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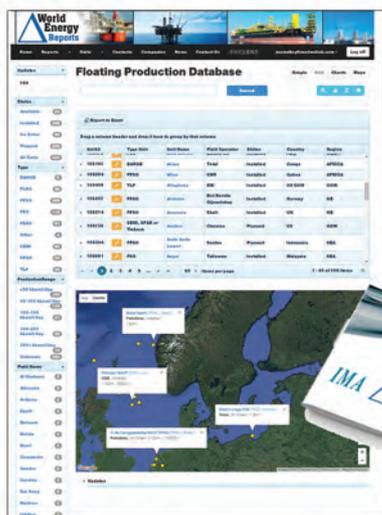
# TRACK FUTURE CONSTRUCTION REQUIREMENTS FOR FLOATING PRODUCTION SYSTEMS WITH REAL TIME MARKET ANALYSIS

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The Lead

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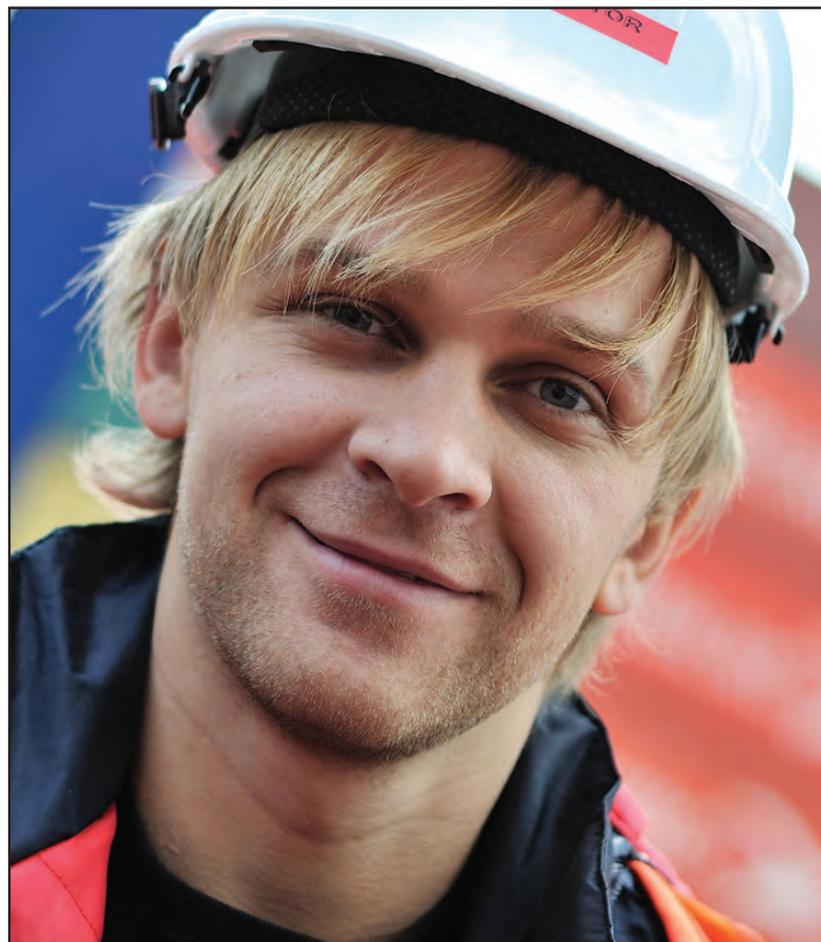
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## GLOBAL MARINE REGULATIONS AND THE FUTURE OF RENEWABLE LUBRICANT TECHNOLOGIES

**T**here are numerous factors that are driving global environmental regulatory growth and the growth in renewable lubricant technologies, such as natural resource constraints, standardizing requirements due to globalization, public opinion and pressure, increase in climate change concerns, new technologies, new evidence from research and overall growing Environmental Health and Safety (EHS) concerns, and most recently the improvements in the durability of lubricants made from renewable technologies. According to environmental consultants and advisors, there are currently thousands of new environmental regulations awaiting attention from legislators and regulators around the globe. Different standards hamper growth and thus, pressure to harmonize regulations is likely to continue alongside the regional and global integration of markets.

The marine industry is one of the most heavily regulated industries and was amongst the first to adopt widely implemented international safety and environmental standards. It is principally regulated by the International Maritime Organization (IMO), which is responsible for the protection of the marine environment and has, over many years, adopted a wide range of measures to prevent and control pollution caused by ships. One of the main goals of IMO is to mitigate the effects of any damage that may occur as a result of maritime operations and accidental spills, leaks and discharges. So far, IMO has adopted 51 treaty instruments for the regulation of international shipping, 21 of which are directly environment-related.

To address the increasing concern regarding the extent of spills, leaks and discharges of chemicals into the oceans, the U.S. Environmental Protection Agency (EPA) has developed the 2013 Vessel General Permit (VGP). Oil-based chemicals that routinely leak into the sea during normal operations include fuel oils, gear oils, hydraulic oils, marine lubricants, greases and cleaning oils. They can reach concentrated levels with serious local impacts on water quality, impacting fisheries, wildlife and recreational boating. Under the 2013 VGP, all ships larger than 79

feet must use Environmentally Acceptable Lubricants (EALs) in oil-to-sea interfaces when in the three Nautical Mile limit and in the Great Lakes unless technically infeasible. Similar EAL regulations are coming into effect for smaller vessels. The EPA's Small Vessel General Permit (sVGP), which is currently pending and expected to go into effect in December 2017, will apply to non-military, commercial vessels that are less than 79 feet in length. According to the "Economic and Benefits Analysis of the Proposed sVGP" document issued by EPA, compliance with the VGP and sVGP allows vessels to meet the Clean Water Act (CWA) requirement to obtain National Pollutant Discharge Elimination System (NPDES) permit coverage for discharges incidental to normal operations.

Currently, EPA and IMO are working together to develop and implement legal standards that address vessel source pollution and ocean dumping. EPA also works with the United Nations Caribbean Environment Program based in Jamaica, focused on reducing land-based sources of marine pollution, including in the Gulf of Mexico and the wider Caribbean region.

With the VGP, drafted sVGP and other global sustainability initiatives firmly in place to regulate discharges by EPA, IMO and other organizations, two main EAL solutions have emerged for marine applications – Hydraulic Environmental Synthetic Esters (HEES) and Hydraulic Environmental Polyalphaolefin and related hydrocarbons (HEPR). While both options are globally available and meet current environmental regulations, the HEPR technology has inherent advantages that drive economic value and enable environmental leadership. While HEES products can deliver high performance, they can be prone to hydrolysis in the presence of water (they can decompose to form acids and alcohols which impact lubricity and can cause potential damage to metals and seals). In contrast, HEPR solutions have excellent thermal and hydrolytic stability and broad temperature range performance.

Building on the proven success of the HEPR technology, some in the

industry are leading the way with the development of new bio-based lubricant formulations that pair enhanced renewability with an excellent performance profile to meet the growing global regulations and evolving market needs. FUTERRA™ is a new Ecolabel-certified (a voluntary label promoting trusted environmental excellence) renewable hydrocarbon Environmentally Acceptable Lubricant (EAL). According to the European Commission, the EU Ecolabel helps to identify products and services that have a reduced environmental impact throughout their life cycle, from the extraction of raw material through to production, use and disposal. The only EAL from a renewable hydrocarbon resource, FUTERRA offers drop-in replacement for mineral oil- or petroleum-based lubricants and was designed to outperform other EALs in both wet and dry environments.

FUTERRA outperforms other EALs in several key areas, such as durability, water separability, oxidative stability, hydrolytic stability and seal compatibility (see Figure 1). It allows for easy conversion and, while some EALs are incompatible with certain types of seals, FUTERRA has very broad seal compatibility, even with traditional seals like

NBR, allowing operators to use the seal that is the best choice for their specific needs.

