August 2020

MARITIME REPORTER AND ENGINEERING NEWS

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GREAT LAKES DREDGE & DOCK

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Number 8 Volume 82

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Photo: Great Lakes Dredge & Dock

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MARITIME REPORTER AND ENGINEERING NEWS

MARINELINK.COM

ISSN-0025-3448
USPS-016-750
No. 8 Vol. 82

Maritime Reporter/Engineering News (ISSN # 0025-3448) is published monthly (twelve issues) by Maritime Activity Reports, Inc., 118 East 25th St., New York, NY 10010-1062. Periodicals Postage Paid at New York, NY and additional mailing offices.

POSTMASTER:

Send all UAA to CFS. NON-POSTAL AND MILITARY FACILITIES send address corrections to Maritime Reporter, 850 Montauk Hwy., #867, Bayport, NY 11705.

SUBSCRIPTION INFORMATION

In U.S.:
One full year (12 issues) $110.00;
Two years (24 issues) $190.00

Rest of the World:
One full year (12 issues) $189.00;
two years $228.00 (24 issues)
including postage and handling.

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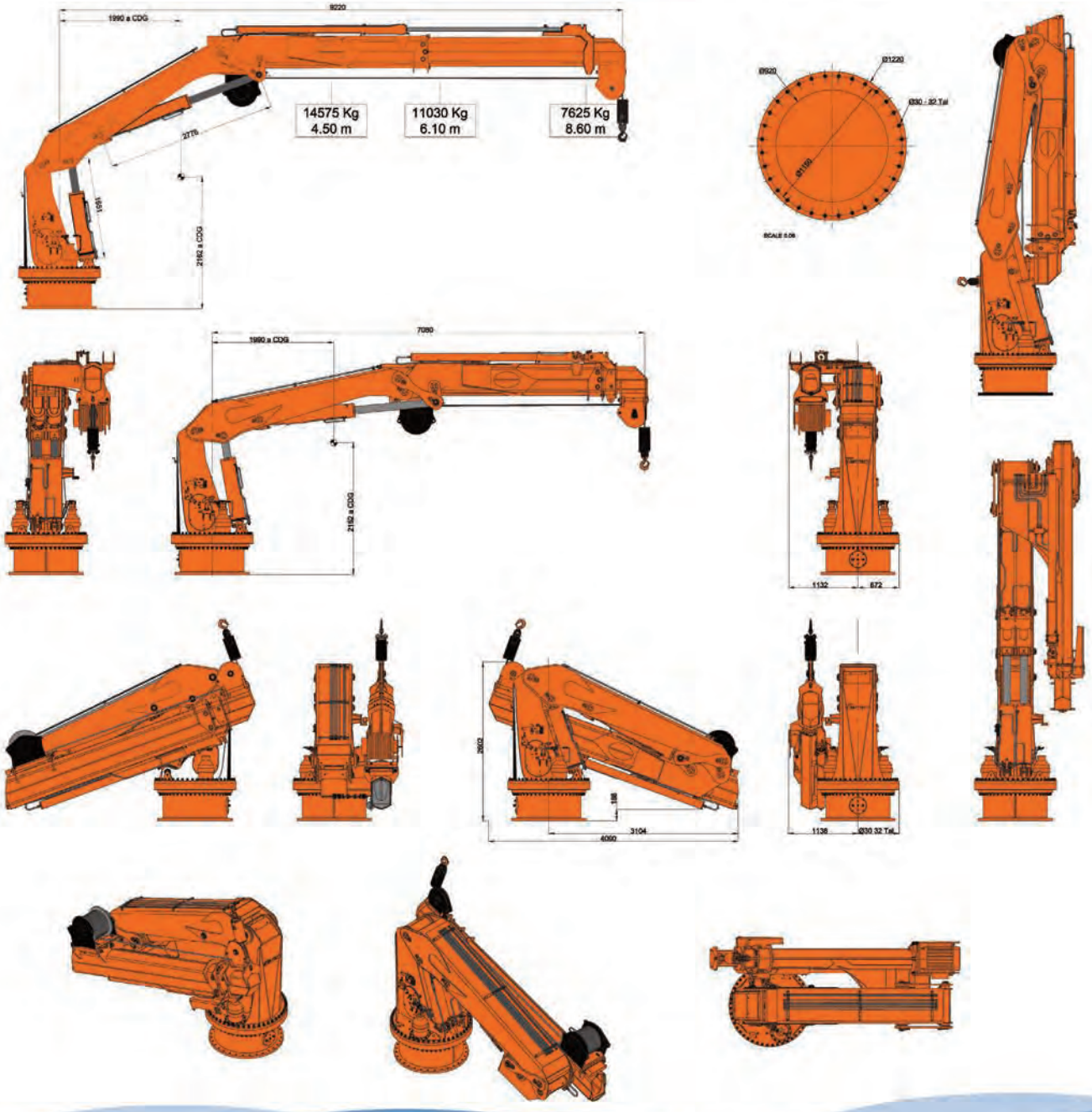

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As we enter nearly six months away from our HQ in Manhattan, I'm starting to get that "Tom Hanks in *Cast Away*" feeling.

A bit of hyperbole for sure, as I'm not stuck on a deserted island with a volleyball friend named "Wilson", rather on Long Island, population 7.6 million. But this is by far the longest stretch of zero travel in the past 30 years, and I, like the majority of you, have settled into what appears to be the new norm.

COVID-19 and all that it entails has been taxing across all industries and businesses, and despite the fact that maritime has been deemed "essential", challenges abound in the shipyard, too. This month **Bob Kunkel**, a familiar face to many of you, gives an insightful look at the situation via his *"Shipping through a Pandemic: Wake Up Call or Perfect Storm."* Kunkel is well-situated to comment, an industry veteran and his Amtech is involved in shipbuilding projects from Erie, Pa., to South Korea. His story starts on page 24.

While the cover story this month is not a shipbuilder, the Great Lakes Dredge and Dock (GLDD) company, as led by **Lasse Petterson**, CEO and President, has had a big impact on delivering shipbuilding contracts just when they are sorely needed. Driven by growing federal and state budgets, the dredging industry as a whole is strong and growing, and this month Petterson shares insights on the direction of GLDD on the heels of a recently announced $100m investment to build a new trailing suction hopper dredge (TSHD) with Conrad Shipyard. The profile on GLDD and Petterson starts on page 36.

This month's "Heavy Lifting" section is multi-faceted and reads like a *'Modern Marvels'* episode. To start us out, **Captain Andrew Kinsey** of Allianz Global Corporate & Specialty looks at the business side starting on page 16 and his column *"Project Cargo and Heavy Lifts in the COVID-19 Environment."*

Moving to the second half of this edition, we offer a trio of features looking at various heavy lift scenarios. *"The Art of the Ship Lift"* is a profile of Bardex CEO **Thomas Miller** and the evolution of the Chain Type Ship Elevator, a big capital investment for shipyards that promises even bigger dividends for generations to follow.

Next is a look inside Tandemloc, a unique company focused on a number of innovative solutions for the container shipping industry, born (literally) in the basement of **John DiMartino's** father's basement in the mid-80s. The story starts on page 46.

Last, but certainly not least, we visited with Allied Systems as it works through the largest contract in its company history, a $70m deal to design, engineer, build and deliver 37 crash and salvage cranes to the U.S. Navy, cranes designed to keep aircraft carrier flight decks clear and operational. *"Clear the Flight Deck"* starts on page 50.

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Cover Image:

Photo: Great Lakes Dredge & Dock

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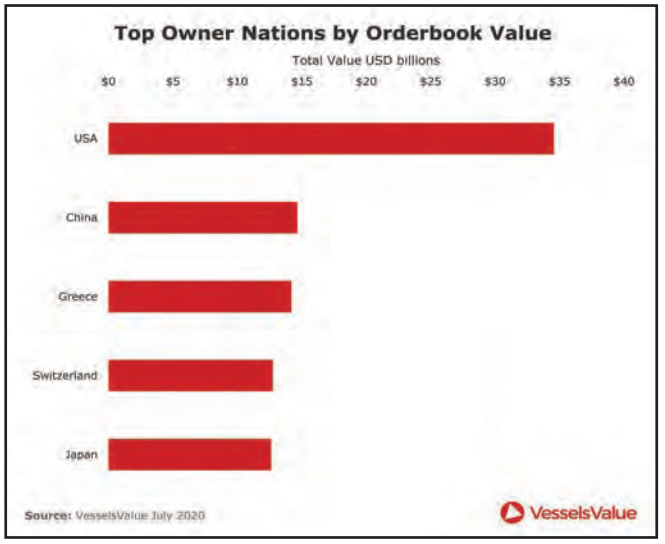
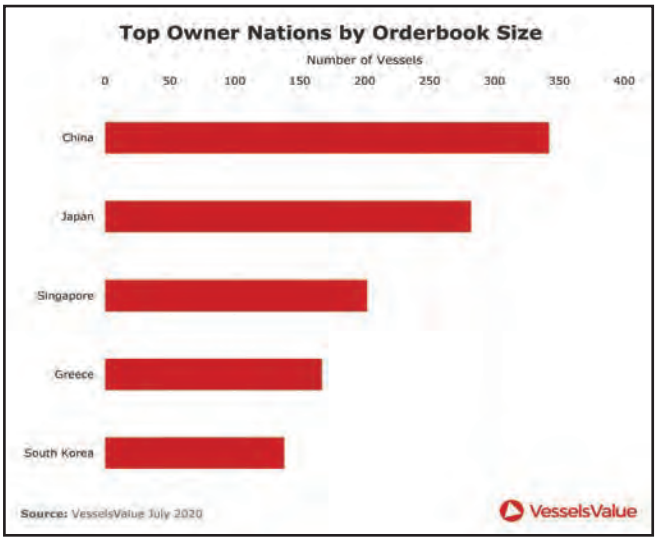
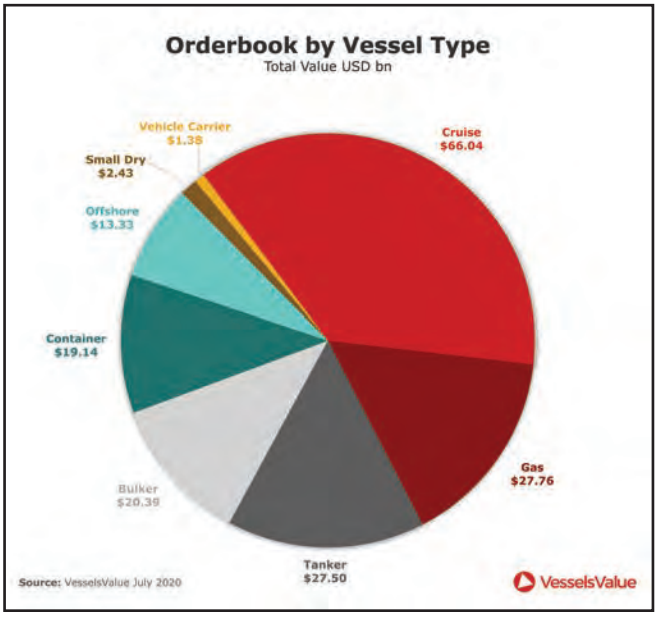
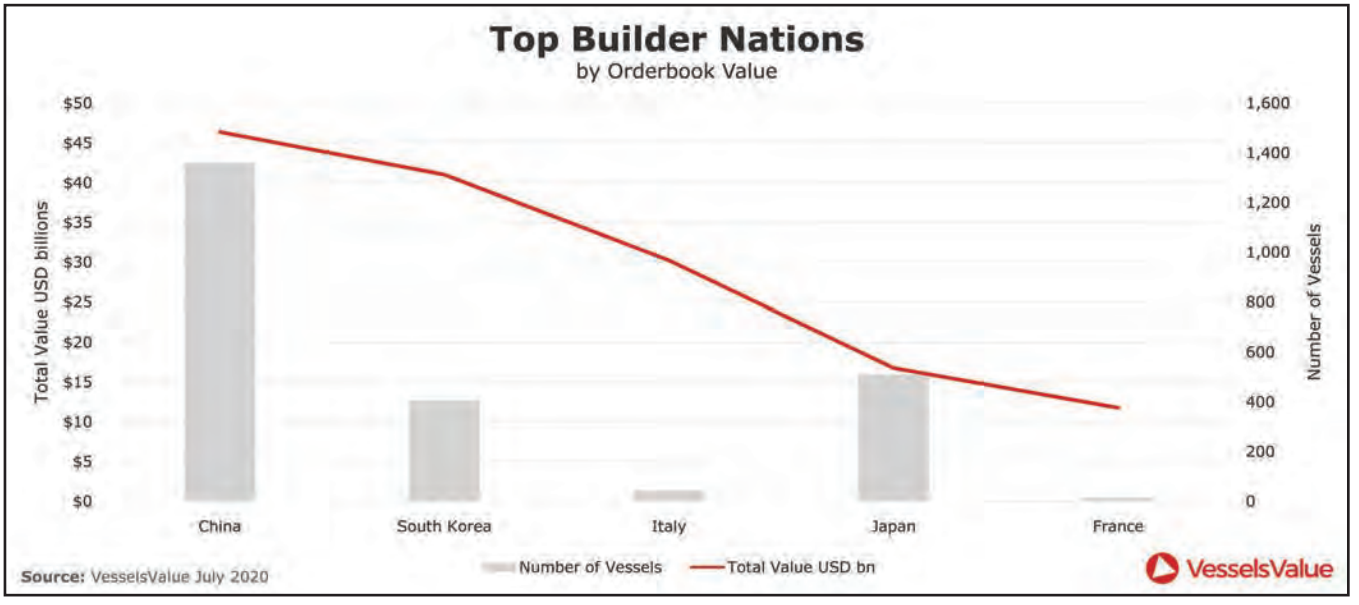


Shipbuilding Outlook

According to a recent report from BIMCO, the ship orderbook for dry bulk, containerships and tanker ships has shrunk to a 17 year low as Covid-19 slowed contracting. Contracting has been massively slowed contracting (-50%) while deliveries of new vessels have proved more resilient (-2%). The statistics provided here from VesselsValue paint an interesting picture, mostly because the high-value cruise ship fleet orderbook is included in the mix, launching U.S. to the top of the "Top Owner Nations by Orderbook Value" list.





