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Volume 32 • Number 9

Marine News

SEPTEMBER 2021

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Shipbuilding & Repair

Joey D'Isernia
One-on-one with Eastern Shipbuilding's president

Inland Waterways
Expect the unexpected

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COVID-19 and the green push pose new challenges

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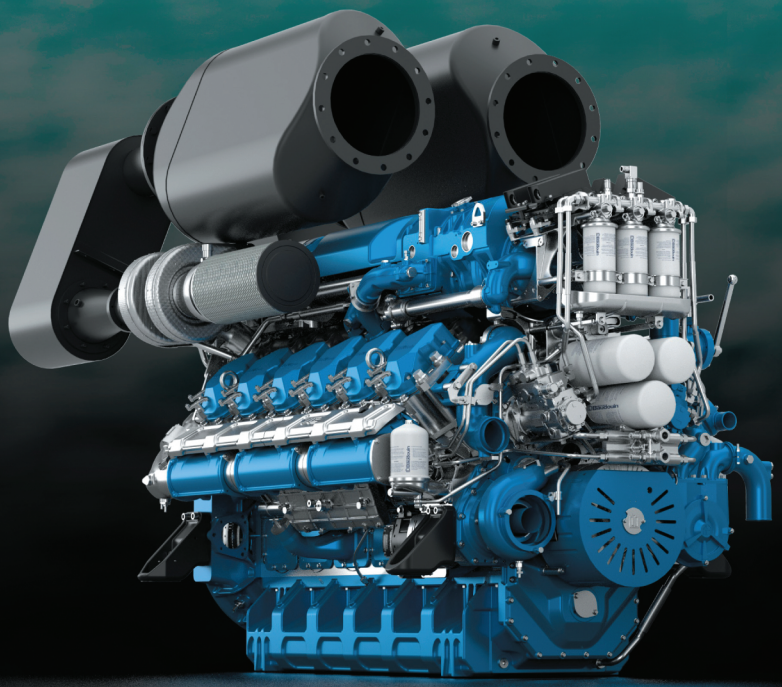

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Features

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On the Cover

Eastern Shipbuilding recently completed the first of three new Ollis Class vessels for Staten Island Ferry. (Photo: Eastern Shipbuilding Group)

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Editor's Note

Eric Haun, Editor,
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In last year's shipbuilding and repair edition of *Marine News*, I wrote in this space that America's shipyards hold a number of roles beyond the construction and repair of commercial vessels. One of the most important: economic engine. A recently published report from the U.S. Department of Transportation's Maritime Administration (MARAD), "The Economic Importance of the U.S. Private Shipbuilding and Repairing Industry"—the subject of this issue's By the Numbers—paints this picture very clearly. The numbers speak for themselves: "In 2019, the U.S. private shipbuilding and repairing industry directly provided 107,180 jobs, $9.9 billion in labor income and $12.2 billion in gross domestic product, or GDP, to the national economy. Including direct, indirect and induced impacts, on a nationwide basis, total economic activity associated with the industry reached 393,390 jobs, $28.1 billion of labor income and $42.4 billion in GDP in 2019."

This month, we hear from the heads of two of America's leading shipyards directly. We caught up with Joey D'Isernia, president of Eastern Shipbuilding Group, for the latest on the market drivers and projects that are keeping the Florida shipbuilder humming. And Chris Allard, CEO of Metal Shark, delivers an op-ed explaining how stock boats could help to better meet customer demand while also boosting U.S. competitiveness amid shifting dynamics in the global marketplace.

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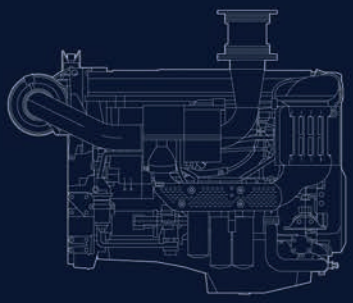

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2


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4

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a naval architect and Webb Institute graduate, is CEO and co-owner of Metal Shark Boats, a U.S.-based designer and builder of custom vessels for commercial, defense and law enforcement applications worldwide.

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3 Barry Parker
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4 Jeff Vogel
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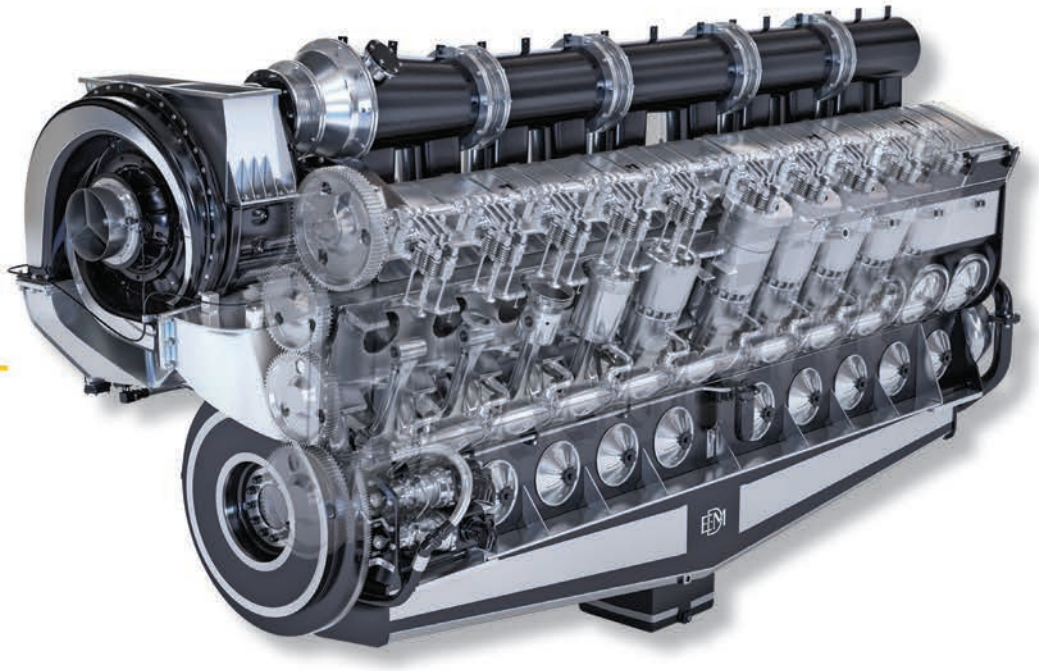

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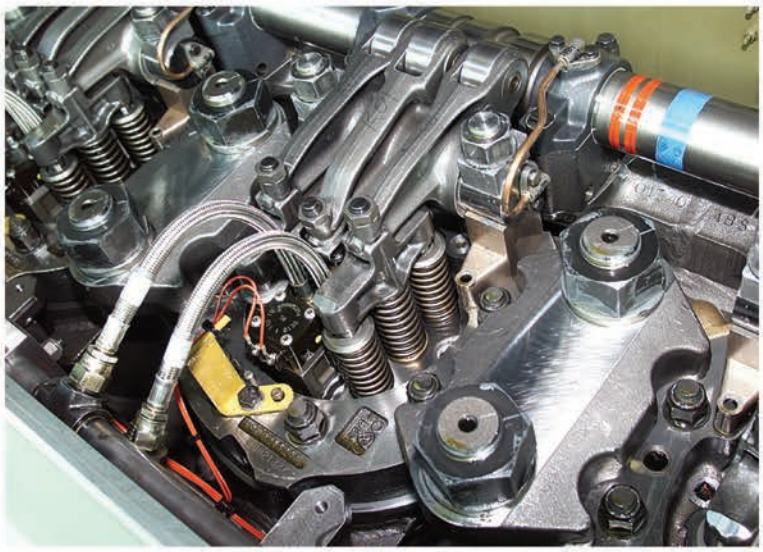

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By the Numbers

U.S. Shipbuilding and Repair Economic Impact

In 2019, the U.S. private shipbuilding and repair industry directly provided 107,180 jobs (**see Figure 1**), $9.9 billion in labor income and $12.2 billion in gross domestic product (GDP) to the national economy (**see Figure 2**), according to a recent report form the U.S. Department of Transportation's Maritime Administration (MARAD). Including direct, indirect and induced impacts, on a nationwide basis, total economic activity associated with the industry reached 393,390 jobs, $28.1 billion of labor income and $42.4 billion in GDP in 2019.

The industry impact by state varies based on the level of direct activity and the share of the supply chain included in the state. The states with the highest levels of overall direct, indirect, and induced employment associated with the industry are Virginia, California, Connecticut, Mississippi and Texas.

Considering the indirect and induced impacts, each direct job in the U.S. private shipbuilding and repair industry is associated with another 2.67 jobs in other parts of the U.S. economy; each dollar of direct labor income and GDP in the U.S. private shipbuilding and repair industry is associated with another $1.82 in labor income and $2.48 in GDP, respectively, in other parts of the U.S. economy.

Currently there are 154 private shipyards in the U.S., spread across 29 states and the U.S. Virgin Islands, that are classified as active shipbuilders. In addition, there are more than 300 shipyards engaged in ship repairs or capable of building ships but not actively engaged in shipbuilding. The majority of shipyards are located in the coastal states, but there also are active shipyards on major inland waterways such as the Great Lakes, the Mississippi River and the Ohio River. Employment in shipbuilding and repair is concentrated in a relatively small number of coastal states, with the top five states accounting for 64% of all private employment in the shipbuilding and repair industry.

U.S. shipbuilders delivered 608 vessels of all types in 2020, up from 577 vessels in 2019 (**see Table 1**). More than 60% of vessels delivered during the last six years have been inland tank and dry cargo barges. However, deliveries of inland tank barges and dry cargo barges showed the greatest decrease in terms of vessels delivered between 2015 to 2020.

The Federal government, including the U.S. Navy, U.S. Army, and U.S. Coast Guard, remains an important source of demand for private U.S. shipbuilders. While only 16 of the 608 vessels delivered in 2020 were delivered to the U.S. government, nearly all deliveries of large deep-draft vessels (14 of 15) were to U.S. government agencies (seven to the U.S. Navy and seven to the U.S. Coast Guard).

Total revenues for the U.S. shipbuilding and repairing industry are estimated to be $27.9 billion in 2019, up from $26.9 billion in 2018. 10 In 2019, 78.7% of these revenues came from military shipbuilding and repairs, and 21.3% from commercial shipbuilding and repairs.

The largest expense for ship builders is purchases of raw materials and supplies used in the construction and repair of ships, including paints, steel plates, copper tubing, aluminum and iron castings. These purchases account for an estimated 34.1% of total industry costs. Other costs (which include research and development, insurance, security, cleaning costs, equipment repairs and site maintenance) are the second largest expenditure for the industry, amounting to approximately 34% of industry costs. Wages account for 26.9% of industry costs. Depreciation, rent and utilities account for the remaining 5% of industry costs.

The value of imports and exports of ships and repair services varies considerably over time, in part due to the long lead time associated with manufacturing and delivering finished ships.

Imports of finished ships, inputs, and repair services amounted to $596 million in 2020, down from $686 million in 2019. Industry imports are limited by regulation; in particular, the Jones Act (section 27 of the Merchant Marine Act of 1920) requires that all vessels carrying goods between U.S. ports be manufactured (or rebuilt) in the U.S. and be owned, operated, and crewed by U.S. citizens. In addition, imports for U.S. government needs are generally limited because defense contracts typically require access to sensitive military technology and information.

