April 2026

MARITIME REPORTER AND ENGINEERING NEWS

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'Born into Maritime'

John McDonald
Chairman & CEO, ABS

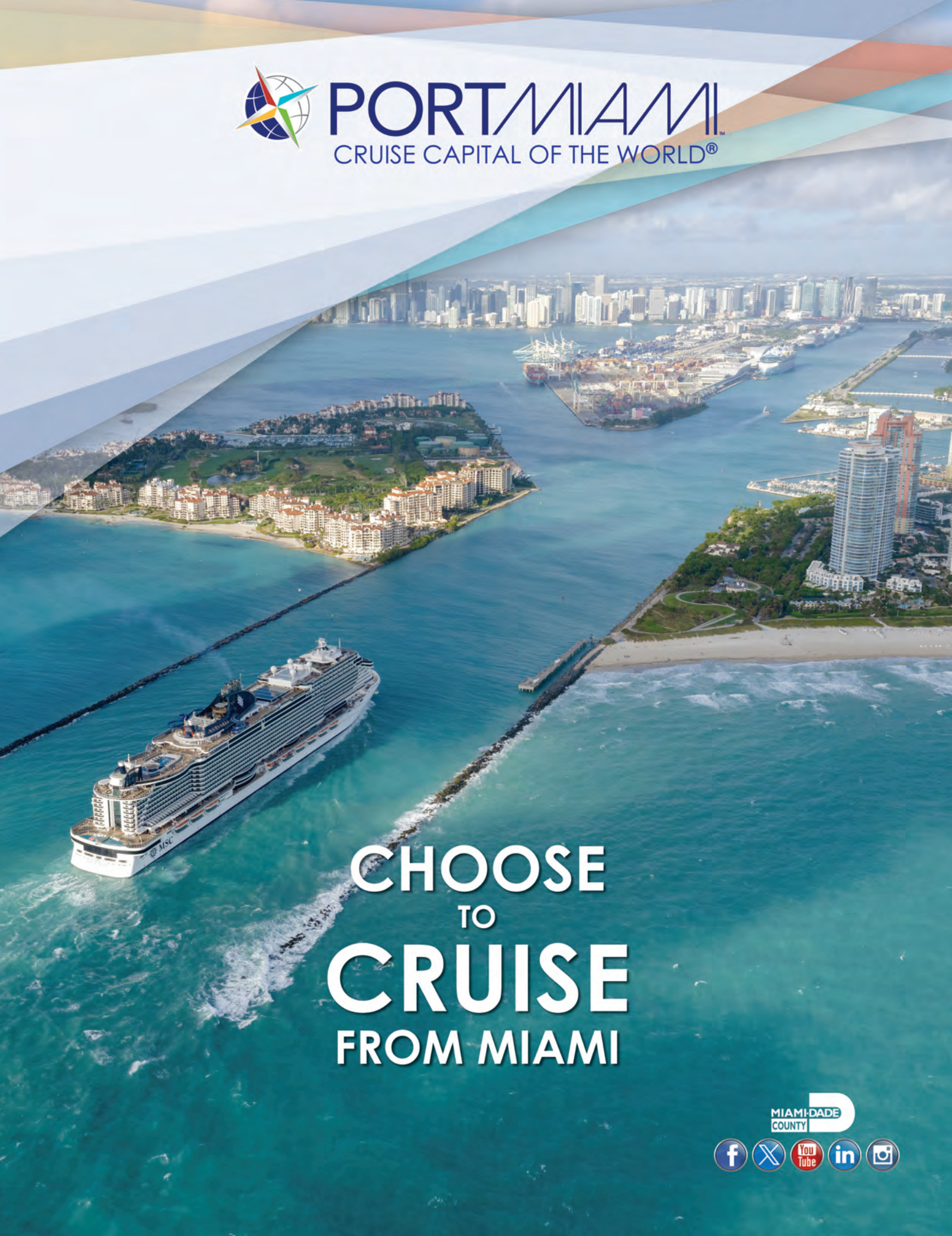
Shipbuilding
Changing Dynamics in Japan

Cruise Shipping
Newbuild Backlog to mid-2030s

Offshore Energy
The X-BOW Turns 20

Hydrogen Ready
Jonas Moberg, Head of Newbuildings, Gotlandsbolaget

Since 1939 | Number 4 | Volume 88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On the cover
John McDonald, Chairman & CEO of the American Bureau of Shipping (ABS). Image courtesy ABS

On this page
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Departments


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THE EVERCLEAN SOLUTION
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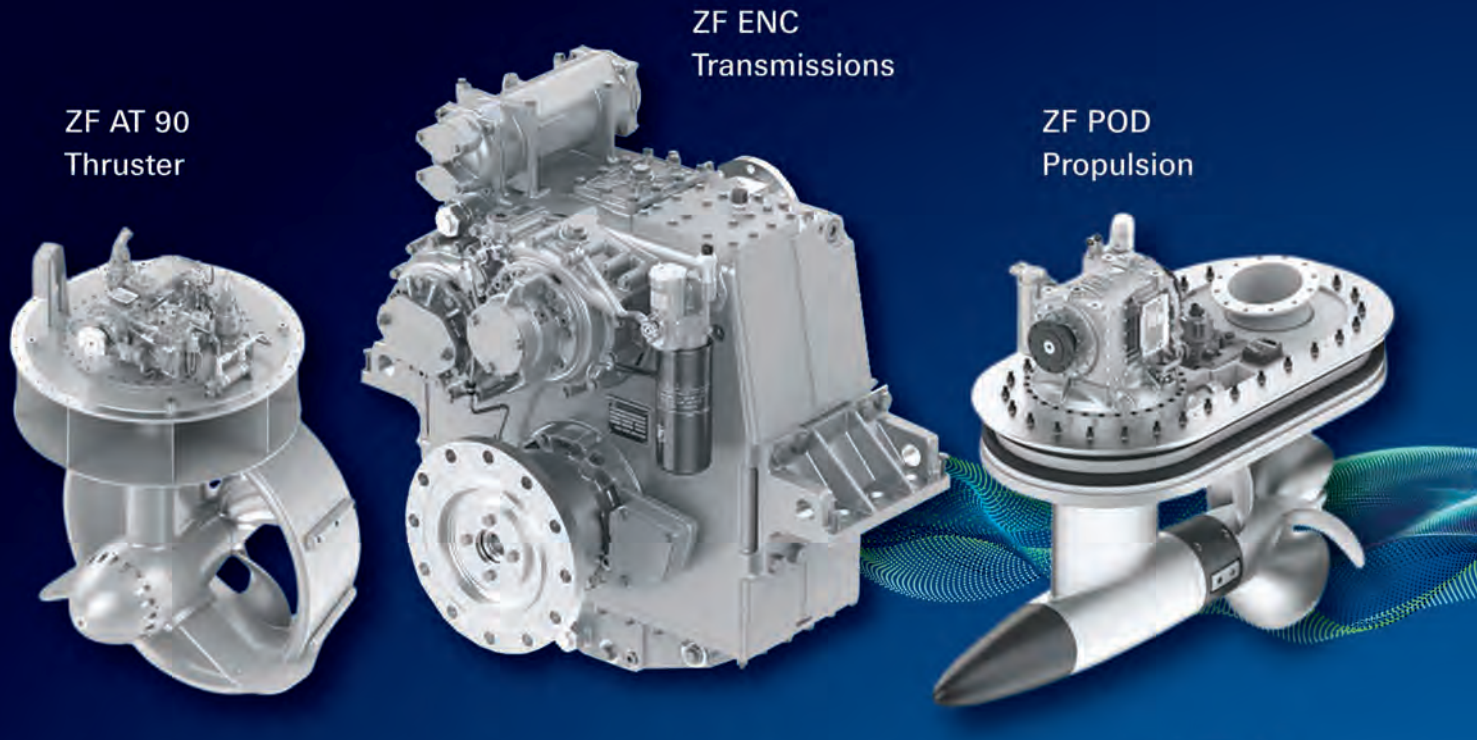

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Photo Justin Zurre

Unlike John McDonald, I was not born into maritime. Despite the fact that I grew up just north of Cincinnati, 30 minutes or so from the Ohio River, one of the nation's vital waterways to facilitate the transportation of critical bulk cargoes, as a young man I had zero knowledge of 'maritime' as a career. I simply fell into the industry by dumb luck and circumstance in 1992. Despite the fact that I was not born with *'salt in my veins'*, I have adopted the industry (or it has adopted me), and for three decades and counting I've had a front row seat to this industry's evolution, along the way meeting thousands of fascinating characters, business and technical leaders from all four corners of the world.

Late last month in Houston I had the opportunity to another dynamic leader, **John McDonald, Chairman and CEO of the American Bureau of Shipping.**

As the cover states, as the eight-page feature starting on page 38 repeats, McDonald was born into maritime. His corner office in Houston contains a fair share of maritime art and memorabilia, but as we chatted before hitting the 'record' button, each piece has personal significance. Personal history aside, McDonald takes the helm at ABS at arguably one of the most exciting yet tumultuous times in maritime history, as it faces whirlpool of change, from decarbonization and fuel transition, automation and autonomy, digitalization, robotics and seafarer training, to name but a few. As a 30-year veteran of ABS and a lifelong member of maritime, McDonald seems well suited personally, professionally to navigate the world's largest classification society and the industry it serves through the unsteady seas ahead.

While the penchant today is to look only ahead, as has been proven time and again in this (and all) industry is to learn from the past. In this regard I thank **Dr. Luis Guarin**, Principal Naval Architect, Brookes Bell, for his article on the MV Estonia disaster, examining how it has impacted passenger vessel safety in maritime. The loss of MV Estonia carries a special marker in my mind, as it was the first major shipping accident at the start of my tenure here, and I remember where I was when the news broke: on the exhibition floor in Hamburg, Germany at the SMM 1994. I think being in Northern Europe at the time of the accident was as impactful as the accident itself, because even in an exhibition as massive as the SMM, the pain was palpable. MV Estonia was a RoRo Passenger ferry making its overnight crossing from Tallinn to Stockholm through the Baltic Sea. With heavy seas and strong winds affecting the vessel, shortly after 01:00, passengers and crew heard a loud metallic impact, and water began entering through the bow visor and loading ramp. **In less than an hour after the first signs of trouble, Estonia had capsized and sunk. Of the 989 passengers and crew on board, 852 died.** In 1994, I'd only been at this job for two years, and if I'm being honest with myself I did not imagine then that more than 30 years later I'd still be at it. But I learned a lot about the industry because of that accident, and I learned a lot about the people that power this industry. It's a business for sure, but for many people it's not just a job, it's not just a career, it is a family and it is life.

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Vessel Hardening Readiness: *The Real Weakness Is Not What We Think*

A review of more than 450 audit findings shows that vessel hardening failures are driven less by missing equipment and more by weaknesses in planning, control and assurance. While recent efforts have reduced visible gaps, the data indicates that true readiness depends on stronger management systems, consistent verification and practical, vessel-specific procedures that crews can rely on in high-risk environments.

By Dave Cudbertson, Programs Director, OCIMF

A data review of 452 audit findings provides a clear picture of how vessel hardening measures are applied on board. This total comprises 231 findings from OCIMF's Focused Inspection Campaign (FIC) on vessel hardening and security preparedness, launched in October 2025 within the SIRE 2.0 programme, and 221 findings from the preceding nine months.

The campaign focused inspections on hardening arrangements, with the aim of building a clearer understanding of how consistently these measures are implemented and how confidently crews can rely on them in practice.

The findings point to a consistent outcome. The most significant weaknesses are not in equipment or physical arrangements, but in the systems that support them. Across the fleet, vessel hardening is often not managed as a controlled, verifiable process.

Process Before Equipment

In the pre-FIC period, from January to September 2025, almost half of all findings, 48%, were process-related. Human Factors accounted for 35%, while hardware concerns represented 17%. This distribution shows that the primary vulnerabilities lie in planning, governance and control, rather than equipment availability.

At the centre of these findings is the vessel hardening plan. In many cases, plans are missing, incomplete, or not usable in practice. Some vessels had no vessel-specific plan on board. Others lacked essential detail, such as required materials, quantities, or how measures should be implemented safely alongside operations. Records were also often not maintained, leaving no clear evidence of equipment availability or readiness.

Without clear and controlled guidance, crews are left to interpret requirements themselves. This is evident where vessel-specific hardening plans are missing or lack critical implementation detail, forcing crews to rely on ad-hoc confirmation from shore rather than following a defined system. These workarounds highlight that vessel hardening is not being governed as a structured system with defined standards and verifiable controls.

Knowledge Wthout Assurance

Human Factors reinforce this picture. Knowledge is often present, but not consistently demonstrated or applied. Officers may state that they are familiar with procedures, yet routine checks fail to identify missing or defective equipment. Crew members may have been briefed, but cannot demonstrate how measures should be implemented when asked.

This points to a weakness in assurance rather than awareness. There is a clear difference between knowledge and verification. Without structured familiarisation, documented training, and routine competency checks, there is no reliable way to confirm

that crews are prepared. Many systems appear to rely on assumed knowledge, rather than measurable assurance.

Hardware findings, although fewer in number, still highlight important risks. Recurring issues include non-operational CCTV systems and missing or degraded hardening materials such as razor wire. These problems are often linked to weaknesses in inventory control and maintenance. When equipment is not tracked, inspected and maintained within a controlled system, readiness cannot be confirmed.

What Changed, What Did Not

The FIC period, covering October 2025 to February 2026, shows how these issues respond to focused attention. Hardware findings dropped significantly, from 17% to 9%, and visible implementation gaps, such as unsecured access points, were reduced. This demonstrates that targeted effort can improve physical readiness in the short term.

However, process-related findings increased to 54%. The nature of the findings also shifted. Fewer vessels were identified without a hardening plan, but more were found with inadequate plans. In particular, many plans did not specify the materials or quantities required for effective implementation.

This shift points to a deeper issue. Addressing visible gaps does not resolve underlying system weaknesses. The presence of documentation alone is not enough. Plans must be complete, accurate and usable to support effective action.

Across both periods, a consistent pattern emerges. Process weaknesses remain dominant. Human assurance is inconsistent. Hardware issues continue to recur, but they are rarely the root cause. Vessel hardening readiness is fundamentally a management system issue.

Improvement will depend on strengthening the systems that support implementation. This includes establishing clear standards for vessel hardening plans, ensuring that inventory is controlled and verifiable, and introducing structured approaches to training and competency assurance. There is also a need to move away from assumptions. Stated familiarity is not sufficient. Crews must be able to demonstrate understanding, and verification processes must identify real gaps.

The FIC, concluding at the end of March, provides valuable insight into how vessel hardening is managed in practice. It shows that while visible deficiencies can be reduced through focused effort, the underlying system requires greater attention. Vessel hardening is not simply a set of measures. It is a system that must be consistently planned, controlled and verified.

HOW THE MV ESTONIA DISASTER RESHAPED PASSENGER SHIP SAFETY

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Dr Luis Guarin, *Principal Naval Architect, Brookes Bell*

Maritime safety regulations are often shaped by hard lessons. Few accidents demonstrate this more clearly than the loss of the ferry MV Estonia in September 1994.

More than 30 years later, the incident is still a touchstone for passenger vessel safety. Many of the stability and survivability questions it raised are influencing how ferries are designed and how safety regulations evolve under the SOLAS Convention.

The tragedy unfolded in the early hours of 28 September as the ro-ro passenger ferry was making its overnight crossing from Tallinn to Stockholm through the Baltic Sea. Weather conditions had deteriorated overnight, with heavy seas and strong winds affecting the vessel. Shortly after 01:00, passengers and crew heard a loud metallic impact.

Water began entering through the bow visor and loading ramp, allowing seawater to flood the vehicle deck. Within minutes the vessel developed a severe list. Less than an hour after the first signs of trouble, Estonia had capsized and sunk.

Of the 989 passengers and crew on board, 852 lost their lives.

Beyond the scale of the loss of life, what shocked the maritime community the most was the speed of the accident. A large passenger ferry operating on a well-established route had become unstable and capsized far more quickly than many had anticipated.

For naval architects and regulators, the disaster marked a turning point. It exposed weaknesses in long-standing assumptions about ferry stability and forced a fundamental reassessment of how passenger ship safety should be evaluated.

When Theory Met Reality

At the time of the accident, ship stability was typically evaluated using relatively simplified models. Designers would analyse how a vessel behaved after flooding had occurred and the water inside the ship had reached equilibrium.

This approach provided a useful baseline for design, but it also relied on assumptions that did not always reflect how accidents develop in the real world. Ships rarely experience damage under calm, controlled conditions. They may already be rolling in waves, taking on additional water, or losing buoyancy in areas not intended to be submerged. The earliest stages of flooding can therefore be critical in determining whether a vessel remains stable or capsizes.

The loss of Estonia, together with earlier ferry disasters such as the Herald of Free Enterprise in 1987, highlighted how vulnerable ro-ro ferries could be once water entered large open vehicle decks. When water spreads across these spaces, the free surface effect can rapidly reduce stability.

In Estonia's case, flooding of the vehicle deck combined with heavy seas and vessel motion to create a situation where stability deteriorated quickly and recovery became impossible. The disaster made clear that the maritime industry needed to reconsider how ferry survivability was evaluated.

Research and Regulation

The response to Estonia triggered one of the most significant research efforts ever undertaken in passenger ship safety. Across Europe, universities, classification societies, opera-

tors and regulators worked together to better understand the mechanisms behind rapid ferry capsizes and how ship design could be improved.

This ultimately led to the Stockholm Agreement in 1994, a regulatory framework retrospectively covering ro-ro passenger ferries operating in Northern Europe. The agreement required vessels to demonstrate that they could remain stable with water on the vehicle deck while operating in defined sea states.

Instead of relying only on calculations, regulators began asking a more practical question, could a ferry survive damage in real sea conditions? To answer it, engineers combined computer simulations with physical model tests, using scale models in wave basins to study how flooding developed and how vessels behaved when damaged.

These experiments helped naval architects better understand the interaction between flooding, wave motion and ship stability. They also provided practical insights into how vessel designs could be improved. In many cases, relatively modest modifications, such as additional buoyancy or adjustments to internal arrangements, significantly improved survivability.

The research carried out during this period did more than address a specific regulatory requirement. It reshaped the industry's understanding of how passenger ships behave when damaged.

More than just Rules

The influence of accidents like Estonia have also been reflected in the evolution of international maritime regulation. The SOLAS Convention, first introduced following the sinking of the RMS Titanic in 1912, has been the cornerstone of global maritime safety standards. For more than 100 years, it has evolved as the industry learns from accidents and operational experience.

One of the most important changes has been a shift in how safety requirements are structured.

Historically, many SOLAS requirements were written in very specific terms. The rules described exactly what equipment should be installed or how certain safety features should be arranged. While this helped standardise safety across the industry, it left little room for different design solutions as passenger ships became larger and more complex.