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p. 24

"... in most photographs taken during the initial strike of the virus, our supervision staff looked like they were preparing for brain surgery rather than structural block inspections."

Robert Kunkel
President of Alternative Marine Technologies, discussing the impact of COVID-19 on shipbuilding

p. 18

"When we first mapped the number of Israeli startups which had any potential strategic play with ports, shipping and logistics back in 2017 - the number was 37. Today we count 105."

Hannan Carmeli, (left) Co-Founder & Managing Partner, theDOCK

"There is a heightened priority on procuring this new design from us because it is able to support the newest F-35 Joint Strike Fighter which the previous model could not due to its limited load capacity."

Hitesh Patel,
Vice President, Allied Systems

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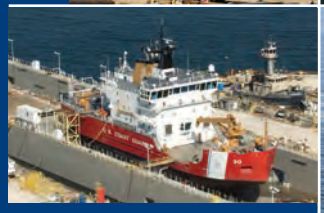
Built Better by Bay



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Tip #15

Using Student Exam Results to Measure OUR Performance

Exams are a staple of training. We know what they are, we know what they are for, and we know how to write and deliver them. And, of course, we all use them to test trainee knowledge. But there is another benefit of exams that the vast majority of maritime trainers are ignoring. And since we give and grade exams all the time, this benefit is already there for the taking! The value I am referring to is that of providing outstanding, actionable feedback on how effective our training is, organization-wide. Exams are normally used to measure an individual trainee's knowledge. But the same data we generate for that purpose can be used as an outstanding indicator of overall training program success. It is also a leading indicator of organizational performance and safety - if we just examine the data a little differently. So - how do we do this?

There are many ways that our exam data can provide valuable insights. In general, all of these analyses are greatly facilitated by having the learners perform their exams in an LMS, as some LMSs produce the insights automatically for you. If your learners are doing their exams on paper, the various analyses could be done, but it would be a largely manual task. Let's look at what is possible with the help of technology.

One of the most useful analyses we can run on exam results is to group all of the questions by the competency they cover, and then look at average performance for the group of questions covering that competency. As it stands now for most organizations, we only monitor the average performance of an exam as a whole. Thus, if (for example) the new deckhand exam is being performed with an average score of 80%, this might give us confidence that the concepts are well learned. This is false security. Within that exam it may be that there is a set of questions that cover a particular competency which are routinely being failed.

As an example, we could identify all of the firefighting-related questions in the exam (or across all exams) and look at how

well they are performed as a group. If we discover that these questions are poorly performed, even within the context of an exam that is well performed overall, we have identified a serious risk that we can now work to eliminate. This would have been completely hidden when looking at average scores on exams in general, but becomes immediately apparent if we perform a by-competency analysis of question performance.

A second useful analysis we can perform on multiple-choice questions is to generate statistics which indicate, for each question, how often each of the potential answer selections is chosen. For example, on a particular question this might tell us that the correct answer is chosen 60% of the time, that the first incorrect answer is chosen 35% of the time, and that the remaining two incorrect answers are rarely chosen. This is useful for many reasons, but the most critical use of this data is to identify common misperceptions. In the example above, one of the incorrect answers is mistakenly believed to be correct by roughly ⅓ of the students who have answered that question. If that common misperception creates a potential safety issue, having access to per-question statistics of this sort reveals that safety risk and allows the organization to quickly correct the misperception before the risk manifests itself as an accident.

So - what risks are hiding in the data we already have? As indicated, if we deliver exams within an LMS, some of this information may be readily available. If not, one might consider some form of on-line exam delivery to begin the process of collecting and utilizing this important data.

These two examples only touch the surface of the insights that can be derived from the exam data we have. We will continue with other useful exam -derived insights in the next Training Tips for Ships. Until then, stay healthy and sail safe!

The Author

Goldberg

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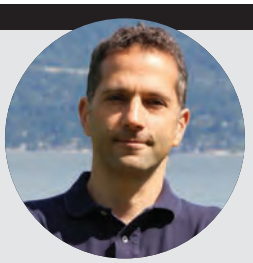


Containers and the Rolling Seas

Cargoes have come off ships at sea it seems like forever. Some years ago a ship suffered a casualty transiting the English Channel in a storm. Much of its cargo of lumber and other floating items washed ashore on the southwest English coast. Before the authorities could arrive, enterprising local residents gathered it up.

Nowadays, the majority of non-bulk cargo is carried in containers. Container ships have gotten larger and are capable of carrying thousands and thousands of containers. The ships have greater length, greater breadth, and greater draft. They also have greater air draft. Containers at or near the top of each stack swing through a greater arc as the ship rolls than do those located at or near the bottom of the stack.

One source estimates that approximately 10,000 containers are lost at sea annually due to falling overboard from underway vessels, but it is unclear how this estimate was derived. Given the millions of annual container transits, this is an impressive testament to good cargo handling and seamanship. The World Shipping Council, an association of the major container shipping companies, representing 80% of the total global vessel container capacity, states that ships of its members lost an average of 1,382 containers annually during the period 2008-2019.

Until recently, governments only got involved in container losses if they created a hazard to navigation (such as by floating) or if a hazardous cargo were involved. Otherwise, the loss was treated as an insurance matter between the involved parties.

Lately, though, governments have shown great concern about containers lost within their territorial seas (generally 12 nm offshore) and potentially further, particularly if the cargo is deemed hazardous.

In February 2014, the container ship Svendborg Maersk lost 517 containers during heavy weather while transiting the Bay of Biscay. At the request of the French government, Maersk hired a survey vessel which located most of the containers so that fishing vessels would not inadvertently entangle their nets. One of the lost containers later washed ashore in England unleashing 11 million very wet cigarettes. This incident ranks as the largest recorded overboard container loss to date.

On 31 May 2018, the container ship YM Efficiency lost approximately 80 containers during heavy weather off southeast Australia. The owner paid for recovery and cleanup of containers that washed ashore or were found in the vicinity of the coast but has allegedly denied responsibility for recovery of containers on the seafloor in deeper waters.

The APL England lost at least 50 containers in heavy seas off the coast of Australia in May 2020.
Photo: Australian Maritime Safety Authority

On 1 January 2019, the container ship MSC Zoe reported the loss of approximately 342 containers during a storm in the North Sea. Most of the containers soon washed ashore on the Frisian Islands of the Netherlands and Germany. The Netherlands government has opened an investigation into the incident.

On 24 May 2020, the container ship APL England lost 50 containers in waters about two kilometers deep during heavy seas about 73 kilometers southeast of Sydney. Fifteen containers have washed ashore but the others remain missing. A formal written undertaken of $22.5 million was required before the vessel was released from detention to ensure remediation of all impacts of the incident. The owner has been directed to search the seafloor for the containers and

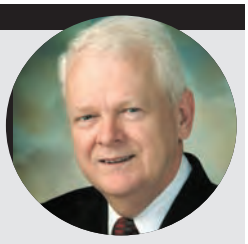
recover containers as agreed with the Australian Maritime Safety Authority (AMSA). Charges have been laid against the master for pollution and/or damage to the Australian marine environment as a result of poor cargo loading. The incident is under investigation.

On 22 June 2020, a deck barge under tow from Honolulu to Hilo lost 21 containers in a storm. The US Coast Guard is requiring the operator of the barge to locate and recover the containers. The incident is under investigation.

On 26 June 2020, the container ship Navios Unite lost three containers in rough weather approximately 33 nm off southwest Australia. The Australian Maritime Safety Authority (AMSA) immediately launched an aircraft to search (albeit unsuccessfully) for the containers but has issued no follow-up reports.

There are indications that the design of modern container ships may be a significant factor in the loss of shipping containers overboard. These ships are designed chiefly to achieve two goals: maximize carrying capacity and operate efficiently at high speed. Thus, the ships have wide bow flare and wide beams that minimizes frictional resistance as the bow passes through the water. As the wave crest moves aft, the bow pitches down. If the seas are on either forward quarter, this causes the ship to roll. Due to a combination of the vessel's speed and the offsetting wave action, the roll can sometimes become synchronous resulting in increasing roll. The dangers are exacerbated in vessels with flat sterns and in heavy sea conditions. The combination of all these factors can result in parametric rolling. This condition can occur very rapidly, going from moderate rolling to rolling in excess of 30° in just a few wave cycles. Parametric rolling has been implicated or suspected in many of the instances cited above. Naval architects and ship designers would do well to include this consideration in their future work. Masters and deck officers of container ships should be alert to signs of parametric rolling and take immediate action to ameliorate the situation.

The Author



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Project Cargo and Heavy Lifts in the COVID-19 Environment

The year 2020 has presented a litany of challenges to the safe movement of global project cargo. While heavy lifts and engineered cargo movements always present challenges from a rigging and execution standpoint, we have also faced exceptional challenges on other fronts. These have included cancelled vessel bookings, port facilities as well as prefabrication/modulization yard closures, lack of vessel and facility access as well as travel restrictions. At Allianz Global Corporate & Specialty (AGCS), we have found that focusing on some fundamental project management principals can greatly assist in helping engineered cargo continue to move safely and efficiently during these challenging times.

Have a Plan

The greatest change I have witnessed in my years moving marine cargo is the detail that goes into the planning and execution of an engineered cargo movement. Since my early days at sea aboard an Export Lines C-3, that included hand-drawn colored stow plans and rigging the booms for heavy lifts, a lot has changed. The use of detailed method statements is one of the most important changes that has occurred to help ensure safe cargo movement. The fact that we refer to it as an "Engineered Cargo Movement" goes to the root of the issue. The details of the cargo, lifting appliances, transport and securing are all clearly specified. The utilization of uniform standards for carriage ensure that all design and securing criteria can be accurately reviewed.

The method statement includes the analysis of transportation and handling of the cargo and is an essential risk management tool. It should combine detailed technical data with a thorough understanding of transportation and logistics to form a comprehensive description of how the operations of the entrusted cargo shall be conducted. A method statement is designed to ensure safe transportation operations as well as delivery of the cargo in good condition.

Review the Plan

All parties involved in the execution of an Engineered Cargo Movement should have the chance to review and comment on the method statement. During this phase, it is critical that communication protocols and the escalation processes be clearly outlined. It is critical to know whom to contact if changes need approval or damages need to be reported. Given the current changes that are impacting our industry, it is also important to have a plan B is in place. There needs to be enough time provided to adequately review a method statement and provide feedback. At AGCS, we require that plans be submitted 10 working days prior to cargo movement at a minimum. This timeline allows adequate time to request clarification or adjustment without leading to delays of cargo movement.

Agree to the Plan

Formalized QA checks and signoffs are important to ensure that all parties involved are on the same page and that a planned cargo movement will proceed smoothly. This helps to ensure that no detail is overlooked. In a heavy lift, we are only as strong as our weakest link – both literally and figuratively. Ensuring that all stake holders sign off the method statement prior to execution helps to eliminate potential disruptions.

Execute the Plan

One key to successful execution is that we agree to what we are going to do, and we do what we agreed too. While this sounds simple and elementary, it really is one of the key aspects to a successful evolution. We do not walk onboard the day of a lift and start changing things because "this is how we always do it". The approved method statement outlined the required steps, all parties concerned have reviewed and agreed to them, now it is time to deliver on the plan.

Verify the Plan

As part of our Survey Warranty Process, we are on site to witness all cargo movements involving Project Critical Cargo. This is gaining increased importance during the current time as it is essential to be on deck to make sure everyone is on the same page. Given the current issues with delayed crew reliefs as a result of COVID-19, it is important

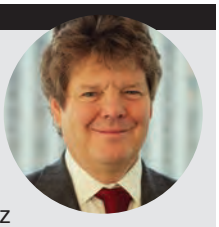
to ensure that vessels are adequately manned. In addition, the current pandemic has brought significant stress to supply chains and have seen instances where late changes to stowage have been necessary.

COVID-19 continues to present some significant challenges to achieving in person attendance. At AGCS, we are actively utilizing technology to help us capture lifting and securing details when local conditions are preventing us from attending. This has included over the road heavy hauls as well as barge shipments. While not an ideal situation, remote technology has provided us with a solution that allows cargo to continue to move safely and securely. However, for any of this to happen the lines of communication need to be established beforehand and kept open. The steps outlined above are far more effective when communication, cooperation and collaboration are present. Fostering collaboration at times like these is the real challenge.

In Summary

The shipping industry has largely proved resilient to the coronavirus outbreak, keeping the life blood of global trade and essential supplies flowing. A sharp economic downturn and difficult operating conditions, however, present a unique set of challenges. At Allianz, we continue to partner with our assureds to help ensure successful voyages. It is my hope that the insight shared here will help the reader realize success in their ventures as well.

The Author



Kinsey

Captain Andrew Kinsey is the Senior Marine Risk Consultant at Allianz Global Corporate & Specialty.

L to R: Nir Gartzman, Noa Schuman (CMO) & Hannan Carmeli.

Photo: theDOCK

theDOCK

Hannan Carmelie & theDOCK: Fertile Grounds for Innovation

There are many Venture Capital funds helping to drive innovation across industry. theDOCK, co-founded by Hannan Carmeli and Nir Gartzman, is unique in that it is working to connect the ports, shipping and logistics industries with primarily Israeli-based start-ups. We recently interviewed Carmeli for insights on the path and pace of the companies under theDOCK's guise.

By Greg Trauthwein

Hannan Carmeli, Co-Founder and Managing Partner of theDOCK, freely admits that he always wanted to be a 'Chief Dreamer,' a dream fulfilled with the creation of theDOCK in early 2017. "My entire career was focusing on operational aspects of large companies," Carmeli said, citing his work for "a NASDAQ-traded software company" delivering solutions to Fortune 500 and Global 1000 enterprises. "I was engulfed in operations, with little time for (business) dreaming," he said. Carmeli and Nir Gartzman founded theDOCK in early 2017, allowing him to connect his profession (high tech) with his passion for boating, seamanship, navigation. "I got the license to dream… and execute on it," Carmeli said.

What is theDOCK

"If I were to describe in one sentence - theDOCK is a thematic (vertical) Venture Capital (VC) fund," said Carmeli, noting that the domain of focus includes ports, shipping and logistics. Dubbing Israel 'the startup nation,' theDOCK team started out with events and activities, including Hackathons, Challenge-driven campaigns, meetups, and networking events, all sponsored by global partners aiming to tap new sources of innovation.