In contrast, exports by U.S. shipbuilders have remained relatively strong in recent years, reaching $1.8 billion in 2020 and $2.0 billion in 2019 (representing 7.5% of industry revenues in 2019). As a result, the U.S. shipbuilding industry has run a trade surplus in eight out of the last ten years and a cumulative trade surplus of $7.3 billion over this period.

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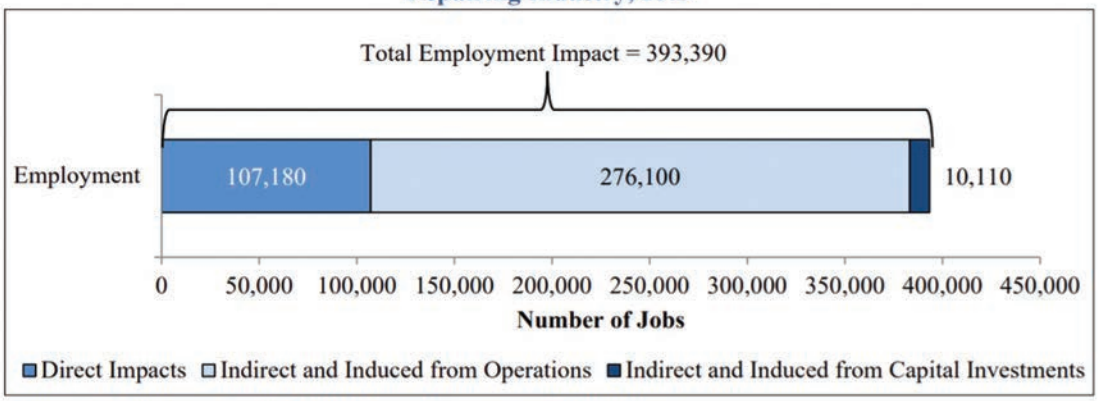
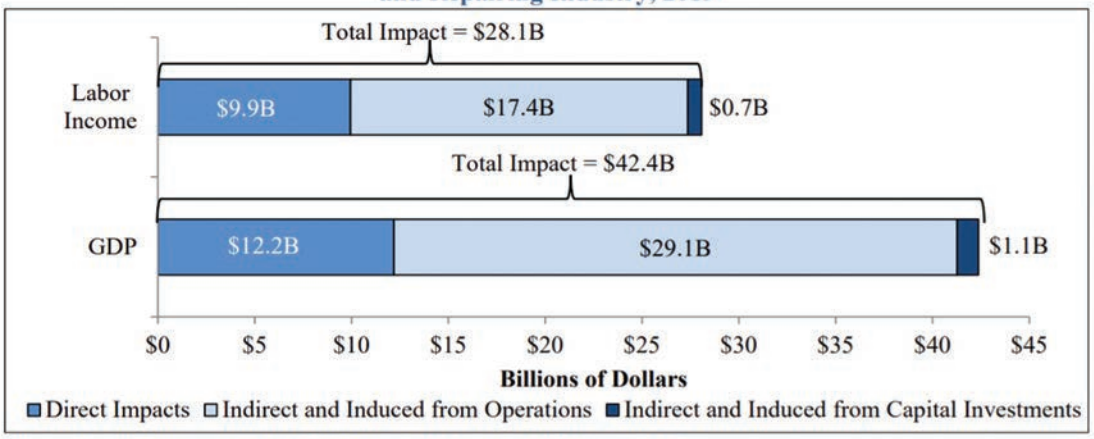
By the Numbers

Figure 1: Total Employment Impact Attributable to the U.S. Private Shipbuilding and Repairing Industry, 2019



Source: Calculations using the IMPLAN modeling system (2019 database).

Figure 2: Total Labor Income and GDP Impacts Attributable to the U.S. Private Shipbuilding and Repairing Industry, 2019



Source: Calculations using the IMPLAN modeling system (2019 database).

Table 1: Deliveries by U.S. Shipyards, by Type of Vessel, 2015–2020

Type of Vessel	2015	2016	2017	2018	2019	2020
Deep-Draft Vessels and Structures	18	28	18	20	14	15
Offshore Service Vessels	43	21	11	5	5	1
Tugs and Towboats	122	110	88	85	87	122
Passenger Vessels (>50 feet)	25	32	51	46	47	40
Commercial Fishing Vessels (>50 feet)	7	16	9	7	6	4
Other Self-Propelled Vessels (>50 feet)	8	9	11	3	12	13
Large Oceangoing Barges	7	11	10	7	0	5
Inland Tank Barges	268	117	87	84	182	135
Inland Dry Cargo Barges	940	985	301	229	224	273
Total Delivered	**1,438**	**1,329**	**586**	**486**	**577**	**608**

Source: www.shipbuildinghistory.com
Note: The delivery date for a vessel was determined by the date on which its Certificate of Documentation was issued, which should be, but may not be, the date on which the shipyard made delivery.

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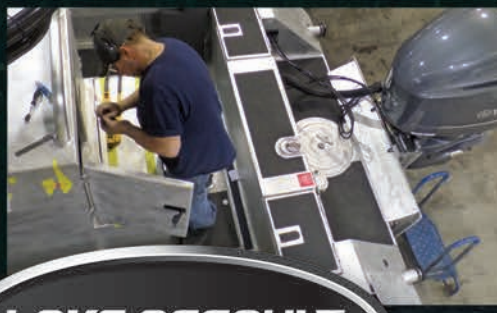

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Joey D'Isernia

President, Eastern Shipbuilding Group

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Eastern Shipbuilding Group is one of America's leading shipbuilders. Perhaps best known for its tug, towboat and offshore supply vessel track record, the company is currently finding success in other markets, with notable newbuild projects underway for the U.S. Coast Guard, Staten Island Ferry and dredging contractor Weeks Marine. Eastern's president Joey D'Isernia weighs in on the yard's current workload, market drivers and the challenges overcome and on the horizon.

Where do you see best opportunities for Eastern Shipbuilding Group today?

JD: We see a lot of opportunity in the defense sector, which is why we have dedicated our Nelson St. Shipyard to the U.S. Coast Guard Offshore Patrol Cutter (OPC) program. We are committed to delivering high quality, innovative, and efficient OPCs to the men and women of the Coast Guard on or ahead of schedule. We are competing for Stage II of the program, which would be ships five through 15 over the next 15 years.

We also expect to continue to see opportunities in the commercial dredge and offshore wind markets. We were recently awarded a second hopper dredge from Weeks Marine. ESG's business is based on superb customer relations and a high performing workforce with proven results. We are committed to continuing our tradition of service to our commercial customers worldwide, and with our newly opened Port St. Joe facility, we are also committed to becoming a trusted partner for vessel sustainment for both commercial and government customers.

In addition, we see growth in the energy and transportation sectors where energy development and the rise in consumer goods fuel growth. As fleets age, the repair market is trending positively for the foreseeable future, which was the impetus for our new Port St. Joe facility and drydock project. We also saw our new dry dock as an opportunity to reduce costs and potential schedule disruption for our new construction projects since many of the new build projects require docking prior to delivery.

Will you please give a status update for the newbuild projects Eastern currently has underway and lined up?

JD: The Coast Guard awarded detail design for the Offshore Patrol Cutter to Eastern on September 15, 2016. Long Lead Time Materials (LLTM) was awarded in September 2017. Construction began in fiscal year 2018. Delivery of the lead OPC is planned for fiscal year 2022.The contract includes options for production of up to four vessels. To date, Eastern has earned the award of construction for OPC one through three and the LLTM contracts for OPC one through four. We have earned those contracts by executing for our USCG customer on time and on budget. The USCG plans to award construction of the fourth cutter in spring of 2022.

ESG recently completed Builder's Trials and Contract Trials for the first of three NYCDOT Staten Island Ollis Class ferries and has received ABS class certificates as well as the USCG Certificate of Inspection. The vessel was recently towed to New York Harbor and is preparing its final acceptance trials, which is essentially duplicating the trials it has already completed at our facilities in Panama City, Fla. Construction of the second and third ferries are continuing on schedule, and we look forward to delivering them to our customer and its ridership.

We are honored that Weeks Marine decided to return to Eastern Shipbuilding for another hopper dredge. Our experience dealing with them on the Magdalen was a very good one, and together we delivered a state-of-the-art hopper dredge to the Jones Act Fleet. We continue to make great progress on their second vessel—a 8,550-cubic-yard twin screw trailing suction hopper dredge—and we remain on schedule and on budget despite building the vessel in the midst of the COVID-19 pandemic. This is the third hopper dredge to be built by ESG, and it cements our position as a proven builder of large, highly sophisticated hopper dredges.

Earlier, you mentioned the new facility in Port St. Joe. Will you please tell us a bit more about that yard and how it will impact the company overall?

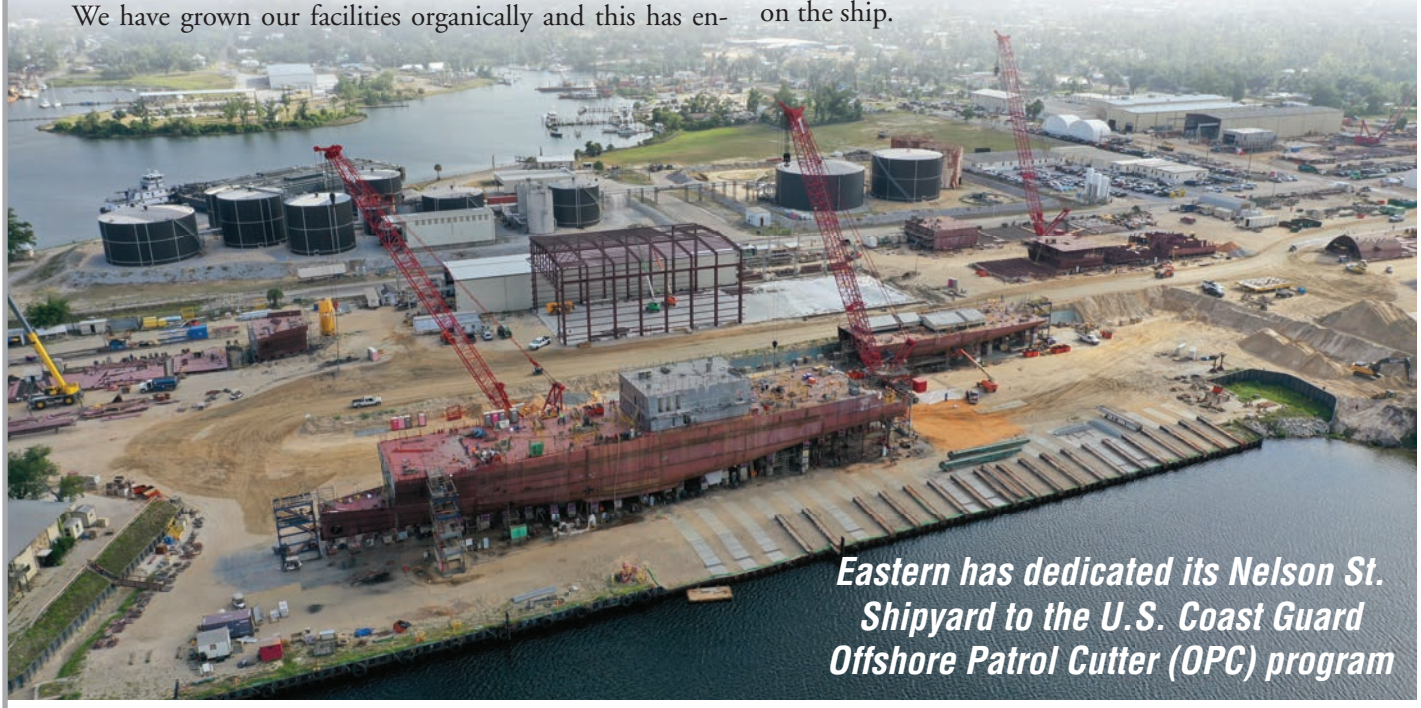
JD: We opened our third facility in Port St. Joe, Fla., in nearby Gulf County, where we are currently outfitting and testing the Staten Island Ferries. With the addition of the PSJ facility, we have expanded our capacity and are thus more responsive to meeting the dynamic needs of our customers.

