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Marine News

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ON THE COVER

The newest – and greenest – workboat of The Great Lakes Towing Company is framed by the port city of Cleveland, Ohio, where improvements to this intermodal hub's infrastructure auger well for the marine commerce certain to follow. The story begins on page 34.

Image credit: The Great Lakes Group

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(ISSN#1087-3864) (USPS#013-952)
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Subscriptions to ***Marine News*** (12 issues per year) for one year are available for $60.00;
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MarineNews (ISSN# 1087-3864) is published monthly (twelve issues) by Maritime Activity Reports Inc. 118 E 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 Marine News 850 Montauk Hwy, #867 Bayport, NY 11705.

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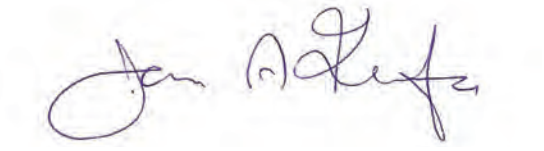
When I recently dialed up my very own Editorial Calendar for the July 2018 edition, a quick scan had me immediately concerned that I'd tried to include too much in just one edition. That's because awaiting coverage were the topics of Propulsion, Lubricants, Fire & Safety, Workboat Repair and our annual look at North America's all-important fourth coast – the Great Lakes. Not to worry. This edition contains all of that and more, much of which emanates from a focused trip to the Port of Cleveland, Ohio.

There is a great deal happening on the Great Lakes. Beyond that, a great deal more in potential commerce is lurking just over the horizon. At the Port of Cleveland, William D. Friedman has his port on the right course for what comes next, including the re-introduction of box shipping to the region and the exciting advent of offshore wind. The latter development involves the culmination of almost ten years of sweat equity by local stakeholders that looks set to bear fruit, possibly by the end of this year.

Friedman, recently named 2018-19 chairman of the American Association of Port Authorities (AAPA), has a full agenda ahead of him as he looks to grow his intermodal hub while at the same time helping to drive AAPA's infrastructure funding advocacy. That's no small task. Hence, and while his selection as our **INSIGHTS** Q&A featured executive should come as no surprise to ***MarineNews*** readers, what he has to say about the future of the Great Lakes just might. And, while Friedman's offices may have been our first stop in the Rock & Roll Capital of the World, it certainly wasn't our last. At the Great Lakes Group – the largest operator of assist tugs in the vast five lake region – it quickly became apparent that no one in the Cleveland maritime cluster sitting on their hands.

Great Lakes Group President Joseph Starck presides over a myriad of small but regionally critical firms, whose missions span the gamut from ship repair, newbuild construction, ship assist tug work, line handling, subchapter M expertise and, believe it or not – icebreaking. Starck, now engaged in the modernization of his considerable fleet of 30 vessels, also has a weather eye on the possible emergence of local offshore wind operations. Already operating in 11 ports between Duluth and Buffalo, no one else is arguably better positioned to service any and all aspects of what comes next. That story begins on page 34.

Circling back to the first sentence of this missive, I suddenly realize that my initial fears were completely unfounded. It turns out that propulsion, lubricants (inside you'll see that there's more than one way to get to the Promised Land), shafts, seals and bearings and the Great Lakes all have one thing in common: the environment and the regulatory machine that protects it. Touching on each and every one of these bullets within the confines of a 64-page folio wasn't easy, but it does make perfect sense. See if you don't agree.



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MarineNews
July 2018
Volume 29 Number 7


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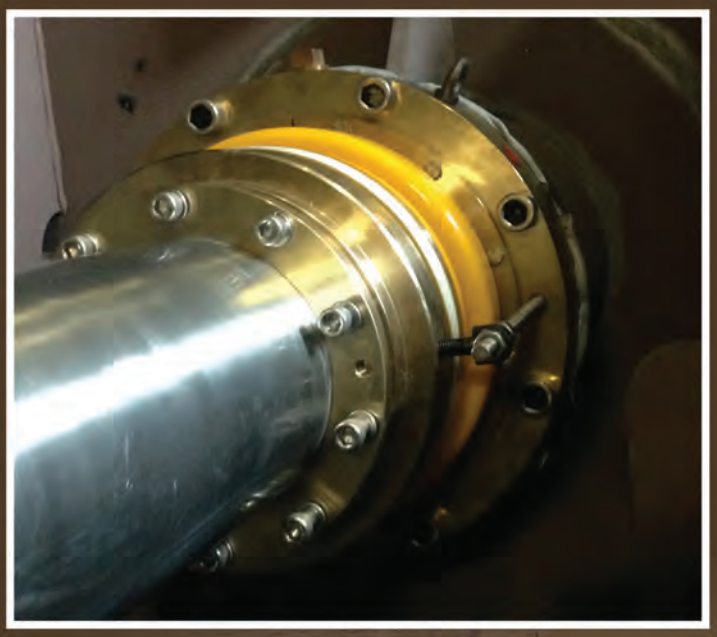

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U.S. Coast Guard's 2017 Recreational Boating Statistics

Summer is officially here. At no other time of year will there be more vessels in U.S. coastal waters. That's a good reason to sharpen your bridge watch, post another lookout and make sure the Radars are working correctly. Almost 12 million recreational vessels, many operated by untrained folks have joined you (some navigating more successfully than others) on the nation's 95,000 miles of rivers, harbors, inlets and coastal waters.

One might think that recreational boating numbers are a little out of the ***MarineNews*** wheelhouse, but for commercial workboat operators maneuvering in close proximity to this substantial fleet, the numbers can be both a predictor of what's to come, and a confirmation of certain safety assumptions. *First, the good news*: despite an increase in the number of registered recreational hulls – consistent with a rising economy that brings more disposable income – boating fatalities in 2017 totaled 658, a 6.1% decrease from 2016. Boating injuries also decreased 9.4% and accidents dropped 3.9%. Nevertheless, the latest tallies also reflect the second highest number of fatalities in the last five years, meaning that there is still room for improvement in this sector. *By-the-Numbers*, Recreational Boating in 2017 looked something like this:

Recreational boaters aren't the only ones who drop the ball. The collision involving the USS Fitzgerald and a commercial boxship in clear weather in June 2017, south of Tokyo Bay, immediately comes to mind. Just one of many recent U.S. Navy mishaps, this incident exposed the inadequacy of the Navy's preparation of younger surface warfare officers prior to being turned loose in the fleet. Addressing that reality, the Government Accounting Office (GAO) last year took a look at the Navy's efforts to educate its mariners. The report, entitled GAO-17-798T, looks at *Actions Needed to Address Persistent Maintenance, Training, and Other Challenges Facing the Fleet.* GAO says that the Navy's increased deployment lengths, shortened training periods, and deferred maintenance resulted in declining ship conditions and a worsening trend in overall readiness. All of this contributes to sailor overwork and safety risks.

On the commercial side of the ledger, the catchphrase *"Standards of Training, Certification, and Watchkeeping"* or STCW has become, at least for the IMO and U.S. Coast Guard regulatory regime, the panacea for improving safety underway. The costly and time-consuming training scheme is seemingly never ending and is viewed by many

1: *the number one leading known contributing factor in fatal boating accidents is Alcohol.*
5.5: *The fatality rate per 100,000 registered recreational vessels.*
18: *Percent of accidents involving personal watercraft – a growing problem.*
19: *Percent of fatal boating accidents where alcohol was the leading contributing factor.*
46: *Millions of dollars in property damage.*
62: *Percent of accidents involving motorboats of any kind.*
76: *Percent of fatal boating accidents where the victims drowned.*
81: *Percent of deaths occurring where the operator did not receive boating safety instruction.*
84.5: *Percent of drowning victims who weren't wearing a life jacket at the time of the incident.*
2,629: *Number of Recorded Injuries.*
4,291: *Number of recorded accidents.*
99,757: *The number of additional hulls added to the nation's recreational boat fleet in 2017.*
11,961,568: *Number of registered U.S. recreational boats reported in 2017.*

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On the other hand, if anything has been proven to work – and work well – to promote safety and reduce accidents, it has been the Coast Guard's 30-year quest to eliminate drug and alcohol abuse by professional mariners. And yet, the current rules allow certain crewmembers on board commercial fishing vessels to escape random testing – the one thing that the undisputable statistics has proven to work. As 2018 progresses, the Coast Guard and congress are working to close these loopholes, but an anti-regulatory climate and a 'rules freeze' inside the Beltway may serve to slow this progress. Let's hope not.

If commercial mariners are anything but perfect, large swaths of domestic recreational boaters also have no formal training. While testing and training methods are slowly becoming standardized, there is a long way to go. Retired Coast Guard Commandant Thad Allen put it best when he said that the biggest issue with recreational boaters was that "the general public understands that driving an automobile is a privilege, but at the same time, they consider being able to drive a boat as a basic right." Unfortunately, this hasn't changed much, over time.

Working to close the recreational training gap is the National Association of State Boating Law Administrators (NASBLA), a national nonprofit, 501(c)3 organization that works to develop public policy for recreational boating safety. NASBLA represents the recreational boating authorities of all 50 states and the U.S. territories, bringing standardized marine education to the recreational boater. That's important, because it is simply shocking to see boating education standards (or the lack thereof) on a state-by-state basis. Perhaps this year's improving safety numbers means that they are making progress. Let's hope so.

As it continually addresses the issue of boating safety, the Coast Guard's Mission and Strategic Plan (2017-2021) of the National Recreational Boating Safety Program (RBS) is "to ensure the public has a safe, secure, and enjoyable recreational boating experience by implementing programs that minimize the loss of life, personal injury, and property damage while cooperating with environmental and national security efforts." The Plan can be viewed at: **www.uscgboating.org/content/strategic-plan.php**

	2017		2016	
State / Totals	Boats Registered	Deaths	Boats Registered	Deaths
United States	11,961,568	658	11,861,811	701
Florida	918,255	66	905,298	70
Michigan	798,544	20	794137	38
Minnesota	825,658	14	817560	17
California	745,641	50	697,412	47
Wisconsin	624,353	25	611,240	20
Texas	565,422	63	573,425	53
South Carolina	534,726	13	518,269	23
Ohio	541,898	20	505,082	12
New York	444,710	22	448,480	22
North Carolina	358,171	15	367,225	23
AVG (Top 10)	635,738	31	623,813	33
TOTALS / PCT	6,357,378 (53%)	308 (47%)	6,238,128 (53%)	325 (46%)

Top 10 Boat Registration States & Fatality Rates
Source: U.S. Coast Guard (2017 data)

Table 29 • DEATHS, INJURIES, & ACCIDENTS BY YEAR, 1997-2017

Year	Deaths	Injuries	Accidents
1997	821	4555	8047
1998	815	4612	8061
1999	734	4315	7931
2000	701	4355	7740
2001*	681	4274	6419
2002	750	4062	5705
2003	703	3888	5438
2004	676	3363	4904
2005	697	3451	4969
2006	710	3474	4967
2007	685	3673	5191
2008	709	3331	4789
2009	736	3358	4730
2010	672	3153	4604
2011	758	3081	4588
2012	651	3000	4515
2013	560	2620	4062
2014	610	2678	4064
2015	626	2613	4158
2016	701	2903	4463
2017	658	2629	4291

** On July 2, 2001, the Federal threshold of property damage for reports of accidents involving recreational vessels changed from $500 to $2000.*

View the 2017 Recreational Boating Statistics at:
http://uscgboating.org/statistics/accident_statistics.php

President & CEO, Port of Cleveland & Board Chairman, American Association of Port Authorities

When the American Association of Port Authorities (AAPA) announced the election of Port of Cleveland President and CEO, William D. Friedman, to serve as chairman for the 2018-19 year, beginning this October, it was perhaps a conscious decision to tap someone who has a broad range of experience and skills in myriad ports, large and small. That's Friedman in a nutshell. AAPA represents 140 of the leading maritime port authorities in this hemisphere. If you've seen one port; well, you've seen one port. In his role with the Port of Cleveland, Friedman has transformed the business model since taking the helm in 2010. Under Friedman's leadership, the Port has enjoyed a resurgence in maritime trade and cargo volumes. In 2014, he led the Port's efforts to launch the Cleveland-Europe Express service, revitalizing containerized shipping via the Great Lakes/St. Lawrence Seaway system and solidifying Cleveland's position as its leading international hub. Moreover, the Port's economic impact has grown to encompass an annual average of over 13 million tons of cargo through the Cleveland Harbor, resulting in $3.5 billion in yearly economic activity and supporting more than 20,000 local jobs. He has 'been there and done that,' first in the ports of Indiana and then out in Seattle. This month's *MarineNews* focus on the Great Lakes was perfect opportunity to visit with him and find out what's coming next, and why.

Your term as AAPA board Chairman begins in October. What will AAPA's big focus be during your upcoming tenure?

The first word that would come out of my mouth is infrastructure. The association has identified 66 billion dollars that it believes that the ports nationally need over a 10-year time frame. AAPA is going to push Congress for funding to that level – for a combination of waterside and landside improvements. The top priority will be to advocate for funding. As you're probably aware, we've been making very good progress with the harbor maintenance tax, moving toward full spend. I think the success has been a little spottier for ports with land side transportation funding through the various iterations of Tiger and Fast Lane grants. I'd like to see more dedicated freight funding as time goes on in recognition that it's an intermodal system that needs to be adequately connected. You're only as good as that weakest link.

You arrived in Cleveland in 2010. What's changed here in the last eight years?

A lot. When I got here, this port was in a state of great uncertainty. There had been an effort to potentially relocate our primary docks to another location, and the theory was you could free up this space for redevelopment – of non-industrial, mixed lakefront redevelopment – and then build a new port, essentially, a little bit east of here using dredge material. And that had gotten some traction, but there are a lot of assumptions baked into all that that weren't really feasible. Right before I got here, that whole idea had fallen

apart. It left the port with a big problem, because that had been the solution for the dredge material. The idea was to take it all for the next 20 or 30 years, form up this new land mass, and we get this nice solution to dredging, where to put dredge material, and we get a modern, new port, we can move the port over there and we free up all this lake-front land. It sounded good, but it was going to be a really expensive project and nobody knew how to pay for it. Now, we've really got the dredging problem very close to solved. We immediately put to bed this notion of moving the port, and we have come through a very long process with the Army Corps that included some litigation by the State of Ohio and the port. The Corps – in the middle of our big planning process – decided that the sediments were clean enough to just put out in the open waters of Lake Erie. The state of Ohio said no, we adamantly disagree. And then that matter got litigated in federal court and the court, essentially to make a long story short said, 'We're not going to decide this on technical grounds, but the State has the authority under the Clean Water Act to make a decision.' So we've come through all that and we've got a solution – we actually put about 50 percent of the material, and more over time, into beneficial use. It gets used, as opposed to just being treated as a waste material and landfilled. So we feel good about that outcome.

Tell us about your business mix at the port.

Like most of the primary Great Lakes ports, we are an international business, seaway business, and then we have the domestic side. And the growth opportunities, as far as we're concerned, are more on the international side. The industries that are served domestically – steel industry, construction – really aren't the demand. It's just we don't see demand ramping up for iron ore at the integrated mill here, or for stone going into construction. That's more of a protection mode – preservation mode. Let's make sure we dredge, let's make sure nothing happens that threatens the continued movement of the domestic commodities that are important, but they're not going to grow a lot. It would be nice if they did, but the economic impact of moving those bulk commodities just isn't as high as moving a container or higher value cargo.

What's the biggest project underway right now at the Port?