To date theDOCK has invested in 10 portfolio companies over the course of the two+ years, and it maintains an 'extended portfolio' of about 50 startups which showed promise. "Overall, we maintain in our CRM details and research data

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of some 300 startups to-date," said Carmeli, with about 70% Israel-based and the remainder from around the world.

To facilitate meaningful tech innovation, theDOCK has relations with about 100 "major players," including global terminal operators, port authorities, shipping companies, class societies, equipment manufacturers and shipyards, among others. "Of these, some 40 companies have sent representatives to various events and panels organized by us in Israel throughout the last three years. With eight of them we signed formal strategic relations," said Carmeli. The growth to date has been palpable. "When we first mapped the number of Israeli startups which had any potential strategic play with ports, shipping and logistics back in 2017 - the number was 37. Today we count 105," said Carmeli. theDOCK is always on the prowl for innovators, and in this regard Carmeli said that "for a startup to be interesting for us it has to fulfill three main criteria:"

1. Address a recognized market pain point. *We are driven by challenges which are intimated with us by our global partners (leaders in the space).*

2. Own deep technology. *i.e. - have significant Intellectual Property (IP). It could be in any of the interesting and "hot" disciplines such as AI and Learning, Augmented Reality, underwater communication, energy and charging, etc.*

3. Present a strong, coherent and committed team *with good coverage of technology and business knowledge/expertise.*

Maritime Opportunities Abound

While the maritime sectors generally have been conservative on the uptake of new technologies, Carmeli sees this as a positive, as the maritime, port and logistics sectors will have to innovate to keep up with developments in related sector, making it ripe for innovation leaps. "Back in 2017 when we started looking into it, we observed early indicators for change," said Carmeli. First, "leaders in the space started nominating executives to new roles which did not exist up until then: CDO (Chief Digital Officer), VP Innovation etc. Maersk, Wartsila, PSA, Cargotec were a few such leaders, and indeed very quickly we connected and identified joint vision regarding innovation in the space. Also, we recall an interview by Soren Skou – Maersk's CEO, in which when asked about who does he foresee as his competition in the future he provided a surprising answer (back then). it was not any of Maersk traditional competitors, rather he cited Amazon. This was a clear sign that things were going to change in the space."

While theDOCK is still in its infancy, it has already experienced success.

- ***Orca / Liberty*** *– Pilot benefitting both organizations around intelligent bridge assistance and fleet management.*
- ***DockTech / Kirby*** *– Pilot addressing depth mapping of segments of the Mississippi river in order to optimize barge load while maintaining safety measures.*

theDOCK

- ***ArcusTeam*** *– theDOCK led an investment round by syndicating additional funding (1+ USD million) on top of our own investment.*
- ***AIDock*** *– theDOCK's network of mentor yielded an opportunity for one of its mentors to assume the role of COO with a portfolio company, benefitting both sides.*

Partnership with leaders in the maritime space – Lloyd's Register, ThyssenKrupp, Wartsila, and Maersk, to name a few, is a vital component of the success of start-ups under via theDOCK. "We usually sign one-year cooperation agreement which is framed as follows," said Carmeli. "We first conduct a few sessions to understand the needs and challenges our partner would like to address. We then draft together a high-level annual plan (how many campaigns, KPIs for the number of startups and pilots to be identified etc.). Next step is carrying out the plan and delivering on the results." The approach has the potential to benefit both sides, as theDOCK partners get an exciting deal flow of startups addressing the business/operational needs specified; while startups get access to data, knowledge and platform/equipment for running pilot programs.

While progress to date has been substantial, theDOCK team continues to eye the impact of the COVID-19 pandemic, both in the near and long-term.

"The pandemic is a game changer," said Carmeli. "No man-made event could have ever inflicted such impact on our personal and business lives. The changes forced us to open our eyes to many new facts and observations. We can use zoom instead of travel. We may reduce office visits by using electronic bill of lading rather than get (in person) stamps on a piece of paper. These are just two examples of habits that changed (or accelerated) due to Covid19 and which might actually stick. That's the upside."

But there is a flipside, too. "On the other hand, business slowed down. With a few early stage startups struggling due to freeze of funding and pilots, for example. Young companies have all taken yet another look at their burn rate in order to increase the runway left before they get to the next round. The strong will survive as their market will look for efficiency, new offerings and optimized operations. These are fertile grounds for innovation."

Photo: WCI

Tracy Zea and WCI are

Working for the Inland Waterways

*We checked in with **Tracy Zea**, Waterways Council Inc.'s new President & CEO, on what's in store for the U.S. inland waterways for the remainder of 2020.*

By Greg Trauthwein

To start, give us some insight on your background and how you came to lead WCI.

I was born and raised in Chandler, Arizona, and attended South Dakota State University, receiving a degree in Political Science. After college, I found my way to Washington, D.C. via an internship with Senator Thune (R-SD). After the internship, I was hired by the House of Representatives, Transportation and Infrastructure Committee. During my time with the Committee, I served in various positions, but the one that relates the most to my position as Waterways Council, Inc. President/CEO is my time on the Water Resources and Environment Subcommittee. During my time on the Subcommittee, I played an integral role in the enactment of the Water Resources Reform and Development Act (WRRDA) of 2014. In 2015 I joined WCI as Director of Government Relations.

Describe the shape and size of WCI's membership today.

WCI is comprised of a diverse membership of approximately 165 members, primarily operators, shippers, organized labor and conservation groups.

What are your top priorities as you begin your new role?

To continue achieving legislative victories that will advance the modernization of the inland waterways system. There has been significant progress made on the inland waterways transportation system since 2014, but there is a real opportunity in the Water Resources Development Act (WRDA) of 2020 to enhance and modernize the system for years to come. WCI's top priority is to achieve a cost-share adjustment for construction and major rehabilitation projects on the inland waterways.

Much of the U.S. inland waterway infrastructure is in need of repair. Where do you see most urgent needs?

The Corps of Engineers built most of the nation's locks and dams in the early 20th century, and more than 70% of the lock chambers are, at over 50 years old, past their design life, with an overall average age of 71 years . All the infrastructure require maintenance, and the Corps continues to provide that to the best of the financial resources provided to them by Congress. They do an amazing job to ensure the reliability of the system. Meanwhile, some projects are being modernized. Congress has recognized the need to invest in the maintenance of these structures to provide operators and shippers reliability. An increase in funding over the last five years for operation and maintenance provided by Congress has also been extremely helpful.

Overall, how would you rate the Trump Administration for its efforts to address inland infrastructure needs?

The inland waterways have several champions within the United States Congress. Congress, regardless of party, has continued to invest in the inland waterways over the last seven fiscal years, whether through the appropriations or authorization process. On the appropriations front, over the last two years Congress has adjusted the cost-share for Chickamauga Lock to ensure that all four top priority navigation construction projects could receive efficient funding. Efficiently funding these construction projects remains a high priority because

it allowed for the Olmsted Locks and Dam project to become operational four years ahead of its "adjusted" schedule. The Lower Mon project is estimated to become operational in 2023, which is four years ahead of schedule. Kentucky Lock is estimated to become operational three years ahead of schedule, and Chickamauga is estimated to become operational four years ahead of schedule. This success will continue or improve if Congress adopts WCI's top priority of adjusting the cost-share in the WRDA 2020 bill.

Describe the takeaways (both good and bad) and potential impacts from America's Water Infrastructure Act 2020?

WCI's top priority of adjusting the cost-share for construction and major rehabilitation of projects is included in the America's Water Infrastructure Act of 2020. The cost-share is adjusted to 65% general fund revenue/35% Inland Waterways Trust Fund. If this adjustment is enacted into law, it could potentially provide an additional billion dollars toward construction and major rehabilitation of inland waterways modernization projects. Currently, there are 18 modernization projects that are valued at just over $8 billion, and by adjusting the cost-share, these projects will significantly be expedited toward completion.

Can you provide insight on how COVID-19 has and will impact inland marine operations?

The inland waterways industry has shown that it is not immune to COVID-19. Significant precautions have been taken by companies to keep their employees safe and healthy. The Inland Waterways User Board announced at its meeting in July that IWTF fuel receipts are down for FY20 as a result of the COVID-related economic downturn. The receipts were tracking almost identically to FY19 until February, when we saw almost a flat line. Expected total projections may be significantly lower than FY19.

While most of the chatter around COVID-19 is negative, if nothing else it has illustrated the importance of supply chains and the maritime industry's role in an efficient, cost-effective means to bring products to markets.

As the Department of Homeland Security pointed out early in the COVID-19 crisis, maritime workers are essential. The commerce this nation depends upon moves on the inland waterways in the most cost-competitive, environmentally friendly, traffic congestion-relieving, and safest way. Congressional champions believe in the inland waterways and will fight for it now and in the future.

SHIPPING THROUGH A PANDEMIC: *Wake Up Call or* Perfect Storm

By Bob Kunkel

The global pandemic news has been horrific and certainly an historic moment in domestic and worldwide shipping. For many businesses, the action was simple; hang the "closed" sign, furlough or layoff staff and wait for the approval to re-open. Or not, depending how long the virus will linger and continue to cause hundreds or thousands of deaths and rising numbers of cases. Make no mistake, there will be many businesses associated with our industry that will not return. The damages will be far beyond bars and restaurant businesses. That thought alone will affect future new construction, markets and financial support.

The flip side to the closures and unemployment numbers were the companies and business activities that were considered essential and "frontline". As a country we saluted the tireless efforts of first responders and health care workers as heroic. That said there were unsung heroes also. Crewmembers on ships, ferry, tug and barges worldwide that maintained the logistics patterns and kept the shelves, gas tanks, and storefronts filled with products. Shipyard workers are included in list that continued repairs and construction in an attempt to maintain delivery

VanEnkevort Tug & Barge, Inc. (VTB) tug freshly painted at Don John Ship Repair in Erie, Pa.

Photo: Amtech

schedules and regulatory requirements. Many of these men and women are still to this day stranded on those ships or shipyards due to the inability of ports, terminals, cities, states, and countries to develop a safe way for them to travel home and arrange their reliefs or shift change. This is a serious problem that still exists today as transportation and shipping continues to be a forgotten essential business and service.

That essential service includes shipbuilding and make no mistake the COVID virus struck hard at the builders and repair yards worldwide. Within our Amtech and First Harvest Navigation network of companies, we were midstream in the construction of six chemical carriers in our Hyundai South Korea office, a 750-ft. self discharging bulk carrier barge for VTB at Bay Shipbuilding in the Great Lakes and a major ATB tug refit and modification at Don Jon in Erie, Pennsylvania. Add to those responsibilities four of our MR 50,000 deadweight tankers due for special survey and drydocking in the first and second quarter of 2020 and six more of our 25,000 deadweight chemical carriers due in 2021. COVID 19 has surrounded us for over six months. It has been a formidable enemy.

The first project to experience the sting of the COVID virus was our six vessels under construction at Hyundai Mipo Dockyard in Ulsan, South Korea. That said the reaction and procedures put in place by the Korean government and Hyundai in hindsight were simply the gold standard. Testing was immediate. PPE requirements were upgraded and in most photographs taken during the initial strike of the virus, our supervision staff looked like they were preparing for brain surgery rather than structural block inspections.

It may sound trivial until you understand that loosing one or more of that supervision team resulted in the inability to fly new staff into the project. Both a quarantine period and the fact that travel was not allowed into the country was the "Sword of Damacles" that hung over our heads and played with possible major delays in the project. As we moved closer to delivery periods positioning both a forward joining sea trial crew, manufacturers representatives and the actual crew scheduled to take the vessel to sea at delivery were also subjected to the same difficulties. The costs of the quarantines and the PPE are easily substantiated for health & safety reasons. The business costs are not. The first three vessels have been delivered on time and the following hulls are well underway to meeting their scheduled delivery dates. Much like the use of steroids in professional sports, this project will have an asterisk placed next to it – "built and delivered under Global Pandemic". We are proud to be recognized as completing "first of" projects but this is pushing it. Our staff worked long hard hours to solve many new problems including virtual sea trials as our U.S. staff could not

travel to support them.

The Korean yards are blessed with having most of their subcontractors, manufacturers and licensees either located within the new building facility or nearby distances. That is not the case in the U.S yards and as a result delays have occurred receiving equipment, arranging trucking services and placing manufacturers representatives and labor at actual construction locations where they were needed. Foreign equipment, normally flown in for these projects, had little to no chance of meeting previously agreed delivery dates.

In no uncertain terms the lack of any national direction to handle the virus in the U.S. can be attributed to damages and delays we experienced as each state determined how the virus issue would be addressed. Some considered transportation and shipbuilding as "essential" others did not. Many small manufacturing companies were closed, as they did not meet an "essential business" definition. In one example the Governors office had to be contacted to request a waiver for the shipyard to continue operations. Maintaining a solid workforce also became difficult as the U.S. "positive" numbers peaked in several surrounding areas.

All that said – not one builder, repair yard or worker – threw up his hands waived the white flag or tossed away his N-95 facemask. And that is a credit to our industry and to the builders and owners we have been working with. Social distancing takes on a whole new mean-

Left: Tristar Sharma crankshaft inspection. Below: Tristar Sharma ready for launch.

Photo: Amtech

ing when working the deck plates 10 to 12 hours a day. That workday for us is normally followed with a trip to the bar and a solid meal at a favorite restaurant. These five months – it was back to the hotel room with a curbside pick up.

The concern now is whether the virus creates a perfect storm that will affect all of the markets – wet, dry, offshore, container and cruise. We have seen the closing of Meyer Werft Shipyard on what is claimed as a temporary basis due to the failure of the cruise industry. More then several deliveries from known cruise companies delayed well into 2021. Product and Chemical tanker markets we are active in are looking at new supply and demand projections due to drydocking issues and the inability to exchange crew. Several of our tanker fleet now working towards their third drydock and Special Survey extensions simply due to COVID concerns and facilities that were closed or quarantined. Again these are discussions and agreements with class, flag and owners that have never been addressed in the industry and will have asterisks in there record.

Keep your mask on and social distance. We have no doubt the industry will continue for month in uncharted waters as we define the "new normal".

