR is not a business, but rather a 501(c)3 nonprofit organization. Functioning as a training trust operated by the AMO safety and education plan, STAR provides training and development for the men and women of AMO and the vessels they operate.

Comprehensive maritime training, license upgrading and STCW certification programs include lodging and meals to AMO officers at no cost, and are offered on a space-available basis with a program fee for maritime professionals who are not AMO members.

AMO recently pioneered new job opportunities for

STAR's 360 degree field of view full mission bridge simulator.

American officers in the international fleet aboard liquefied natural gas (LNG) carriers. With developed international equivalencies, AMO officers can now crew vessels registered with more than a dozen flag states.

When STAR opened for business in 1993, the center premiered the world's first 360 degree field of view full mission bridge simulators, according to Capt. Jerry Pannell, director of member training.

The training center hosts a second full mission bridge simulator featuring a 270 degree field of view, a full mission diesel electric simulator, as well as a full mission engine room and Kongsberg's Neptune liquid cargo simulator, dynamic positioning (DP) simulators, radar simulators, Transas ECDIS simulator and GMDSS simulator with Poseidon software.

STAR's Kongsberg full mission engine simulator depicts a choice of four propulsion plants: MC90 slow speed diesel; diesel electric; RT-Flex and M-11 medium speed diesel.

Courses meet USCG, STCW, SIGTTO, Military Sealift Command and IMO Model requirements, and are tailored for specific training goals.

A machine shop provides hands-on engineering training with blades, drill presses, valve stems and a tapered pin project. Maintenance and repair classes on pumps, engine disassembly, refrigeration and hydraulic labs are part of the training program for engineers in addition to safety training for high-voltage and gas turbines.

An in-house wellness center helps students pass their Coast Guard physical. Carved out of an old motel, the center repurposed its space to provide 125 apartments for students and their families on STAR's 10-acre campus. The campus includes two pools: one for families and a second pool for operations training in safety and water survival.

"This is a comfortable environment for officers, that is also conducive to learning," said Pannell.

Similar to MPT, TECH (The Engineering Candidate Hawsepipe) is STAR's new apprenticeship program for engineering candidates. The program mentors Veterans and select high school graduates as future merchant marine engineers during a two year program alternating between classroom training and sea phases.

STAR Center also develops in-house modeling capabilities for port development, ship response models, research and forensic maritime studies.

Resolve Marine Academy,
Fort Lauderdale, FL

Resolve Marine Academy exemplifies their parent salvage company's commitment to protecting life, the environment and property at sea. Specializing in shipboard fire and safety, damage control, USCG requirements for license upgrades and renewals, STCW and MCA-approved safety, navigation, resource management, Resolve provides marine safety training required for their own damage control operations. The school trains as many as 2,000 students annually including mariners and officers from tankers, offshore vessels, cruise lines and yachting.

Courses include controlled firefighter operation aboard ships, organizing and training fire parties, inspecting and servicing fire detection and fire extinguishing systems, and incident investigation and report compilation.

Resolve Marine Group began offering shipboard firefighting in the mid 1990s and is considered among the most advanced trainers in the industry, garnering contracts from municipalities to train first responders like Fire Department of New York (FDNY). Clients, including cruise ship lines and bulk carriers, contract to train their personnel at Resolve, with individual marine professionals working and certifying in various levels within the maritime industry, including yachting, global offshore, and oil and gas.

"The fire trainer vessel T/V Manatee was built in response to OPA 90 regulations and was the crux of why we entered training," said Joe Farrell III, director of business development.

T/V Manatee is an innovative 140-foot shipboard firefighting simulator designed by Resolve's engineering staff specifically for marine firefighting training. Located inside Port Everglades adjacent to BSOFD Station 6, T/V Gray Manatee incorporates live fire training in a realistic scenario, giving mariners the experience of real smoke and heat while performing and practicing real-life shipboard firefighting tactics.

"There is a higher level of training required to fight a fire onboard," said Farrell. "We are an emergency response company that fights fires. On the ocean there is no backup coming. Our Resolve personnel receive advanced firefighting training to fight fires with three cargo holds on fire and to deal with explosions."

The recent Damage Control Olympics during Fleet Week pitted US Navy against USCG personnel, who extinguished fires, conducted search and rescue, and experienced a helicopter simulator burning real gas on top deck.

The training is as real as it gets; Resolve trains its own marine firefighting team. T/V Gray Manatee training center mimics a ship with a bow and stern, onboard hoses to pull and real engine room spaces, allowing students to feel heat on the back of a door compartment.

Not content to sit back and rest on what is already top notch training program, Resolve is launching a new shipboard firefighting and emergency rescue training facility in 2020. Now in the permitting phase, the new, improved T/V Manatee will effectively double the number of students able to train, all using the latest gear and equipment.

Delgado College Maritime, Fire and Industrial Training Center, *New Orleans, LA*

One instinctively realizes Delgado College is a brown water academy for the maritime world simply by crossing the moat over an alligator that guards the school entrance located near the Rigolets in east New Orleans, LA.

Students learn hands-on training in the simulator driving an inland towboat with an identical bridge setup, including all electronics and chart plotting systems. The control panels are interchangeable with an exact replica of wheelhouse, radio, radar, and engine room monitoring with two sets of rudder controls. Three Transas Navi-Trainer Professional 5000 bridge simulators interact with three students at a time, primarily for Florida Marine Transport (FMT).

As an instructor in a fourth room demonstrates the law of superior tonnage on a rogue ship with the right of way, the simulator training is a virtually complete, land-based training experience for every career level on a towboat. A captain can climb the hawsepipe with the confidence and expertise required to operate and navigate safely after simulator training, handling a bigger tow for bigger pay.

FMT brings everyone to simulator training annually; all pilots, captains and mates, excluding deckhands. An ambitious deckhand could move through the ranks to the wheelhouse in less than 10 years.

"Students think about all safety points, how to keep your cool in critical situation," said Rick Schwab, senior director of maritime and industrial training for Delgado's $7 million state-of-the-art center. "You'd rather crash in here than crash out there. The simulator shows how fast things

can escalate in a domino effect."

Zero incidents, zero injuries and eliminating critical barge and equipment failures doesn't just happen by osmosis. It's a result of continual safety training that breeds operational awareness and confidence to anticipate a difficult situation on an inland waterway before it actually occurs.

Training and experience teaches captains to be in position in the right place at the right time with a big, heavy tow, allowing students to train in critical areas on the simulator. For instance, passage is tricky when the water is running hard near Morgan City, LA.

The simulator actually gives the sense of a vessel moving on the water and how it feels, rocking in open water, and even running aground if there's insufficient water beneath the vessel.

Importantly, and for the widely diverse world of inland transportation, Delgado's simulators adapt for both conventional and Z-drive propulsion. Situations can be tailored for unique circumstances, from running a light boat in the IntraCoastal Canal to pushing 30 loaded barges southbound in the Mississippi River with a 6000HP towboat. Inland and offshore wheelhouse simulation is also offered at Delgado.

"We now video the simulation to pull and review as we make our full report," said training instructor Capt. Shelden Detrafford, adding "Ships are easy, but a tow boat is different dealing with current. It's as large as a ship, but not the same propulsion and handling of a ship, especially in bad weather."

The simulator provides students with the opportunity to learn how to flank bridges, letting the current bring a large tow around the bend.

Over time, Delgado has expanded the former Marad facility to address STCW, a full radar suite and advanced inland waterway training. Delgado trains personnel from various shallow draft companies and customizes FMT's training for Subchapter M.

"Everything we do now has an assessment," said Schwab. "It's not about dulling the sword, but about sharpening the sword and building new levels of confidence to strengthen the student's abilities."

Lisa Overing *is an award-winning marine journalist and copywriter. Lisa served on the board of directors of Boating Writers Int'l from 2007-2012. She is published in nine languages for some the world's leading yachting titles. Additionally, she is creative director for Megayacht Media, an advertising agency for marine businesses. Email:* ***lisa.overing@maritimemail.com***

US OFFSHORE RISING

The growth of a new industry (wind) and the impending resurgence of an established one (oil and gas) present opportunities for companies operating in the United States' offshore sector.

By Eric Haun

DAMEN the Ubiquitous

With 36 shipbuilding and repair yards sprawled across several continents and some 6,500 vessels of various types delivered globally, the Netherlands-based Damen Shipyards Group is nothing if not ubiquitous.

Although the shipbuilding conglomerate does not physically build in the United States, it has been selling into the American market for years through cooperative relationships with US shipyards that have the capacity to build its designs, most notably with the National Security Cutter (NSC) and Offshore Patrol Cutter (OPC) hulls for the US Coast Guard.

Damen, which established an office in Houston in 2016 to offer its brand of shipbuilding concepts and repair and conversion knowhow on the American market, is now in the midst of its latest push to meet a specific pocket of growing demand stateside: namely a new fleet of vessels to support the burgeoning US offshore wind market.

Having employed its standardized ship-design concepts in the European offshore wind industry for many years, Damen has built up a portfolio of proven designs for offshore wind farm services, including vessels designed for construction, installation and cable-lay operations, as well as crew transfer and operations and maintenance.

A pair of Damen vessels being marketed to the US offshore wind market are the 27-meter and 34-meter versions of the Fast Crew Supplier (FCS), featuring Damen's Twin Axe bow design, which combines the Axe Bow with a catamaran hull. The FCS 2710 and FCS 3410 offer respective capacity to transport 24 up to 80 technical personnel to offshore wind sites.

Ampelmann's A-type gangway system operating on the Harvey Blue Sea vessel in the Gulf of Mexico.

The 34-meter versions of Damen's Fast Crew Supplier, the FCS 3410, is designed to transport personnel to offshore wind sites.

Another arrow in Damen's US quiver is the Accommodation Support Vessel (ASV) 9020, a walk-to-work vessel designed for transporting and providing accommodation for offshore personnel for up to a month. After the first ASV 9020, Bibby WaveMaster 1, proved itself in the European market, customer Bibby Marine Services ordered a second ASV 9020 within a year of operations.

TIDEWATER,
Now Larger and Better-financed

Tidewater has led the offshore supply vessel (OSV) market from the start – and that's because it helped create it. The company's very first vessel in 1956, Ebb Tide, was the industry's first vessel to be designed and built specifically for supplying materials to offshore platforms.

More than six decades later, the company is the planet's largest owner and operator of OSVs, and today it stands ready to lead the industry yet again – this time out of the prolonged offshore sector downturn.

Tidewater took top spot among OSV owners and operators in terms of fleet size when it wrapped up its acquisition of fellow Houston-based peer GulfMark in November 2018. John Rynd, Tidewater's President, CEO and Director told *MarineNews* in 2018 that the merged company also boasts the "broadest operating footprint and strongest financial profile in the OSV sector".

Pre-merger, Tidewater and GulfMark had each separately leveraged financial restructuring efforts to better position themselves independently to pounce on the offshore market rebound. The former emerged from Chapter 11 in July 2017, and the latter did the same in No-

vember 2017.

Now the larger, better-financed Tidewater, which operates a mixed fleet of US- and foreign-flagged vessels in all key markets globally, is well positioned to operate within the still-challenged OSV market. While it's a long road back to the OSV glory days, operators have begun to see the signs of market improvement, including the rising rig count and upward trending oil price. Tidewater has the financial power it will need to reactivate stacked vessels when the time comes

VesselValue's head of offshore, Robert Day, told this writer in a recent interview that Tidewater is "one to watch" post-Chapter-11 and post-merger. "Once more in a comfortable position financially, Tidewater has an advantage over its competitors in that rates and purchasing moves can be both aggressive and competitive," Day said.

AMPELMANN
Eyes US Potential

The Netherlands-based offshore access solutions provider Ampelmann has its sights set on market opportunities in US waters.

Founded in 2007, the company established its US presence in 2014 with the award of its first project stateside, and in 2016 it set up a permanent Houston office with the aim to capitalize on the offshore oil and gas rebound and the budding offshore wind segment.

Ampelmann's range of motion-compensated gangway systems are designed to make safer the transfer of people and cargo between a vessel and a fixed or floating object. Its solutions provide full motion compensation, meaning there is no movement in the gangway during operation, and are available in various types and performance levels for transfers up to 4.5m wave height and cargoes up to 1,000kg.

Gus DeOliveira, Ampelmann's regional manager for the Americas noted that Ampelmann's solutions not only help to make offshore operations safer, but also more efficient. Using Ampelmann's solutions, transfers can be performed more quickly and in higher sea states, accelerating the transfer process, reducing downtime and ultimately improving time to first oil.