Over time, regulators began to frame requirements differently. Instead of prescribing a single technical solution, the rules increasingly describe the safety objective that must be met.

This means designers have had greater freedom in how they achieve that objective. A regulation might state that a ship

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must prevent passengers from falling overboard or remain stable after certain types of damage, without dictating exactly how the design should deliver that result.

The shift may sound subtle, but it changed how naval architects approach passenger ship safety. The focus moves away from simply meeting a list of technical requirements and towards demonstrating that a vessel can manage the risks it may encounter.

In passenger ship design, this has encouraged a stronger emphasis on survivability. Ships are expected to remain stable and keep essential systems running long enough for passengers and crew to respond to an emergency. In many cases, the vessel itself is designed to provide that protection, effectively acting as its own first line of safety.

Lessons that Continue to Shape SOLAS

The process of learning from accidents and translating those lessons into regulation continues today.

New amendments to SOLAS that entered into force in January 2026 introduce updated requirements for lifting appliances carried on board ships, including cranes, davits, ramps and movable decks, while additional updates address container loss reporting and strengthen fire safety provisions for certain vessel types.

Although these amendments focus on specific technical areas, they reflect the broader way SOLAS continues to develop. The convention evolves gradually as experience from operations, investigations and engineering research is incorporated into the regulatory framework.

More than three decades after the loss of MV Estonia, the accident remains an important reference point in discussions about passenger ship safety. It demonstrated how quickly stability can be lost and how critical it is that regulations keep pace with the realities of ship design and operation.

The Author

Guarin

Dr. Luis Guarin is a naval architect with over 20 years of experience advising shipowners, designers, insurers, ports, and regulators on ship safety, performance, and marine risk. He is recognized internationally for his work on passenger ship safety, bulk carrier structural integrity, and risk based regulatory compliance, with contributions that have informed IMO discussions.

Below the Waterline: How Two Decades of Robotic Intelligence Are Paying Off for Ship Owners

Greensea IQ's EverClean brings proven underwater autonomy to hull performance — delivering measurable fuel savings and a new standard for in-water inspection.

Industry Adoption: From Niche to Norm

For most ship owners and fleet managers, hull maintenance has long operated on a reactive cycle: wait for fouling to develop, schedule a cleaning, and absorb the performance losses in between. The industry has accepted this as the cost of doing business. But a growing body of data — and a company with twenty years of underwater robotics experience — is making a compelling case that there is a better way.

Greensea's EverClean business is growing rapidly, at least doubling every year since launch and is expanding by more than 300% in 2026. Well past the "early adopter stage", proactive maintenance is quickly becoming the standard for hull performance and EverClean is the commercial solution delivering industry results. What's driving the growth? The economic returns are real and the data-driven approach aligns with modern values.

Greensea IQ, founded in 2006 and headquartered in Vermont, built its reputation developing autonomous navigation and control technologies for unmanned underwater vehicles used by the U.S. Navy, scientific institutions, and commercial operators worldwide. Its software platform now powers thousands of robotic systems across defense, science, and commercial sectors — from explosive ordnance disposal to seafloor mapping. The company's expertise is not theoretical. It is the product of two decades deploying cutting edge technology and operating robots in some of the most demanding underwater environments on the planet.

That core foundation of robotic intelligence is what powers EverClean®, Greensea IQ's hull performance service for commercial maritime operators. What distinguishes EverClean from conventional hull cleaning is not just the technology it uses, but how it frames the problem it solves.

Reframing the Problem: From Cleaning to Performance

Biofouling is one of the most persistent and underestimated drains on fleet efficiency. Research consistently shows that even a light layer of slime can increase hull resistance by more than 10%, translating directly into higher fuel consumption and elevated emissions. Across a fleet, over a five-year period, the difference between a vessel that is never cleaned and one maintained with EverClean can amount to tens of thousands of metric tons of excess fuel burned.

Traditional cleaning approaches address this problem after the fact. Divers or machines are dispatched once fouling has already developed into macrofouling. At this point, removing macrofouling requires more aggressive methods that can damage coatings and, in some jurisdictions, create compliance concerns around toxic discharge. The efficiency losses incurred between cleanings are simply accepted.

EverClean intervenes much earlier as a maintenance practice, not a cleaning solution. Using robotic systems deployed on a performance-plan schedule, the service targets microfouling — the earliest stage of biological accumulation — before it becomes a drag problem. The robots use proprietary nylon brushes that have been tested and approved by major hull coating manufacturers, making the service compatible with even high-performance silicone coatings. The result is a hull that is consistently maintained at or near its clean-hull baseline, rather than cycling between degraded and restored states.

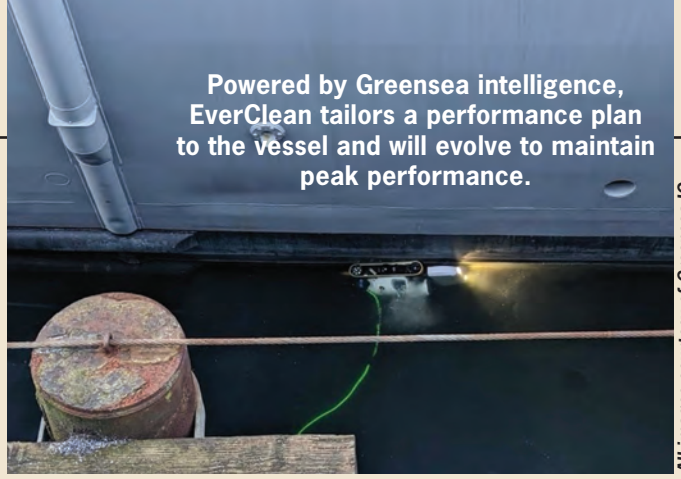
The ROI Is Real — and Measurable

For ship owners, the critical question about any hull maintenance program is whether the investment pays. With EverClean, the answer is supported by actual performance data, analyzed using the ISO 19030 model — the international standard for measuring changes in hull and propeller performance.

One vessel that entered EverClean service two years after its last drydock had already lost 11% of its original fuel efficiency by the time service began. Following consistent EverClean maintenance, that vessel has recovered most of its original performance and now operates at just a 3% efficiency loss. This is a recovery worth 85 metric tons of fuel oil per month, which equates to $59,500 at $700 a ton with a reduction of 270 metric tons of CO2 emissions over the same period.

Scale that profile to a 14,000 TEU container ship operating 260 days per year at 80 tons of fuel per day, and the pro-

The EverClean subscription is a full-service operation to ensure efficiency and an effortless experience.



Powered by Greensea intelligence, EverClean tailors a performance plan to the vessel and will evolve to maintain peak performance.

All images courtesy of Greensea IQ

jected annual savings come into sharp focus: roughly 1,600 metric tons of fuel per year and more than $1.4 million in avoided fuel costs (based on the current Americas average VLSFO price of $892 per metric ton). That figure has climbed more than 30% since the escalation of conflict in the Middle East and the disruption of Strait of Hormuz traffic, meaning every percentage point of hull efficiency recovered through a service like EverClean now carries substantially greater financial weight than it did even months ago. Across customers analyzed by Greensea IQ, average fuel savings attributed to EverClean maintenance and see benefits between 5% and 20% depending on rate of cleanings.

These results also carry regulatory relevance. The IMO's Carbon Intensity Indicator (CII) framework requires vessels to demonstrate and report on emissions efficiency — a rating that directly affects commercial viability and charter prospects. Consistent hull performance, maintained through a service like EverClean, translates into stronger CII ratings and simplified compliance with biofouling regulations being implemented in markets including Australia, New Zealand, and Brazil.

Inspection Built Into Every Cleaning

One of the most significant capabilities of the EverClean service is what happens alongside every cleaning pass: continuous underwater hull inspection.

Because EverClean robots traverse 90% of the hull during each service visit, they capture continuous video and comprehensive hull data at the same time as they clean. This is not a separate inspection event requiring additional scheduling, cost, or crew involvement. It is an inherent feature of how the robots operate. The data feeds directly into the EverClean IQ reporting and analysis platform, providing a data-driven approach to designing and managing maintenance plans to achieve optimal vessel performance. This data set is also available to customers, giving fleet managers before-and-after imagery, fouling pattern tracking over time, coating condition monitoring, and detailed change detection reports.

In practice, this means that a vessel receiving regular EverClean service is also receiving regular, systematic hull inspections — without diverting crew time, arranging separate dive teams, or scheduling additional port time. Coating degradation, anomalies, and structural concerns that might otherwise go undetected between drydocks become visible in the reporting data, allowing operators to act proactively rather than discover problems at their next scheduled inspection.

This is a direct expression of Greensea IQ's two-decade history in subsea systems. The same navigation and data architecture that enables precision operations in defense and scientific applications — accurate positioning, reliable autonomy in complex environments, and structured data capture — is what makes EverClean's inspection capability possible at commercial scale.

A Service Model Built Around the Ship, Not the Schedule

EverClean is structured as a subscription service, but the underlying approach is customized to each vessel. Greensea IQ's hull performance team works with the owner, vessel crew, and in some cases coating manufacturers to develop a performance plan specific to the vessel's coating type, operational schedule, and the ports it calls. Cleaning frequency is driven by performance optimization targets, not an arbitrary 30-day calendar.

The service can also include additional services such as niche area cleaning as part of complete hull management, with all findings from routine service feeding back into continuously updated performance plans. Fleet managers receive regular reporting: cleaning summaries, footage, condition observations, fuel and emissions projections, and trend analysis. The model is designed to be genuinely hands-off for operators — no crew lockouts, no tagouts, and no downtime required during service visits.

The vision Greensea IQ articulates for EverClean is a straightforward one: proactive, intelligent hull optimization has the potential to eliminate a significant portion of the shipping industry's fuel waste and carbon output. The company estimates that widespread adoption of managed hull performance could address approximately 3.5% of worldwide carbon emissions — a figure that reflects just how immense the biofouling drag problem actually is at a global scale.

For ship owners and technical managers navigating the operational and regulatory pressures of decarbonization, that potential is increasingly difficult to overlook. The technology is mature, the results are measured, and the inspection data that comes with every cleaning visit turns a maintenance expense into something more valuable: a continuous window into the condition of the asset beneath the waterline.

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WHAT'S IN *THAT* BOX?

***Homer** is a maritime start-up, born when **Samantha Weckesser** was a research assistant given access to a large USCG data set on shipping containers that had failed inspection. **The task:** discover if actionable information could be derived from that dataset to ID problems that could relate to real-world problems. **There was a problem.** Undeclared or misdeclared cargos – particularly hazmat cargos – can end in catastrophe at sea and in port. Today, **Homer offers Calypso**, built on a machine learning model based on 20 years of data on failed container inspections, a system to 'go through' containers, identifying the most high-risk units and predicting which are most likely to fail inspection.*

In an industry that moves more than 200 million containers annually, the margin for error is razor thin. When it comes to hazardous cargo, the consequences of getting it wrong can be catastrophic. Fires at sea, port explosions, environmental damage and supply chain disruption have all been traced back, at least in part, to one persistent issue: undeclared or misdeclared cargo. It's a problem that Homer, a young maritime technology startup, is aiming to solve.

Co-founded by **Samantha Weckesser**, Homer emerged not from a traditional shipping background, but from a data problem. While working as a research assistant with the U.S. Coast Guard Sector New York, Weckesser was given access to a large dataset of containers that had failed inspection. The task was straightforward: determine whether the data revealed any actionable insights. It did.

"What we found was not just bad data — it pointed to real-world risk," Weckesser said. "Certain cargo types, certain shippers, certain origins; there were patterns that clearly indicated higher likelihoods of failure."

Those failures are not trivial. Misdeclared hazardous materials can ignite, explode, leak or otherwise compromise vessel safety. In worst-case scenarios, they can lead to total vessel loss, environmental disasters and billions of dollars in damages. Even less severe incidents can ripple through global supply chains, triggering delays, port congestion and mounting costs. For crews at sea, the risks are immediate and personal.

Out of that initial research came Calypso, Homer's flagship technology platform.

At its core, Calypso is a machine learning system trained on more than 20 years of historical data tied to failed container

Watch the full interview with Samantha Weckesser @ MARITIME REPORTER TV

inspections. The platform analyzes vessel manifests container by container, assigning each unit a risk score based on factors such as cargo type, compliance with IMDG and CFR codes, shipping history and other variables derived from past failures.

The goal is not to replace inspection regimes, but to make them smarter. Regulators today face a scale problem. In the Port of New York and New Jersey alone, roughly 7.4 million containers move through annually, yet only about 2,400 are physically inspected, or roughly 0.0003% of total volume. That leaves significant exposure, particularly when high-risk cargo slip through undetected.

Calypso aims to close that gap by prioritizing which containers should be inspected.

"When a regulator goes out, they can focus on the containers most likely to fail," Weckesser said. "The idea is to pull risk out of the system before something happens."

Early results suggest the approach has merit. Using preliminary data analysis, before the full system was even built, recommendations based on Homer's findings helped Coast Guard inspectors identify three times more deficiencies during inspections.

Beyond risk scoring, Calypso also integrates workflow tools designed to streamline the inspection process. The system can ingest vessel manifests, flag high-risk containers, and automatically generate documentation such as hold orders for ports, reducing friction between regulators, terminals and operators.

While Homer's initial work has been closely aligned with government stakeholders, the company is increasingly targeting commercial applications. Shipowners, cargo interests and insurers all have a vested interest in identifying risk earlier in the logistics chain, ideally before a container is ever loaded aboard a vessel. For insurers in particular, the ability to digitally assess cargo risk at scale could reshape underwriting models. For carriers, it offers a pathway to reduce incidents that can damage both assets and reputation.

Homer remains a small operation — led by Weckesser and a systems engineering professor from her alma-mater Stevens Institute of Technology — but it is backed by an advisory network of maritime industry veterans. The company is now seeking partners to conduct full-scale testing of Calypso in live operational environments, a step Weckesser views as critical before broader commercialization.

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WTIV The global bottom-fixed offshore wind turbine and foundation installation market

By Philip Lewis, Research Director, Intelatus Global Partners

The last two or three years have seen a change in the underlying stakeholder support for the energy transition, resulting in the energy trilemma being focused more on energy security and affordability than transition, which means a pivot away from renewables to increased support for oil & gas. At the same time, inflation and interest rates have impacted project economics. Needless to say, these factors have impacted the global offshore wind forecast and the supply and demand balance for wind turbine installation and major component exchange (MCE) and foundation installation.

It is not all bad news. The UK and North Seas European countries are planning to increase offshore wind capacity (to increase energy security and affordability through scale) and advance grid integration (to manage localized offshore wind farm intermittency and stabilize the grid). Poland is advancing its offshore wind agenda. Mediterranean countries will enter the market. The big three EAPAC players (Japan, South Korea and Taiwan) will continue to advance offshore wind auctions and capacity development and will soon be joined by Australia and the Philippines. In North America (NAM) Atlantic Canada is looking to fill some of the hole left by the withdrawal of the USA from offshore wind, South America (SAM) is moving through the gears to establish offshore wind markets, and India (ISC) may soon turn plans into auctions.

This ever-changing market has an impact on the wind turbine and foundation installation market, where investment decisions for the latest generation vessels were generally made in more stable and promising times. As a result, utilization could be challenging, impacting day rates and financial returns.

These are some of the findings from a new bottom-up analysis and report by Intelatus Global Partners of the bottom-fixed turbine and foundation installation and maintenance market.

Changing demand has impacted the wind turbine and foundation installation supply & demand balance, resulting in tight to over-supply during the forecast period.

The global offshore wind forecast (excl. China) has "moved to the right" over the last year or so due to cancelled projects, disappointing auctions, cost increases and political headwinds.

The 2035 commissioned capacity forecast is ~230GW, of which over 90% features bottom-fixed technology. Europe accounts for over 70% of capacity additions and EAPAC 20%. In NAM, the project pipeline has been severely impacted by the current federal administration's campaign against offshore wind projects and Canada looks to make a market entry in the

next decade. Other new demand is forecast to emerge in SAM and ISC towards the middle of the next decade.

The 2035 forecast is ~17,900 commissioned turbines. Over 70% of turbines commissioned in 2025-2035 are forecast to be bottom-fixed. Europe accounts for ~70% of capacity additions and EAPAC ~20%. Forecast sensitivities include the speed of adoption of larger turbines and the speed of project capacity development.

The specialist FFIV segment (≥DP2 crane vessel with deck to carry several monopiles or jackets) excl. China will grow from 8 vessels to 9 by 2028 and is insufficient to meet global demand (excl. China) throughout the forecast.

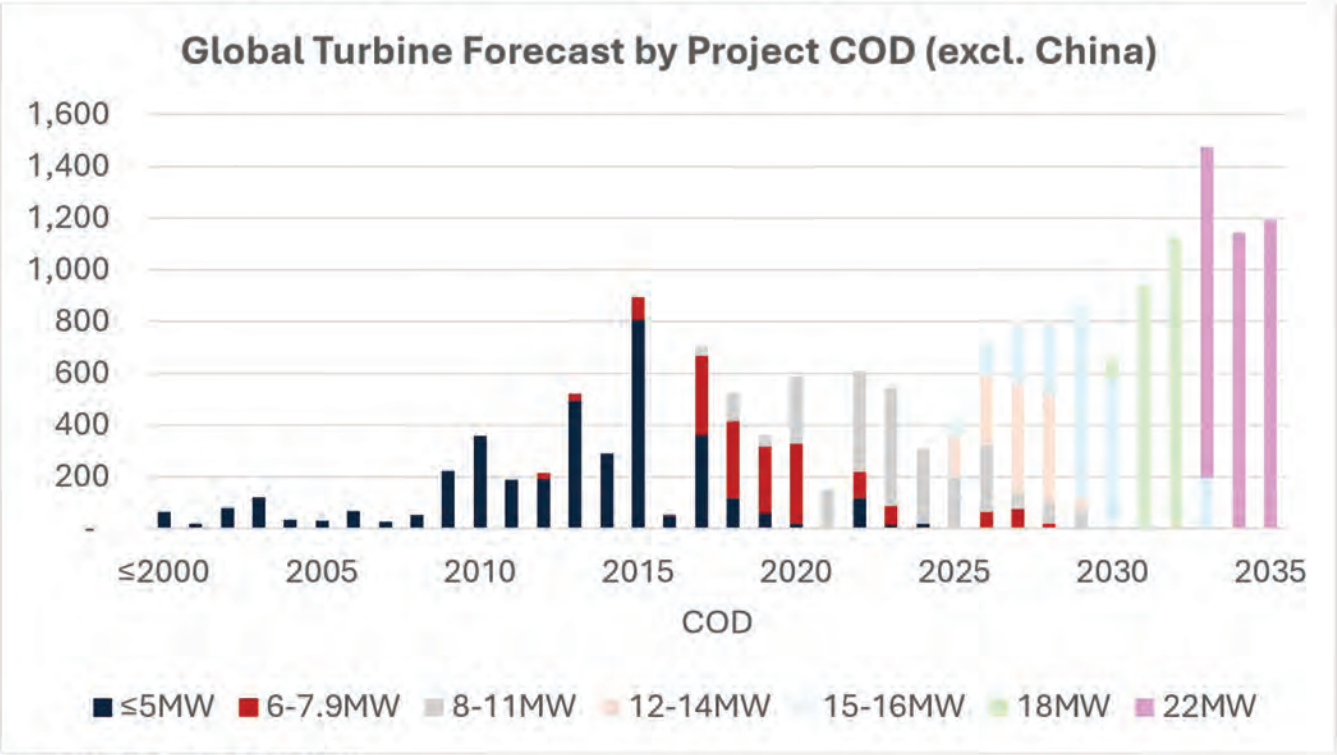
Foundation vessel supply remains tight over several years of the forecast period when adding in foundation support from WTIVs. The FFIV and WTIV fleet is supported by 5 HLCVs and 4 HLSSs (≥DP2 crane vessel with a smaller or no monopile carrying capacity, often fed by barges, and also working in the oil & gas sector). Most can install XXXL monopiles and large jackets. At a granular level, the European FFIV and WTIV supply will struggle to meet all European foundation demand in the forecast period and requires HLCV and HLSS support. EAPAC is largely oversupplied with FFIVs throughout the forecast period, and both NAM and other markets are undersupplied throughout the forecast period.