The Cleveland Europe Express – that's our headline service. Our carrier is the Amsterdam-based Spliethoff Group. They've been our partner from the beginning. Nobody had cracked the container market here in the Great Lakes for decades. Seasonality, lock closures and limitations on the size of ships and all these things – people said it just can't be done. We think it can be done, we're trying to prove it out

Credit: Port of Cleveland

with Cleveland Europe Express, and that's where we've had our priority. Equipment-wise, we have two new Liebherr mobile harbor cranes, and two reach stackers for container handling. We built a new building next to where we're handling the containers for trans-loading, potentially, from domestic trailers to containers or vice versa, getting anything else out of the weather that needs to be out of the weather. We want to be the best equipped port on the Great Lakes. And we are. We've also worked very hard with CBP. CBP had never handled containers in the Great Lakes, and so for them, it was a big deal. They didn't have the equipment and they had to staff up. To us, that's a competitive advantage – we have something here that the other Great Lakes ports don't necessarily have. And you put all that together, and we think we're far and away the leading international hub here on the system. We're up to probably about 4,000 TEU a year, which I know sounds ridiculously small, but that's starting from nothing. In the Great Lakes, where we haven't had scheduled liner container service for decades, we consider that an accomplishment. We've seen that we can beat the door-to-door transit time through an east coast port by up to about 10 days. There are things that for us to compete – for us to really grow and make this a 20,000 TEU per year service – we have to solve. That's our goal; we're not trying to be half a million TEU port. We've got trains, a lot of them stack trains, going by us between New York and Chicago, and it's a constant reminder as I look out my window that we want to make some of that stop here. That isn't happening yet. It's all truck at this point. Is there some potential for rail intermodal at some point? Yes. We've tried to get the railroads to take more interest, but that's a long-term goal. We have quite a bit of rail capacity on the port – we are served directly by NS and CSX, and then we have a little switcher on the port, so we've got a nice setup. We

A containership alongside at the Port of Cleveland.

Credit: Port of Cleveland

built about 5,500 feet or so of track so we have this double loop. We can land a unit train on the port, pull it off, and move it out.

Talk a little bit about steel. There's a lot worry about tariffs and other market conditions at moment.

We handle a lot of steel. Last year, we were probably just under half a million tons – it's all from Europe – so we were, of course, very alarmed by the potential for tariffs on European-made steel. If we were to see the 25% tariff on steel from Europe or countries where we see our imports, it wouldn't be good for us. It would be disruptive to the customers who depend on it. It's labor-intensive handling that steel, supporting a lot of jobs in manufacturing facilities in this area. So it's a concern. No question about it.

The wind farm business, if you believe local stakeholders, is about to explode. What's your take for the port on that?

We're in the lead on that, actually. For more than 10 years or so, there has been a group here in Cleveland that we are part of – it's called LEEDCo – Lake Erie Energy Development Corporation, that has been trying to move toward a pilot offshore Cleveland. We're really close to getting it built. And we believe it will. We want Cleveland to be at the forefront on the Great Lakes. It would be the first freshwater, offshore wind project in North America, and one of the few in the world. A lot of the engineering and the design work has been done, we're well down the road on the permits, there's a large Department of Energy grant in the waiting, there's an arrangement at one of the big Norwegian installers to build a project. Some say that permits might be in place by October, but that's a little optimistic.

What about the Jones Act? It's always in play on domestic wind farm projects.

That is one of the challenges of the project. We've got some ideas, we're creative and we think we can overcome. Remember, this is for a pilot. So whatever you do for a pilot, your costs are going to be high, but then as you scale up, you get the marine contractors bringing equipment in or building new equipment because they can see your return. But we think with a combination of a big enough barge and some modifications to a barge and putting a big enough crane on it, we can get the job done and not have to bring in European equipment or, essentially import equipment which we can't do under Jones Act, so we work around it.

Looking around the country, each port seems to have a unique funding structure. What is the model here?

We largely have to survive on our own merits. We're not getting a lot of support yet from state government. We are making progress. It's a big part of what we do on a continual basis is to convince lawmakers in Columbus that it's worth it to invest in our ports. I try to make that case by showing them what Georgia has done, what Florida is doing through the Florida Ports Council, and what Maryland is doing with Baltimore. Those states are driving economic development with their port investment strategies. Ohio is a big state. You're not going to get a permanent line item in the budget overnight. So we're working toward that. But we're really dependent on our own revenues that we generate, and we are at the point now where, on an operating basis, we're really self-sufficient. For capital, we've done well with grants – federal and state – which have allowed us to make some of the investments we've made in our equipment without debt. We also have a small tax levy here in Cuyahoga County, which is voter-approved. It's meaningful to us, but we're really trying to drive our own revenues. We're trying to get our fair share of grant dollars. Another way we differentiate from some of the other Great Lakes ports is that we're the main issuer of project revenue bonds for all sorts of projects throughout this area. So if you were to drive around here and look at almost anything new that's been built, we're usually an issuer of bonds, so we're kind of the regional development authority, in addition to being a port, a maritime port. We earn fees off of that and that's also an important source of revenue to us.

Los Angeles and Long Beach have been burdened with a mandate to go totally zero emissions by 2030. They've done a good job. Tell us about what's happening here on the environmental front.

We're not under pressure today, but we want to be prepared – we want to be ahead of either mandates or just pressure from the community to make changes that would mitigate any environmental impacts. We were one of the founding members of Green Marine. Green Marine is really the only maritime environmental certification program. I'm on the board of Green Marine. We've been certified for six years. That's a tool we use to measure our progress against the important criteria. Our sediment management program is another indicator of our sustainability, the beneficial re-use of the sediment. And, the Cleveland Europe Express substitutes maritime transportation, burning less fuel at lower carbon emission, to bring that freight into Ohio. Even though we're nowhere near where California is, the good news is that our 'emissions profile' is quite low today – we're not a major contributor to the air quality concerns in our region, but we wanted to know what our baseline is. My view of the world is that whatever starts in California is eventually going to come to Cleveland, Ohio, and every place else.

The VIDA Bill just failed in the Senate. Does the Port of Cleveland have an official position on that?

We absolutely support VIDA. We push it mainly through American Great Lakes Port Association, which I also chair. So we're lined up with the Lake Carriers and others on this. It's a top priority for us. We can't continue to have this patchwork of state and two federal sets of regulations. Carriers want to comply, but they don't know what to comply with. Ohio, like most states, doesn't want to lose their own ability to regulate. I would make the case to our governor and anybody else that if we want to be an active, competitive, international port; we are going to have to be consistent with IMO.

I understand that the cruise industry might be taking off here. Bring the readers up to speed.

On and off over the years, there's been some cruise ships in and out of the Great Lakes, but it seems to be having a bit of a renaissance here. We're excited about it. These are small ships, with three operators in the system. And then we are hearing that others may take a hard look at coming into the Great Lakes. Last year we had eight or nine port calls. We're going to double that this year. The point is that, for a lot of people, the ship itself IS the destination. That's not the case here in the Great Lakes. The ships are not going to be the destination. The lakes are going to be the destination. It's more like the European River cruises. They'll be nice ships and people will enjoy them, but they're going to get off at Mackinaw Island or Cleveland and go to the Rock and Roll Hall, or Chicago, etc.

When it comes to Great Lakes commerce, you've been given credit for coining the catch phrase, "we're all in this together." True?

I don't know who's crediting me for that, but sure. I'll take credit. We are in it together absolutely, and so I think it has to be a regional effort as opposed to an individual effort if we are all going to succeed.

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Nothing Beats Cost-Effective Investments in New-Technology Diesel Marine Engines

By Ezra Finkin


Finkin

As most maritime professionals already know, diesel is recognized as the fuel of work. Diesel fuel is the most energy dense transportation fuel, and the diesel engine is the most efficient means of transferring this energy into work. These features explain why heavy-duty applications like trucks and equipment and much larger applications like locomotives and marine workboats rely on diesel.

While diesel is relied on for its efficiency it is also prized for its durability and longevity. Unlike other powertrain options, diesel engines last for decades and can be rebuilt over and over again, extending their useful life sometimes for generations. This is certainly true of the largest engines that power locomotives and marine workboats. Some of the largest diesel engines in use are also some of the oldest. It is not uncommon to see some vessels powered by engines manufactured during the Great Depression.

While these durable engines may continue running for 70 years or more, many miss out on the modern emission controls present in more recent generations. Diesel engines manufactured today are orders of magnitude cleaner than those manufactured even five years ago. A combination of ultra-low-sulfur diesel fuel – which cuts sulfur by 97 percent and soot by 10 percent – and advanced emission control technologies reduces particulate matter and nitrogen oxides (NOx) emissions by 88 percent to 95 percent, to near-zero levels.

Thanks to the clean diesel system found on new and newer diesel engines, ports around the United States have made incredible strides in cleaning up their emissions. For example, California's Port of Oakland, in its 2015 emissions inventory, found a 98 percent reduction in PM 2.5, a 74 percent reduction in smog-producing nitrogen oxides (NOx) and an 87 percent reduction in carbon monoxide – all due to the increased use of new-technology diesel engines at the port.

Recent research commissioned by the Diesel Technology Forum and the Environmental Defense Fund finds that between 76 percent and 80 percent of workboats in the United States use engines manufactured before emissions standards were put in place. The same study suggests that, because marine engines are much longer lived than air quality models have assumed, emissions near port communities may be higher. U.S. Environmental Protection Agency (EPA) air quality models predict that, by 2020, emissions from the fleet of marine workboats would have fallen by about 55 percent. In contrast, real-world evidence suggests that larger marine engines are not replaced as quickly as the EPA models suggest. In fact, a more realistic engine replacement rate means that emissions would only fall by about 15 percent by 2020.

Replacing these old engines with newer cleaner models generates substantial emission reductions for ports and the communities near where this equipment operates. Replacing older engines that power a single workboat can eliminate on average 14.9 tons of NOx emissions per year – that's as much as replacing 96 older Class 8 drayage trucks with new clean models. Beyond the emissions reduction potential from a marine repower or upgrade, there are considerable savings to the operator in the form of lower fuel consumption, engine maintenance costs and longer vessel life.

While such marine upgrade or replacement projects can be expensive and may not be as high-profile in the eyes of community residents, replacing the large, older engines used in marine workboats delivers the kind of substantial emission reductions many port communities have been promised – and at the lowest cost-per-ton of emissions reduced. In fact, upgrading marine tugboat engines with new-generation diesel technology is the single most cost-effective way to quickly eliminate NOx emissions: replacing tugboat engines with new clean diesel engines costs only an average $4,379 per ton of NOx eliminated.

While repowering these vessels with new clean engines generates enormous benefits to port communities, they

also generate substantial benefits for vessel owners. Replacing decades-old engines with new models translates directly to lower maintenance costs, which can be sizeable for large vessels. Some vessel owners experience fuel savings benefits as well. One workboat owner in the Puget Sound region saved 45,000 gallons of fuel when replacing older propulsion and auxiliary engines with new cleaner models.

Thankfully, there are many funding sources to help vessel owners replace the oldest of these engines and generate significant immediate term benefits for port communities. Port administrators, their tenants and their customers have access to a variety of incentive funds that help vessel owners replace their oldest engines with newer models.

One of the largest pots of incentive funds is the Environmental Mitigation Trust established through the Volkswagen settlement. This fund offers $2.9 billion to replace older heavy-duty vehicles and repower older heavy-duty engines, including those in marine workboats. State decision makers, as beneficiaries of the Trust, are already hearing from constituents concerning the use of these funds – and many need to be made aware of the cost-effectiveness and benefits of converting older marine engines to new-technology diesel. Marine vessel owners/operators putting forward successful projects could see the potential of 40 percent of the cost of new engine upgrades or repowers covered by these funds.

When it comes to making the most of these emission reduction funds, nothing beats investments in new-technology diesel marine engines. More emissions can be reduced for a single dollar's investment in large engine replacements than any other project. Marine workboat engine replacements will do the most to deliver the greatest benefits to port communities, but it's a competitive process. Now is the time to speak up and propose that your state invests funds toward marine projects.

Ezra Finkin *is the policy and outreach director for the Diesel Technology Forum, a position he has held since July 2012. Mr. Finkin works to educate policy makers with state, local and federal governments as well as elected leaders and NGOs about the importance of diesel technology and the clean air and economic benefits of continuing investments in clean diesel technologies. Learn more about the Forum at* ***http://www.dieselforum.org****.*

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EALs On Deck

Lubricants below deck and under the waterline are critical aspects to your vessel's smooth operations. Neglecting what happens on deck can also cost you money, and run you afoul of the regulatory hammer.

By Ben Bryant

Bryant

If your environmental program for vessel operations does not include lubricants used in on-deck applications, you may be missing a golden opportunity to be green. High-performance, environmentally acceptable lubricants are available for these critical operations and can play a significant role in your overall sustainability efforts.

The use of Environmentally Acceptable Lubricants (EALs) first came to the attention of vessel operators through requirements in the 2013 Vessel General Permit, where the focus is on oil to water interfaces and equipment subject to immersion in water. As you continue to look for methods to minimize your operational impact on the environment, using EALs in on-deck applications can be a cost-effective and operationally beneficial next step.

Consider the fate of lubricants used in vessel operations. Each year your company purchases hundreds of pounds of lubricating products for use in deck machinery on each of your vessels. Some of the volume is returned in the form of oil changes. A small percentage is released to the environment through accidental discharges, and yet much is simply washed off, worn out, or disappears in quantities too small to be detected by an oil sheen. Added up across fleets and across the industry, this volume of lubricants amounts to a considerable source of non-point pollution into the waterways. By converting the lubricants used in these applications to EALs, you can significantly reduce the impact of your operation on the environment.

Asking the Right Questions

To begin a conversion to EALs, the first question to ask might be: "What is an EAL?" The complete answer can be found in an appendix to the 2013 Vessel General Permit; how-

Commercial dredgers have myriad oil-to-water interfaces that must be considered.

(*) All images Credit: Klüber Lubrication

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ever, a brief definition is: *An EAL is a lubricant that meets defined standards for toxicity, bioaccumulation and biodegradability.*

Products on the market that promote achieving some environmental advantage compared to traditional mineral oil based products, but do not meet the EPA standards, are of limited environmental benefit and will not satisfy the requirements of the Vessel General Permit. A statement from the lubricant supplier on the product data sheet or in a separate letter of certification should be included in the vessel documentation to ensure you are using a product that meets the criteria.

Which applications to convert to EALs can be determined by taking an inventory of applications on deck that require lubrication and separating them into three categories: closed systems, open systems and at-risk systems:

- ***Closed Systems*** *on deck could include sealed bearings, cylinder oils, compressors, heat transfer fluids and enclosed gearboxes or chain drives. For these applications, the traditional lubricant can and likely should continue to be employed.*
- ***Open Systems*** *are where the lubricant is lost in use. These would include winch girth and pinion gears, re-lubricated bearings, pins, bushings and sheaves on davits, wires or cable, level winders on wire drums, chains on open drive systems, doors and hatches, guide rails, slewing gears on cranes and stern rollers and fairleads. These systems should be the first to be converted because the lubricant can easily find its way into the environment through rain, waves and deck washes.*
- ***At-Risk Systems*** *would include hydraulic cranes, winches and hatch covers and enclosed gearboxes where a leaking system or blown hose cannot be contained effectively. For these*

Choosing a Specialty lubricant … at a glance:

Cost: What is the total cost for the system not just the price of the product? Will overall costs be reduced through reduced consumption, extended lubrication intervals or improved protection of the equipment?
Compatibility: Lubricants work in combination with metals, hoses, seals, previous lubricants used and possible future lubricants and paints. Does the lubricant work with each of these other components?
Chemistry: A basic understanding of different base oils, thickeners, additives and modifiers can be invaluable in narrowing down the list of potential products available.
Conditions: What are the conditions the lubricant will be exposed to, such as: temperature, speed, pressure, size of mechanical element, frequency of use and past failures?
Performance: What are the stated and/or expected results from the lubricant? What test data, trials or experience support the product claims?

Inspection of deck machinery and lubricant application points is the first step in any good lubrication strategy.

applications, an EAL hydraulic oil or gear oil can replace the traditional products without reduction in performance.

Solve the Problem Without Compromising Performance

To meet the dual objectives of environmental regulation and operational performance, Klüber Lubrication is developing a portfolio of specialty EAL lubricants that optimizes the performance of specific applications. A specialty lubricant can be defined as a lubricant that meets a regulatory requirement, protects a mission-critical piece of equipment or helps achieve an operational objective better than a standard, multipurpose lubricant.