FUTERRA is demulsifying, allowing for the effective separation and removal of water from the fluid and system (see Figure 2). A product that is capable of quickly and completely separating from water has multiple practical applications, such as allowing operators to recycle and reclaim product contaminated with water. In comparison, HEES lubricants are emulsifying, which means they have a tendency to absorb water contamination. Many producers of HEESs have claimed that, given their fluids' ability to emulsify water, there is no need to check for or remove water from the system. However, most OEMs disagree, recommending draining and refilling any fluid with water content above 5 percent. The industry generally appears to be moving toward wider use of demulsifying lubricants, which allow water to be easily removed through normal separating methods. Because of this capability, HEPRs generally offer longer drain intervals and enhanced performance, which result in better long-term return on investment.

FUTERRA has better oxidative stability compared to other EALs (see

## KEY DIFFERENTIATORS OF EALS

Hydraulic Environmental Oil	HETG	HEPG	HEES	HEPR	FUTERRA™ HEPR	Petroleum
Durability / Life Expectancy	●	●	●	●	●	●
Viscosity Index	●	●	●	●	●	●
Water Separability	●	●	●	●	●	●
Oxidative Stability	●	●	●	●	●	●
Hydrolytic Stability	●	●	●	●	●	●
Seal Compatibility	●	●	●	●	●	●
Frictional Characteristics	●	●	●	●	●	●
Mineral Oil Compatibility	●	●	●	●	●	●
Renewability	●	●	●	●	●	●
Biodegradability	●	●	●	●	●	●
Ecotoxicity	●	●	●	●	●	●
Bioaccumulation Potential	●	●	●	●	●	●
Foam	●	●	●	●	●	●
Pour Point	●	●	●	●	●	●

● Very Good  
 ● Good  
 ● Fair  
 ● Poor

Figure 1: Key Differentiators of EALs

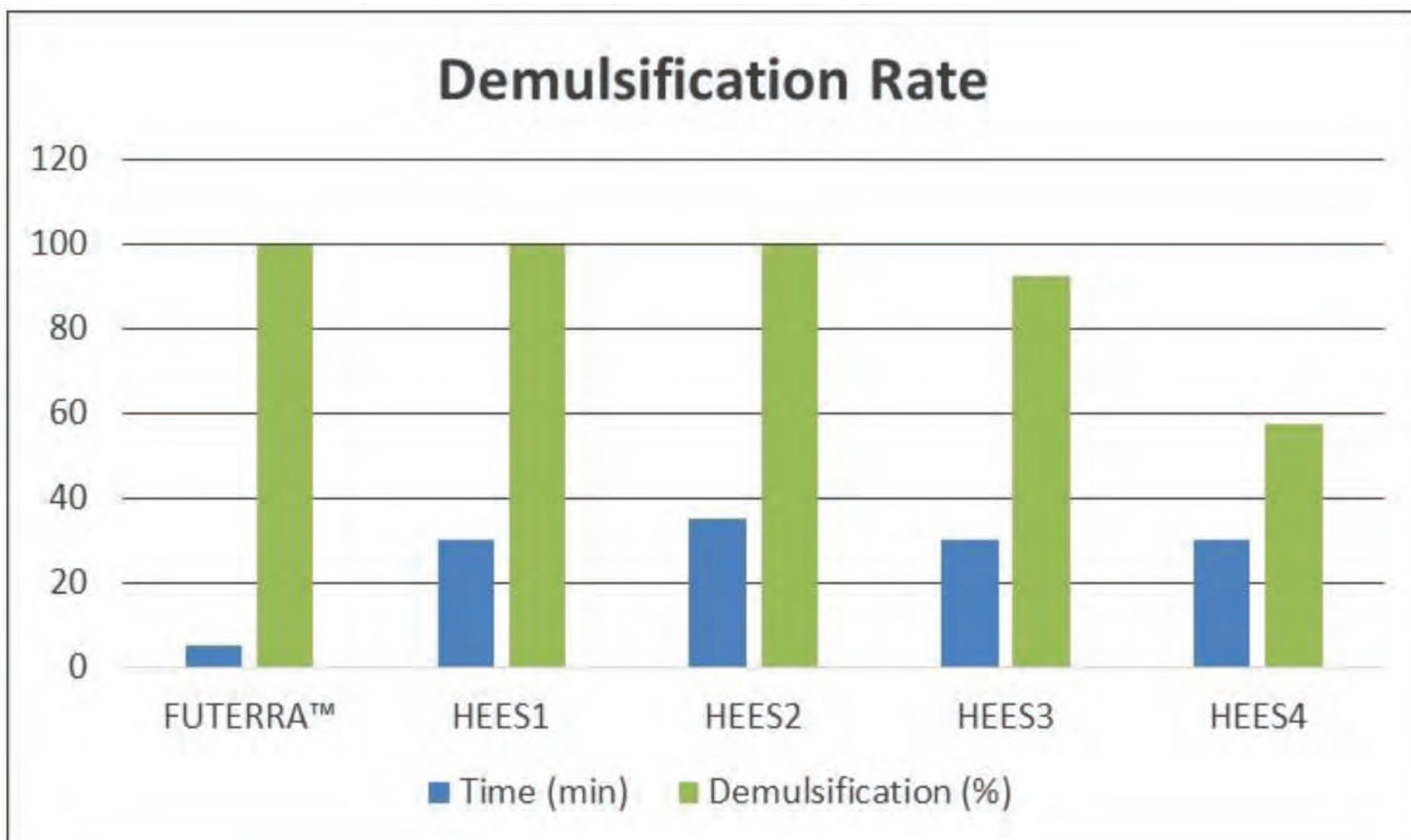


Figure 2: Demulsification Rate

**Figure 3).** Oxidation is a chemical reaction that naturally occurs with a combination of the lubricating oil and oxygen. The rate of oxidation is accelerated by high temperatures, water, acids and other catalysts such as copper. Generally, oxidation reduces the service life of a lubricant by half, for every 10 degrees C (18 degrees F) increase in fluid temperature above 60 degrees C (140 degrees F). FUTERRA is more capable to resist degradation in the face of moisture and heat.

FUTERRA performs well in low temperature environments (see Figure 4). In early versions of biodegradable products, there had been performance issues at low temperatures. FUTERRA accomplishes this and more. FUTERRA even has a lower pour point than the Polyglycol HEPG products that are based off of similar chemistries to anti-freeze.

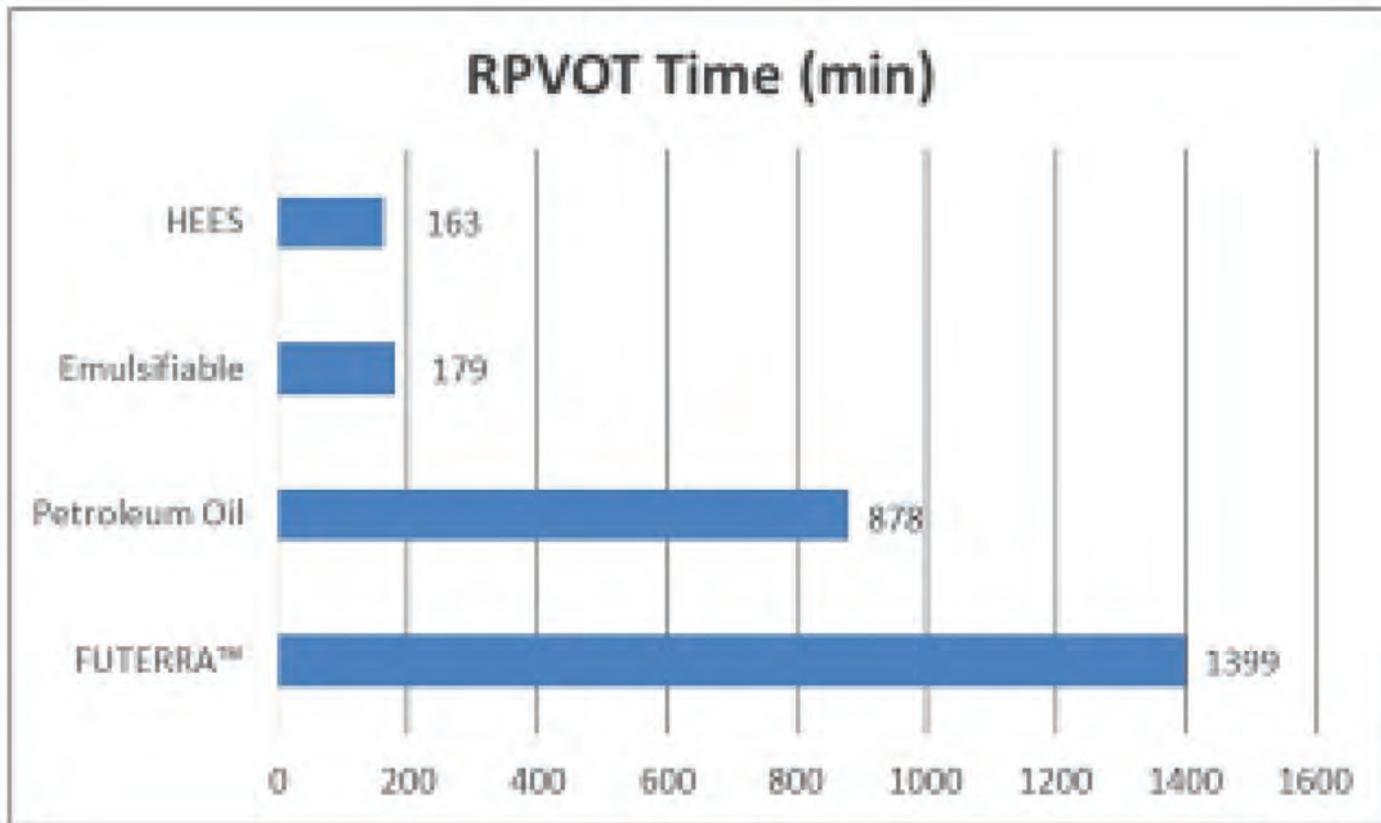
Air contamination can have serious effects on lubrication. Air can exist in oil in four different states of coexistence (dissolved, entrained, free and foam). Foam indicates more than 30 percent air, which can lead to numerous problems, including oxidation, thermal degradation, poor heat transfer, retarded oil supply and cavitation. Depending on the machine design, application and aeration severity, it is possible that all five of these conditions could be happening concurrently. Air is a real contaminant that requires thoughtful monitoring and control, and

