



ISSUE

01

CRUISE CONNECT

Driving Innovation and Safety in the Cruise Industry

Discover how ABS is leveraging its deep maritime domain expertise to drive innovation in the cruise industry with cutting-edge technical advisory services, advanced training solutions and tailored strategies for operational excellence.

A LETTER FROM ABS LEADERSHIP

As the cruise industry continues its transformative journey, ABS is proud to launch a dedicated newsletter designed to keep you informed, inspired and equipped for the future.

Cruise operators today face a unique set of challenges, from evolving SOLAS lifeboat requirements to the operational complexities of aging fleets and emerging alternative fuels. At ABS, we understand the dynamic environment in which cruise ship owners operate, where guest expectations, regulatory demands and technological advancements converge.

This newsletter reflects the collective expertise of ABS' global cruise team, including insights from Vikram Dang, our Cruise Sector Lead. Vikram plays a pivotal role in shaping ABS' cruise strategy and supporting operators with tailored solutions that address the unique demands of cruise ship design, safety and sustainability. His deep industry knowledge and collaborative approach help ensure ABS remains a trusted partner to cruise stakeholders worldwide.

What You Can Expect:

- **Expert Perspectives:** Thought leadership on emerging trends, regulatory shifts and technological advancements.
- **Strategic Insights:** Deep dives into the solutions redefining the industry—from digital transformation and sustainability strategies to risk management and crew training.

- **Success Stories:** Real-world examples of how cruise operators are overcoming infrastructure limitations, fuel adoption hurdles and onboard safety concerns.
- **Innovation Highlights:** Updates on our latest research, classification Rules and tools like the Custom Rule Book application.

Whether you're reconfiguring aging ships, planning for alternative fuels or enhancing onboard safety systems, ABS provides technical advisory services and tools designed to address your operational challenges. Our global network, backed by the new ABS Cruise Center of Excellence, investment in research and development, and a collaborative approach help ABS deliver solutions tailored to your operational realities.