For open gears in deck applications—such as rack and pinions on lift vessels, deck winches or slewing gears—the target performance areas are their ability to withstand water spray off, protection of highly loaded gears, anti-corrosion properties and pumpability. Klüber Lubrication, for example, has developed three products to be used in these applications, all with high-viscosity, biodegradable synthetic-ester base oils and selected extreme pressure (EP) and anti-wear (AW additives. Each of these products performs as good as or better than regular open gear lubricants.

Klüberbio AG 39-602 has a NLGI class between 1-1.5 and has excellent anti corrosion properties. Klüberbio LG 39-700 N and Klüberbio LG 39-701 N have been developed for open gear systems using automatic applicators. All three products have good low temperature properties.

For hydraulic systems, Klüber Lubrication has two product families: Klüberbio M series and Klüberbio LR series—allowing the customer to choose between operational and cost considerations. Both series of products are produced using bio-based synthetic esters and optimized for lubricant life.

For enclosed gears, the Klüberbio EG series of products are based on fully saturated ester oils with inherent viscosity characteristics that ensure adequate film thickness and long lubricant life. The viscosities of the different gear oils range from 68 cSt to 320 cSt. The higher viscosity oils are appropriate for deck cranes and winches.

For plain bearings that require good anti-wear protection, lubrication flow and water resistance, Klüber Lubrication has developed Klüberbio AM 12-501. This NLGI class 1-1.5 grease has been developed for the ATB coupling system market, but it is also good for use in pins, bushings, steering systems and drive chains.

For medium to high-speed bearings used on winches, cranes and davits, Klüberbio BM 32-142 offers excellent anti-wear protection, good water resistance and very good low-temperature performance due to its fully saturated ester base oil.

Checking All the Boxes

EAL lubricant development at Klüber Lubrication and other specialty lubricant manufacturers will continue to investigate specific applications and create products that address the unique conditions of the mechanical element being lubricated. By taking a specialty lubricant approach to the conversion of standard mineral oil lubricants to EALs for on-deck applications, the end user can achieve operational objectives—and enhance the organization's sustainability and environmental programs.

***Ben Bryant** is Marine Market Manager at Klüber Lubrication NA LP. A graduate of the Massachusetts Maritime Academy, he is a long-time contributor to our pages.*

The Jones Act and Offshore Wind in Light of the Aeolus Energy Announcement

As the domestic offshore wind industry comes to life, U.S. flag vessels will necessarily be part of that expanding equation.

By Emily Huggins Jones

Huggins Jones

A potential sea change came with the recent announcement from Aeolus Energy Partners that the renewable installation and operation company was investing in a fleet of Jones Act-compliant vessels dedicated to the offshore wind industry. Long a barrier to entry for foreign and domestic prospectors alike, the Jones Act, a portion of the Merchant Marine Act of 1920, holds:

"A vessel may not provide any part of the transportation of merchandize by water, or by land and water, between points in the United States to which the coastwise laws apply, either directly or via a foreign port [unless the vessel was] built in and documented under the laws of the United States and owned by person who are citizens of the United States."

In other words, vessels transporting "merchandise" within the three nautical mile territorial sea of the United States must be US-built or re-built, and US-flagged. Further, the vessel must be 75% US-owned and US-crewed.

Jones Act: the fine print

There is some uncertainty around the extent to which the Jones Act applies to the offshore wind industry for operations on the Outer Continental Shelf, which Congress has declared through the Outer Continental Shelf Lands Act ("OCSLA") to extend 200 miles, beyond the territorial sea. The gray area centers around the OCSLA's limiting language, which extends the application of federal law to:

"[T]he subsoil and seabed of the outer continental shelf and to all artificial islands, and all installations and other devices permanently or temporarily attached to the seabed, which may be erected thereon for the purpose of exploring for, developing, or producing resources therefrom."

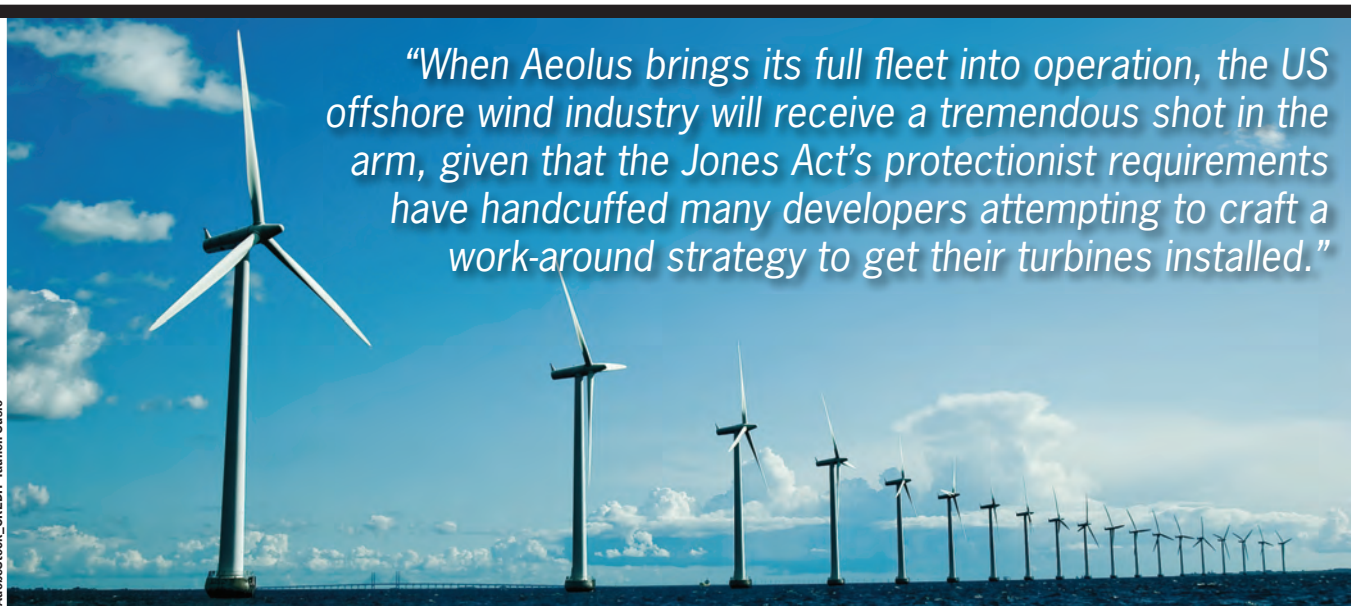
As interpreted through opinion letters and practice of the Customs and Border Patrol Agency, which is tasked with enforcing the Jones Act, the term "resources" has been given the meaning ascribed to it under the Geneva Convention on the Continental Shelf: "the mineral and other non-living resources of the seabed and subsoil together with the living organisms belonging to sedentary species." Article 2.4, Geneva Convention on the Continental Shelf (19 Apr. 1958). As such, the term is generally interpreted to exclude activities that are not intended for the exploration, development or production of seabed mineral resources. Under this view, then, offshore wind power generation is excluded, given that it does not contemplate the exploitation of mineral or other resources from the seabed.

While the pile driving activity necessary to install wind turbine towers on the seabed likely is not an activity subject to the limitations of the Jones Act, the transport of wind turbine components, installation equipment, and personnel from US ports to the wind farm site most certainly is. As of today, there are no Jones Act-compliant vessels to service the offshore wind industry in US waters, a deficiency that has long featured among the primary headwinds stunting the development of the US offshore wind market. In addition to concerns about environmental impacts, NIMBY-opposition, the lack of port infrastructure, deficiencies in supply chain and manpower resources, financing challenges and the dearth of federal regulatory support, developers have historically been challenged to compose a fleet of vessels that could install a demonstration size windfarm project, much less a commercial-scale one.

Navigating the Jones Act Carefully

One strategy devised to get around the Jones Act limitations, which was implemented at the Block Island demonstration windfarm, combined the use of a foreign-flagged heavy-lift jack-up vessel, assisted by purpose-built lift-boats. Fred Olsen Windcarrier, a Norwegian developer, supplied the jack-up, which transported the nacelles to Rhode Island from Saint Nazaire, France. Once at the project site, the U.S.-flagged feeder vessels, supplied by Falcon Global, a subsidiary of Seacor, shuttled the remaining components from port in Providence, RI to the Block Island installation site.

In addition to the lack of turbine-installation vessels, the nascent US offshore wind industry lacks a Jones Act compliant electrical transmission cable-installation vessel. At Block Island, this gap was filled with retrofitted barges.



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Durocher Marine Division, subcontracted by LS Cable, installed a 22-mile transmission cable from Rhode Island to Block Island, a 6-mile export cable from Block Island to the offshore wind towers, and four inter-array cables between the five turbines. In order to complete the installation, Durocher Marine designed and constructed a self-propelled Dynamic Positioned Barge to lay and bury the subsea cable installations.

While a similar approach is being considered for the installation of the Icebreaker windfarm off of Cleveland, Ohio, it is unlikely this strategy would prove efficient or cost-effective for the installation of a commercial windfarm, which can range anywhere from 15 to 62 turbines. Further, a number of the windfarms currently in the development pipeline are sited from three to 30 miles offshore, whereas the Block Island project was only three miles from port. Moreover, technological advances, such as the development of GE's mammoth Haliade-X 12MW turbines would stretch the physical and logistical capability of an installation strategy premised on the combination of foreign jack-ups and US converted tug-barges.

Good News for U.S. Builders

The increasing investment in the US offshore wind market has prompted several recent announcements regarding Jones Act-compliant solutions for the lack of US installation vessels. The first came on March 30, 2018 from Fred Olsen Windcarrier and Falcon Global, the team that installed the Block Island turbines. The companies signed a cooperation agreement whereby Falcon Global will provide Jones-Act compliant lift boats to supply Fred Olsen's heavy-lift jack-up installation vessels, which the companies claim will be capable of installing the largest turbines in the market. The teams will consist of up to four vessels, depending on the size of the installation project. The second came from Aeolus Energy Group in early April with the announcement that Aeolus intends to build a complete wind-installation fleet of US Jones Act-compliant vessels. According to the company, its plans include:

- *Jack-up vessels capable of installing the newest generation of 10 and 12 MW turbines;*
- *Cable ships capable of installing both the medium and high voltage marine cables;*
- *Service Operations Vessels to provide large-scale accommodation at sea for workers;*
- *A fleet of crew transfer assets, both vessels & helicopters; and*
- *Port facilities in both Massachusetts and Maryland.*

When Aeolus brings its full fleet into operation, the US offshore wind industry will receive a tremendous shot in the arm, given that the Jones Act's protectionist requirements have handcuffed many developers attempting to craft a work-around strategy to get their turbines installed. Until then, however, the Jones Act remains a legitimate hurdle that will require legal acumen and creative strategic planning to facilitate the installation of commercial scale wind farms in US waters with the available marine assets.

Emily Huggins Jones *is a partner in the Cleveland office of Squire Patton Boggs (US) LLP. Ms. Jones represents clients in the maritime, chemical, steel, and oil and gas industries. She advises ship-owners' trade associations on a full range of environmental compliance concerns, international maritime laws and conventions.*

The Legal Ramifications of the Marine Industry in the Digital Age

An overdue, but essential primer on technology and its impact on the waterfront.

By David James and Marianne Laine

James

Laine

The digital revolution has changed the world in which we live and work. People around the world are accustomed to accessing unlimited information instantly with the touch of a button. Digital devices have entered every facet of life, from simple tasks such as turning on lights in our homes to driving cars. Likewise, the digital revolution has now reached the collective maritime industry, impacting fundamental tasks such as voyage planning, navigation, and communication.

Not always an early adopter of anything new, the maritime industry today is embracing this revolution. Indeed, the presence of devices such as personal computers, phones, electronic chart systems, vessel identification systems, sensors, recording devices, and cameras aboard vessels has lately become the rule, and not the exception. Real-time information that includes weather, electronic charts, engine and critical equipment operating parameters and vessel identifying data is now readily available to vessel crews. As satellite communications becomes less cumbersome and more affordable, expansive enterprise systems between vessels and personnel on shore have becomes commonplace, with shoreside managers also real-time access to vessel operations.

A Double Edged Sword

It is indisputable that the digital revolution is poised to enhance safety, protect the environment, improve working conditions, and increase efficiency in the maritime industry. At the same time, the advancement of technology in the maritime industry is not a panacea and with it comes other challenges. Numerous legal issues surrounding now available technologies are manifesting themselves.

Notably, technological advancements have rapidly changed how maritime casualties are investigated and how evidence is developed in legal cases. For example, parties to a lawsuit would, in the past, present their case by offering witness and expert testimony and documentary evidence such as log book entries, a bell book and charts. There was seldom a case where witnesses completely agreed on the facts. As a result, investigators, courts, and juries were left to weigh the credibility of the witness testimony.

With the advancement of technology into the maritime sector, we are seeing a proliferation of myriad computerized programs, both onboard and ashore, including those that enhance recording position, speed, and heading, voices on the bridge, and rudder angle. In fact, security cameras are now commonplace aboard vessels, shore side, and on the water. Many incidents, therefore, are now captured on video. This technology has made determining the cause of an incident – in some instances – much faster and less fallible.

Several recent casualties have highlighted various problem areas surrounding the deployment of technology on vessels. Significantly, crewmembers are sometimes unable to operate equipment as intended and are unaware of critical features of the equipment. Such competency issues are often due to insufficient training. They also reveal shortcomings in the auditing function of safety management systems. Some cases have involved mariners' failures to use advanced technology in situations where it would have helped prevent the casualties, while others have involved improperly installed or malfunctioning equipment.

Garden Variety Examples

Failure to use equipment meant to aid a mariner in avoiding a collision can undoubtedly result in legal liability. Rules 5 and 7 of the Rules of the Road require a mariner to *"use all available means…to determine if the risk of collision exists."* This rule may now be interpreted to include the use of widely available technology such as digital navigation equipment utilized to maintain a proper lookout and identify collision risks. A mariner is legally negligent if a reasonably prudent mariner would have used such equipment in the same or similar circumstances. Thus, the failure to use available advanced digital technology increases the risk of liability for damages to mariners and vessel owners.

Liability can also flow from the improper or ineffective

use of digital navigation aids. Crews lacking the competence to properly operate equipment can provide a basis for a vessel to be found unseaworthy, leading to liability for cargo, injury, property damage, and other claims. An unseaworthiness finding may also impact the vessel owner's ability to take advantage of such protections as the Shipowner's Limitation of Liability Act, limits of liability for cargo loss and damage, and the ability to succeed on a claim for general average.

Various international codes and United States Coast Guard regulations require vessels to be crewed with properly trained and qualified mariners. Not surprisingly, therefore, the failure to employ crewmembers with the skills necessary to operate modern digital equipment can serve as the basis for a statutory violation. In turn, statutory violations can lead to a finding of negligence per se, civil penalties, and actions against the mariner's license. Casualties stemming from the improper use of digital equipment can also result in costly and time consuming investigations by regulators.

Managing Your Risk: the Way Forward

The risk of adverse legal ramifications from the presence and use of complicated computerized equipment aboard vessels can be minimized. Mariners should be receptive to using these new digital tools to accomplish old tasks. It is essential that vessel owners provide frequent and effective training to ensure that mariners know how to use the equipment as intended and to make sure their skills keep pace with advancing technology.

Mariners should routinely review manuals and other materials associated with such equipment. Senior mariners should strive to see that their subordinates are competent in the use of this digital equipment. Owners should consider auditing practices which are rigorous enough to identify mariners who are not using digital equipment as intended.

Similarly, mariners must also be familiar with the limitations of such equipment and be wary of overreliance on digital equipment. Indeed, the advancement of technology should complement and enhance a mariner's ability to navigate and complete other tasks but should not be used to displace common sense, the knowledge upon which the technology is based and/or years of experience at sea.

The growing availability of information to vessel crews and owners alike will dictate a change in practices. For example, effective passage planning requires the mariner to gather all information related to the passage and to use that information to appraise potential risks. Mariners have historically looked to onboard resources such as the Coast Pilot, Tide Tables, and the Local Notices to Mariners.