As bottom-fixed turbine and foundation sizes are forecast to continue to increase, available WTIV supply (excl. China) capable of installing ≥15MW turbines is growing from none in 2020 to over 25 by 2028, made up of new generation high-spec vessels, designed to service larger wind farms built further offshore, and upgrades of earlier generation vessels. Supply is forecast to be able to meet global demand (excl. China) through the forecast period, although Europe is forecast to see tight supply in the ≥15MW segment from 2032 and from 2030 for other markets. EAPAC and NAM are oversupplied through the forecast.

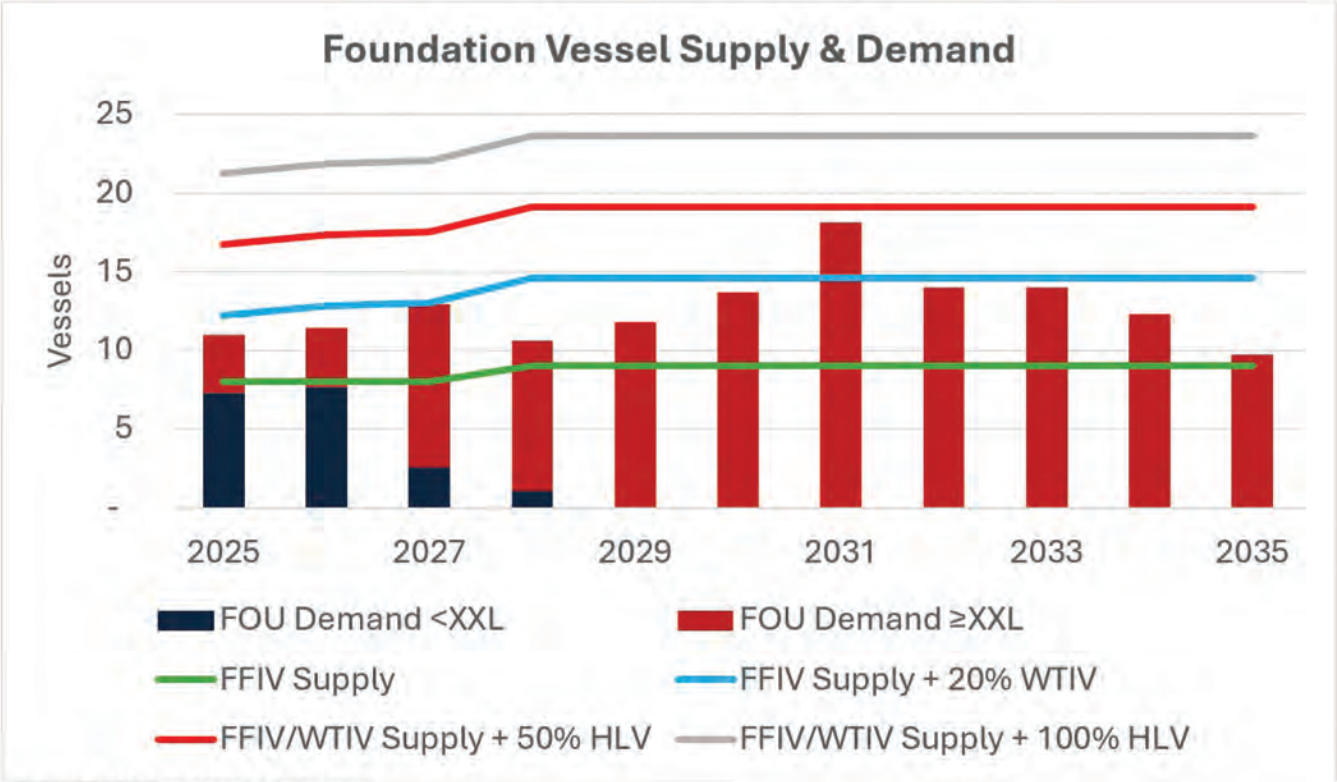
The bottom-fixed WTMV fleet, both early generation WTIVs and oil & gas maintenance and intervention jack-ups, is forecast to stand at ~40 by end 2026 and is largely sufficient to meet major component exchange (MCE) requiring a jack-up intervention, subject to activity in the oil & gas market.

There are many sensitivities to the forecast, which can both increase and reduce vessel oversupply.

There are many sensitives impacting



Source: Intelatus Global Partners



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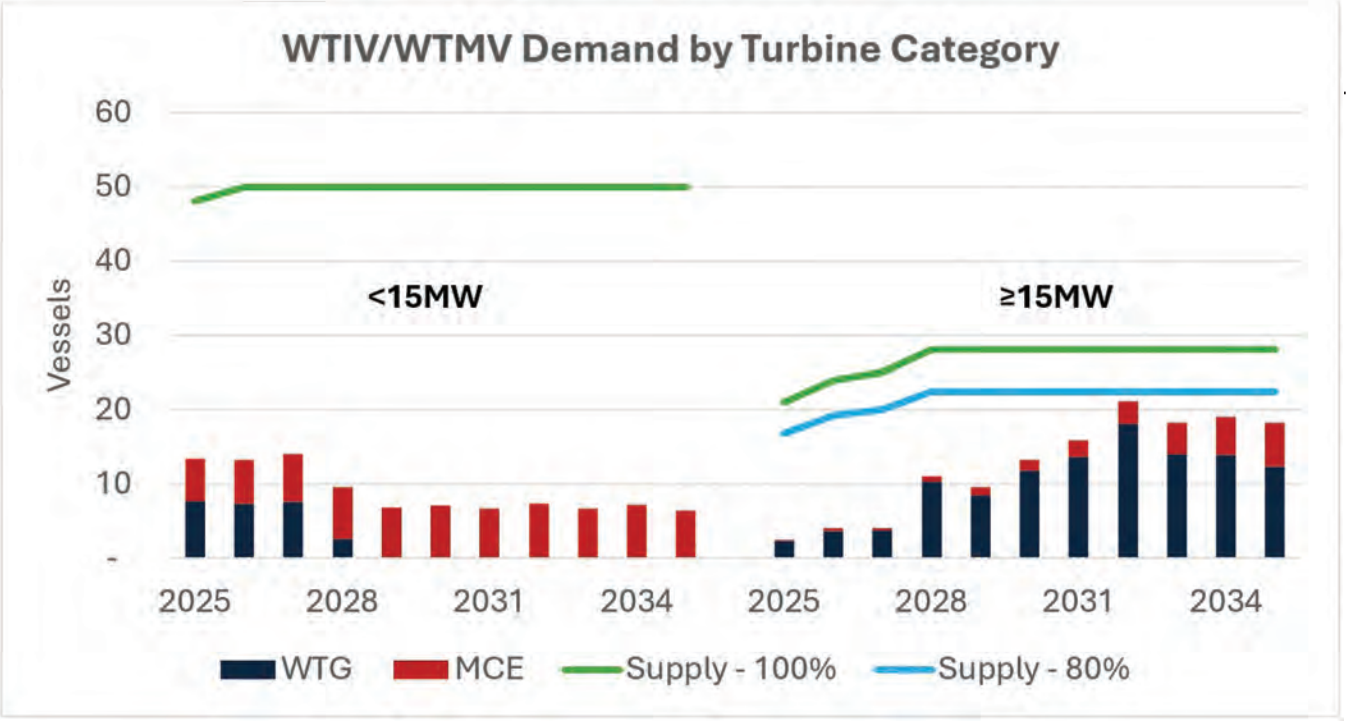


the forecast, including:

- Timing and amounts of auctions of currently active markets and new players. For example, Germany has recently delayed its 2026 auction to 2027.
- Grid connection availability.
- Speed of adoption of larger turbines. The two leading western OEMs are currently focusing on turbines of ≤15MW, although Siemens is reported to be discussing commercializing its 20MW+ model for projects under construction in the next decade. Several Chinese OEMs are developing 16-25MW offshore turbines and a couple of discussing factories in the UK and Europe.
- Acceptance of Chinese OEMs and scale of entry of Chinese installation and maintenance vessels to global the market. Chinese foundations, subsea cables and, to a lesser extent, turbines already feature in the European and EAPAC markets. Wide scale adoption of Chines turbines including planned European factories is still subject to significant political debate.
- Cabotage/preference to build & operate domestic vessels, particularly in EAPAC and NAM.
- Vessel productivity through technical capabilities of older/smaller vessels and newer/more capable vessels. New generation vessels achieve productivity of up to more than 40% compared to upgraded earlier generation vessels.
- Changing economic returns (inflation, exchange rates, etc.).
- Changing political support for offshore wind, as seen in the USA but it also witnessed in several other offshore wind markets.
- Oil & gas demand for WTMVs, HLCVs and HLSSs for construction, intervention and maintenance.
- Timing of industrialization of floating wind, which has generally moved further into the 2030s.
- Black swans.

ICEBREAKERS

An increasingly important shipbuilding & ship machinery sector

By Philip Lewis, Intelatus

An aging fleet of icebreakers, active in the Arctic, Antarctic, Baltic and several inland seas and rivers, coupled with increased interest in Polar research, shipping, asserting and protecting territorial claims, tourism, and subsea energy and minerals exploitation provides the foundations for new icebreaker design and build opportunities.

These are the findings of a new report on the global icebreaker fleet by Intelatus Global Partners.

The comprehensive report analyzes the global icebreaker market, highlighting increasing geopolitical, scientific, and commercial demand for Polar and sub-Arctic-capable icebreaking vessels, with Russia and Canada dominating the active year-round Polar icebreaking segment and Finland and Russia leading the in-service Summer/Autumn Polar and year-round sub-Arctic/Baltic and inland segment. Western, Asian and South American nations are expanding icebreaking fleets to secure Arctic and Antarctic access, led by Canada, Russia and the USA.

Key Market Drivers

The importance of icebreaking construction activity is increasing due to:

- **Climate change is opening Arctic waters.**
- **The expansion of Arctic shipping routes, offering shorter journeys than Panama and Suez Canal transits.**
- **Rising geopolitical competition in polar regions.**
- **Growing scientific research in Antarctica and the Arctic.**
- **Increased interest in energy and mineral exploration, such as Russia's oil & gas exploration**

& production activity in the Arctic.

- **Aging existing fleets active in the Polar regions,the Baltic and inland river systems.**

As a result, governments are investing in and planning more than 70 new icebreakers to support commercial shipping and for security, logistics, and research.

Classifying Icebreakers

Icebreakers are classified by ice-strength and operational capability, often using Polar Class (PC - the most powerful icebreakers), the Finnish-Swedish Ice Class Rules (FSICR) or regional classifications.

Typical roles of icebreaking vessels include:

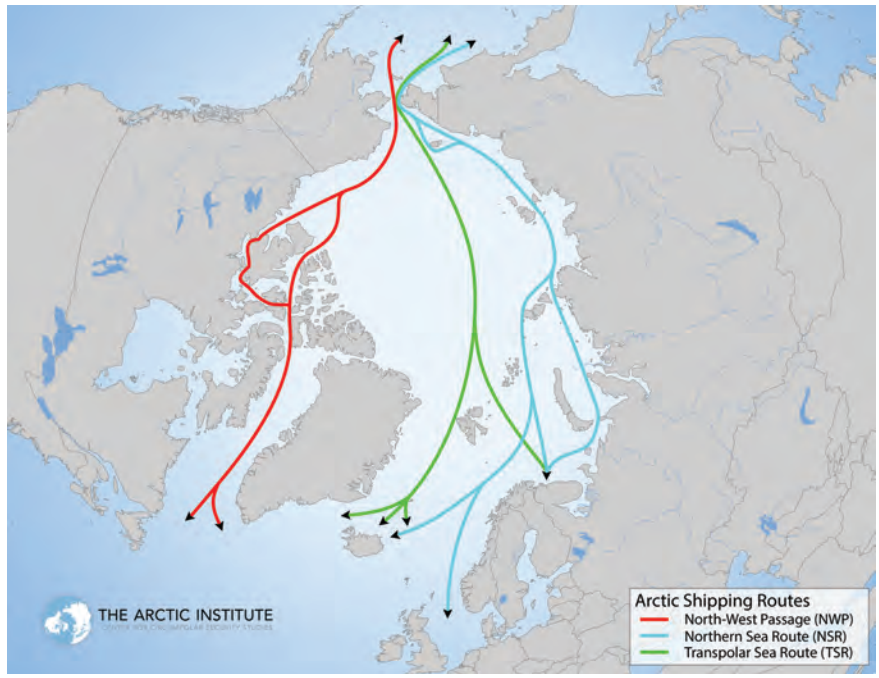
- **Breaking sea ice (clearing ports and shipping channels, freeing ice-bound vessels, towing vessels, etc.).**
- **Escort (clearing paths ahead of commercial vessels).**
- **Research and scientific missions, multipurpose functions (logistics and search & rescue).**
- **Security and border patrol.**

Country Highlights

Russia operates the world's largest and most powerful icebreaker fleet and is currently the only country operating nuclear-powered icebreakers that are critical for maintaining the Northern Sea Route (NSR). In addition to Arctic icebreakers, Russia also operates Baltic, Far East and inland river icebreakers. Russia continues expanding fleet capacity, developing domestic building capacity because of international sanctions. Subject to the eventual lifting of international sanctions, the Russian market presents an opportunity to support icebreaker fleet renewal programs and leverage the cost & time benefits associated with operating ships on the NSR (to Europe, China, Japan, South Korea and Taiwan).

Canada has a large Arctic coastline requiring significant icebreaking capacity. Canada's icebreaking fleet is operated mainly by the Canadian Coast Guard, which is building new Polar and Arctic icebreakers to replace or upgrade aging capacity and build security capabilities. Canada's icebreaker fleet renewal and expansion (over 20 icebreakers under construction or on order) is a key element of Canada's National Shipbuilding Strategy (NSS) which is revitalizing Canada's shipbuilding and ship repair segment.

The USA currently operates a limited Polar ice-



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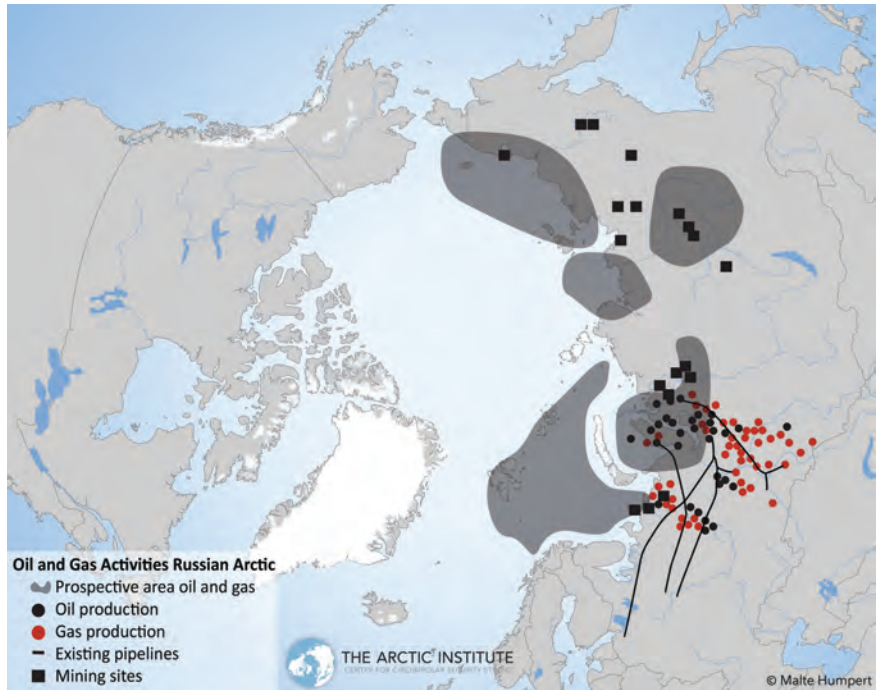

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breaker fleet and an aging fleet of Great Lakes icebreakers. The U.S. has ordered the construction of up to 14 Polar and Arctic vessels for the U.S. Coast Guard (USCG) to address Arctic security concerns (mainly from Russia and China). As with Canada, the U.S. intends that icebreaker construction forms part of a wider national plan to reinvigorate domestic shipbuilding, supported by ICE Pact partners Canada and Finland.

Outside of Russia, Finland, Sweden, Estonia, Latvia and Germany operate icebreaking fleets primarily for supporting Baltic Sea winter navigation. The Baltic fleets are generally aging and require replacement over the next 5-10 years. Finland and Sweden experience the most severe Baltic ice conditions and have developed the Finnish-Swedish Ice Class Rules (FSICR) to which the major classification societies align for Ice Class vessels. The Finnish icebreaker supply chain (design & engineering firms, shipyards, specialist contractors and equipment & machinery manufacturers, particularly power & propulsion, electrical backbones, interiors and navigation) is world leading in track record and experience.

Other European nations, such as France, Germany, Italy, Norway and the UK maintain small Polar capable mainly research icebreakers and have mostly completed or are in the process of fleet renewal programs.

Several Asian countries are developing Polar icebreaker capability, led by China that is declares itself to be a near Arctic country. China is expanding its Polar research fleet to support existing and develop new commercial shipping routes in the Arctic and the exploration & production of energy and mineral resources. China is planning increasingly powerful icebreaker capability, including nuclear icebreakers, developed with the support of Russia. Despite maximizing local content, the growing Chinese market offers an opportunity for European designers and specialist ship machinery and equipment manufacturers.