left unattended, it can destroy equipment. FUTERRA has near zero foam tendency (see Figure 5), thus, eliminating the problems associated with air contamination.

FUTERRA resists corrosion (see Figure 6). The need for corrosion inhibition in a wet environment has been a need as long as there have been vessels in the water. The rods in Figure 6 were immersed and heated in a water contaminated stern tube fluid. Testing results show that FUTERRA protects from corrosion even when water is not removed from the system and allowed to contact the metals. Corrosion and sludge in the system plug filters and reduce the life of the equipment, but with FUTERRA corrosion is not an issue. FUTERRA's corrosion inhibition capabilities reduce the need for oil and filter changes and extend equipment life, thereby reducing maintenance. Ultimately, this reduces expenses and increases flexibility.

FUTERRA has incredible resistance to hydrolysis (see Figure 7). FUTERRA is made from chemistry that is designed to resist hydrolysis, and it also removes acid from the lubricating phase keeping corrosive materials out of equipment in the face of moisture contamination. This is the first EAL ever designed to not only resist hydrolysis, but provide a means of dissociating acids from the lubrication zone. FUTERRA is

# Oxidative Stability ASTM D2272

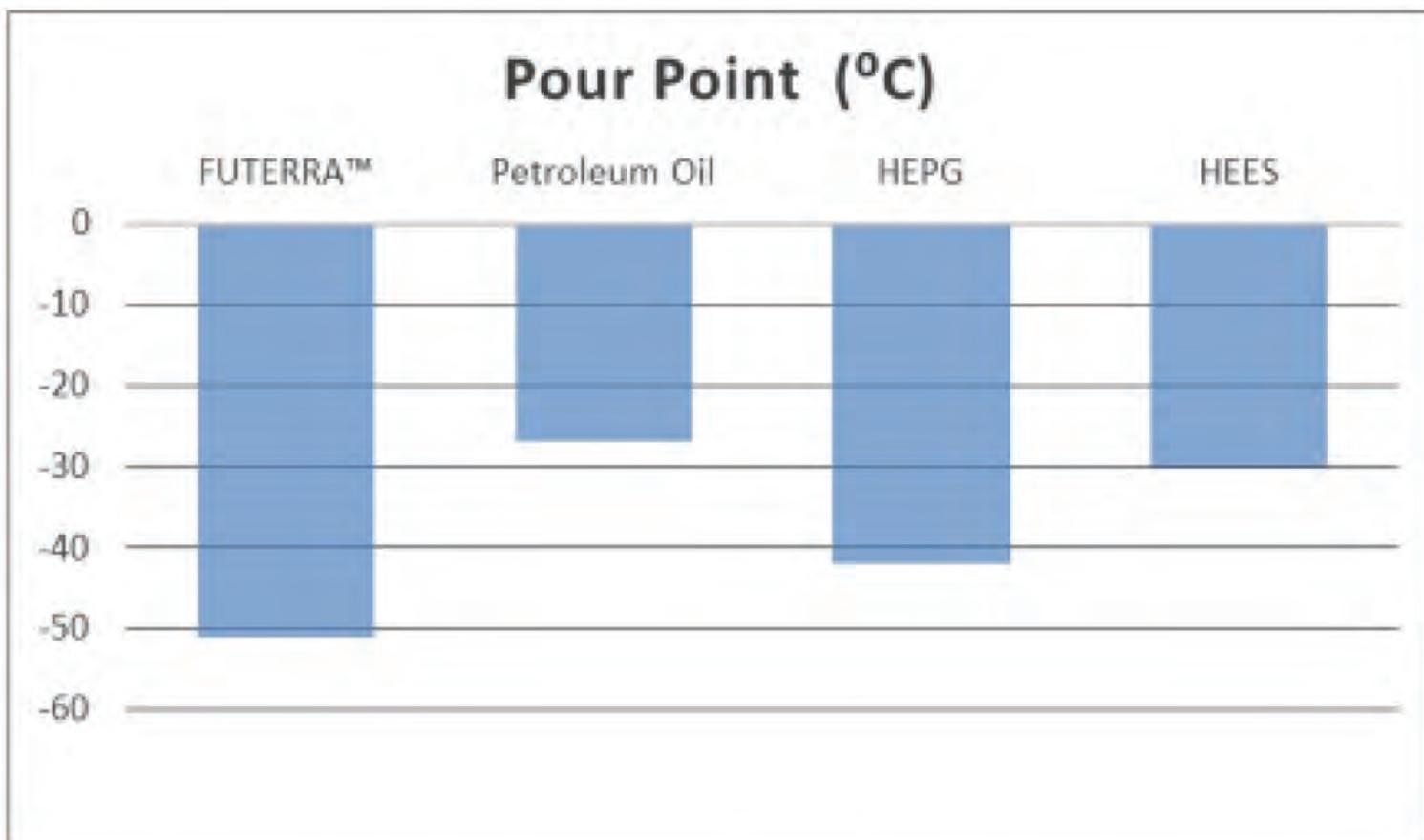


ISO 100

This test was run at 150°C; this test was timed until a pressure drop of 25 psi was detected.

Figure 3: Oxidative Stability

# Low Temperature Capability ASTM D97



ISO 100

This test was run at decreasing temperatures until the fluids were unable to flow.