With the availability of internet access aboard vessels, mariners may have more up-to-date information in developing passage plans. This may necessitate using internet resources to secure current information rather than relying on stale information that may be available in paper publications aboard the vessel. Using outdated information when more accurate information is available could be considered negligence. In some circumstances, a crew's practice of not consulting available resources could render a vessel unseaworthy.

Additionally, vessel owners' liabilities are likely to expand as enterprise systems linking vessels to shore in real time grow in sophistication and remotely controlled and autonomous vessels begin to enter service. Certain cargo loss rules provide that carriers are not liable for the loss of damage to cargo caused by the operational negligence of a competent crew on a seaworthy vessel. Likewise, a vessel owner is able to limit its liability under the Shipowner's Limitation of Liability Act if the cause of the loss was occasioned or incurred without its "privity or knowledge." Thus, navigation errors made by the vessel's crew at sea were not within the "privity or knowledge" of the owner. If owners on shore supervise or otherwise exert more control over vessels at sea, however, these defenses could be vulnerable.

In sum, advancing technology as well as its pervasiveness into every facet of life, including the maritime industry, is inescapable. Diligent vessel owners and mariners will embrace the advancing technology and ensure it is being used as intended to reduce the chances of marine casualties and insulate themselves from liability in the process.

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The Great Lakes Group

Embracing and spanning the full breadth of Great Lakes geography and business mix, GLG's Joe Starck has his multi-missioned firm looking to the future – in more ways than one.

By Joseph Keefe

The Great Lakes Group (GLG) takes its beginnings from its 1899 incorporation by industrial icon John D. Rockefeller, who formed the Great Lakes Towing to satisfy the demands of a Midwest industrial revolution that brought bigger ships to the region. Existing vessels, unable to keep up with demand, were supplemented and replaced by a fleet of as many as 100 tugboats; the first steel tugs in the region. GLG still has a tug that was part of that original operation. Built in 1897; it remains in service today.

Today, GLG is a full-service marine transportation organization made up of diversified marine-related companies, all operating on the Great Lakes. Its fleet of vessels has an eye-popping average age of about 100 years, all of them built between 1900 and the early 1930's. GLG President Joseph P. Starck told *MarineNews* in late May, "They were re-powered in the late 1940's and 1950's with diesel. All were built with steam, converted to diesel, and some of them have been re-powered multiple times." That's not to say that GLG is sitting on its hands. They are not.

"The tug that was built in 1897 has been repowered five times and sank twice. You just can't keep doing that and keep up with the times," explained Starck, continuing, "And Subchapter M has really pushed us over the edge, at this point, in maintenance and repair. That isn't affordable anymore and that's why we're building new tugs."

THE GLG PORTFOLIO

Great Lakes Towing was the original company, and from Great Lakes Towing several other companies were born. Tugs International was formed in the mid-1990s to build new tugs – it was formed to build tractor tugs. Kept separate from Great Lakes Towing, it was primarily a non-operating company, intended to own and charter vessels to others. Today, theirs is only one of those boats left that GLG still owns and it is on charter to Moran.

Soo Line Handling – still another GLG company – operates out of Sault Ste. Marie, Michigan. This firm handles lines for foreign-flag ships at the locks. GLG more or less

ties that mission into its harbor towing operation there. Back in Ohio, Great Lakes Shipyard, an operating division of Great Lakes Towing, has always been the towing company's yard in Cleveland. "The original fleet was built here, and from the 1960's through the mid-2000s, we were primarily a repair operation," says Starck. Eventually, the yard got back into new construction again. Back in 2006, Starck says that GLG essentially leveled the yard and put up all the new facilities.

Today, the Great Lakes towing company – the largest U.S.-flagged tugboat fleet operating on the Great Lakes – consists of 30 vessels, operating in 11 ports between Duluth and Buffalo. The vast majority of that work consists of ship assist work, what Starck characterizes as "the primary mission of the company." Along the way, however, GLG does a little icebreaking, as well. All told, the firm collectively employs about 100; including 35 tug men, with the balance domiciled in Cleveland, aside from a small group of port engineers.

GREAT LAKES SHIPYARD: LEAN & GREEN

In the past, most of the shipyard's output consisted of service to others. For example, the tug Cleveland that was built in 2017 was actually the first tug that GLG built in this yard for internal use. All of that changed when GLG embarked on an ambitious newbuild program. "Now we're building a series of four more and that will take about two years, but that's not going to preclude us from bidding construction projects for other operators."

As for capacity, the biggest boats built at Great Lakes Shipyard were the Jensen 92-foot designed tugs SeaCor, completed in 2013. A floating drydock with a 300-ton capacity was designed and built 1983 to handle GLG's traditional G-tugs. But, when the firm added a Marine Travelift in 2011, it basically rendered the dry dock obsolete. Great Lakes Shipyard therefore has plans to refurbish it and relocate it to another port.

Notably, The Towing Company, as it is commonly known, has also enrolled its shipyard facility as a Green Marine participant – making it the first U.S. shipyard to join the program. Starck explains proudly, "It's a code, and it's used as a measuring stick to help you improve upon your environmental footprint. We've got the towing operation as a member, and separately the shipyard is a member; there's two pieces to it."

As a starting point, participants have to make a certain benchmark before they can self certify, and then have a third party come in and audit that self-certification. Starck continues, "And we did – and we do. So we went ahead and self-certified and had the auditor come in just a couple weeks ago."

There is a saying in the marine industry that stakeholders typically go green only when dragged kicking and screaming into the fray, and/or when they can see another kind of 'green' as an ancillary benefit. And, while Joe Starck certainly has his eye firmly on the bottom line, he's only too aware that his carbon footprint is every bit as important a measure of GLG's ultimate success. Indeed, The Towing Company's commitment to building 10 new tugboats at its Cleveland shipyard over the next five years is yet another example of its commitment to sustainability. The introduction of each new tug's more efficient design, propulsion and automated equipment will significantly reduce air emissions and permit the company to retire two older tugs from service.

The new vessels, coined the 'Da-

"We took AWO and the RCP very seriously. Our Vice President of Operations was on the AWO Board for several years. We were proud of it – we promoted it. At the time of our last 3-year audit, we hired our auditor and he became our Director of Operations and Compliance, a new role within our organization. Shortly after that, we hired a maritime college graduate and he became our Quality Auditor."

men Class,' will all be sisters to the tug Cleveland, built last year. "We actually laid 10 of those keels. So, after we get through these next four, we'll take a step back and reassess and decide if we want to continue on. But those other keels, we expect to use those, and if not for ourselves; we'll try to sell those to others," says Starck.

The idea, continues Starck, is to get the line started in series-build fashion, and maybe even having a couple of stock hulls available for quick turnaround to prospective buyers. "I'd like to do that and I think building these boats for ourselves is a step towards proving that we're worthy of their model. And if they buy into it, I'd like to build the boats for them, and then they can sell them to whoever they want, or we can sell them, whoever sells them first. That's some of the long-term plan here."

GLG and Starck inked a license agreement with Damen in 2014, which immediately generated a lot of interest. "We didn't sell anything using that agreement," says Starck, adding quickly, "but what it did for us was to give us a portfolio of proven off-the-shelf models to sell to customers."

Starck – like the U.S. Coast Guard and many others – is sold on the Damen concept. "Most of those tugs have been built multiple times. The tug, Cleveland – the 1907 ICE that we're building – that was their most-popular design. I went over there and rode the boat in the Port of Amsterdam, and I just thought it was just a perfect modern-day version of our old traditional style G-tug. It made sense to me that this is a proven boat with every fine design, and we brought it in here and they helped us put the package together."

SUBM EXPERTISE: FROM THE LAKES' OLDEST AND BIGGEST OPERATOR

Joe Starck and his people know a thing or two about subchapter M. They've helped out a customer here and there and owing to GLG's position in the Great Lakes marine community, they know that a critical service provider has to be on the ball. As a long-time (original) member of AWO's Responsible Carrier Program (RCP), safety and

high standards have always been a Hallmark of the GLG business philosophy.

Starck looks back on the process with pride. "We took AWO and the RCP very seriously. Our Vice President of Operations was on the AWO Board for several years. We were proud of it – we promoted it. At the time of our last 3-year audit, we hired our auditor and he became our Director of Operations and Compliance, a new role within our organization. Shortly after that, we hired a maritime college graduate and he became our Quality Auditor."

In terms of helping out others in a similar position, for GLG, subM advice is an extension of the service they provide every day. "We're exposed to it probably more than anybody else. Most of the other tugboat operators are our customers," he explains. "They're marine construction companies, or the dredging operators, or even our other tugboat operators who are out there doing barge towing or ice breaking, or whatever it is. If they have questions and they need the service, we're offering to help."

That includes going through the boat with a drydock customer, providing each with a report (for a small fee) that gives them a roadmap for compliance. "We don't represent ourselves to be a third party organization or anything like that," adds GLG's President.

And for smaller operators without assets to fill in when their primary workboats need service, GLG has a plan for them, as well. The Tugboat Loaner Program provides customers with a tug, or conversely, The Towing Company can go out and perform their work for them until the needed upgrades and drydock period is completed. "We make sure we cover our costs but it's not intended to make a whole bunch of money. We're here to allow the operator to take his vessel out of service in the most critical time of the year when he's supposed to be making money," Starck explained.

As for The Towing Company, Starck says they will have the fleet ready for July 20th. Beyond this, the newbuild program will soon produce five new hulls, each replacing two aging assets each. Built to ABS Class, GLS Hull Numbers 6501–6510 will be among the first tugs built to meet the new USCG Subchapter M Regulations. With a nod to the coming pressures and expense associated with subchapter M, Starck insists, "It's really to eliminate the 10 boats that have the highest cost of maintenance and repair coming down the road. So these are boats that we're just not going to put the money into for Subchapter M. And reducing the fleet is going to reduce the overall maintenance bill." All while maintaining the same amount of collective power and bollard pull.

GLG's newest tugs are prudently using some of the so-

called VW Dieselgate funding, coming in through the Ohio EPA, as well as the more familiar Diesel Emission Reduction Act (DERA) Grants. That's important because the money defrays as much as 40 percent of the cost of the propulsion system, or in total, about 10 percent of the cost of the tug.

Separately, the shipyard is a major contractor for the U.S. Coast Guard, U.S. Geological Survey, U.S. Army Corps of Engineers, EPA, and many other federal, state and local governments. Tell us about some of the more significant vessels you've produced in this sector. With a look out the window, Starck pointed to his latest project. "We do a lot of ship repair. The Coast Guard tug that we hauled out yesterday, it's here for about 50 days. We service at least one of those annually. Separately, there are six, 140-foot ice breaking tugs on the lakes. Two of those are paired with buoy tending barges, and we try to win those contracts every year."

The Great Lakes Shipyard works hard to keep that business. "All the science vessels, they are regularly dry docked. The Corps of Engineers has a lot of tugs and barges between the Buffalo district and the Detroit district – we've lifted all of those over the years. And then, EPA, NOAA, Fish and Wildlife and the US Geological Survey all have research vessels. All these different agencies have research vessels all over the lakes, and we dry dock just about every single one of them."

BLOWIN' IN THE WIND JUST AROUND THE NEXT BEND

The excitement over offshore wind in Lake Erie is evolving into a reality that some say could get the final go-ahead as early as October of this year. If and when it does come, GLG and Starck will pursue business opportunities in that sector through the shipyard; building (turbine) foundations, and then hopefully employing the towing operation to support the installation developer. It's not 'pie-in-the-sky' talk.

Starck fully expects to compete for, and win some of that logistics business. "We're limited to a 78-foot wide seaway, so the [wind support] equipment that is available in the world can't fit through that seaway." He adds enthusiastically, "I don't see how it cannot move forward, there's been so much time and money and effort put into it. And, the pilot program is for eight wind turbines, but ultimately there could be hundreds out there. We absolutely hope to be a part of it." In anticipation of offshore wind, coming newbuild opportunities, and continued repair work, the shipyard has embarked upon a four phase Shipyard Expansion Project.

With two adjoining land two parcels that the firm was preparing to close on at the time of this interview, the GLG team intends to add as much as 5 acres to the west of the existing property, providing much needed 'laydown' space for future building and growth. Suffice it to say that there are a lot of moving pieces to those plans, but the ultimate goal is to build a tugboat factory on that property with facilities big enough that the Travelift can be driven directly onto it.

"Actually," says Starck, "It will involve about 8 more acres total and a lot of space for new construction. And we'll also be able to do repair inside, which is one of the big issues we have here, you know, when we haul a boat out of the water in the wintertime, working out in the elements is not all that efficient. If we can bring the boat inside and do maintenance, repair and painting, so much the better."

LOOKING AHEAD

Starck's vision for what comes next is simple. "We're an old company and a small company, but we see a future here. The Great Lakes is not a dying industry. There's a lot of investment; our customers are investing, the ports are investing, the cargo interests are investing and we see the future and we're investing in the future, as well. These new tugs are a representation of that. We've built this entire new shipyard, and we're continuing to expand it." Borrowing a page from Port of Cleveland CEO William Friedman, he adds, "We believe we're all in this together with the shipowners and the ports and the cargo interests, and we want to make it happen. And, we're going to give it our best shot."

A CRUISE SHIP THAT MOVES THOUSANDS OF PASSENGERS

And a large-scale project where we were on board from the beginning

Why does the world-renowned Meyer Werft shipyard team up with Viega time and again for numerous projects of this scale? In addition to the extremely reliable piping systems made from copper, copper alloys or plastic materials, Viega also supplies the know-how to go with them. **Viega. Connected in quality.**

Meyer Werft shipyard, Papenburg, Germany

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The ABB Electric Tow Boat Beckons to Inland Operators

Long a staple for offshore service providers, a more compact and carefully designed version of the diesel electric option is now available for inland pushboats. For budget conscious operators (and who isn't, in this environment?), the stars may finally be aligned.

By Joseph Keefe

(*) All images courtesy ABB

For many years, electric propulsion has proven to be a viable propulsion solution for many different types of vessels. Most familiar to workboat stakeholders would be the advent of the 'diesel electric' offshore serve providers (OSV) that became commonplace during the offshore boom era. Those vessels operated in a different regulatory environment, with the emphasis more leaning towards operational efficiencies and fuel economy. Those benchmarks are still important, of course, but today's EPA's rapidly escalating Tier standards for marine engines bring new pressures and many variables into mix.

Those offshore systems were, by and large, too big to fit into a conventional inland pushboat, hence the concept never had legs for inland commerce. Until now. ABB's electric propulsion systems are now available to help long-established towboat owners operating chiefly on U.S. inland waterways to solve some very modern challenges. In a nutshell, diesel electric propulsion offers owners a way to build compliant vessels operating on easier to meet Tier 3 main engines. That doesn't mean that these won't be efficient and environmentally friendly systems. They will.

The waterfront in general has never been known to be an early adopter of most readily available technologies, but experience shows that domestic inland owners will commit to new technologies when it makes business sense. Sometimes, new regulations can have way of speeding up that process. Indeed, the new rules have major cost implications for owners looking to build new vessels, concurrent with the reality of an aging river fleet at a time of poor freight rates.

Edward Schwarz, ABB Vice President of New Build Sales, has his own take on what is transpiring today. "The US inland river vessel owners were known as pioneers around the world with regard to introducing the consistent use of steam vessels thus helping usher in the 1st industrial revolution," he says, and then asks, "Then why does the perception exist that the US inland river industry is an anti-technology group [?]; maybe because they do not appreciate technology solely for technology's sake. Prior to every major adoption of technology in the US inland river market there is a perfect alignment of opportunity and solution. We are at one of these points today and ABB is ready to help the US inland market enjoy the benefits of the 4th industrial revolution which is based on electrification, digitalization and connectivity."

The 'conventional' option involves installing two large EPA Tier 4 main engines supplemented by an aftertreatment system – either the Exhaust Gas Recirculation (EGR) or Selective Catalyst Reduction (SCR) option. The latter choice can add additional piping, a refill and urea stor-

age tank and demand separate maintenance all within the confines of an already cramped machinery space. With no guarantee that such expenses and arrangements can bring higher rates to support them, the time may well be right for the electric solution to get a second look.