To date, Ampelmann has enabled more than 370,000 personnel transfers in about 30 projects in the Americas, including 50,000 transfers in the US specifically. Looking ahead, Ampelmann's Houston office – which services North and South American markets, including Brazil and the Caribbean – predicts the US will take over as its largest region within the next two years on recovering oil and gas activity and new offshore wind projects.

"The market is steady now, we know who the players are and what the demand is, going forward, and that it is only going to grow," DeOliveira said.

He noted that services such as maintenance and crew transfer are always needed for the oil and gas industry, and that the firm is actively awaiting the results of its bids to major service providers in the US offshore wind market.

OCEANEERING'S
Ocean Evolution

When it comes to offshore technology leaders, one Houston-headquartered engineering, technology and services company provides a clear example of the cutting edge.

Over recent months, Oceaneering International has re-

After its merger with GulfMark, Tidewater is the world's largest owner and operator of OSVs.

vealed a number of impactful technology developments, including Ocean Evolution, its new vessel ready to service customers' subsea construction and intervention needs in the ultra-deep waters of the Gulf of Mexico.

The 108-meter Ocean Evolution, built by BAE Systems and christened in May this year ahead of its first offshore job in June, is designed to augment Oceaneering's extensive portfolio of subsea products and services. The vessel is essentially a versatile offshore multi-tool that can be equipped to support a wide range of operations, from subsea maintenance, repair, decommissioning and tieback installations to deepwater well stimulation and light well intervention services.

Oceaneering is calling the newbuild the industry's most ecologically friendly and capable Jones-Act-compliant subsea construction vessel. Its capabilities are headlined by its 250-metric-ton active heave compensated (AHC) crane, two Oceaneering work-class remotely operated underwater vehicles (ROVs) with AHC launch systems, survey systems and subsea tooling all built for work down to 4,000-meter water depths. The vessel has accommodations for 110 persons, a helideck and a working moonpool.

Designed to accommodate the vessel's wide mission capability profile, Ocean Evolution's 1,170-square-meter deck is rated to support 10 metric tons per square meter, with a total cargo carrying capacity of 1,900 metric tons.

Ocean Evolution is built with five low-emission EPA Tier 4 diesel engines with a combined generating capacity of 16 megawatts on a three-bus system. The DP2 vessel achieved the highest possible ERN station keeping reliability rating, using two tunnel thrusters and a drop down thruster in the bow along with two Azipull thrusters in the stern.

Oceaneering's new multi-service vessel Ocean Evolution is designed to perform a range of subsea construction and intervention tasks in ultra-deep waters.

ADMIRAL KARL SCHULTZ: Commandant, United States Coast Guard

The career biography of Admiral Schultz is predictably impressive for an officer that has ascended to the top of the United States Coast Guard. Admiral Schultz hit the ground running and has been on a mission since day one to not only stress the importance of the maritime industry as a whole, but to inextricably link the U.S. maritime industry – inland, Great Lakes and coastal – to the current and future success of the U.S. economy. He is a tireless advocate to ensure that Coast Guard budgets as well as maritime infrastructure needs are kept firmly entrenched in the 'vital infrastructure' discussion.

"I think it's important to have the conversation that links $5.4 trillion in annual commerce to the marine industry," Admiral Schultz shared with ***MarineNews*** during an exclusive interview on his jet returning from an event in New Orleans. "And I think it's important to have the conversation in government that when you talk about investment in infrastructure, maritime infrastructure and the Coast Guard need to be a part of that conversation and a part of the equation."

At the same time, the U.S. Coast Guard is building or preparing to build boats and ships at a historic clip. "The Coast Guard is building ships. We're planning to build 25 Offshore Patrol Cutters, we're still building Fast Response Cutters, we're building National Security Cutters, we're positioned to start building Waterways Commerce Cutters and now we're building Polar Security Cutters," said Admiral Schultz. "We've never been building five classes of cutters (simultaneously) in my 36 years here; it's a banner time and we have to keep the capital funding stable and predictable."

The Commandant is clearly passionate about all matters maritime, and he realizes too that tomorrow's Coast Guard must be in-step with the world at-large in terms of technology, as an efficiency measure but also to hold serve in the fast-evolving realm of cyber security.

"We can't be 10 years behind general society in terms of technology," Admiral Schultz told ***MarineNews***. "We're building out our cyber capability at the Coast Guard. I have about 300 positions today on cyber at the Coast Guard, and the 2020 budget has about another 60 bodies as we have to defend Coast Guard networks from attack and we have to bring a cyber regulatory face to the waterfront. We need to build our own technical experts in this area." To that end, a new cyber major program at the Coast Guard Academy will deliver its first graduates in 2022.

While cyber security is an obvious point of focus, Admiral Schultz said that the evolution of technology in the maritime sector – from autonomous ships to emerging commodities (LNG & LPG, for example) require expertise to regulate. "We have to generate and re-generate expertise, we have to make people feel valued and want to stay as part of the brand," said Admiral Schultz. "Technically smart people are central."

JMS NAVAL ARCHITECTS

The Case:

Since 1988, JMC Naval Architects has provided engineering services for barges, dry docks, and workboat design – including vessel design package development; from concept to detail design, structure and systems design, and owner's rep services. JMS is also widely considered the foremost designer of fast, coastal research vessels in the U.S.

The Company:

JMS Naval Architects is a specialty maritime engineering firm providing naval architecture, marine engineering, marine surveying, and marine casualty response services to assist ship owners in the management of their fleets. With a unique combination of high-end analytical engineering expertise and practical deck plate experience, JMS delivers innovative and cost-effective solutions to complex problems. Recent highlights include a complete engineering and design package for Weeks Marine and McNally Construction of Hamilton, Ontario to modify an existing deck barge and allow it to be used as a submersible platform for constructing concrete caissons. Also recently, JMS designed a 93-foot research vessel VIRGINIA for the Virginia Institute of Marine Science. The state-of-the-art research vessel offers enormous capability in a small package that is also economical to build and operate. www.JMSnet.com

MARINE GROUP BOAT WORKS, LLC

The Case:

MGBW is continuously recognized worldwide for its high-quality work and unique vision to become a zero-emissions boatyard—something it is not far from achieving. From having a solar-powered boatbuilding facility to operating a fleet of electric vehicles and equipment, MGBW is truly a leader in the maritime industry.

The Company:

MGBW is an award-winning, eco-friendly full-service boat repair and new construction company occupying over 25 acres of land and water across two facilities on the San Diego Bay and a third facility in Cabo. Featuring one of the largest travelifts in the U.S., MGBW specializes in refits, repairs and new construction of vessels up to 220 feet long. MGBW specializes in the construction of steel and aluminum workboats, tugboats, barges, training vessels and patrol boats. Within its repair division, it has a team of 170+ tradespeople cross-trained in welding, pipefitting, shipfitting, machining, mechanical and electrical work, propeller work, painting and fiberglass repair. On a routine basis, it hauls vessels up 665-tons to perform coast guard inspections, class surveys, preservation, refurbishments, refits, engine repowers, structural reinforcements and hull extensions. www.marinegroupbw.com

Todd Roberts, President

The Case:

Glosten has provided engineering services to the marine industry for over 60 years, integrating advanced analysis with practical, experience-based design. From the design of an ice-capable ASD harbor tug to the first all-electric vehicle ferry conversion in the US, Glosten's diverse capabilities span every sector of the industry.

The Company:

Glosten is an employee-owned, full-service consulting firm of naval architects, marine engineers, electrical engineers, ocean engineers, and production engineers. With offices in Seattle, Washington and New Bedford, Massachusetts, the firm's extensive design experience includes research vessels, passenger/car ferries, tugs, barges, dredges, and special purpose platforms. Consulting and design services include hull, structural, mechanical, and electrical systems design, as well as construction management. Since their founding in 1958, Glosten has supported projects reaching every sector of the industry. The team contains professionally licensed engineers and includes personnel with seagoing experience and US Coast Guard licenses. Glosten is the parent company to Noise Control Engineering, an acoustical and structural engineering consultancy specializing in noise and vibration measurement and control for marine applications.

Washington's Skagit County selected Glosten to design a vehicle/passenger ferry to replace the M/V Guemes. The County had a vision of replacing the aging Guemes with an all-electric vessel. Glosten quantitatively evaluated propulsion system options, including conventional, hybrid diesel-electric, and battery electric systems. Glosten conducted a Vessel Capacity Study to analyze past ridership, and to provide a recommended vehicle and passenger capacity for the replacement vessel. Staff also performed a Transportation System Assessment to address the overall transportation system, including the terminals and uplands infrastructure. Following the county's selection of a battery electric propulsion system, Glosten helped prepare several funding requests and grant applications, resulting in the award of millions in state funds. Glosten's design team continues to progress the design through preliminary and contract details. This project is expected to pave the way for the electrification of ferries throughout Washington State. www.glosten.com

The Case:

Kongsberg Maritime is a single supplier of diverse, integrated solutions with the power to optimize marine operations and reduce environmental impact. Its technology and services drive positive transformations and enable safe, efficient and sustainable management of more than 30,000 vessels in the seaborne transportation, energy, fishing, superyacht and naval sectors.

The Company:

Kongsberg Maritime's development of sophisticated sensors, automation and control technology has improved safety at sea and operational efficiency for over 50 years. Always at the forefront of innovation, Kongsberg Maritime has taken the lead in the development of Maritime Autonomous Surface Ships (MASS) and is a major enabler of maritime digital transformation, with an extensive portfolio of information management and data-centric advisory systems. Kongsberg Maritime's established Full Picture product and service portfolio diversified further in 2019, through the acquisition of Rolls Royce Commercial Marine. The subsequent integration enables Kongsberg Maritime to offer integrated or standalone solutions for applications on any ship, with almost 9,000 expert staff as well as 24/7 Global Customer Support ensuring uptime and availability anywhere in the world. Kongsberg Maritime is owned by KONGSBERG (OSE-ticker: KOG), an international, knowledge-based group delivering high technology systems and solutions to clients within the oil and gas industry, merchant marine, subsea, defense, aerospace and space.

2018 was a successful year for key segments, including LNG powered vessels, with milestone growth performance from Kongsberg Maritime's existing market position. Kongsberg Maritime technology is also at the forefront of emerging maritime markets. With the Yara Birkeland all-electric, autonomous containership, Kongsberg Maritime is bringing autonomous shipping one-step closer. Kongsberg Maritime has also been chosen to deliver a state-of-the-art hybrid power solution for nine new 'green' ferries from Grimaldi. Additionally, digital solutions such as Kognifai and Mapping Cloud are introducing vital new functionality for optimizing safety and efficiency on all vessel types. www.kongsberg.com/maritime

The Case:

The Massachusetts Maritime Academy is the oldest, largest continuously operating maritime college in the United States, placing Marine Transportation and Engineering officers throughout the maritime sector. As a leader for the industries it serves, the Massachusetts Maritime Academy reputation is second to none in terms of the overall quality of its people and programs.

The Company:

Massachusetts Maritime Academy is a fully accredited, four year, co-educational state university offering Bachelor and Master of Science degrees. The campus is equipped with state-of-the-art technology along with its rigorous academics and hands-on approach to building leadership and professional skills fully prepare its students for successful careers. The Academy experience is unique. Though structured as a regimented academy designed to grow effective leaders, only cadets who volunteer for commissioning programs have military obligations during and after their time at Massachusetts Maritime Academy. Through Sea Terms and Cooperative Education Programs, undergraduates log career experience during their four-years, often traveling to foreign countries. Upon graduation, cadets are distinctly qualified to lead as licensed maritime professionals, skilled managers, ship safety officers, commissioned military officers, and more. http://maritime.edu

MOPS MARINE LICENSE INSURANCE

The Case:

MOPS Marine License Insurance has been protecting the USCG licenses, livelihoods and professional reputations of American inland mariners since 1935.

The Company:

MOPS provides its policyholders with defense of their USCG-issued licenses following a covered marine casualty. For one low annual premium payment, MOPS policyholders are assigned an experienced maritime attorney who represents them and them alone from the first report of casualty through any and all administrative proceedings and, if necessary, appeals. Providing Unlimited License Defense and Optional Income Protection, Civil Legal Defense and Professional Liability Coverage, MOPS has been in the corner of professional mariners for more than 83 years. www.mopsmarinelicenseinsurance.com

KONRAD MARINE

The Case:

Konrad Marine is the only stern drive manufacturer capable of handling high horse power and high torque output. Konrad provides optimal solutions for vessels seeking reliability, endurance and performance. With its newest 600B product line, Konrad has created a package that cannot be met in the diesel stern drive application market.

