THE REPORT

The Magazine of the International Institute of Marine Surveying

SEPTEMBER 2023
ISSUE 105

The future of AI in marine cargo survey businesses

Safety Challenges at Sea

Introducing the history of Ceramic Coatings

A comprehensive look at the future of yachting

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THE REPORT

The Magazine of the International Institute of Marine Surveying **SEPTEMBER 2023 • ISSUE 105**

Contents

Editor's Letter

Dear Colleague

Welcome to edition 105 of The Report, an issue which offers readers an eclectic mix of news, features and industry comment. This Report is the edition of the reports. Let me explain. The past few weeks have seen a plethora of new reports published on all manner of maritime activities. Of course, none of us has the time to sit and read them from cover to cover, especially those that run to several hundred pages. But as I said elsewhere recently, there are nuggets of great wisdom buried in every report, some of which may well be relevant to your work. So, at the very least I would encourage you to scan the executive summaries. The roundup of reports starts on page 40.

The IIMS Conference and AGM, held at Southampton in June, already seem a distant memory. If you missed the event, there are words and photos in this publication to describe and depict what went on. The content presented by leading industry experts was of the highest quality and bang on trend with some of the key issues facing the profession and maritime industry right now.

As always, I am grateful to those who have written content for this publication. It is fitting that Jeff Wilson, who stunned the Conference audience with his presentation, has accepted my invitation to translate his PowerPoint into an article entitled *'Charting the Course Ahead: The Future of AI in Marine Cargo Survey Businesses'*, a sign of our times (page 74). And on the subject of AI, a big thank you to Nick Parkyn who has written the second part of his article on this emerging technology (page 60).

Nick Deal, Bond Solon, has produced a short article that is a must read for anyone who either does, or is considering undertaking expert witness work. Do you really know what the court wants from you as far as a CV is concerned? Nick does. See page 85.

In an environment of increased consumer enthusiasm to tackle pollution, Wave International's Paul Gullett is raising the stakes by calling for legislation for the unregulated marine leisure sector as far as overboard discharge, especially with grey water, is concerned. His article on page 92 makes compelling reading.
I expect the concept of green corridors might be a new one for some. Vijay Kurup seems to have his finger on this particular pulse though. His article on page 124 - *'The Green and Digital Corridors New Highways to the Ocean'* - will give you a good introduction to this concept.

It is always a pleasure to publish an article authored by the highly respected and knowledgeable Michael Grey. In his opinion article entitled *'When the numbers become dangerous'*, he tackles the issue of lithium-ion batteries and EV car fires on ships in his usual forthright fashion. It will make you think.

I am especially indebted to Tom Keeling, an inland waterways marine surveyor, for sharing his research on the dangers of LPG gas installations and his resulting concerns. His findings from the surveys he has conducted are little short of shocking. I am happy to give Tom a platform as I believe his work should be recognised so that lessons can be learned. He kicks off on page 82 and I expect a future edition will reveal some of the actual findings.

As for me, well I am hitting the road again as travel is well and truly open. Conferences, training seminars and workshops await. Perhaps we will meet up soon. If not, I will be certain to publish an overview in the next Report Magazine.

Regards

Mike Schwarz
Chief Executive Officer

The President's Column

Dear Members and fellow Marine Professionals,

Welcome to this President's Column for September 2023. I have changed my opening address as I know that this marvellous publication, 'The Report', is read far beyond the membership of IIMS. We welcome all non-members to not only read this Report but also to contribute. We enjoy receiving interesting papers and articles from across the marine industry and from around the globe. I'm sure you will join me in thanking Mike Schwarz and the Head Office Team who not only put this quarterly publication together but also deliver the monthly News Bulletins (**https://www.iims.org.uk/news-bulletins**) and the Mid-Month Marine Communiqué – all excellent communication vehicles to keep us abreast of valuable information.

I don't want to reiterate Mike's report about the AGM and Annual Conference that was held in early June in Southampton, but I do want to say thank you to all the speakers, (industry experts) who gave their time freely to join us and deliver their professional and fascinating papers. As you may be aware we, as an organization, have a diverse membership and there is generally a 50/50 split between Big Commercial Vessel Surveyors and Yacht and Small Craft and Inland Waterways Surveyors. So, it is always a challenge to prepare and deliver a meaningful conference that covers this diversity, but Mike and the IIMS Head Office Team managed to put together a great event.

This is the first full event that we have run since pre-COVID, so it was gratifying that we had many face-to-face members, as well as online members, joining us. The benefits of face-to-face events cannot be over-emphasized, but certainly, the dynamics have changed. We cannot expect to see the big events held in London venues that we used to attend. This simply is not cost-effective and can actually create massive losses for an organization (as other bigger marine-related organizations have discovered this year).

So, it was all the more satisfying that the AGM, Conference and Conference Dinner were all well attended and ran so well this year in June. It was a privilege for me to attend as President of the IIMS and to meet members, non-members and speakers, as well as to join together with our dedicated HQ Team who have put so much into these events to make them successful. Thank you from me on behalf of the IIMS Membership.

I would like to mention again the President's Charity for 2023. For those of you who are not aware of this process, the current President nominates a charity that the IIMS supports for a period of twelve months until a new nomination is made at the next year's AGM.

I am very pleased to re-announce that the President's nominated charity for 2023 is the Tall Ships Youth Trust. (**www.tallships.org**). I was very happy that Kirsty French, Director of Youth Development and Outdoor Learning, was able to join us for the Conference Dinner.

We have all been talking about continuity planning and where the next generation of surveyors is coming from. There are great opportunities presented for a 'career pathway' through the Tall Ships Youth Trust. Please consider supporting our 2023 charity by making a donation through this link: **www.tallships.org/make-a-donation/**.

Mike is also travelling to Bangladesh to attend the Marine Surveyors Association of Bangladesh (MSAB) milestone 30th anniversary in September.

Also please note that we will be attending KORMARINE, in Busan, South Korea from the 24th to 27th October, **www.kormarine.com**. Mike and I look forward to meeting members on our stand, in the UK Pavilion, and networking in this vibrant trade show.

We must also congratulate all our new members who have successfully joined The International Institute of Marine Surveying in the first half of 2023. This demonstrates your experience and professionalism as it is not just a paper exercise to join IIMS. In order to join IIMS, all applications have to be vetted by our Professional Assessment Committees, who review each one before membership is granted. We pride ourselves on being a 'professional' membership organization that cares about the calibre and credibility of our members. We don't just take an individual's money and give membership. Indeed, this would be rather meaningless if we want to promote the professionalism and integrity of our organization and our members as being the leading professional body for the surveying profession.

We continue to train and educate new and existing surveyors through the many courses and educational material provided through the Institute and its sister company, the Marine Surveying Academy. Please note that you do not have to be a member of IIMS to sign up for a training course. We all need to keep up with evolving technology and industry best practices, so it is vital that we all update our skills and knowledge frequently. This was made very apparent to those who attended the Annual Conference. We heard about many new and quite thought-provoking technologies that all marine surveyors will face in one way or another in their future survey work.

It is easy for IIMS members to update their Continued Professional Development (CPD) records and annual scores through the IIMS CPD App. We encourage you to use it, as there are many ways that you can gain qualifying CPD through the course of your work and generally being attentive and interested in your profession.

Stay safe.

Peter Broad,
CEng, CMarEng, FIIMS, FIMarEST
President IIMS

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UAE MARITIME WEEK CONCLUDED WITH A POWER-PACKED CONSORTIUM OF LEADING MARITIME ENTITIES, DRIVING PROGRESS ON A GLOBAL SCALE

By facilitating knowledge sharing, networking, collaboration, and the signing of important agreements between public and private sectors, the 2023 edition of the UAE Maritime Week proved to be instrumental in driving the progress in the local and regional maritime industry. Through its power-packed agenda of relevant and thought-provoking sessions, the biennial Week held under the patronage of the UAE Ministry of Energy and Infrastructure (MOEI UAE) provided a platform to emphasise sustainability, address environmental concerns, and engage in policy and regulatory discussions. Through leveraging the outcomes of such sessions, the UAE can effectively prepare for the upcoming COP28 and the 2023 IMO Council elections, solidifying its position as a leading global maritime hub, and contributing to the sustainable growth of the industry across the globe.