Diesel electric systems use multiple generators to provide power for the propulsion plant via electric motors. Where diesel electric propulsion is chosen, however, EPA Tier 4 emissions requirements can be met using a solution that includes multiple EPA Tier 3 generator sets, with no prospect in sight of the need for costly upgrades.

Baseline

At its lowest common denominator, the ABB electric propulsion solution is a 'tier beater.' That's not to say it isn't the right thing to do for today's responsible and compliant operator. It is. And, it is good design. To that end, diesel electric cut its teeth in the offshore markets, a sector where it found great success. But, in its infancy it was too large for the towboat world. And, it was also expensive. Today's ABB version is now smaller, more price competitive and designed for the inland towboat. And because it isn't necessary 'position dependent' on the shafts, the logistics of putting it in the limited available machinery space is a bit easier.

Using the latest iteration of this concept, with a smaller ABB packaged generator, a towboat operator would be, at times, able to use one main engine, instead of two, along with the genset. As a result, main engines experience less run time, operating at ideal RPM's, all adding up to less wear and tear on the engines, and of course, longer intervals between required service. The automated nature of the system can even time all engine service intervals to coincide, resulting in less downtime and more available running time for the towboat to accomplish what it is intended to do: make money.

Quite simply, the system consumes electricity as it produces it, consuming less fuel, and thereby producing a smaller environmental signature. The system – driven by ABB automation technology – decides how much power is needed. Hence, and for larger operators, the likelihood that one Captain or another will be labeled the 'fleet gas hog' can be eliminated. That's because, depending on engine loading characteristics, the ETB configuration can also switch from low load to full load more quickly, in a performance gain that will be discernible to the captain. For its part, ABB claims as much as a 30 percent fuel savings.

Nuts & Bolts

Cheaper to build than a tier 4 system, and is less expensive to operate (OpEx) than a Tier 3 inland towboat

"We believe that the technology behind diesel electric propulsion has finally matured to the point it is now a competitive option for consideration for the inland market. We feel that it is vital to the successful implementation of this technology to partner with companies like ABB that have a proven record with diesel electric combined with domestic service, combined with domestic support facilities."

– Joshua Sebastian,
Engineering Manager at The Shearer Group, Inc. (TSGI)

system built just two years ago, the ABB electric towboat package is, for the most part, OEM agnostic. ABB acts as the system integrator, facilitating and allowing smooth interface with and between any and all marine engines, transmissions and gearboxes. If you have a favorite – CAT, Cummins, Scania, Twin Disc, Schottel, ZF, or Steerprop (you name it) – an electric propulsion system can be designed to marry those components.

ABB's Electric Tow Boat (ETB) addresses new regulations, increasing CAPEX costs for new builds, the imperative for lower OPEX costs and demand for greater vessel reliability. Delivered as a customized system for each towboat, the advent of inland ETB potentially represents the next generation of towboat for the US inland waterway network.

In a recently published analysis, Clarkson Research stated that, "By optimizing the loading of the engines, diesel-electric systems can lower fuel consumption and emissions." But, owners of cruise ships, tankers, gas carriers, container ships, offshore vessels and tug boats, many operating in the harshest conditions in the world, have chosen diesel electric propulsion over its mechanical equivalent for its greater efficiency, flexibility and reliability.

Joshua Sebastian, Engineering Manager at The Shearer Group, Inc. (TSGI), was more to the point, telling ***MarineNews***, "We believe that the technology behind diesel electric propulsion has finally matured to the point it is now a competitive option for consideration for the inland market. We feel that it is vital to the successful implementation of this technology to partner with companies like ABB that have a proven record with diesel electric combined with domestic service, combined with domestic support facilities."

For its part, ABB has already supplied over 1,300 vessels featuring diesel electric propulsion. As many as 4,000 towboats operating along the rivers of the United States, annually hauling 25,000 barges and carrying 630 million

tons of cargo along 25,000 miles of waterway, await the same benefits.

In simple terms, diesel electric systems draw on variable frequency drives to deliver their efficiency across a broader operating profile, throughout the engine's total operational cycle. That translates into measurable advantages for those inland operators willing to make the movement to a cleaner environmental signature and a more efficient operation:

- ***Fuel savings:*** Often, the charterer pays for fuel. A fuel efficient boat is a more attractive boat.
- ***Redundancy:*** The diesel electric solution allows power to be distributed to either propulsion motor, meaning that the impact of a prime mover failure is minimized.
- ***Flexibility:*** The vessel can be designed as both a Z-Drive and conventional propeller vessel.
- ***Safety:*** In the ABB ETB design, the system can be configured so that a single engine failure can lead to only a 25% reduction in available power, with this loss having no effect on steering or complete loss of propulsion.
- ***Crew comfort:*** Keep your crew happier with lower noise levels & vibration through the use of smaller engines.
- ***Operating profiles:*** The ABB ETB towboat system exploits variable frequency drives to optimize power use over a wide span of operations: when in standby or moving empty barges, for example.
- ***Research:*** ABB has been fine tuning its diesel electric technology for application to a towboat design, basing its work on a study of real river operations undertaken over a 365-day period covering 500 push boat vessels.
- ***Maintenance/Vessel Availability:*** Standardized and proven products supported by local Houston-based ABB service teams ensure those on board adapt seamlessly to diesel electric operations.
- ***Training:*** ABB's Marine Academy trains operators to become more proactive in operating and maintaining equipment to maximize availability minimize less downtime.
- ***Autonomy:*** the modern towboat does not operate with an electrician onboard, so equipment is robust, requiring very little onboard interaction.
- ***Connectivity:*** ABB has almost 1,000 vessels whose equipment is connected to Collaborative Operations Centers, monitoring 24/7 from centers, one right here in the USA.
- ***Predictive Maintenance:*** ABB power and control systems support Remote Diagnostic System and Condition-based Monitoring, making it easier to comply with SubM & reduce engine maintenance requirements/costs.
- ***In the Shipyards:*** ABB's standard scope of supply includes all generators, power distribution, automation control and electrical power consumers – ensuring just one vendor for main electrical systems.
- ***Warranty:*** ABB offers some of the most extensive and inclusive standard warranties in the marine industry.
- ***Flexibility:*** Can be used for both thruster (L-drives) and conventional designed vessels
- ***Lower OpEx & CapEx:*** Cheaper to build, more economical to run, less expensive to maintain.

Not Coming: Already Here

Primarily known for its efficacy in the offshore energy world where DP operations required precise and constant position keeping, punctuated by brief intervals of heavy support service, the diesel electric model is nothing new. Indeed, for the past eight years, it has seen service in tough conditions on South American rivers with a RAL fit-for-purpose designed boat employing Schottel drives.

Lawren Best, Robert Allan's Supervisor of Design Development, told ***MarineNews*** in June, "When built these were the most powerful triple z-drive shallow draft push boats in the world. This propulsion system is diesel-electric, with three independent Wartsila 9l20 medium speed diesel gensets each developing 1,710 ekW. AC current propulsion motors and electric drive components from ABB power Schottel SRP 1215 azimuthing drives produce a Bollard Pull of 69 tonnes ahead and 63 tonnes astern. For this project, diesel electric propulsion provided advantages of flexibility in positioning the engines and drives to ensure best operating trim in the extremely shallow waters as well as increased propulsion system responsiveness from the medium speed engines when maneuvering."

To date, the ABB ETB propulsion solution can't yet claim any domestic inland installations. It may, however, just be a matter of time. It is a fact that inland towboats and barges represent 85 percent of U.S. vessels and it is no small matter that towboats are the oldest with 66 percent older than 25 years. Hence, the current strategy of growing (or maintaining) a fleet not by newbuild but by acquisition of existing assets will not be viable into the foreseeable future. When that time comes, the ABB ETB will be there to fill the void.

THORDON BEARINGS:

EAL PROTECTION IN A CLASS OF ITS OWN

The ideal solution for the tightening regulatory noose also brings a different (and welcome) shade of 'green' for workboat operators.

By Joseph Keefe

As the US Environmental Protection Agency (EPA ramps up enforcement of regulations that mandate that all vessels over 24 meters (78 feet) operating in US waters must switch over to EALs in all oil-to-sea interfaces before their next drydocking, it is an arguably good time to be in the lubricants business. At the same time, Thordon Bearings, a manufacturer of seawater lubricated bearings for the marine industry has its own thoughts on that very topic. Specifically, Craig Carter, Thordon Bearings' Director of Marketing and Customer Service, asks, "What is the point in shipowners investing in costly biolubricants when seawater is widely available and 100% free? It's akin to paying for the very air we breathe."

When used in conjunction with Thordon Bearings' COMPAC propeller shaft bearing system, seawater lubricates the bearings to ensure the smooth, effective and safe operation of the vessel. Not only does As Thordon guarantees its seawater-lubricated COMPAC system for a wear life of fifteen years, it also reduces a vessel's annual operating and maintenance costs substantially, compared to an EAL-lubricated metal bearing and two seal system. That much cannot be denied.

Arguably the premiere environmentally correct option, Thordon Bearings solve one (underwater) problem while improving another – the bottom line. That's because recently published research into the operational costs of using mineral oil, approved EALs or seawater in a propeller shaft bearing system showed that EALs – vegetable oils, synthetic esters and polyalkylene glycols – are over 7 times more expensive than the mineral oils typically used in oil-lubricated propeller shaft bearing systems.

Thordon estimates that as much as 63 million U.S. gallons of operational oil lubricant are leaked into the oceans each year at a staggering cumulative cost to the operator, even without adding in any monetary penalties incurred by way of environmental fines.

Not everyone is sold on the concept, or the extra costs involved in installing seawater lubricated bearings. Better known in the blue water, international trades, Thordon bearings are available worldwide through over 75 agents and distributors. That said; there aren't too many types of vessels or operating environments that Thordon can't tackle, and certainly, momentum is building in the inland and fresh water markets – here and abroad. To that end, some recent installations auger well for a workboat sector that finds itself under pressure from a variety of regulatory and financial pressures.

RiverTough

When South American inland pushboat operator Impala experienced water ingress through the aft seal resulting in the complete seizure of the tailshaft bearing, they turned to Thordon Bearings for a quick and permanent fix. That's because with El Niño approaching, the operator couldn't risk further damage to the vessel in shallow silty rivers. Impala's boats operate on Colombia's highly abrasive Magdalena River and its existing oil-lubricated tailshaft bearing system couldn't keep pace.

Thordon Bearings has successfully completed the oil to water-lubricated tailshaft bearing conversions of the first four of 15 Impala Terminals Colombia operated tug/tow boats. Impala Zambrano, the first of 15 triple-screw and twin-screw pusher boats scheduled for oil-to-water conversion, was retrofitted in July 2015 with a Thordon RiverTough bearing and TG100 shaft seal combination.

Three triple-screw and one twin-screw pusher vessels have since been converted and all 15 tug/towboats are scheduled for conversion by the end of 2018. The low level of water in Colombia's waterways, an effect of the drought caused by the El Niño weather phenomenon, is a major concern for Latin American owners of workboats operating on the region's rivers.

Jorge Luis Vélez, Manager, Delta Marine and River Services, said "By far the biggest problem with the original oil-lubricated system was the small 4mm (0.157") clearance between the propeller and Kort nozzles. When silt

or sand lodged between them, it prevented the circulation of lubricating oil, resulting in increased friction and high bearing temperatures. Ultimately, it was destroying the bronze bearing, potentially causing catastrophic damage to the shaft."

"Since the retrofit, the RiverTough bearings and TG100 seals have been operating very successfully.

The vessel has been operating in rivers with very low water levels with high sand and silt content but the Thordon Bearings' system has proven itself. We recently checked the bearing clearance as well as the whole system and all the components are in perfect working condition."

The success of that first conversion resulted in Impala Terminals Colombia contracting Delta Marine and River Services for RiverTough/TG100 retrofits to a further fourteen Magdalena-operating vessels.

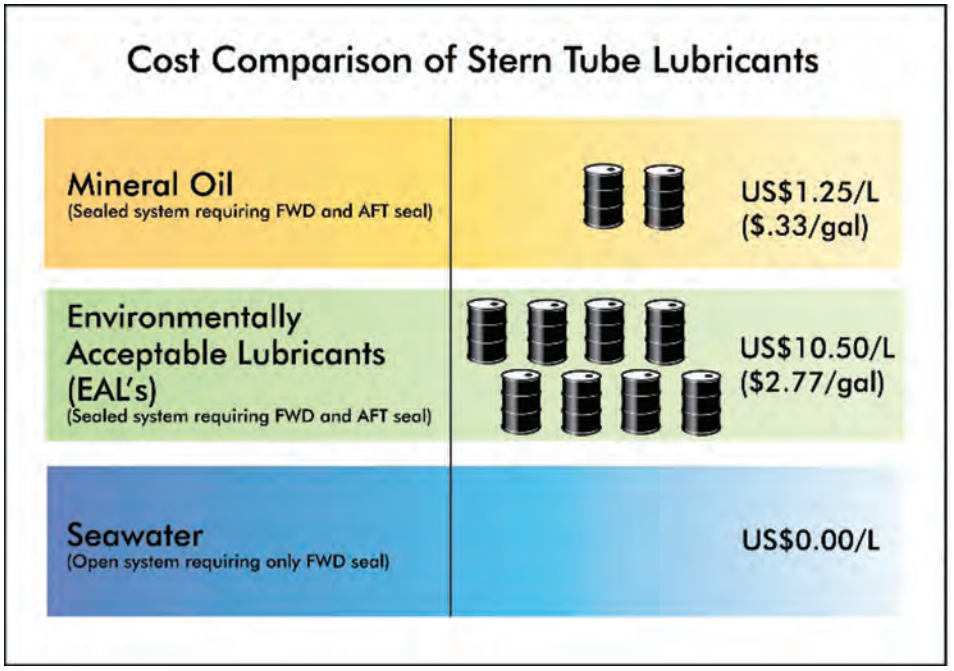
Delta Marine has begun retrofitting RiverTough bearings and TG100 seals to the remaining vessels, each of which will require bearings and seals for shaft diameters ranging from 165mm (6.5") to 186mm (7.3"). Of particular concern to potential inland buyers, Thordon seals typically last the same in both salt and fresh water, as they are made from corrosion resistant bronze.

Closer to Home

Thordon's success on far flung inland rivers could soon bring home to domestic U.S. operators the wisdom of converting to water lubricated shaft bearings. In the meantime, the Great Lakes Fleet operators have already gone ahead with the conversion of the bulk carrier SS John G. Munson to water lubricated tailshaft bearings. Thordon Bearings carried out the conversion last year for the 26,260 DWT Great Lakes vessel.

The shaft conversion of the 1952-built self-unloader formed a key part of the mammoth 12-month power conversion project completed last year by Fincantieri's Bay Shipbuilding yard, in Sturgeon Bay, Wisconsin. Major work included the removal and replacement of the vessels' tailshaft, stern tube, propeller and hub. Thordon Bearings' supplied its COMPAC water lubricated propeller shaft bearings, a Water Quality Package, which conditions the lubricating water, and shaft protection system ThorShield. As a result, the John G. Munson became the first ABS-classed vessel with a water-lubricated propeller shaft arrangement to operate under its TCM (Tailshaft Condition Monitoring) notation. Importantly, the new ABS rules related to open seawater lubricated tailshafts and extended shaft withdrawals (if certain monitoring conditions are met) are expected to be announced this summer.

Commenting on the success of the conversion, Thordon's Regional Manager – Americas, Scott Groves, said: "September 2017 sea trials confirmed the MV John G. Munson is consuming considerably less fuel than it was as a steam ship, reducing emissions dramatically. The water lubricated propeller shaft arrangement adds to these cost savings and further miti-



"What is the point in shipowners investing in costly bio-lubricants when seawater is widely available and 100% free? It's akin to paying for the very air we breathe."

– Craig Carter, Thordon Bearings' Director of Marketing and Customer Service

gates against any risk of tailshaft pollution."