Figure 4: Low Temperature Capability

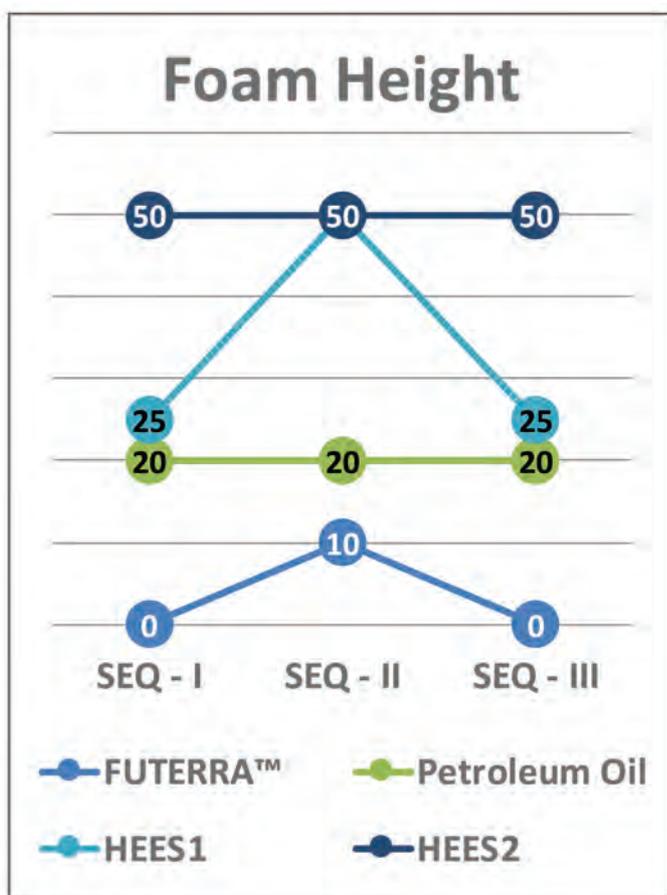


Figure 5: Foam performance in standardized testing

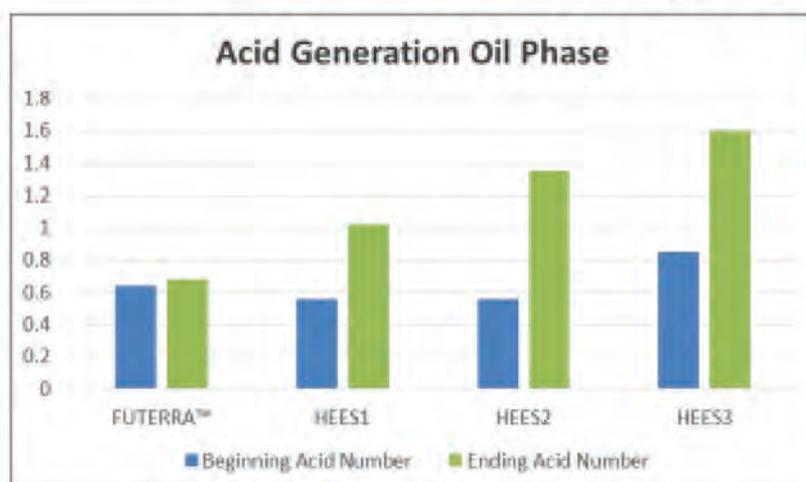
### Corrosion Inhibition ASTM D943 (modified)



This test was run at 95°C for 100 hours with 16% water.

Figure 6: Corrosion Inhibition

### Hydrolytic Stability ASTM D2619



Product	Acidity in water layer
FUTERRA™	Pass
HEES1	Fail
HEES2	Pass
HEES3	Fail

Figure 7: Hydrolytic Stability

the only EAL that acts like an oil. FUTERRA succeeds in places where EALs that are sensitive to water and hydrolysis have failed, which will keep your equipment running better for longer.

With unsurpassed durability, FUTERRA minimizes fear of fluid failure while extending the life of the fluid and offers the ultimate compatibility with legacy equipment and seals. By meeting current and pending global environmental regulations, including EPA's VGP and drafted sVGP, FUTERRA allows operators to future-proof their fleets by addressing evolving standards upfront in a cost-effective and per-

formance-enhancing manner. In fact, FUTERRA is backed by a limited 10-year warranty for stern tube applications that surpasses anything in the market today. FUTERRA not only offers the highest level of sustainability, but also ensures compliance for years to come.

*For more information on FUTERRA or any of RSC Bio Solutions' environmentally acceptable products, as well as regulations, applications and considerations, please visit [www.rscbio.com](http://www.rscbio.com).*

# MEET FUTERRA™

## THE FLUID OF THE FUTURE.

This new marine lubricant combines the highest performance of any Environmentally Acceptable Lubricant (EAL) currently available on the market with unparalleled performance at an attractive price point.

## STANDS UP BETTER IN TOUGH ENVIRONMENTS

- + Excellent corrosion resistance
- + Strong thermal and oxidative stability
- + Stands up to water better than all other EALs

## OFFERS THE ULTIMATE SYSTEM COMPATIBILITY

- + Broad seal compatibility and OEM tested with a wide range of elastomers and conditions
- + Suitable for use with legacy equipment
- + Easy drop-in replacement for mineral oil based lubricants

## KEEPS EQUIPMENT RUNNING AND ON THE WATER LONGER

- + Oxidative stability of 3 to 4 times longer than other EALs, resists breakdown and extends the life of the fluid
- + Near zero foam tendency offers longer pump life and more efficient lubrication
- + Separates water from the system, increasing effectiveness of the lubricant, extending equipment life
- + Fluid performance dramatically increases the time interval between changeouts

## THE BEST CHOICE FOR PLANET AND PEOPLE

- + The first and only renewable hydrocarbon EAL
- + Ecolabel certification ensures a reduced environmental impact throughout its life cycle -- from the extraction of raw material through to production, use and disposal
- + Formulation is safer for workers and aquatic life

## ENSURES GLOBAL COMPLIANCE FOR YEARS TO COME

- + Meets even the most stringent current global requirements
- + Ecolabel certification ensures continued compliance, even in light of tightening regulations
- + Keep moving -- sail anywhere with confidence

## REDUCES COSTS

- + Attractive price for performance against other EALs
- + Performance benefits, reduced change-out times and equipment life extension ensure lowest total cost of ownership
- + Potential to reduce fines and spill remediation costs

Using environmentally acceptable lubricants ensures that what is spilled or leaked is safer, biodegradable and causes no long-term harm.

Use the best.  
Choose FUTERRA™



KEEP MOVING. FORWARD.

For more information on how FUTERRA can protect the environment and your bottom line, visit [rscbio.com](http://rscbio.com)



**WE'RE READY  
FOR THE FUTURE.**

**BECAUSE WE'VE  
CREATED IT.**

# MEET FUTERRA™. THE MOST FORWARD-LOOKING LUBRICANT TECHNOLOGY IN THE WORLD.

FUTERRA from RSC Bio Solutions is the newly designed EAL that does a combination of things no other lubricant can do:

- Meets global environmental regulations
- Is Ecolabel certified - first renewable hydrocarbon EAL
- Only EAL that comes with a limited 10 year warranty providing unparalleled peace of mind
- Superior performance in both wet and dry environments
- Unsurpassed durability minimizes fear of fluid failure
- Provides ultimate system compatibility and drop-in replacement
- Attractive price for performance against other EALs



KEEP MOVING. FORWARD.



For more information visit [rscbio.com/futerra](http://rscbio.com/futerra)

# Deciding When to Rent or Buy Equipment: The Right Decision Can Salvage More Than Money

**A**nything can happen on a jobsite. Your equipment could malfunction or the weather might cause a whirlwind of unexpected issues, or even worse, someone could get hurt. Unfortunately, not much can be done when circumstances such as those arise, which is why developing preventive strategies is crucial to having a successful and safe project. One of those strategies is always choosing safe and reliable lifting equipment.

*But the question that remains: is it safer to rent or to buy?*

## RENTING OR BUYING

After you've determined your lifting challenges, it's time to determine your equipment needs. Often times, you'll find yourself wondering: Should I buy my equipment or is it more sensible to rent? In reality, it depends on your circumstances. In industries such as shipbuilding and ship repair, the answer is never easy to decipher. Start by considering as to whether you want the responsibility for repairs and certifications in-house. We're starting on the topic of repair first because it's often one of the



biggest concerns, not just in the marine industry, but of all industries that lift and move heavy items regularly. One poorly maintained hoist could break and cause that propeller you're lifting to fall. So, not only is it best to anticipate things of this nature to occur, you also need to consider if you can handle repairing the equipment on your own or if you'll have to outsource the repairs to another company.

### What Are Your Costs?

Our research shows that hard costs such as rental fees and lease payments are only a small part of total costs. Among the most frequently overlooked costs are those of maintenance and certifications. As you know, all equipment, eventually, requires maintenance, wears out or breaks down. It's just a matter of when or where. While repairing some equipment can be easy, heavy lifting equipment is a much more complicated matter. In fact, the repairing and certifying heavy lifting equipment is regulated by a specific set of guidelines. For instance, the equipment usually needs to be:

- OSHA and ANSI compliant
- Maintained by specially licensed and trained technicians
- Tested on specialized horizontal or vertical testing equipment
- Depending on the jobsite, equipment may also require certification

So, if you're looking to make a purchase, make sure you have access to the specialized labor and testing equipment you'll need in the event of repairing your equipment.