The Company:

The company is a privately held entity, founded by husband and wife team Ken and Kathy Konrad in 1991. They have self-funded all research and development, engineering, manufacturing, testing, and product releases. As demand for additional marine propulsion power continued to grow and diesel engines climbed to exceed 700 lb.-ft (949 Nm) of torque, it became evident that an entirely new design was needed to stay ahead of the diesel (military and commercial) niche Konrad uniquely serves. Horsepower would continue to rise; longevity and efficiency would continue to be demanded, while ease of maintenance and cost of ownership would be scrutinized by potential users. After funding the Omega and 500 Series, Ken and Kathy Konrad anticipated the need for next generation drives named it the 600 Series. Integrating larger gears, shafts and housings the 600 series drives have set the new standard for high performance propulsion technology.

Primary Product / Service

The Konrad 680B has been engineered with the largest and strongest gears in the industry. The 680B is capable of carrying capacities up to 8.4 metric tons (over 18,500 lbs.) per drive. This drive operates with extreme efficiency in the area of 40 knots (46 mph) and is intended for military, commercial, medium duty and recreational performance. The Konrad 680B offers oversized bearings, thicker walled casings, dual counter rotating propellers, continuous oil circulation for cool operation, no corrosive exhaust through drives, and precision machined super alloy gears. Minimal maintenance is required. www.konradmarine.com

KVH INDUSTRIES

The Case:

KVH is a mobile tech innovator with award-winning marine satellite antenna products and industry-leading maritime connectivity services serving thousands of vessels worldwide. Operator of the maritime industry's most advanced managed HTS network, KVH is consistently listed by industry analysts as the global maritime VSAT market share leader.

The Company:

KVH Industries, Inc. is a global leader in mobile connectivity and inertial navigation systems, innovating to enable a mobile world. A market leader in maritime VSAT, KVH designs, manufactures, and provides connectivity and content services globally. KVH is also a premier manufacturer of high-performance sensors and integrated inertial systems for defense and commercial applications. Founded in 1982, the company is based in Middletown, RI, with research, development, and manufacturing operations in Middletown, RI, and Tinley Park, IL, and more than a dozen offices around the globe. With more than 600 employees worldwide, KVH's connectivity solutions for commercial maritime include the award-winning TracPhone and TracVision product lines, the global mini-VSAT Broadband network, and AgilePlans Connectivity as a Service (CaaS). The company recently introduced KVH Watch, a maritime Internet of Things (IoT) connectivity service for maritime equipment manufacturers and application providers.

Addressing the critical need for cybersecurity among commercial vessels today, KVH's 6-level cybersecurity program for its mini-VSAT Broadband HTS customers includes advanced network-level firewall with automated threat management to provide additional security. Together with 24/7/365 support in more than 3,500 ports worldwide, flexible airtime plans, and the industry's finest operational and entertainment content, KVH's TracPhone HTS-series and mini-VSAT Broadband HTS connectivity make up a seamless maritime communications solution unparalleled in the industry. www.kvh.com

NETSCO

The Case:

Environmental regulatory compliance in the maritime industry is becoming increasingly more difficult as the implementation of the new emission standards and ballast water treatment enforcement becomes imminent. Shipowners, overwhelmed with the mountain of regulations, use NETSCo's highly skilled team of engineers to address these complex environmental issues.

The Company:

Northeast Technical Services Co., Inc. (NETSCo) was formed in 1984 to provide engineering, design and consulting services to the maritime industry. Today, NETSCo is one of the most respected engineering firms in the United States, providing a wide range of naval architecture and marine engineering services in support of vessel design, construction, conversion, modification, operation support and FEA analysis. This includes detailed structural and mechanical system design, cargo securing and loading/unloading analysis as well as regulatory evaluation in support of class and flag/port state requirements. NETSCo goes beyond typical ship projects by providing naval architecture and marine engineering to marine terminals and facilities. Technical support and project management is provided by NETSCo through the design, construction and all the life cycle phases of both new and refurbished vessels. The team identifies and solves technical problems that support the design of a system, component or process appropriate to marine engineering operations. NETSCo conducts safety audits or provide hull mechanical and electrical inspections along with structural assessments for aging vessels or life extensions analysis. In addition, NETSCo can conduct surveys or marine forensic engineering services for pre-acquisition or accident investigations. NETSCo has written many application and installations guides, operation and technical specifications, and manuals for vessel operators. Currently, the NETSCo team is working on more than 30 BWMS engineering projects in varying stages of completion. NETSCo has strong working relationships with Alfa Laval, Ecochlor, Optimarin, DeNora and Hyde Marine as well as managing BWM installation projects with other treatment manufacturers. Also, NETSCo has been working on a transit and embarkation study of the American Waterways for a major cruise line operator. This study has comprised of water depth, air drafts and locks and dams transit analysis to assist with the design of the cruise ship and embarkment strategies for ports within the cruise route. www.netsco.us

PANOLIN AMERICA

The Case:

PANOLIN, a world leader in high performing environmentally acceptable lubricants, is becoming the global standard for marine systems that require consistent, reliable performance while being environmentally friendly in the event of a spill.

The Company:

PANOLIN America is the USA based subsidiary of The PANOLIN Group. The PANOLIN Group is an independent family owned company with headquarters and production facility in Switzerland. The company was established in 1949 by Bernhard Lämmle and is fully owned by the Lämmle family to this date. PANOLIN is a full range lubricants supplier with its core competence in high performing environmentally considerate lubricants (ECLs) since 1983 – 35 years of experience. In 2018 PANOLIN has exported the high performance ECLs to 54 countries. In industries such as construction, marine, dredging, oil and gas exploration and others, PANOLIN is a statement for advanced technology, environmental responsibility and security – due to the 35 years of experience with environmentally considerate high performance lubricants and 70 years of success in the lubricants industry. PANOLIN America has significant inventory around the USA including major hubs in Atlanta, Seattle and New Orleans. www.panolinamerica.com

TEXAS A&M MARITIME ACADEMY:

Dynamically Positioned for the Future

Late last year, the Offshore Service Vessel Dynamic Positioning Authority (OSVDPA) announced that the Texas A&M Maritime Academy at Texas A&M University at Galveston was now the first maritime academy in the nation accredited to provide OSVDPA courses to its cadets. For U.S. maritime academies – typically and traditionally focused on sending out graduates ready for blue water, deep water service – this represents a sea change in training. On the other hand, what better place to start than the U.S. academy closest in proximity to the heart of the domestic offshore energy industry, and indeed, the heaviest concentration of DP equipped support vessels?

In announcing the accreditation, OSVDPA Executive Director, Aaron Smith said, "Going into the accreditation process we obviously knew of A&M's reputation as a great maritime training institution, but they surpassed even those lofty expectations. We were extremely impressed with A&M's instructors, curriculum and equipment. Giving cadets access to top-notch training early in their career will pay great dividends toward the safety of our industry."

The Texas A&M Maritime Academy is one of seven maritime academies in the United States – six state-run and one federally operated. All of these schools in the past have focused much of their training resources on producing unlimited tonnage, blue water mariners. That's changing, to a large extent a function of the fact that the U.S. domestic blue water fleet has dwindled to record low numbers. On the other hand, more that 98 percent of the nation's merchant hulls can be classified as brown water. An increasing number of those also employ dynamic positioning as an important part of their equipment mix.

For cadets to receive an OSVDPA DPO (DP Operator) Certificate they must successfully complete two classroom courses, the first of which covers the theoretical knowledge behind DP operations and the second offers hands on DP experience via the utilization of DP simulators. As the first U.S. Maritime Academy credentialed to teach accredited DP courses, the DP certification is an important step, especially when considering the U.S. training academies – who are all slowly integrating a workboat curriculum into their offerings – have primarily catered to the blue water side of the equation for so long.

Admiral Michael Rodriguez, Superintendent of Texas A&M Maritime Academy, explained the move. "The geographical location of Texas A&M Maritime Academy in Galveston, Texas, makes it the go to academy for well-trained third mates to work in the brown water, oil patch, and coastal towing industries. Students who are considering a career in the oil industry, especially OSVs and drilling rigs, will look at the DP training offered here and understand the importance relative to getting a job in the industry and being successful.

RSC BIO SOLUTIONS


Mike Guggenheimer

RSC Bio Solutions

KEEP MOVING. FORWARD.

The Case:

RSC BIO Solutions is a market leader in performance environmental acceptable lubricants. The firm offers multiple products serving a wide range of industrial and marine applications. With regulations and environmental sensitivity increasing globally, RSC BIO's offerings mitigate these increasing risks without trading performance. In many cases, RSC BIO's technology exceeds the performance of traditional mineral oil options.

The Company:

Headquartered in Charlotte, North Carolina, RSC Bio Solutions was founded in 2010 by the owners of Radiator Specialty Company (RSC), a 90-year-old company that houses, among others, the LIQUID WRENCH and GUNK brands. In 2013, RSC acquired a majority ownership interest in Terresolve Technologies, Ltd., a leading manufacturer of readily biodegradable hydraulic fluids, gear oils and greases for both marine and land applications. Terresolve brought with it a stellar, 17-year track record and an extensive lubricants portfolio of products. Besides Enviro-Logic branded technology, RSC Bio Solutions is also the exclusive North American licensee of SAFECARE, an innovative line of cleaners and solvents for industrial markets. In 2016, the firm launched FUTERRA, a new revolutionary product line of bio-based lubricants. http://rscbio.com

LOUISIANA CAT

The Case:

Louisiana Cat is one of Caterpillar's largest and most experienced marine dealers, and every Cat Marine Engine comes with over 80 years of experience. Cat Marine Engines are durable and dependable, which is why customers worldwide choose Cat engines for marine power over any other brand. Whether it's an offshore service vessel, a passenger vessel, or an inland pushboat, Louisiana Cat has the right Cat engine for your hardworking fleet.

The Company:

Louisiana Cat has been proud to represent Caterpillar for 4 continuous generations in the state of Louisiana, offering superior value and an exceptional customer experience. In 1991, Louisiana Machinery Co. became the statewide dealer for Cat equipment in Louisiana, purchasing five additional locations, moving the corporate headquarters to Reserve, Louisiana. This allowed the company to grow the engine and generator business in the marine and petroleum markets. Nearly half of the firm's business comes from Power Systems Sales, Parts and Service. Today, the company has locations across Louisiana and the gulf coast and continues to focus on the needs of customers in the diverse heavy equipment markets throughout Louisiana as well as the global engine markets worldwide.

Primary Product / Service

The Power Systems headquarters, located within the Port of Iberia in New Iberia, Louisiana, is a ISO 9001 DNV GL certified design, fabrication and customized packaging operation which designs and builds to the most demanding offshore requirements for diesel and natural gas prime power, standby and gas compression applications. Louisiana Cat consistently ranks as the top Caterpillar marine engine dealer in the Americas, offering dockside service in Morgan City and field service support to marine customers globally. www.LouisianaCat.com

RIBCRAFT USA, LLC

The Case:

Built to order in the United States, RIBCRAFT is the only manufacturer who specializes exclusively in building professional grade rigid inflatable boats (RIBs). Serving all commercial markets from military agencies, safety professionals, state and local governments, and private industry, RIBCRAFT has developed one of the most reliable and recognized brands in the RIB market.

The Company:

RIBCRAFT designs and builds safe, durable, performance oriented professional grade rigid inflatable boats (RIBs) ranging in size from 15-41' that fulfill a variety of missions from patrol and rescue to passenger-for-hire and military operations. Every boat is built to industry recognized standards featuring RIBCRAFT's trademark deep V commercial grade fiberglass hull, full length lifting strakes, pronounced bow sheer, and a heavy duty multi-chambered tube. RIBCRAFT takes pride in working with each customer to build a professional grade RIB that is perfectly suited for the task at hand, resulting in a boat that provides unparalleled performance regardless of the sea conditions. RIBCRAFT specializes in building mission specific patrol and rescue boats, support and workboat vessels, dive boats, and USCG Certified passenger for hire vessels. RIBCRAFT designs and builds RIBs to meet the emergent requirements of military and government agencies with current contracts with the United States Navy, United States Department of Fish & Wildlife Service, and United States Air Force. The Sub Chapter T Certified tour boat market has also kept production busy with numerous recent deliveries and more under contract. Beyond military agencies and tour boat operations, RIBCRAFT remains dedicated to building rescue and patrol boats for First Responders.