Japan and South Korea are both building new Polar research icebreaker vessels and South Korean yards have recently won the Swedish tender to build a new Baltic escort icebreaker in competition with Finnish and Norwegian yards.

Argentina, Australia, Chile and South Africa all maintain icebreaking capacity to support Antarctic bases and research. Argentina is currently planning a new Polar class vessel.

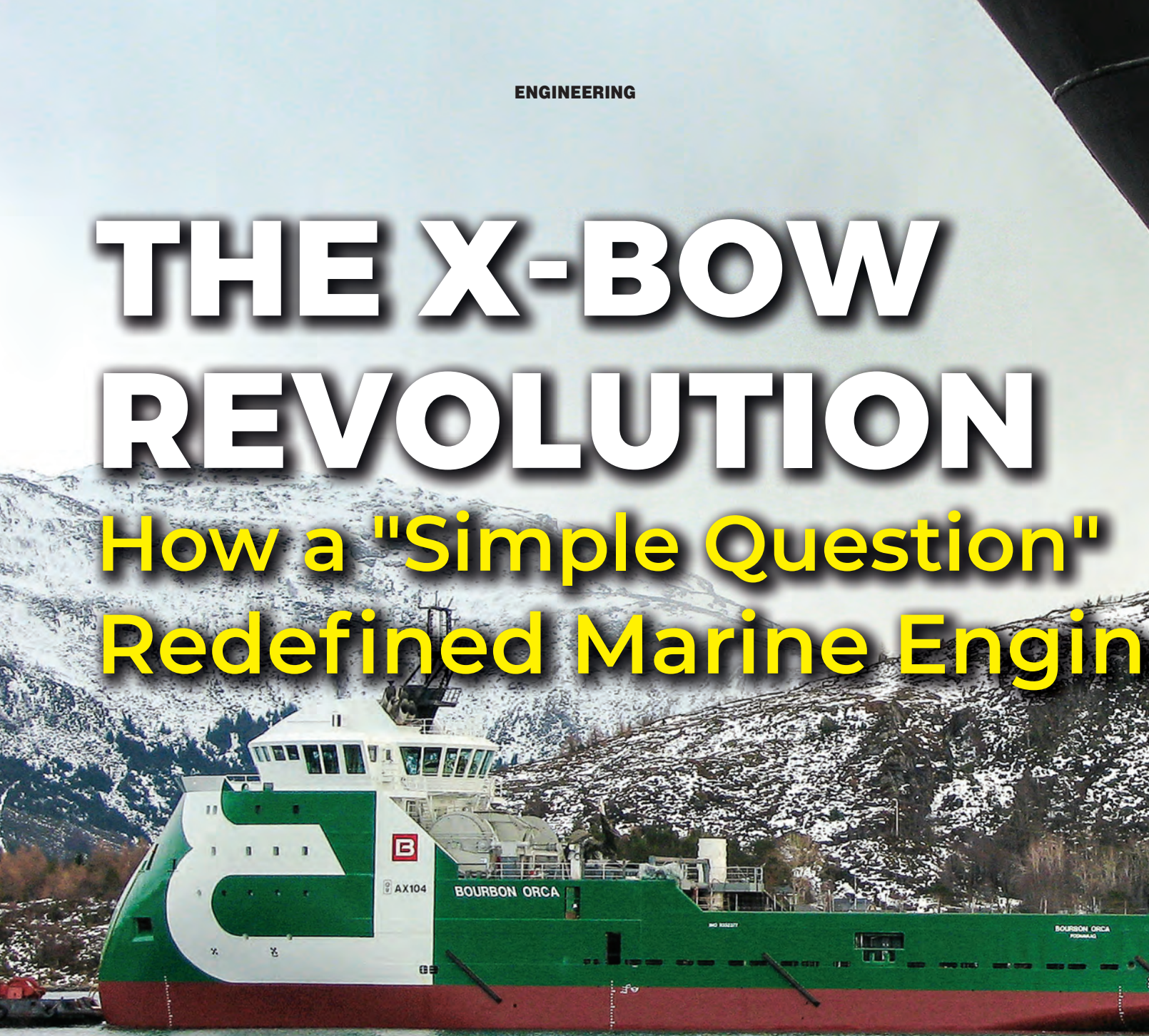
A Positive Trend

Overall, the global icebreaker fleet is expected to grow, particularly among Arctic, near Arctic and Antarctic nations and strategic powers, providing opportunities to design and engineering firms, shipyards and ship machinery & equipment manufacturers. Over 20 Polar Class (or Polar Class equivalent) are currently under construction with at least 45 additional icebreakers on order or planned for the next 5-10 years.

For more information about the Global Icebreaker Report, please contact ***philiplewis@intelatus.com***

THE X-BOW REVOLUTION

How a "Simple Question" Redefined Marine Engin



Two decades ago, the **ULSTEIN X-BOW** *redefined naval architecture, sparking a global success story for Ulstein Group. This is the story behind that revolutionary hull — and the philosophy of Chair of the Board* **Tore Ulstein** *on fostering a culture where creativity and audacity are hardwired into the company's DNA. It all began with a simple question:* ***"Why does the bow actually look like that?"***

By Josefine Spiro

Photo credit: Tony Hall

"None of us could give a proper answer," admitted Tore Ulstein.

The Chair and co-owner of Ulstein Group smiled at the memory of that 2003 workshop—the catalyst for a new era. This turning point came five years after his family had sold their original design business, known for the UT designs (short for Ulstein Trading). Following the 1999 sale, Tore's father, Idar Ulstein, announced the group would build its in-house design capabilities from scratch. Tore—an engineer with a Ph.D. in marine hydrodynamics—was tasked with leading the new team. In 2002, this unit became the subsidiary Ulstein Design AS.

"Our strategy was clear from day one: we had to differentiate," Ulstein explained. "If we had tried to compete with the established UT designs by simply matching them, we would have always been playing catch-up. Instead, in 1999, we chose to lead through innovation. We wanted customers to choose us because we brought something entirely new to the table."

To realize this vision, Ulstein initiated a workshop in 2003 with the Oslo-based agency Abry Design. Choosing a team with no maritime background was a deliberate move. Their "outsider" perspective prompted the question; "Why does the bow look like that?"—along with a series of other seemingly "dumb" inquiries that challenged the status quo.

"What they did know a lot about, however, was the design process itself," said Ulstein. Through these interdisciplinary sessions, the designers were challenged to look beyond the industry's traditional horizon. Following the workshops, Tore Ulstein was shown a sketch by the then 33 year old hull designer Øyvind Gjerde Kamsvåg that he found particularly intriguing. The concept was brought into the dialogue between the two teams, where it piqued their collective curiosity and challenged a century of naval tradition.

Surprise in the Tank

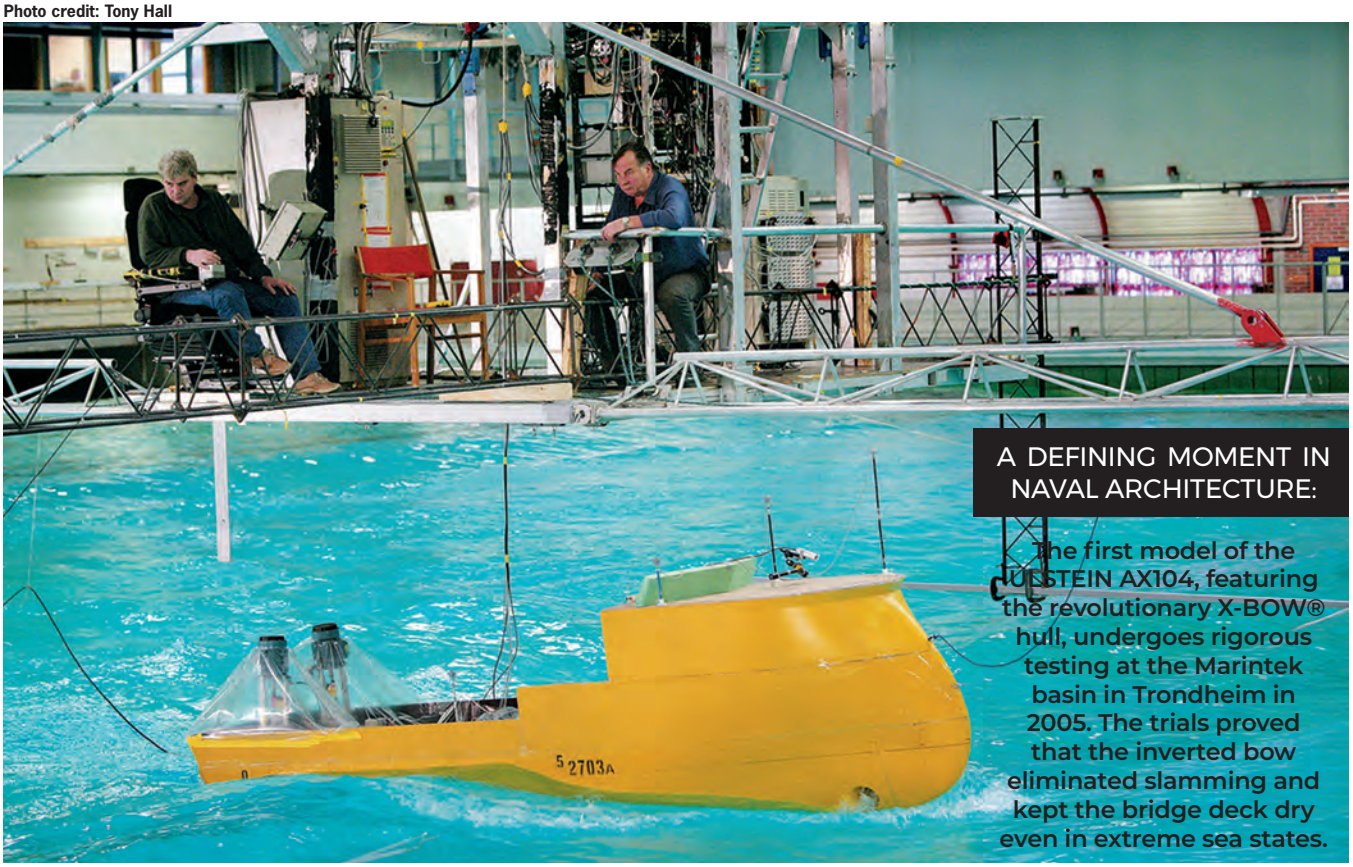
By 2005, the X-BOW® concept was ready for its first trial in the model tank at Marintek (now SINTEF Ocean) in Trondheim. At the time, scepticism from industry experts was palpable.

"The researchers had never seen anything like it," recalled Tonje Øyehaug Ruud, Ulstein Group's Head of Communications. "

THE VISUAL EVOLUTION OF A BREAKTHROUGH:

The Bourbon Orca, the first vessel to feature the X-BOW® design, alongside a traditional hull profile. Launched in 2006, the vessel immediately piqued industry curiosity by defying a century of naval tradition.

Photo credit: Tony Hall



The researchers in Trondheim took precautions before starting the machinery. "They mounted a Styrofoam plough on top of the model and wrapped the measuring equipment in plastic," Ruud remembered. "At the time, they had little faith in the concept."

When the tests were completed, however, the warnings proved baseless. While researchers had expected high waves to climb the hull and impact the bridge deck, the model remained stable and buoyant. The slender bow allowed the hull to move gently through the waves without slamming, and the water was displaced along the side instead of being thrown upward and outward. In the end, there was not a single drop of water on the protected equipment.

From Invention to Innovation

"An invention only becomes an innovation when it succeeds commercially," Ulstein emphasized. "The X-BOW didn't spring from a finished problem definition, but from pure curiosity and a willingness to take detours. And then, you need a customer who dares."

That customer was Bourbon Offshore Norway. "They were brave," Ulstein added. "They challenged us based on some sketches they had seen in our customer magazine. Their primary motivation was the desire to differentiate themselves."

In 2006, the first X-BOW vessel, Bourbon Orca, was launched from the shipyard in Ulsteinvik, Norway. What skeptics feared would be a technical failure became a prize-winning triumph. The design went on to earn "Ship of the Year" honors in both Norway and abroad in 2006, as well as the prestigious "Engineering Feat of the Year" award.

While the awards provided confidence, the true validation came from those working at sea. The ship's steward reported back enthusiastically: "I no longer have to call the bridge to ask them to slow down when I'm making dinner; the pots stay on the stove!"

Another striking proof of the hull's superiority surfaced on YouTube in 2007. A mobile phone video, filmed from the bridge of a supply ship in the rough North Sea, captures the contrast: As a traditional vessel hammers against the waves—crashing into the water, forced to slow down significantly—the Bourbon Orca appears in the frame. It glides through the swells without the characteristic slamming, effortlessly passing the conventional ship.

Resilience & Pivot

Since 1999, Ulstein Design & Solutions has delivered 169 designs. This portfolio includes 122 vessels featuring the original X-BOW, a number that rises to 132 when including its successors, the X-STERN and TWIN X-STERN.

But the journey was not always smooth. When the oil crisis hit in 2015, the maritime landscape was devastated; many

Photos on this page: Josefine Spiro/JoDa Media

LEADING THROUGH INNOVATION:

Tore Ulstein outlines the three non-negotiable criteria for maintaining a creative edge: competence (knowing something), drive (wanting something), and permission (being allowed).

Chair of the Board **Tore Ulstein** and Head of Communications **Tonje Øyehaug Ruud** discuss the collaborative culture that fostered the X-BOW® revolution.

large, publicly listed companies went bankrupt or were forcibly merged with more financially stable players.

Ulstein reflected on the choice they faced as a family-owned company when the market suddenly vanished. “We could have closed down, right? We could have said we’re done. But instead, we chose to invest in finding new markets.”

This strategic pivot involved a staggering 1.2 billion NOK—a commitment that included several years of losses as the company pushed into new markets. While a massive sum, it eventually led to the successful export of Ulstein designs into new segments, ranging from offshore wind and cable-laying vessels to expedition cruise ships and yachts.

“Having leadership and owners who provide the room and security to experiment and ‘play’ a little’ is crucial,” Ulstein added. “Such a turnaround would be almost impossible in an organization governed by short-term corporate thinking and quarterly results.”

Tore Ulstein highlights the group's commitment to sustainable technology, such as hybrid propulsion systems, which evolved from the same innovation-led strategy established in 1999.

Photo credit: Josefine Spiro/JoDa Media

By 2024, the strategy bore fruit as Ulstein Group returned to profitability.

The Art of Stimulating Creativity

How does Ulstein maintain this creative edge? The chairman points to three non-negotiable criteria: you must know something (competence), you must want something (drive), and you must be allowed (permission).

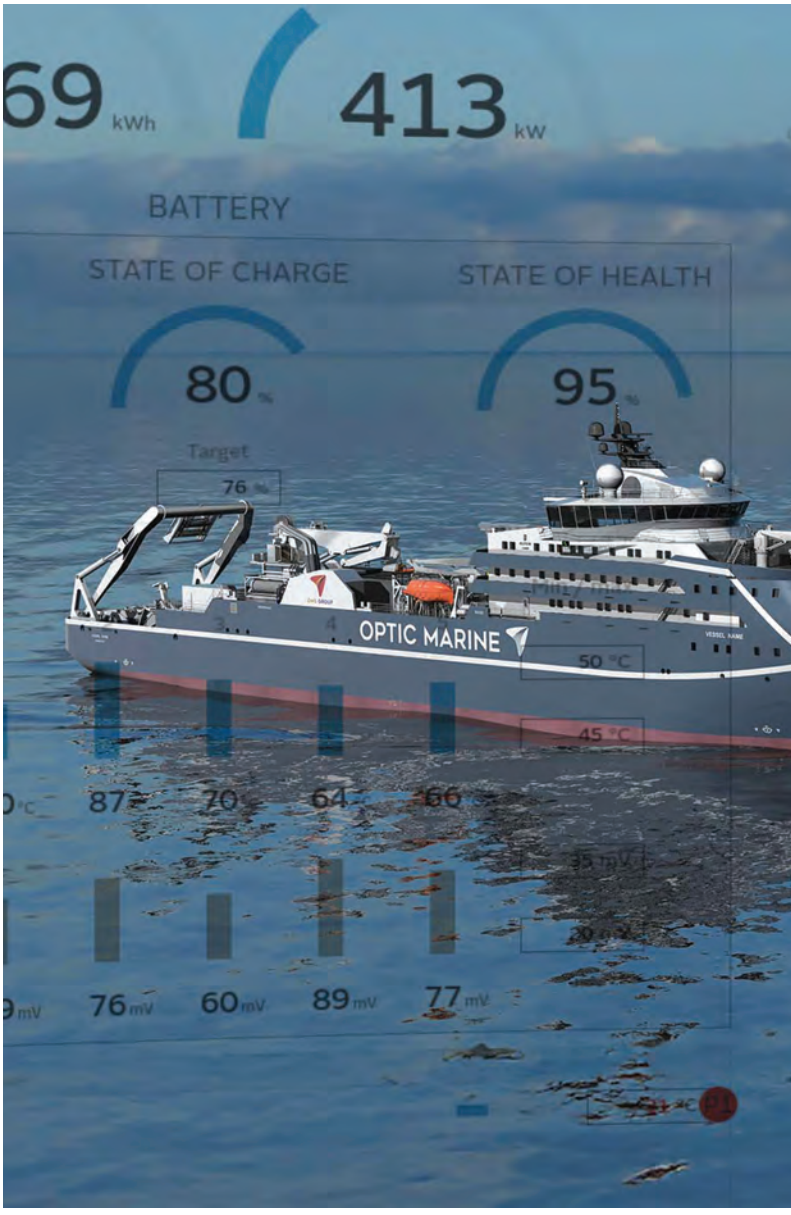
"You need the competence and the inner drive, but the deciding factor is having owners who give you the space to experiment," he explained. He describes this as a balance between Yin and Yang—structure for productivity, but protection for "creative chaos."

An example of this playfulness is the ULSTEIN THOR, a visionary concept for a thorium-powered floating power station unveiled at the Seatrade Cruise Global convention in Miami in 2022. Designed as a mobile charging hub for electric fleets in sensitive regions like Antarctica, it eliminates the need for individual ships to return to port for fuel, dramatically reducing the industry's environmental footprint.

"We knew the technology wasn't ready, but we chose to go public to bring the industry along on the journey and strengthen our brand as an innovator," Ulstein said.

Digital Horizons

The innovative spirit that began with the Bourbon Orca continues to open doors in new markets. Ulstein recently signed a contract with Malaysia's OMS Group for the building of two next-generation cable-laying vessels for 2028. These SX252 designs incorporate the X-BOW® to ensure more comfortable motion for both the crew and the delicate cable equipment, alongside a reduction in fuel consumption. Furthermore, the enclosed cable hangar protects sensitive fiber-optics from the elements and significantly improves the working conditions for those on board.