An integral part of the UAE Maritime Week was the signing of ground-breaking deals between leading industry entities across the country and the region. Amongst the many partnerships that were announced during the Week, the most prominent highlight was the signing of eight MoUs between the Ministry and renowned public and private organisations across the nation for the 'Blue Pass' initiative, a project launched by MOEI UAE in partnership with Marihub to strengthen the maritime sector.

CALIFORNIA GOVERNOR NEWSOM'S 2024 BUDGET PROPOSES 300% BOAT REGISTRATION FEE INCREASE

The nation's largest recreational boat owner's advocacy, services and safety group Boat Owners Association of The United States (BoatUS), and the nonprofit state advocacy organization Recreational Boaters of California (RBOC), are asking Golden State boat owners to speak up on a recently proposed 300% boat registration fee increase outlined in Governor Newsom's 2024 budget.

"Most citizens can understand, over time, the need for modest increases in government fee structures," said David Kennedy, BoatUS manager of Government Relations. "However, BoatUS and RBOC do not believe such a significant increase is justified by the administration. We are asking the state's boat owners to reach out to their state legislators to request they reject this proposal and engage with boating stakeholders to develop realistic boat registration fees that are dedicated to boating programs."

The two groups along with other recreational boating stakeholders have been engaged in a two-year process to review the state's boating programs. While a modest increase was anticipated, there was some expectation that the state would recognize the significant contribution boaters already make, such as $107 million in annual motor fuel taxes.

Image credit: IMO

NEW SECRETARY-GENERAL OF IMO ANNOUNCED

The IMO Council has appointed Mr Arsenio Antonio Dominguez Velasco of the Republic of Panama for an initial 4-year term as its next Secretary-General from 1 January 2024, subject to the Assembly's approval.

Arsenio Dominguez currently serves as Director, Marine Environment Division of the International Maritime Organization (IMO), having previously been the Director, Administrative Division and Chief of Staff. Prior to coming to joining IMO he worked for the Panama Maritime Authority starting in 1998 as Head of the Regional Technical and Documentation Office, and as Alternate Representative and Technical Adviser of Panama to IMO from 2004 to 2014.

Seven IMO Member States had been nominated as a candidate for the post of Secretary-General of the IMO. The term of the current Secretary-General, Kitack Lim, expires on 31 December 2023.

Arsenio Dominguez arrives at a time when there is considerable pressure on IMO and world shipping to tackle some major issues and he is likely to inherit a large in-tray.

NEW REGULATIONS FOR ENHANCED SAFETY AND ENFORCEMENT IN CANADA'S MARINE TRANSPORTATION SYSTEM ANNOUNCED

The Government of Canada is committed to the safety and security of Canada's marine transportation system. A critical part of that system is a flexible, robust, transparent, fair, and consistent enforcement program that keeps Canadians safe.

The Minister of Transport, the Honourable Omar Alghabra, announced new regulations under the Canada Marine Act, effective immediately. These regulations allow for enforcement officers to issue administrative monetary penalties, or fines to individuals, corporations, or ships for violations of the Act and its associated regulations, providing them with more flexibility in dealing with situations where rules or standards are not being followed.

Fines are an enforcement tool that allow enforcement officers to issue monetary penalties rather than recommending legal action. They allow for a flexible, step-by-step enforcement process that both motivates rule breakers to return to compliance and discourages them from breaking the rules again. The total penalty amounts, up to a maximum of $5,000 for an individual and $25,000 for a corporation or ship, vary depending on the severity of the violation and the factors that make it worse or less harmful. This approach is expected to decrease the number of violations in the marine industry as a whole, and ultimately keep the sector and Canadians safe.

Before implementing these new regulations, Transport Canada undertook extensive consultations with industry stakeholders and the public, beginning in 2018. These new regulations allow for the issuance of fines for violations of existing rules.

The Government of Canada's priority is keeping Canadians safe. These new regulations aim to do just that by encouraging those who break the rules to correct their actions and prevent future violations.

The Canada Marine Act and its associated regulations set requirements around the movement and operation of marine vessels within Canadian ports to ensure predictability and efficiency, and to protect the safety of people, property, and the environment.
The new regulations introduce AMPs, or fines, for violations of the Canada Marine Act, the Port Authorities Operations Regulations, the Natural and Man-made Harbour Navigation and Use Regulations, the Public Ports and Public Port Facilities Regulations, and the Seaway Property Regulations.

The proposed Regulations include a schedule setting out the general procedure to calculate individual penalties.

These regulations deal with the safety, order, and day-to-day work of specific ports, harbours and properties managed by Canada Port Authorities, Transport Canada, the St. Lawrence Seaway Management Corporation, and the Department of National Defence.

ISU WARNS THAT SALVAGE UNION MEMBERS FACE MAJOR LOSS IN EARNINGS

The International Salvage Union (ISU) has warned that economic conditions are currently challenging for the salvage industry. In its salvage industry statistics for 2022, ISU said that the general trend towards a smaller number of larger and more complex cases made the volatility more pronounced.

Gross revenue for ISU members in 2022 reached $241m, down from $391m the previous year. There were 149 services provided in 2022, down from 189 in 2021, and wreck removal income was $55m from 32 services, down from $108m, from 56 services in 2021. It was notable that Lloyd's Open Form (LOF) cases were just 26 for ISU members – generating income of $66m. Revenue from LOF cases amounted to 40% of all emergency response revenue. LOF cases made up 21% of emergency response cases in 2022.

ISU President Captain Nicholas Sloane said that "the 2022 ISU statistics show a 38% decrease in the income received by our members compared with the previous year. Wreck removal income has nearly halved".

IMO PUBLISHES GUIDELINES FOR LIFTING APPLIANCES

The International Maritime Organization has published the Guidelines for lifting appliances - document (MSC.1/Circ.1663).

The Maritime Safety Committee, at its 107th session (31 May to 9 June 2023), considered a proposal by the Sub-Committee on Ship Systems and Equipment during its eighth session. The proposal aimed to ensure a uniform approach towards the application of the provisions of SOLAS regulation II-1/3-13. As a result, the committee adopted resolution MSC.532(107) and approved the Guidelines for lifting appliances, which are outlined in the annex. Member States have been invited to utilise the annexed Guidelines when implementing SOLAS regulation II-1/3-13.

Additionally, they are encouraged to bring these Guidelines to the attention of various parties involved, including ship designers, shipyards, shipowners, equipment manufacturers, and other relevant organizations.

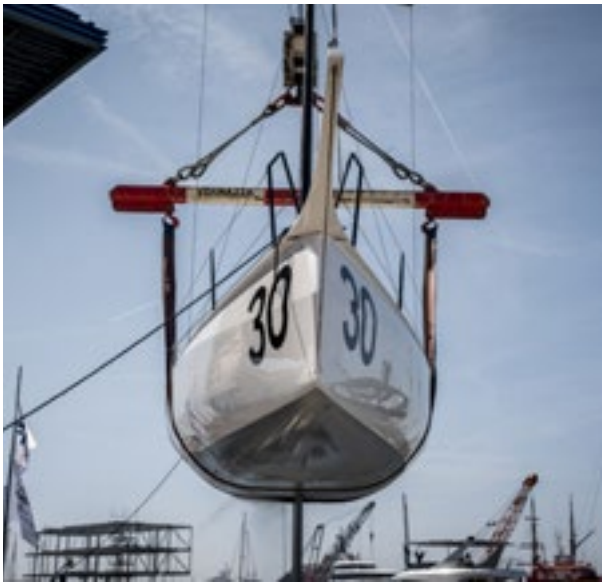
The guidance is available at **https://bit.ly/43v4rqh**.

INITIAL TESTS OF LIFEBOATS: IMO HAS ADOPTED AMENDMENTS TO THE SOLAS, RESOLUTION MSC.81(70), AND THE LSA CODE

Lloyd's Register has published important information about the test required for lifeboats. The International Maritime Organisation has adopted amendments to the SOLAS Convention, Resolution MSC.81(70), and the International Life-Saving Appliance (LSA) Code*, which come into force on 1 January 2024.

These amendments mean the installation survey requirement for carrying out a launch test of lifeboats, when the ship is making headway at not less than five knots, will only be applicable to davit-launched lifeboats and will no longer be required for free-fall lifeboats.