This facility encompasses 40 acres and 1,000 feet of deepwater bulkhead with unrestricted access to the Gulf of Mexico test and trials grounds only a few short miles away. This facility is dedicated to final outfitting and testing of commercial new construction vessels as well as topside repairs. We have embarked on a $50 million, 15,000 ton drydock project at this facility in order to provide full vessel sustainment services. This dry-dock has been specifically designed to be able to service government ships as well as commercial ships and can haul deep draft vessels as well. We have just completed a $6 million infrastructure improvement project at our Port Saint Joe facility to allow for vessel outfitting to commence. Once our dry-dock is in operation, we will become a full-service vessel sustainment facility that can accommodate both commercial and government customers. We have grown our facilities organically and this has ensured our company culture of integrity, safety and quality are alive and well. Additionally, this location enables us to tap into another labor market to support our projects.

How else is Eastern investing today to ensure future success?

JD: We have invested in equipment, processes and procedures to minimize the impacts to the environment where we live, work and play. All our facilities are ISO 14001 compliant. This certification means that we adhere to processes and procedures designed specifically to minimize our overall environmental footprint whether it is carbon emissions, keeping our waterways clean or reducing waste through recycling initiatives to name a few. We have been ISO 14001 certified since 2012 and plan to continue this tradition moving forward. The industry is rapidly moving into zero emissions and reduced footprint across the board, and we are proud to be leaders in that effort.

Additionally, we have built and are currently operating a technologically advanced telecommunications testing facility called a Production Facility (PF) This asset ensures the C5ISR capabilities are seamlessly integrated into our government vessels and that integration risk is drastically reduced through full up-front testing prior to installation on the ship.



Eastern has dedicated its Nelson St. Shipyard to the U.S. Coast Guard Offshore Patrol Cutter (OPC) program

Last but not least, we are in the process of investing approximately $45 million into infrastructure improvements across all of our facilities in an effort to meet the current and future needs of our customers and to maximize efficiency.

How has the COVID-19 pandemic materially impacted your company to date? How do you expect business will be affected going forward?

JD: COVID-19 has affected everyone in this nation and the world, and ESG is no different. We had to quickly adapt our way of business to deal with the new reality, but first and foremost we looked after our employees and our community. We have been and are currently following health and safety protocols as recommended by the CDC to keep our employees and families safe. We remained operational with protocols in place, such as temperature checks, masking, social distancing, hygiene, testing, and quarantines. We had vaccination clinics onsite at our facilities to make vaccines readily available to our employees who chose to become vaccinated. We hope we can all return to a more normalized environment soon. That being said, we are not letting our guard down and doing all we can to combat the virus. Even though COVID-19 made it much more difficult to build ships, we made commitments to our customers, commitments that we have kept.

Many shipyards have trouble finding, hiring and retaining talent. Do you find this to be a challenge today, and what is Eastern doing to ensure it has the workforce it needs?

JD: We have been operational for over forty years, and we expect to be for decades to come thanks to our dedicated team. The pipeline of work that we've captured and plan to capture both commercially and through the OPC program offers skilled workers a rewarding long-term career. Because of this, we have been able to recruit talent that is locally trained and attract workers from outside our area. We've recently enhanced our benefits package to attract and retain workers and continuously look at ways to grow our pool of workers, which is why the Port St. Joe facility is so strategically placed. We have also partnered with many area educational institutions from high schools to colleges in order to stand up training programs tailored specifically to a shipyard employees' training needs. Attracting, training and retaining shipbuilders is a challenge for all American shipbuilders, and we must place emphasis on training the next generation of craftsmen.

Eastern was hit hard by Hurricane Michael in 2018. Please describe the storm's full impact to business and Eastern's build schedule. And what did the road to recovery look like?

JD: Much like the rest of Bay County, ESG facilities were virtually unrecognizable after the storm, nearly every structure was damaged or destroyed. We had a monumental challenge ahead of us. Immediately following the storm, we set out on an aggressive initiative to locate all our employees and help get them back on the job as soon as practical after they took necessary time to secure the safety and security of their family and home. Together with our network of friends, partners and customers in the maritime community, ESG organized daily distribution of meals and goods to employees in need. Additionally, ESG created an interest free deferred payback loan program for those employees in need and successfully organized a Go Fund Me account, raising nearly $250,000 to help those employees hardest hit by the storm. ESG also knew temporary housing was going to be a necessity in the short term and immediately built a small community located on greenfield space near our facilities for those employees with temporary housing needs. In two weeks after the Hurricane we were able to resume operations with at least 80% of our workforce.

We have rebuilt our facilities thanks to the hard work and determination of each ESG employee, as well as the support of our families, friends, neighbors, vendors, customers, and federal, state, and local partners. We are still building, expanding our shipyards and capabilities every day. We could not be prouder of our employees and how far we have come since the Hurricane.

How would you describe your management philosophy?

JD: We always keep our promises, and our quality is unmatched. This is due to our strong company culture combined with our skilled and committed workforce. We have a reputation for producing the highest quality marine vessels in the industry, delivered on time and on budget. On several occasions, we have been called upon to take over

and complete projects that have failed at other shipyards. We have also built a reputation of trust. We keep our word and deliver results because that is the right thing to do. Even if it comes at an economic cost to our business, our customers can count on us to we get the job done.

Our company is a family business that has always made it a point to give back to the community. Our community is our home, and we want to do our part to help it thrive. We have been very involved in local charities designed to help children affected by domestic abuse, have partnered with our school district to bring training programs to our area, and are involved in volunteer work with our local hospitals.

We keep values like these at the forefront as we manage our business, and they flow down through our management chain all the way to the deck plates. This is why our employees won't leave a job until they are satisfied it is done right.

Staten Island Ferry's first Ollis Class vessel on sea trials

While I know your portfolio of work is broad, please provide an in-depth look at one recent project that you consider to be particularly challenging, gratifying or otherwise indicative of the work that you do.

JD: Eastern Shipbuilding is proud to be delivering for the USCG the Heritage Class Offshore Patrol Cutters. We celebrated the keel authentication of the first vessel, USCGC Argus, with the Commandant and Coast Guard leadership in 2020. Argus will be ready for delivery in 2022. Hulls two (keel laying completed May 2021) and three are currently under contract as well demonstrating ESG's ability to execute multiple concurrent hull construction projects. This multibillion-dollar acquisition is the Department of Homeland Security and USCG's highest investment priority. The OPCs represents the backbone of the Coast Guard's cutter fleet, bridging the capabilities of the 418-foot national security cutters, which patrol the open ocean, and the 154-foot fast response cutters, which serve closer to shore. The OPCs will conduct missions including law enforcement, drug and migrant interdiction, search and rescue and other homeland security and defense operations. Each OPC will be capable of deploying independently or as part of task groups and serving as a mobile command and control platform for surge operations such as hurricane response, mass migration incidents and other events. The cutters will also support Arctic objectives by helping regulate and protect emerging commerce and energy exploration in Alaska.

We are executing for the USCG by delivering unparalleled quality of construction while at the same time utilizing proven, DCMA certified business management systems specifically tailored to this government project. I am confident we will continue building forward momentum as we partner each day with the USCG to deliver excellence in government shipbuilding.

ESG has demonstrated incredible resilience and ability in producing these state-of-the-art national security vessels through major setbacks brought on by Hurricane Michael and COVID-19.

Eastern Shipbuilding is the best and lowest risk choice for quickly and reliably introducing OPCs of demonstrated high quality into the active fleet because we provide a uniquely mature OPC design and 3D model that meets OPC specifications, a proven, fully documented production approach and ample, modern facilities dedicated to, and currently executing, OPC production.

We are proud to work with the best engineers and innovators in the industry. We have contracted more than 200 vendors in 34 states and many of them are minority-owned and small businesses. We partner with companies who share our philosophy of quality and results and when we find those like-minded suppliers, we remain loyal to them.

Column

Washington Watch

Prefabrication of Federal Shipbuilding Project Funding

By Jeff R. Vogel, Partner, Cozen O'Connor's Transportation & Trade Group

Initial appropriations discussions

are underway for Fiscal Year 2022, with a continued focus on federal shipbuilding programs. It has been rough going for the Navy as Congress raised questions about the President's commitment to the Navy's long-term shipbuilding program. Meanwhile, House appropriators are seemingly focused on continuing shipbuilding successes at the Maritime Administration and Coast Guard. With billions of dollars in the balance, the U.S. shipbuilding industry should keep a close watch on the development of next year's funding bills.

Congress builds on Navy budget proposal

On June 17, 2021, the Navy issued its Report to Congress on the Annual Long-Range Plan for Construction of Naval Vessels for Fiscal Year (FY) 2022. The report, which is required by statute to contain a detailed program for the construction of combatant, support and auxiliary vessels for the Navy over the next 30 fiscal years, instead focused on the President's immediate FY 2022 budget request. This approach—focusing on the immediate request in lieu of a long-term plan—is typical of a new Presidential administration in its first year. The Navy's proposed FY 2022 budget requested total funding of $18.1 billion for the construction of eight new ships, including two Virginia-class attack submarines (SSNs); one Arleigh Burke (DDG-51) class destroyer; one Constellation (FFG-62) class frigate; one John Lewis (TAO-205) class oiler; two TATS towing, salvage, and rescue ships; and one TAGOS(X) ocean surveillance ship. The report contained limited details on the Navy's long-term shipbuilding plan, simply indicating

Fincantieri Marinette Marine is building the U.S. Navy's Constellation class frigates

U.S. Navy

a long term-fleet fleet ranging 321 to 372 manned battle force ships, together with 77 to 140 uncrewed vessels, with no specific timeline for development of the fleet provided in the report.