RIBCRAFT continues to fulfill its ongoing contract with the United States Navy to provide 7-meter RIBs that will serve as deployable ready service lifeboats for search and rescue missions onboard US Naval ships around the world. RIBCRAFT recently delivered a specialized RIBCRAFT 7.8 patrol boat to the U.S. Department of Fish & Wildlife Service with a Hypalon hybrid foam collar and featuring twin Mercury diesel outboards. http://ribcraftusa.com/

The Case:

NABRICO has been a recognized innovator in the marine supply industry. With the introduction of the FASST Winder, Hi-Cap capstan and stainless steel chocks for synthetic ropes, that tradition continues. More than 110 years of experience, engineering and nautical expertise go into every piece of equipment, giving NABRICO the capability to meet practically any customer need.

The Case:

NABRICO developed its first piece of floating equipment for the USACE in 1915. NABRICO's products include a new patented FASST Winder, which is the fastest tightening hand winch in the industry and results in lower compressive forces and less stress on the body when tightening winches. The company also offers barge-moving, hand, electric and hydraulic winches, and a robust selection of hydraulic and electric capstans with up to 80,000 pounds of bollard pull. Other products include a line of mild steel, aluminum and stainless hatches; castings; watertight quick-acting and manual dog doors; and tank barge fittings. http://nabrico-marine.com

NABRICO MARINE

NABRICO

SCHOELLHORN-ALBRECHT

The Case:

With over 130 years of experience, Schoellhorn-Albrecht is a market leader in engineering, designing and manufacturing of marine deck equipment, dock equipment and vessel access systems. In addition to a standard product line, the firm also specializes in designing and manufacturing castings, fabrications, and specialized machinery to meet any customer's needs.

The Company:

Schoellhorn-Albrecht has enjoyed a long history in supporting the inland river industry. In 1887 the Schoellhorn-Albrecht building was located on the historic west bank of the Mississippi River. This firm began by providing steamboat engines and deck equipment for river boats built in Alaska and used on the Yukon River during the gold rush days of the late 1800's. Today, Schoellhorn-Albrecht is located in Saint Louis County, Missouri supporting the entire marine industry worldwide. Their goal is to provide clients with the best technical solution with the highest quality product at the most competitive price. Schoellhorn-Albrecht is an ISO 9001:2008 certified company. By designing superior quality into all phases of production, the company ensures that products produced meet exacting specifications and adhere to American Bureau of Shipping (ABS), MIL, ISO, NAVSEA, ASTM, JIS, OCIMF, Naval Vessel Regulations or other standards and certification requirements. www.schoellhorn-albrecht.com

SHOXS

The Case:

SHOXS has equipped some of the hardest-working men and women on earth in jobs where life and health are at stake and brought them home safely time and time again. They've also introduced some of the world's most technologically advanced impact-mitigation solutions, and the firm is constantly testing ways to further measure and mitigate impact shock.

The Company:

SHOXS provides highly engineered, premium quality shock-mitigation seating systems designed for extreme use on the water. Their military heritage and high performance standards result in exceptional products and unwavering customer support. Products have always been designed for the men and women of the military, coast guard, and marine patrols — people who travel at fast speeds on rough water in the line of duty. SHOXS Seats has protected crews and extended careers all over the world and designed to last and to protect those that protect us. Today, SHOXS seats are used in all branches of the US military and foreign military marine units. You'll see SHOXS in hundreds of law enforcement and commercial vessels around the world. The UK Ministry of Defense just received SHOXS shock-mitigating seating for 60 Pacific 24 RIBS. https://shoxs.com/

SMITH SYSTEMS, INC.

The Case:

As a primary supplier of speed and temperature sensors for marine, rail, and mining applications, Smith Systems, Inc. prides itself on being an American made product, exceeding the reliability of its competitors, and with competitive pricing. Smith Systems, Inc. designs and manufactures speed, motion, and temperature sensing products for harsh environments in every industry that utilizes engines, motors, or has moving automated parts. The firm's sensors utilize the newest technology, paired with manufacturing techniques allowing the parts to live in the environment for which they are designed for years. These products include speed sensors, temperature sensors, motion sensors, transducers, tachometer sensors, engine temperature sensors. www.smith-systems-inc.com

SENNEBOGEN LLC

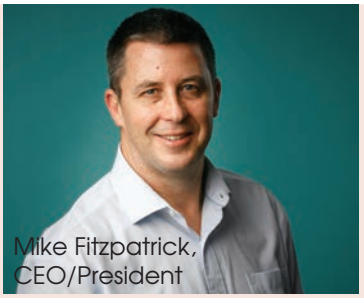
Constantino Lannes, CEO/ President

The Case:

SENNEBOGEN provides material handlers for primary port operations, transloading barges and ships. The firm's modular engineering supports built-to-order manufacturing that uniquely matches the needs of each facility. SENNEBOGEN purpose-built machines and innovations in efficiency and fuel savings achieve duty-cycles faster than any traditional loading equipment at a significantly lower operating cost.

The Company:

SENNEBOGEN has been a global leader in the material handling industry for over 65 years. Established in America in the year 2000, SENNEBOGEN quickly became a leader in specialized equipment solutions for recycling & scrap metal yards, demolition, barge and port operations, log-handling, transfer stations and waste facilities. A network of SENNEBOGEN distributors throughout North America, Mexico and Argentina includes more than 70 service locations on the Ohio & Mississippi River systems. The new "Green Hybrid" energy recovery system utilizes advanced hydraulic engineering to reduce energy costs by up to 50% on every lifting cycle. Service is supported by the firm's 100,000 sq. ft. facility near Charlotte, NC. The warehouse stocks America's largest inventory of repair parts and major components. Its dedicated Training Center provides hands-on instruction for technicians and operators. For waterways applications, SENNEBOGEN offers the widest range of machines, from 48,000 up to 750,000 lbs. including mobile and stationary models in diesel, electric and hybrid powered configurations. https://sennebogen-na.com/



Mike Fitzpatrick, CEO/President

ROBERT ALLAN LTD.

The Case:

Robert Allan Ltd. is a recognized world leader in innovative Naval Architecture and Marine Engineering with a particular focus on harbor and seagoing tugs, shallow draft towing vessels and fireboats for major world ports. Robert Allan Ltd. has won many awards for their design work from a variety of publications and other organizations.

The Company:

Robert Allan Ltd. is Canada's most senior consulting Naval Architectural firm, established in Vancouver, B.C. in 1930. The company has earned an international reputation for innovative, successful designs of a wide range of cost-efficient vessels for service in the marine transportation industry. Their experience includes designs for hundreds of vessels of almost all types, from small coastal and inshore fishing boats to ocean-going vessels of various designs. Robert Allan provides independent professional marine consulting and design services to a worldwide client base, supported by the latest in computer-aided design technology. Robert Allan Ltd. is a world leader in the design of High performance terminal escort tugs.

Designing ships with a legacy of almost nine decades of design experience, there are very few vessel types which the firm has not already developed in some form and which exist in files at least as a basic reference. This legacy includes a large number of shallow draft designs for northern Canadian and South American Rivers. The scope of services offered ranges from concept studies through complete design documentation for contract bidding and Classification Society approval, to production working drawings and procurement support. Use of the latest CAD technologies expedites and improves the accuracy of every aspect of our ship design process.

One of the firm's most exciting recent projects includes a modern fleet of pushboats and barges for Louis Dreyfus Company (LDC) that have started operating in Brazil, all to customized designs from Robert Allan Ltd. of Vancouver, Canada. The vessels will transport bulk grain products on the Amazon River system. This shallow-draft fleet includes one RApide 2600-Z3 class pusher tug, three RApide 2000-Z2 class port-assist pusher tugs, and 64 jumbo hopper barges. www.ral.ca

Gary Aucoin, CEO/President

SCHOTTEL, INC.

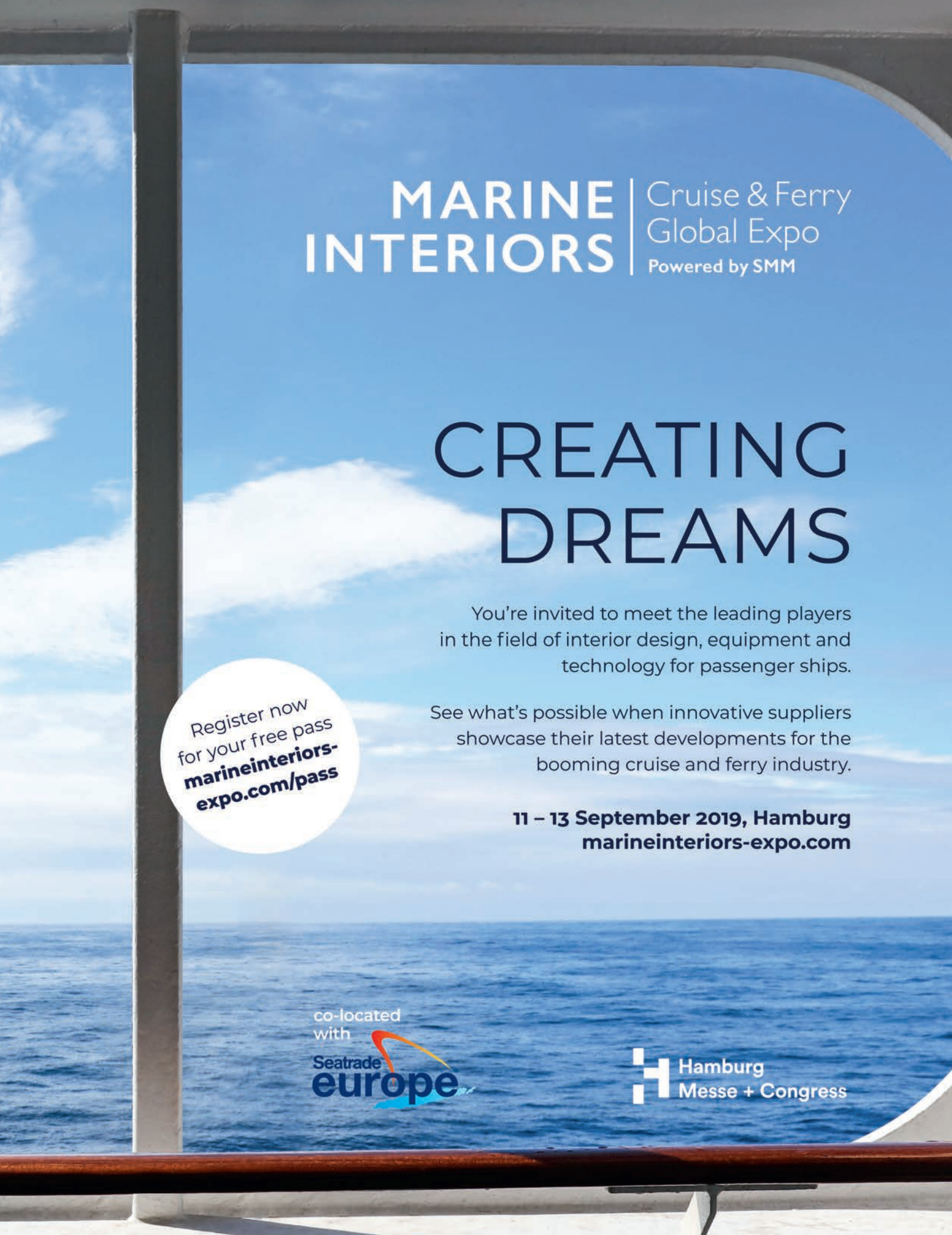
The Case:

SCHOTTEL Inc. is one subsidiary of the global sales and service network from the German SCHOTTEL Group. Thanks to a decades-long presence in the USA and generous space and repair facilities in Houma/LA, SCHOTTEL Inc. is your propulsion expert for the US-American and Canadian maritime market. We offer full support in Sales, Service, Parts and Training.

The Company:

The SCHOTTEL Group, with its headquarters in Spay/Rhine, is one of the world's leading manufacturers of steerable propulsion systems for ships and offshore applications. Founded in 1921, the company has been developing and manufacturing azimuth propulsion and complete propulsion systems with power ratings of up to 30 MW for vessels of all sizes and types, for almost 70 years. Around 100 sales and service locations worldwide ensure customer proximity. With their extensive work in research and development, Schottel remains at the forefront of technology.