Shipyard Review

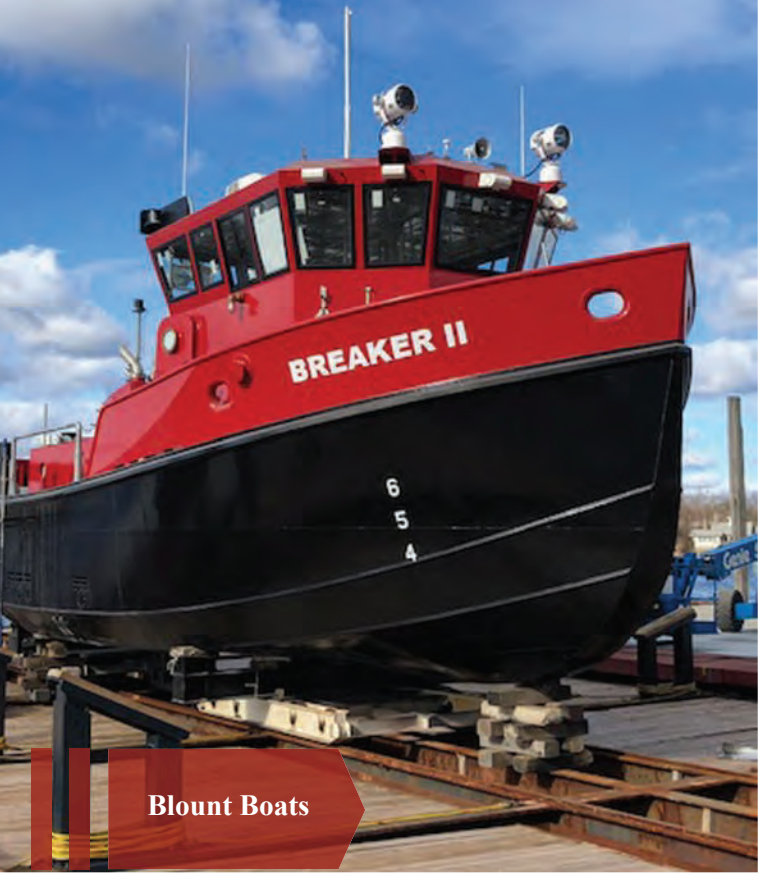
Alabama Shipyard

With a history stretching more than a century, Alabama Shipyard, founded in 1916 by D.R. Dunlap as the Alabama Dry Dock and Shipbuilding Company, today sports one of the largest floating dry docks in the U.S., as well as a 6,000 ft. full service pier, a 42-ft. water depth and crane lifting capacity to 275 tons to service most any ship repair need. According to John Herren, President & CEO, Alabama Shipyard has been "operating at a rapid pace since November of 2019 with no significant slow-down due to COVID-19. The rest of this year is almost completely booked with work for the dry-dock as well as pier-side availabilities. We anticipate this to be our best year under the new ownership," since buying the yard from BAE Systems in 2018. Alabama shipyard is a full-service ship repair facility with one large floating dry-dock, multiple pier locations and cranes to service six to seven ships at any given time. Since the purchase from BAE Systems, Alabama Shipyard has worked on a variety of vessels including, an FPO, OSV, Drill Ship, several dredges, Marad ships and Military Sealift Command vessels. "We have a backlog of repair work through November of this year," said Herren. "The most exciting event this year was the award of the USNS Supply Regular Overhaul and dry-docking that is scheduled to start in mid-August." Currently Alabama Shipyard has the SS Altair finishing repairs alongside, SS Bellatrix on dry-dock with an early August departure and the USNS Baldomero Lopez pier-side with final repairs scheduled to finish in October. Herren said that given the size of the property, "we are investigating possible partnerships with ship builders to utilize our excess land and existing fabrication space."

Blount Boats

Blount Boats in Warren, Rhode Island, was founded in 1949. The shipyard builds for a variety of commercial and government customers, including the U.S. Coast Guard, U.S. Army, and private and public vessel operators. Blount built the "Atlantic Pioneer," the first U.S.-flagged crew transfer vessel for the Block Island Wind Farm and is now completing a second CTV design for Atlantic Wind Transfers. "The shipyard operation has remained open throughout the COVID pandemic," said Marcia Blount, President/CFO. "Vessel deliveries have been extended due to delays in tech and USCG visits, required social distancing, and New York Canal seasonal opening." Overall, busines for the Rhode Island-yards has been "excellent" over the past 12 months according to Blount, premised on:

- *Delivery in June 2020 of Southern Cross, a 101 x 40 ft. double-ended steel PAX/vehicle ferry for Shelter Island, NY.*
- *Completion of a 56-foot twin screw tug for the New York Power Authority. The ice breaking, all-welded-steel, diesel-powered tugboat will operate in seasonal ice near the entrance to and within the upper Niagara River. The vessel is scheduled for delivery in August 2020.*
- *Construction of a second crew transfer vessel for Atlantic Wind Transfers. The 22.4m Chartwell 24 developed by Chartwell Marine is scheduled for delivery in fall 2020.*
- *The award of a contract to build a 90-ft. Ice Breaker/Buoy Tender for the Maryland Department of Natural Resources. The vessel will be designed by BMT Designers and Planners, Inc., replacing the 100-ft., 167-ton Motor Vessel, J. Millard Tawes, formerly commissioned by the US Coast Guard in 1942.*



Blount Boats

"We see opportunities in offshore wind as the driver for growth in the coming year," said Blount. "The offshore market has been off to a slow start due to permitting issues but this market will develop into a robust market for a variety of vessels."

Colonna's Shipyard

Colonna's Shipyard in Norfolk, Va. is a family-owned, full-service vessel repair and service facility that serves everything from workboats to oceangoing ships, in business for 145 years since 1875. Today the company offers diverse industrial capabilities: Colonna's Steel America Division is a custom steel fabrication shop and large-scale machining service provider with complex mechanical and electrical capabilities. Colonna's Down River Division is the rapid repair division of Colonna's, designed to mobilize outside the gate on a 24/7 basis for pier-side and underway emergencies, or preplanned voyage repairs. Now encompassing more than 100 acres, Colonna's has three floating dry docks, one Marine Railway, and a 1,000mt Marine Travelift. The total covered building under roof at Colonna's is approximately 240,000 sq. ft., inclusive of 115,000 sq. ft. of covered shipyard shop and storage space.

Conrad Shipyard

Conrad Shipyard has been in business for more than seven decades, and today it operates five shipyards located along the Louisiana/Texas Gulf Coast, offering new construction, repair and conversion services. Founded by Parker Conrad in 1948, Conrad employs an in-house en-

Colonna's Shipyard

gineering team; an experienced workforce. led by a seasoned management team tightly focused on customer satisfaction. Each shipyard is equipped with computer-aided manufacturing technology, covered manufacturing buildings, and lifting capacity to handle demanding projects. Conrad Shipyard designs, builds and overhauls tugboats, ferries, liftboats, barges, offshore supply vessels, LNG vessels and other steel and aluminum products. It also provides repair, conversion and new construction services at its five Gulf Coast shipyards strategically located in southern Louisiana and Texas. The year 2019 displayed diversity in product lines as Conrad delivered 61 newbuilds, including 50 tank, deck, spud, crane and hopper barges; five LPG carriers; two tugs and one ATB tug; and, one dock and two large structures. In addition to new construction projects, Conrad completed a broad range of repairs, including hull repairs and painting; electrical, engine, piping and propeller repairs; and, maintenance and inspection on vessels spanning multiple markets.

Detyens Shipyard

Detyens Shipyards, Inc., located in Charleston, S.C. is a one of the largest commercial shipyards on the U.S. East Coast, positioned to service both blue- and brown-water fleets. Detyens provides emergency and scheduled maintenance and repair work for both domestic and international operators, including government and commercial vessels. The yard's lo-

Conrad Shipyard

cation in the deepwater Port of Charleston offers deep draft repair berths, graving and floating dry docks along with all the services one would find at any modern ship repair facility. The Detyens Shipyards facility offers three 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 ft of deepwater pier space and a floating dry dock for smaller vessels. Family owned and operated since its inception, the company has continually emphasized customer service, family values and safety in the workplace.

Eastern Shipbuilding Group, Inc.

Eastern Shipbuilding Group, Inc. has three waterfront facilities engaged in new construction and repair of all types of steel and aluminum vessels built for commercial and government clients. The product mix at ESG is purposefully broad – including harbor/escort/ship assist tugs, offshore tugs, dredges, offshore/platform supply vessels, ATB's, multi-purpose construction vessels, research vessels, firefighting vessels, barges, ferries, passenger vessels, fishing vessels, offshore patrol vessels (OPC) and inland towboats – allowing it to maintain a steady business curve despite fluctuations in any one market.

"Despite the crash of the oil and gas marine industry in 2016-2017, Hurricane Michael in 2018, and now the COVID-19 pandemic, Eastern has been able to maintain its strong market position due to our diversified build history and customer relationships," said Stephen J. Berthold, Vice President of Sales & Marketing. "Throughout 2019-2020 Eastern has maintained a respectable backlog and has recently signed a large U.S. Flag dredge project with Weeks Marine." In total ESG delivered seven vessels over the past 12 months, with several projects in the works including an Artic Trawler, passenger ferries for Staten Island Ferries, a 356 x 79.5-ft. hopper dredge and two 360-ft. USCG Medium Endurance Cutters (OPC).

While investment in new equipment and facilities is the tenant of any shipyard, investment has taken on a whole new scale at ESG as it rebuilt two facilities, Nelson Street and Allanton after Hurricane Michael in 2018. "This was a major undertaking with our workforce, sub-contractors, vendors, and insurance underwriters," said Berthold. "During that same time Eastern started construction of a third facility, Eastern's Port St. Joe Shipyard, located in Gulf County, 35 miles SE of Panama City, Florida. By the end of 2020, this 20-acre shipyard will be Eastern's final outfitting, startup, and trials

facility. Port St. Joe will eventually become a fully functional repair shipyard. Investing at Eastern's current facilities, it has constructed two large metal production buildings, several smaller buildings, expanded office spaces, added new automated fabrication equipment, is conducting facility dredging operations and will continue to invest in expanding each facility supporting the future needs of the marine industry.

Fincantieri Bay Shipbuilding

Tracing its history back to 1918, Fincantieri Bay Shipbuilding in Sturgeon Bay, Wis. is a leader in the construction, conversion and repair of commercial and government ships. In terms of new construction, the diversified FBS portfolio includes all types of vessels including articulated tug-barge units, dredges and dredging support equipment, self-unloading carriers, ferries and offshore support vessels. On the repair side, FBS is expert at managing critical deadlines in the repair and sustainment of bulk carriers and other ships of the Great Lakes fleet. While the split between newbuild and repair work varies from year to year, generally 30-40% of FBS' annual sales are repair driven

Shipbuilding facilities at the 68-acre plant include a large graving dock, a U.S. Navy-certified drydock, and lifting capacity to meet the most demanding requirements. Erection buildings are climate-controlled and equipped with sophisticated computer-aided manufacturing equipment. Fincantieri's workforce has an average of more than 20 years of shipyard construction experience.

In 2020, FBS laid the keel for a bulk carrier for Interlake Steamship Company, the first new U.S. flag Great Lakes bulk carrier built in nearly four decades. Among other newbuild projects, FBS recently delivered the Washington Island ferry, Madonna, for the Washington Island fleet, and it is building a 5,400 cubic meter LNG barge for NorthStar Midstream for its East Coast route as well as a 740-foot self-unloading barge for VanEnkevort Tug & Barge, Inc.

Fincantieri Bay Shipbuilding is an operating unit of Fincantieri Marine Group (FMG), the United States division of global shipbuilding giant Fincantieri.

Halter Marine

Bob Merchent, President and CEO, took the top spot at Halter Marine in June 2020, new to this role but an industry veteran with much of his career spent at Ingalls Shipbuilding,

Halter Marine

most recently as Vice President, Surface Combatants, Fleet Services and U.S. Coast Guard Programs.

Highlights for the past 12 months for the yard Merchent takes over includes:

- *Winning the contract to build the U.S. Coast Guard's Polar Security Cutter, the first heavy icebreaker built in 40 years.*
- *Winning a $3m contract for U.S. Navy's CHAMP program.*
- *Winning a MARAD small shipyard grant of nearly $2m.*
- *Delivering the ferryboat Powhatan to Virginia DOT.*
- *Starting construction of and launching first two berthing barges for U.S. Navy, scheduled for delivery in the autumn of 2020; a third APL is under construction. Won contract for fourth APL and began construction.*
- *Named and launched the QLNG 4000 and Q-Ocean Services, world's first offshore LNG bunker barge.*

N-KOM

Established in 2008, Nakilat-Keppel Offshore & Marine (N-KOM) is a joint-venture between LNG fleet owner Nakilat and Keppel Offshore & Marine. The Erhama Bin Jaber Al Jalahma shipyard is currently operated by N-KOM, offering three Q-Max sized docks (two graving docks and one floating dock), berthing capacity of 3.15 km and cryogenic cleanrooms, which make it well-equipped to handle the complexities associated with repairs of modern, sophisticated vessels. N-KOM's presence in the LNG vessel market is strategic, as its facility that is located within Ras Laffan Port in Qatar, home to the world's largest and busiest LNG export terminal. To date, N-KOM has delivered more than 1,100 marine and offshore projects, and it has also completed in excess of 230 gas carrier routine drydocking and repairs at its facility, including retrofits of specialized systems such as the Ballast Water Treatment System (BWTS) and the world's first ME-GI conversion on the world's largest LNG tanker Q-Max.

While the current COVID-19 pandemic has ground many industries to a hault, N-KOM reports that it has remained fully operational. One unintended consequence that has impacted the shipyard was the soarting freight rates for tankers, resulting in some clients indefinitely postponed their scheduled dry dockings.

The shipyard is still expecting the arrival of several oil and gas tankers for maintenance, routine dry-docking inspections and Ballast Water Treatment System (BWTS) installations in the coming months to close 2020, and it has also received enquiries from shipowners for vessels that are typically booked with the Far East shipyards that are now enquiring the availability of dry-docking space at N-KOM.