### What's at Stake?

When making the decision to buy or rent equipment, the next thing you should consider is what's at stake if the equipment breaks. The marine industry is a tough market and it's just as competitive as other maintenance and construction-related industries. By missing a deadline or a budget target, it could mean the end of your relationship with your customer. So, when considering to buy or rent, ask yourself what I am really losing if my equipment fails?

For some projects, it might not be a big deal. When the project at hand is a "lynch-pin" task, one which must be completed before further work can continue, you must carefully weigh your options. When renting equipment, some vendors will send a certified, trained technician to repair the equipment, the same day an issue occurs. They might replace the equipment, too, mitigating the risk of equipment failure and time loss. However, these are not guarantees.

When purchasing, you must make sure you have access to back-

up equipment and technicians in case of incident because when you purchase equipment.

### What Risks Are You Willing to Take?

Something else you should be thinking about is how risky do you want to be. Heavy lifting equipment requires a specific kind of knowledge and training to operate, maintain, and certify safely. It is also the culprit behind some of the most dangerous tasks on a job-site.

When purchasing equipment, you may have some peace-of-mind knowing you have direct access to that equipment at any given time.

That being said, purchasing means you have to accept any and all responsibility for the on-going upkeep, maintenance, warehouse expenses, and certification of that equipment. To put it simply, you're accepting total liability for it.

Don't fret, however. Owning equipment is not inherently a risky decision because with the appropriate maintenance and upkeep, it can be very safe. It's just a responsibility you have to be ready to take on because in this industry, anything can happen. Just weigh the risks and decision to see what tips the scale.

Once you've measured your risks, now you should wonder when your equipment will become outdated. You probably purchase your equipment because you see a long-term benefit for your company and with consistent use, it will produce a positive ROI. If that is your belief, then you need to ensure your purchase will last long enough to see it through.

When purchasing, keep in mind a few things:

- Is the equipment consumable?
- Will access to the "latest & greatest" help me meet the needs of my customers?
- Will the equipment last long enough so that I will make a reasonable return on the funds invested?

### Where Will Your Equipment Be Used?

Next, ask yourself if the equipment is going to remain in one location or be repositioned around the country. The answer to this largely depends on whether you're a regionally focused company or if you have a geographically distributed customer base. A regionally focused company has little need to transport equipment, and has an on-going need for the equipment, which makes owning more sensible.

A firm that services a geographically distributed customer base, even across a major metropolitan area, the cost of freight and the headache of logistics can make renting a better option. You might not want the burden of shipping heavy equipment. It makes more sense



to partner with locations and warehouses that are near your jobsite to avoid these additional and needless costs.

### Will the Job Change?

Is the nature of your work consistent or do your requirements and job tasks change? Depending on your customers and core capabilities, your on-going equipment needs may be largely predictable. However, customer demands can be ever-changing, which mean your capabilities need to be readily-adaptable to give yourself a competitive advantage.

So, are you a utility contractor that requires your scissor lift every day? Well, it makes more sense to own the equipment then. If you're uncertain as to how long or how often you'll need the equipment for a single job, you might want to rent your heavy lifting equipment instead.

When you purchase your equipment, you're doing it for the long term. If you don't use it all the time, it becomes your total liability. It can be easier to rent even for long-term purposes and cheaper, as well,

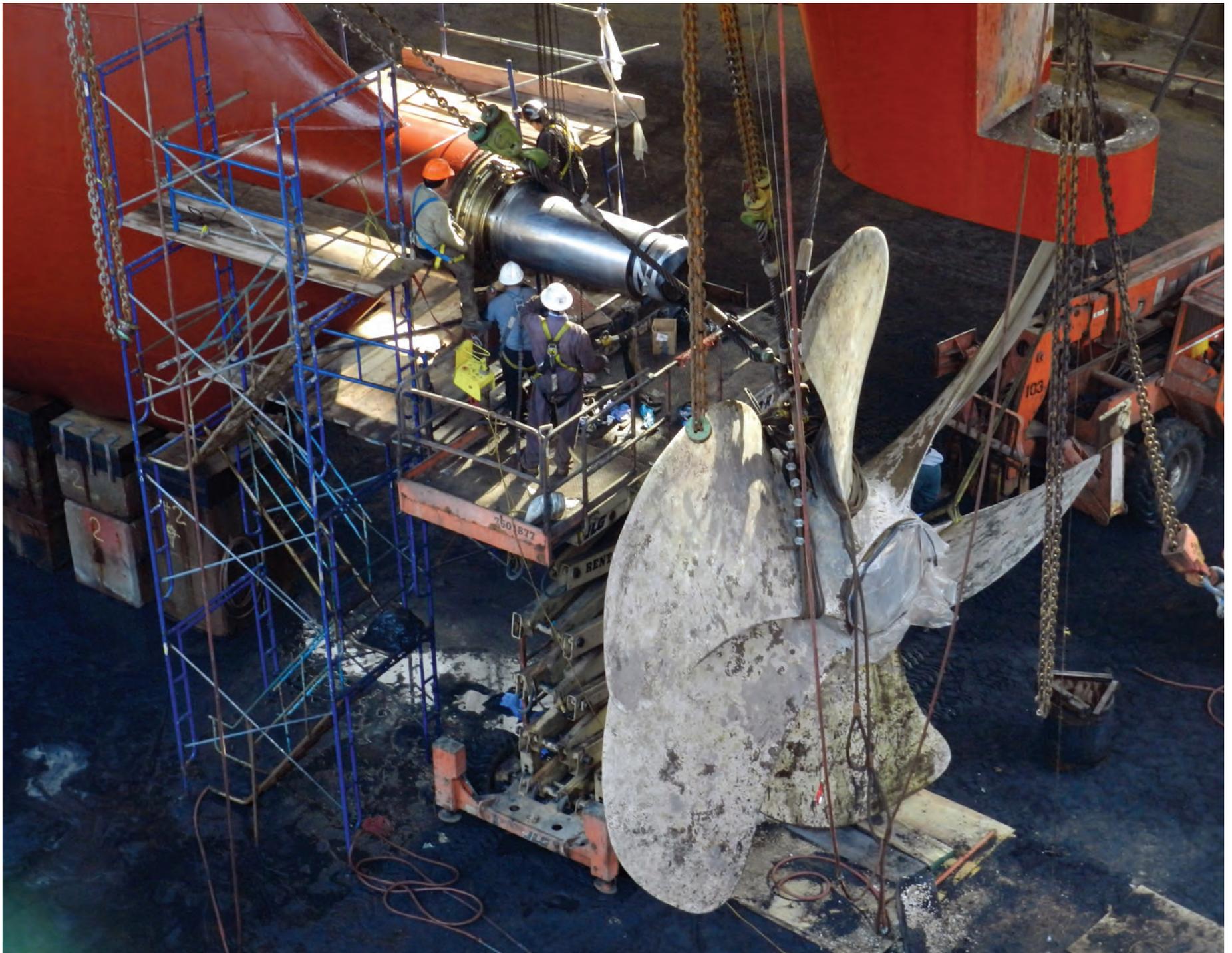
to know the equipment is modern, new and already inspected and tested.

Just weigh the long-term needs of your company to understand what makes the most sense for you. The truth is, there is no one-size-fits-all answer. There are many factors to consider when evaluating what's best for your company. A careful analysis of each of these factors will help you make the best possible decision.

### What Renting Can Save

It's imperative to every worker to always adhere to and practice the utmost safety procedures. When it comes to heavy lifting equipment, not having the right capacity, type, or a Plan B in the case of emergencies can be quite exasperating and dangerous. Delays in getting the equipment can challenge the schedule of your project and its cost effectiveness, too.

As with purchasing your equipment, there are benefits that are exclusive to renting. Advantages that can save you time, money, energy, your project, and perhaps, even your life.