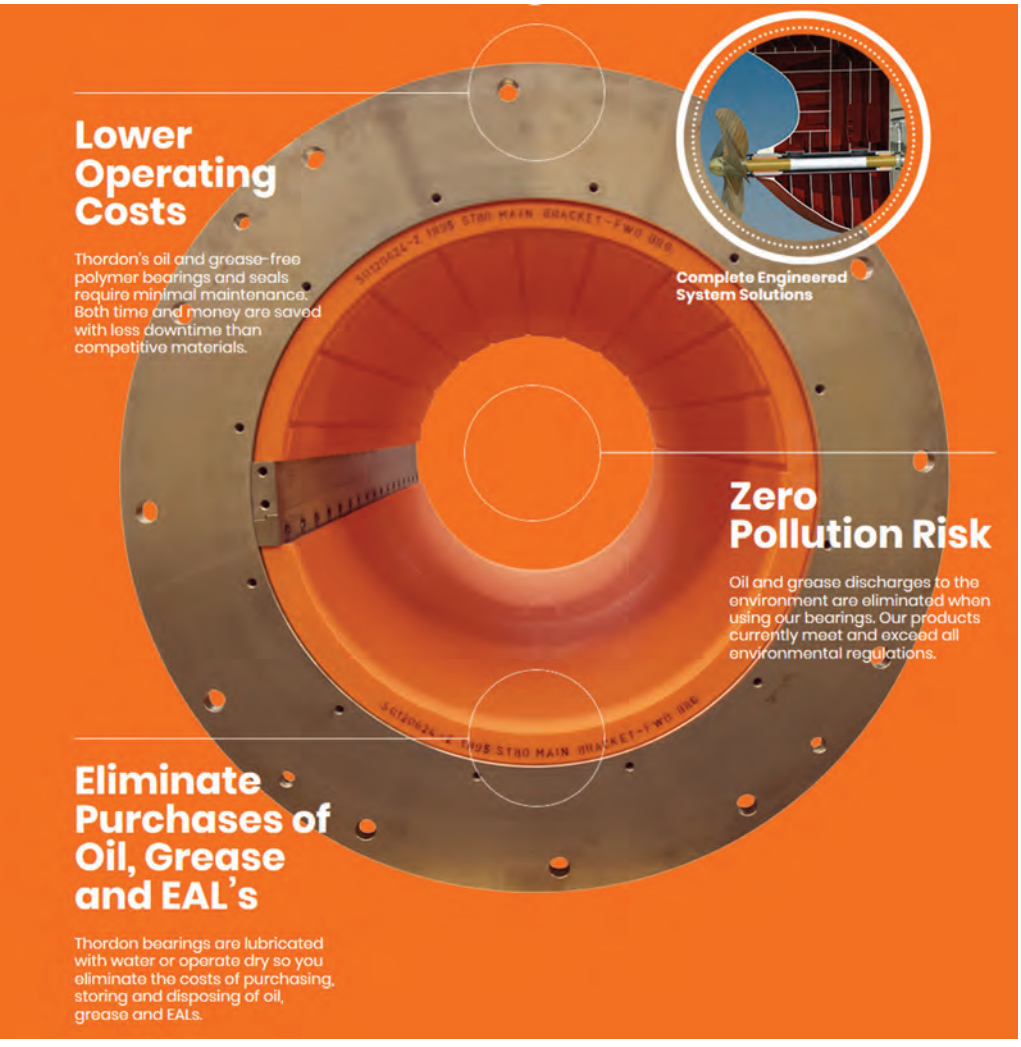
Separately, and in early 2016, the Interlake Steamship Co also converted its last steam-powered vessel, the 1959-built self-unloader Herbert C. Jackson to diesel and also specified the COMPAC water lubricated bearing system.

In this instance, both Interlake and the Great Lakes responded very quickly to the changes in the shipping industry and specified COMPAC to meet new US EPA environmental requirements. Other Great Lakes stakeholders are assessing the performance of COMPAC installed on the Munson with a view to converting more vessels in its fleet to water-lubrication. And, this is one place where owners get their money's worth out of every single hull. In this market, it is safe to say that the cost of a Thordon refit is dwarfed many times over by the lifespan burden of traditional lubricants.

Advantage: Thordon

Eliminating the need to vet, source and purchase expensive so-called EAL lubricants probably remains as the top reason to select a Thordon Bearing solution for your commercial marine vessel, especially when it comes to newbuild tonnage. But, savvy owners who aim to operate existing tonnage longer and with greater economy also turn to the Thordon solution in conjunction with other environmental improvements to their equipment.

That comes at a cost. A Thordon open seawater lubricated bearing system with one seal is typically 15-20% more expensive than a closed EAL/oil lubricated system with 2 seals for a newbuilding. While payback periods will depend on how frequent the owner/operator performs aft seal maintenance on the oil lubricated system, the typical payback is just four years. And, while Thordon suddenly has a competitor in this sector, it also took 15 years for that to happen. Much further down the learning curve, Thordon today has more than 550 commercial vessel installations with proven wear life, using seawater lubricated bearings. No one else is even close.



Typically, operators go 'green' for just one of two reasons: they either grudgingly yield to the regulatory hammer or surprisingly find that there are two kinds of green to be realized. With Thordon, they can check both boxes.

DNV GL's new voluntary TMON notation for open loop water lubricated propeller shafts follows similar rule revisions by Lloyd's Register (LR), Bureau Veritas (BV) and the China Classification Society (CCS). Many stakeholders expect ABS to follow suit this summer. In a nutshell, and as long as certain condition monitoring criteria are met, the new rules mean that propeller shafts operating water lubricated bearings no longer need to be withdrawn for inspection every five years. There will be no predetermined intervals between shaft withdrawal surveys. And, of course, no need to purchase another round of lubricants.

Passive Fire Protection: Serious Business

STI Marine Firestop's Online Fire Protection Training Program features curriculum that targets shipyard employees, contractors and surveyors.

By Joseph Keefe

When STI Marine Firestop – a division of Specified Technologies – added a new, free Marine Online Training Program to its website, its purpose was to provide in-depth curriculum that targets shipyard employees and contractors and the surveyors that must inspect their work. To be sure, the world of passive fire protection might seem, on the surface, to be a boring and unimportant part of today's workboat vessels. But, that's not the case. STI's new training portal shows us why.

In a nutshell, the Marine Online Training curriculum provides an overview of passive fire protection and its important role in ensuring life safety at sea. That's because the task of installing penetration seals and cable transits and successfully integrating such protection systems into fire-rated bulkheads and decks, including areas where water-tightness is required is one of them most important but perhaps least understood part of the newbuild process. Until now.

Safer Vessels Start with Knowledge

"The online training is intended to be comprehensive enough to provide an overview of passive fire protection in the marine environment, and then cover specific products and technologies, including aspects of the installation," James P. Stahl Jr., STI Marine Firestop Vice President & General Manager told ***MarineNews*** in June, adding, "The marine business is a global business, and we wanted an immersive way to educate shipyard employees, contractors, and even surveyors working anywhere in the world via distance learning."

For its part, STI Marine Firestop's main business involves providing penetration seals and cable transits for use in fire-rated bulkheads and decks. Their product families include water-tight sealants, firestop collars, non-hardening putty, silicone foam, cable plugs and innovative EZ-Path Marine Cable Transit and Marine Snap Seal systems. In the near future, STI will roll out another product – the MBD Busbar Firestop Device.

The IMO's FTP Code and SOLAS requires any penetration through a fire-rated bulkhead or deck be sealed to prevent the passage of fire and hot gases, and STI's USA-manufactured products help contribute to the protection afforded to the vessel, and the personnel onboard the vessel. Stahl adds, "We also have specific products that provide watertightness where required in the event of compartment flooding. Our products are installed in all types of vessels, including workboats such as tugs, support vessels, offshore vessels, fishing vessels, superyachts, ferries, naval vessels, and platforms." STI clients include Matson and Patriot Contract Services and recent product installations include the USNS Shughart, and NOAA's Oscar Elton Sette.

According to Stahl, however, it simply isn't enough to procure the best equipment and hope that it works, should it ever come to that. "Knowledge is the key to compliant installations. When the workers installing the products have a more comprehensive understanding as to the importance, we believe they will ensure the systems are installed correctly. We also know that video and images can tell the story in a more compelling manner than black-and-white instruction sheets, so there is that element, too. For the surveyors inspecting for compliance, there is the familiarity with seeing compliant installations, and the specific knowledge as to what constitutes compliance."

Naturally, the training module focuses on STI's hardware, a considerable array spanning watertight soft sealants all the way to marine pipe and cable transit system. These transits allow for easy cable moves, additions, and changes without the need to remove or replace sealing materials. Beyond this, and in the past year, STI has expanded the line to include solutions for sealing busbars, a method to fix deficient block/cable transit frames, and a unique product – Snap-Seal Cable Plugs – for single or small cable bunches. Stahl explains, "With more security cameras being installed aboard ships, Snap-Seal is proving very popular, and we have an Ingress Protection Rating of IP66 when used in conjunction with MFS Sealant."

Compliance: Quality Components & Qualified Technicians

Each U.S.-manufactured product sold by Somerville, NJ-based STI Marine Firestop is available globally and the complete line is fully tested to IMO FTTP 2010 and certified by major classification agencies, including DNV GL, Lloyds Register, ABS, BV, and RINA. Notably, and as this magazine went to print, STI is the prime for an NSRP Electrical Technologies Panel Project to bring the EzPath MDM 150 cable transit to the U.S. Navy. Even James Stahl, however, knows that improperly installed equipment by untrained yard personnel is a recipe for disaster.

According to Stahl, the nascent STI Marine Firestop Online Passive Fire Protection Training Program been well received. An influx of registrations from the specific types of people that the training is targeted for have been received. Stahl adds, "We have certainly seen a surge of surveyors, and that is great, too, because they are important stakeholders in terms of helping to ensure that systems are installed properly." For surveyors, understanding all the nuances of what constitutes a proper installation means that they can inspect accordingly. Beyond this, the curriculum drills down into the importance of Type Approvals and the manufacturer's installation instructions that accompany them. In the end, those documents are a roadmap for compliant installations.

The competency-based training program even includes a test-out quiz to gauge user knowledge of the module content and features a certificate of completion that can be printed at the conclusion of the program. And, while 'paper' is often important, Stahl says that the training itself is far more important.

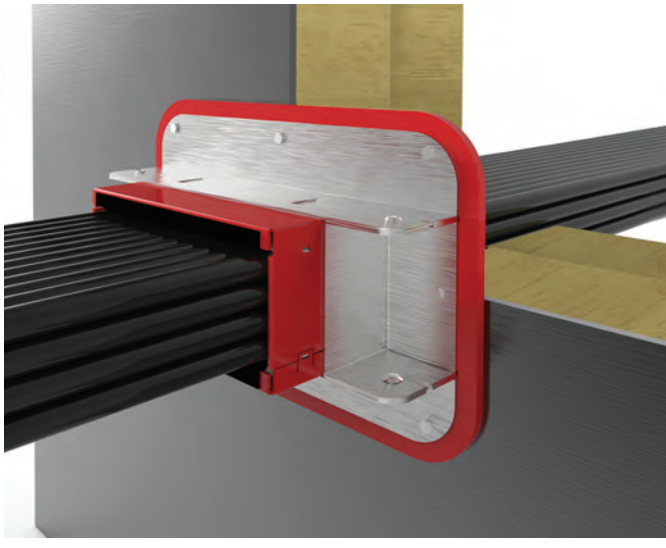
"Our goal is to ensure that we help facilitate the education that is so vital to proper installation. We believe that our distance learning program is a great start that supplements the experience that comes with actual hands-on installation of the products."

"Knowledge is the key to compliant installations. When the workers installing the products have a more comprehensive understanding as to the importance, we believe they will ensure the systems are installed correctly. We also know that video and images can tell the story in a more compelling manner than black-and-white instruction sheets, so there is that element, too. For the surveyors inspecting for compliance, there is the familiarity with seeing compliant installations, and the specific knowledge as to what constitutes compliance."

– James P. Stahl Jr., STI Marine Firestop Vice President & General Manager

For any participant who has previously installed a marine penetration sealing system or cable transit, transitioning to the use of STI Marine products will not be a far departure and proficiency with physical installation may be faster. For people who are new to installing these types of systems and materials, the training focuses on proper techniques and dispenses helpful advice that will increase proficiency.

As yard personnel begin installing the products and systems, proficiency will quickly increase. For surveyors, the training helps ensure that transits, cables and plugs not only look good; they'll also perform in an emergency as intended. Whether for a brand-new installer or an installer who has experience, but not with STI Marine products, this training will help. U.S. flag operators and boatyards now have another domestic resource – not just for hardware, but also, for peace of mind. **www.stimarine.com**



Under the Microscope

The performance of Environmentally Acceptable Lubricants (EALs) used to lubricate stern-tube bearings has been analyzed by ABS and its research partners. Their findings shed new light on the sector.

By Marios Ioannou

ABS has unveiled the findings of a joint-research project on Environmentally Acceptable Lubricants (EALs) conducted with Vickers Oils and Imperial College London. The study was undertaken to support maritime safety by evaluating the properties of EALs that are used to lubricate stern-tube bearings against those of the mineral oil-based lubricants that are largely a by-product of refined crude oil.

Viscosity was found to be the most important property when selecting an EAL for use with stern-tube bearings and, in general, the viscosity of EALs was found more stable than that of mineral oils with respect to changes in temperature.

According to Derek Novak, ABS Senior Vice President of Global Engineering and Technology, the performance of EALs have gradually come under the industry spotlight since 2014, shortly after new regulations – specifically, the 2013 Vessel General Permit from the U.S. Environmental Protection Agency required them to replace mineral-oil lubricants in marine vessels. While the initiative was intended to help shipowners lessen the environmental impact of new ships, an increase in the number of failures of their stern tube bearings was also noted.

Regulations Collide With Operational Realities

The new VGP regulation coincided with a trend towards new designs for propulsion systems, such as single stern tube bearing installations and larger, heavier propellers operating at lower RPM, which may have played a role in the increased failure rate.

To investigate, ABS joined forces with Vickers Oils and the Tribology Group at the Imperial College London, a department renowned for its study of friction, wear, lubrication and the design of bearings. The findings of the research were released on April 25.

"Working closely with our project partners in an extensive study of EAL properties, we found oil viscosity to be the main determinant in choosing the optimal EAL for normally operating stern-tube bearing installations," Novak said in a release announcing the findings. The failures were mostly experienced in single stern tube bearing vessels. Some of those were remedied by replacing EALs with mineral oils, or by using EALs with higher viscosity; however, the majority was mitigated by ensuring proper shaft alignment, or re-alignment.

The persistence of causal and remedial uncertainties prompted internal investigations into the properties of EALs compared to those of mineral oils to identify whether the failures of the stern tube bearings were linked to the use of the environmental lubricants. An examination of established literature and previous experimental studies revealed some differences between EALs and mineral oils, but those differences were inconclusive about the performance of EALs when applied to stern-tube bearings.

Searching for – and Finding Answers

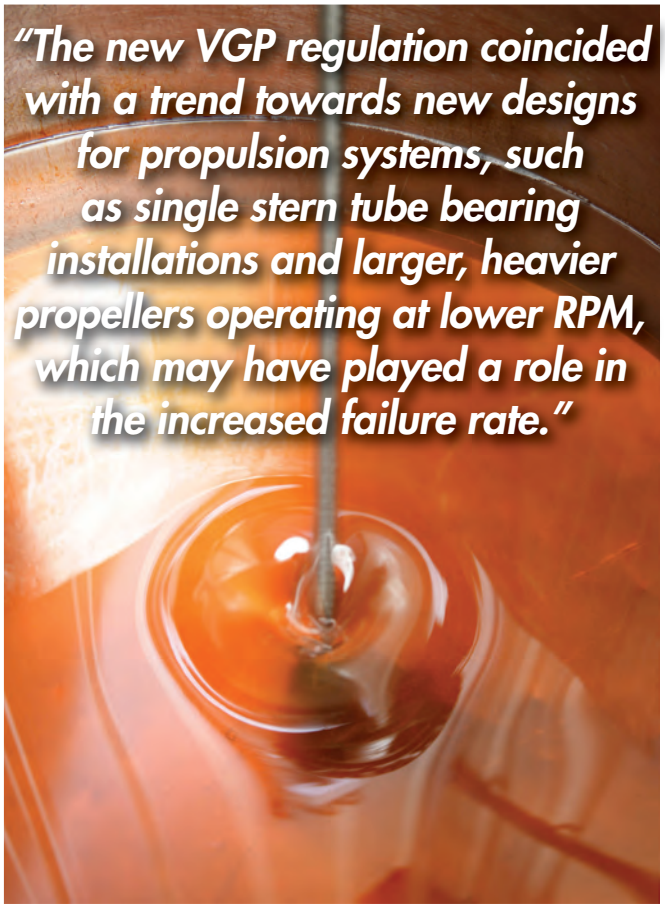
To gain greater understanding about the applicability of EALs, targeted experiments were undertaken (for example, journal bearing rig tests) to provide more information about their lubricating properties, behavior and to discover whether they had contributed to the increased number of bearing failures. Tests were executed to evaluate fundamental lubricant properties (e.g. viscosity, pressure-viscosity coefficient, boundary film formation and wear protection), and to evaluate the performance of the lubricants under standard operating conditions for stern tube bearings.