Flag Administrations may choose to adopt the amendments prior to the entry-into-force date of 1 January 2024 and allow early implementation, as permitted by MSC.8/Circular 2 and MSC.1/Circular 1565.



ITALIAN STARTUP LAUNCHES 'FULLY RECYCLABLE' PRODUCTION BOAT

Italian startup Northern Light Composites has launched its new EcoRacer30 sailing boat, which the firm claims can be fully recycled thanks to new composite technology. The company, based in Monfalcone, specialises in rComposite technology, which the firm says allows for easier recycling of composite material at the end of the boat life.

The Ecoracer30 is a 9-metre sailing boat designed by Matteo Polli that utilises rComposite. It launched during the recent Ocean Race Grand Finale in Genova, which concluded on 2 July 2023. rComposite 'replaces thermosetting resins with a thermoplastic matrix', according to the firm. This change allows for easy chemical processing and recovery of the raw materials, enabling the boat to be recycled.

WORLD'S LARGEST CONTAINERSHIP NAMED IN CEREMONY AT BREMERHAVEN PORT

The world's largest containership, MSC Michel Cappellini, was officially named in a ceremony held at the Stromkaje Terminal in Bremerhaven. Germany. China's Jiangsu Yangzi Xinfu constructed this huge vessel for the Bank of Communications and Financial Leasing, while MSC operates it commercially. The ship is now the largest in its category. She is registered in Liberia and has been classed by DNV.

The ships extends to 400 meters in length and is 62 meterswide. With its enormous carrying capacity, it can accommodate up to 24,346 containers stacked in 24 rows when fully laden.

The ship complies with the stringent IMO Tier III emission standards set by the International Maritime Organization. Emissions are reduced utilising technologies such as Selective Catalytic Reduction and air lubrication technology. The vessel is equipped with shore power capabilities and a hybrid scrubber.

AMSA RELEASES INAUGURAL STRATEGIC OVERVIEW OF MARITIME SAFETY IN AUSTRALIAN WATERS

The Australian Maritime Safety Authority (AMSA) has released its inaugural State of the Fleet overview, which showcases its regulatory interactions with the people and vessels that worked in Australian waters in 2022, and foreshadows forthcoming compliance priority areas.

AMSA is responsible for regulating safety on domestic commercial vessels, regulated Australian vessels, and foreign-flagged vessels operating to and from Australian ports, and through Australian waters. AMSA Executive Director Operations, Michael Drake, said the authority's regulated communities were incredibly diverse from one another, but also within themselves.

"Safety is important regardless of whether you operate a three-metre tinny for commercial crabbing, or a 200-metre bulk carrier," Mr Drake said.

"Despite the differences in vessels and operations, and the challenges that regulating safety on each of them presents, we have identified a number of issues and areas of concern that apply to the full range of vessels under our responsibility.

"Our inspection and incident analysis activities show us that planned maintenance, voyage planning and lookout, working conditions and safety behaviours, electrical safety and vessel-sourced pollution continue to be issues across these diverse regulated communities."

To read the review and to get access to the various reports go to **https://bit.ly/3XWa5k0**.

CANADA HAS INTRODUCED MANDATORY WASTEWATER REGULATIONS FOR CRUISE SHIPS WITH IMMEDIATE EFFECT

Citing the importance of strengthening Canada's environmental standards, government officials have announced that effective immediately they have moved from voluntary to mandatory measures governing cruise ship wastewater discharges. Having previously been criticized for lax standards and enforcement, they highlighted that the new measures align with or exceed standards set out by the International Maritime Organization.

"We need to ensure they are doing so in a more sustainable manner moving forward," Omar Alghabra, Canada's Minister of Transport said while recognizing the contribution of cruise tourism to Canada's economy. He noted the direct and indirect contributions to the economy represent more than C$4 billion annually (US$3 billion) while highlighting the need to protect Canada's waters and environment.

The rules were first introduced in April 2022 on a voluntary basis for measures addressing discharges of greywater (the drainage from sinks, laundry machines, bathtubs and showers, or dishwaters) and sewage (wastewater from bathrooms and toilets). They noted that greywater can contain detergents, cleaners, grease, and cooking oil while in addition to human waste sewage can contain pharmaceuticals and heavy metals.

MARITIME ANTI-CORRUPTION NETWORKS ANNUAL REPORT PUBLISHED

The Maritime Anti-Corruption Networks (MACN) has released its annual report for 2022 describing the issues that has led to an increase in demand for frontline support and company compliance tools.

By 1 January 2024, the IMO's Single Window for data exchange will become mandatory in ports around the world. The Single Window is a significant step in the digitalization of shipping, meaning more transferable data and, potentially, an increase in transparency around how ships are managed and how they interact with port-side authorities.

An increase in data sharing and the number of connected ships improves the industry's ability to inform a vessel of possible risks, helps MACN provide real-time support to frontline staff, and makes incident reporting faster and easier. Through the launch of tools such as the Global Port Integrity Platform (GPIP) and 3 Sea Diligence (an online third-party due diligence risk management platform), MACN is at the forefront of embedding technology into the fight against corruption.

Download the full report at **https://bit.ly/3pVP1Oa**.

ABU DHABI BOAT SHOW LAUNCHES INNOVATION HUB

Abu Dhabi International Boat Show (ADIBS) is launching a new innovation hub for its upcoming fifth edition, in partnership with startup hub Yachting Ventures. Organisers of the annual show, which runs this year from 9-12 November 2023 at the Abu Dhabi National Exhibition Centre (ADNEC) say the hub will be 'dedicated to supporting CleanTech and sustainable startups within the leisure marine and yachting industries.'

The Innovation Hub will serve as a centre for collaboration, education, and networking, bringing together investors, industry experts, and innovators passionate about shaping a more sustainable maritime sector. There will be space for ten startups and Yachting Ventures will select those chosen to participate.

Image credit: Abu Dhabi International Boat Show

FINCANTIERI AND COMAU UNVEIL FIRST MOBILE ROBOT FOR SHIPYARD WELDING

Fincantieri working in collaboration with Comau has unveiled the first mobile robotic solution to be used for outdoor welding in the company's shipyards. Known as MR4Weld (Mobile Robot for Welding), the companies report the mobile robot is designed to improve quality, performance, and employee well-being during labour-intensive welding activities.

The collaboration was launched seeking to apply technology, digitalization, and innovation within cutting-edge, mobile robotic solutions that will increase production speed and worker well-being, by automating traditionally manual processes. According to the companies, the MR4Weld mobile robot is part of a new paradigm in bringing automation beyond the factory floor.

The companies have completed the production of prototypes of the system and have said it is currently undergoing testing. They intend to use the robot within Fincantieri shipyards to autonomously weld steel structures, reporting it could produce a possible three-fold increase in productivity compared to a manual process. Fincantieri and Comau have jointly filed a European patent application for specific MR4Weld technological features.


Image credit: Feadship

2023 OBSIDIAN FROM FEADSHIP RAISES THE BAR ON CARBON REDUCTION

Feadship is another step closer to the goal of producing carbon-neutral superyachts by 2030 following the launch of the recently built 84-metre (276-foot) superyacht Obsidian. the vessel is the first of Feadship's new generation of large yachts furthering carbon reduction through hulls optimised at cruising speed instead of top speed, weight control, advancements in electric propulsion, and the ability to run engines on non-fossil diesel fuel called HVO.

The yacht's sea trials were conducted with the generators running on this second-generation biofuel, reducing carbon emissions by 90% compared to yachts operating on fossil fuels.

Reducing CO2 emissions is a top priority, but Feadship goes even further by addressing the overall environmental impact of its vessels. The emissions of nitric oxide and nitrogen dioxide (NOx), particulate matter, hydrocarbons, and the impact of building materials like steel, aluminium, fairing compounds, antifouling, teak, interior finishing, and more, are also under scrutiny.

SEAN POOLE APPOINTED AS NEW COO AT VANCOUVER ISLAND FERRY COMPANY

Vancouver Island Ferry Company (VIFC) has appointed Sean Poole as its new Chief Operating Officer, effective immediately. Most recently, Poole served as the Senior Director of Operations at Seaspan ULC, where he led a diverse team responsible for the safe and efficient operation of a fleet of 130 marine assets. Notably, he spearheaded the design and construction of a state-of-the-art simulation centre tailored to a fleet of new vessels. Sean will oversee all operations as VIFC sets sail into exciting new waters with the launch of Hullo this Summer.