The most significant repair and conversation completed this year were Ballast Water Treatment System (BWTS) installation and major works for several energy tankers, as well as scrubber retrofits. In addition, the delivery of two major fabrication of offshore structures for Qatar's oil and gas further showcased N-KOM's capabilities in supporting the local oil and gas industry. The yard delivered a major fabrication project for Qatar Petroleum's Bul Hanine Redevelopment (Phase B) in November 2019, which was awarded by McDermott

Fincantieri Bay Shipbuilding

Eastern Hemisphere Limited (MEHL). Amongst the most complex offshore projects undertaken at N-KOM, the scope involved the fabrication of several large-scale offshore structures such as an 877-ton topside, offshore jacket, piles, deck extensions, subsea piping spools and subsea valve skids. The most recent delivery by N-KOM in February 2020 was the fabrication of approximately 5,000 tons of additional living quarters structure, the first of its kind constructed locally in Qatar, for Qatargas' North Field Bravo (NFB) Living Quarters Expansion Project. Awarded to N-KOM by Rosetti Marino, the project work scope includes the construction of a four-legged jacket and piles weighing approximately 2,200 tons that will support the new living accommodation platform weighing approximately 2,800 tons comprising of five decks, a fully equipped helideck, six bridge links to existing living quarters, services and utilities. N-KOM projects that 'green' ship initiatives will significantly drive business to the yard this year and beyond, specifically compliance requirements with the new IMO regulations being enforced in 2020, as well as continued interest for BWTS, fuel systems modification and scrubber retrofits throughout the past year.

Offshore Inland Marine & Oilfield Services, Inc.

Offshore Inland Marine & Oilfield Services, Inc. (OIMO) focuses on topside repairs on all types of vessels, with a long-tenured team to handle everything from fabrication, steel/pipe renewals, hydraulics, electrical, complex conversions and engineering/design. OIMO also the capabilities to send Riding Teams all over the world.

"The first thing that comes to mind during this pandemic has been the well-being of our families and employees; however, the decline in maritime markets and the offshore sector has been dramatic," said Jack Berglund, Senior Vice President, Commercial, Offshore Inland Marine & Oilfield Services, Inc. "We have great relationships with many of the Offshore Drilling companies, which has been one of our most important revenue streams. However, with Crude Oil hovering around $40 dollars per barrel, these same great companies have had to reinvent themselves by cutting back on overhead, employees, maintenance, and upgrades. This has in turn forced us to develop new revenue streams, thankfully we've been successful at this and we remain a strong company."

Despite the downturn, Berglund said OIMO's business cli-

mate in the past 12 months has been positive. “One of the ships at our facility at the Port of Pensacola is the LPV, owned by Blue Origin. Although we can’t get into specific details of this project, we are extremely fortunate to have Blue Origin here. The work includes, steel, pipe, machinery and electrical upgrades and alterations.”

An exciting recent project he could discuss in detail was the contract recently awarded by Mare Island Dry Dock, LLC (MIDD) in Vallejo, CA. “We are going to send a significant team for about two months to complete major steel work aboard the USS Emory Land,” said Berglund. “We are grateful for this opportunity from MIDD. This is an example of one of our new revenue streams. We are also continuing our riding teams working in the GOM, West Coast and even offshore in Guyana.”

STE Halter Marine & Offshore

ST Engineering Halter Marine and Offshore (Halter Marine and Offshore) provides services for ships, drilling rigs and other marine vessels within the Gulf of Mexico and beyond, providing drydocking, upgrades, repair, conversion, major fabrication, new construction and on-location or in-transit offshore service teams. Headquartered in Pascagoula, Mississippi, Halter Marine and Offshore is an affiliate to VT Halter Marine, and a subsidiary of Singapore Technologies Engineering Ltd., a company with 23,000 employees worldwide, and more than 100 subsidiaries and associated companies in 46 cities across 24 countries.

“Despite the many challenges facing our industry, we have continued success in delivering on major projects for our customers,” said Spencer Zeigler, Director of Business Development. “With nearly 100% drydock utilization, we continue to provide exceptional support for customers, with no expectations to slow down over the coming year.”

“Having recently completed successful on time delivery of two simultaneous drillship projects in recent weeks, we have maintained full utilization of our drydock to support major repair work aboard dredges,” he said. “In addition, our team has provided offsite support in modifying a large dry dock to support in salvage operations.”

The recently delivered projects were two large drillship conversion projects for Diamond Offshore, as both the Ocean Blackhornet, and Ocean Blacklion were modified to support existing contracts, working in the GOM.

Digg

The dredging market in the U.S. is strong and growing, a bright spot for U.S. shipyards, with increased funding for critical infrastructure projects and port dredging at the federal and state levels. Great Lakes Dredge & Dock, the country's largest dredging company, has invested mightily in new dredgers at U.S. yards. **Lasse Petterson**, CEO and President, shares insights on the strategy ahead.

By Greg Trauthwein

ging Deep

Great Lakes Dredge & Dock is the leader of the pack in the U.S. dredging market.

"The Game Changer"
Ellis Island, which cost $170m and was delivered two years ago, is the largest hopper dredge in the U.S. sporting a 15,000 cu./yd. capacity.
Photo: Great Lakes Dredge & Dock

You have sat at the helm of Great Lakes Dredge and Dock for just over three years. What attracted you to the position when you joined in 2017?

I have worked around ocean and maritime industries most of my career and found the challenge to lead GLDD to be a wonderful opportunity. GLDD has a very long term successful history of 130 years to build on and a well recognized brand name and reputation for tackling and accomplishing difficult projects. Initially what attracted me to GLDD was the imbedded safety culture that completely aligned with my experience and commitment as well. This safety culture makes getting our employees home safely every night the highest priority.

Dredging is a unique and quite necessary business, as we have learned during COVID when we were among the first businesses to be named as an essential service. Dredging combines elements of ocean and coastal environments in addition to actually accomplishing fairly precise excavation in unknown sea floor conditions.

How would you describe your management philosophy?

My management style has evolved with experience. I have learned a lot in my short time at GLDD about dredging but even more about the talented people that work for "the bullseye". There is definitely a Great Lakes way" of doing things that emphasizes safety, efficiency, and innovation. We have a very experienced management team and an equally eager next couple generations who we need to get more involved.

One of the things I have focused on is to engage more with our wonderful client, the US Army Corps of Engineers, who is tough but fair, exactly what we need in terms of defining a reliable marketplace. And there are many stakeholders who we need to partner with and with that in mind we are opening regional offices around the country to better engage with on short and long term challenges.

Looking back, what were your primary goals coming in, and how is GLDD most the same … and most different, from when you took the helm?

My goals were to help GLDD get back on solid footing after a few rough years attempting to diversify into other businesses that did not go well. We refocused our operations and rationalized our dredging fleet and shed some of the businesses that did not really fit GLDD. We have had a very good run but also believe we are just getting started.

When you look at your company and the markets you serve today, can you give us a "State of the Market?"

The U.S. dredging market is strong and improving. The Federal government has provided the Corps record annual budgets, there is a lot of funding for coastal protection, and Governors have taken a greater interest in their seaports and coastal areas. Our international market is weak currently, but it tends to be more cyclical and retain an interest in that market and expect that we will return at some point in the future.

Where, specifically, by region or market sector, do you see opportunity today?

There are significant investments being made on the East and Gulf Coasts in the U.S. particularly for port deepening and coastal projects.

Photo courtesy Great Lakes Dredge & Dock

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Lasse Petterson

From Norway to Houston: A Maritime Life

Lasse Petterson, Chief Executive Officer and President, Great Lakes Dredge & Dock was raised in Norway, a country where 'maritime' is seemingly interwoven in the DNA, "so there really wasn't much doubt where I would end up," Petterson said. "But I have to admit dredging was not on my radar."

Though raised in a maritime nation, Petterson said that by and large he had was self-taught, with no real mentor to guide him, "except from the values I got from growing up in a very egalitarian culture in Norway. My father was a school janitor and I had to work to sustain myself through university and I always believed that If you work hard and treat every one you meet with respect, things would work out well."

Courtesy of a career in maritime, Petterson admits he has had a varied run with many ups and downs. And though dredging was not on his radar, "I would say that being a part of GLDD has been one of the highlights. There is a good dredging market, a great client, and an outstanding GLDD team that really does lead the industry in many ways," said Petterson. "As a result of that leadership culture, it is not unusual to find GLDD alumni working for our clients, their consultants and even our competitors."

Personally, Petterson said his wife and children have always been an inspiration. "It is not easy living the life of a construction executive with travel and frequent moves, and I really appreciate them for being with me," he said. Looking at the uneven business world around him, Petterson said that if he had one bit of advice to give to the next generation entering the business world, "I would suggest being a risk taker. Be smart, be thorough, but believe in your own abilities and look for opportunities that may be less than obvious and then go after them with all you have."

When asked about activities he enjoys in his leisure time, he concludes: "What leisure time? Dredging is 24/7/365; but given time, skiing (natural for a Native Norwegian), sailing (natural for a maritime guy) and golf (natural for a Texan)."

How has the current COVID-19 pandemic materially impacted your company to date?

Owing to the discipline of our preexisting safety culture, we were able to quickly adapt and implement safe operating procedures for our crews and employees. We have restricted travel and have been working remotely from our corporate offices since April. We have made extra precautions to reach out to our crews on their shift changes as well as their time off practices. We did not have any cases for the first three months, but have had several encounters with positive tests, leading to crew changes and idling vessels while being disinfected. But since we have had such good discipline at all levels we have been able to execute the protocols, take care of the employees as a priority, and then get back to work. I have to complement both the SIU and Operating Engineers unions who have been terrific partners through all this.

What do you consider to be the number one technology/innovation that enables a dredger to do its work more safe, efficient and cost-effective?

While there are many technologies and innovations that can help drive efficiency and cost effectiveness, safety is a core principal that only works when all parts of the company embrace the concept that we will do everything in our power to protect our employees. This is my attitude that is shared by my senior management and extends to deck level and office workers alike to make sure no one gets hurt.

Automation & Autonomy: There has been a palpable movement throughout maritime to advance automation and autonomy. How do you see this impacting dredging operations?

Automation has impacted almost every phase of the dredging operation not only from the production standpoint but also from the project inspection by our clients who are able to remotely monitor our work for compliance with their requirements. None of this takes the worker out of the picture in the dredging world although we are having to provide added training as automation becomes standard.

What one piece of legislation or societal movement do you see on the horizon that you figure will have the greatest impact on your business for the generation to come?

We will respond to those changes when and if they come. Certainly the equipment we use is more efficient on a lot of levels and all our new equipment features the latest most efficient engines. The U.S. already has very stringent environmental standards so when issues like IMO fuel standards come up, they are not really impacting us, because we already comply.

How is GLDD investing today to ensure it tomorrow?

We just announced a new build hopper dredge which will be a $100 million investment, in addition to our Ellis Island, the largest hopper dredge in the U.S. which cost $170 million and was put in service two years ago. We also recently bought a large clamshell dredge and have put it into service on the East Coast and have also brought two of our large class cutter dredges back to the U.S. market. I would want to point out our investment in our people as well. We believe the move to regional offices will allow our next generation talent to showcase their skills and experience and help shape the company for an even better future.

Photos: Bardex

The Art of the Ship Lift

Bardex has made its name in providing solutions to move, restrain and lift heavy loads, active in the offshore oil and gas, shipbuilding and offshore wind markets. In shipyards its principal products are the Chain Type Ship Elevator, ship transfer solutions, and ship block transfer, lift and positioning systems, and Bardex installed its first shiplift in 1978 … a shiplift that is still operational today. Bardex CEO Thomas Miller shares insights on the company's history and future.

By Greg Trauthwein

Thomas Miller, CEO, Bardex

Bardex CEO Thomas Miller, PE, has lived a maritime life, graduating from the University of California, Santa Barbara in 1982, with a bachelor's degree in mechanical engineering and a specialization in marine structures, serving 38 years with Bardex, starting in the design department. In assessing the markets Bardex serves, he said while the split varies from year to year, "In 2019, Bardex reported 50% of revenue from shiplift and transfer products, 40% from Offshore Oil/Wind projects, and 10% from aftermarket lifecycle support." Bardex today offers a number of system solutions designed to improve shipyard productivity.

"Our Chain Shiplift is a unique solution from that has significant benefits for yard owners," said Miller. "We can design and supply shiplift systems ranging in capacity from 2,000 metric tons to 20,000 metric tons. We manufacture chain jacks in standard sizes of 300, 400 and 600 metric tons and we can customize these sizes if desired."

Miller contends that, compared to Dry Docks the Shiplift & Transfer System offers a number of strategic advantages, including:

- Optimizing yard space and revenue potential
- Increasing yard flexibility in ship building and servicing
- Reduce Dry Dock CapEX and OpEX
- No confined work area constraints improving productivity and efficiency
- Lower environmental Impact; contained construction waste, reduced water contamination.

Customize Your (Ship Lift) Ride

The design and construction of a shiplift is typically segregated into four principal activities; civil works, lift and transfer system equipment, platform fabrication, and installation/commissioning. "The most cost-effective approach is for the shipyard to act as the general contractor and issue separate contracts for each of the activities," said Miller. "Depending on capability, some clients elect to perform some of the activities instead of contracting the work. Most shipyards are capable of fabricating the steel platform, for example, to designs provided by Bardex." Alternatively, Bardex can provide a turnkey solution, except the civil works, which requires design and construction specialists. The civil works consists of

the dredging of the area under the shiplift, installation of support piles, the concrete for the piers and yard transfer area, and utilities. "A typical project execution with Bardex providing a turnkey solution is described as follows," said Miller. "For this example, the civil works are completed by others. The civil works order is placed on or about the same time as the shiplift system."

1. **Each shipyard has a unique location,** servicing vessels of various configurations and weights so the design phase starts with client specific parameters and requirements. Bardex prepares the basic system design in collaboration with the client until there is agreement on the shiplift, shipyard, and transfer system arrangement. The average duration for basic design is four months. The detail design including engineering calculations requires another four months as the client specific parameters are applied to the standard equipment design. The piping and electrical arrangement and steel platform are usually unique to the project and so these are new designs.
2. **Procurement of long lead items** will begin within six months of order and about two months ahead of the conclusion of detail design, to save time. The total duration for the procurement phase is eight months, with many items being received in advance to allow the manufacturing to commence after four months of procurement.
3. **The equipment manufacture is performed** at Bardex facilities in the U.S. and South Korea. Platform fabrication is subcontracted to a supplier in the vicinity of the yard to facilitate transporting of the platform to the site. If there is sufficient space at the site, the platform final welding/assembly can be performed at the site. The manufacturing phase is approximately six months. "Therefore, the equipment and platform are ready to ship 16-18 months after contract award," said Miller. "The client should target 16 months for completion of the civil works to obtain the minimum project schedule. In other words, the civil works will be completed at the same time as the equipment and platform. It is also desirable to install the piping and electrical systems prior to delivery of the equipment."
4. **The equipment and platform are installed** followed by interconnection of the piping and electrical to the equipment. The duration for installation and commissioning (start-up) is four months. Acceptance testing consists of functional, synchronization, and load testing of the shiplift. Witness testing by an independent third party can be arranged or in the case where the lift is to be classed or certified, Lloyds Register of Shipping is involved.