In addition to comparing and evaluating the properties of EALs to those of mineral oils, similar comparisons were made between EALs from separate suppliers. ABS believes this research to be the most comprehensive and conclusive ever conducted into EALs. Although it did not find EALs to be responsible for the recent failures of stern-tube bearings – or that the use of mineral oils would have prevented those failures – it did identify the key properties that should be considered in the selection of environmental lubricants.

Some of the key characteristics discovered included:

- *the viscosity of EALs was found to be more stable than that of mineral oils with respect to changes in temperature;*
- *EALs demonstrated relatively lower pressure-viscosity coefficients than mineral oils, indicating they may form thinner oil films, which could prove insufficient to protect surfaces from wear under edge-loading conditions;*
- *using EALs with higher-pressure viscosity coefficients, compared to other EALs of the same viscosity, may provide some safety margin in shaft-alignment-sensitive installations;*
- *EALs may offer a smaller safety margin when a shaft is not aligned, so particular attention should be taken to ensure alignment is correct when using them;*
- *using EALs with higher viscosity, compared to a mineral oil of lower viscosity, may provide additional tolerance for edge-loading wear.*

For its part, Vickers Oils began introducing EALs to the marine sector in 2002, and has since supplied thousands of vessels worldwide and gained approvals from many of industry's leading original equipment manufacturers. According to the company's Technical Director, Chris Wholley, the study's findings offer important insights into viscosity selection and the more specialized area of pressure-viscosity coefficient behavior, an area where no universal measurement standard exists.



"By tackling this issue, we developed a deeper understanding of lubricant behavior in a journal bearing, operating both normally and under edge-loading conditions," Wholley said in a statement. "This information will help us to give the best advice to owners and operators who wish to reduce the adverse effects of shaft misalignment, and it will also inform our product-development processes."

The project results demonstrated that when a journal bearing operates normally – when it is aligned – the property of lubricants that most affect performance is viscosity. The journal bearing tests showed that mineral oils and EALs behaved similarly in terms of their ability to provide lubricant and prevent wear.

However, several differences were also identified, which may influence the operation of the stern-tube bearing (STB):

Temperature vs. Kinematic Viscosity characteristics: *The viscosity of EALs was more stable with respect to changes in temperature, which is a desirable property, especially in STB applications that involve significant temperature variations. However, the mineral oil had a higher viscosity (compared to the EALs of same viscosity @ 40°C) at temperatures below 40°C, which can also be desirable.*

Pressure-Viscosity Coefficient characteristics: *EALs demonstrated lower pressure-viscosity coefficients than mineral oils, which implies that EALs may form thinner oil films, which could prove insufficient to protect surfaces from wear when their viscosity increases from high-pressure increases, such as those caused by excessive shaft misalignment angles, or from existing bearing-shaft wear.*

Since significant rises in pressure can result from incorrect shaft alignments, it is specifically important to ensure proper alignment during STB installations when using EALs. This does not, however, imply that under the same conditions mineral oils will prevent failure. But they may improve safety margin.

Marios Ioannou, *Principal Engineer in Corporate Technology, joined ABS in April 2017. Marios holds a PhD from University College London (UCL) in UK, in the field of Internal Combustion Engines. Marios extended his knowledge to marine engines by working on projects with MAN Diesel & Turbo. Prior to joining ABS Marios worked for Wartsila / Winterthur Gas & Diesel (WinGD) in Switzerland, and was the Project Manager in Technology projects, and Performance Leader during Type Approval and Factory Acceptance Tests at Licensee sites, in China, Korea and Japan.*

Second 7000 HP Tier IV Tug Joins McAllister Fleet

The tug Rosemary McAllister, the second in a series of four 100' x 40', 80 metric ton bollard pull tugboats, and 32nd tractor tug, has joined McAllister's fleet. The Rosemary was completed at Eastern Shipbuilding in Panama City, FL. Eastern is building both remaining tugs in the series. Looking ahead, the Ava McAllister is due in January 2019 and the Capt. Jim McAllister is due in May 2019. The ROSEMARY is powered by 3516E Tier IV Caterpillar engines with twin Schottel SRP4000FP units. Packed into her 100' x 40' hull is 6,770 horsepower, with an impressive ABS-approved 82.75 metric ton bollard pull certification. The ROSEMARY joins her sister vessel, the CAPT. BRIAN A. MCALLISTER, as one of the earliest EPA Tier IV tugs on the U.S. East Coast. State of the art remote controlled fire monitors and deluge systems (ABS FiFi certified) complete the package, making the tug both versatile and unique to any East Coast port. The Rosemary McAllister will serve clients in Virginia.

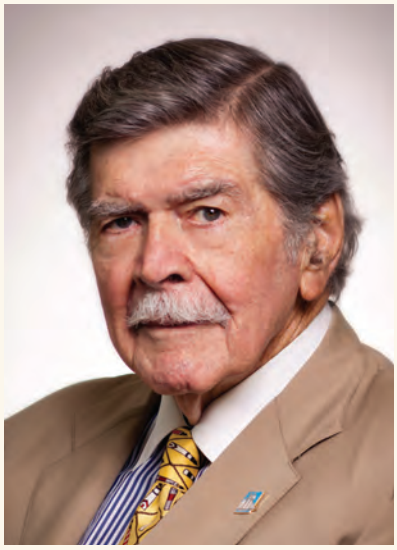
Alaskan Power Skiff: Smooth Operations

Dirk Rozema's grandfather, Alle, was building wooden power skiffs with gas Chrysler Crown engines a few years after he arrived from the Netherlands in 1949. After his son, Clarence, joined the family's Bayview Washington business, they tried a few diesel powered steel skiffs around 1970. Excessive weight on the steel skiffs soon led to aluminum skiff. Rozema's first aluminum skiff would have been delivered in the mid-1970s. The lightweight of the skiff assured that all future seine skiffs for Alaska's 58-foot limit seiners would be aluminum. Gildnes' solution was elegantly simple, move the wheel and controls to the bow, which is the first part of the skiff to reach the seiner. This allows the skiff to easily pass a line up to deck before going smoothly and quickly out under the towline at seiner's stern. The new skiff weighs approximately 7800 pounds with its engine, a Cummins QSB 6.7L 305 bhp at 2600 RPM with a Twin

Disc MG5061-SC at 2.43:1 reduction. The engine turns a 27 ¾-inch propeller in a steerable cast aluminum nozzle. While the under water assemblage reduces efficiency, Rozema estimates that the 19-foot 305 bhp skiff/tow-off boat still has about 6,000 pounds of bollard pull.

Work Boat Large for US Navy

From powerful seine skiffs for the Alaskan salmon fishery to sturdy and practical crew boats for the safe transfer of workers on marine construction jobs, Seattle-based Snow Boat Building is known for its quality aluminum fabrication and general commercial boat repair. Recently they won a contract to construct a 40x17-foot US Navy Workboat Large. The small heavily built steel vessel with aluminum superstructure will be operated by a crew of two and have capacity for up to five passengers. It will have a capacity for a 3100 pound total payload. Propulsion power will be a pair of Cummins QSM11 mains each developing 455 mhp at 2100 RPM. This power will give the vessel a bollard push of 22,000 pounds or a speed of nine knots. The workboat will assist barges, submarines and can be employed in opening and closing security barriers or to tow/push other floating port support equipment.



John "Jack" J. Gallagher

A maritime industry veteran and environmental services pioneer, passed away on Monday at the age of 89. Jack's greatest professional passion was his work as a Spill Manager/Qualified Individual, a role in which he had few peers. He attended and helped shape the outcome of more maritime casualties and oil spills than can be remembered. Over time, he served as a P&I correspondent and attorney specializing in admiralty and patent law, a pioneer in the field of oil spill contingency planning, aeronautical engineer, educator and founding Director of the Center for Marine Environmental Protection & Safety at the Massachusetts Maritime Academy, and founder of the maritime environmental consulting firm Gallagher Marine Systems. Jack was an inventor and patent holder of oil spill mitigation technology and contributed to the development of many of the tools of the industry including the U.S. Navy's inflatable oil boom. He also served the U.S. Navy and U.S. Air Force.

TOTE Maritime

Nolan Noone Greene

Jaenichen

Helis

Williams

Leadership Transitions at TOTE Maritime Companies Announced

Saltchuk announced that **Tim Nolan** has been named the next President and CEO of TOTE, the parent company to TOTE Maritime and TOTE Services. Nolan currently serves as the President of TOTE Maritime Puerto Rico, has been with the TOTE family of companies since 2013. He will take over the helm on July 16. Nolan will remain in Jacksonville, FL shifting TOTE's corporate headquarters to Jacksonville where both TOTE Maritime Puerto Rico and TOTE Services are currently based. Separately, the firm announced that **Michael Noone,** currently President of TOTE Maritime Alaska, will become President of TOTE Maritime Puerto Rico. Additionally, **Grace Greene**, currently Vice President and General Manager at TOTE Maritime Alaska was promoted to President and will take over for Noone. Noone has more than 30 years of experience in the maritime industry and has been with TOTE Maritime Alaska since 2013. Greene has worked for TOTE Maritime since 2014 and previously served in the U.S. Marine Corps as a helicopter pilot.

Jaenichen Joins Liberty Global Logistics

Liberty Global Logistics (LGL) announced that **Paul "Chip" Jaenichen**, former U.S. Maritime Administrator, has joined the Company as its Executive Vice President – US Flag. Chip received his B.S. in Ocean Engineering from the U.S. Naval Academy and his Masters' degree in Engineering Management from Old Dominion University. He joins Liberty after a career primarily spent in public service, including a 30-year Navy career and his tenure as U.S. Maritime Administrator.

Helis Accepts Position at Marad Headquarters

The U.S. Maritime Administration announced that RADM **James Helis** has accepted a position at MARAD headquarters in Washington DC where he will serve as a Special Assistant to the Administrator. He leaves his position as Superintendent of the U.S. Merchant Marine Academy after six years. Marad has announced a search for his successor. Helis will continue leading the USMMA until a new superintendent is named.

Phoenix Welcomes Norfolk-based GM

Phoenix International Holdings announced that **Chris Williams** has joined the company as General Manager (GM) of its Norfolk, VA office. Chris will manage Phoenix's key U.S. Navy Diving Services Contract, providing underwater ship repair capability to U.S. Navy ships worldwide. A retired U.S. Navy Engineering Duty Officer and diver, Chris is also a licensed Professional Engineer with a Masters Degree in Mechanical Engineering, Chris's qualifications supplement his deck-plate knowledge in the area of underwater ship husbandry.


Weldon


Morganti


Bush


Glas


Thelen


Montgomery

HII Names VP of Supply Chain Management at Ingalls Shipbuilding

Huntington Ingalls Industries Ingalls Shipbuilding division announced that **Scott Weldon** has been promoted to vice president of supply chain management, effective immediately. He succeeds Lori Harper, who will retire after more than 15 years of service at Ingalls. Weldon joined HII in 1998 and served in various leadership positions across the shipyard. He received his Bachelor of Science degree in business administration and an MBA from the University of Southern Mississippi.

Morganti Joins Ecochlor Management Team

Ecochlor announced that **John Morganti** has joined the company in the new position of Vice President of Sales and Marketing. John has held leadership positions in a Fortune 500 company as well as mid-sized services providers and technology start-ups. John has a Bachelor of Science in Marine Transportation from the United States Merchant Marine Academy.

Bush Promoted to Crowley VP, Deputy General Counsel

Crowley Maritime Corp. announced that **Tim Bush** has been promoted to vice president and deputy general counsel. Bush joined Crowley in 2013 as senior corporate counsel. Prior to joining Crowley, Bush worked at the American Bureau of Shipping (ABS), where he was senior counsel and the principal engineer in charge of the stability group in ABS' offshore engineering department. He graduated from the U.S. Naval Academy with a BS in naval architecture in 1990, after which he served as a surface warfare officer and nuclear engineer in the United States Navy. He earned his master's degree in marine affairs from the University of Rhode Island in 1998.

Glas Joins Bouchard as VP, Vessel Compliance & Audit

Bouchard Transportation announced that Captain **Robert "Bob" Glas** has joined the Company as Vice President of Vessel Compliance and Auditing. Robert holds an active USCG License as Master of Towing Vessels on Oceans & Western Rivers, and is an authorized Designated Examiner, as well as an ISO 9001 / 14001 Lead Auditor.

CIS Rigging Names Marine division Sales Manager

CIS Rigging has added **Scott Thelen** to its technical team. He joins CIS as Sales Manager for the company's Marine Division. Thelen holds a BA in Marketing from the University of Wisconsin. His professional background includes working as the Senior Market Director for Thern, Inc., along with over 20 years of proven sales performance in the industrial rigging world.

Ports America Group Appoints New CEO

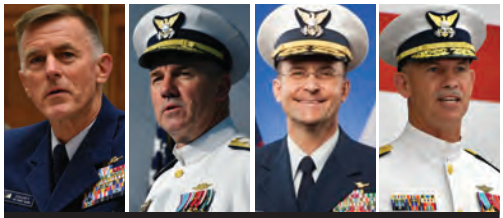
Ports America Group has named **Mark Montgomery** as president and CEO. Mark was previously president and CEO of Ports America Chesapeake from 2010 to 2014, and currently serves as a senior advisor and operating partner to the Infrastructure Investing strategy of Oaktree Capital Management, L.P. (Oaktree). He also serves in board roles at the Port Newark Container Terminal (PNCT), PAC, the Delaware River Stevedore joint venture in Philadelphia, the CP&O joint venture in Norfolk, the Port of Miami Terminal Operating Company and the Eller-ITO Stevedoring joint ventures in Miami. Mark also serves on the Board of the National Association of Waterfront Employers, the North Atlantic Ports Association and the General Stevedoring Council.

New US Coast Guard Leadership Takes the Helm

Adm. **Paul F. Zukunft** was relieved as commandant of the U.S. Coast Guard by Adm. Karl Schultz during a military change-of-command ceremony held last month at U.S. Coast Guard Headquarters. Zukunft also retired from the Coast Guard after 41 years of service to the nation as part of the same ceremony and received the Homeland Security Distinguished Service Medal from President Donald J. Trump. Schultz, now the service's 26th commandant, reports to Coast Guard headquarters from Portsmouth, Virginia, where he served as the Coast Guard Atlantic Area commander since August 2016. In an earlier ceremony, the Coast Guard also welcomed a new vice commandant. Adm. **Charles D. Michel** was relieved as vice commandant of the U.S. Coast Guard by Adm. **Charles W. Ray**. Mi-

SUNY Maritime Mourns Loss of Professor James McKoy

Long tenured, much loved and respected SUNY Maritime Professor **James "Jim" McKoy** passed away in June after a long illness. SUNY President RADM Michael Alfultis told *MarineNews*, "He was an outstanding teacher and he will be sorely missed." Mate McKoy will be missed by his colleagues and students across the campus and by the thousands of alumni who had him as an instructor during their time at Fort Schuyler. During his 38 years at Maritime College, Mate McKoy was well respected by his students as a tough but fair instructor, dedicated to his teaching and holding his students to high standards. McKoy made a lasting impact at Maritime College and on his students and will be long remembered.