Image credit: Sunreef Yachts

SUNREEF YACHTS OPENS NEW SPANISH OFFICE

Polish catamaran builder, Sunreef Yachts, has opened a new office in Palma de Mallorca, Spain.

Headed by Perry Carroll, Sunreef Yachts Spain will provide sales, marketing and aftersales support to Sunreef owners and clients throughout the country. It will also be responsible for building a network of brokers and dealers.

"We are excited to open our office in Spain," says Carroll, who has over 20 years' experience in the luxury yachting industry. "This is a key market for us, and we are committed to providing our owners and future clients with the best possible service."

Sunreef Yachts builds catamarans from 40ft-160ft in length. The company was founded in 2002 in Gdansk, Poland.

2023 SYDNEY INTERNATIONAL BOAT SHOW A GREAT SUCCESS

The Sydney International Boat Show enjoyed four days celebrating the Australian boating lifestyle at the International Convention Centre Sydney and the Show's purpose-built marina on Cockle Bay, Darling Harbour last month.

Andrew Fielding, President of the Boating Industry Association said, "Boating is a standout option in leisure for people from all walks of life, ages and abilities. We're delighted with the diversity of the offering, quality of the displays and the enthusiasm of the public attending our Show."

Image credit: Sydney Boat Show

With a total of 233 exhibitors, accounting for 646 boats at the Show, including 220 vessels on the marina representing 82 on-water exhibitors, the largest on-water display since 2018, all available space in the halls and marina was sold out. There were 151 exhibitors showing a total of 424 boats in the halls.

Exhibitors reported significant sales in the halls and the marina, leading to an anticipated Show turnover in the hundreds of millions of dollars. This reinforces the annual economic value of the boating industry to New South Wales of more than $3 billion.

On the marina, Hannah Mason of Short Marine said this could well be the 'best show ever' for their business. "The Show has gone really well for us, partly due to the Viking Yacht at our stand. It's been such a showstopper, we'll bring a bigger model next year, maybe even the Valhalla 55. Our sales have been that significant," she said.

CONSTRUCTION STARTS ON FIRST MINI CREW TRANSFER VESSEL FOR US OFFSHORE WIND INDUSTRY

The development of the U.S. offshore wind energy industry continues to contribute to the supporting industries with shipbuilding being one of the sectors to benefit. U.S. shipbuilder Edison Chouest has begun on another first-of-its-kind vessel for the U.S. industry, a mini crew transfer vessel.

Work began in July on the 39-foot vessel which will be a daughter craft working in conjunction with the service operation vessel (SOV) that the yard is also building. Both vessels are due to enter service in 2024. Designed by the UK's Chartwell Marine, the vessel supplies another critical piece of the maintenance and operations aspect required for offshore wind farms. The vessel will operate for joint-venture partners Ørsted and Eversource to service their three wind farms Revolution Wind, South Fork Wind, and Sunrise Wind in the Northeast U.S.

Chartwell's managing director, Andy Page, highlights while the vessel is small it is essential in the chain connecting the SOVs and turbines. With a capacity of up to 12 personnel, the mini crew transfer vessel is designed to be deployed from the SOV during extended offshore stays. As a daughter craft, its role is to transfer staff including engineers and maintenance personnel from the SOV to turbines, vessels, and other critical project infrastructure.

Image credit: Edison Chouest

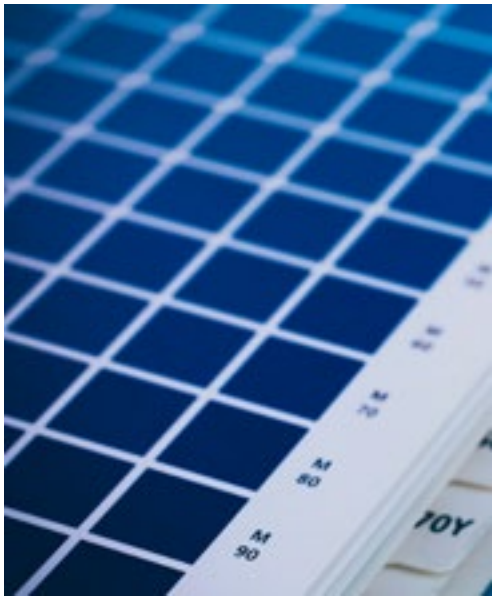
ABS SUPPORTS INNOVATIVE YACHT DESIGN WITH DEDICATED GUIDANCE NOTES AND SOFTWARE

ABS has published Guidance Notes on Yacht Design and released new Yacht Structure Assessment software, both geared toward streamlining and simplifying the yacht design and plan approval processes.

The Guidance helps support innovation by simplifying the plan approval process for designs that fall outside the arrangements covered by statutory conventions. The software further streamlines the design and approval process, providing a fast and efficient check of structures and material.

"ABS recognizes yacht designers are always innovating, and technology is evolving rapidly, but safety remains a paramount focus throughout the design stage. We produced this guidance and assessment software to simplify and accelerate the plan review process," said ABS Yacht Sector Lead, Daniele Bottino. "The notes offer guidance on standardizing key design innovations that are increasingly applied in new yacht construction, while the software provides a straightforward platform to identify acceptable structural and material strength."

The guidance provides designers and builders information on previously approved designs with an equivalent level of safety to that outlined in statutory conventions. Combining the ABS guidance with the Yacht Structure Assessment software, designers can quickly develop and assess new designs.



FUND BRITAIN'S WATERWAYS MAKES URGENT CALL ON GOVERNMENT TO STOP INLAND WATERWAYS FALLING INTO DISREPAIR

Britain's unique and well-loved network of canals and navigable rivers is deteriorating because of inadequate funding. At a time of unprecedented challenges caused by the climate emergency and high inflation, the government is failing to respond. Fund Britain's Waterways (FBW), a coalition of organisations representing hundreds of thousands of users and supporters of inland waterways, is campaigning for national and local governments to act now and protect our waterways' public benefit and natural capital.

RYA LOOKS TO NEW HORIZONS WITH 'TOGETHER ON WATER'

The RYA has launched its Together on Water strategy, celebrating the passions and benefits of being on the water and advocating opportunities for all to find and enjoy their place among the UK's boating communities.

Coupled with a refreshed new brand identity, 'Together on Water' sets out how the RYA will work in partnership to connect more people than ever, from all locations and backgrounds, with everything the water has to offer. This long-term vision will see the RYA's work extend further than ever before to help more people feel welcome, included and inspired to discover and safely develop their skills.

'Together on Water' was developed following extensive consultation across the sailing and boating sector, and is driven by the RYA's renewed purpose of positively impacting peoples' lives through inspiring, creating and supporting a safe environment to enjoy the benefits of being on the water.

Image credit: HMS Bronington Trust

IF FUNDS CAN BE FOUND AND SHE CAN BE RAISED, THE "KING'S WARSHIP" HAS A PERMANENT BERTH

A home in the Portsmouth Historic Dockyard in the UK for the "King's own warship" – otherwise known as veteran minesweeper HMS Bronington – awaits the vessel if enthusiasts can save her. The National Museum of the Royal Navy has offered a permanent home for Bronington, now 70 years old, which was commanded through most of 1976 by a then Lieutenant/ Lieutenant Commander Wales.

However, at this time Bronington is in a sorry condition, partially sunk at her mooring in Birkenhead, Liverpool. Despite outward appearances, surveyors say she is not beyond restoration – hence the concerted efforts by the HMS Bronington Trust to save the ship as a museum.

A five-stage plan has been drawn up to save, preserve and finally restore the vintage minehunter with the first three steps alone – getting Bronington out of the water, moving her to a shipyard and creating a special steel cradle to support the ship – estimated around to cost upwards of £1.5 million.

The final phases of the restoration will focus on the general preservation of the vessel and removing any toxic materials from the vessel, followed by the actual task of restoring Bronington to a state worthy of display to the public.