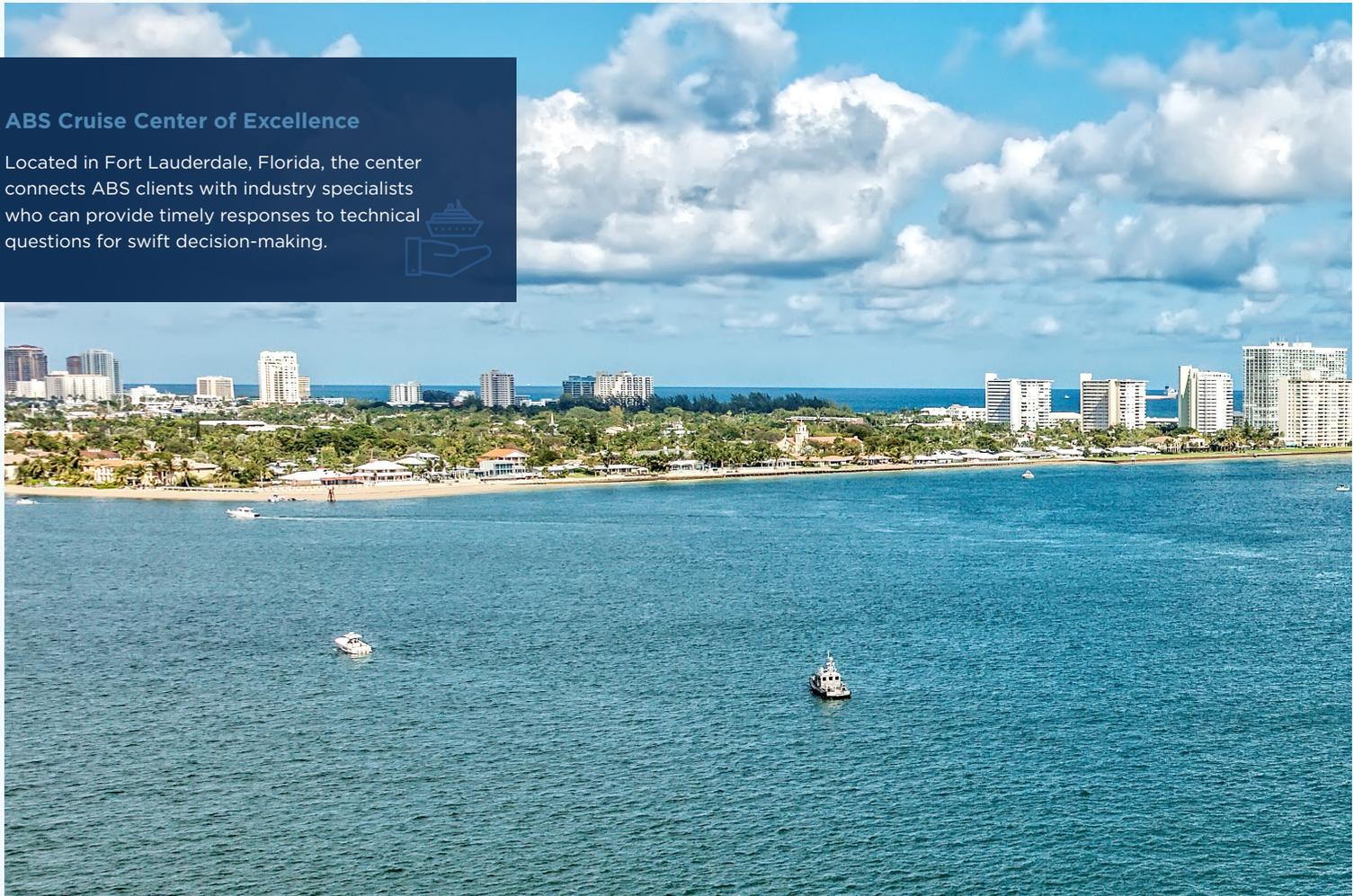
Joshua Divin

SVP, Global Marine
Business Development



ABS Cruise Center of Excellence

Located in Fort Lauderdale, Florida, the center connects ABS clients with industry specialists who can provide timely responses to technical questions for swift decision-making.



RESILIENT CYBER RISK MANAGEMENT FOR THE CRUISE INDUSTRY

The cruise industry has transformed significantly by embracing digital technologies to enhance operational efficiency and improve the overall guest experience. From advanced booking systems and onboard entertainment platforms to automated navigation and operational technology systems, integrated digital solutions are revolutionizing how cruise lines operate.

However, this increasing reliance on information technology (IT) and operational technology (OT) systems across cruise ships and ports also introduces new cybersecurity vulnerabilities, ranging from ransomware to data breaches.

These attacks not only threaten the integrity of operational systems but also jeopardize the safety and privacy of passengers and crew. It is crucial to address these challenges head-on by operationalizing cybersecurity in a manner that aligns with the maritime industry's rigorous safety and compliance standards.

Cruise operators must go beyond compliance checklists to proactively minimize cyber risk through the lens of operational readiness. By integrating a robust maritime cybersecurity risk management framework, the cruise industry will build resilience for safer cruising.

Cyber Risk is a Critical Operational Risk

Operating as floating cities, cruise ships are no longer isolated assets. They are connected platforms with remote vendor access, extensive digital infrastructure and complex OT networks. Bridge systems, propulsion controls and automation platforms are all cyber-enabled. Guest-facing IT networks introduce additional vulnerabilities. These are all potential points of failure.

To manage cyber risk, cruise lines must continuously assess and secure their mission-critical systems through programs that comprise OT cybersecurity testing, penetration testing, regulatory compliance with International Association of Classification Societies (IACS) and Maritime Transportation Security Act (MTSA) standards and crew training programs. Fleetwide cybersecurity assessments and training services help cruise operators reduce risk as they implement safeguards to meet International Maritime Organization (IMO) Guidelines, the National Institute of Standards and Technology (NIST) Cybersecurity Framework, U.S. Coast Guard requirements and classification society standards.



But compliance is only one dimension of readiness. Cruise operators must view cyber risk management as part of a wider strategy that bridges the gaps between organizational and operational safety culture.

Building Cybersecurity Resilience for Cruise Lines

Effective risk reduction is essential for safe cruise operations. A resilient cyber risk management program secures cruise operators' visibility, control and availability for uninterrupted service. The cruise industry needs a comprehensive strategy so that systems, processes and personnel are prepared to respond effectively to cyber threats. This means aligning cybersecurity initiatives with six key operational readiness principles to:

- Prioritize human safety;
- Enhance marine safety and resilience;
- Safeguard environmental safety;
- Support guest services and experience;
- Maintain regulatory compliance; and
- Improve company and personnel data sanity.

Managing cyber risk is a 24/7 priority, especially on cruise ships containing 6,000-plus passengers. Therefore, it is crucial to have a safety management system (SMS) in place with audits to protect the well-being of employees, guests and assets, and maintain a secure environment for smooth, reliable operations.

Additionally, effective cybersecurity depends on cooperation among government agencies, industry partners and specialized advisors who understand the cruise industry's unique operations. Cross-sector collaboration and transparent reporting will only strengthen defenses across the entire maritime transportation sector, especially as novel technologies are onboarded to support operational efficiency, safety and sustainability.

The Path Forward: A Call to Action

As the cruise industry embraces the opportunities and challenges of an increasingly interconnected world, the urgency to operationalize cybersecurity has never been greater. Cruise operators must adopt a proactive, strategic approach that integrates cybersecurity into every aspect of cruise operations, from bridge systems and guest services to supply chain management and environmental safeguards.