The firm offers powerful, cost-effective and efficient propulsion and maneuvering systems for the widest range of vessels. Schottel provides sales for new builds as well as modernization projects and has project engineers that work alongside customers to determine needs. With Schottel units, the firm includes global support of parts and service, as well as in-house repair at Schottel in Houma, LA. The firm maintains multiple training facilities throughout the globe. These provide safe, high tech simulators for the training of crews and engineers to better manage faults and carry out repairs on their own. This results in reducing vessel down time. www.schottel.de/home/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The Apprentice School at Newport News Shipbuilding

The Apprentice School at Huntington Ingalls Industries' Newport News Shipbuilding division celebrated its 100-year anniversary just last month. That's bigger news than you might otherwise think. Accordingly, the company held a ceremony to mark the day – July 1, 1919 – when the school was established. During the event, a historical highway marker was unveiled, and tools, textbooks, commemorative coins and other items were placed in a time capsule. The alumni room also was dedicated in honor of Danny Hunley, an Apprentice School graduate and retired vice president who was instrumental in getting the new school building built in downtown Newport News in 2013.

The school is celebrating its centennial with special events throughout the year and has received special proclamations from the Commonwealth of Virginia and City of Newport News.

The Apprentice School opened at the end of World War I to recruit, train and develop shipbuilders. Since then, Newport News has evolved over the years and currently is undergoing a massive technological transformation. Advanced digital shipbuilding concepts and technology in The Apprentice School curriculum are now supporting the company's integration of digital technology across the shipyard.

"The Apprentice School is one of our national treasures," said Latitia D. McCane, director of education at The Apprentice School. "Its legacy and tradition of excellence have sustained the school for all these years, and as we move forward, our ability to transform ourselves to continue to meet the needs of Newport News Shipbuilding will be paramount to our success for another 100 years." Indeed, and over the last 100 years, The Apprentice School has produced more than 10,800 graduates who have designed and built ships for the U.S. Navy. The school currently enrolls 850 students.

"The Apprentice School is a national model for apprenticeship programs and a shining example of our commitment to workforce development," said Xavier Beale, Newport News' vice president of trades. "When an institution has operated for 100 years, it's easy to fall back on what we've always done. That's not how you succeed. Our faculty and staff go to great lengths to make the apprentice experience at Newport News Shipbuilding relevant."

The Apprentice School accepts about 225 apprentices per year. The school offers four- to eight-year, tuition-free apprenticeships in 19 trades and eight optional advanced programs. Apprentices work a 40-hour week and are paid for all work, including time spent in academic classes. Through partnerships with Thomas Nelson Community College, Tidewater Community College and Old Dominion University, The Apprentice School's academic program provides the opportunity to earn associate degrees in business administration, engineering and engineering technology and bachelor's degrees in mechanical or electrical engineering.

SEWART SUPPLY

FEATURES

Sewart Celebrates 50 Years In Business

The Case:

Sewart is a world's leading distributor of Twin Disc, Hamilton Jet, and Veth Propulsion products. Sewart offers high quality products combined with extensive remanufacturing capabilities that have been successful across many industries. The firm specializes in energy and marine based products. This year, Sewart celebrates 50 years of putting your horsepower to work!

The Company:

Founded in 1969 by Allie W. Adams Jr., Sewart has grown into one of world's leading distributors of Twin Disc, Hamilton Jet, and Veth Propulsion products along the gulf coast for the marine industry. Sewart strategically operates two Louisiana offices located in Morgan City and Harvey to support their customer base in marine industry and Texas-Based operations are headquartered in Friendswood, Texas. As part of the 50th anniversary celebration, the company has launched a new website and rebranded the organization from Sewart Supply to simply, 'Sewart.' The firm has over 40 factory-trained technicians spread out through three strategic locations: Morgan City, LA; Harvey, LA; and Friendswood, TX. In 2019, Sewart received the Hamilton Jet Taituara Award for excelling above all other distributors in the Western Hemisphere, achieving excellence in aftermarket service and inventory support. www.sewartsupply.com

SIGNAL MATE LLC

The Case:

Signal Mate is the only manufacturer addressing the issue of LED degradation in UL1104 navigation lights by monitoring the LED intensity, and controlling current to alarm panel; enabling alarm to notify the bridge of non-compliant COLREG LED navigation lights. Signal Mate's modular design is 100% serviceable.

The Company:

Signal Mate navigation lights were developed from over 30 years of experience in the electronic manufacturing industry. The parent company of Signal Mate LLC, Kimberlite Assembler Inc, was started in 1985, and is the sole source of Electronic Water Level Controllers used on Baltimore Aircoil Company's (BAC) cooling towers around the world. Concerns for safety on the water led to the patent of the Signal Mate Automated Signaling Controller for synchronized horn and light signaling for restricted visibility and distress. For the Signaling Controller, an all-round 360-degree High Brightness LED light was designed. Then, a whole line of recreational LED navigation lights was built to ABYC-A16 standards and 72 COLREGS. In 2008, the owners of Kimberlite started a new company, Signal Mate LLC, for the marine division. Many commercial customers after seeing the recreational navigation lights requested commercial lights to UL 1104 standards. Signal Mate's UL 1104 navigation lights are third party certified and have an IP67 rated modular design with replaceable LEDs and power supply. All parts are made in the USA. www.SignalMate.com

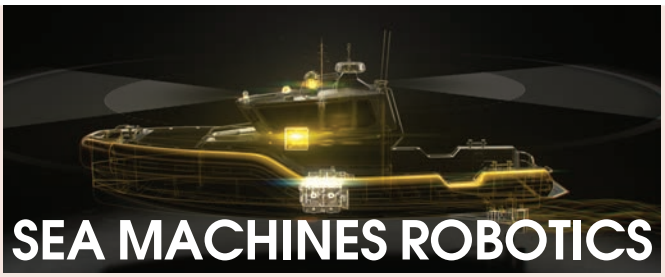
The Case:

Scienco/FAST Inc. or Marine FAST is the oldest and leading U.S. manufacturer of shipboard sewage treatment systems or as known in the marine world as Marine Sanitation Devices (MSD's) equipment for commercial marine use. The firm designs, engineers and manufactures all systems in house. Never resting on its laurels, Scienco/FAST strives to be leaders and innovators in the industry.

The Company:

Scienco/FAST has customers that have purchased the sturdy Marine/FAST sewage treatment systems for use mainly in their workboats and tugs, but have several on Carriers, Tankers, Barges, and other types of vessels and offshore platforms. Too voluminous to list in this article, the Scienco/FAST client and install list since 1968 spans 36 pages, thousands of systems, and reads like "who's who" of domestic inland operators, with dozens of repeat clients. In fact, the list of installs, which Scienco/FAST updates daily, includes some of the biggest names in the marine business, such as ARTCO, ACBL, Ingram Barge, Military Sealift Command, US Corps of Engineers, USCG, US Navy including two Aircraft Carriers, the Canadian Royal Navy and Coast Guard, American Steamship to name just a few.

The firm is a manufacturer of sewage treatment systems (MSD's) for commercial vessels. The MarineFAST LX-Series, originally developed for small harbor tugs, uses DOT certified salvage drums and overpacks. The HDPE and XLPE tanks are so strong that they lower the cost with no compromise in performance, strength or reliability. With easy installation, this Series have now grown to include six models with capacities ranging from crew sizes of 4 to 39 people. The MarineFAST M-& MX-Series was originally developed to fit into the rope lockers and shaft alleys of small towboats. These modular units can be installed wherever space is available. There are five models with epoxy coated steel tanks and with capacities ranging from 11 to 80 people. www.sciencofast.com



The Case:

Sea Machines is revolutionizing and modernizing the commercial marine industry by developing autonomous control and advanced perception systems for workboats and other commercial vessels. Available for installation now, our industry-leading autonomous-command and remote-control products increase the safety, efficiency and performance of marine operations. Sea Machines also enables minimally manned and unmanned autonomous operations, ideal when crews are unavailable or restricted.

The Company:

Sea Machines is a leader in pioneering autonomous control and advanced perception systems for the maritime industry. Founded in 2015, the company builds autonomous vessel software and systems, which increases the safety, efficiency and performance of ships, workboats and commercial surface vessels.

Primary Product / Service:

Sea Machines' SM series of products includes the SM200 (available now), an Industrial-grade, remote control navigation capable of interfacing with pumps, winches and other equipment. This is ideal for workboats, tugboats, fireboats and utility craft. The SM300 (available now), provides autonomous and remote control operability for pre-planned, routine or predictable workboat tasks. This is ideal for workboats, patrol and daughter craft. The SM400 (in development) is an A.I.-powered situational awareness, using computer vision, LiDAR and perception software; ideal for commercial and naval ships.

Recent Highlights / Deliveries / Contracts

It has been a busy year for Sea Machines. They partnered with Hike Metal to Demonstrate Capabilities of Marine Autonomy during Search-and-Rescue Missions. Separately, Sea Machines opened a new Technology Center in Boston. In another important development, Sea Machines established a Global Dealer Program and, just as importantly, raised $10 Million in Series A Funding to the ensure the growth and success of the firm's already impressive array of technology and hardware. https://sea-machines.com/

SONARAY LED LIGHTING FROM DASCOM

The Case:

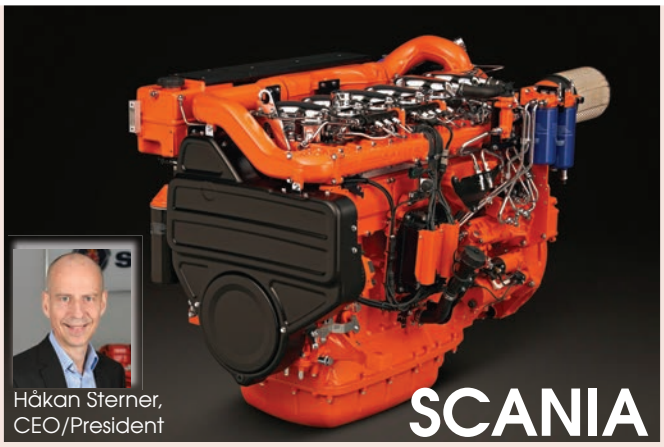
SONARAY LED Lighting from DASCOM specializes in mission-critical marine and industrial lighting. Their line of LED flood lights are used in demanding marine environments around the world including on vessels for dive, rescue, and recovery in Panama, commercial fishing vessels in Dutch Harbor, Alaska, some of the world's largest ports and shipyards, and vessels along the U.S. Gulf Coast. SONARAY is a trusted name in the world's toughest blue and brown water applications.

The Company:

SONARAY LED Lighting is a flagship offering from DASCOM. Engineering and building LED lighting for industrial, commercial, horticulture, and marine lighting applications, the company is dedicated to changing the world through safer, more cost-efficient lighting. Marine lighting is an important element of SONARAY. The brand's fixtures are used in an array of applications ranging from military water craft to commercial fishing vessels to prominent ports and shipyards around the world. Used in the toughest environments such as in Dutch Harbor on commercial fishing vessels, SONARAY LED

lighting can literally be the difference between life and death. SONARAY is particularly strong in the United States and Canada and is well represented by leading distribution sources including Britmar Marine, a Vancouver-based leader in marine products for the world.

www.sonarayled.com

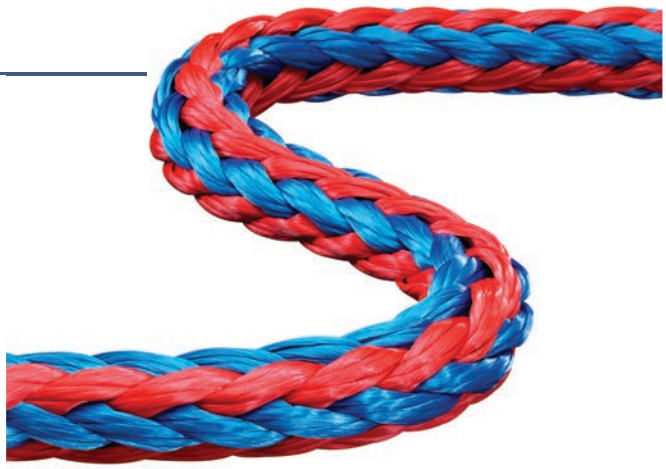


The Case:

Scania is a world-leading provider of transport solutions. Together with their partners and customers, they are driving the shift towards a sustainable transport system by offering a EPA Tier 3 solution to meet all requirements without the use of after treatment. Scania engines are also suited for hybrid and diesel electric installations because of its high power-to-weight ratio.