NEW PROGRAMME OF WORK TO HELP PROTECT UK WATERWAYS ANNOUNCED

The Canal & River Trust has announced an £89m programme of engineering work in the next round.
£26.5m of the programme is earmarked for 37 of the 71 reservoirs, with works including spillway replacements, upgrading the capacity to 'draw down' water levels, improving access and reducing leaks. 19 reservoir projects will be on site during the year including ongoing activity at Toddbrook (Peak Forest & Macclesfield canals), Harthill (Chesterfield Canal), Barrowford (Leeds & Liverpool Canal), March Haigh (Huddersfield Narrow Canal) and Swellands (Huddersfield Narrow Canal). A further 18 reservoir projects are being developed, with construction works planned for future years. In addition, repairs along canal beds, canal walls and at locks will help ensure millions of litres of water aren't lost from the network's ageing structures.

The Trust is continuing to invest in further works to improve navigation, carrying out a £6.5m dredging programme including 11 routine maintenance projects, three national programmes, spot dredging and dredging to canal feeders. £1.8m is allocated to dredging at Gloucester and Sharpness docks to tackle high levels of silt.

In addition, £2m is planned for stabilisation and leak sealing on four embankments, £2m for improvements to five mechanical and electrical structures, £1.4m for the refurbishment of seven bridges and £1m to repair six culverts. Two programmes focus on reducing leaks in critical areas and two on the resilience of river sluices supporting water control on river navigations. External funding is supporting the continued restoration of the Montgomery Canal and a programme of works to the iconic Anderton Boat Lift following recent repairs.

Repair work being undertaken at Caen Hill Flight

A FAMILIAR BRITISH BOATBUILDER RELAUNCHES WITH FIRST NEW MODEL IN 20 YEARS

British sportsboat manufacturer Fletcher has revealed details of its new F23 model, ready for delivery from March 2024. The F23, which is a completely new design from Fletcher, will initially launch as a petrol outboard before the brand introduces a fully electric version in autumn 2024. Fletcher has a long history of building sportsboats in the UK, but met problems in the 2000s and stopped production. The F series marks a surprise comeback for the beloved British brand.

This is an incredibly exciting time for Fletcher as the launch of the F23 not only marks our first new model in twenty years, and the first in the F series but also highlights a major step in our new direction towards a fully electric offering in 2024," says Ed Ahmed, chief product architect at Fletcher.

FERRY PORT OF DOVER CELEBRATES 70 YEARS

Dover Ferry Port is marking 70 years of operations in 2023. On 4 July 1953 the Port of Dover's roll-on, roll-off berths opened for the first time, transforming ferry travel to Europe. 70 years on Dover Harbour Board and its staff remain proud to be stewards of the port's heritage and to be driving it into a new age.

The Port of Dover of today facilitates £144bn of UK trade each year, handles 33 per cent of all trade with the EU, and is driving efficiencies and innovations that intend to ensure the next 70 years are even more prosperous.

Due to its geographic position, Dover had been Britain's connection to Europe for centuries, receiving its royal charter in 1606 and assisting over a million passengers in crossing the Channel each year during the 20th century. However, before 1953, most passengers boarded ships on foot from rail services and most cars were loaded on and off ships via cranes from the open deck to the quayside.

BABCOCK COMPLETES MAINTENANCE ON RRS SIR DAVID ATTENBOROUGH

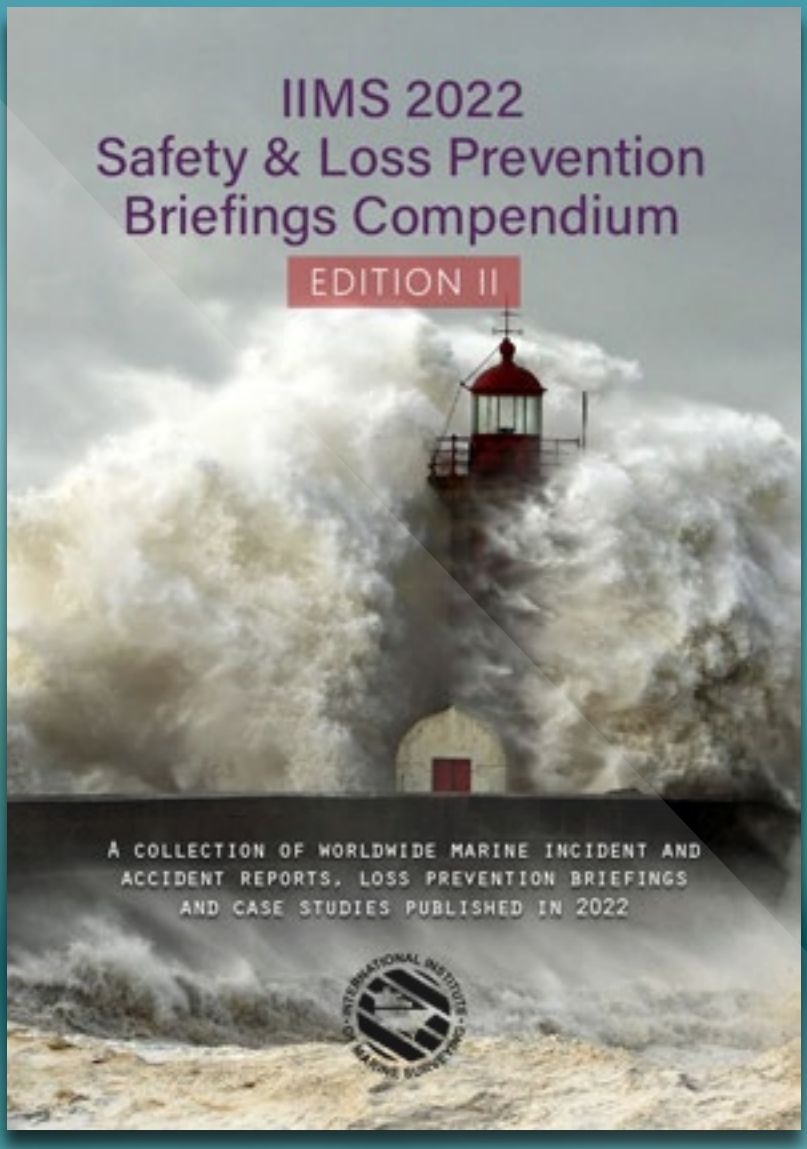
Babcock International has completed maintenance works for the Royal Research Ship (RRS) Sir David Attenborough at its Rosyth facilities. The company welcomed the RRS Sir David Attenborough to the Scottish town of Rosyth with works to the ship, including upgrades to the vessel's gas detection system, helideck netting, draft sensor vent pipework, as well as assistance with planned maintenance, defect rectification and general logistics support. Babcock says the maintenance it has carried out will allow the vessel to continue operating efficiently and safely as it embarks on its next global operation.

Designed to support science in extreme environments, the RRS Sir David Attenborough is one of the most advanced polar vessels in the world. The 129m icebreaker made headlines after a public vote to select a name resulted in Boaty McBoatface topping the vote. The mischievous name was ultimately overruled by UK ministers, but the name now lives on and has been applied to one of the vessel's onboard submersibles.

Image courtesy of Babcock International

DOWNLOAD THE 2022 COMPENDIUM AT

http://bit.ly/3GpsbEr



SCAN THE QR CODE

MAIB REPORT ISSUED INTO PERSON OVERBOARD FROM CREEL FISHING VESSEL WITH LOSS OF LIFE

At about 0736 on 28 August 2021, the owner and skipper of the lone-operated creel fishing vessel Harriet J accidentally entered the water while shooting the fishing gear. The unmanned vessel motored away and the skipper was neither able to reboard the vessel nor call for assistance. There were no witnesses to the accident and the alarm was raised by the skipper of another fishing vessel working in the area, who observed the unmanned vessel at 0745.

A search was carried out by local fishing boats and emergency services and just before 0900, the skipper was recovered unconscious from the water. He was airlifted to hospital but was declared deceased at 0955. The immediate cause of death was drowning.

Harriet J's skipper was working alone, although in the same area as other fishing vessels, and probably entered the water when his foot became entangled in the chain weight at the end of the fleet of creels that was being deployed at the time. He was neither wearing a personal flotation device (PFD) nor a personal locator beacon (PLB).