Operationalizing cybersecurity is no longer a choice. It is an imperative that underpins the safety, resilience and reputation of the industry. By embedding cybersecurity into the foundation of operational readiness, cruise operators not only safeguard their systems and passengers, but also position themselves as safety leaders in the maritime sector.

By fostering a proactive approach to managing evolving cyber risk, ABS Consulting is helping cruise operators maintain regulatory compliance and adapt to industry advancements while safeguarding crew, assets and the environment.



To learn more about how ABS Consulting can assist your fleet in preparing for cyber risks, email Kristy Huang, Director of Business Development at KrHuang@absconsulting.com.

Cyber safety is now part of operational safety — and training is the first line of defense.



EQUIPPING CRUISE SHIP CREWS FOR TOMORROW'S CHALLENGES

The cruise sector is entering its most transformative decade yet.

The rapid development of new fuels and technologies represents the single greatest disruptor of skills, procedures and operational models in the industry's history. Crews must now operate new propulsion systems, manage digitalized machinery and defend their vessels from evolving cyber threats. This is all on top of maintaining the safety, service and sustainability standards guests expect. Preparing your people for this change is arguably the most critical challenge facing the industry.

What makes cruise ships unique is that 85 percent of the onboard crew are hotel staff rather than trained mariners. While relatively few crew members interact directly with navigation, machinery or fuels, safety and emergency preparedness remain critical for all crew, especially those responsible for passenger safety.

Navigating New Safety Considerations

According to the Cruise Lines International Association (CLIA), more than 15 percent of cruise ships entering service in the next five years will be equipped with battery storage. Additionally, 24 operational ships have already conducted biofuel trials, and five methanol-ready vessels are currently under construction.

Alternative fuels like liquefied natural gas (LNG), methanol and ammonia present unique considerations for storage, handling and emergency response procedures. As new fuels and energy sources make their way into the industry, all stakeholders and onboard crew must understand the significant safety challenges.

The challenges:

- **Fuel Transition Shock:** New fuels introduce unfamiliar hazards, bunkering procedures and safety protocols.
 - **Liquefied natural gas** offers lower emissions than conventional marine diesel oil but requires crews to account for the possibility of cryogenic burns, gas leaks and fire hazards.
 - **Methanol** is a promising option due to its reduced environmental impact, yet toxicity and flammability concerns require careful handling.
 - **Ammonia**, while producing zero tank-to-wake carbon emissions, is extremely toxic and demands advanced safety protocols as well as specialized equipment and training.
 - **Lithium-ion batteries** come with their own fire and safety considerations, including unique extinguishing systems for thermal runaway events.
- **Digital and Cyber Integration:** Modern cruise ships now carry hundreds of networked systems, including propulsion, hotel automation, passenger Wi-Fi and operational data, blurring lines between OT and IT.
- **Competence Gap:** Crews trained for conventional systems are now expected to master advanced automation, energy management and data-driven maintenance.
- **Regulatory Clarity:** Operators face overlapping regulatory, technical and safety requirements with no unified framework.
- **Experience Drain:** Senior engineers are retiring faster than knowledge can be transferred.

Understanding these challenges and reacting efficiently during high-stakes situations are essential to keeping both personnel and passengers safe as the cruise industry adopts new energy sources.



*The technologies powering tomorrow's cruise ships require a completely new kind of readiness, **blending safety, digital literacy and environmental awareness.***

Layered onto this shift is the increasing digitalization of the systems that manage and monitor modern energy technologies. Cruise vessels now rely on interconnected propulsion controls, automated fuel handling units, hybrid energy interfaces and integrated bridge systems. As this digital ecosystem expands, cyber incidents or control system failures can disrupt essential operations, including bunkering, power distribution logic and emergency shutdown functions. With vessel systems becoming more interconnected, new digital safety considerations are emerging—reflected in requirements such as the IACS UR E26 and E27 standards now applied to most vessels built after July 1, 2024. Ensuring the resilience and integrity of this digital backbone is now as critical as managing the physical hazards of alternative fuels.

Recognizing Personnel Shifts

As the cruise industry prepares to address these emerging challenges, shifting demographics within the workforce require consideration. Training programs must connect with personnel in ways that match how they learn, helping ensure the retention of critical safety and operational behaviors.

While certain segments of the maritime workforce are aging, Millennials and Gen Z workers now fill many roles onboard vessels.

These younger workers often exhibit a digital-first mindset. Research supports this generational shift:



74%

A 2021 Inmarsat study found that **74 percent** of seafarers used smartphones or tablets onboard, indicating their comfort with technology in daily operations.