The Company:

Scania offers a complete marine engine concept to meet the toughest demands of reliability, performance and operating economy. The Scania marine platform is comprised of the powerful 16-liter V8 and the robust 13-liter inline engines. The 16-liter V8 engine ranges from 300-1,150 hp for propulsion applications, and 430-596 kW for auxiliary applications. The 13-liter engine ranges from 250 - 925 hp for propulsion applications, and 269- 426 kW for auxiliary applications. Scania also offers a robust, IMO Tier II, 9-liter engine for continuous and intermittent applications. The 9-liter ranges from 220-400 hp for propulsion, and 199 kW-323 kW for auxiliary applications. Engines ratings vary by emissions level. Scania's latest marine engine development, the High Power DI 13-liter, has positioned itself as a class leader in power-to-weight ratio, thanks in large part to the new Scania XPI fuel system. It combines new power levels ranging from 650 to 925 hp with reduced fuel consumption. Scania engines are all based on Scania's state-of-the-art modular engine platform, which is used for marine, industrial, power generation, truck and bus applications worldwide. This unique concept with common components enables higher availability, more cost-efficient production, simplified service and maintenance, and efficient training. To further help minimize downtime, Scania Assistance is available 24/7/365 with one phone call, 1-800-2-SCANIA. www.scaniausa.com



TEUFELBERGER FIBER ROPE CORP.

The Case:

Teufelberger Fiber Ropes Corp. (formerly New England Ropes) is one of the top synthetic ropes manufacturers in the world. The firm manufactures the highest quality, engineered ropes for critical applications across several markets including Life Safety, Arborist, Government, Pleasure Marine, Industrial/Heavy Lift, and more.

Whether the requirement is mooring lines, tow lines, winch lines, or any other application, Teufelberger's commitment to excellence means quality and value that is second to none. The Commercial Marine product line is specifically engineered to provide the strength, abrasion resistance, and elongation characteristics necessary for the majority of marine operations. Many of these lines serve as the perfect alternative for wire rope compared to wire. These lines are lighter in weight, easier and safer to handle and provide an extended, corrosive-free service life. As the global epicenter of the Commercial Marine division of Teufelberger, its Fall River, MA plant produces large diameter lines for fleets of tugs, barges, and towboats. Teufelberger's customers include the US Army, US Navy and US Coast Guard as well as for the armed forces of several of our allies.

Teufelberger Fiber Ropes will be providing Boston Towing & Transportation, a division of the Reinauer Transportation Companies, with a complete replacement of their mainline and pendant aboard the tugboat Justice. The rope selected for this application is the 3" diameter Endura 12 Red & Blue, which is a two color 12 strand HMPE with twist identifying constructions, and has a minimum break strength of 749,000 lbs and an average of 856,000 lbs. This rope will be deployed in ship assist activities throughout Boston Harbor and surrounding New England waters. www.teufelberger.com/en/products-services/commercial-marine.html

THRUSTMASTER OF TEXAS, INC.

The Case:

Thrustmaster of Texas has been leading the way over the past year in marine propulsion systems through the acquisition of several hybrid propulsion system patents, including the acquisition of a podded permanent magnet electric motor thruster, and Rolls Royce's DP product. Thrustmaster continues to strive to deliver the highest quality and most complete package to customers through these and other initiatives.

The Company:

Thrustmaster of Texas has been designing and manufacturing marine propulsion systems for customers around the world for over 35 years. Thrustmaster's products include hybrid propulsion systems, DP systems, azimuthing thrusters, waterjets, portable dynamic positioning systems and tunnel thrusters among others. Thrustmaster's complete vertically integrated manufacturing process is located in Houston, TX at Thrustmaster's 300,000 square ft climate controlled manufacturing facility where fabrication, machining, painting, assembly, and testing all takes place. Thrustmaster celebrated its 35th anniversary this year. www.Thrustmaster.net

TIDEWATER TRANSPORTATION AND TERMINALS

The Case:

Tidewater operates the largest barge transportation and terminal network on the Columbia-Snake River system. Tidewater has an excellent reputation with customers, regulators and the communities they collectively serve as a result of a strong and unwavering focus on service, safety and environmental stewardship.

The Company:

Tidewater's services on the Columbia-Snake River (CSR) system link shippers, ports, and communities to the global market, while providing quality family sustaining jobs that add to the region's economic strength. Tidewater is proud to have one of the best safety records in the industry. Tidewater's fleet includes 14 towboats, several which have been repowered with new diesel engines, and 150 barges. Tidewater transports a wide range of commodities and project cargo. Island Tug and Barge is a subsidiary of Tidewater Canada and is the West Coast's largest bulk transporter of refined petroleum products. Island Tug and Barge christened and put into service two new, custom-built, state-of-the-art Articulated Tug and Barges in the last year. Tidewater Terminal Company will be opening a new, advanced, leading-edge ethanol facility at their terminal in Pasco, WA. It includes two new storage tanks that has a net working capacity of 54,000 barrels, or 2.28 million gallons each, as well as a 24-hour unload facility. www.tidewater.com

TORQEEDO, INC.

The Case:

Torqeedo is the world market leader for electromobility on the water with more than 90,000 electric and hybrid systems in service. Torqeedo offers fully integrated electric and hybrid solutions for workboats, ferries, excursion boats, water taxis, patrol vessels, lifeboats, research vessels, self-propelled barges, rental fleet operations and utility vessels.

The Company:

Torqeedo is a pioneering technology company in the design, development and deployment of electromobility solutions for marine vessels. The company has a network of dealers in over 50 countries. Torqeedo offers a wide range of electromobility solutions for commercial vessels. Products include outboard and inboard systems from 0.5 to 100 kW. Torqeedo offers fully customizable integrated helm-to-prop solutions with carefully matched and tested components, all from a single source. The integrated solution includes electric motors/drives, lithium-ion batteries, electronic throttles, user interface plus a remote access app for smartphones. The Deep Blue system provides wireless connectivity for remote updates and diagnostics. Torqeedo unveiled its new Deep Blue 100i integrated inboard propulsion system in late 2018 with major improvements that include a 100kW electric direct-drive motor with twice the power of previous models, a 40kWh BMW i3-type battery with 30 percent more capacity and super-fast recharging up to 75 percent capacity in less than 1.5 hours. Recent major deployments include Thailand's first all-electric commuter ferry and the world's first solar-electric sewage pump-out boat for Connecticut's East Shore District Health Department. www.torqeedo.com

VANE BROTHERS

The Case:

While adding new tugboats and barges, Vane Brothers has expanded beyond the East and Gulf coasts into West Coast markets. President C. Duff Hughes says, "Now that equipment, crews, and key support staff are in place, we have a platform for continued growth in partnership with valued customers."

The Company:

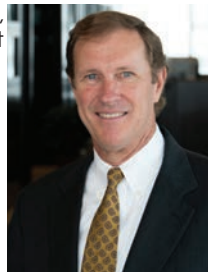
Vane Brothers offers a range of maritime services along the U.S. East, West and Gulf coasts. The family-run marine transportation provider operates 130 tugboats, barges, AT/B's, and launch boats out of multiple locations on three coasts. More than 75 new vessels have been added to the fleet in the last 15 years, helping to demonstrate Vane Brothers' commitment to quality, safety and environmental responsibility. While the employee count has grown from 200 to nearly 800 since the turn of the 21st century, the company works hard to preserve a close-knit, family environment that rewards dedication and loyalty. Vane Brothers' new West Coast fleet operations are focused on two fronts: ship bunkering in Washington State's Puget Sound, and articulated tug/barge (AT/B) dock-to-dock transfers in an area that includes Los Angeles/Long Beach and San Francisco. The company continues to benefit from an aggressive New Vessel Construction program that includes four 3,000-horsepower, Subchapter M compliant push tugs, in addition to several articulated tug/barge (AT/B) units and model-bow tugs that have been added to the fleet in recent months. www.vanebrothers.com

For over 20 years, Marinelink.com has been serving the commercial maritime industry with news, editorial and insights. It is where leaders and executives turn to get targeted, industry specific news each day. Marinelink.com, is part of the Maritime Network, the world's largest network of print, digital and social media serving the maritime industry.

MARINELINK

www.marinelink.com

Michael L. Lapeyrouse,
CEO/President



THE AMERICAN EQUITY UNDERWRITERS, INC.

The Case:

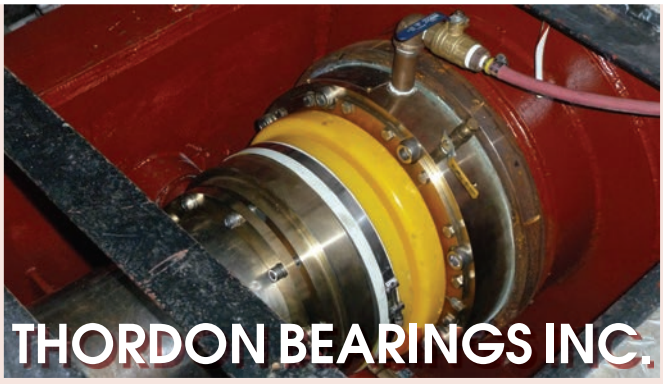
Nearly 1,300 waterfront employers trust the experts at The American Equity Underwriters, Inc. with their longshore workers' compensation needs. AEU has carefully built services around loss control, underwriting, and claims handling to directly address the unique challenges and intense regulation these waterfront employers face.

The Company:

The American Equity Underwriters, Inc. is the program administrator of the American Longshore Mutual Association Ltd., a group self-insurance fund authorized by the U.S. Department of Labor to provide USL&H coverage for the liabilities of its members under the United States Longshore & Harbor Workers' Compensation Act. AEU works with insurance brokers to provide USL&H coverage to employers who are members of ALMA, including shipbuilders, ship repairers, marine terminal operators, stevedores, marine contractors and other waterfront businesses. With a history rooted in maritime, AEU is keenly aware of the challenges faced by waterfront employers and has carefully built services and teams to directly meet those needs. Members can rest assured their unique exposures are being managed by experts in longshore. Nearly 1,300 waterfront employers entrust AEU with their USL&H needs.

The American Equity Underwriters, as ALMA's program administrator, provides underwriting, claims and loss control, as well as value-added services that support these areas, to ALMA members. AEU's member-centric approach to underwriting, claims and loss control, as well as value-added services that support these areas, combine to form an insurance program like no other – one that gives members more control over their long-term success.

In August 2019, AEU was named one of the Best Companies to Work For in Alabama. Last year, 60.6% of AEU insureds had zero lost-time accidents, due in part to AEU's intense focus on safety at their facilities. The AEU Advantage program, designed for small to mid-sized waterfront employers, continues to expand. AEU provides loss control and claims support to these employers that they would not receive from large insurance carriers. www.amequity.com



THORDON BEARINGS INC.

The Case:

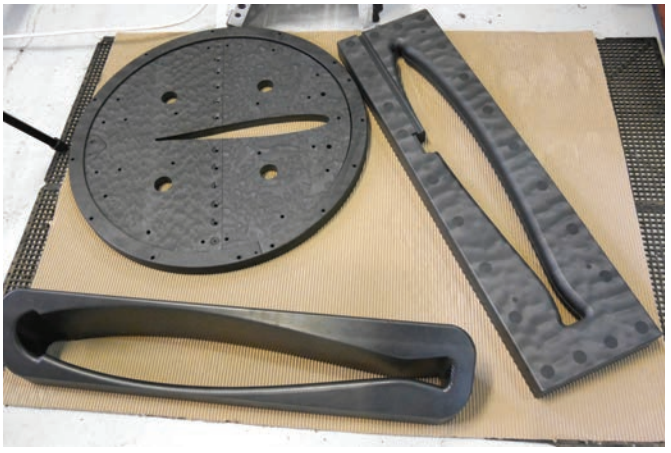
Thordon has invested heavily in the inland waterway market, keeping two warehouses well stocked with tailshaft bearings, seals and rudder bearings to ensure quick delivery. The TG100 shaft seal has an emergency seal allowing vessels to return safely to the nearest port if the primary seal is ever damaged.

The Company:

Thordon Bearings designs and manufactures a complete range of journal bearing and seal systems for marine, clean power generation, pump and other industrial markets. These products are built using Thordon proprietary non-metallic polymer materials that are lubricated with water eliminating oil or grease usage, meaning ZERO risk of pollution to rivers, lakes and oceans. Additionally, the firm manufactures water lubricated propeller shaft bearings, grease-free rudder and tiller arm bearings, deck equipment bearings, shaft coatings and shaft seals for the global marine market. Thordon practices a sustainable approach that most companies cannot claim. These include striving to provide products that last the life of the vessel or application, with no spare parts needed, and make a positive and sustainable contribution to the environment. Offering in-house design, CAD and the proprietary Thordon Bearing Sizing Calculation Program to help correctly size bearings, Thordon Bearings has an extensive distribution network of more than 75 distributors in 100 countries to supply and service the global customer base.