## More Control

You've probably asked yourself, 'what do I do with the equipment after the job is over?' or 'what if it's broken?' Well, with LGH you can worry less and concentrate on building more.

Keeping control of your lifting project can be challenging, especially when you add the possibilities of the equipment breaking and enduring possible injury, which might cause hindrances in the scheduling. And in the marine industry, the scheduling is everything.

Most cargo or military ships have a two week turnaround. This means, the ship has to dock, obtain needed repairs, and leave the harbor, so that the next vessel may dock. One day off schedule can cause a major disruption in the flow of the meeting your timeline.

And any rigging superintendent can tell you that their hands are tied by procurement of the equipment. They need to have the right equipment, and a variety of it available at all times.

Luckily, renting means you don't have to consider what to do with your equipment after the project is over or schedule delays due to equipment failure. The equipment is up-to-date, never obsolete, and

available at a moment's notice.

## More Productivity

By not having the right tool or quantity or type, you're sacrificing time, money, and energy. It's not a fair trade. Also, operating conditions can be severe at times, so your equipment needs to be tough in order to survive and thrive in all oceanic, atmospheric, and workplace conditions.

Unfortunately, purchasing equipment doesn't always guarantee you're getting the exact piece or quantity that's needed. In the marine industry, you have to know what you need, when you need it and how much of it in order to stay on schedule.

This leaves the productivity of your job hanging in the balance. Equipment failure means more downtime for employees, which means less productivity on the job.

For shipbuilding and ship repair, equipment that is not tested to survive oceanic and atmospheric weather conditions could result in delays and money loss.





Renting means you will get exactly what's needed at the right time, place, and quantity. You can feel safe in knowing you won't receive broken or obsolete equipment, removing the worry of being behind schedule and succeeding the budget allotment.

### Less Inventory

Staying within budget is yet another challenge to overcome. From extra storage costs to house your unused equipment to maintenance expenses to repair broken tools, any number of additional charges challenge your efforts to control costs. Not to mention, you can experience additional problems or extra expenses that typically come from not having the right quantity of the equipment needed.

Building and maintenance crews are more concerned about the low prices and efficiency of the equipment more than anything else. With renting, you can hoist easier when you know you received the exact amount of the equipment you need because rented equipment is delivered when and where it's needed and retrieved immediately after the project is ended. Also, renting removes the constant need for service and certification because it's already taken care of for you. Plus, it doesn't lock you into a long-term decision – returning cost-effective

results.

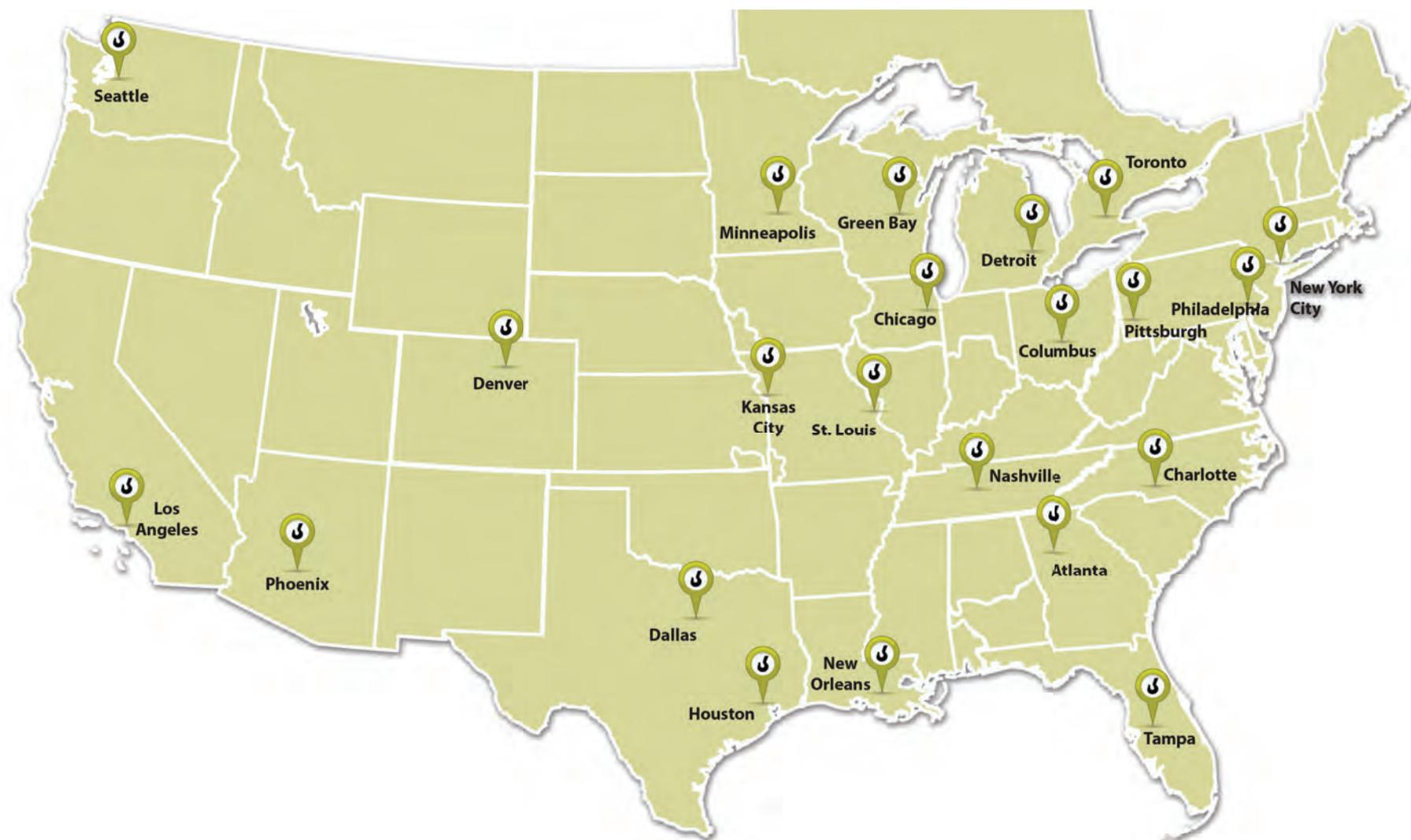
### More Capital

You probably weren't aware that property taxes are reduced on rental equipment. You also might not have considered that renting would help you conserve capital. Well, it's true.

You can spend a lot of additional money on the taxes of purchased equipment, which is money that could've been used elsewhere. Renting can help you there. It reduces your expenses, reduces taxes and increases your borrowing capacity. Not to mention that renting is just an overall easier and more convenient process than purchasing. The unused or additional capital can be used elsewhere within your project instead of being used on purchased equipment that you might not use often.

### WHAT'S REALLY AT STAKE...

There are many concerns building and maintenance crews have to think about before a job begins. Choosing the right equipment is always number one. However, the timing of your project doesn't always allow for extra time to be spent on contacting multiple places in an



effort to find the best equipment for the most affordable prices. Which is why, no matter whether you're purchasing or buying your equipment, a primary focus should be placed on lifting equipment that has been tested and inspected first.

### Your Budget

Equipment that is tested and inspected saves you money. If you bought or rented equipment that wasn't tested beforehand, you'd have to delay the usage of the equipment to test it first. Otherwise, without testing or inspecting it, you're leaving the safety of your workers and the success of your project to chance. Plus, you'd have to spend additional money to have it tested and inspected, as well. Money that could've been saved and used elsewhere had you bought or rented equipment that was previously tested.

### Your Stress

Using untested and uninspected equipment is very risky. You could be putting your workers in danger by using equipment that hasn't been proven to retain its full functionality. Save yourself the stress and worry of whether or not your equipment will fail or survive by just renting equipment that's certified to be safe and ready for immediate use.

### Your Efficiency

The efficiency of your project is truly dependent upon the surviv-

ability of your equipment. Tested and certified equipment is physically proven to withstand your project's challenges. If your equipment should fail during a lift, you'll have to put the project on hold until the equipment is repaired or another one has been purchased or rented. This means more downtime for your employees and more money that was needlessly spent when you could've purchased trusted equipment in the first place.