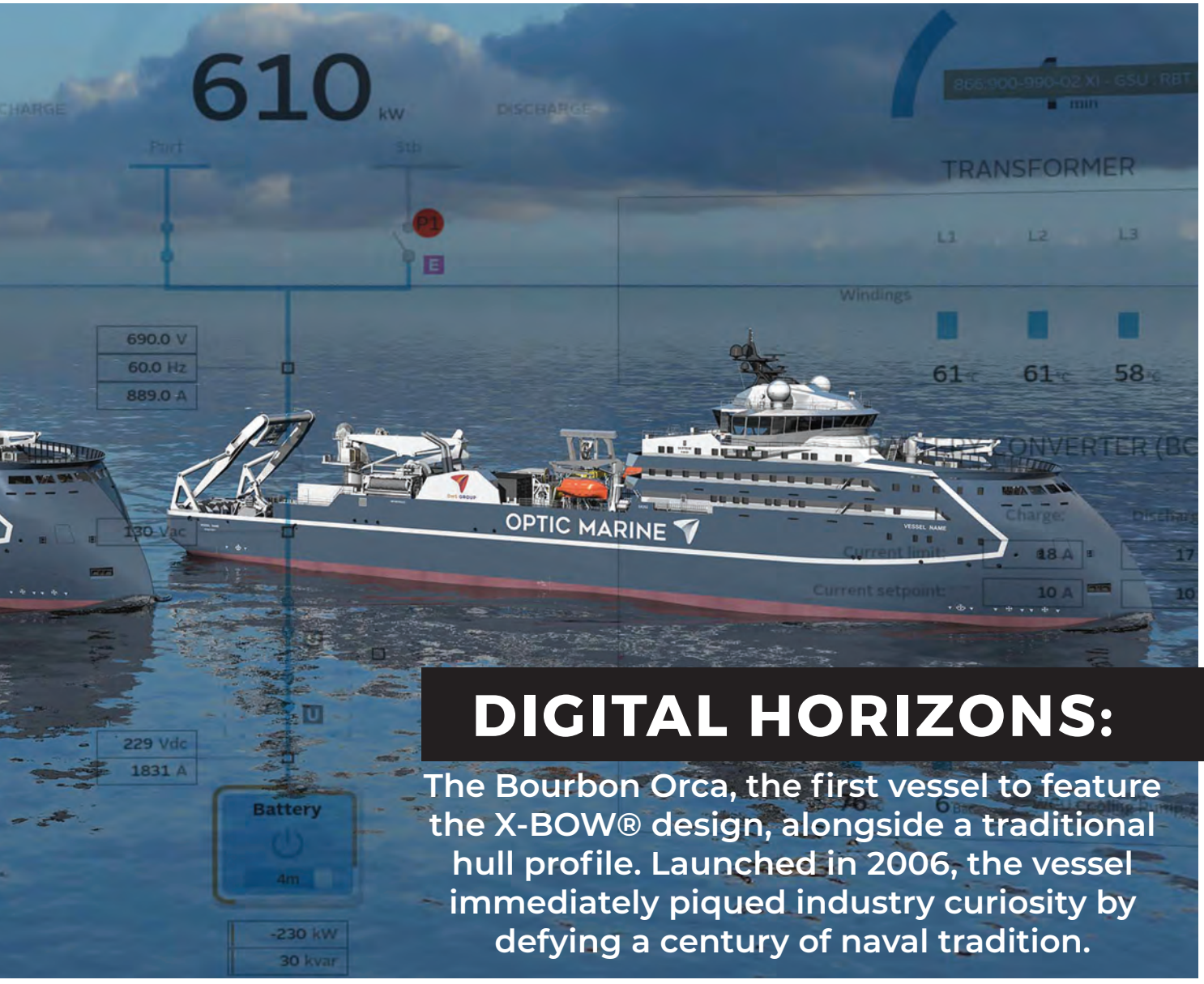


But when asked about the next "big nut to crack," Ulstein looks beyond hull shapes.

"The next frontier is digitalization and Artificial Intelligence (AI)," he said.

By harvesting fleet data through proprietary systems, Ulstein aims to support real-time decisions to reduce emissions and enhance safety.

For Tore Ulstein, the mindset remains exactly as it was in 2003: the courage to challenge the established. "If we only tried to be as good as the others, we would always be a step behind," he concluded. "We must have the desire to challenge the status quo."



DIGITAL HORIZONS:

The Bourbon Orca, the first vessel to feature the X-BOW® design, alongside a traditional hull profile. Launched in 2006, the vessel immediately piqued industry curiosity by defying a century of naval tradition.

Photo credit: Ulstein Group ASA

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Project Reference

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- UFE Type 220 x 7 Units
- Steam capacity : 220 t/h
- Steam Pressure: 69 barg
- Steam Temperature: 480 degC
- Fuel: Gas or Diesel oil
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- Weight : approx. 500 ton per 1 unit
- Certification/Applicable rule : LR, NR13, IECEx

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Certification:	Major classes such as LR, ABS, NK, BV, DNV/GL
Rules:	NR13, IECEx, API

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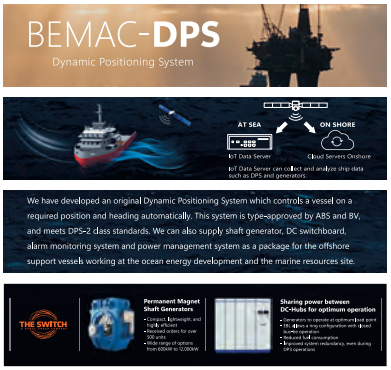
- Offshore Technology Conference (Houston,USA)
- Posidonia 2026 (Athens, Greece)
- SMM Hamburg 2026 (Hamburg, Germany)



ClassNK

ClassNK has launched a new service,"ClassNK Fleet Cost Simulation". This new service estimates the cost impact of GHG emission reduction regulations including EU-ETS and Fuel EU Maritime on behalf of clients. This service provides the "ClassNK Fleet Cost Calculator," a calculation tool that simulates future cost fluctuations due to fuel conversion, along with a "Cost Estimation Report" that summarizes the total cost outlook for the entire fleet through graphs and tables. This can significantly reduce workload for cost estimation and documentation, enabling clients to obtain reliable cost data for use in business planning.

Courtesy Austal

Alternative-Fuel Inflection Point

Gotland Horizon X and the Port Hydrogen Question

Gotland Horizon X *is a 130-meter, 18,300-gt, 1,500-passenger, 400-car, 30-knot catamaran now under construction at Austal for delivery in summer 2028. Positioned as hydrogen-ready from day one, the vessel is not a technology demonstrator. It is a frontline Ro-Pax ferry designed to maintain timetable integrity while opening a credible pathway toward hydrogen. For ports and fuel suppliers, that distinction matters. Horizon X is less about a single vessel and more about what it signals:* ***future-fuel ships are coming that will demand corresponding evolution ashore.***

By Greg Trauthwein

Jonas Moberg, Head of Newbuildings at Gotlandsbolaget, frames the project as part of a long-term strategy rather than a one-off experiment. “We have kept our compass,” Moberg says. The company builds ships to operate them for decades, not to flip them. That mindset forces a hard question: what will fuel economics, infrastructure and regulation look like 10, 15 or 20 years from now? No one can answer that with certainty. So Horizon X is built around flexibility.

The vessel will enter service capable of operating on LNG and diesel. But its powerplant architecture is designed to transition toward 100% hydrogen when infrastructure allows. In practical terms, that means the ship can operate commercially from day one while positioning itself — and its home ports — for the next phase of marine fuel evolution.

That sequencing is deliberate. Moberg points to Gotland’s 2009 decision to invest in gas-powered vessels before LNG infrastructure was fully mature. “Without having the infrastructure in place for fueling, we took a bold decision and we built the ships,” he says. They entered service in 2018 and 2019 and have operated successfully, blending LNG and biogas where available. Horizon X follows the same philosophy: move forward, but do not strand the asset.

WHY BATTERIES DIDN’T FIT

The Gotland route between mainland Sweden and Gotland Island is roughly 80 nautical miles, requiring high-20-knot service speeds — about 28.5 knots — to maintain the three-hour crossing that defines the product.

Batteries were evaluated. But the energy demand of a large high-speed Ro-Pax vessel makes full battery propulsion impractical at this scale. The weight penalty alone challenges performance, and charging infrastructure at the required magnitude is, for now, unrealistic.

That pushed the design team toward fuel-based solutions — and ultimately toward hydrogen as the long-term objective.

But hydrogen cannot be viewed in isolation from the vessel’s operational needs. The ferry must deliver 30-knot performance, carry 1,500 passengers and 400 cars, and operate year-round. Emissions reduction cannot come at the expense of service reliability.

A COMBINED-CYCLE FERRY POWERPLANT

At the heart of Horizon X is a propulsion system derived from Siemens Energy’s Ocean Green Hybrid Combined Cycle concept introduced in 2022.

Each hull houses a combined-cycle plant built around the Siemens Energy SGT-400 gas turbine, producing 13 MW per unit. Waste heat from the turbine exhaust is captured by a once-through steam generator (OTSG), producing steam that drives a 5.3 MW condensing steam turbine.

The key design decision: both gas and steam turbines feed mechanical drive waterjets via gearboxes rather than gener-

In 2009, Gotland invested in gas-powered vessels before LNG infrastructure was fully mature. ***“Without having the infrastructure in place for fueling, we took a bold decision and we built the ships.”*** *The ships entered service in 2018 and 2019 and have operated successfully, blending LNG and biogas where available. Horizon X follows the same philosophy: move forward, but do not strand the asset.*

Jonas Moberg,
Head of Newbuildings,
Gotland Tech Development

ating electricity for electric propulsion. That mechanical approach reduces weight and maximizes efficiency — critical in a high-speed catamaran.

Total shaft power reaches 36.4 MW, with overall efficiency approaching 50%. For comparison, earlier generations of gas turbine ferries in the 1990s operated closer to 30–35% efficiency — insufficient for modern economics.

For Moberg, combined cycle was non-negotiable. Without it, fuel efficiency would not have supported the business case. Michael Welch of Siemens Energy emphasizes the maturity of the SGT-400 platform. Originally launched in 1997 for oil and gas and co-generation markets, the turbine's twin-shaft configuration allows variable output speeds — well suited for waterjets. Its high exhaust temperature makes it particularly effective in combined-cycle configurations.

The result is a propulsion system optimized not only for peak output, but for part-load efficiency — a critical factor in real-world ferry operations where power demand fluctuates.

HYDROGEN-READY: WHAT THAT MEANS

"Hydrogen-ready" is often used loosely in shipping. In Horizon X's case, it is tied to a defined development pathway.

Siemens has been working on hydrogen combustion in the SGT-400 for more than a decade. According to project documentation, the platform achieved 100% hydrogen operation in 2023 under the EU-funded HYFLEXPOWER project, with further testing ongoing.

The turbine features a Dry Low Emissions (DLE) system and is designed to meet IMO Tier III NOx limits without SCR. A new combustor configuration allows operation on 100% hydrogen, 100% natural gas/LNG, or blends between, with retrofit potential and minimal changes to the turbine core.

But Moberg is clear: the engine is only part of the equation.

"If you're talking hydrogen, you need a complete arrangement in order to get it on board," he says.

Hydrogen's small molecular size, storage challenges and safety requirements mean that fuel handling systems define practical fuel flexibility. Designing a ship capable of storing and managing hydrogen — whether liquid or pressurized — requires careful integration with classification societies, port authorities and regulators.

The vessel's ability to transition fuels does not eliminate the need for shore-side readiness. It amplifies it.

PORTS AS THE NEXT BOTTLENECK

Today, ordering diesel is simple. Ordering hydrogen is not.

The transition from LNG to hydrogen introduces a new layer of complexity for ports:

- Dedicated storage infrastructure
- Safe transfer systems
- Regulatory frameworks
- Supply chain reliability
- Crew training and emergency protocols

Horizon X highlights a critical point for port operators and energy suppliers: ships can be built ahead of infrastructure, but only up to a point. If hydrogen-ready vessels enter service without parallel port investment, the transition stalls. Moberg acknowledges this reality. The ship will operate conventionally until hydrogen bunkering becomes viable. That means LNG and diesel capability remain essential in the near term. However, by committing to hydrogen readiness now, Gotland effectively signals to ports and energy providers that demand is coming. In fuel supply chains, credible demand often drives investment.

ENGINEERING CHALLENGES AND APPROVALS

Adapting a land-based turbine for marine use required extensive collaboration with DNV for type approval of the turbine core, package and control systems. Combined-cycle integration presents additional complexity. Weight and volume are critical in a high-speed catamaran. The OTSG was selected specifically for low weight and compact footprint.

Fuel handling presents further engineering hurdles. LNG operations bring boil-off management issues, and high-pressure fuel requirements add design complexity. Hydrogen introduces even greater challenges, particularly in combustion dynamics and flashback prevention.

These are not incremental adjustments. They are system-level integration exercises.

THE COST OF FLEXIBILITY

Moberg estimates a capital cost premium of roughly 25% compared to a more conventional vessel of similar capacity.

Under pure head-to-head economics, that premium would be difficult to justify. But Horizon X is part of a broader fleet strategy with strong seasonal demand peaks. High capacity and high speed unlock value in summer operations while future-proofing the asset for a 25-year lifecycle.

"If we would have gone on a fuel cell version we would have been more locked in," Moberg says. "The flexibility here is key." Fuel cells might offer efficiency benefits, but they risk technological lock-in. A multi-fuel turbine platform provides optionality — critical in an era of regulatory uncertainty and volatile fuel pricing.

PART-LOAD EFFICIENCY: A PRACTICAL INSIGHT

One of Moberg's most significant observations concerns part-load performance. Traditional gas turbines lose efficiency sharply away from full power. Combined-cycle configuration flattens that curve. "Efficiency actually is almost flat from 100% down to 50% or lower," he notes.

For ferry operators, that changes the calculus. Ships rarely operate at full power continuously. Designing for real-world operating profiles — not theoretical peak conditions — is essential.

A SIGNAL TO THE FUEL SUPPLY CHAIN

Horizon X does not assume hydrogen infrastructure will appear overnight. It does something arguably more important: it commits to a vessel architecture that can absorb hydrogen when ports are ready. For maritime fuel suppliers, the message is clear. Demand for hydrogen bunkering will not originate from speculative small craft or isolated pilot projects. It will come from large, high-capacity vessels operating on fixed routes with predictable schedules. That predictability — daily calls, defined volumes, stable service life — makes ferry operators ideal early adopters of new fuels. If ports align investment with such operators, the hydrogen supply chain can scale in measured, commercially grounded steps.

A FUTURE-FUELS BLUEPRINT

Horizon X is not simply a fast catamaran. It is a strategic bridge between LNG-era decarbonization and a hydrogen-capable future. The vessel maintains timetable discipline, preserves operational reliability and introduces a propulsion architecture that avoids technological dead ends.

For ports, fuel suppliers and maritime stakeholders, the takeaway is straightforward: alternative-fuel vessels are no longer theoretical. They are entering construction.

The question now shifts from whether ships can burn hydrogen to whether ports can supply it.

Gotland Horizon X suggests the clock is ticking.

By the Numbers: Gotland Horizon X

Type: High-speed Ro-Pax catamaran, multi-fuel, hydrogen-ready
Length: 130 meters
Beam: 30.5 meters
Gross tonnage: 18,300
Speed: 30 knots
Capacity: 1,500 passengers and 400 cars
Crossing: ~140 km / 80 nm, ~3 hours
Power into waterjets: about 36 MW (interview) / 36.4 MW (technical paper)
Builder / contract: Order placed February 2025 with Austal
Delivery / entry into service: Moberg cites summer 2028 delivery; the technical paper targets entry into service in 2029
2 x Siemens Energy SGT-400 gas turbines (one per hull), 13 MW each (guaranteed at 10–20°C ambient)
Waste heat recovery: once-through steam generator (OTSG), up to 55 bar, 510°C design inlet temp
Steam turbine: 5.3 MW condensing
Total shaft power to waterjets: ~36–36.4 MW
Overall fuel efficiency: close to 50%
Drive concept: gas turbines drive steerable waterjets; steam turbines drive booster waterjets (mechanical drive via gearboxes)
Electrical supply: 1 MW PTI/PTO on main gearboxes + BESS + auxiliary gensets; shore connection for cold lay-up
Emissions: Tier III NOx compliance (<2 g/kWh E2/E3) without SCR; methane slip expected <0.014 g/kWh (50–100% MCR)
Future fuel pathway: retrofit combustor for 100% hydrogen capability; blends supported

John McDonald, Chairman & CEO, ABS

'Born into Maritime'

All images courtesy ABS

Many claim to have 'saltwater in their veins,' but all you have to do is walk into the corner office of John McDonald, the new Chairman and CEO of the American Bureau of Shipping (ABS), to see that him saying "I was born into maritime" is not hyperbole. The first thing that greets you is a Dusan Kadlec nighttime painting of the Brooklyn Bridge, a painting that has special meaning to him as he remembers being on a boat in New York harbor in 1983, his father USCG Captain of the Port of New York at that time, watching the fireworks over the bridge for the celebration. There are maritime executives who find the industry by accident, then there are those that are destined to be in it from birth; McDonald is the latter. He takes the helm of ABS at arguably one of the most exciting yet tumultuous times in maritime history, as it is an industry facing multiple inflection points in terms of decarbonization and fuel transition, automation and autonomy, digitalization, robotics and seafarer training, to name but a few. McDonald discussed this and much more in his inaugural maritime CEO interview with *Maritime Reporter & Engineering News* from his office in Houston.

By Greg Trauthwein

The majority of people have jobs; many have careers; but John McDonald is one of the select that has a job, a career and a mission. The new Chairman and CEO of ABS is not someone who discovered the industry late, or chose it strictly as a career move, or found his way into it through some lateral jump from finance, consulting or technology. He talks about maritime the way many people talk about family: It was there from the start; it shaped the setting and the routine; it shaped the people around him. In his telling, life, career and the waterfront are one in the same.

That matters because as of January 2026 McDonald took the helm at ABS, the world's largest classification society and one of the most influential organizations in global shipping at a time when the industry is juggling more change than at any point in recent memory. ABS sits at the intersection of classification, safety, digitalization, regulation, energy transition, autonomy, cyber risk, shipyard modernization, and as of early 2026, mariner training too. It is a broad palette of mutual priorities for certain, but it all comes back to the simple premise of ships operating safely, efficiently, effectively and globally.

ABS is a technical organization in a highly practical business. With McDonald, what stands out is not theatrics or chest-thumping. It is that he views the job through the lens of a lifelong mariner who knows that the future only matters if it can be made safe, useful and workable.

"We have a very strong safety culture; it's built into us, not only with our people, but in everything that we do as an organization."