The Market

While the world collectively comes to grips with the 'new normal' courtesy of the COVID-19 pandemic, Miller said that there are a number of areas around the world that have potential for future investment in shipbuilding and facilities upgrades, some supported by government investment in the form of loans, grants and military related vessel orders.

"Bardex has been successful with shipyards expanding their capacity to launch and repair the next generation of military vessels that are larger and heavier than their predecessors," said Miller. "We understand this to be ongoing in the U.S., Australia, and South Korea amongst other countries."

Another area ripe for growth is the megayacht repair sector. "These are the next generation of yachts that are larger and heavier than SuperYachts," said Miller. "In order for ship repair companies to compete in this market, they need larger shiplift capacity. Even though a yard may have a drydock of sufficient capacity, yards need the ability to handle multiple vessels at any one time. For example, during the yachting off-season there is a majority of yachts being repaired and maintained. We understand there will be demand for shiplifts in the Mediterranean Sea, Florida, and the Carribean."

Finally, Miller reckons that the IMO 2020 initiatives for retrofitting fuel scrubbers and ballast water treatment systems may lead to shipyards upgrading to a shiplift system.

Case Study

Bardex's was recently contacted by a returning client that wanted to increase the capacity of its shiplift so they can repair larger vessels. This project was more involved than other projects because it required the removal of all the existing system including; lift equipment, structural platform, transfer system, piping and electrical as well as building and installing replacement equipment, increasing the platform capacity, reinforcing the piers, and supplying a control system based on the latest technology. The facility was commissioned in 1996 with a nominal lift capacity (NLC) of 4,300 metric tons. It consists of a 140m x 22m platform that features dual mode operation, whereby the operator may elect to use a 40 m section of the lift or the entire 140 m length. The outer 40m of platform lifts the smaller vessels reducing wear on the system and energy consumption. The client needed a new NLC of 4,970 metric tons and it was important to change the dual mode configura-

tion to handle smaller vessels of 60 m length instead of 40 m. For the conversion Bardex supplied:

- **Concrete Piers and Equipment Foundation:** An independent evaluation of the piers and chain jack supporting foundation was conducted to identify areas needing repair and reinforcement. Bardex completed concrete reinforcement and replaced the foundation steel plates that support the chain jack. Two additional chain jacks and supports where added to increase the maximum distributed load (lift density) of the shiplift.
- **Shiplift Equipment:** Existing chain jacks were removed and replaced with new higher capacity chain jacks. Lift chains were replaced with chains of higher capacity. Larger hydraulic power units and water cooling system was installed so the speed of lift could be maintained with the larger capacity lift equipment. All piping and electrical components were replaced.
- **Shiplift Structural Platform:** Platform modifications were designed and fabricated by Bardex. The platform was removed from the site and transported to a quayside facility permitting better control of welding and painting. Upgrades include refurbishment and strengthening of the platform structure including cutting 20m from the 100m platform and welding it to the 40m platform, thereby achieving the 60m length. The platform was transported back to the site and reinstalled.
- **Transfer System:** The facility uses a rail-based transfer system. The ship shop has three repair bays that are accessed using a longitudinal transfer carriage and a pit type side transfer carriage. Bardex designed and constructed new longitudinal and lateral transfer carriages.
- **Ship Shop Area Improvements:** In collaboration with the client, Bardex delivered design drawings to modify the ship shop to accommodate more vessels. New features include an additional repair bay and a second Bardex side transfer carriage that can lift and transfer vessels for additional flexibility. This improvement reduces congestion in the ship shop area by providing a means to relocate smaller vessels undergoing maintenance more efficiently. Bardex provided basic design to modify the yard to add a recessed pit for installing Bardex sonar dome removal and re-installation handling equipment. This improvement will streamline repair and maintenance of these vital electronic systems.

Photo: Tandemloc

Hoist Away

Starting from his father's basement in Bayport, New York, John DiMartino and his brother Bill have built a custom, heavy lift powerhouse in Tandemloc. It's a story of building something from nothing; a story of plotting a path and adjusting for multiple course changes along the way. Ultimately, it's a story of engineering ingenuity and heavy lift success.

By Greg Trauthwein

When John DiMartino graduated from SUNY Maritime in 1980 with a BS Marine Transportation Management, his career path started as projected, sailing as a third mate on a hopper dredge for North American Trailing Company, a division of Great Lakes Dredge and Dock. But after less than two years, he decided to go to work as a salesman for his father's firm, which designed and manufactured container securing and lifting devices. "A few years later, in late 1983, dad's company went out of business and we started Tandemloc in the basement of his home in Bayport, NY," DiMartino recalls in a recent interview. "Early on I was functioning as the salesman, assembler, painter and order packer while my father ran things. In the mid-1990s I took the reins as president."

Tandemloc was created literally in the ashes of his father's company with no financing or facilities, "just three guys in the basement of my father's house." While it was light on corporate structure, it was heavy in engineering experience courtesy of his father's container lashing experience. "We subcontracted the manufacturing to area shops," said DiMartino. "We could not compete with the general container lashings and we focused on niche products, like the Tandemloc connector which was the company's namesake."

The Tandemloc connector is used to link mini containers together to form 20-foot equivalents and "it is still the

only connector today that enables a connected array of containers to meet CSC approval, without waivers on some of the requirements. These mini containers are largely used by the military," said DiMartino.

The first big move for the company was striking a deal with ILS in Belgium to operate its U.S. company selling its container lashing equipment. While the connection with ILS was discontinued after several years, the companies remained friendly and it was an instrumental part of Tandemloc's growth as "that got us out of the basement and into a small 3,000 sq. ft. building," said DiMartino.

A more pivotal move for the company came purely by fate, effectively setting the course for Tandemloc's growth to the business it is today, as DiMartino explained. "My wife and I were travelling through North Carolina on our way back from vacationing in FL. We fell in love with the area, not to mention the cost of living, which in itself was likened to a positive exchange rate between countries and we wondered about moving the company to NC. We met a realtor who, in DeMartino's words, "made us an offer we could not refuse."

That deal was a new 5,000 sq. ft. building in Havelock, NC, a building that for two years offered a rent of $1 a month. So in 1992 DiMartino and his brother Bill packed up Tandemloc and their families for the move to North Carolina, and at the end of two years and $24 in rent total, they bought the building.

Since then Tandemloc has expanded several times and now it owns more than 100,000 sq. ft. of space on 12 acres of land.

The Product Line Today

Since moving to North Carolina, Tandemloc has developed a variety of container lifting products, all non-powered and that includes 20 and 40 foot fixed frame spreaders, forklift spreaders , low head room load leveling spreaders and its newest member of the autoloc family, a modular 20/40 combo. "A variety of container lift slings are also available and together in the mid 90's this led to prospective customers requesting non container lifters," said DiMartino. "So we found ourselves in the general below the hook market, first designing and manufacturing custom lifters. As the years went by, this developed into a variety of informal product lines, eventually leading to a new product development department, focused on developing new product lines and cleaning up the existing lines, primarily for lifting."

One of its top sellers is the "build your own" steel spreader beam assemblies, allowing customers to literally build their own spreader beams using Tandemloc's stocked, proof tested components including end caps and spreader pipe. The pipe is cut to the exact length needed for the lift and end caps are available to make spreader beams in capacities up to 3 million pounds.

Another popular product is its fixed length spreader beams which can be built to spans of up to 40 ft. and with capacities of up to 100,000 lbs., with higher capacities possible with longer lead times. "We also provide from stock several sizes of telescopic spreader beams which as the name indicates, telescope

Photo: Tandemloc

Photos: Tandemloc

"We proof test every individual lifter. Not one in a batch, every single lifter gets proof tested ... We are serious about proof testing because lives are at stake."

John DiMartino
President, Tandemloc

to different lengths for different lift applications. Those that are not in stock can be shipped in 5 to 7 workdays. Capacities are up to 100,000 pounds in this delivery window, greater capacities are possible with longer lead times."

Outside of heavy lifting the company is active in specialty container products, such as VI-SO Connectors, Container Casters and Hydraulic Lift Caster Systems. VI-SO clamping connectors offer a rigid connection which in certain applications is necessary, such as container living modules.

Finally, its Hydraulic Lift Casters are wheeled jacks that fit into the corner fittings and hydraulically lift the container up to 13.5 inches off of the deck and provide mobility in a very compact package.

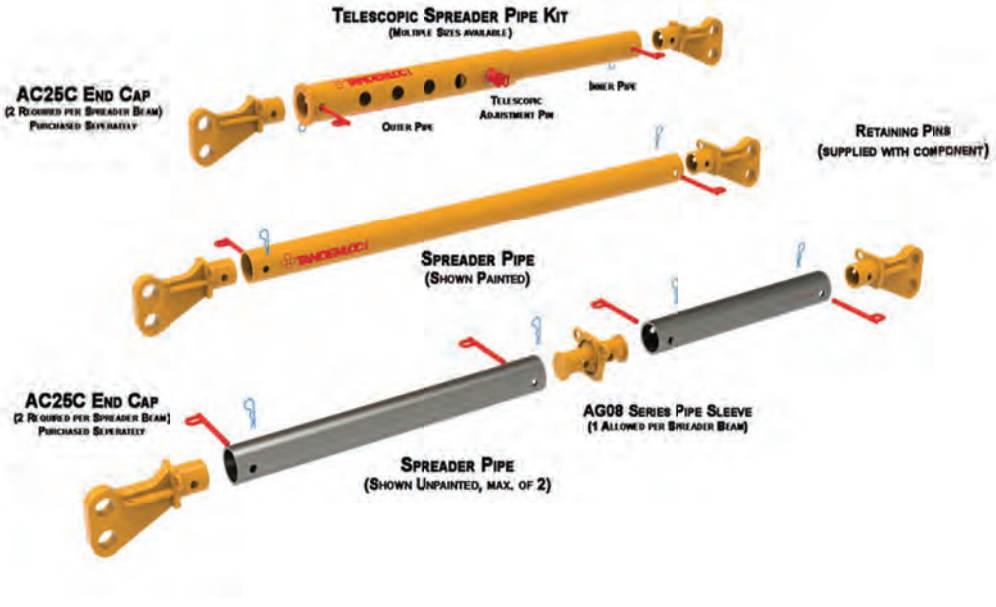
Most recently Tandemloc developed Telescopic Spreader Pipe Kits for End Caps, a kit that enables the user to change spans quickly and simply, instead of having different lengths of spreader pipe on hand. "Our design is an improvement over a 'modular' spreader beam design that incorporates fixed length sections of flanged pipe weldments and requires the user to mix-and-match the sections to get the desired length and then finally bolt the sections together to make a spreader," said DiMartino. "With our design the incremental length adjustment is in inches, versus the modular system's foot-length adjustability. This has been well received in the field, enabling the end user tremendous versatility while saving labor time."

To help the customer select the correct End Caps along with sizing the pipe and the correct length to cut, Tandemloc offers an App on our website which makes this process easy and foolproof. It also evaluates whether or not a particular set of caps or pipe is usable for other lifts and also provides working load information for our telescopic pipe kits as you change spans.

Another, the "Modular Autoloc," is transported on a shippable pallet inside a closed van, saving the significant freight costs. It also takes up less real estate for storage. The unit can be assembled to lift 20-ft. containers or 40-ft. containers. "It's 'pin-together' design makes for fast assembly for either size," said DiMartino. "Just like our standard Autoloc spreaders, this nonpowered spreader is considered semi-automatic, as it has simple mechanical operation with no electronics or hydraulics. The twist locks unlock or lock when the crane operator slackens the sling wires, providing for safe operation with minimal personnel involvement."

Case Study

Tandemloc designed and manufactured and tested the AT09 "Rocket" Adjustable Spreader Beam. With a capacity rating of 170,000 pounds, the beam was required to provide a critically specific adjustment range while "under load." A mechanical single-operator design, the adjustments are made via an 80 ft. pull chain that drives the beam's padeyes and horizontally shifts the sensitive product so that it can be accurately placed in a special carriage. The design's most challenging aspect was that "they wanted to keep the force required by the [pull chain] operator to be 40 lbs or less. This required very precise engineering and manufacturing so that all of the moving parts met as little resistance as possible. In the end, the operator's force required to move the load on the final design was approximately 25 lbs," said **Bill DiMartino, Tandemloc Executive VP and Director of Engineering**. Per industry standards, prior to its first use out in the field the beam was proof tested to 212,500 lbs, inspected, and certified. Despite the critical and high-profile nature of the lift, DiMartino found peace in the company's testing program. "I felt quite calm when the product went into service, because I knew the product was made correctly, and the proof testing went off without a hitch," said DiMartino. The "Rocket" beam has continued its successful lifting career in a secure and unnamed location.



Most recently Tandemloc developed Telescopic Spreader Pipe Kits for End Caps, a kit that enables the user to change spans quickly and simply, instead of having different lengths of spreader pipe on hand.

Photos: Allied Systems

"Clear the F

With an estimated price tag in excess of $13B, nuclear aircraft carriers are one of the biggest ticket items in the U.S. military arsenal. But the floating warship is only as effective as its flight operations, and a new, heavier duty crash and salvage crane is needed to efficiently handle heavier aircraft. Allied Systems won the $70 million contract to deliver up to 37 Crash and Salvage Crane units to the US Navy. Hitesh Patel, VP of Sales and Marketing at Allied Systems, discusses the biggest contract in company history.

By Greg Trauthwein

What, specifically, are the cranes used for?

The Crash Cranes are mobile rubber-tired cranes that move aircraft with mechanical failures or battle damage out of the way on the flight deck of Aircraft Carriers (CVN) and Landing Helicopter Assault and Dock Vessels (LHA & LHD). They are critical pieces of equipment since no flight operations are allowed without an operational Crash Crane running on standby.

Why was the new crane design necessary?