Subsequent discussions have seemingly dismissed the report fleet projections, and have instead remained focused on the 355-ship fleet in the Navy's 2016 force structure assessment. Indeed, the budget request and long-term report have been met by significant criticism in Congress, with the House Appropriations Committee ultimately seeking to add funding for a second Arleigh Burke-class destroyer in the FY 2022 Department of Defense appropriations bill. The Committee was extremely critical of the President's budget request and its impact on the shipbuilding industry. The Committee report accompanying the appropriations bill stated, "The Committee is dismayed by the Navy's decision to remove one DDG–51 Flight III Destroyer from the planned fiscal year 2022 budget request. For the second consecutive fiscal year, the Navy has chosen to remove a major ship procurement from the budget request rather than make difficult funding decisions in a fiscally constrained environment. This represents a troubling trend of underfunding ship acquisition programs and then requesting the removed ship as the highest priority on the unfunded priority list. Furthermore, removing the ship from the budget request breaks the program's multi-year procurement contract, which adversely impacts the already fragile domestic shipbuilding industrial base." The Senate Armed Services Committee apparently shares the views of House appropriators, adding $1.7 billion in its markup of the FY 2022 National Defense Authorization Act (FY 2022 NDAA) to authorize the second Arleigh Burke-class destroyer.

NSMV and Coast Guard Cutter funding continues

While the Navy's shipbuilding program is facing Congressional scrutiny, the reception has been far more positive for the Maritime Administration (MARAD). Built on MARAD's initial success in the on-going construction of the first four National Security Multi-Mission Vessels (NSMV) under the oversight of Vessel Construction Manager (VCM) TOTE Services at Philly Shipyard, the House Appropriations Committee is looking fund the fifth NSMV for Cal Maritime. The Committee's markup of the Transportation, Housing and Urban Development appropriations bill, released on July 20, would provide $315 million to fund NSMV V in its entirety, along with providing $5 million for the NSMV program to assist State Maritime Academies in making necessary shore-side infrastructure improvements in preparation for delivery of the NSMVs.

Beyond just the NSMV themselves, it is clear that many federal leaders see the value of the NSMV design and VCM approach. In its markup of the FY 2022 NDAA, released on July 28, the House Armed Service Committee's Subcommittee on Seapower and Projection Forces specifically pointed to the NSMV as a basis for replacing the Navy's hospital ships (T-AH). The Subcommittee's markup stated, "The committee believes that as an alternative to maintaining converted supertankers that were procured in the mid-1970s, the Navy could take advantage of the National Security Multi-Mission Vessel (NSMV) that the Maritime Administration is currently procuring for the State Maritime Academies. By utilizing the NSMV hull form and production line, the Navy could minimize design costs and schedule of the T-AH(X) that is planned to replace the current T-AHs. This strategy would also allow the Navy to defer future costly maintenance availabilities on the existing T-AHs and deliver a replacement capability sooner than the current plan." Accordingly, the Subcommittee has requested a briefing from the Secretary of the Navy on the feasibility of utilizing the NSMV hull form to fill the requirements of the Navy's hospital ship replacement vessels.

The House Appropriations Committee's markup of the Homeland Security appropriations bill also focuses on continuing U.S. Coast Guard (USCG) shipbuilding programs. The bill would provide an additional $597 million to fund the construction of the fourth Offshore Patrol Cutter (OPC) at Eastern Shipbuilding and long lead time materials for the fifth OPC. The USCG would also receive $170 million for a portion of the long lead time materials for a third Polar Security Cutter at VT Halter Marine to keep the acquisition program on schedule.

While these funding bills are only in their preliminary stages, it is certainly a positive sign that the House Appropriations Committee has not only supported, but increased, the President's budget requests for shipbuilding projects. If this trend continues, FY 2022 could be a positive year for new federal shipbuilding projects.

OpEd

Shipbuilding

The Case for Stock Boats

By Chris Allard, CEO, Metal Shark

Could you imagine designing your own car or truck or airplane, and then trying to build it? Unless you're Elon Musk, you most likely couldn't.

Today's consumers don't want to solve their own problems, they want turnkey solutions, and they want them now. In what industry—other than maritime—do you see customers designing their own products, putting them out for bid, and then dealing with time and cost overruns? Yet, in the maritime world most acquisitions are long, drawn-out processes, often a frustrating exercise in specification development: design the vessel, bid the design, redesign, build, make more changes while building, and then . . . wait. And so, the industry and our customers remain caught in this never-ending cycle. There are few other businesses where such a practice would be acceptable, yet it's the norm the maritime world.

Yes, the nature of the public bid process is partially to blame, but that's only one driver. After all, it's common to see governments buying proven solutions in other sectors. Trucks, aircraft and heavy equipment are bought largely "right off the lot", with little lead time, low risk and immediate return on capital. So why not boats?

Metal Shark

Collectively as an industry we have been unable to build fully developed products, ready to serve our customers' needs and kept in stock for prompt delivery. It's not our customers' fault. It's not solely the fault of the public bid. Much of the fault is ours, and as a result, shipbuilding remains a cottage industry where small, undercapitalized players have no choice but to continue the cycle.

Along with other builders, Metal Shark shares this responsibility. Instead of building product to suit, we should be building product that suits. Suits their mission, their need and their job. As individual builders and as an industry, we can do better. How do we do this? By researching and knowing our potential customers' needs before they ever give us an order.

Driven by this belief, four years ago Metal Shark launched its Stock Boats program and began marketing and executing a different strategy. This program was equal part reality and creativity. We started to build core models into our inventory, whether in the form of completed boats, partially completed hulls, or advance-building units on our most active production lines. As we implemented the system, we became more creative and flexible. We began to say "yes" more often, providing clients with turnkey solutions in 90 days or less.

It worked. We allocated a 38-foot U.S. Coast Guard production slot to a pilot group in order to answer their immediate security need. We took the client from order to on-water in 60 days, added the original USCG order back into the schedule, and delivered it on time. Within 90 days of another order, we did the same thing with two 45-foot

river service boats delivered to Belle Chasse Marine. These were not small outboard powered boats, but fully-featured inboard diesel waterjet platforms. We even delivered an unmanned 29-foot Defiant to the USCG within 90 days of order. Think about that: an autonomous USV delivered to the USCG within 90 days!

Thanks to our Stock Boats program we have delivered dozens of other small patrol-style boats to overseas clients, commercial operators or domestic first-responders. Sometimes, as expected, the urgency was driven by expiring money or some unforeseen need. What we didn't expect was clients who approach us with no apparent pressing need; clients who just want the ease, the low risk, and even the immediate gratification of buying something ready. Ready for whatever they need to do. Now.

The stock boat program has not yet revolutionized our business. Very large and extremely complex vessels by their nature may not readily lend themselves to this approach. The majority of our boats still remain custom ordered, designed and built. Yet, we have seen the success of this program, we believe in it, and we know it's the way of the future. The reason we're so committed to this approach isn't simply because it has helped us sell additional boats. We believe in it due to an unintended but profound result that we have encountered along the way: immediate customer satisfaction. Products are delivered faster, contracting and payment processes are reduced, and most importantly, the products do the jobs for which they were intended. In today's world, purchasers of all types are most satisfied if they get what they want and don't have to wait for it.

And so, we continue to invest in modular design and the standardization of our product offerings, to reduce lead times, to design additional flexibility into standardized platforms, and to further build our Stock Boats program. We believe further investment is needed to bring standardized, stock offerings into other markets. Passenger vessels. Offshore patrol craft. Unmanned platforms. We believe the world is ready.

In order for American manufacturers to remain competitive, more volume is required. We are unable to compete on the world market without technology and a consistent, repeatable high rate of production. Our labor rates are (thankfully) too high, which means Americans make a good living doing what we do. To continue to compensate our people while competing with the rest of the world, we need a merciless focus on technology, automation and repetition. It is not our clients' responsibility to get us there; we as an industry need to do it ourselves. We believe that reducing lead times and truly making boat and small ship buying an off-the-shelf experience is key to this vision.

Expect the Unexpected on the Inland Waterways

By Barry Parker

Among transportation planners, "resilience", describing the ability to bounce back from adversities, both economic and other, has become a top consideration as we increasingly must "expect the unexpected." The U.S. waterway system, covering the network of inland rivers and coastwise waterways, has seen a mix of good and not so good. As the 2020-2021 pandemic moves toward winding down, a recovery from the dismal 2020 is underway, but activity on the rivers is uneven. Ken Eriksen, senior vice president for agribusiness at consultants and data provider IHS Markit, told ***Marine News***, "The demand varies by barge type. For covered hopper the solid demand is associated with record U.S. grain and soybean exports and solid movement of fertilizers to support farmer crop production prospects." He added, "Grain and soybean exports for the new crop year starting September 1, 2021 will be slightly lower, but still in the top five of U.S. export volumes. So, the covered barge market has opportunity." A tabulation contained in a presentation by listed company Kirby Corp shows leading owners of dry tonnage, handling agricultural products but also coal and other bulks, to be Ingram (with 4,203 barges), the reorganized American Commercial Lines (ACL, with 3,091 barges) and American River Transport Co (1,839 barges).

Looking ahead, Eriksen says, "The prospects are still solid despite lower export prospects beginning in September. The U.S. will be the market to source corn since Brazil's winter corn crop has been hit hard by late planting, drought and

now freeze damage." He does caution, however, that farmers have planted less corn than anticipated, with reduced inventory available for export.

Coal, which was historically a big mover on the waterways, has been on a long down-swing as power producers decrease their dependence on fossil fuels. The Energy Information Administration (EIA), an information provider within the U.S. Department of Energy, suggests that 2020 coal production (preliminary estimated at 534 million tons) was the lowest since 1956. The agency notes further that U.S. coal shipments overall were down 22% in 2020 from 2019 levels and that coal shipped by waterways fell 20% from 2019 levels. Costs per ton to move coal have not surprisingly declined, with volumes. IHS Markit's Eriksen points to a recent recovery in coal moves post-COVID (with record cold weather in the first quarter of 2021 contributing to a drawdown in stocks that had surged in 2020) and notes, "This year there was a slight bump up for domestic use and a bit higher exports. But that is more of a head fake than anything. The long-term prospects for coal movement is going in one direction, down."

In the liquid markets, 2020's second quarter saw dramatically reduced shipments, but resurgent demand began to turn things around late in the year and into 2021, albeit with reduced year-on-year utilization. Kirby Corporation, said that its "marine transportation segment's revenues for the 2021 first quarter decreased 25% and operating income decreased 96% compared with the 2020 first quarter revenues and operating income. The decreases were primarily due to reduced barge utilization in the inland and coastal markets as well as reduced term and spot pricing in the inland market, partially offset by the addition of the Savage Inland Marine, LLC fleet acquired on April 1, 2020." For its inland barging specifically, Kirby, with a May, 2021 fleet of 1,057 inland tank barges and 241 towboats, said, "Inland tank barge utilization levels averaged in the mid-70% range during the 2021 first quarter compared with the low to mid-90% range during the 2020 first quarter. The 2021 first quarter continued to be impacted by reduced demand as a result of the COVID-19 pandemic and the resulting economic slowdown as well as the impact of reduced volumes as a result of Winter Storm Uri."