### Your Safety

With the amount of injuries and death that occurs on building and maintenance sites each year, protecting workers from harm is of the utmost importance. Equipment that is not tested, inspected, and certified is a risky decision and could put your workers in danger. Always ensure the protection of workers by renting or purchasing equipment that is new, modern, and above all, safe and ready for immediate use.

**ABOUT LGH:** Lifting Gear Hire is the largest single organization in North America devoted exclusively to the provision of lifting and moving equipment for rent. LGH holds the most comprehensive inventory for hoisting, rigging, jacking, pulling, material handling, and safety equipment. With an extensive inventory, our lifting equipment is available for rent from over 20 locations throughout North America and our customers are supported by a local LGH Rental Representative.



# **Lifting Gear Hire**

Lifting Equipment Rental Specialists

Hoisting | Pulling | Jacking | Rigging | Material Handling | Safety

# rent safe

## LIFTING EQUIPMENT RENTAL SPECIALIA

Due to the limited timing of shipbuilding and ship repairs, we know the success of your project depends greatly on equipment availability and variety. By not having the right capacity or type or a Plan B, you're losing out on time, productivity and money. Not to mention, unsafe and untested equipment could put you, your workers, and the success of the project at risk.

Don't leave things to chance and start renting your equipment from Lifting Gear Hire. Renting from LGH means you'll never have to deal with:

- Obsolete or Broken Equipment
- Unserved or Untested Tools
- Needless Downtime on Project Site
- Loss of Productivity

Because at LGH, we stock only the most reliable equipment from the most trusted bands in the industry and guarantee to always supply you the exact tools you need, the exact amount you need, when it's needed and at your exact specifications.

With LGH, we promise to provide:

- Safe & Ready-to-Use Equipment
- A Stocked Warehouse Near Your Job-Site
- Local Rental Representatives To Assist You
- A Variety of Equipment With Over 50,000 Pieces Available

So, you can conduct a safe operation without having to worry about costly lifting equipment failure.

Because at LGH, we put safety first.





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LISTS

## Air Chain Hoists:

- Capacity from 0.5 to 50 ton
- Numerous lift heights possible
- LGH certificate supplied

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# INNOVATING

THROUGH FOUR GENERATIONS

FAMILY OWNED & OPERATED PROUDLY SERVING THE MARITIME INDUSTRY SINCE 1933.

## Horizontal Vent Valves

## Boiler Accessories

Wager prides itself in the exemplary services we provide to all of our customers. We carry an extensive inventory in order to guarantee your orders will ship on time, or in a moment's notice whenever possible. We continually reinvest into our machine shop in order to assure each part is made with the utmost precision.

We are Wager. A team dedicated to excellence in service and innovation. We want to be the company you can rely on for decades to come.



Horizontal Vent Valves

Dewatering Plugs

Deck Drains

Sounding Tubes

Vertical Vent Check Valves

Pipe Cap

Smoke Indicators

Emissions Monitoring

Vertical Vent Check Valves

Mud Vent Valves

Anti Syphonic Valves

Rosebox Strainers

Tank Air Escape Valves

In-Line Valves

Inverted Vent Check Valves

Odor Control Valves

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# ODOR CONTROL VALVES

ELIMINATE H<sub>2</sub>S GAS ODORS

Wager, a leader in Odor Control Valves on land, is proud to provide the marine industry a unique solution to H<sub>2</sub>S odors onboard ships. Our valves allow ventilation of black water and grey water tanks without the effects of nuisance odors.

Wager's media is the heart of our odor control valves. We use an engineered media that is highly effective in scrubbing H<sub>2</sub>S gas. Our media is in pellet form to allow for adequate airflow thru the media bed, and is non-toxic and landfill disposable.



We offer **SEVEN** models to choose from, in a wide range of sizes and configurations. Our larger units hold 50 lbs., 100 lbs. 200 lbs. or 450 lbs. of Wager media. These larger units can easily be placed on board a vessel, or used at pump outs in port.

Wager Odor Control Systems are currently in use with the U.S Coast Guard, onboard ferries in North America, and at Pump Outs in various ports worldwide.

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Shipbuilding

# WAGER FABRICATION

Wager proudly celebrates 83 years of manufacturing quality valves and deck equipment for the Maritime Industry. Our commitment to excellence is the key to our success. Our new Fabrication Division helps us deliver exemplary service to all of our customers. We have added a plasma cutter, press brake, and a robotic welder, along with a full machine shop of CNC machines. We have the capability of producing any project upon request.



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# NEW WAGER 1500-MV MUD VALVE

NOW AVAILABLE

Wager is proud to introduce the 1500-MV Mud Vent Valve to compliment our extraordinary line of Vertical Vent Check Valves.

The 1500-MV Mud Valve is designed for tanks that carry liquid mud. Inside the mud chamber is a ball check that prevents the liquid mud from rising into the upper vertical vent check valve.

We designed the 1500-MV so liquid mud is forced through a spring loaded door (instead of a burst disc) on the front of the valve. This allows for ease of maintenance.

After the mud flow resides, the ball float returns to it's original position allowing airflow to return through the upper chamber.

The 1500-MV is ABS Approved. It is available in Galvanized Steel, 316 Stainless Steel, and Aluminum upon request. Sizes range from 4" -10".



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ORIGINAL PATENT HOLDER

# INVERTED VENT CHECK VALVE

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Wager proudly celebrates 83 years of manufacturing quality valves and deck equipment for the Maritime Industry. Our commitment to excellence is the key to our success. The Inverted Vent Check Valve was invented by our founder Robert H Wager. Through the decades, we continue to offer a full range of quality vent check valves and rugged deck equipment. Our inverted and vertical vent check valves are all ABS approved. In an effort to comply with the most up to date regulations required by ABS, Wager has an extensive on-site test facility. Each valve along with its component parts are rigorously tested in order to assure both quality and functionality. In addition to current ABS requirements, Wager can now perform Discharge Reverse Flow Tests for engineering.

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# Addressing Hidden Exposures that Can Sink a Business

## Marine Repair and Marine Equipment Installers

By Charlie Pugliese, Chief Underwriting Officer, Ocean Marine

**B**y operating on both land and water, marine repairers and equipment installers tackle a variety of tasks from general maintenance and repair, to upgrading and installing state-of-the-art systems and equipment. Along with these tasks comes a wide array of maritime risk exposures, both large and small, which the business owner needs to adequately address.

The tasks of a marine repair technician are challenging enough on their own, but try to do this work on a vessel at sea or in a shipyard, and the technician will find that the hazard level rises dramatically – from making sure that all facets of the systems work together as they should, to the increased fire risk hot work and welding presents to the safety of the vessel. As a result, only professional installers with an experienced maritime background should be considered for such work. Vessel owners and shipyards should be sure to contract only with ship repairers and installers who have comprehensive insurance that will not only protect that business, but also provide coverage for the vessel or ship-

yard if the installer is found responsible for any damage. This would be done by ensuring the repairer or installer has proper and adequate insurance along with written contractual risk transfer. The exposure for vessels in their care, custody, and control, along with any other potential third-party property damage must be addressed.

While most maritime repairers and installers recognize and address these exposures, good coverage is not always easy to find for potential high hazard businesses like these. Some insurers shy away from underwriting these businesses due to the potential high-risk nature of their work. Others may be willing to insure these maritime service companies, but may not have the marine expertise to understand, address, and provide coverage for some of the “hidden” exposures of the business. By understanding how underwriters assess risk, and by implementing proper risk control measures, marine businesses will have more options when it comes to choosing an insurer that has the expertise to uncover the hidden exposures threatening their business.



## The Underwriting Process

An insurer with extensive ocean marine experience will closely examine risk exposures facing the business and place particular emphasis on five key criteria:

### 1. Work Performed

Some companies may choose not to insure repair businesses that undertake welding jobs because the “hot” work carries too much fire risk, or the technical repairs and installation of critical systems on a vessel may present a great amount of third party property damage exposure. When assessing the work performed, underwriters will examine a number of factors, including operational procedures, potential for third party damages, how they document their work, and what safety programs they employ.

### 2. Location

On shore, marine repairers and installers may have to be concerned not only with the vessel on which they are operating, but also with any surrounding property that could present third party liability exposures. In water, underwriters will look at where on the vessel the work is being performed – whether it is a control room, high atop the vessel, or underwater beneath the vessel – and assess the risk there along with the potential risk of damaging any adjacent vessels or property.