Safety Issues

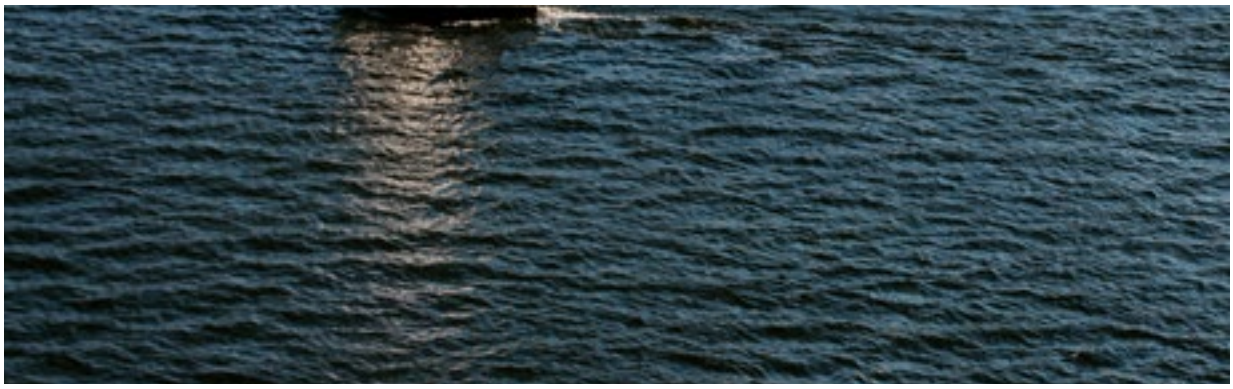
- the chance of survival was reduced because a personal flotation device was not being worn and a personal locator beacon was not carried;
- there was no effective way for the skipper to enter the working deck to clear a snag without the risk of being entrapped in the fishing gear;
- the risks of becoming entrapped and pulled into the water hadn't been fully assessed or mitigated;
- once in the water, there was no means for the skipper to remotely stop the engine;
- promulgation of safety information related to safety in this sector of industry continues to be problematic.

Recommendations

Fishing Industry Safety Group (FISG) has been recommended (2023/101) to expedite the delivery of the outcomes of its working group on lone-operated fishing vessels, taking into account the work commissioned by the MCA and Seafish.

A safety flyer issued following the loss of the skipper from the lone-operated creel fishing vessel Harriet J (AH180) west of Fast Castle Head, south-east Scotland, on 28 August 2021. The document summarises the circumstances and contains four key points reminding fishers of safety steps that could help save lives. These are especially critical when operating a vessel alone.

Download the report at **https://bit.ly/3XrpQzm**. Or scan the QR code.



REPORT bites

Teledyne FLIR is predicting an increase in the use of thermal and visual cameras in the maritime sector as the growth of autonomous vessels and leaner crewing gathers pace.

Ocean Shipyard Ltd has gone into voluntary liquidation just a year and a half after taking on the Southerly builds - previously owned by Discovery Yachts.

Netherlands-based Elegant Exit Company, which specializes in the sustainable recycling of veteran ships by converting them into green steel, has voiced interest in recycling FSO Safer.

The ports of Los Angeles and Nagoya have signed a new Memorandum of Understanding to broaden cooperation on sustainability and operational efficiency initiatives, including a green shipping corridor between the two ports.

The fast-paced development of the offshore wind industry is causing the emergence of new jobs to which ports cannot cater as there is a lack of people and port capacity, Jesper Bank, Chief Commercial Officer of Port Esbjerg, said.

Bound4blue, a Spanish developer of wind-assisted propulsion technology, has installed two eSAILs on Dutch flagged Eems Traveller, a 2,850-dwt general cargo vessel owned by Amasus.

Fund Britain's Waterways calls on Government to stop inland waterways falling into disrepair.

Raymarine has signed a three-year exclusive supplier agreement with Swedish cruising yacht builder Hallberg-Rassy.

Frauscher is partnering with supercar icon Porsche to develop its largest electric model to date, the Frauscher x Porsche 850 Fantom Air.

Eight Danes on a sailboat were rescued after their sailboat capsized in the Pacific Ocean following a collision with a whale, the Danish Armed Forces has said.

VoltSafe is currently partnering with marinas across North America to conduct a large-scale beta pilot program of VoltSafe Marine.

Safety Briefings

FIRES IN LITHIUM-ION BATTERIES CAN BE A CHALLENGE TO EXTINGUISH

A recent Safety Flash from IMCA (International Marine Contractors Association) focuses on an incident in which water got into Lithium-ion batteries in equipment for use subsea causing an explosion.

Inspection of the equipment after a successful deployment identified a potential leak from one of the metal tubes. However, other work priorities meant that the technician in charge of the equipment decided to leave it in its storage area and delay the removal and further examination of the battery. Seven hours later, the vessel's bridge team heard a loud bang followed by a fire detection system warning for the deepwater equipment storage area. The attending crew members discovered a scorched and damaged metal battery tube lying on the deck. There were no injuries.

Examination of the battery tube indicated that sea water had leaked into the battery compartment and contaminated the Li-ion battery, which caused pressurised gasses to build up and self-combust and resulted in a brief explosion. The remaining battery tubes were removed to a secure storage area for further checks.

Lessons learned

- Lithium-ion batteries are widely used in IMCA members' operations, and they are potentially very hazardous. A 1kg Li-ion battery can store the same amount of energy as a 6kg NiMH (Nickel metal hydride) or lead acid battery.
- Lithium-ion battery failures do occur; fires in Lithium-ion batteries can be difficult to extinguish.
- Lithium reacts intensely with water, which can corrode or damage the internal battery safety devices and cause it to overheat, ignite, rupture or leak. Some of the chemicals produced by burning Lithium-ion batteries can be very dangerous.
- A Li-ion battery that is found to be damaged or affected by water should not be used or charged. Remove the battery to a secure place where it can be monitored and potential spontaneous combustion can occur safely. In the event of a fire, use an appropriate fire extinguisher to put it out.

OILY RAGS WERE THE CAUSE OF LUXURY YACHT FIRE ARE ACCIDENT INVESTIGATION FINDINGS

The marine environment takes a toll on coatings, and to keep up with maintenance, most ships' crews use oil-based paints and finishes almost every day that the weather allows. These materials come with an inherent fire risk, the National Transportation Safety Board (NTSB) has warned, because waste and rags from cleanup can easily combust. For finishes containing linseed oil – a common ingredient in wood finishes – the risk is elevated by the material's tendency to self-heat and ignite. Left alone, a linseed-soaked rag can catch fire without any external source of ignition as the crew of the yacht Pegasus discovered last year.

At about 0200 hours on July 15, 2022, a fire broke out aboard the Pegasus at a marina in Gig Harbor, Washington. No one was on board to detect it, and the blaze had about one hour to spread before a bystander noticed and reported it. Another half hour passed before firefighters were able to bring hoses to bear on the blaze. As firefighting went on, Pegasus' stern slipped below, and the bow slowly settled as the boat took on more water. The fire was finally put out at 0430 when the Pegasus' main deck cabin was immersed.

The wreck was salvaged, and a county fire inspector came aboard to examine the damage. The transom and aft deck were heavily burned, and under a table on the aft deck was a hole burned through into the engine room. Components near the overhead in the engine room were melted, but below they were undamaged, suggesting that the heat came from above.

The location of the origin of the fire was on the aft deck, where the owner and his employee had been working the day before the fire. They had been refinishing wood on board the yacht using teak oil, and the employee had taken the towels used to wipe up the excess oil, put them in a plastic bag and set the bag under the table. The teak oil formulation contained linseed oil, and it had a manufacturers' warning about the self-combustion risks of any wastes soaked in the product.

There were no indications of other possible causes of the fire, and security camera footage from that night showed no signs of human activity. The county fire marshall determined that the oil-soaked rags were the likely cause of the fire, and NTSB agreed. Once the fire started and burned undetected for an hour, NTSB determined, it was unlikely that the yacht could have been saved. The case was very similar to a fire aboard the passenger vessel Safari Spirit in 2012, which likely started when rags soaked in teak oil were laid out to dry and caught fire on a railing.

NTSB reminded mariners to follow manufacturers' instructions for disposing of oil-based paint and finish wastes, and in particular to avoid piling up or bagging oil-soaked rags, which allows heat to build up and increases the risk of self-ignition.