The market is picking up. Kirby was forecasting that utilization "is expected to increase further as the economy recovers and refineries and chemical plants return to full operations following Uri. In the second half of 2021, the company anticipates barge utilization to improve into the high 80% to low 90% range which should lead to a more positive pricing environment in the coming months." On its second quarter investors call, Kirby described a market where average barge utilization had risen to "the low to mid-80% range", where term contracts represented approximately 65% of revenue with some 57% attributed to time charters. The rates had improved with Kirby reporting, "Spot market rates increased

U.S. Army Corps of Engineers

approximately 10% sequentially, but remained down approximately 10% to 15% year-on-year." Martin Midstream Partners L.P., with a barge fleet primarily serving the Gulf Coast on shorter term charters, said in a recent filing, "We believe that refinery utilization will continue to increase in the second half of 2021 as a result of widespread vaccinations, government stimulus and a rebounding economy. This should ultimately improve refined product demand." Kirby leads the league tables on tank barge ownership with 1,046 barges, followed by ACL with 408, Canal Barge with 363, Martin Midstream (tied to Marathon Petroleum) with 300, Ingram with 298 and Florida Marine Transporters with 250, according to data in a recent Kirby presentation.

The push toward a fleet of vessels fully compliant with Subchapter M inspection requirements where previously uninspected towing vessels would need to have a Certificate of Inspection (COI) continues. The U.S. Coast Guard explains, "In order to operate after July 19, 2022, all Subchapter M towing vessels must have a valid COI." In its Maritime Commons blog, it notes, "Owners and managing operators (OMO) are responsible for ensuring that 75% of their respective fleets receive a COI before July 19, 2021." Statistics provided to ***Marine News*** by the U.S. Coast Guard showed the aggregate fleet falling short of the 75% milestone, with some 3,217 active towing vessels have been is-

sued COIs as of July 6, 2021, out of 5,227 such vessels overall. Trade association the American Waterway Operators (AWO) in an early June newsletter reported that USSG Commandant, Admiral Karl Schultz, speaking to an online audience, "…remarked that he thinks industry is 'on a good trajectory' with Subchapter M, noting that while there had been a learning curve, almost 75% of towing vessels are expected to be certificated under the TSMS option." The TSMS option, short for Towing Safety Management System, enables Third Party Organizations (TPO), rather than by USCG inspectors, to conduct vessel examinations as part of vessels attaining COIs.

With the Colonial Pipeline outage in May, earlier this year, "resilience" has taken on powerful meanings for the inland refined oil products barge business. A blog from Vanderbilt University details research on this very topic, noting that gas stations in Nashville, Chattanooga and Knoxville (accessible by inland barging) fared far better with fuel availability than those in land-locked Charlotte, Asheville and Raleigh- where stations saw widespread closures due to supply outages. IHS's Eriksen agrees: "At the time [of the outage] there was not much known on the full impact so barges became an insurance to get product moving and positioned." Kirby, in reporting its second quarter results, chimed in, saying, "Barge demand was further increased by the Colonial Pipeline outage that occurred in May," noting that its inland utilization had temporarily increased up to near 90%, touching pre-pandemic levels.

Sustainability, which is intertwined with resilience, is a major theme now

coming to the inland and coastal towing sector. In June, 2020, AWO announced that it had joined the newly launched Blue Sky Maritime Coalition, an organization with the mission of accelerating "the U.S. and Canada maritime value chain's pathway to net zero greenhouse gas (GHG) emissions by jointly developing and executing a roadmap to a commercially viable net-zero emission logistics value chain." In a presentation at the Coalition's launch (during a June, 2021 Marine Money conference), Board member Ted Tregurtha, president of Moran Towing, explained that the U.S. and Canada are unique with equipment being long-lived, and unique sets of rules and regulations. He said that North America "would have to place greater emphasis on retrofits in order to make progress in an acceptable timeframe". Coalition members also include Kirby Corporation (with its CEO, David Grzebinski also serving on the board), Crowley Maritime and Bay Houston Towing Corp. Sustainability also affects cargo flows; in the Q&A following Kirby's Q2 earnings presentation, Grzebinski noted an uptick in movements of biodiesel and renewable diesel moving on the waterways.

In a sign of future developments, New Orleans- based Maritime Partners LLC, known for its role in providing lease finance for inland equipment, has teamed up with deepsea tanker owner Ardmore Shipping, and Element One Corp, a distributor of hydrogen in liquid form, in the new venture e1 Marine, a business that may soon bring fuel cells to the inland markets. Austin Sperry, co-founder of

Finance

The inland sector continues to be relationship based, with local banks and specialist units in regional banks providing loan financing on towboats and barge fleets. Reflecting trends from the broader maritime sphere, lease financing has continued to be an important capital source. Austin Sperry, from Maritime Partners explains, "Historically, the value of leasing was that it could provide a better loan profile and higher loan to asset ratio." In describing his firm, he said, "We've grown from a single tug to more than 550 vessels within five years of launching our business, and the feedback we receive is that people choose us over the alternatives because of our reliability, integrity and ability to innovate custom leasing and financing solutions for which the larger lenders don't have the flexibility." Recent deals seeing regulatory filings include First Horizon Bank, based in Birmingham, Ala., putting 20 open hopper barges built at Arcosa Marine onto a bareboat charter to M/G Transport Services, and a bareboat charter to the same carrier for an additional 15 barges (10 covered and five open, all built at Arcosa) from U.S. Bank Equipment Finance. Another deal saw Banc America Leasing placing 50 covered rake barges (built 2006) on a bareboat charter to Ingra, headquartered in Nashville. Consolidated Grain and Barge (CGB), a large grain mover that had previously been tied to the Japanese trading house Zennoh, is the ultimate lessee of 157 grain barges in a complicated transaction where the ultimate ownership is tied to Japanese financier MUFG Bank. In mid-2021, the leases were modified as Zennoh acquired multiple assets from agribusiness giant Bunge Corporation.

Maritime Partners

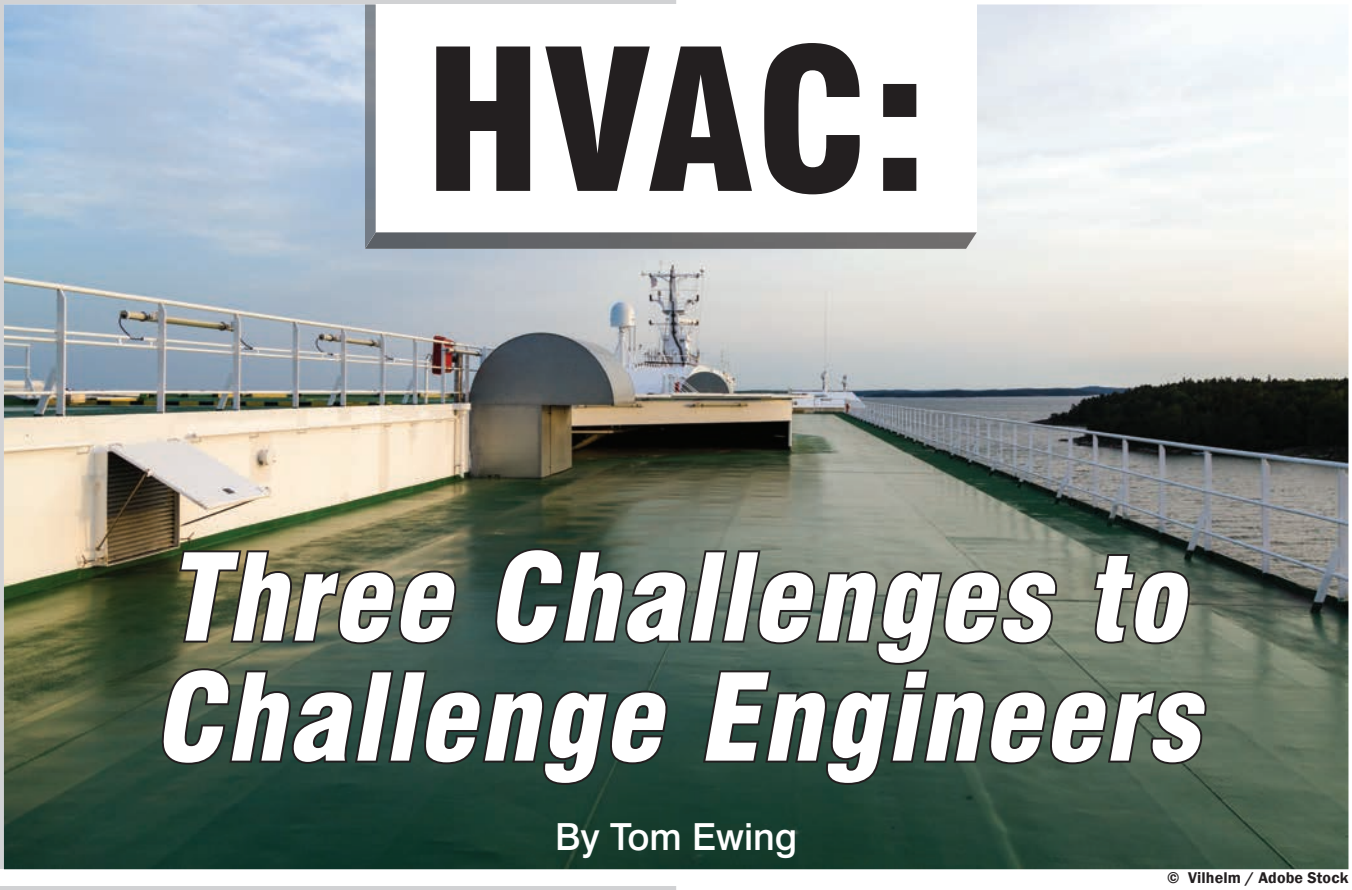
"From our research, we concluded that methanol to hydrogen is the most promising [power] option for towing vessels operating on the inland waterways. . ."

– Austin Sperry, co-founder, Maritime Partners

Maritime Partners, told *Marine News*, "At present, almost every vessel operating on the inland waterways is powered by an internal combustion engine. Since it's likely that there will soon be regulation requiring zero (or very low) greenhouse gas emissions, the total addressable market is almost the entire sector." He explained further, "From our research, we concluded that methanol to hydrogen is the most promising option for towing vessels operating on the inland waterways…that's why we invested in e1 Marine, alongside Element One and Ardmore Shipping. Methanol-to-hydrogen is more scalable than the alternatives, the technology is proven on land and almost entirely built with off the shelf parts." In discussing the e1 Marine technology, he said that "…it works as both a newbuild and retrofit solution, producing zero NOx, SOx and PM emissions."

The move away from fossil fuels in the inland sector has already begun. Sperry tells *Marine News*, further, "The most reputable players in the sector are already investigating their options and weighing their investment decisions. Indeed, we've had exploratory conversations with a number of them about how they could finance their next generation fleets. But it will require comprehensive regulation—which we expect soon—to bring full market adoption." In a video released by AWO in late June, a top executive from Ingram Barge describes the company's exploration of electric propulsion, alternative fuels (including hydrogen and methanol) as well as dual and multiple engine technologies. In the same video, executives from Campbell Transportation (active in both dry and liquid sectors) describe a program where 20% of its fleet is being repowered for more efficiency and sustainability.