There is a heightened priority on procuring this new design from us because it is able to support the newest F-35 Joint Strike Fighter which the previous model could not due to its limited load capacity. The previous crash crane was designed decades ago and those models are not only insufficient for current missions, but are becoming increasingly difficult to support.

Please give an overview of the project from your perspective.

This project is the largest single contract Allied Systems Company has been awarded. However we produce a large volume of heavy lift equipment across many industries. In addition to designing and

"There is a heightened priority on procuring this new design from us because it is able to support the newest F-35 Joint Strike Fighter which the previous model could not due to its limited load capacity. "

Hitesh Patel, VP, Allied Systems

Flight Deck"

manufacturing pedestal mounted marine cranes and davits, we also design and manufacture our Wagner product line of rubber-tired logstackers and chipdozers. The Crash Crane is a project that comes naturally for Allied, this design pulls from our Wagner prime move design experience, and our experience designing cranes for the harsh marine environments.

What is the timeline for the project?

The project was awarded to us in July of 2019. The first year was spent designing the crane. Beginning Q3 2020 we will begin building prototypes which will endure an exhaustive list of testing to ensure that it can withstand severe environmental and operational conditions. In 2021 the Navy will conduct its own testing on additional units, and full production will begin 2022 and continue through 2025.

What are the top engineering challenges to this project.

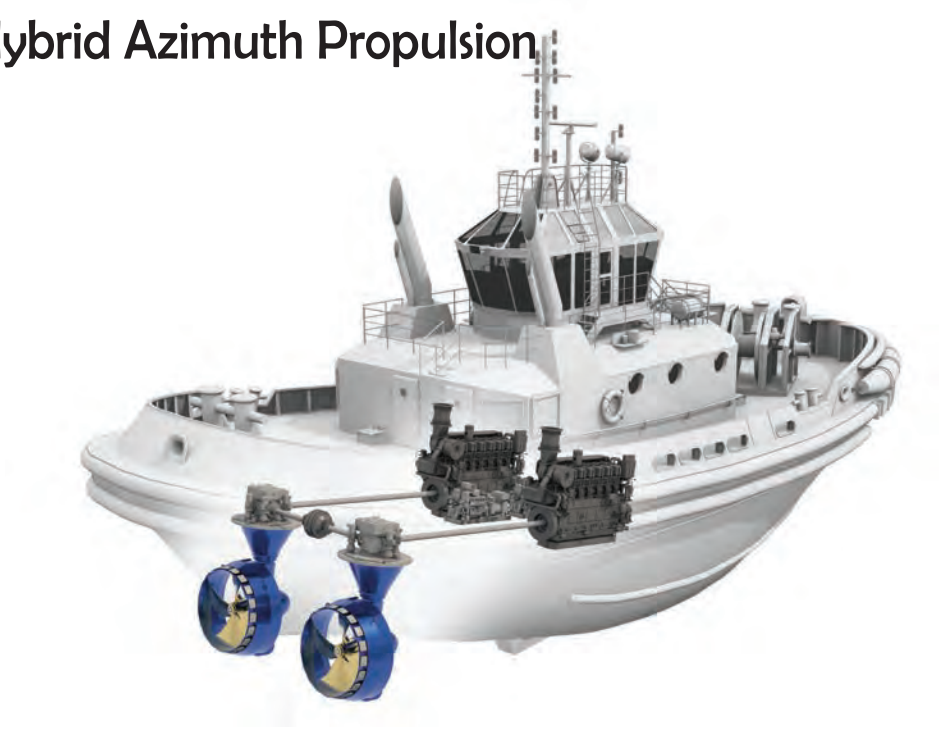
The biggest challenge we had was reducing the weight of the machine to meet strict deck loading requirements while increasing the load capacity from the legacy machine. In order to do this we had to employ ultra-high strength steels, which introduces additional procurement and welding challenges. Another challenge was designing the machine to not only withstand a large shock load, but also prove to be fully operational after the event. The prototype unit will undergo a full shock test in which the Crash Crane will be on a barge while a large explosive charge will be detonated in the water near it.

COVID-19 has proved a challenge for many businesses; what has been its impact to date on Allied Systems?

Aside from the challenges that most businesses have been experiencing as a result of COVID-19 (remote work inefficiencies, supply chain issues, etc.), we were subjected to a very unexpected side effect. All of our manufacturing is done on site at our Sherwood, Oregon facility, and our welding operations use CO_2 as a shield gas.

The significant drop in car travel and reduced oil prices after COVID-19 hit resulted in many gasoline producers to limit production or completely shut down their plants. CO_2 is produced as a bi-product to gasoline production, and without it, we were not able to source enough CO_2 for our operations. To mitigate the risk caused by this we implemented new welding procedures that utilized a mix of argon and CO_2, to reduce our dependence on CO_2. As of recently it seems that the supply of CO_2 is returning, but there is no certainty in the future.

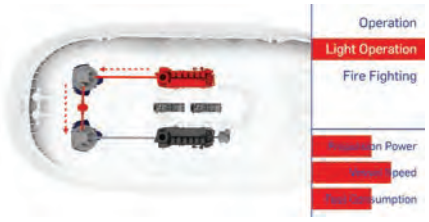
Schottel SyDrive-M: Hybrid Azimuth Propulsion



Schottel won a new order for its patented SYDRIVE-M system, a hybrid propulsion concept is based on the Schottel Y-Hybrid thruster technology that connects a port and starboard azimuth thrusters. The contract is to supply the system to UZMAR Shipyard, which is building a 30.25 x 11.75-m RAmparts 3000 series tugboat for the Port of Aarhus, Denmark's largest container port. The new tug will sport a pair of Schottel Rudderpropellers type SRP 430 (2,000 kW each) with fixed pitch propellers measuring 2.5m in diameter. The azimuth thrusters will be driven by diesel engines, delivering an expected bollard pull of about 65 tons and a free running speed of approximately 12.5 knots.

"Not only does the tugboat have great strength, it also has significantly better maneuverability and thus efficiency and precision in the work it will undertake," said Thomas Haber Borch, CEO, Port of Aarhus. "It can assist the very large vessels arriving at Aarhus with pronounced precision, as it is delivered with an Azimuth Stern Drive system." The Schottel SRP-Y Hybrid upper gear module for azimuth thrusters, Schottel SYDRIVE-M is a new variable and purely mechanical hybrid propulsion system with no need for additional electronical components or an additional gearbox. The system has main operation modes:

- **Light Operation Mode:** In synchronized Light Operation Mode, one of the two main propulsion engines remains alternating off, leading to a reduction of operating hours of the main propulsion engines. In addition, the single running main engine remaining in operation is now better loaded by two thrusters and operates in a better specific fuel consumption range, leading to less fuel consumption and emissions.

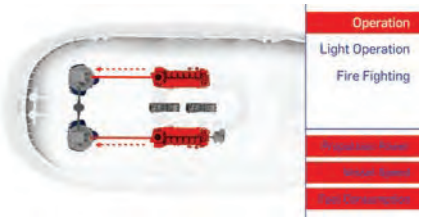


Retractable Rim Thruster
Schottel launched a retractable variant of its rim thruster covering the power range up to 500 kW, with internal propeller blades are hydrodynamically designed to be highly resistant to cavitation.
www.schottel.com

Electro-Hybrid Drive
HamiltonJet unveiled its Electro-Hybrid Drive (EHX) system. HamiltonJet delivers the electric motors, power electronics and control system integrated with the waterjets, engines, gearboxes or clutches.
www.hamiltonjet.com

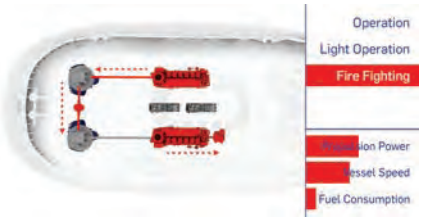
eVSP
The new electric Voith Schneider Propeller (eVSP) uses a permanent-magnet synchronous motor as its main drive, fully integrated into the VSP, reducing oil volume. No gears or transmissions are required.
www.voith.com

Proteus ESS
LAVLE launched its flagship Proteus Lithium-Ion Battery Energy Storage System (Proteus ESS), engineered to overcome the limitations of conventional lithium-ion storage technologies.
https://lavle.com



- **Full Thrust Operation Mode:** For short operation times when full propulsion power is needed, the connection between the two thrusters is disengaged and each engine is engaged to each thruster.

- **FiFi-Mode:** For any directly driven vessel the new SYDRIVE-M system provides a solution to enable fire-fighting operation with no need of an additional investment in components like medium or heavy duty slipping clutches, CP propellers or dedicated engines to supply power to a FiFi-pump. For the SYDRIVE-M FiFi-mode, the disengaged main engine is used to drive the FiFi-pump through its front PTO.



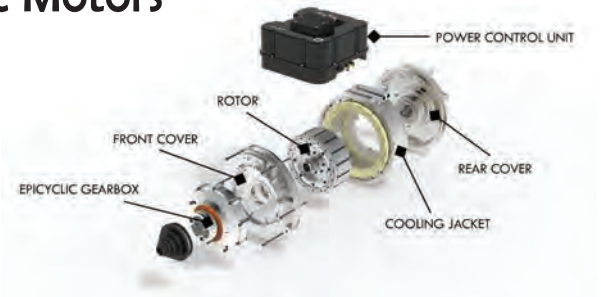
Credit: Schottel

Hydrogen Electric System

The Hydrogen Electric System (H2ES) developed by eCap combines the Re-Fire fuel cell tech with latest hydrogen and electrical components. The now-approved fuel cell solution can be installed on deck and encompasses cabinets for up to 440 kW power.

www.re-fire.com • ecap-mobility.com

F1-Bred Electric Motors



Equipmake, primarily a provider of EV technology to automotive OEMs and specialist supercar manufacturers, has a range of electric motors for marine, with output ranges from 125kW up to 220kW and weighing as little as 14kg. The company's APM motors use technology born out of Equipmake Managing Director Ian Foley's career in top-level motorsport. A former Lotus and Benetton F1 engineer, Foley's research into electric motors and flywheels in the mid-2000s led to him play a key role in the development of Williams F1's hybrid system, used in the 2009 F1 season. The resulting hybrid flywheel arrangement went on to further success in endurance racing with Porsche and Audi.

https://equipmake.co.uk

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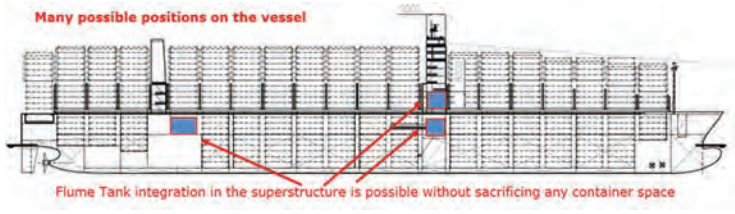
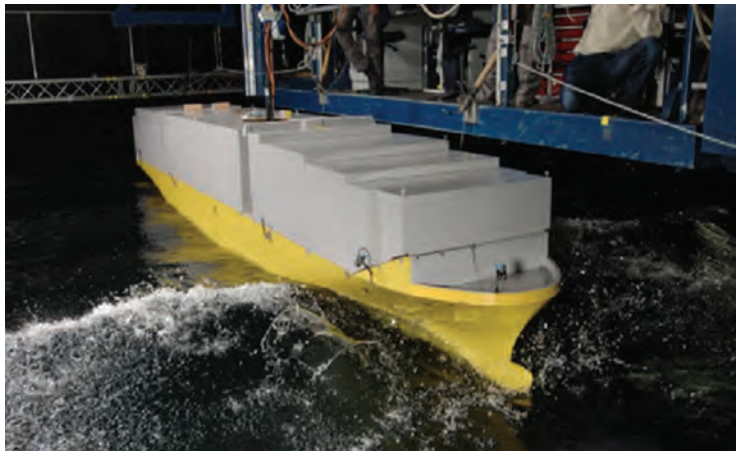


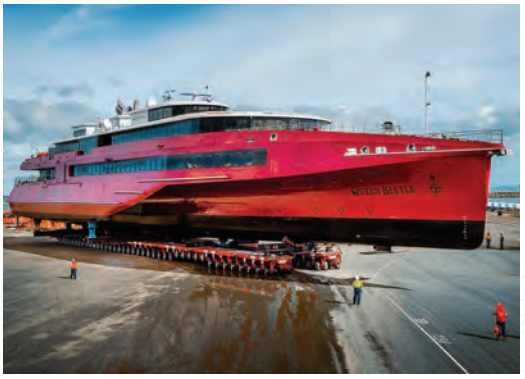
Hoppe Marine

New 'Auto Mode' for FLUME

For decades, Flume Roll Stabilization Systems have been installed on hundreds of vessels aiming to deliver increased comfort levels and lower fuel consumption. Now Hoppe Marine offers an automatic version of the Flume system in development, which automatically adjusts the level of the roll damping tank to the current loading condition of the vessel by communication with the loading computer. The company installed the system for the first time on a 15,000 TEU container ship of CMA CGM, currently under construction in Shanghai Jiangnan Changxing Shipbuilding. The newly developed automatic mode can also be retrofitted to many Flume systems already in operation without much hardware effort.



Credit: HSVA



Austal/TBHLS

'Queen Beetle' gets a Lift

With the help of a total of 80 SPMT axle lines, the 83m, 770-ton high-speed ferry Queen Beetle got from the production hall to the water with help from the heavy goods professionals at Tutt Bryant Heavy Lift & Shift.

The Queen Beetle, a high-speed trimaran ferry, will soon connect the Japanese city of Fukuoka with the South Korean port metropolis of Busan and will reach a speed of 37 knots during the crossing. But before it could be used for the first time, the ship had to get from the production hall to the water. It was less rapid.

Austal, manufacturer of the Queen Beetle, commissioned the heavy goods specialists from Tutt Bryant Heavy Lift & Shift (TBHLS) to carry out the transport on the site of the shipyard in Henderson in Western Australia. The TBHLS lift experts used two 40 SPMT axle lines (Self Propelled Modular Transporter) from SCHEUERLE.