"Born into Maritime"

McDonald says he was born into maritime, and in talking to him, this is not a throwaway line.

His father was a Coast Guard captain, and McDonald essentially grew up on Governor's Island in New York, literally surrounded by vessels, maritime safety and the working harbor. Summers were spent on the Maine coast, where his family's ties ran deep and where life on the water was not recreation so much as routine. He lobstered as a kid. His brother went on to the Coast Guard Academy and later retired as a captain. Maritime, in other words, was not a profession outside the front door. It was and is the family business and the household language.

He has three children who have grown up at ABS, in Korea, London, Singapore and many other places, and those experiences have shaped them into the people they are today. After he graduated Maine Maritime Academy, McDonald, started sailing and worked several years at sea. He even met his wife courtesy of maritime when he signed on to work aboard a cruise ship in Hawaii. She was the purser signing him aboard. For two years he stayed with that work before family life and the realities of shore-side stability pulled him in another direction. He joined ABS in 1996, and the rest is a long arc through survey, operations, business development and executive leadership.

In addition to the Kadlec painting, McDonald's office houses more clues that belie his deep maritime connection. A model of the USCGC Eagle, the Coast Guard's training ship upon which both his father and brother sailed; where his dad's retirement ceremony was held on the Thames River and where he, as a

young man, met another influential ABS leader, Bob Somerville.

Another painting, behind his desk, is a scene of New York Harbor that includes Fort William on Governor's Island, which served as his kindergarten. For McDonald, these things are both decorative and anchors to a life spent inside the orbit of maritime service, safety and tradition. This personal history is important it gives depth, breadth and context to not only McDonald's past, but helps to explain the tone he brings to ABS now. He is not trying to reinvent the mission of class. He is aiming to make sure the mission remains relevant as the operating environment changes around it.

ABS Today

When taking the 50,000-foot view of ABS today, McDonald points first to the scale of the organization and the confidence that owners and builders continue to place in it. He points to a classed fleet measured in the hundreds of millions of gross tons, thousands of vessels and a sizable orderbook.

But he does not linger on size for the sake of size, rather he is more interested in what this growth signals: trust. In his view, clients still want a class partner that is technically credible, responsive, globally present and capable of supporting them well beyond the narrowest definition of a survey cycle. That broader support theme comes up again and again. With emerging technology grabbing the headlines, McDonald is careful to ground ABS in its core purpose.

"Our core business is classification, that's who we are, a mission-driven organization and that's what we've been doing since 1862. How we do it is another matter. If you look at the investments being made in technology today, maritime is most certainly on this growth curve that we've never seen before," said McDonald. "When you bring in sensor technology, and the newbuilds you're seeing around the world today, from autonomous systems to the sensor technology to optimizing every aspect of machinery systems and monitoring the hull's performance; and then you overlay a digital twin framework where you can monitor real-time your vessels historical and real-time performance; what the future looks like for us is taking all that of that information, using the tools we're building out and bringing that to bear on the core work we do in classification."

McDonald is adept, too, at bringing big picture matters like digitalization down to reality level.

"Condition-based classification, condition-based maintenance these are two areas that are very interesting to me in that, if I look back five years ago, ABS really started to look at the data we had on our vessels: how can we structure that data properly? How do we build these large-language models? How do we start using that information to drive value to our clients that either help them with operational efficiency or helps us drive a stronger safety framework onboard the vessels and at the same time gives us the ability to strengthen our rules and the regulations that we have because we're seeing how these vessels operate with much more detail," said McDonald. A key plank in the digitalization conversation is connectivity via both legacy and new tech entrants such as Starlink. "We can take data right off of the vessels and start doing predictive analytics today. We've been building our predictive analysis capability for several years, which started with U.S. government fleets. We have condition-based monitoring today on almost 20 vessels with Military Sealift Command, which was the world's first CBM class program and growing every year as an indication of their satisfaction with it. We're starting to bring that more into the commercial business, too, offshore already and starting now with commercial shipping pilots."

With all of the tech talk and the promise that it offers, the starting point still is people. For all the justified industry fascination with AI, autonomy, robotics and digital twins, McDonald comes back repeatedly to the human side of the business, as the common thread is still judgment. The industry still needs people who understand ships, machinery, operations, risk and the consequences of getting something wrong.

"We're an organization of engineers, technologists, digital engineers and coders and not just in your standard maritime practices; but now we have everything from AI Experts, Cyber experts, and moving into robotics, autonomy and nuclear," said McDonald. "We have a global footprint but we're U.S.-based, which allows us to work with various government industries as well as a number of high-tech companies. There is a lot of focus around innovation … not just our core business, the rules and tools that we have today but what we're looking at tomorrow.

"ABS has the best people in the industry. It's a family and I am proud of that."

Safety First ... and Always

McDonald's emphasis on people also runs straight through ABS' safety culture, both internally with its own people and through the ships under ABS classification. McDonald takes obvious pride in the organization's record, both in terms of outside validation and internal performance. Port state control remains an important external check on class society performance, and ABS has maintained a strong standing there for years. He sees that not simply as a measure of ABS rules and processes, but as evidence of alignment between ABS and the owners and operators it serves.

Internally, he talks about safety as something built into the organization's DNA, its daily conduct, not simply a slogan dusted off for presentations. He takes pride in the long stretches without lost-time injuries and to the importance of pushing accountability from the executive level down through every layer of management to the personnel actually boarding ships and entering hazardous spaces. That is not glamorous material, which is exactly why it matters. In class, safety loses meaning the moment it becomes abstract.

He's passionate too in discussing the connection of that safety mindset to technology. He does not talk about digitalization as a replacement for class. He talks about it as a way to make class more informed, more targeted and, in some cases, more efficient.

JOHN MCDONALD, CHAIRMAN & CEO, ABS

"Our core business is classification, that's who we are, a mission-driven organization and that's what we've been doing since 1862. How we do it is another matter. If you look at the investments being made in technology today, maritime is most certainly on this growth curve that we've never seen before."

As noted, ABS has been building the infrastructure to use its own data more intelligently, which McDonald says has been a deliberate effort to structure information from across its vessel base, build data lakes, develop large language model capability and create tools that allow ABS to understand vessel condition and operational patterns with greater depth than before. In practical terms, that means the organization can increasingly look at live or near-live vessel data, identify anomalies, support clients proactively and in some cases satisfy elements of classification or compliance remotely.

That is not theoretical. ABS already performs a meaningful percentage of its survey activity remotely. Put another way, this is no longer a pilot project nor chatter for conference presentations, rather an operating model. By moving certain checks and document-driven activities remote, ABS effectively reduces travel, reduces fatigue among survey staff and directs human attention toward the tasks that genuinely require boots on steel — tank inspections, structural assessment, critical systems evaluation and other work where physical presence is irreplaceable.

The efficiency gains are real. McDonald said that last year alone ABS reduced survey staff travel time by thousands of hours. But the deeper point is strategic. Remote capability, condition-based class and condition-based maintenance all point to a more intelligent version of class service, one less tied to rigid intervals and more responsive to actual equipment condition and operating data, as is being done with MSC.

The willingness across the industry of owners to participate, McDonald says, has been strong, and that makes sense. If the data helps owners improve efficiency, anticipate failures, optimize spare parts and avoid unnecessary downtime while also supporting class, the value proposition is obvious.

Digitalization and AI

Artificial intelligence is the other large thread running through McDonald's agenda, but as with all of the other topics discussed, they do not stand solo in a silo rather exist in unison with all of the other techs and topics discussed. Here again, his approach is practical. ABS stood up an AI Center of

"We're an organization of engineers, technologists, digital engineers and coders and not just in your standard maritime practices; but now we have everything from AI experts, Cyber experts, and moving into robotics, autonomy and nuclear."

– John Mcdonald, Chairman & CEO, ABS

Pictured: Operated by Asiatic Lloyd Maritime and classed by ABS, the bulk carrier MV Castle Point was christened by Kelly McDonald in February 2025.

Excellence to look first at internal use cases: workflow support, better access to procedures, faster drafting and knowledge retrieval, and software development. From there it moved toward applying AI more directly to the classification process itself.

One of the more compelling examples he offers is using digitized ABS rules and AI tools to run those rule sets automatically against drawings, operations manuals and engineering analyses. Again, the goal is not to remove human oversight but to compress the time needed to complete tedious, rules-based review. What might once have required an engineer to manually work line-by-line through a document can now, in certain cases, be handled in seconds. That should improve speed, consistency and capacity, especially as new designs and new technologies expand the complexity of review work.

"What the future looks like for us is taking all that information… and bringing that to bear on the work that we do in our core classification business," said McDonald. "We are using technology to understand the vessels that ABS has under class with much more depth and a bit more accuracy."

McDonald also sees ABS playing a role as a guide to clients that are earlier on the digital maturity curve. While the industry's biggest players with the largest fleets and deepest pockets are progressing at speed to incorporate digital solutions, most owners do not start from a sophisticated data architecture, with many still trying to move from spreadsheets to structured systems. ABS has responded by building an AI consulting capability within its commercial business, focused not on generic digital strategy but on vessel operations, maintenance, reporting, bunkering optimization and predictive analytics.

The maritime industry is full of capable operators who know exactly what problems they want to solve but do not necessarily want a consultant who lacks domain fluency. ABS can help bridge that gap because it knows both the vessels, the rulebooks and the digitalization solutions.

But as has been proven time and again through the history of innovation, technology moves can be a double-edge sword. In this case, the more connected ships become, the more cyber risk and threats move to the front burner. On this point, McDonald is clear: sensor-heavy vessels, real-time connectivity and shoreside access create operational benefits, but they also expand the attack surface. ABS has been building cyber notations, internal capabilities and service offerings around that reality. He describes cyber as a core growth area, with dedicated centers of excellence and increasing engagement with clients on everything from governance and processes to testing and implementation. It is one more example of class adjacent work becoming class essential.

Fuel Transition

Arguably there is no greater challenge or opportunity in maritime than then one focused on decarbonization and fuel transition. From sail to steam to diesel, the industry has had its fair share of fuel pivots throughout its history, and the fuel transition in maritime is on again, as owners navigate increasing mandates from the International Maritime Organization to slash emissions. "Decarbonization is still very here and now and active," said McDonald. "The industry is not backed away from it." Today the industry collectively, scouts for that 'fuel of the future' that can effectively, efficiently, economically, and safely replace heavy fuel oil, the primary fuel that has and continues to power commercial ships and boats for more than a century. The choices are broad, from the natural and 'green' varieties of everything from Biofuels, LNG, Methanol, Hydrogen, Ammonia, as well as the very real possibility to leverage new nuclear technologies on commercial ships. But the challenges are many and the path forward is not the same for all, as cornerstones such as logistics, price and availability remain, not to mention the technological considerations and safety framework around any fuel transition to ensure that fuels work as they should and keep vessel, seafarer and property safe. That is exactly where class comes in.

On fuels, McDonald's tone is both excited and measured. Decarbonization has not gone away, though the pathway remains unsettled. He points to a pause of sorts after recent IMO developments, with many new vessel orders reverting to conventional fuel choices even as LNG and methanol remain strong in liner segments. Ammonia continues to move forward.

Nuclear is the fuel topic where McDonald sounds most convinced that the industry may be underestimating the pace of change. He admits he once thought commercial nuclear propulsion would arrive only after his career was over, but he no longer thinks that, and in turn ABS has hired nuclear engineers, has continued to develop guidance and is working with the U.S. Department of Energy on conceptual designs. He sees likely early applications in power barges or stationary support systems before full propulsion, but he is clearly preparing ABS for a world in which nuclear is not a thought experiment, rather a real solution for the industry.

Training Seafarers

And then there is training, which is one of the more notable additions to the ABS portfolio. Traditionally, ABS has not had a formal commercial training business of the kind now taking shape courtesy of a recently closed acquisition. McDonald sees that as a gap worth filling, especially given the mismatch between legacy curricula and the technologies now entering fleets and yards. In a deal to deliver immersive training at scale to the maritime industry, ABS late last year signed an agreement and recently sealed the deal to purchase the MetaSHIP intellectual property and related vessel simulator software assets from Orka Informatics as part of the strategic growth plan for ABS Training Solutions.

The acquisition aims to allow ABS to expand its digital training program, which can be delivered on board, in port or at home, as well as in a global network of high-tech ABS

learning centers in Qatar, Greece and Singapore. The software powers an embedded gaming experience using the industry-leading ABS MetaSHIP Fleet, virtual vessels that allow students to reach true competence without setting foot on board.

The ABS MetaSHIP game-based training breaks down the complex tasks required to operate modern ships into visual and engaging lessons that equip seafarers with the skills they need in a rapidly evolving maritime landscape. MetaSHIP is a digital maritime universe featuring vessels, ports and waterways, and training and assessment on vessel operations through gamification. The ODENES platform, also included in the acquisition and part of MetaSHIP, tracks training completions and generates reports. Navigational Skill and Behavioral Assessment, another component of MetaSHIP, is a specific simulation used for measuring the performance of maritime personnel, designed to evaluate and enhance the operational skills and behaviors of users.

Training also links directly to McDonald's concern about the future U.S. maritime workforce. "We're building out a lot of modern training; bringing in this kind of gaming technology where you can take yourself as an avatar and walk on board the vessel," he said.

But the focus on training is not limited to this acquisition,

U.S. Shipbuilding Revival — Momentum Meets Reality

There is no shortage of rhetoric around rebuilding the U.S. shipbuilding base. What's different this time, according to John McDonald, is that the rhetoric is now paired with real intent at the federal level.

"A couple things that are different this time is you have commitment right from the administration… this is one of our top priorities," McDonald said, framing shipbuilding not just as an industrial concern, but as a national security imperative. That commitment is reflected in the recently released **Maritime Action Plan**, which targets a familiar but formidable checklist: people, infrastructure, shipyard capacity and critically, supply chain. In McDonald's view, success hinges on aligning all four simultaneously, something the U.S. has historically struggled to do.

There are, however, early signs of progress. One notable shift is the growing involvement of foreign shipbuilders and suppliers. Programs such as the Arctic Security Cutter are bringing overseas expertise, equipment and capital into U.S. yards, creating a hybrid model that blends domestic production with international know-how. "Now you've got foreign equipment, you've got foreign expertise… and industry investing in the United States shipbuilding framework from that entire value chain," McDonald noted.

Still, the challenges are significant. Chief among them is supply chain depth. "The supply chain's a bit of a concern," McDonald said, pointing to the need for domestic capability alongside yard modernization and workforce development.

Training is another pressure point, with new fuels, digital systems and advanced manufacturing entering the mix, the traditional pipeline of mariners and shipyard workers must evolve quickly.

Rolled into the U.S. shipbuilding revitalization too is the advances being made robotics, and on this point he is succinct: if the United States wants to scale shipbuilding meaningfully, robotics will have to be part of the answer.

ABS is engaging through smart yard guidance and through its experience with major shipbuilding nations. That includes helping yards think through how digital systems, robotics and future automation fit into a safe and efficient production model. McDonald is especially interested in humanoid robotics for hazardous tasks such as welding in shipyards and work in confined spaces, and notes the work being done via partnership with Persona AI and a South Korean yard that suggests the concept is moving faster than many might expect. Whether or not every current claim is fruitful, the direction is clear enough: robotics is becoming part of the shipyard conversation in a way that transcends feeling experimental.

"If we're going to start scaling and become a shipbuilding power again, robotics most certainly has to come into play."

and looking domestically with the recent intense focus on rebuilding the U.S. maritime industry base, McDonald says ABS can help. He talks about supporting the six state maritime academies, helping them modernize and pushing for a curriculum that reflects the ships cadets will actually see in the field: vessels with advanced systems, alternative fuels, digital overlays and increasing automation.

The old path to a license remains necessary, but it is no longer sufficient by itself. If the U.S. intends to rebuild maritime capability at scale, the training architecture has to catch up to the equipment and operational models already emerging.

That may prove to be one of the more consequential pieces of his leadership. Everyone in maritime says people matter. Far fewer are willing to put money, structure and urgency behind the claim. McDonald is intent on doing that.

Looking Ahead

Many leaders in maritime are reticent to bring the focus back to them, and when we asked McDonald to discuss his career and achievements that made him most proud, he was hesitant. Upon thinking it through, he recalled a letter from former ABS Chairman Robert Somerville during his time in Korea – a letter he still holds. "I was in Korea, and I was a surveyor at the shipyard Samsung," said McDonald. "Our chairman at the time, Bob Somerville, who I met when I was 18, wrote me a letter that said, essentially, the values that you're bringing across to our client base and to the team within Samsung Heavy Industries is being seen across the company, so keep doing what you're doing."

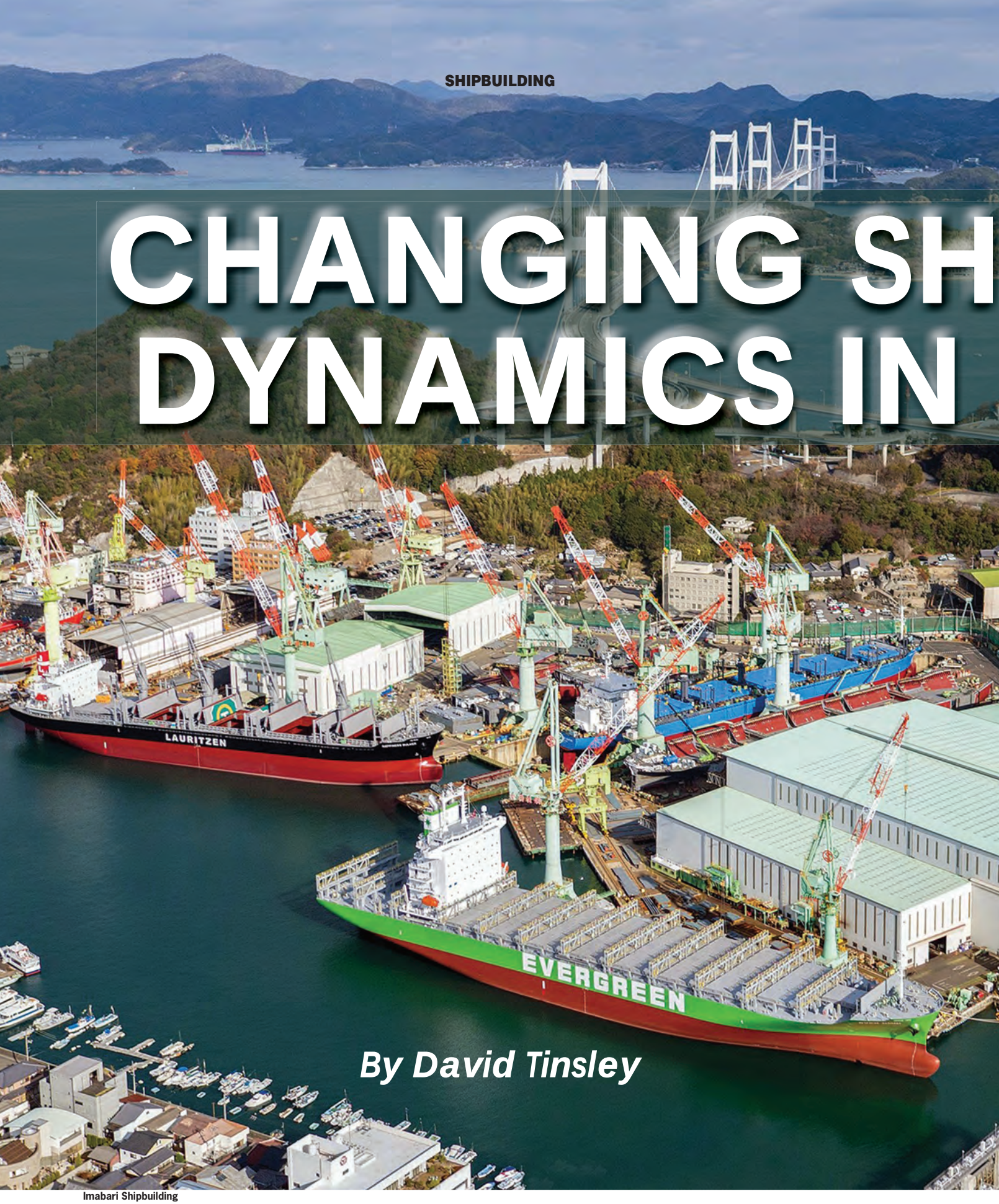
That answer fit the rest of the conversation. McDonald is clearly ambitious for ABS. He wants growth. He wants stronger digital tools, broader services, better training, deeper technical capability and a larger role in helping the industry navigate the myriad of changes ahead. But the center of gravity remains steady. Safety first. People first. Class first, even as class evolves.