US Coast Guard

Zukunft **Schultz** **Michel** **Ray**

Korney

Fernstrum

chel, who also retired from the Coast Guard after 33 years of service to the nation as part of the ceremony, received the Homeland Security Distinguished Service Medal from the 25th Commandant of the Coast Guard Adm. Paul F. Zukunft. Adm. Ray recently served as the deputy commandant of operations where he led the development of Coast Guard operational strategy, policy, guidance and resources to address Coast Guard and national priorities.

Cashman Equipment Adds Korney as Business Development Manager

Andrew Korney has joined Cashman Equipment Corporation (CEC) as their Business Development Manager. CEC has one of the world's largest and youngest fleets of barges.

R.W. Fernstrum Achieves ISO 9001:2015 Certification

R.W. Fernstrum & Company received ISO 9001:2015 certification following an audit performed by Verisys Registrars in May. The scope of Fernstrum's registration includes the engineering, design, manufacturing, and sales of heat exchangers for marine and industrial applications. "Nearly 70 years ago, we introduced the first factory assembled, engineered keel cooler. Today, as part of our commitment to continually improve our ability to meet and exceed our customers' needs, R. W. Fernstrum & Company has obtained ISO 9001:2015 certification," said **Sean Fernstrum**, President, R. W. Fernstrum & Company.

Metal Shark Acquires the Assets of Horizon Shipbuilding

Following a motion approved by the U.S. Bankruptcy Court Southern District of Alabama on June 5th, 2018, Louisiana-based shipbuilder Metal Shark has acquired the assets of Alabama-based Horizon Shipbuilding. Metal Shark's CEO **Chris Allard** explained the move, saying, "This acquisition will dramatically expand Metal Shark, as we add an impressive Alabama facility to our growing portfolio of shipyards and leverage Horizon's expertise in the construction of steel vessels." Metal Shark assumes ownership of a 35-acre shipbuilding facility in the Mobile Bay region, with separate east and west yards both fronting a dredged deepwater inlet. The facility boasts a wide array of assembly buildings and equipment, all situated just minutes from the Intracoastal Waterway with direct access to the Gulf of Mexico. Looking ahead, Metal Shark plans to be active in the design and construction of custom steel vessels for multiple markets, as well as the refit, repair, and conversion of existing vessels. Horizon CEO **Travis Short** will join Metal Shark as Executive Vice President.

Crowley Launches Service between Puerto Rico, the Dominican Republic and USVI

Crowley Maritime Corp.'s liner services group announced that it has launched a new feeder shipping service connecting San Juan, Puerto Rico; Rio Haina, Dominican Republic; and St. Croix and

Allard

Crowley Maritime Corp.

Hite

Blount

St. Thomas in the U.S. Virgin Islands (USVI). With the new service, this fast, reliable schedule also provides customers shipping time-sensitive cargo the advantage of end-of-week departures with early-week arrivals in Puerto Rico and the Dominican Republic.

ABS Clients Lead the Way in SubM Compliance

The first towing vessel owners to receive US Coast Guard (USCG) Certificates of Inspection (COIs) demonstrating SubM compliance, on all three U.S. coasts and in the USCG District 8, are all ABS clients. "ABS is guiding owners to find the right compliance solution – suited for their unique needs – while also considering operational demands," says **Paul Hite**, ABS Subchapter M Operations Coordinator. "This succession of firsts all around the U.S. clearly demonstrates how ABS is leading the way on Sub-Chapter M compliance." Marine Towing of Tampa's MV Endeavour received the first COI on the Gulf Coast, followed by Vane Line Bunkering's vessel MV Brandywine on the East Coast and Tidewater Barge Lines' MV Crown Point on the West Coast. ABS acts as the Third Party Organization (TPO) for each of these towing vessel companies, conducting vessel surveys and audits to maintain statutory compliance.

Blount Boats, MAPC Ink Sub-License Agreement

Blount Boats has signed a sub-license agreement with Marine Applied Physics Corp. (MAPC) for the building

Bell Blake Bronstien Finn

Guidry

Lamie & Sanders

Gaddy, Bordelon, Paxton

of South Boats crew transfer vessel designs. South Boats has designed and built 30% of the windfarm crew transfer vessels operating on European windfarms. Blount Boats has held the U.S. license for South Boats designs since 2011. In 2016 Blount Boats delivered the "Atlantic Pioneer," a South Boats 21m transfer vessel, to Rhode Island Fast Ferry. The vessel is the first U.S. flagged crew transfer vessel to operate in U.S. waters and services the Deepwater Wind Block Island Project. MAPC is a 32 year-old company that designs and builds vessels for commercial and military customers. **Marcia Blount**, President of Blount Boats, explains, "We are thrilled to have found a well-qualified partner to build South Boats designs as the offshore industry develops and demand for crew transfer vessels increases exponentially."

MyTaskit Announces Advisory Board

MyTaskit has announced its newly-formed advisory board. This group will provide strategic guidance to the company's C-suite managers. **George Bell**, **Frank Blake, Jr.**, **Jim Bronstien** and **Sandi Finn** will serve on the board. A 30-year veteran of consumer businesses, Bell has served in various capacities, including as managing director and executive in residence at VC and private equity firm General Catalyst Partners. Blake is a general manager for The Home Depot. Bronstien has spent 32 years as a marine business owner and executive. His experience includes large scale yacht refit yards, including Rybovich, where he presided for 20 years as owner. Finn has served in various executive leadership positions at Cendant Corporation, Haddon Holidays, and E.F. Hutton & Company.

Harvey Gulf Receives Confirmation of Reorganization Plan

The United States Bankruptcy Court, Southern District of Texas - Houston Division, in late May confirmed the final Plan of Reorganization submitted by Harvey Gulf International Marine. Harvey Gulf CEO **Shane Guidry** commented, "We really appreciate the diligent and collaborative efforts of all involved in this process – both within the company and from the legal and financial support teams." The Company also revealed in connection with the Chapter 11 proceedings that it recently entered into three long term vessel charters with Hess for two of its 310' LNG PSV's and one of its 300' PSV's.

MOU Signed to Foster Economic Growth on the Mississippi River

The St. Louis Regional Freightway, Plaquemines Port Harbor & Terminal District of Louisiana and four ports in the St. Louis region have entered into a Memorandum of Understanding (MOU) to establish and grow an alliance to generate new business by promoting international and inland trade routes at strategic locations along the Mississippi River. The agreement embodies the effort to develop a hub-and-spoke transportation system for container transport vessel shipments from Plaquemines, at the mouth of the Mississippi River just south of New Orleans, to the St. Louis region. "The Freightway is committed to serving the greater St. Louis region by helping to support efforts to attract shippers and carriers, and we believe the proposed container transport vessel route would benefit the entire region and other ports along the Mississippi River Basin," said **Mary Lamie**, Executive Director of St. Louis Regional Freightway. **Sandy Sanders**, Executive Director of Plaquemines Port Harbor & Terminal District, added, "The hub-and-spoke system provides opportunities for value-added services to be performed on the shipped goods at any of the cargo aggregation points. This is a real job multiplier."

Bollinger Receives SCA Safety Award

Bollinger Shipyards was presented the 2017 "Award for Excellence in Safety" for the 13th consecutive year by the Shipbuilders Council of America (SCA) on May 17, 2018 during SCA's Annual General Membership Meeting in Washington, DC. Ben Bordelon, Bollinger President and CEO, commented, "This recognition of exceptional safety performance is realized from a commitment at the highest level and the continued focus of Bollinger employees on workplace safety."

Cox Powertrain's CXO300 Diesel Outboard

Cox Powertrain's game-changing CXO300, diesel outboard engine has arrived. Built for professional marine use from the ground up, the CXO300 is the highest power density diesel outboard engine ever developed. With a 25% better range and longer service intervals, it has been designed to live up to three times longer than an equivalent outboard engine, something crucial to the operation and performance of fast response vessels.

www.coxmarine.com

MJP to Unveil New Product Line at SeaWork

MJP will soon unveil a new range of waterjet propulsion. The X Series, a stainless steel mixed flow propulsion solution, capitalizes on MJPs successful duplex steel product line by offering a highly efficient, highly durable product at a much lower price point. The new jets are designed for easy installation, maintainability in service and feature advancements in steering and maneuverability with improved reversing and stopping characteristics.

www.marinejetpower.com

Mercury Marine introduces new V-8

Mercury Marine has expanded its SeaPro family of commercial outboard engines with two new V-8 4.6L models. Building on the launch of the V-6 200hp SeaPro, the new 225hp, 250hp and 300hp V-8 SeaPro engines bring the durability, reliability and efficiency that the SeaPro brand is known for. These new engines now give Mercury a full lineup of four-stroke commercial engines from 40 to 300hp.

www.mercurymarine.com

Twin Disc Celebrates 100th Anniversary

Twin Disc is celebrating 100 years of making horsepower work. In the 1930s, the company entered the marine market, manufacturing countershaft reduction gears with 100% reverse power. During WWII, it converted all its operations to the production of essential war materials, especially Higgins Boats. It has grown to become a leader in innovative propulsion equipment used on commercial and military vessels worldwide.

www.twindisc.com

Corvus Energy's Energy Storage for Shore Stations

Corvus Energy manufactures energy storage systems for maritime applications, offering the innovative Orca ESS solutions portfolio and has experience from 140+ projects, totaling over 100MWh and 1.5 million operating hours. Corvus Energy provides high power energy storage in the form of modular lithium ion battery systems. Its purpose-built battery systems provide sustained power to hybrid and all-electric heavy industrial equipment, including large marine propulsion drives.

www.corvusenergy.com

Saft's New Battery for High Energy Applications

Saft has launched a new product in the Xcelion product line, the Xcelion 6T-E, a high energy lithium-ion (Li-ion) battery capable of providing double the useful capacity of lead-acid batteries in the same footprint. The 24V battery is designed for applications such as marine and hybrid gensets that require higher levels of storage capacity and longer silent watch periods.

www.saftbatteries.com

Shell Marine 40 Launched for Tug Markets

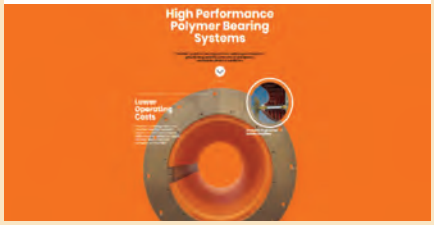
Shell Marine 40, an engine oil for high-speed diesel engines in the tugboat segments, enhances the performance of engines on board some of the world's hardest working vessels. Formulated to react to the combustion processes that take place in high-speed engines, it gives added protection and extended machinery life to vessels whose unavailability can have disproportionate cost consequences further along the supply chain.

www.shell.com

Thordon's New Bearing Informational Portal

Thordon Bearings has unveiled a web-based platform to provide information about the commercial, technical and environmental advantages of using grease-free and water-lubricated polymer bearings across a wide variety of applications. The website is designed to provide shipowners, shipyards and propulsion system integrators with the information they need to make more informed procurement decisions, especially with regards to water-lubricated propeller shafts.

www.thordonbearings.com



40 Years of Henriksen Hook

Henriksen Hooks will celebrate the 40th birthday of its boat lifting hook in July. Since its introduction in 1978, the Henriksen hook has become established among users as a safe and reliable means of launching a boat from a single crane. With over 10,000 hooks now in use around the world, Henriksen's 100 percent safety record still stands since its first appearance 40 years ago.

www.hhenriksen.com

Fireboy-Zintex Means Fire Safety

Fireboy-Xintex supplies Fire Detection, Fire Suppression and Gas Detection systems for the marine industry. Featuring products that comply with USCG, ABS, IMO/SOLAS and RINA, the firm has been in business since 1973, celebrating its 45th anniversary this year. Fire-Xintex provides Pre-engineered Clean Agent Fire Suppression systems, Engineered Clean Agent Fire Suppression systems Fire Detection systems, Carbon Monoxide Detection systems and Gas and Propane Detection systems.

www.fireboy-xintex.com

Carboline Breaks Ground on New Fire Protective Lab

Carboline has broken ground on a state-of-the-art full-scale passive fire protection testing facility at its Research, Development, & Innovation (RD&I) Center. This $4 million investment is scheduled to be complete by the end of the 2018 calendar year. The new space will be the first manufacturer owned UL-approved fire testing facility in North America, allowing Carboline to be able to test products on its own timeline.

www.carboline.com

CIS Debuts X-Factor Barge Cover Handling System

Contractors Industrial Supply's (CIS) X-Factor "No Boots on the Barge" Barge Cover Handling System can dramatically reduce the safety risks facing barge operators. X-Factor is a safe, efficient system for barge cover handling that prevents the need for human assistance. X-Factor quickly, efficiently and safely removes fiberglass barge covers without exposing terminal operators to the hazard of physically being on the product barge.

www.cismarinedivision.com

RC Dock Redefines USV Launch & Recovery Ops

RC Dock has created a universal and low-cost launch and recovery system that is especially built for Unmanned Surface Vehicles (USV). This system retains its flexibility while also being compatible with many other variants of platforms such as RIBs and FRCs. This self-floating dock can be operated with any standard crane or davit, eliminating the need for USV operators to investment in specially-designed davit systems.

www.rcdock.com

Miller's Welding Helmet Alternative

The Weld-Mask 2 is an alternative to traditional welding helmets, engineered specifically for the unique hazards prevalent for construction and ship welders, and other operators who weld in tight, non-traditional spaces. Weld-Mask 2 is also designed to address compliance issues within industrial environments. The Miller LPR-100 reusable respirator and classic safety glasses seamlessly fit under Weld-Mask 2 — ensuring the operator is fully protected without sacrificing comfort.

www.MillerWelds.com/weld-mask

Carreras Line Protection Systems

Carreras rings can be installed on any mooring line eye to extend service life, prevent ice adhesion, and allow for easy inspection of eye condition to improve safety. Fabricated from UHMW-PE and tested to the line breaking point, this product outlasts the life of the line. Carreras Line Protection Systems protect and prolong the life of expensive marine lines, reducing maintenance time and costs.

www.mars-marine.com

Night Shift Shoe Lights Up Workplace Safety

Night Tech Gear's Night Shift Shoe Lights are designed to help workers identify potential hazards and reduce workplace falls. Night Shift Shoe Lights are worn on shoes or boots for the rigors of industrial use. Hands-free lighting in low-light work environments with 400 lumens of LED lights is delivered forward and from all sides to prevent workplace accidents, lost productivity and employer liability.

www.NightTechGear.com

Aussie Safety is Heady Stuff

Aussie Pumps has launched a helmet and visor with hearing protectors suitable for use in high pressure cleaning applications. The helmet, designed with the cooperation of 3M, meets the requirements in industrial helmets but is substantially stronger and more comfortable than conventional safety helmets. The helmets have been tested with combined pressures of 2000 bar and 17.9 liters per minute flow, with excellent results.

www.aussiepumps.com.au

Schuyler Companies Marine Fender Products

Schuyler Companies, an OEM provider of marine fender products for the vessel and dockside markets is celebrating its 68th birthday. The Schuyler story begins with visionary founder Fred B. Schuyler. Fred transformed an industry by introducing more durable rubber products, thus enhancing durability, affordability, and safety. The fenders produced today as they had been in the past are made from 100% recycled rubber.

www.schuylerco.com

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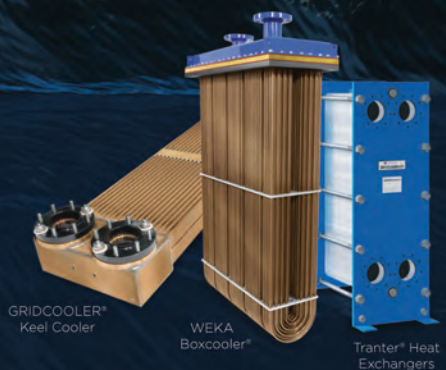

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