REPORT bites

Sir Tim Laurence, husband of Her Royal Highness Princess Anne, has accepted an invitation to become Patron for the Charity which owns the historic Paddle Steamer Waverley.

Nautor Swan has launched the new Swan 108, the first unit of the new generation of Maxi Swan, at the Boatbuilding Technology Centre in Pietarsaari, Finland.

Mitsubishi Corporation, a global integrated business enterprise, has established a new company, Eneco Diamond Hydrogen, to develop green hydrogen and associated renewable energy in Europe.

The world's first all electric powerboat racing championship is gearing up for its first ever racing season, unveiling the venues which will host the stylish Race Birds and their celebrity-led teams from January 2024.

Canada has signed agreements with Georgia, the Philippines, and the United Kingdom to allow their certified seafarers to work onboard Canadian vessels, part of an effort to fill a seafarer shortage in the country's domestic fleet.

The EU-Interreg North Sea Region project, known as 'WASP: Wind Assisted Ship Propulsion,' has concluded with the retrofitting of five commercial vessels with wind-assist systems.

Car brand Volvo Cars has switched to renewable fuels for ocean freight to cut fossil CO2 emissions.

The Port of London Authority has enforced a ban on commercial vessels discharging sewage to the tidal River Thames.

Hampshire & Isle of Wight Wildlife Trust's seagrass restoration project is the official charity for the Southampton International Boat Show 2023.

DNV classification society has awarded marine engineering consultancy BAR Technologies a full type approval design certificate for its wind propulsion technology.

The global shipping industry can reduce emissions by nearly 50% by the end of the decade, according to a new study by CE Delft.

Safety Briefings

MGN 681 (M) FIRE SAFETY AND STORAGE OF SMALL ELECTRIC POWERED CRAFT ON YACHTS

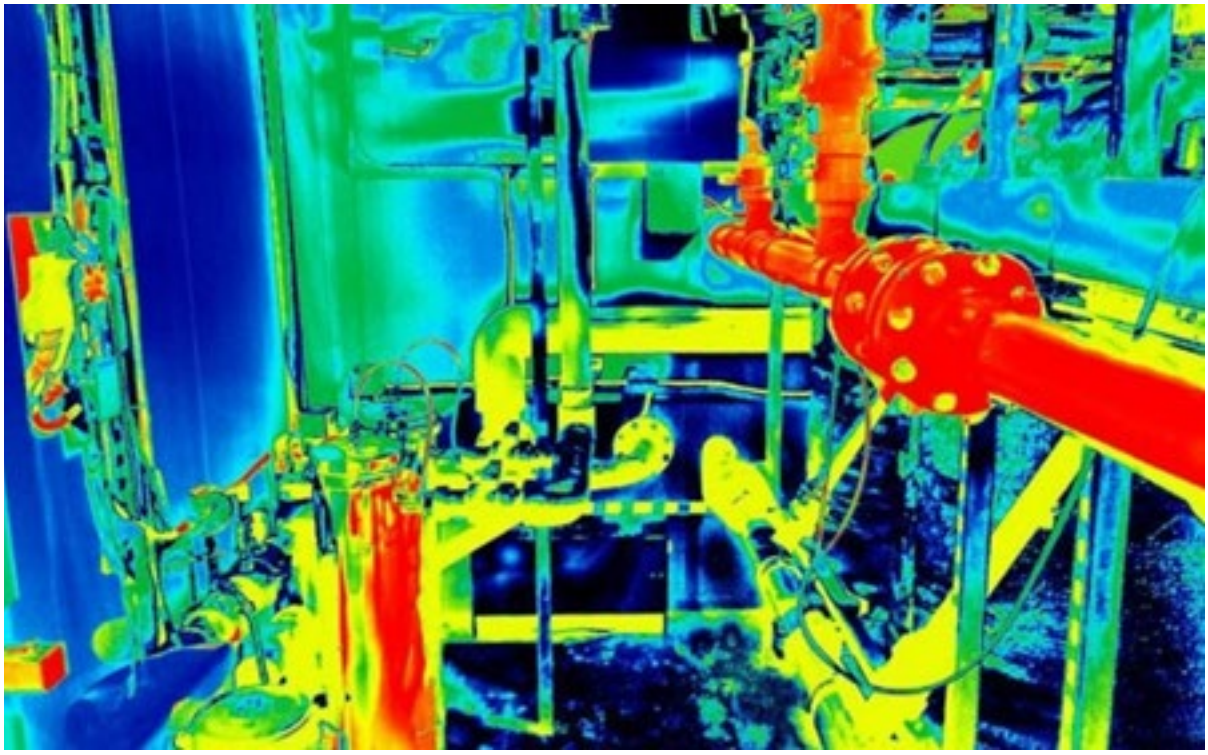
Notice to all shipowners, masters, deck and engineer officers, certifying authorities and surveyors involved with yachts. This MGN notice should be read with the Red Ensign Group Yacht Code Parts A and B.

Small electrically powered craft and other vehicles (such as personal watercraft) are becoming more commonly used in place of similar petrol-powered craft or vehicles stowed on yachts. Whilst electric craft do not necessarily represent a greater fire risk than petrol craft, there are considerable differences in best practice for fire prevention, storage, fire detection and fire suppression of such craft, which should be considered when they are stored onboard. This guidance is provided for use where lithium-ion (Li-ion) batteries are used as the source of electrical power. Batteries with alternative chemistries may present a different risk profile during charging or stowage.

There has recently been an increase in the number of fires on yachts, with industry groups estimating 16 total losses due to fire between August 2021 and August 2022; whilst the source of some of these fires are explained and have no relation to the measures proposed in this guidance (for example arson, collateral damage from another fire, etc.) around half have not had their cause established yet; one potential explanation for the unexplained fires, out of many potential causes, could be lithium-ion (Li-ion) battery fires. There has been an increase in the use of small electrically powered craft and other vehicles such as electric tenders, electric jet skis, electric foils (e-foils) and other personal watercraft powered by Li-ion batteries. However, there has not been a thorough consideration of whether the fire prevention, detection and suppression measures previously in-place on large yachts for previous generation petrol-fuelled craft, are appropriate for the newer-battery powered craft.

Download the MGN at **https://bit.ly/46bBdzx**.
Or scan the QR code.

FUEL LEAKS AND UNSHIELDED HOT SPOTS IN ENGINE ROOMS



The majority of fires onboard ships start in the engine room and the frequency of such fires is on the rise. Although the main cause of these fires may not be identical, there are certain similarities in the underlying patterns of the fires. Every year fires on board ships lead to loss of lives and severe damage to the ships themselves. Most fires on board ships originate in the engine room where the three ingredients for a fire, namely fuel, oxygen and a source of ignition, exist in abundance. These do not only start the fire but also feed and intensify it further. Fire safety is not only about detecting and fighting a fire, but also about preventing it from igniting in the first place.

How do most engine room fires start?
A review of Gard's hull and machinery claims for the years 2017-2021 related to fires and explosions on vessels, shows that nearly 60% of all such fires originated in the engine room. Nearly two thirds of these engine room fires occurred on the main and auxiliary engines or their associated components such as turbochargers. The majority of these incidents were caused by a failure in a flammable oil system, most often in the low-pressure fuel oil piping, allowing spray of oil onto an unprotected hot surface.

Case study
A copper pipe that was part of the fuel oil pressure gauge supply pipework for one of the auxiliary engines fractured. Due to a missing metal spray shield the fuel sprayed onto the unprotected hot surfaces of the nearby turbocharger and the exhaust system which had temperatures of more than 400 °C. The fuel ignited causing extensive damage to auxiliary engines and power distribution cables. The vessel was out of service for 40 days to carry out repair works. Investigation by experts showed that the copper pipe that fractured did not match the original design and had a lower wall thickness. There was no record of any previous repairs carried out to the fuel system pipework. The pipe assembly on the other three auxiliary engines appeared to be of original installation comprising of a steel pipe. The spray shield was removed during maintenance and not re-installed. Insulation was also suspected to be inadequate since exposed sections around the exhaust manifold and turbocharger were noticed on other three auxiliary engines. The investigators concluded that the heat shielding arrangements on the fire damaged auxiliary engine did not meet the relevant SOLAS regulations, II-2/2.2.6.1.