That is probably the most useful way to understand the leadership transition now underway at ABS. John McDonald is not trying to turn a classification society into a software company, a consulting firm or a futurist brand. He is trying to ensure that a 164-year-old institution remains technically credible and operationally relevant in an industry being pushed hard by digitalization, autonomy, cyber risk and fuel uncertainty.

For someone who grew up on Governor's Island, spent summers on the Maine coast, sailed ships, met his wife on one, and then spent three decades at ABS, maybe that makes perfect sense.

Maritime by birth. ABS by calling.

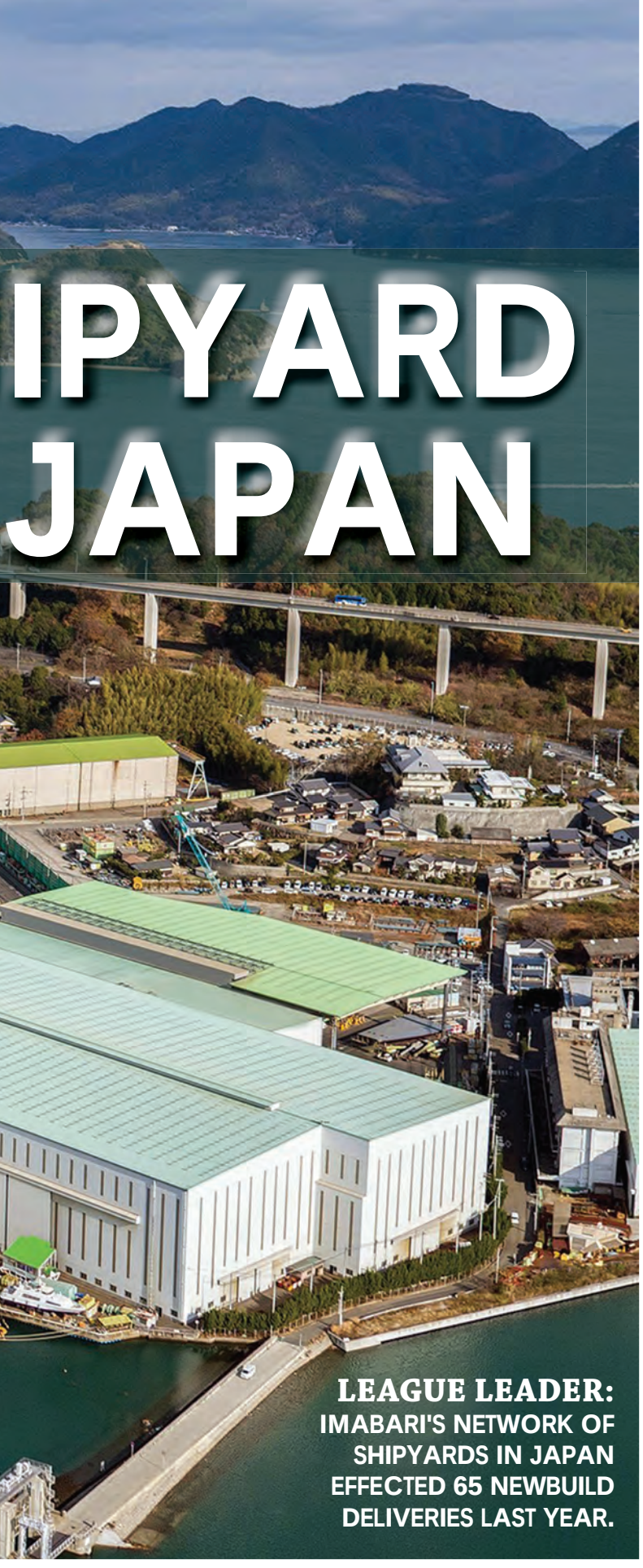
CHANGING SH
DYNAMICS IN



By David Tinsley

Imabari Shipbuilding

IPYARD JAPAN



LEAGUE LEADER: IMABARI'S NETWORK OF SHIPYARDS IN JAPAN EFFECTED 65 NEWBUILD DELIVERIES LAST YEAR.

Continuous design refinement and incremental productivity gains—reflecting the Japanese concept of kaizen—alongside unremitting attention to contractual performance and product quality have seen the country's shipbuilders maintain a high profile in certain sectors of the commercial vessel market.

The industry's scale, reach and financial returns, though, have suffered from the onslaught of competition from its Asian counterparts, most notably China and South Korea, both of whom the Japanese contend benefit from both overt and covert state financial intervention.

By the measure of output, Japan's position as a global shipbuilding force has been eroded over the past 30 years under the weight of the inexorable rise of China and the contest with ever-determined Korean players. The Japanese grip on commercial newbuild volume has slid from about 40% in the 1990s to no more than 10% today. China is now reckoned to command close to 70% of the market in terms of orders by deadweight, with Korean yards' share at approximately 20%.

Active capacity in Japan has reduced through withdrawals from newbuild business and also as a consequence of integration. At the same time, shipbuilders have to an extent hollowed-out domestic capability through investments abroad, in new shipyard ventures or collaborations, as well by the outsourcing of hull sections and other elements to lower-cost areas.

Political Recognition

But a new energy and mood of confidence seems to have been inspired of late within the industry through the perception that Japan's political establishment, as with the administrations in China and South Korea, has come to acknowledge shipbuilding's national economic, strategic and social value. This recognition is manifest in a preparedness to take steps to help revitalize the industry.

Japan in any event remains a shipbuilding force to be reckoned with. It melds a considerable technical talent base, a propensity for ploughing earnings back into R&D, and an openness to cooperation, with access to a comprehensive eco-system for the supply of key equipment, machinery and materials. A long line of foreign clients who continue to keep faith with Japanese yards is testament to product value and contract performance.

Notwithstanding the growing recourse over the years by Japanese operators and trading houses to yards in China and elsewhere in Asia Pacific, the vast Japanese shipping sector continues to provide bedrock business and ongoing scope for home shipbuilders. In addition, the vibrant domestic fields of coastal cargo and ro/ro ferry transportation provide a regular inflow of work to certain Japanese yards.

With the recent change in government, policy directives and measures have been implemented aimed at substantially bolstering shipbuilding capacity, competitiveness and busi-

Cool Carriers

RECORD SCALE IN A DEDICATED REEFERSHIP: THE 905,000 CUBIC FOOT-CAPACITY COOL ELEGANCE WAS HANDED OVER LAST YEAR BY SHIKOKU DOCKYARD.

ness volume within a decade. Initiatives subsequently taken by the industry itself and by major Japanese shipping groups indicate a receptivity to working to achieve the developmental blueprint of central government, in line with corporate goals. Moreover, Japan is seeking to broaden its business reach through a government-to-government agreement with the USA for a joint working group to foster cooperation in shipbuilding. All this could presage a reset in global influence.

Strategic value

The appointment of Sanae Takaichi as Prime Minister in October 2025 and the subsequent, landslide victory of her Liberal Democratic Party (LDP) in the February 2026 snap election, has opened the way to realizing earlier political pledges.

The LDP had propounded support for heavy government investment in sectors designated as of critical strategic value. The identification of shipbuilding as one of 17 nationally important industries, placing it in a strategic and economic context alongside fields such as artificial intelligence (AI), semiconductors, nuclear fusion, biotech and defence, has thereby raised its long-term profile and no doubt boosted confidence among its practitioners and investors.

The Shipbuilding Industry Revitalization Roadmap rolled out late last year seeks a doubling in annual construction volume to around 18 million gross tons by 2035, with a concomitant cut in build costs by 10%.

The government is to establish a fund of about Yen 350 billion ($2.2bn) and proceed with public-private investments totalling Yen 1 trillion ($6.3bn) over the next 10 years. It sees a necessity for the industry to reorganize into fewer groups, to enhance resilience. The immediate task, up to 2028, under the Roadmap is to advance automation at production sites by leveraging cutting-edge technologies such as robotics and AI. The 2029-2031 phase will be focused on capacity and equipment renewal and expansion, with a view to actual production scale-up within 2032-2034.

Key challenges for the revival strategy include skilled labour shortages, compounding recruitment needs in the face of an ageing workforce. In fact, the share of foreign employees has reportedly risen to some 20%, from a negligible figure not so long ago. Japanese yards also have to countenance substantially higher steel prices than those in China.

Tokyo is also promoting an ‘All Japan’ framework, linking the shipping and shipbuilding sectors through closer coordination, not least as regards development of next-generation, new-fuel vessels. The country’s three major shipping groups have already elected to invest in a ship design company jointly owned by Imabari Shipbuilding and Mitsubishi Heavy Industries.

Ongoing integration

Consolidation in shipbuilding has been an ongoing process for many years. The restructural process regarded by government as vital to long-term wellbeing has lately seen a further phase of consolidation, whereby Imabari Shipbuilding obtained majority control of Japan Marine United (JMU). Ranked Japan’s largest builder and now the fourth worldwide, the Higaki family-led Imabari organization has upped its stake from 30% to 60%, making JMU a subsidiary.

The move has paved the way for deeper integration of operations and strategy, strengthening cost efficiencies and facilitating swifter business decisions. The business link had been established through the creation of the 51% Imabari-owned joint venture Nihon Shipyard at the outset of 2021, to undertake design and project work on all ship types bar LNG carriers.

Imabari operates 10 shipbuilding and maintenance facilities. A purpose-built dock was completed at Marugame in 2017, conceived mainly for the new generation of boxships in excess of 20,000TEU load capacity. The network effected 65 newbuild deliveries through the 2025 calendar year, amounting to some 3.36m gross tons, and embracing a broad range of vessel types.

Integration during 2025 was also expressed in Tsuneishi Shipbuilding’s completion of the full takeover of its joint venture with Mitsui E&S Shipbuilding, signalling the final stage in Mitsui’s exit from shipbuilding. The former partnership now functions as Tsuneishi Solutions Tokyobay, focusing on engineering services, engineering for alternative fuel and gas-related equipment, monitoring and technical support.

Long-term strategies laid down in today’s geo-political environment are fraught with uncertainties, but Japan retains the critical mass and determination to bolster its shipbuilding standing.

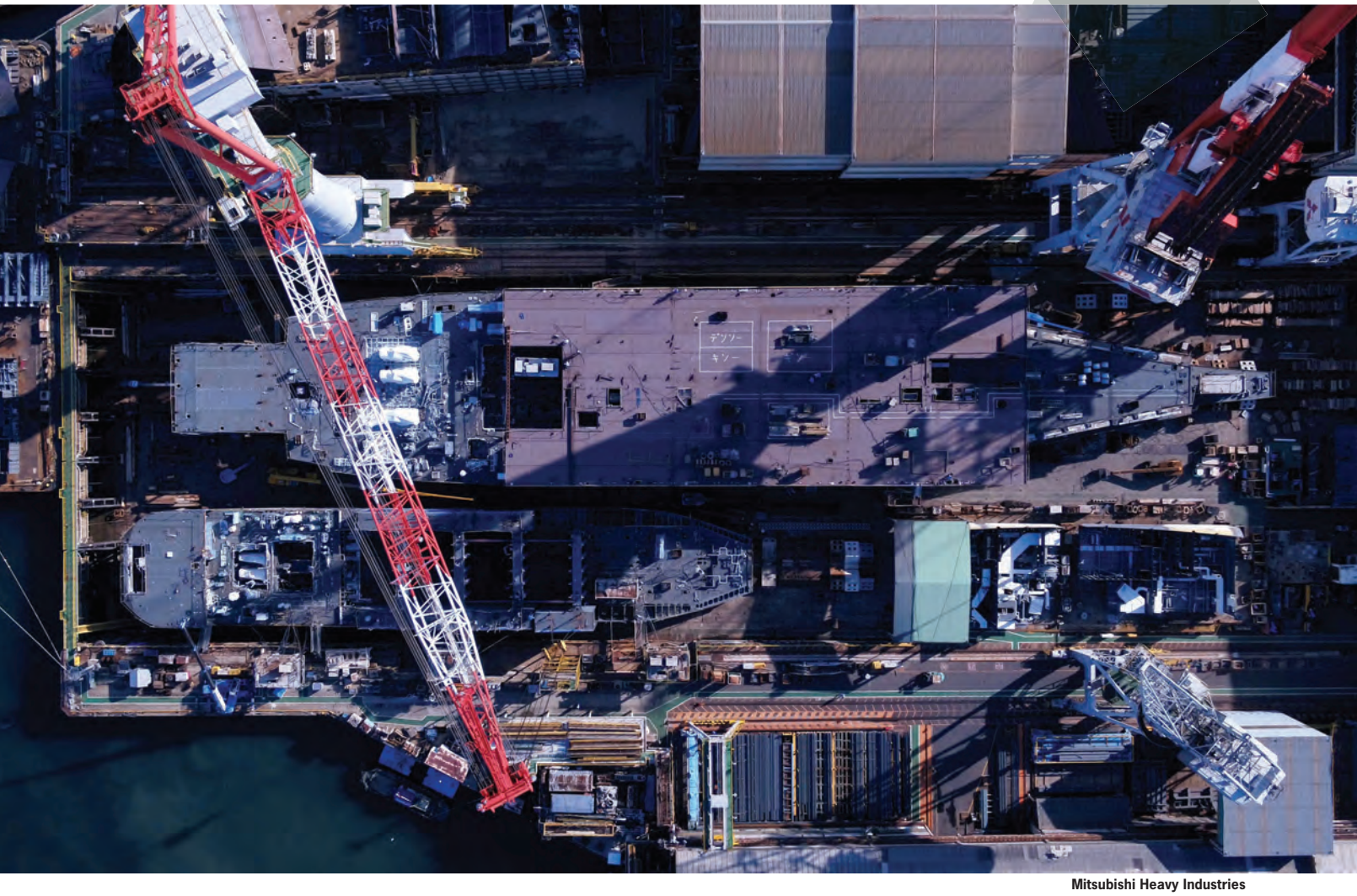
K Line

PROLIFIC JAPANESE:

LNG DUAL-FUEL PURE CAR/TRUCK CARRIER (PCTC) TETHYS HIGHWAY, COMPLETED LAST YEAR BY SHIN KURUSHIMA TOYOHASHI SHIPBUILDING.

MITSUBISHI SHIPBUILDING'S SHIMONOSEKI YARD

HAS A LONG TRACK RECORD IN RO/PAX FERRY AND SPECIALIZED VESSEL CONSTRUCTION.



Mitsubishi Heavy Industries

Chantiers de l'Atlantique-built Celebrity Xcel can run on methanol as well as standard fuel types.

EUROPEAN SHIPYAR
WORKLOAD INTO THE

By David Tinsley

Image courtesy Celebrity Cruises

RDS BUILD E MID-2030s

A flourishing cruise market and European shipbuilders' unerring contractual success in the sector has taken orderbooks into the middle of the next decade, ensuring production continuity and underpinning fresh capital expenditure and R&D commitments by the continent's foremost players.

Just how important the segment is to the industry and supply chain may be gauged from the fact that at least three-quarters of the value of European yards' commercial orderbooks is attributable to cruise vessel construction.

Europe's in-depth professional and trade skill strengths as regards the ecosystem covering design, engineering, outfitting, and onboard systems, together with adeptness in project management, are fundamental to the market prominence achieved by the leading builders concerned, namely the **Fincantieri Group**, **Chantiers de l'Atlantique**, **Meyer Werft** and **Meyer Turku**.

Another card in the hand of the European yards is the propensity for an anticipative approach to design and powering. Fuel-flexibility is at the core of new and emerging generations of vessels, extending beyond LNG dual-fuel solutions to embrace 'greener' options, such as methanol. The through-life design concept foreseen by builders also affords a wider platform for broader, ongoing technological updating and internal design reconfiguration.

Concerns had been expressed that the elongation of the European cruise vessel production program, by reducing the scope for owners to obtain medium-term delivery slots, might open up opportunities on the international market for Chinese shipbuilders. However, the major brands have continued to keep faith with European yards, as expressed in a raft of orders over the past four or five months carrying completion dates well into the 2030s.

China's impact on the high-capacity vessel market to date has been limited and has been achieved so far through recourse to European know-how. The technical foundation for the two diesel-electric newbuilds ordered from Shanghai Waigaoqiao Shipbuilding (SWS) by CSSC Carnival Cruise Shipping—which subsequently became Hong Kong-registered Adora Cruises—was provided by Fincantieri in collaboration with China State Shipbuilding Corporation (CSSC).

Fincantieri remains the most prolific builder, with Monfalcone and Marghera being the points of concentration for high-capacity cruise vessel construction within the group's Italian shipyard network.

Delivered last November, Disney Destiny is the sixth vessel built by Meyer Werft for Disney Cruise Line.

Image courtesy Meyer Werft

Judicious subcontracting of steelwork fabrication to lower-cost areas has assumed increasing importance within Fincantieri's business strategy, where the focus on heightened productivity and throughput capacity is attended by more intense cost control oversight. The current plan provides for greater reliance on Romania for supply of certain hull sections, with contemporaneous investment in dedicated home yards. This includes the purchase of a new jumbo crane at the Monfalcone shipyard near Trieste.