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L.S. Starrett launched a series of "3X Power" Bi-Metal Reciprocating Saw Blades featuring teeth that cut more efficiently, enabling users to make up to three times the number of cuts than conventional blades.
www.starrett.com/3xpower

Phoenix Master Series for
Sturdilite Master Series from Phoenix is a low-voltage LED flood-light with a durable, compact design. The Master Series comes in two versions – 24W and 48W – producing up to 2500 and 5000 lumens.
www.phoenixlighting.com

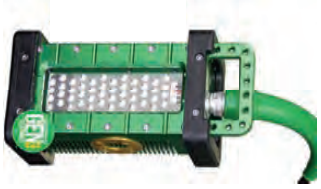
ABB to Power the World's Largest 'Diamond Digger' for DeBeers

Damen Shipyards Group is building and ABB is powering what is being called the world's first custom-built diamond recovery vessel. With a total cost of $468 million, it is the largest single investment ever made in the marine diamond industry. It will deploy subsea crawling – a technique for recovering diamonds from the seabed. The newbuild will be delivered to Debmarine Namibia, a JV between the Government of the Republic of Namibia and De Beers Group in 2022.

Namibia has the richest known marine diamond deposits in the world, with Debmarine Namibia extracting diamonds from water of between 90-150 meters deep off the south west coast of the country. Traditionally, onshore along the coastline of Namibia, diamond mining is done in open-cast mines, however, with the land-based output in Namibia expected to run out in 15 years, offshore mining is on the rise. The new 177m ship has been designed by Norwegian naval architects Marin Teknikk.

It is expected to increase the shipowner's annual production by 35%, contributing additional 500,000 carats to today's production levels. ABB will supply an integrated power system package for the vessel is being built at Damen Shipyards Mangalia on the Black Sea in Romania. In addition to the advanced system for power generation, distribution and variable speed drive propulsion systems, the solution includes a large online double-conversion marine uninterruptible power supply (MUPS) to support the ship's vital control processes. ABB's MUPS is designed for undisrupted availability, ensuring power backup for the vessel's onboard control systems of the subsea-crawler and processing plant that sorts through sediment lifted from the seabed to extract diamonds.

Image credit Marin Teknikk AS



Explosion Proof LED
Western Technology launched BRICK 3.0, a portable LED lighting system with many accessories, mounting options & stands, built to allow the user to easily position and adjust this light into any workplace.
westerntechnologylights.com

Body Heat Camera
JRC/Alphatron Marine introduced the AlphaFever-Camera, a Body Heat Camera to address the COVID-19 threat. The camera is able to measure temperature with accuracy up to ±0.5°C.
www.alphatronmarine.com

Remote Services App
Liebherr offsrs a remote service tool with features such as audio and video calls, chat function, screen sharing, image and document exchange, and real-time customer support from Liebherr.
www.liebherr.com

GK Firestop
Roxtec introduced the GK Firestop sealing kit, which has an A-class marine fire rating and is both RoHs and REACH compliant. Certified for any type of bolted or welded sleeve and any marine grade fire sealant.
www.roxtec.com

Shipping Community Beware ... Sanctions scrutiny is stepping up a gear

By David Loeser, Senior Director, Accuity

Earlier this year, The U.S. Department of State, the U.S. Department of the Treasury's Office of Foreign Assets Control (OFAC), and the U.S. Coast Guard issued a new advisory to provide those engaged or involved in trade in the maritime industry with further information and tools to counter illicit shipping and sanctions evasion.

The advisory is representative of the U.S. Government's increasingly detailed efforts towards addressing these issues, as illustrated by OFAC's recent sanctions actions which show a trend of incremental but clear extension of oversight. For example, new sanctions imposed in June this year against the Islamic Republic of Iran Shipping Lines and its Shanghai-based subsidiary E-Sail Shipping went into effect, impacting previously exempt humanitarian activities.

The challenge however is that with the sanctions, fraud and money laundering landscape becoming more complex, more organizations are being held to account for trying to stop them from happening, which includes businesses that may not have previously maintain ed rigorous due diligence and compliance programs.

What then does this new advisory tell us, and how does the full shipping supply chain need to respond?

What's new in the 2020 advisory?

Over the past few years OFAC has released five advisories regarding the maritime industry, each one further defining and alerting the industry to the varied deceptive shipping practices used to evade sanctions. The intention? To provide those that utilize the maritime industry for trade with information, red flags and tools to counter current and emerging trends in sanctions evasion related to shipping and associated services.

Previous advisories have varied widely in focus. The 2018 advisories focused primarily on the North Korea and Syrian trade and sanctions compliance, targeting prevalent tactics in the region, such as falsifying information, physically altering ship registrations, ship to ship transfers and disabling AIS transponders; all of which still apply as key issues.

This year's advisory was however both broader and more detailed, looking at comprehensive supply chain due diligence and Know Your Customer (KYC) counterparties (things financial institutions have been doing for 20 years), but also offering guidance to the full gamut of those involved with the shipping industry including insurers, flag registry and port control.

Importantly, what the most recent advisory has done, other than upping the ante significantly for all parties in the supply chain when it comes to monitoring sanctions compliance, is signal a shift in position for OFAC. What seems apparent is that OFAC's focus is now to collaborate with industry participants by providing them with more prescriptive guidance to combat illicit activity. This shift towards a private-public partnership is a long way from the relationship of 10-15 years ago, in which OFAC seemed to approach the challenge with adversarial oversight rather than collaboration.

Meeting the challenge

While the intention to have all organizations on the shipping supply chain involved in the compliance and due diligence process, widening the net in this way has created an environment in which organizations such as port authorities, logistics companies, and freight forwarders are subject to a much higher standard of due diligence than they are used to.

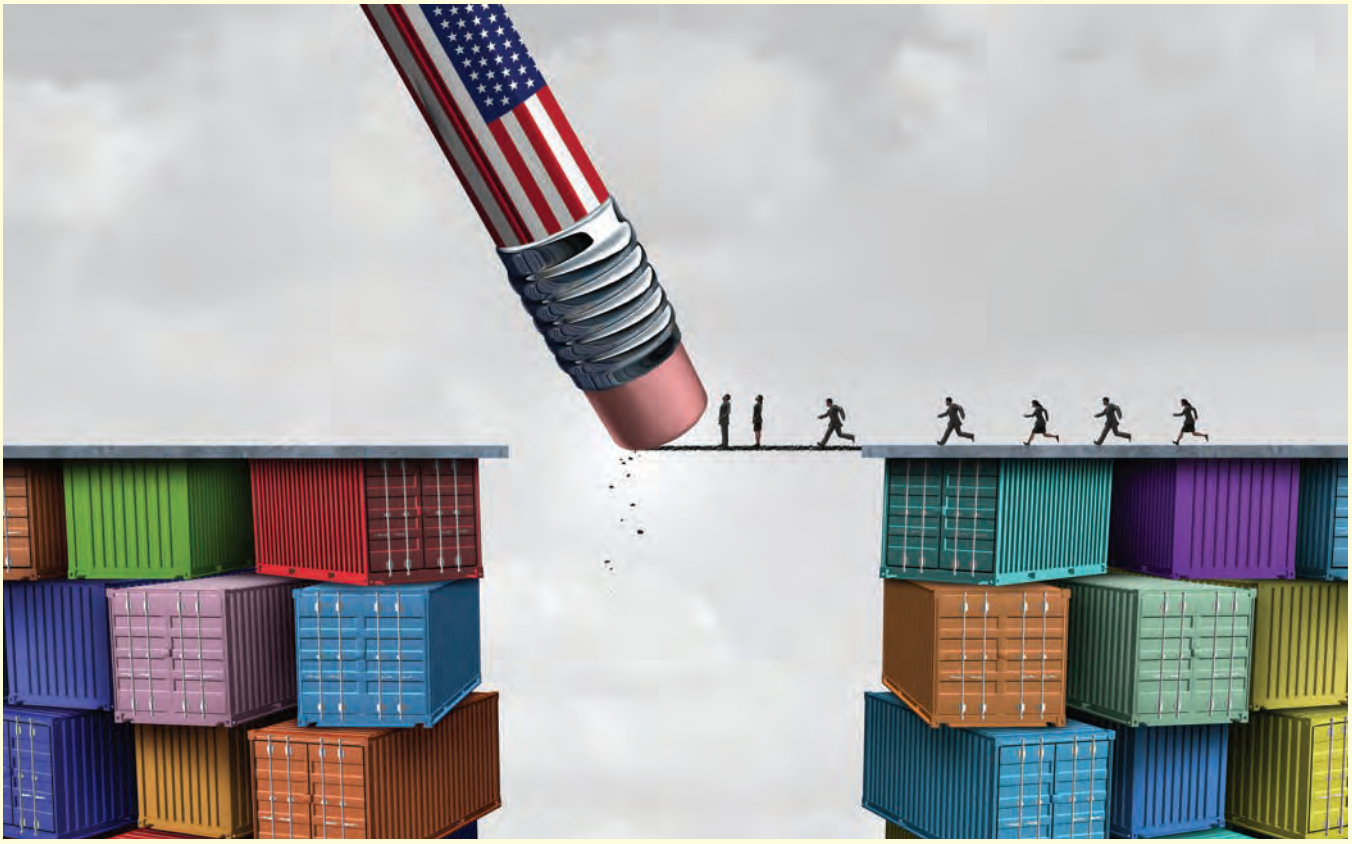
These issues are complex, even for financial institutions that are used to this level of compliance. Trade finance is one of the areas that requires a robust due diligence and screening process, in order to detect potential sanctions risks. However, trade compliance screening comes with a number of complexities, including:

- Trade finance transactions often involve a large number of counterparties that all need to undergo KYC checks;
- Much of the data and documentation used in trade finance is still paper-based or in an unstructured format, making it difficult to digitalize the process;
- There are numerous international reference lists to manage to ensure the screening process is as accurate and up to date as possible.

This is just one side of the coin. When you look at the rapidly moving sanctions landscape, operating to this standard of compliance is going to very quickly become overwhelming for many.

Moreover, OFAC doesn't have all the answers as keeping track of changes (even between advisories) manually can be challenging. For instance, the vessel named "SAM MA 2" that was listed on the 2018 OFAC advisory has since changed its name to "MYONG SIN" and was listed on the 2019 advisory.

By waiting for new advisory notices



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to come out, organizations can become exposed to the potential risks that occur in real time. In order to protect their business and its reputation, it is important for them to be proactive in spotting red flags themselves.

A further example is that a vessel named "ASIA HONOR" was not listed on the February 2018 advisory, even though it had visited the port of Najin, North Korea on June 23rd, 2017 - something that could have been verified through wider networks and tracking.

A new approach

For companies new to enhanced due diligence and compliance, these challenges are daunting. First and foremost, internalizing and institutionalizing sanctions compliance is key. This means operating a robust compliance function and having someone responsible for consistent monitoring, evaluation and implementation of a compliance program. This will be the first step towards meeting all the guidelines in the current advisory.

However, operating this function relies on information, and it can't be done manually given the vast network of shipping routes, ports, ships, and other business in the network.

Outsourcing this intel, and the technology needed to monitor and identify red flags is likely to be the most cost-effective way of doing that. Sophisticated trade compliance software can spot such activity and alert the organization to the risk, even if the regulator does not.

Some of the risk patterns OFAC has called out suggests that a more prudent approach to identifying risks related to trade is needed. This goes beyond the complex due diligence that must be conducted prior to agreeing to finance a transaction, and requires ongoing vigilance to identify other red flags, such as when a ship approaches a sanctioned or high-risk port or when they turn off their AIS tracker.

The future

Ultimately the goal of OFAC's advisory is to work towards the elimination of money laundering and fraud, but this will require everyone in the trade supply chain to operate with the same, or near same, due diligence that has been expected of the financial institutions financing the trade.

This will be a big change for many, but as with most risks, they are manageable with the right combination of information, insight, and application. Shipping organizations should rightly take a moment to assess their position, but while the new advisory clearly shows OFAC's increased scope in enforcing compliance, it also helps lay the route map to success for the organizations most impacted.

The Author

Loeser

Dave Loeser is Senior Director of Product Strategy for Accuity.

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Modular Autoloc


Fixed Autoloc Lifting a Container

MODULAR AUTOLOC FEATURES

In addition to the Fixed Autoloc Features…

- Pallet Ready
- 20′ and 40′ Scaleable Design
- Small Disassembled Footprint

Modular Autoloc Ready for Shipping

FIXED AUTOLOC FEATURES

- Self-Actuating Operation (Hand's Off)
- Proof Tested
- Exceeds AISC Fatigue Life
- Easily customized to specific sizing requirements

Break-Bulk Cargo Lifters

MANUALLY CONTAINER SPREADERS AVAILABLE


Container Lift Slings

- www.TANDEMLOC.com • info@tandemloc.com
- Toll-Free Tel: 1-800-258-7324
- International Tel: +001-252-447-7155
- 824 Fontana Blvd., Havelock NC 28532 USA

Scan QR code for more information on the N3100SF Modular Autoloc.

TANDEMLOC AUTOLOC® ISO CONTAINER LIFTING SPREADERS

Manufactured in the USA

QUALITY SYSTEM CERTIFICATION DNV·GL ISO 9001

We take the heat, so you don't have to.

Cool. Because you need it.

We deliver cool based on your reality. So no matter where you operate, hot days and heavy loads will never slow you down.

GRIDCOOLER® Keel Cooler

- **One Piece Head Design** maintains greater structural integrity.
- **Higher Silver Content Braze Joints** resist fatigue and maintain the strength of surrounding material.
- **Better Penetration at Braze Joints** places more braze material with less heat, making joints stronger.
- **2-Year Warranty on Copper Nickel GRIDCOOLER Keel Coolers:** Industry-leading design, craftsmanship and materials create industry-leading products.
- **70 Years of Experience with Fully Assembled Packaged Keel Coolers**: Our focus is and always has been heat exchangers.

WEKA Boxcooler®

- **Over 20 Years of Experience with Copper Nickel Boxcoolers** offering longer product life cycle than standard coated tube units.
- **Manufactured in the USA and The Netherlands:** provides the greatest product availability.
- **Weka Guard and Protector** eliminate the need for bulky and costly copper sacrificial anodes.

Tranter® Heat Exchangers

- **Tranter Heat Exchangers** product offerings make Fernstrum your single source for multiple stage cooling systems.
- **Tranter Superchanger** plate and frame heat exchanger provides a range of options in pattern, size and material for a wide variety of applications.
- **Tranter Platecoil** provides an efficient and cost effective alternative to traditional pipe coil heating for bulk cargo, ballast and other applications.

FERNSTRUM®
R.W. Fernstrum & Company

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