65%

A 2022 Wärtsilä study revealed that **65 percent** of participants aged 35 years or younger favored immersive learning systems, such as virtual simulations, for complex safety and operational training.

In addition to the generational workforce shift, the cruise industry is also grappling with a growing crew shortage, impacting both skilled mariners and hotel staff. As a result, crew members are faced with managing both the growing technological changes and additional responsibilities.

Recognizing these trends will allow cruise operators to select training programs that meet personnel expectations while reinforcing safety-critical maritime skills.

Bridging the Gap Between Technology and People: ABS Training Solutions

While the ABS Cruise Center of Excellence develops the frameworks that anchor safe operations — enhanced SMS structures, HAZIDs, HAZOPs, QRAs, design reviews, human-factor integration — into one coherent approach, ABS Training Solutions bridges the gap between these advancing technologies and the people who must apply them. The goal

is clear: identify vulnerabilities early, strengthen risk controls and help ensure innovation does not introduce new exposures. Together, this approach enables cruise operators to move forward with confidence, aligning technical progress with practical, operational readiness.

Emerging challenges, demographic shifts and unfamiliar energy systems all highlight the need for cutting-edge training solutions. These programs must focus on both traditional maritime safety principles and modern approaches to learning.

Young seafarers have shown a particular preference for immersive training tools, reporting better retention of complex safety and operational concepts when using techniques like virtual reality (VR) and simulations. By leveraging tools that appeal to younger workers' learning preferences, such as the ABS MetaSHIP game-based training, cruise operators can fulfill crew needs more effectively while fostering critical safety behaviors.

ABS Training Solutions Portfolio Includes:

- **Emergency Preparedness:** Immersive scenarios using VR, simulations and classroom techniques train all personnel to handle incidents, such as bunkering operations or passenger emergencies, in a controlled environment.
- **Adoption of Alternative Fuels:** Layered training approaches provide foundational knowledge for all crew and advanced education for personnel directly handling fuels like LNG, methanol and ammonia.
- **Fire Safety Systems:** Training programs emphasize system functionality, maintenance protocols, and regulatory expectations tied to modern fire suppression technologies.
- **Cyber Resilience:** Expanding crew education on data networks and cybersecurity helps ensure staff can protect critical data networks, navigate alarm overload, and mitigate vulnerabilities in connected systems. The ABS CyberSafety® Program enables operators to implement IACS UR E26/E27 in a practical, behavior-focused way that can also enhance crew awareness.
- **Regulatory Compliance:** Cross-functional training addresses regulatory standards, helping ensure all personnel understand how to comply with evolving regulations, even across cultural and language barriers.

Given that cruise ships house diverse teams, including traditional seafarers, hotel staff, medical personnel and more, it is essential to integrate cross-functional training to help ensure everyone onboard can support safety protocols and emergency response.

From immersive simulations to instructor-led classroom sessions, ABS can provide comprehensive training strategies for the technical, operational and management needs unique to cruise ships. The MetaSHIP learning environments bring real-world complexity into a safe, repeatable training space, helping crews build confidence before they face it at sea. Connect with the ABS Training Solutions team to explore how the MetaSHIP immersive environments and Cruise Training Suite can strengthen your fleet's operational readiness.



Find out how ABS Training Solutions can solve your next training riddle by emailing ABSTrainingSolutions@eagle.org.



Technology and regulation will continue to evolve, but it's the **competence of people** that determines how safely and successfully that evolution unfolds.

OPEN DECK

We want to hear from you. Share your thoughts with ABS, so that we can better assist you in supporting your fleet.



Scan Here ↗

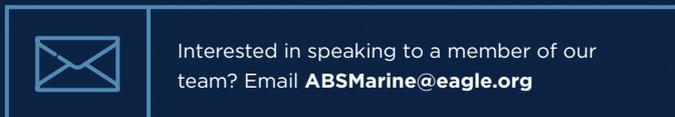
- Are your vessels prepared for a cyber-attack using passenger Wi-Fi as a vector? How can ABS support your fleet's cyber resilience?
- How are your crews preparing for radically evolving operations? What role can ABS play in better training your crews for multi-dimensional challenges?

WHAT'S COMING UP NEXT

Prepare to dive into the transformative world of cruise technology with our next issue! We'll explore innovations like AI, IoT, and automation, highlight the ABS Center of Intelligent Systems Technology in Korea, and showcase advancements in condition-based programs and predictive analytics. Join us as we embrace the smart ship revolution and examine how these technologies are setting new standards for safety and sustainability in the cruise industry.

STAY CONNECTED WITH ABS

To learn more about how ABS is supporting the cruise ship sector and to receive your copy of the next Cruise Connect, follow us on LinkedIn and X or subscribe to our news below:



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