In respect of the group's cruiseship workload, Fincantieri's Capital Markets Day presentation in Milan during February this year referred to "a growing commercial pipeline, both in terms of quantity and quality, with improving margins and new orders expected in the coming months, which will extend the visibility of the backlog beyond 2036." A tranche of contracts quickly followed, including three ships for various brands of **Norwegian Cruise Line (NCL) Holdings**, plus a fresh intake of business from **Viking Cruises**, encompassing two 378-passenger expedition-type vessels plus options on two more 1,000-passenger capacity ships from the long-running Viking Star series.

Both NCL and Viking had already augmented the Fincantieri orderbook during 2025, and at scale in both cases, through respective commitments to four 227,000gt vessels, commanding delivery positions in 2030, 2032, 2034, and 2036, and four more Viking Ocean sisters for 2030/2031 handovers.

Fincantieri's vision for ***'The shipyard of the future'*** spans the entire planning and production process from digital design to advanced automation and the deployment of collaborative robots. This embraces 4D dynamic production planning to unlock bottlenecks through proprietary AI algorithms and designs prepared for full life-cycle optimisation.

Following a period of great uncertainty and profound change at Meyer Werft, culminating in acquisition by the State of Lower Saxony (Niedersachsen) and the Federal Government, the German yard landed a prestigious and extensive contract towards the end of 2025. The deal with **MSC Cruises** signified the attraction of a new and influential customer, viewed as a long-term strategic partner.

The order entails four 180,000gt newbuilds to be delivered at yearly intervals from 2030 onwards, with options on fifth and sixth ships appended to the deal. Designated the New Frontier class, featuring what are described as next-generation environmental technologies, each vessel will provide for a maximum passenger complement of 5,400. Realisation of a six-ship series will keep the Papenburg yard running at full capacity through 2035, with commensurate benefits for the German advanced maritime manufacturing ecosystem.

MSC Cruises has hitherto met fleet development requirements via Meyer Werft's arch-rivals in Italy and France. The commitment to existing business relationships is undiminished, as MSC's transaction with Meyer had been preceded shortly before by the assignment of contracts to Chantiers de l'Atlantique for seven and eighth vessels in the MSC World-

class program, due in 2030 and 2031. This constituted the second tranche of MSC orders won by the French yard in 2025, the earlier deal having embraced fifth and sixth ships in the series.

Chantiers de l'Atlantique has also consolidated its business relationship with the **Royal Caribbean Group** this year by landing a firm contract for two vessels commanding delivery positions in 2029 and 2032, plus four on option, based on a new type designated the Discovery class. A total of 21 ships have been built for the organization over the past 40 years. Current production embraces a seventh 231,000gt Oasis-type behemoth the Celebrity Xcite for the premium Celebrity brand.

Through the intervention of September 2024, the Federal Government and Niedersachsen obtained a total 80% share of the then cash-strapped shipbuilder in exchange for a EUR 400 million ($465m) injection. Up to that point, the company had been under Meyer family ownership and control for seven generations.

Consequently, given the Italian and French state holdings in Fincantieri and Chantiers de l'Atlantique, respectively, national involvement has gained added dimension across the entities that largely sustain European pre-eminence in the luxury, high-capacity cruiseship production market.

However, compared to the situation at its main European competitors, there is an altogether different strand to the German intervention, in that the agreements include provision for a possible buy-back by the family at some future stage. The public involvement in Meyer Werft is viewed as interim, the central objective being to financially stabilize the shipbuilder while strengthening competitiveness.

It is understood that the Meyer family retains 100% of the shares in premier Finnish shipbuilder Meyer Turku, full ownership having been obtained 11 years ago through the purchase of the state's 30% holding via Finnish Industrial Investment.

Image courtesy Fincantieri

Fincantieri's investment plan includes a new jumbo crane at the Monfalcone yard for cruise ship production.

Norwegian Cruise Line's recently commissioned Norwegian Luna, from Fincantieri's Marghera (Venice) yard.

Image courtesy NCL

Palfinger Marine launched its new crane PFM 1500 at the Aqua Nor event last year.

©tommy_grunning

Simplicity & Safety

INSPIRE DECK MACHINERY INNOVATION

Deck machinery OEMs are applying smart solutions to complex problems.

By Wendy Laursen

In standard lashing system with rigid turnbuckles, the lashing loads are normally unevenly distributed between upper and lower lashings (turnbuckle + lashing bar). The upper lashings are taking most of the stress while lower lashings are working only at around half of capacity. In worst cases this has led to damages on the containers, especially on container corner castings. The resulting cracks in the container corner castings may be difficult to spot, leading to escalating damage and risk.

MacGregor has introduced a simple yet effective solution by inserting an elastic element that gives the otherwise standard upper turnbuckle and lashing bar the ability to respond to the changing clearance so that both the upper and lower lashings share the load equally. This keeps the twistlocks and lashing system in balance, increasing safety by reducing the risk of lashing bar failure.

"The elastic element provides increased range that compensates the vertical clearance of the twistlock, and only after that does the turnbuckle start to carry load," says Perttu Jokinen, Technical Manager (Lashings). "The elastic element will be totally squeezed after some 5 tonnes, and after that there is a steel to steel connection in the turnbuckle and it works as a standard, traditional turnbuckle." The elastic material is a standard product which is already in use for cleats and the bearing pads used to compensate for the movement between the hull of the vessel and hatch covers.

As well as improving safety, the reduction of the load on the upper lashing enables container payload on deck to be increased by up to 10%. The patented system is already in use on three major container lines and hundreds of vessels, and class societies are beginning to adjust the calculations they use to determine payload limits accordingly.

In another materials-based development, **HD Hyundai Samho** has delivered the world's first LPG carrier equipped with Hybrid Vertical Support (HVS) technology that keeps gas tanks from floating if the ship floods. The system, developed by HD Hyundai, replaces the heavy steel structures that are traditionally placed on top of tanks to hold them down with lightweight, strong carbon fiber that anchors the tanks from the bottom. This makes the ship lighter and more fuel-efficient, while also creating more space and reducing maintenance costs.

Specialist vessels are employing increasingly complexity

deck systems, as exemplified by the floating wind construction vessel being built for **Hana Shipping of Korea** to support mooring operations, cable laying, and other complex construction activities essential to floating wind projects. **Kongsberg Maritime** is supplying a winch package featuring a 500-tonne main towing/AHT winch system with three drums, complemented by secondary winches for rope installation, a rope tensioner system, tugger winches, an active heave-compensated working winch, and a complete Towcon X8 control system.

The contract introduces two innovative products developed specifically for large anchor handling/mooring installation vessels. The AH100 cranes have increased load capacity and extended reach for larger vessels. They also feature dual arms for lifting and precision handling, with interchangeable tooling to support project-specific tasks. The Shark Jaw, capable of handling chain sizes up to 220mm, incorporates remotely adjustable inserts for enhanced safety and operational flexibility.

Bjørn Harald Brevik, Senior Sales Manager, Research Handling Systems, Kongsberg Maritime's, says early involvement in the design phase of such vessels ensures optimal integration of advanced deck systems. It's a strategy the company applies to other complex projects including the design and supply of equipment for research vessels.

These vessels can have up to 12,000 meters of winch cable to support deployment of scientific equipment, and this may need to be done, in the case of ice breakers, at temperatures as low as to 45 to -48deg Celsius.

"The winch systems are typically required to be led overboard at various points. Some projects want to have all options: over the side, over the A-frame or through the moon pool, depending on ocean conditions. Typically, they will use one or two systems at the same time while they are preparing a third system for the next job." He cites a current project with the vessel will require 100 pulleys pulleys to direct cables from the winch room to the overboarding points.

"Arctic research vessels spend most of their time operating in very remote areas where they don't have easy access to service personnel or spares. They need to be largely self-sufficient, so they are often concerned with redundancy for their operations. They want multiple possibilities to achieve their research mission," says Brevik.

"We have the hardware, the winches and the A-frames, of course, but we deliver the entire system - the power systems, both hydraulic and electric, control systems, user interfaces, radio remotes, operator chairs - everything that is needed to operate these systems."

Kongsberg Maritime's Shark Jaw, capable of handling chain sizes up to 220mm, incorporates remotely adjustable inserts for enhanced safety and operational flexibility.

Kongsberg Maritime's AH100 cranes have increased load capacity and extended reach for larger vessels.

Images courtesy Kongsberg Maritime

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#Seawork

mercator valued maritime marketplaces

Palfinger Marine launched its new crane PFM 1500 at the Aqua Nor event last year. The crane has a maximum outreach of 26.7 meters and a lifting capacity of 3,350 kilograms at full extension, making it a smaller member of the PFM series. The patented P-profile extension boom system allows a wide range of movement and outreach, while providing the strength and stiffness required for demanding lifting tasks. The new design improves the crane's performance by increasing stability while minimizing weight.

In the naval segment, **Fairbanks Morse Defense (FMD)** has expanded its offerings through the acquisition of **Vestdavit**. Vestdavit has delivered over 2,200 davit systems to naval and offshore operators. The company pioneered dual-point lifting systems, automated boat-handling technologies and advanced launch and recovery systems. These innovations are critical for the U.S. Navy's planned large unmanned surface and undersea vessels, says FMD. The company has also added Vestdavit's manufacturing facility in Poland and service centers in the Netherlands and Seattle, Washington to its operational network.

DMT Marine Equipment reinforced its presence in the United States with the delivery of two towing winches to Harbor Docking and Towing last year. The company has also expanded its global footprint with a new production facility in China. The facility, now operating as DMT Hinlee Marine Equipment, enables DMT deck machinery to be manufactured close to Asian shipyards, and CEO, Piet ter Schure says the company is better positioned than ever to respond to market demand with reliability, speed and competitive value.

Image courtesy MacGregor

MacGregor has introduced a solution that gives an otherwise standard upper turnbuckle and lashing bar the ability to respond to the changing clearance so that both the upper and lower lashings share the load equally.

In the Shipyard

From Design to Delivery

Viking Libra: Hydrogen-Fueled Cruise Ship

Fincantieri launched what it says will be the world's first hydrogen-powered cruise ship, marking a notable step forward in the industry's push toward zero-emission operations. Viking Libra was floated out at the company's Ancona shipyard in Italy and is being built for cruise operator Viking, with delivery scheduled for late 2026.

At approximately 54,300 gross tons and 239 meters in length, the ship will accommodate up to 998 passengers across 499 cabins — consistent with Viking's small-ship positioning — but its significance lies beneath the waterline. The vessel will feature a hybrid propulsion system incorporating liquefied hydrogen and fuel cells, enabling zero-emission operations in certain conditions. That capability is expected to allow access to environmentally sensitive regions where conventional cruise ships face increasing regulatory restrictions.

The project reflects a broader shift among cruise operators and shipbuilders toward alternative fuels, particularly as regulatory pressure builds in key markets such as Europe. While LNG has served as a transitional fuel for many newbuilds, hydrogen—despite ongoing challenges related to storage, infrastructure and cost — is increasingly viewed as a longer-term pathway to full decarbonization.

Image courtesy Fincantieri

For Fincantieri and Viking, Viking Libra represents the latest milestone in a partnership that dates back to 2012. Including existing orders, signed contracts and recent options — subject to financing—the two companies now have a combined pipeline of 26 vessels.

Explora IV Floated-Out

Fincantieri and MSC Group's l Explora Journeys marked a major milestone in the construction of the brand's next-generation cruise fleet with a triple ceremony at the Sestri Ponente shipyard in Genoa. **The event included the technical float-out of Explora IV, the traditional coin ceremony for Explora V, and the steel-cutting for Explora VI**, advancing the build-out of Explora Journeys' six-ship luxury fleet. With the start of construction on Explora VI, Fincantieri now has four vessels for the brand under construction at the same time. Explora III is currently undergoing sea trials and is scheduled for delivery in July. Explora IV and Explora V are expected to enter service in 2027, while Explora VI will follow in 2028, completing the fleet program.

The first two ships in the series, Explora I and Explora II, are already in operation, serving global itineraries in the high-end cruise segment.

The ceremony was attended by regional and maritime officials alongside executives from MSC Group and Fincantieri, including Pierfrancesco Vago, Executive Chairman of MSC Group's Passenger Division; Anna Nash, President of Explora Journeys; and Pierroberto Folgiero, CEO and General Manager of Fincantieri.

MSC Group has invested approximately €3.5 billion in the six-ship Explora Journeys program. Including four previously delivered cruise ships—MSC Seaside, MSC Seaview, MSC Seashore and MSC Seascape—the group's total investment with Fincantieri reaches about €7 billion.

The vessels currently under construction will be powered by liquefied natural gas (LNG), reducing emissions compared with conventional marine fuels. The final vessel in the series, Explora VI, will also incorporate fuel-cell technology designed to generate energy by converting LNG into hydrogen.

With two ships already in service and four under construction, the Explora Journeys fleet is expected to be fully operational by 2028.

In the Shipyard

From Design to Delivery

80m, Six-Engine High Speed RoPax

© INCAT CROWTHER

Incat Crowther was commissioned by South Korean shipbuilder Kangnam Corporation (Kangnam) to design a new 80-m high-speed catamaran RoPax ferry for operation by Korea Express Ferry (KEF). The new vessel will service routes between Incheon Metropolitan City and the Yellow Sea islands of Daecheongdo, Baengnyeongdo and Socheongdo in Ongjin County, Republic of Korea (South Korea).

The project renews the partnership between Incat Crowther, Kangnam and KEF, with the companies having previously collaborated on the design and delivery of Korea Pride – a 72-m passenger ferry that has been operated by KEF from Incheon City since 2022.

The operational success of Korea Pride led to KEF being selected to replace the aging Ro-Pax service on these critical routes, with a vehicle deck capable of transporting up to 60 cars or 50 utility trucks.

Capable of transporting up to 572 passengers and 12 crew at speeds of up to 45 knots, the new vessel has been designed to optimize vehicle flow and passenger amenity. The vessel features twin pedestrian access ramps providing step-free access to the passenger deck, as well as a stern ramp for vehicle access.

The new vessel is powered by a six-engine drivetrain of MTU M05 rated engines, combined with an off-the-shelf configuration of waterjets and gearboxes for ease of installation and maintenance. Construction on the new vessel is to commence in second half of 2026, with the vessel to be delivered in 2028.

Dorian LPG Takes Delivery of Dual-Fuel 93,000cbm Areion

Image courtesy Dorian LPG Ltd.

Dorian LPG took delivery of its 93,000 cubic meter (cbm) dual-fuel newbuilding named "Areion" an LPG and ammonia very large gas carrier (VLGC/AC) from Hanwha Ocean Heavy Industries Co., Ltd. at the Okpo Shipyard in South Korea. Areion will commence employment on charter under the Helios LPG Pool, an entity jointly controlled by Dorian LPG Ltd and MOL Energia Pte Ltd. In Greek Mythology, Areion is the name given to a black-maned horse known for its extraordinary speed, spoken wisdom and significant powers.

This is the second wholly owned LPG dual-fuel ship being added to Dorian's fleet along with the four chartered-in LPG dual-fuel ships raising the percentage of low emissions alternative fuel ships to over 20% of its fleet.

Areion is a dual-fuel ship that can run on LPG and fuel oil. It is equipped with a hybrid scrubber, which can operate in closed loop in ports or ECAs where emissions and effluent must either be very low or prohibited. This scrubber is designed to emit lower levels of sulfur oxides, particulate matter and black carbon than the very low sulfur fuels oils (VLSFO) widely used currently in the marine fuel markets. The ship's main engine also operates on LPG as fuel which reduces CO2 emissions by approximately 20%, sulfur oxides, particulate matter (PM), and other pollutants.

Areion is fitted with Alternative Marine Power (AMP) equipment and can carry out all port operations exclusively with shore power in any port where cold ironing is available. This feature aspires to promote emission free port operations. The ship is Battery Energy Storage System (BESS) ready-fitted for hybrid battery power management system operation. BESS enables optimization of onboard power generation systems eradicating blackouts while providing continuous peak shaving of energy requirements onboard.

The Naval Engineers' Foundry

The Naval Engineers' Foundry represents the enduring sum of ASNE's professional education locker.

The American Society of Naval Engineers' Foundry can be unlocked by reading the Naval Engineers Journal and the ASNE Blog, "Read a Little ~ Learn a Lot," listening to the ASNE Podcast, "Talk a Little ~ Learn a Lot," and at ASNE symposia (if you never go, you'll never know what you're missing). It's the mentors you'll meet, the questions you'll ask, the ideas you'll challenge, and the conversations you'll shape alongside the decision-makers and innovators driving the future Fleet forward.

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July 14–16, 2026 | Portsmouth, VA

Fleet Maintenance & Modernization Symposium
September 22–24, 2026 | Va Beach, VA

navalengineers.org/Symposia

Mark Offshore Tapped to Operate RV Mintis

Mark Offshore reached an agreement with Klaipėda University (Lithuania) to operate Research Vessel Mintis. The addition of RV Mintis represents a strategic expansion of Mark Offshore's service offering. Originally designed as a scientific research vessel, RV Mintis combines high-end research capabilities with practical offshore functionality. This unique combination enables commercial clients to benefit from a highly versatile platform that bridges the gap between traditional Survey Vessels and dedicated Subsea Support Vessels.

R/V Mintis is a 40-m DP1 catamaran research vessel built in 2014, with operational experience across the Baltic Sea, North Sea, Mediterranean and Eastern North Atlantic. Since 2015, the vessel has been actively involved in international marine research projects, many of which are directly linked to offshore renewable energy developments. The vessel is currently located in Klaipėda and available for client inspections.

RV Mintis is equipped with a central moonpool between the twin hulls and a dedicated midship A-frame, the vessel enables safe and efficient deployment of a wide range of subsea vehicles. The onboard laboratory can be converted into a fully functional ROV control room, ensuring optimal working conditions offshore.

The aft deck features a 14-ton SWL A-frame and multiple winch systems, enabling the deployment and recovery of subsea equipment such as CPT systems, buoys, landers, clump weights, measurement pods and environmental monitoring equipment.

Image courtesy Mark Offshore

Next Geosolutions gets $112m for Offshore Vessel

Next Geosolutions finalized financing to support the acquisition of a new offshore vessel, strengthening its fleet and subsea service capabilities as demand grows in the offshore energy sector. The Italy-based marine geosciences and offshore construction support specialist said it has secured backing from Intesa Sanpaolo and Cassa Depositi e Prestiti (CDP) for the purchase of the vessel Siem Day, which will be renamed NG Supporter. The total investment is valued at approximately $112 million.

The two financial institutions are providing 70% of the funding, with a 10-year repayment term. Intesa Sanpaolo is acting as lead bank, underwriting 60% of the financed amount, while CDP is contributing the remaining 40%.

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