HVAC:



Three Challenges to Challenge Engineers

By Tom Ewing

"On the 27th of July, 1850, I sailed from Baltimore in the ship Nonantum, of Boston, (Bates, master,) bound to San Francisco. In the ship's hold was stowed 1,050 tons of coal. The second morning after the commencement of the storm, smoke had been discovered between decks. The alarming truth instantly flashed upon our minds. The gas that originated from the coal had generated fire. They next proceeded to close the hatches, and caulked every seam tightly, in the hope of arresting the progress of the fire it was impossible to extinguish."

- Incidents On Land and Water, or Four Years On the Pacific Coast.
D.B. Yates, Boston, J. French and Company, 1857.

Ever since open vessels were enclosed into compartments, ventilation has been a paramount concern, for passengers, crew and the existence of the ship itself.

In 2021, and for the next few years, HVAC experts cite three top priority issues: the COVID-19 pandemic; energy efficiency; and finding safe, new refrigerants with low global warming potentials (GWP).

In some ways these challenges are linked. In other ways they are evolving separately. But each presents naval architects and ship owners with a myriad of questions.

I. COVID-19.

The cruise industry is at the eye of the coronavirus storm. Ventilation and air quality are central to the industry's return to sail plans.

In July 2020, to tackle the pandemic crisis, the Royal Caribbean Group and Norwegian Cruise Line Holdings established a team of public health and medical experts, referred to as the Healthy Sail Panel. HVAC and ventilation were in the crosshairs. In September, in an extensive report, the panel recommended a number of HVAC and air management strategies. Examples include:

- Enhanced filtration – Upgrade HVAC filters to the highest level possible given the constraints of ship age and ventilation type.
- Optimize airflow patterns – Don't recirculate air. If that's unavoidable then use high-grade filters.
- Think strategically – establish preventative practices where the virus might be hardest to control or where crowding is common.

The report emphasizes that "HVAC upgrades can drastically improve filtration of pathogens" and that "cruise operators should make every possible effort to upgrade the HVAC filters throughout their ships to MERV 13 filters" (MERV = Minimum Efficiency Reporting Value, a 1 – 20 rating system in which 1 is the lowest level of filtration, 20 is highest).

The cruise industry, at least as represented by the Cruise Lines International Association (CLIA), supported the panel's recommendations. "The CLIA Global Board unanimously voted to adopt all of the listed core elements for an initial restart of limited operations in the Americas," CLIA wrote in a September 2020 press release. HVAC was among the listed core elements slated for change: "Ventilation. Air

management and ventilation strategies to increase fresh air onboard and, where feasible, using enhanced filters and other technologies to mitigate risk."

As the cruise industry works to get back to normal, it's difficult to assess the extent to which the panel's HVAC recommendations turned into actual shipboard projects. CLIA did not respond to inquiries about industry or membership metrics that might summarize recent investments in upgraded HVAC systems.

II. Saving energy, money and carbon

Vessel operators face worldwide pressure to decrease carbon emissions. That's challenging enough. Now, add new strategies to control COVID-19. HVAC draws a lot of power. On a passenger ship, HVAC loads can consume as much energy as propulsion.

Kevin Glover, PE, is owner and managing principal at Coefficient Engineers, a North Carolina based HVAC-engineering firm; marine design is a core business segment. Glover also serves on ASHRAE's HVAC Transportation Committee 9.3, which includes a maritime focus.

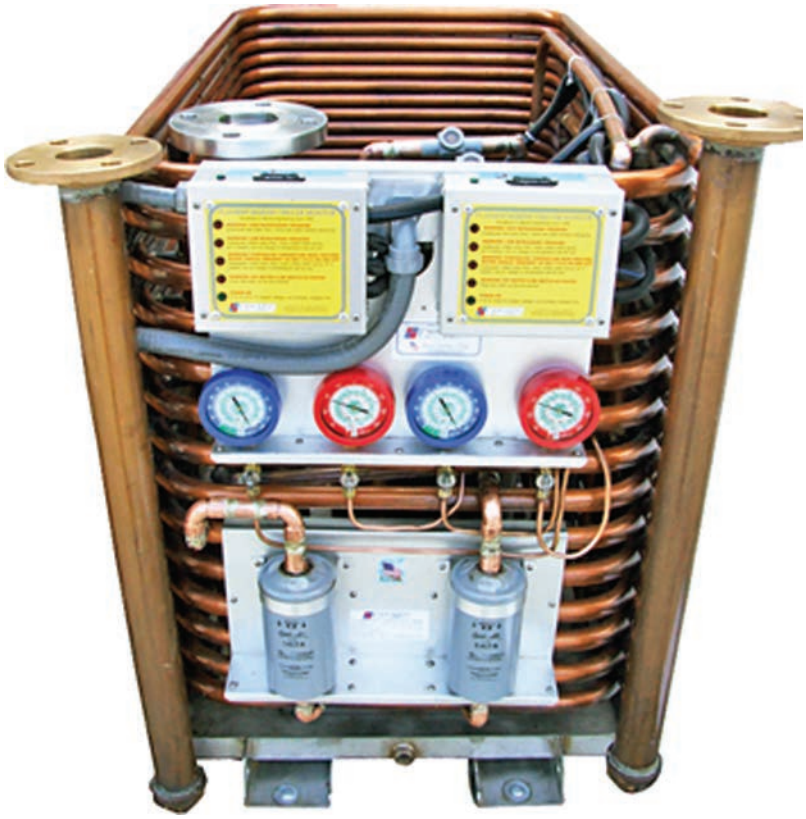
Glover explained how HVAC, COVID and energy are entangled. To start, consider that operating efficiency, across all of a vessel's systems, not just propulsion, is a critical focus right now. Fuel costs are always a concern. And now, fuel consumption is a concern because of climate pressures.

Efforts to save fuel have been impacted by COVID-19, especially on passenger vessels. Research has shown that viruses are less viable within a narrow range of relative humidity (rh), 40-60%. Maintaining that range, however, in selective locations, presents numerous energy and engineering challenges.

The biggest energy demand on an HVAC system comes from removing moisture from fresh air. Standard practice, therefore, is to admit only minimal amounts of fresh air into a circulating system, thereby maintaining higher HVAC efficiency. Less moisture removal means less energy.

COVID introduced a new wrinkle. One of the most effective means to combat the virus is to dilute its numbers with large quantities of fresh air, and it turns out, the virus "dislikes" the same relative humidity range optimal for human comfort. This places new demands on ventilation and humidity control, Glover explains, even leading to "over-ventilating." This provides healthier, more comfortable shipboard systems, he comments, "but the tradeoff is using more energy."

Flagship Marine is a Florida-based manufacturer of HVAC systems and components. Steve Brigham is Flagship's Business Development Manager. He explains that on



Flagship Marine

This Flagship chiller can retain a system wide temperature variation within 0.5 degrees under conditions from tropic to arctic.

relatively small vessels, e.g., yachts, ventilation is straightforward: opening the hatches is usually sufficient. Larger vessels require make-up air units which draw outside air and treat it before the air is mixed within an onboard system.

Brigham said make-up units need to be properly sized so that fresh air, from just one pass across the evaporator or heating elements, closely matches the conditions aboard the vessel. Flagship uses copper to prevent the evaporators from being destroyed by maritime elements. In response to COVID-19, Flagship Marine offers U/V lighting with its air handlers and make-up air units.

Fuel costs and energy dynamics are leading HVAC designers to rethink fundamental approaches to maritime design. Kevin Glover described how these new approaches - from advanced 3-D modeling to digital twins – are expanding opportunities to construct energy efficient systems and still meet customer expectations. One idea: take the sophisticated building information modeling (BIM) used for land-based buildings and adapt it to vessel construction."

"With 3-D modeling used for buildings, everybody on the development team has the same set of data," Glover explained. Potential construction conflicts, say with electrical and plumbing, are resolved before construction starts. "This is applicable to marine design," Glover commented.

More importantly, these models can account for the huge difference in designing HVAC for a vessel vs. a building, e.g., a building is static, its solar exposure is easy to track, and plan for. A ship's solar exposure can vary by the

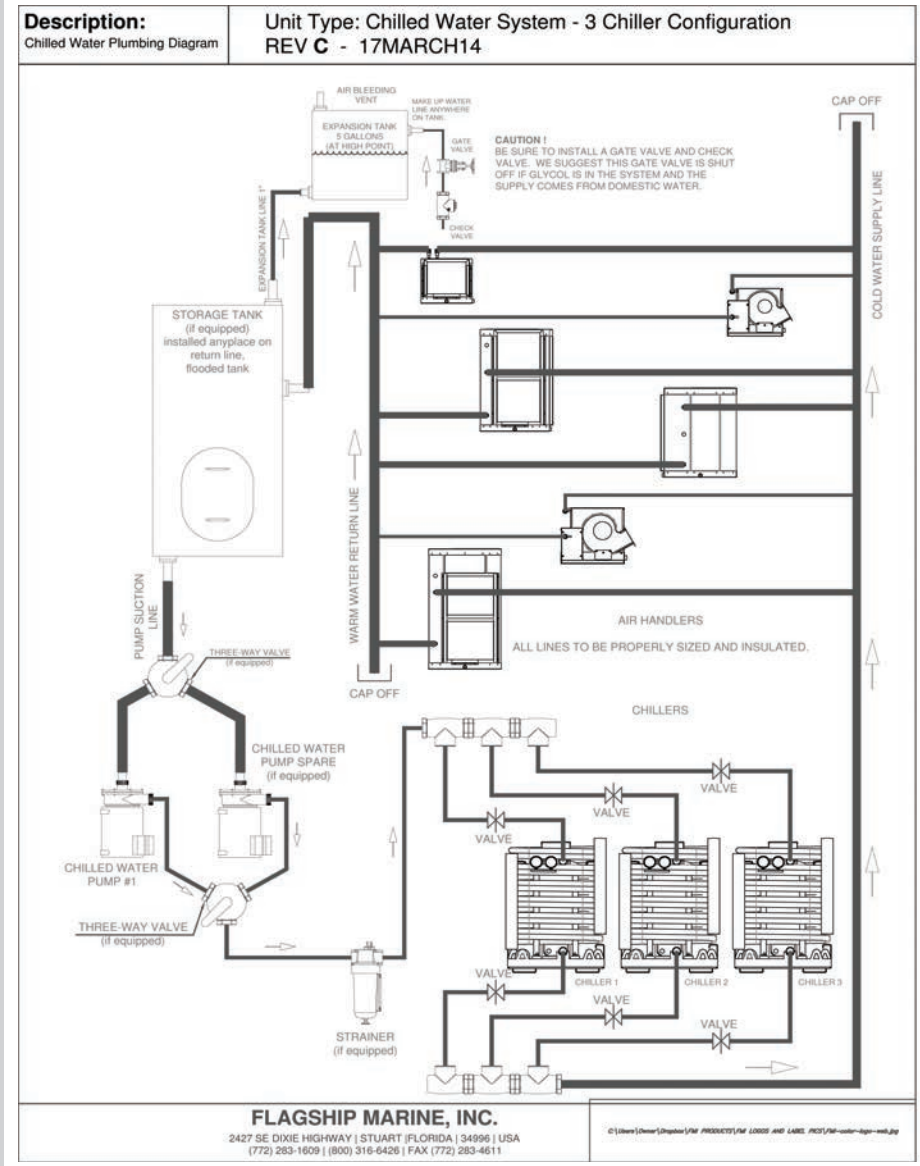
Coefficient Engineers

Kevin Glover, the owner and managing principal at Coefficient Engineers, says HVAC and the challenges of COVID-19 and energy efficiency are intertangled.

hour. Ditto for ambient temperature and humidity and the full range of weather conditions.