### 3. Experience

Experience should always be a critical factor in hiring someone for any job, and the same holds true when it comes to insuring marine repair and installation businesses. Underwriters will consider whether the technicians are skilled and knowledgeable and what level of experience they have on similar projects. While proper training is key for a good ship repairer, often the time spent on the job can build his or her level of expertise and reduce his likelihood of an accident. The experience will be verified by underwriters reviewing past insurance loss history. While having losses may not paint a total adverse picture to the underwriter due to the fortuitous circumstances in any business, the details of the losses will be a good barometer in determining a comfort level of experience. Considerable experience in more hazardous marine repair work like welding or heavy engine or system repair may lead an underwriter to consider writing a policy for a high-risk business that otherwise may have been declined.

### 4. Contractual Issues

When working on someone else’s vessel, a contract must be involved. Underwriters will look at not only whether a contract is in place to manage third party exposures, but how and to whom the repair business executes that contract, how they communicate that contract to all parties involved, and how they incorporate changes to each project into the contract. Evidence of proper contractual risk transfer will be closely evaluated. Determining insurance requirements and proper contractual risk transfer should be addressed prior to signing any contract and performing any work. Once a contract is signed, it may be difficult to change. The person signing on behalf of the repairer or installer should be competent to thoroughly review the contract and make the decision to sign it. Finally, insurers will look to cover contractual obligations that pertain only to the operations of their Insured.

### 5. Product Liability Exposures

The installation of a piece of equipment a ship repairer or installer did



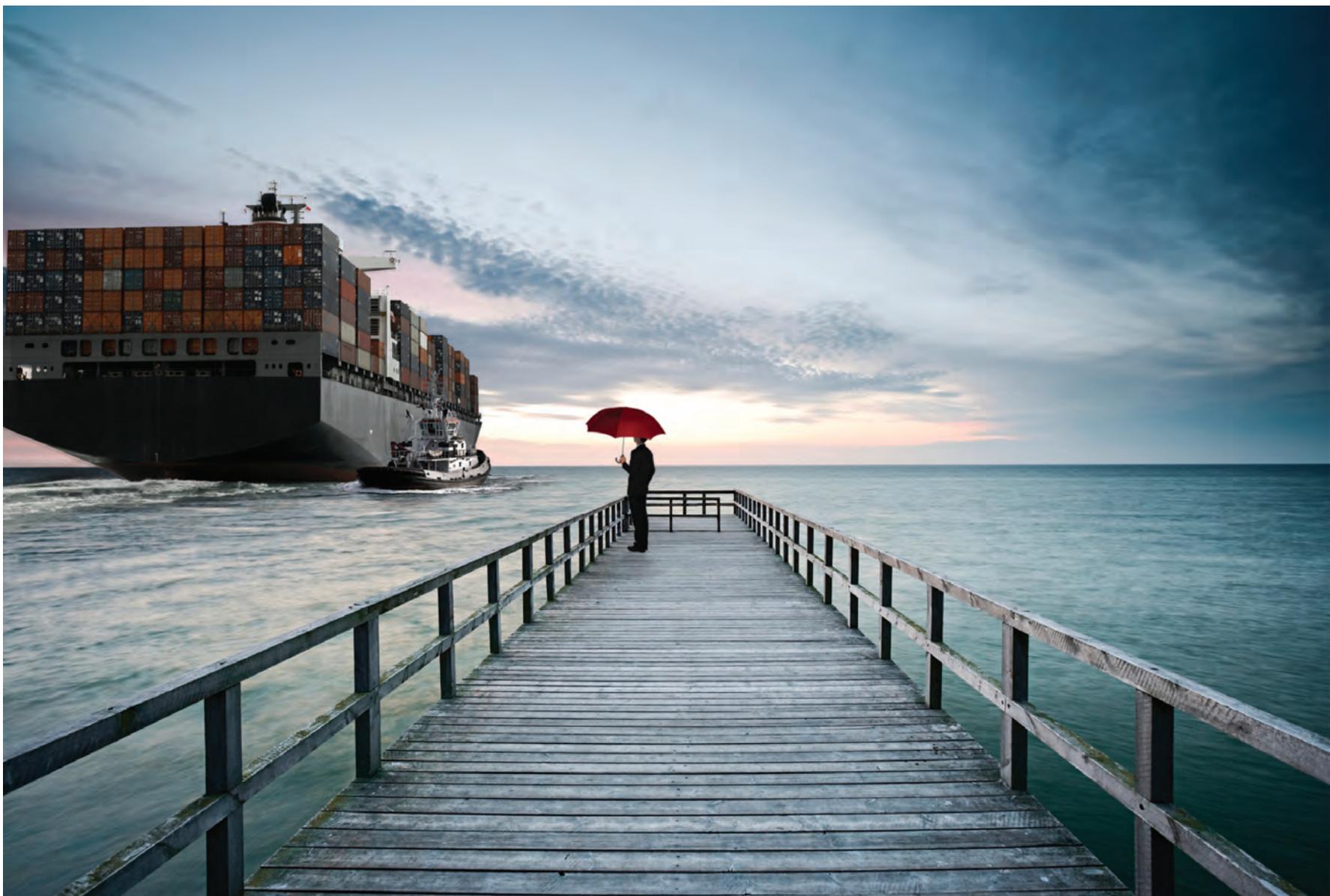
(Photo: istock)

not manufacture carries its own set of risks. There is a large potential for vicarious liability on behalf of the repairer or installer even though they did not manufacture the product. If a ship repairer were to install a new radar device – manufactured elsewhere – on a vessel, and that device shorts out and causes damage to the vessel, the installer could be held liable. They are involved in the process that potentially caused the loss. An experienced marine underwriter will examine this risk exposure, verify the ship repairer has the proper controls in place, and determine what, if any, liability they are exposed to on behalf of the manufacturer. Repairers and installers should review and address any of this potential liability before arranging an agreement with any manufacturer.

## Risk Control Measures to Shore up a Ship Repairer’s Business

Marine underwriters understand the nature of risk within the ship repair business. The ship repairer that demonstrates higher quality operations combined with sound risk control practices and procedures





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can differentiate themselves from other similar ship repairers. A few key areas that can help manage ship repairer exposures, are the following:

**Risk Transfer.** Several key risk transfer tools include: Certificates of Insurance, Hold Harmless Agreements and Vendor's Coverage by endorsement. Ship repairers vary greatly with respect how much they rely upon third parties, therefore, it is important for each business to carefully review and understand the extent of exposure created by every third party relationship and create effective means to control these. Your risk management team, insurance broker and legal counsel familiar with contracts and product liability law, should be part of the review team to identify exposure as well as developing appropriate control techniques for the business.

**Fire Protection.** Fire can be a significant exposure for the ship repairer. If proper controls are not in place, fire losses can be the most destructive exposure faced by ship repairers; not only endangering lives and destroying property, but also negatively impacting the repairer's reputation. Having proper fire control equipment available, adequate automated suppression systems, when possible, combined with effective and regular training in fire safety can help to reduce the likelihood and severity of loss from fire.

**Product/Vessel Modifications.** In ship repair operations adding or modifying large pieces of equipment or changing the vessel's structures can be a routine occurrence. Modifications to vessel equipment, or making structural changes that deviate from its original design that result in bodily injury or property damage could create significant liability for the repairer. It is important that repairers carefully review manufacturers' specifications and research any special requirements that may pertain to marine installations. Additionally, if structural changes are part of any repair work, appropriate consultation with qualified marine engineers and/or naval architects may also be helpful. The job specifications and details of all work performed, possibly including photos, should be documented.

### Finding the Right Insurer

When looking for a marine insurer, the insurance agent should understand the ocean marine needs of their client, review and address their exposures thoroughly, and work with carriers who have extensive experience in developing proper coverage and risk management solutions for ocean marine policyholders. It is key to find an insurer with expertise in managing third party risk exposure, coordinating both marine and on-shore coverage, and using risk control and claim teams that specialize in ocean marine. Finding the right insurer can mean added protection – and less risk – for ship repairers, enabling them to focus on their business and their customers' needs.