RiverTough tailshaft bearings run in combination with hard coated NCB ThorSleeves routinely outlast rubber bearings by a factor of two or more in the most abrasive operating water conditions. Longer wear life has consistently been confirmed by owners of workboats, pushboats and tugs operating in the US inland waterways. Workboats operating with RiverTough tailshaft bearings are more reliable – they operate longer, require less maintenance with fewer drydockings. https://thordonbearings.com/

VESCONITE BEARINGS



The Case:

Since marine breakdowns can take place anywhere, the number of Vesconite-stocking warehouses has been increased globally to eight, while expanding the range of stock that it has available in these warehouses. The company has also ensured that 90% of its orders are dispatched within three working days. These interventions have resulted in reduced costs for marine breakdowns, while supplying a superior product well suited to the marine environment.

The Company:

Founded in 1958, self-lubricated polymer bearings and bushings manufacturer Vesconite Bearings produces a proprietary range of bushings, bearings and wear plates that operate in dusty, dirty or wet conditions and last longer than other products on the market. The marine industry has been an important contributor to earnings for 20 years, and remains a focus industry for the company. Vesconite Bearings supplies rudder bearings, stern tubes, on-board marine parts and polymer stock to various regions, including Southeast Asia, South America, Australia, the Middle East and Africa, and North America, which has represented approximately 25% of the company's marine sales in the last 10 years. The North American market, in particular, has been a significant purchaser of polymer plates that it manufactures into on-board equipment, including daggerboard trunk bearings for top-end luxury catamarans. www.vesconite.com/marine

VICTAULIC

John Malloy, CEO/President

The Case:

In the early 1920's Victaulic gathered its sea legs and began to demonstrate value in rigorous maritime applications. The small product footprint and light weight design allowed their couplings to be employed in tight shipboard spaces and areas of the ship where a weld arc or fumes could be deemed risky or impossible. Today, Victaulic products are certified by the U.S. Coast Guard, global regulatory agencies, and classification societies for many shipboard applications.

The Company:

Since 1919, Victaulic's solutions and drawing services have increased construction productivity and reduced risk; ensuring projects are completed safely, on time and within budget. Driven by a spirit of continuous innovation, Victaulic's portfolio of 100,000+ products and patented technologies promote freedom of design, safe and efficient vessels, as well as simplified inspection and maintenance for the life of any system. As an industry leader in Virtual Design, BIM content and software solutions, and a recognized Autodesk partner, Victaulic offers project coordination, estimation, and project management, along with BIM drawing services and hands-on training for commercial, industrial and pipeline construction business professionals. Victaulic drives industry growth by enhancing routing efficiencies and delivering cost certainty throughout the project life cycle. www.victaulic.com

TRI-STATE COATING AND MACHINE

The Case:

Tri-State Coating and Machine has become one of the world's largest producers of hard-coated liner sleeves. TSC knows the abuse that workboats, push boats, and tug boats endure from dirty, brackish, and corrosive salt water calls for liners that are a cut above the rest.

The Company:

Tri-State Coating And Machine Co., Inc., began operation in March 1987 under the direction of president and owner, David M. Thompson, with the goal of producing long-lasting parts to service the coal mine industry while creating jobs for a depressed economy. The company is located along the Guyandotte River just 15 miles south of Huntington, West Virginia. Opportunity opened in the marine industry. The hard-coated tail shaft sleeves were very much in demand but very competitive. Tri-State Coating And Machine Company Co., Inc., quickly became one of the world's largest producers of hard-coated liner sleeves. The firm has sustained this business by maintaining materials in stock which allows the manufacture of sleeves in the time frames required while vessels are drydocked for short periods of maintenance.

Tri-State Coating takes great pride in being a complete Thermal Spray Facility. The shop includes a complete Machine Shop Department, complete Grinding Department and a state of the art Thermal Spray Facility featuring the HVOF thermal gun complete with waterfall dust collector. Tri-State Coating is a production oriented Thermal Spray company. Thermal Spray application using metallurgical and mechanical bond coatings are the firm's specialty. The Quality Assurance Program is strict and adheres to Mil-Std 1687 A (SH) and to PMS-335 Quality Assurance Instruction and PMS-335 Training Guide. The training program is vast and takes four to seven years to complete. Each employee is trained in individual departments under strict quality assurance steps to provide the customer with a quality product at a competitive price. http://tscminc.com

VIEGA, LLC

The Case:

Viega LLC, a privately held subsidiary, is the expert in the manufacture and distribution of plumbing, heating and pipe joining systems in North American ship building. Only Viega offers press fitting systems in multiple materials, such as MegaPress for carbon steel and stainless, ProPress for copper and stainless and MegaPress CuNi and SeaPress systems for marine applications.

The Company:

Viega started in Germany in 1899, founded by Franz Anslem-Viegener, who created an innovative design for a brass beer tap. By 1901, the company began to manufacture home plumbing products, growing and expanding internationally as the authority in press technology during the last century. In 1999, through the purchase of an interest in an American company, Viega expanded to North America. Today, Viega's innovative products are produced at six international locations and distributed worldwide. The corrosive environments of the shipbuilding market require extremely high-performance piping systems. The material must withstand not only the applications on board the ship, but also the extreme external conditions of the ocean. Cramped installation spaces and strict safety regulations also place extraordinary demands on installation. Viega provides reliable performance in harsh conditions and protects installers.

Viega offers more than 3,000 products in North America, including Viega ProPress for copper and stainless, Viega MegaPress, MegaPressG, MegaPress XL, as well as MegaPress CuNi and SeaPress systems, specifically for marine applications. The products are used in a variety of applications, from potable water to fuel to fire mains. Viega MegaPress, MegaPressG and MegaPress CuNi have received approvals from the American Bureau of Shipping and the U.S. Coast Guard that enable them to be specified throughout the entire vessel. With the widest range of options and maritime industry approvals, Viega solutions can be installed in many applications, including potable water, fuel and fire sprinklers. www.viega.us

UNITED STATES MARINE, INC.

The Case:

United States Marine, Inc. strives every day to meet or exceed customers' expectations by adhering to USMI Values of Family/Integrity/Quality. USMI is a two time winner of the David Packard award, presented by the United States Department of Defense, for excellence in acquisition. On April 16, 2019, USMI celebrates its 35th anniversary of continuous Department of Defense production, with hopes of many more years to come.

The Company:

The company originally built World Class racing sailboats with much success. Since 1987, United States Marine, Inc. has designed and built military, patrol and special warfare boats ranging in length from 21 to 90 feet, constructed of high performance composites and aluminum. A fully integrated manufacturer capable of designing, building and testing boats in house, USMI has supplied DOD craft uninterrupted for 35 years and counting. Headquartered in Gulfport, MS, with a maintenance/repair facility in Chesapeake, VA, the Gulfport facility has extensive dockage and capability for launching and retrieving boats. The facility connects to the Mississippi Sound providing riverine and littoral type environments, as well as varying water conditions for trials and training.

USMI is a privately held corporation, allowing the decision-making process to be quick and decisive. USMI support teams are known as Tiger Teams, comprised of USMI employees who are experts in their field. In short, USMI Logistics is available at any time to travel anywhere to assist our customers in any way.

USMI's dominate focus is the production of sophisticated craft for the Department of Defense. Craft include the SOCR, 11MNSWRIB, MKV and 9M MERC, all of which are in-house USMI designs. The 9M MERC is the latest USMI boat in the small craft naval inventory and includes an outboard powered open and cabin boat that is lower cost for initial investment and maintenance. The 9M MERC is used primarily by Navy EOD forces, including Mobile Diving and Salvage Units to conduct underwater operations, harbor clearance and passenger transport. www.usmi.com

VIGOR

The Case:

Vigor is a company that honors great industrial work and accomplishes complex projects in Marine, Aerospace & Defense and Energy & Infrastructure. The diverse portfolio of work gives the firm the ability to apply lessons learned in one area across industries fostering innovative solutions and value to our customers.

The Company:

Vigor is a values-driven, diversified industrial business operating in seven locations with 2,300 people in Oregon, Washington and Alaska. Built around a collection of unique assets and differentiated capabilities, Vigor excels at specialized shipbuilding and ship repair. Vigor's marine fabrication teams build high performance, mission-critical vessels for combatant, unmanned and port security applications as well as ferries, fireboats, survey vessels, tugs, and a variety of aluminum workboats. Vigor's shipbuilding experts take pride in delivering quality workmanship, on time and on budget. Vigor ship repair and conversion teams operate out of three primary locations with eight dry docks including the largest floating dry dock in North American. Key customers include MARAD, the U.S. Coast Guard, the U.S. Army and the U.S. Navy. Vigor has built a positive culture that honors the work they do, the workers who do it and the world we live in. Proven performance, cost effective design and exceptional quality are the hallmarks of Vigor built workboats.

Vigor took possession of its new state-of-the-art aluminum fabrication facility in Vancouver, WA in July. Production will be anchored by the nearly billion dollar contract the company was awarded to build the U.S. Army's new landing craft. Other government programs will be built at the site along with aluminum fast ferries and commercial workboats. The inaugural project at the facility will be two 56' pilot boats for the Port of Los Angeles. Vigor is steadily increasing its export portfolio. Two Response Boat – Mediums (RB-M) are on their way to Jordan and six RB-Ms will be delivered to Bahrain this year. https://vigor.net/

VOLVO PENTA OF THE AMERICAS

The Case:

For over 100 years Volvo Penta has led the marine industry in developing new engine innovations that boost performance, reduce fuel consumption and emissions, extend service life and minimize downtime. As a part of the Volvo Group, Volvo Penta draws on the R&D and engineering resources of one of the world's largest engine manufacturers.

The Company:

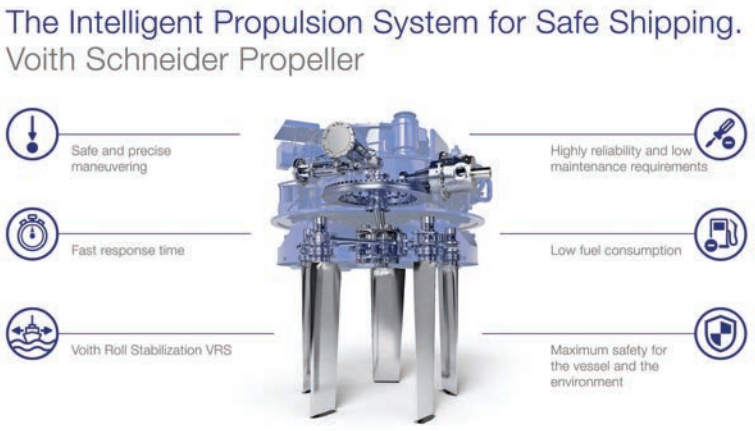
Volvo Penta, with approximately 3,500 dealers in over 130 countries, is a global manufacturer of engines and complete power systems for boats, vessels and industrial applications. The engine program comprises diesel and gasoline engines with power outputs ranging from 10 to 1,000 hp. Volvo Penta engines are type approved by major classification societies and comply with all applicable national and international emission regulations.

Volvo Penta's extensive product line for the US commercial and SOLAS marine market includes 3-16 liter Tier 3 diesel engines in inboard sterndrive and IPS configurations, as well as gensets and auxiliary engines for fuel barge pumps. Target markets include Coast Guard and patrol boats, short-sea and river transport, pilot launches, crew and supply vessels, barges, research vessels, passenger ferries and sightseeing vessels, workboats, tugs and fishing boats. Volvo Penta's new-generation marine diesel engines provide higher torque out of the hole, better performance at all rpm ranges and the lowest costs of ownership with lower fuel consumption, longer service life and less downtime on the job.

In May, Volvo Penta unveiled a large number of new commercial marine propulsion products and upgrades. These include a comprehensive makeover for D4 and D6 marine engines, including new fuel injection system, new turbocharger, new supercharger and redesigned cylinder head, pistons, valves and crankshaft, and a new DPI Aquamatic sterndrive with a silent hydraulic clutch, just to name a few.

The new Volvo Penta IPS-powered Virginian Pilots launch, delivered by Gladding-Hearn in 2018, was named a Boat of the Year by *MarineNews*. www.volvopenta.com

VOITH



The Case:

The Voith Group is a global technology company. Founded in 1867, the company has more than 19,000 employees, sales of $5 billion and locations in over 60 countries worldwide and is one of the larger family-owned companies in Europe. The Group Division Voith Turbo is part of the Voith Group.