"There are opportunities now," Glover said, "to take advantage of new sensors, rich data, machine learning, and to tie all of this together into real-time operating abilities." He said that in the past naval architects dealt with variable conditions by overdesigning multiple factors and building in redundancies.

Glover said 15-20 years ago there was resistance among ship owners about new tech and sensors and software. Now, though, raw material costs are going up, while tech costs have declined dramatically. "With a properly designed system," Glover comments, "with real-time inputs about chillers, equipment, filtration, the whole turns out to be bigger than the sum of its parts." Lower operating costs quicken payback times, not just in efficiency, but also in maintenance. High tech allows for real-time monitoring. And problems uncovered earlier are usually cheaper to fix.



Flagship Marine

A Flagship Marine chilled water system.

III. Low GWP R\refrigerants

A third critical maritime HVAC challenge is linked to low global warming potential (low-GWP) refrigerants. Readers are likely aware that flammability concerns plague certain low-GWP refrigerants.

Brigham, with Flagship, commented that "the old reliable R22 is no longer being produced although it is still available." He said that newer, proposed gases are environmentally friendly "but have some major concerns due to flammability." This may not be a concern in well-ventilated shoreside applications. "However, it is a concern shipboard," he advised, "where compressors are frequently located in tight spaces."

Glover said that a large cruise ship, with heavy chillers, can safely use a low GWP compound that is not flammable. But for smaller cooling applications, even in relatively small quantities, high flammability is still a problem. Stateroom refrigerators are an example: each has very little refrigerant but there are thousands of such units. Glover said that because cruise ships are built in Europe, designers and engineers there have been somewhat ahead of this problem compared to their American counterparts.

Recently, though, low-GWP refrigerants moved to the forefront of America's regulatory priorities. The new American Innovation and Manufacturing (AIM) Act passed last December requires the U.S. Environmental Protection Agency (EPA) to establish an allowance allocation and trading program for hydrofluorocarbons (HFC), the compounds used in modern refrigerants, called "potent greenhouse gases" by the EPA. By 2036, HFCs are to phase down to 15% of baseline levels. AIM is also supposed to facilitate "the transition to next-generation technologies that do not rely on HFCs," according to the EPA.

This Phasedown started in May when EPA's proposed rule was published in the Federal Register. While HFCs for some uses will get expanded allowances (e.g., military and fire-fighting) overall quantities will decrease.

The Phasedown raises almost endless questions. As HFCs become scarce, will the materials that remain available work in a maritime setting, just because they may work in land-based applications?

Glover said this is a top priority topic for ASHRAE. "We're reviewing ASHRAE research and land-based developments of alternative refrigerants to determine the best way forward for maritime applications," he said.

Stay tuned.

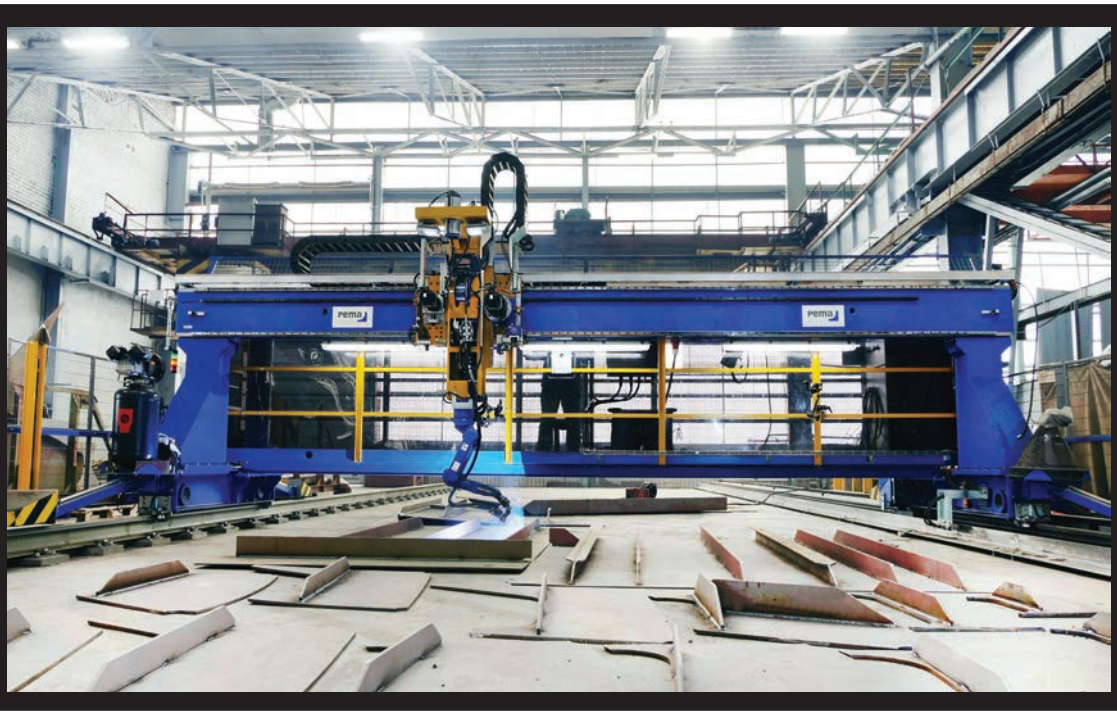
Tech
File

Automated Welding Solutions Save Time and Maximize Manpower for Shipbuilding and Repair

All images: Pemamek

Pemamek has provided automated welding solutions to the shipbuilding industry for more than 25 years. Modular lines consisting of everything from simple robotic welding systems to entirely integrated plate preparation, joining and finishing operations can be built according to customer needs. But, according to Michael Bell, Sales Director for Pemamek LLC, the North American subsidiary of Finland-based Pemamek Oy, their systems are customizable for all types of vessels ranging from sub birthing barges, to tugboats, to ocean liners to naval warfare vessels.

Ship hulls consist of many thick and heavy panels welded together, some weighing more than 300 tons. These blocks are pieced together to form the hull. Often, ships experience stresses caused by the harsh conditions of the sea, or even the Great Lakes. When building a boat or ship that undergoes these stresses, following the Welding Procedure Specification is of paramount importance. Pema solutions can include two separate stations with two machines or as fully automated systems integrated into one stiffener mounting and welding station. But first, the plates must be prepared for welding. "If your plates have been stored outside for three to five months,



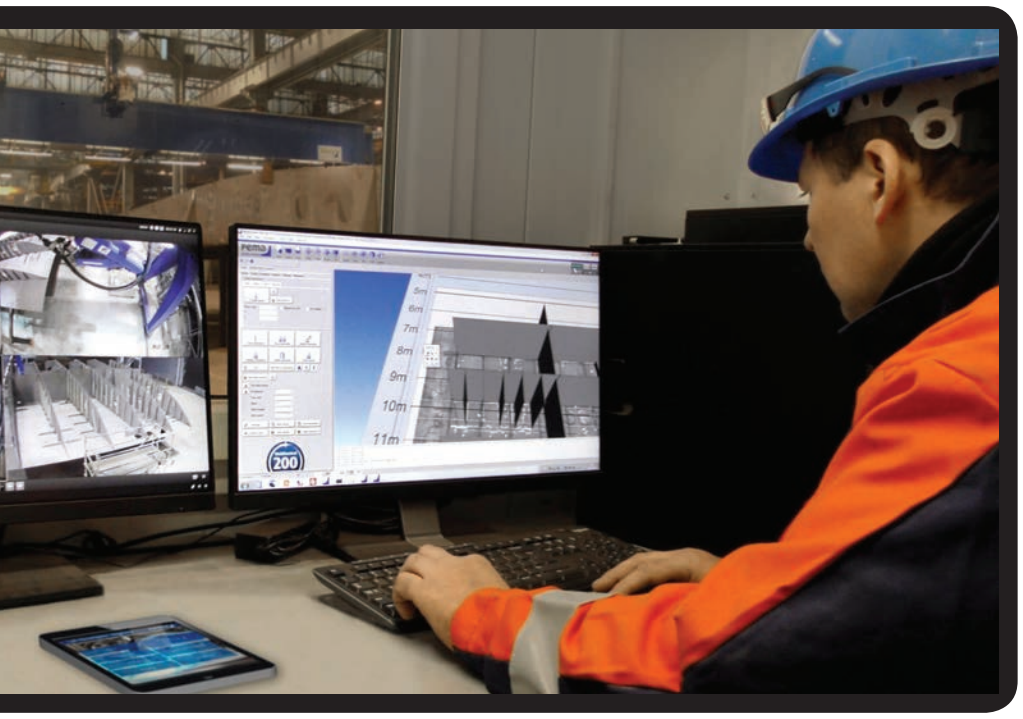
they have scale and rust and you need to get them back to blue steel again," Bell said. "Pema has a blasting line that blasts the steel back to blue."

Plate joining is next in the process. "We join the plates in the manner that was prescribed by the SUB engineering drawings using a laser hybrid welding process," Bell said. "It's a laser beam followed up with secondary operation of high fill deposition." The system records all input data sending it to the robot which will continue to weld the joint until the job is done.

The plates look a bit unconventional when joined. Bell likens them to Tetris blocks. "You're going to profile that plate and use the laser marking system to mark the plate for stiffener placement. The plate is then moved to the Stiffener Mounting Portal (SMP) outfitted with a gantry that loads the stiffeners into the appropriate location on the plate. It's all verified with a camera, tacked into place and moved to the second system which automatically welds them into place. The Pema Vision Robot Welding Portals (VRWP-C is the most compact) can be set up quickly and easily. Consisting of the plate joining station, panel cutting and marking station, SMP and welding station, the VRWP-C and its larger counterparts (VRWP-S, X2) are controlled and integrated using the WeldControl 200 and WeldControl 300 Offline software systems. Designed by welders and shipbuilders, both software systems simplify the entire process by taking the data input by the operator—or captured via scans—and creating programs for the robots to follow. The WeldControl 300 Offline's user-friendly interface enables welders to quickly and easily download CAD files then edit welds and robot configurations as necessary.

One welding robot can take the place of six to seven manual welding operators. However, it does not replace the knowledge and experience of the human welder who can see whether something minor is awry and adjust the system accordingly. A side benefit of automating the welding process is bridging the gap between older welders and their younger counterparts. "The average age of a welder is 58," Bell noted. "These solutions transcend generational differences. Incoming talent can help the knowledge base to enter their data and operate it simply."

"No boat or vessel builder is too small or too big," Bell said. "We have the smaller welding portal but can scale it up if need be. There is no need to buy a $50 million system. We can help builders find the solution that best fits their operation."



Sea Change

All American Marine

The United States' first zero-emissions, hydrogen fuel cell-powered, electric-drive ferry has been launched and is gearing up for operational trials off the U.S. West Coast.