The Company:

Be it out at sea or in port, on rivers or lakes – Voith's custom-tailored propulsion systems ensure precise, prompt and safe maneuvering. Voith's propulsion solutions are specifically designed for all maritime tasks and requirements. With more than 90 years of experience, Voith provides Propulsion systems tailored to a wide range of applications including ferries and passenger ships, offshore oil and gas, offshore wind, tugboats and yachts. The Voith Schneider Propeller (VSP) combines propulsion and steering in one unit and are in use wherever precise, safe and efficient maneuvering is of the essence. The Voith Linear Jet (VLJ) combines the best properties of propellers and waterjets. The VLJ has few moving parts, making the system robust and easy to maintain. Voith recently delivered Voith Schneider Propellers (VSP) units to the North Carolina DOT (NCDOT) for its ongoing ferry project. The U.S.-built and tested equipment allowed NCDOT to champion its use of an American workforce on the project. http://voith.com/corp-en/industry-solutions/marine-technology.html

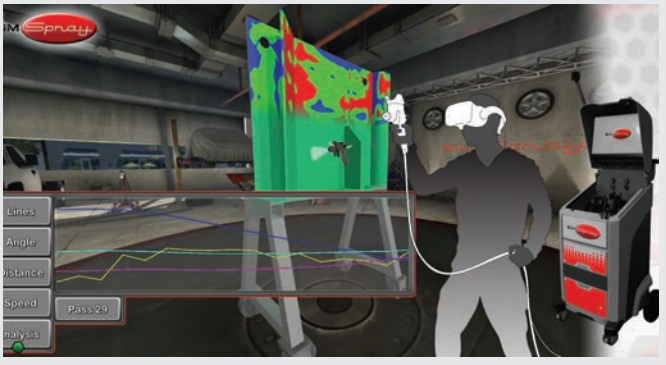
VRSIM, INC.

The Case:

VRSim develops virtual reality training systems for painters, welders, and the skilled trades. Products provide hands-on training with deeper performance insights. VRSim's products empower trainers and trainees with easy-to-use training experiences that reduce the material and operational costs of training while improving training quality, accessibility, and deliver-ability.

The Company:

VRSim develops immersive simulations and interactive software for the skilled trades. Founded in 2001, the company operates under the guidance of recognized virtual reality applications expert, CEO & President, Matthew Wallace. VRSim is proud to offer training tools that allow students and trainees to practice and improve without the costs and risks associated with real materials, live machinery and/or hazardous conditions. VRSim's training and educational tools engage students while teaching practical, fundamental skills. VRSim products accelerate learning by providing an effective, engaging experience that improves knowledge retention and motivates practice. They allow



exploration and experimentation in a safe environment. Thorough feedback, analysis, and detailed reporting support rapid learning. These advanced training tools and systems measure progress and skill mastery, as well as time and materials saved. VRSim's products – which extend to welding and marine coating applications – improve training and education ROI with easy-to-use, effective, efficient, and engaging tools. https://vrsim.com/

VT HALTER MARINE

The Case:

VT Halter Marine (VTHM) designs and builds both commercial and government vessels. Since November 2018, VTHM has won six major contracts, including the U.S. Navy's Polar Security Cutter, which will provide national security at both poles, and the first offshore LNG Bunkering ATB for Q-LNG.

The Company:

VTHM designs, builds and repairs a wide variety of vessel, including tugs, ferries, ocean-going vessels such as security patrol, oil and gas support, logistic support and survey vessels. VT Halter Marine has more than 60 years of experience and a strong track record in both the commercial and defense industry segments, we offer solutions from ship design, construction, repair and conversion to maintenance and support. VTHM shipyards have delivered more than 2,600 vessels to commercial and government clients in 29 countries on five continents. The firm harnesses existing commercial and defense-related project knowhow while integrating emerging technologies. Customers benefit from seven decades of proven experience invested in each vessel, reducing risk, increasing interoperability, and providing solutions in an on-time delivery schedule.

Delivering diversified high-tech maritime products to U.S. and international markets, VT Halter Marine meets the most challenging design and construction schedules. VTHM builds to the requirements of the U.S. Coast Guard, U.S. Navy, ABS and other regulatory bodies and classification societies, up to and including vessels up to 50,000 DWT. New in 2018, VT Halter Marine debuted the blast and paint facility, a cutting edge, enclosed building that allows crews to work in any weather conditions while in an environmentally safe atmosphere. This facility allows ship sections to be prepared, blasted and painted in a controlled environment. The facility is also designed for 24/7 operation in all weather conditions, and uses 100 percent LED lighting to reduce energy consumption and carbon footprint. The firm's ongoing work and backlog is significant, mixing commercial with government projects. https://vthm.com/

W&O

The Case:

W&O, a leader in the marine industry for more than 40 years, operates 17 strategically located global branches with more than 330 maritime professionals. From supplying pipe, valves and fittings to offering advanced technical solutions to the marine, offshore and cruise industries, W&O is a leader in technology, service, quality products, and solutions.

The Company:

With over $50 million in equipment in stock, W&O has broadened its offerings to include value added engineered solutions including pumps, actuation expertise and assembly, consultancy, and project-management organization. W&O has built a well-earned reputation for going the extra mile to make sure every need of every client is met, forming win-win strategic partnerships with those we serve. The industries W&O serves work 24/7, and so does W&O.

W&O focuses solely on the maritime industry with products and services that go far beyond the expected. Representing the most recognizable brands in industry and offering more products at more locations than any other marine products distributor in the US, no one knows the business better, and no one puts more time, energy and resources into serving customers specific and unique requirements. W&O serves all segments, including commercial shipping, the U.S. Navy, Military Sealift Command, MARAD, U.S. Coast Guard, barge owners and shipyards that build and repair vessels of all sizes. W&O understands the unique needs of shipbuilding, repair and retro-fitting for all types of maritime vessels. W&O provides convenient access to complete valve-automation networked systems that are assembled, tested, delivered and ready to install.

With the recent acquisition of EMI, W&O expanded its portfolio of products and capabilities to include steering and propulsion control systems, alarm and monitoring systems, tank level gauging systems, valve control systems, PA/GA systems, and custom fabricated consoles. EMI's new suite of Subchapter M compliant systems are specifically designed for the inland market. www.wosupply.com

Marine News 2019 Editorial Calendar

JULY

AD CLOSE: JUN 13

Propulsion Technology

MARKET FEATURE: **Lubricants, Fuels & Additives**

TECHNICAL FEATURE: **Safety & Fire Prevention**

PRODUCT FEATURE: **Workboat Engines**

SPECIAL REPORT: **Ballast Water Treatment**

AUGUST

AD CLOSE: JUL 19

MN 100 Market Leaders

MARKET FEATURE: **Boatbuilders**

TECHNICAL FEATURE: **Marine Operators**

PRODUCT FEATURE: **Cordage, Wire Rope & Rigging**

SPECIAL REPORT: **Energy Efficiency Systems**

EVENT DISTRIBUTION
Seatrade Offshore Marine & Workboats:
Sep 23-25, Abu Dhabi, UAE

SEPTEMBER

AD CLOSE: AUG 21

Vessel Conversion and Repair

MARKET FEATURE: **Offshore Wind**

TECHNICAL FEATURE: **DP Equipment & Training**

PRODUCT FEATURE: **Hull and Deck Coatings**

SPECIAL REPORT: **LNG as a Fuel – Where are we?**

EVENT DISTRIBUTION
Shipping Insight: Stamford, CT
Clean Gulf: Nov 2-5, Houston, TX
Interferry 2019: Oct 5-9, London, UK

OCTOBER

AD CLOSE: SEP 16

Autonomous Workboats

MARKET FEATURE: **Multi-Mission Workboats**

TECHNICAL FEATURE: **Communications**

PRODUCT FEATURE: **Electronics & Navigation Equipment**

SPECIAL REPORT: **Shipyard Exports**

EVENT DISTRIBUTION
SNAME: Oct 29- Nov 2, Tacoma, WA

NOVEMBER

AD CLOSE: OCT 18

Workboat Annual

MARKET FEATURE: **Outfitting Today's Workboat**

TECHNICAL FEATURE: **HVAC / Ventilation**

PRODUCT FEATURE: **Deck Machinery-Winches and Cranes**

SPECIAL REPORT: **The Digitalization of Workboats**

EVENT DISTRIBUTION
Workboat Show: Dec 4-6, New Orleans, LA

DECEMBER

AD CLOSE: NOV 15

Innovative Products & Boats – 2019

MARKET FEATURE: **Fire, Patrol & Escort Craft**

TECHNICAL FEATURE: **Emissions Compliance and Monitoring**

PRODUCT FEATURE: **Fire & Safety Equipment**

SPECIAL REPORT: **Top 10 Stories for 2019**

EVENT DISTRIBUTION
SNA 2020 - Crystal City, VA

Information may be subject to change

Marine Marketplace

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Post Your Resume for Free • Energize Your Job Search @ MaritimeJobs.com

Marine Engineer, Sunrise, FL. Plan, direct & coordinate marine engineering projects to install, commission, test, maintain, refurbish & repair marine refrigeration, cooling & heating systems onboard cruise vessels. Consult customers & engineering staff to plan project layouts. Assign, supervise, manage engineers & other tech staff members during repairs & machine overhauls in FL workshop & installations & repairs onboard cruise vessels. Analyze blueprints, schematics, manuals & other documents to determine installation & commissioning procedures. Provide customer training on systems operation, analysis of malfunctions, & budget proposals for projects & programs.
Reqs: 2 years exp in a position involving marine refrigeration, HVAC, cooling & climate systems, marine STAL compressors & equipment onboard cruise vessels. Drug, credit & criminal screenings required. 10% domestic travel.
Resumes: Christer Öhrskog, Jorgen@kompressorteknik.com, CompTech Engineering LLC, 5150 NW 109th Ave, Sunrise, FL 33351.

MSC Program Life Cycle Manager

Salary: $ $110,000-$120,000 annually, Full Time, Engineer
Category: Project Engineering / Project Management

Qualifications:

US Citizen

Hold or eligible for a SECRET security clearance.

A bachelor's degree in engineering, or project management certification.

Meet at least one of the following criteria: (a) At least five years of experience within the last ten years managing technical projects valued at $1M or more, or (b) recent experience in managing major shipyard availability projects valued at $5M or more, or (c) At least 12 years of experience gained while employed by a shipyard or commercial shipping company in a technical management position.

Active military duty performing substantially the same duties as a Port Engineer or Program Manager may be considered.

Specific skills in technical writing, cost estimation, and negotiations is desirable.

Experience in MS Word, Excel, SharePoint, and other MS project management software.

Able to endure sustained activity and move about vessels in a shipyard environment.

Available to travel to inspect vessels or participate in contract management meetings (approximately 1 week of travel/month.)

Description:

The Life Cycle Manager is responsible for identifying, developing, planning, resourcing, and executing major vessel alteration projects for a fleet of eight (8) T-AKR Watson Class LMSR's to meet or extend vessel service life, expand mission effectiveness, or to address safety issues. The Life Cycle Manager also plans and executes major planned contracted maintenance projects, including periodic drydock repair availabilities to maintain the vessels within class and regulatory compliance.

Responsibilities & Authorities:

Identify, develop and implement class standard engineering improvements through MSC's TRANSALT program on 8 Watson Class LMSR vessels to ensure the safe, reliable and cost-effective operation for Military Sealift Command's MPF program.

Use and understand MSC's standard tools, programs, processes, and policies related to life cycle management of the vessels they operate.

Forecast budgetary and schedule requirement to accomplish alterations or upgrades on vessels in between planned operations.

Assist Engineering Manager and vessel Port Engineers in planning and executing drydock maintenance periods on 8 vessels.

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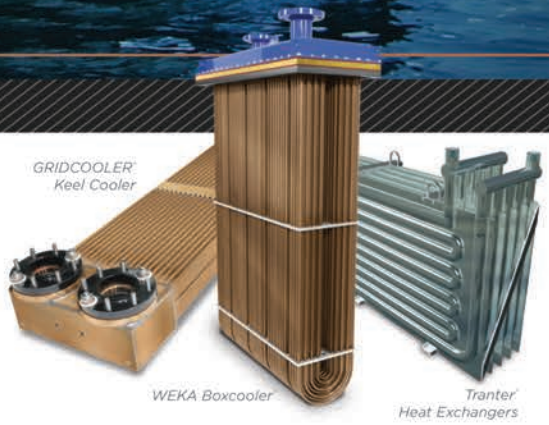

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