Constructed by Bellingham, Wash. shipbuilder All American Marine, Inc. (AAM), SWITCH Maritime's 70-foot newbuild Sea Change will operate in the California Bay Area as the United States' first hydrogen fuel cell vessel, developed to demonstrate a pathway to commercialization for zero-emission hydrogen fuel cell marine technologies. While still working on permitting of hydrogen fuel systems for maritime vessels with the U.S. Coast Guard, the completed ferry will exhibit the viability of this zero-carbon ship propulsion technology for the commercial and regulatory communities.

The vessel is equipped with a hydrogen fuel cell power package provided by Zero Emissions Industries (formerly Golden Gate Zero Emission Marine), comprised of 360 kW of Cummins fuel cells and Hexagon hydrogen storage tanks with a capacity of 246 kg. This system is integrated with 100 kWh of lithium-ion battery provided by XALT and a 2x 300 kW electric propulsion system provided by BAE Systems. The hydrogen fuel cell powertrain system affords the same operational flexibility as diesel with zero emissions and less maintenance. The vessel design originates from Incat Crowther, and the construction supervision and management is led by Hornblower Group.

Rock Hall

Vane Brothers

Jones Act marine transportation provider Vane Brothers has taken delivery of the third in a series of four 3,000-horsepower push tugs. Named the Rock Hall, Vane's newest addition is the nineteenth Maryland-built towing vessel to join the Baltimore-based company's fleet since 2008. The tug is named for a waterfront town located on Maryland's Eastern Shore. The town is known as "The Pearl of the Chesapeake."

Chesapeake Shipbuilding and Naval Architects of Salisbury, Md. has delivered 16 3,000-horsepower, model bow tugs and three 3,000-horsepower square-bow push boats. Two of the Rock Hall's sister tugs, the Salisbury and the Annapolis, were delivered in 2019 and 2020, respectively. The molded depth of these push tugs is only 10.5 feet, making them well suited for working in confined, shallow-draft areas along the U.S. East Coast's inland waterways.

One more 3,000-horsepower Salisbury Class push boat, the Charles Hughes, is scheduled for delivery from Chesapeake Shipbuilding and Naval Architects later this year.

To create the Salisbury Class design, Chesapeake Naval Architect John Womack worked in close collaboration with Vane Brothers Port Captain Jim Demske, who has overseen construction of nearly 50 tugboats for Vane over the last two decades.

NOAA Patrol Boat

Ocean Craft Marine

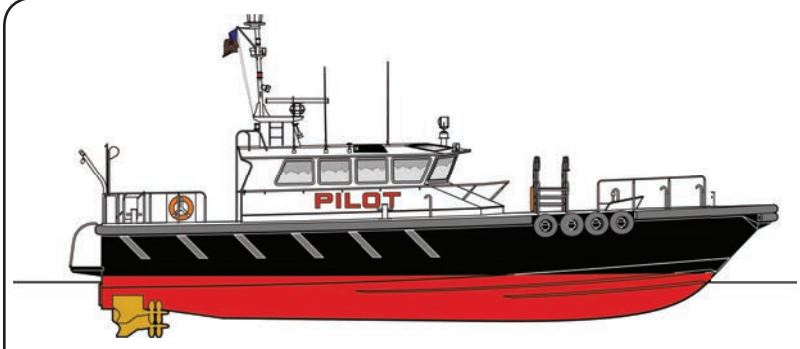
Annapolis, Md. boatbuilder Ocean Craft Marine (OCM) delivered a custom-designed 9.5-meter rigid hull inflatable boat (RHIB) to the National Oceanic and Atmospheric Administration (NOAA) Office of Law Enforcement (OLE), Pacific Islands Division headquartered in Hawaii. The RHIB was custom designed for the extreme offshore environs of the open Pacific Ocean waters and the various mission-profiles that are unique to NOAA OLE.

OCM partnered with the design team at Shockwave Seats to design and then build a five-man fully shock-mitigating operator-console, known as an Integrated Control Environment or "ICE-Console", to insulate the boat's operators and equipment from the jarring impacts caused by wave action at sea. It is fully-free-floating with three-axis of movement while suspended on 12 inches of travel supported by six pneumatic Fox Racing shock-absorbers.

The vessel is powered by twin 300-horsepower Yamaha outboard motors, and features state-of-art navigational and communication electronics, including a David Clark Company fully-integrated digital wireless headset-communication-system, FLIR thermal camera and Furuno HD Radar.

The RHIB has a cruise speed of 36 miles per hour while consuming 20 V-GPH and has a top speed of 58 miles per hour. The boat's twin 100-gallon fuel tanks provide a mission-range of approximately 360 miles without refueling.

Galveston-Texas City Pilot Boat



Gladding Hearn

The Galveston-Texas City Pilots ordered a fourth launch from Gladding-Hearn Shipbuilding, Duclos Corporation. Delivery is scheduled for late 2022.

With a length overall of 73.2', beam of 23.3' and draft of 5.9', the all-aluminum, high-speed pilot boat features the Ray Hunt Design deep-V hull. It will be powered by three Volvo Penta D13, EPA Tier 3 marine diesel engines, each delivering 800 Bhp at 2,300 rpm, and integral to the engines' triple IPS-Pod 1050 system. Top speed will be over 30 knots. The vessel will burn 25% less fuel than the pilots' existing 70-foot pilot boats at the same speed, said shipyard officials.

Humphree interceptors, with Active Ride Control, Coordinated Turn and Automatic Trim Optimization, will be installed at the transom. Seakeeper 30HD stabilizing gyro will be installed to reduce up to 80% of the vessel roll at all speeds.

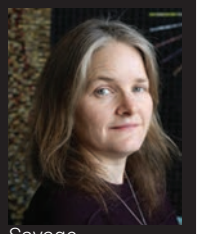
Outside the wheelhouse are wide side-decks and a flush main deck and on the foredeck aft of the wave break are port and starboard boarding platforms. A Harken safety rail system will be installed on the wheelhouse handrails. A control station is at the transom, along with a winch-operated J-Basket rescue system and recessed stairs and platform, for pilot rescue operations.

People & Companies


Burns


Mahaffey

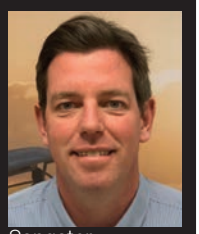

Michel

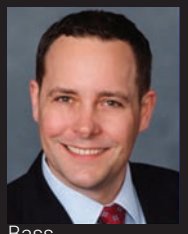

Savage


Steady

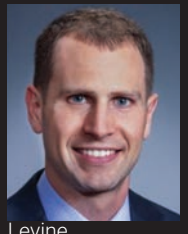

Grönborg


Dearing


Sangster


Bass


Zoelle


Levine


Bruhns

Burns to Lead Mass. Maritime's Renewables Work

The Massachusetts Maritime Academy announced Capt. Michael R. Burns Jr. as the first Executive Director of the Academy's Maritime Center for Responsible Energy.

ABS Promotes Mahaffey

ABS has appointed Jessica Mahaffey as Vice President, Marketing and Communications.

Webb President Michel Retires

Webb Institute is searching for its 17th president to fill the role left by R. Keith Michel, who retired on June 30, after nine years of service.

Savage Rejoins BMT

BMT has hired Catriona Savage to the role of Technical Assurance Director, responsible for its global technical authority.

Derecktor Names Steady COO

Derecktor Shipyards has hired Richard Steady as chief operating officer, responsible for overall operations and development at the company's Florida and New York shipyards.

Grönborg Tapped as OXE Marine CEO

Magnus Grönborg has taken over as CEO of OXE Marine, succeeding Myron Mahendra, who will assume the position of EVP business development, sales and marketing.

Dearing Joins Callan Marine

Callan Marine has hired Chris Dearing as the dredging contractor's new director of engineering.

Leadership Changes at Mercury Marine

Mercury Marine announced multiple job moves and promotions within its global leadership team. Will Sangster has been promoted to President, Mercury EMEA; Brad Zoelle has been promoted to General Manager, APAC Region; and Jonathan Levine was named General Manager, Mercury Canada. Marty Bass will be moving back to the U.S. to take on a future role within the company.

Lake Assault Boats Expands

Lake Assault Boats has opened a 14,800 sq. ft. repair, service and maintenance facility in Portsmouth, Va., to be led by marine industry veteran Smokey Glover.

HEC Names Bruhns President

Herbert Engineering Corp. appointed Hendrik Bruhns as president, succeeding Spencer Schilling who formally stepped down on July 1.

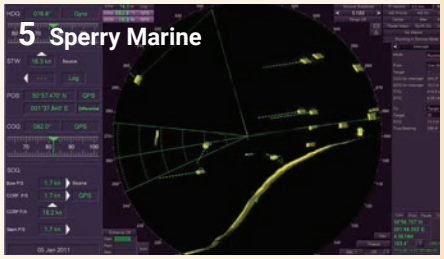
Products

1 Wilson & Hayes
Marine Furniture

2 In-Mar Solutions

3 L.S. Starrett Company

4 Miller Electric



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3. "Intenss" Saw Blades

The L.S. Starrett Company offers the newly positioned Intenss Bi-Metal Band Saw Blades for general purpose metal sawing of a wide range of materials and shapes. Featuring a patented process developed by Starrett called bi-metal unique technology, that provides 170% more weld contact with the teeth, Intenss blades exhibit superior resistance to tooth strippage, significantly reducing fracture and breakage, which enables exceptionally long blade life. Performance is further enhanced by M-42 teeth with a multi-edge tooth design that produces split chips for faster cutting.

4. SubArc Digital Converter

Miller Electric Mfg. LLC, has expanded its digital capabilities for submerged arc welding (SAW) to more welding power sources. Designed for field applications such as shipbuilding, the new SubArc Digital Converter enables the use of digital SAW accessories, such as the 3-Wheel Tractor and digital control, with expanded equipment — including Big Blue welder/generators and Dimension 650 welding power sources. "The digital converter is the middleman between the power source and the digital subarc accessories. This expands the equipment capability and allows contractors to bring the subarc process to the field more easily," said Zak Stapp, Miller SAW application specialist.

5. VisionMaster Radar and ECDIS

Sperry Marine has strengthened its portfolio of military navigation solutions with the release of Additional Military Layers (AML) for its VisionMaster series of Radars and ECDIS. Developed to allow defense and naval users to take advantage of Sperry's commercial radar systems on military assignments on small and large vessels, the enhancement supports the display of AMLs created to support both command and control and provide digital navigation systems that ensure the best situational awareness available for marine operations.

Marine News

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PRODUCT FEATURE	BENEFIT
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16 bar (230psi) DN 50-300 (NPS 2-2) 10 bar (150psi) DN 350-1800 (NPS 14-72) Reinforced seat option: 16 bar (230psi) DN 350-600 (NPS 14-24)	Large range of pressure ratings
Wide range of body materials (Ductile Iron, Carbon Steel and 316 Stainless Steel)	Greater combination of trim options
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Upper and lower steel/PTFE lined bearings	Provides for longer cycle life and lower torques
Fully elastomer lined body with concentric disc	"Dry Shaft Design" isolates the shaft and the body from the line media
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