In this case, there are two main aspects which need to be highlighted.

The first is the leakage of flammable oil; and second is the inadequate protection to prevent highly flammable fuel from coming in contact with a source of ignition.

REPORT bites

Norwegian energy intelligence firm Rystad Energy believes that demand for offshore turbine towers will outstrip manufacturing capacity in 2028.

The U.S. Navy has received multiple reports of sailors receiving free smartwatches in the mail, raising concerns that the devices could be gift «Trojan horses» from a spy agency or a hacker.

Royal Caribbean's latest mega-ship, Icon of the Seas, has successfully completed her first sea trials out of Meyer Turku. Upon completion, Icon of the Seas will claim the title of the largest cruise ship ever built.

Fugro has secured a contract with France's Directorate General of Energy and Climate and Réseau de Transport d'Electricité to perform a ground investigation campaign set to support the development of future wind farms in French waters.

New Zealand's Auckland Transport has announced that shipbuilder Incat Crowther has been commissioned to deliver the design for a new 300-passenger electric hybrid fast ferry.

NYK is to introduce world's first engine air compression system to reduce vessel GHG emissions.

Two VO65 yachts racing in The Ocean Race became the latest boats to face 'attacks' by orcas off the Iberian Peninsula.

Saildrone will send a new record of 12 ocean drones to intercept large and destructive hurricanes during the 2023 Atlantic hurricane season.

Highfield Boats, manufacturer of aluminum-hull Rigid Inflatable Boats, announced the opening of its new 50,000-sq.ft. warehouse and rigging facility in Cadillac, Michigan.

Maersk has reached a significant milestone as its first methanol-powered container vessel undergoes crucial sea trials.

Safety Briefings

Some of the most commonly occurring causes of fuel spraying from low pressure piping systems are listed below. The list is by no means exhaustive, but a review of past Gard cases has shown that below listed failures occur frequently.

- Piping, piping connections and other associated components, such as o-rings, were not original parts or of a type recommended by the manufacturer. In some cases, modifications had been done by the crew under existing management, whilst in others the crew were not aware of such modifications as they had been done under previous ownership or management.
- Piping connection had not been tightened to the required torque and with time it loosened due to, for example, vibrations. Another reason may be incorrect assembly after maintenance.
- Bolts for flanges or filters breaking due to fatigue caused by overtightening over a period of time. In some cases, securing bolts were also found loose or missing altogether.
- Fatigue fracture of pipes. Such pipes are typically not well supported along their entire length, which causes excessive stress due to vibrations. Lack of support may be attributed to the design or failure to reinstall the holding brackets after maintenance.
- Fuel oil filter covers coming loose and displacement of the spindle from the top cover for various reasons.
- Rupture of rubberized hoses due to degradation caused by the heat generated from nearby machinery.

Oil coming in contact with hot surfaces

Shielding can either be by insulating hot spots with thermal insulation or anti-splashing tapes, and/or by using physical barriers such as spray shields. Some typical issues with insulation that have been seen are:

- The quality may differ from yard to yard;
- It can deteriorate with age;
- It may not have been fixed back properly after maintenance, and;
- It can become soaked with oil over a period of time due to minor leakages.

As for physical barriers

- They may not have been part of the original design and therefore not fitted, or;
- Where fitted, they may not have been installed back in place after maintenance has been carried out on the oil system.
- Older vessels need more attention.

One of the factors which must be considered when assessing fire risks in engine rooms is the age of vessels. The risk of leakages from machinery may increase as ships grow older. Protection of hot surfaces may degrade, with the quality of insulation deteriorating increasing the probability of ignition and risk of fires. Older vessels can face cuts to their maintenance and safety budgets as they near the end of their service life. A vessel may have changed ownership and management a number of times during its life, and this can have a direct impact on the consistency of maintenance in the engine room.

Typical hotspots in the engine room

Based on previous fire incidents handled by Gard, the source of ignition in most cases are listed below. The temperature of these areas can easily exceed 500 °C which may be well above the oil's auto ignition temperature.

- Exposed areas of boilers.
- Turbochargers.
- Indicator valves on cylinders.
- Heater for purifier units.
- Exhaust manifold, pipes and associated flanges.
- Electrical wires/components and switchboards.
- Melting or smouldering of cables can also contribute to the transmission of heat.

DE-RISKING THE CARRIAGE OF LITHIUM-ION BATTERIES

At the heart of efforts to draw attention to the hazards inherent in transporting lithium-ion batteries, specialist freight insurer TT Club now urges debate leading to a balanced, yet realistic awareness of the dangers, and a united approach to enhancing their safe carriage. Improved regulatory clarity is required and auto manufacturers need to address transport safety issues more thoroughly.

Rapid development of battery technology and the uncertainties created by these developments, particularly concerning safety when the energy packs are being transported require the logistics industry to have a clear understanding of the dangers which can include fire, explosions and toxic gas emissions. Moreover, there needs to be increased efforts to minimise the risks, and if necessary, make sure there is an effective response to any catastrophic event.

Alarmist reports in the media can overstate the number of incidents involving electric vehicles. Indeed Peregrine Storrs-Fox, Risk Management Director at insurance mutual TT Club points out that "Lithium-ion (li-ion) battery fires are not an everyday occurrence. But when thermal runaway does happen, the result is release of toxic gases such as carbon monoxide and hydrogen cyanide, a very high temperature fire and can spread very fast."

The release of toxic fumes may be the first alert, but fire with temperatures higher than 1,000degs centigrade can be reached in a matter of seconds and, as the mix of chemicals and metals ignites, devastation can ensue.

Such concerns regarding the battery packs within electric vehicles (EVs) have been raised in the US and the National Transportation Safety Board (NTSB) has carried out a study. The forum heard that EVs were reported to have incurred fewer fire incidents than internal combustion engine (ICE) cars. However, there are a few provisos to be highlighted here – not least that there are far fewer electric cars on the road than ICE vehicles.

Secondly it is understood that newer batteries are less likely to ignite or explode than used batteries, effectively the older the li-ion unit, the greater the chance of an incident. As a result, it is not clear how the batteries will perform through the intended life, given that the switch to EV's is only now gathering pace and most battery packs are new.

Regarding the rapid spread of fire, Eva Mckiernan, the technical director at firefighting consultancy Jensen Hughes highlighted the dangers of thermal runaway as the most pressing issue after ignition. She explained that these energy packs are thermo-dynamically unstable. When the batteries are damaged, they can release hot and poisonous gases into containers or onto car decks of ro-ro ships and other vehicle carriers within seconds. When the batteries explode those extraordinary temperatures can be reached.

"Thermal runaway occurs when the heat and chemical reactions reach a certain level, they are effectively self-sustaining and very difficult to extinguish," she added.

Of course, EVs are just one use for li-ion batteries, which can be found in a variety of goods including e-bikes and scooters, as well as computers and mobile phones. All of these goods are transported with batteries in containers. Whilst transported as new, it may be reasonable to expect appropriate packaging, although state of charge is variable, used and damaged batteries present considerable uncertainty for the transport supply chain.

"Currently li-ion batteries are classified as one of four UN numbers, depending on power output or the weight of lithium in them and whether they are contained within devices or shipped separately. All four are Class 9 in the IMDG Code – Miscellaneous dangerous substances and articles," explained Storrs-Fox. "Class 9 is the least hazardous ranking and dates from a change in IMDG Class from 4.3, which was made in the late eighties. Clearly there is a need for a radical review of this classification, as the size and energy capacity of these batteries has altered dramatically since then. As has the volume being carried in container ships."

This raises concern that li-ion batteries are not classified as sufficiently hazardous and the range of potential Special Provisions increases complexity and uncertainty. All this may have serious ramifications when a container is being accepted for shipment or a ship stowage plan is being compiled. Storrs-Fox concludes, "In addressing the commercial opportunity in the answering the agenda to move away from fossil fuels, there needs to be urgent engagement from manufacturers and OEMs to resolve the justifiable concerns of the logistics industry – ahead of regulatory strengthening."

REPORT bites

Hill Robinson and Trinity House are joining forces to create a new pathway for young people seeking careers as officers in the superyacht industry.

New vessel designs to carry and store liquified carbon dioxide from PETRONAS, Mitsui O.S.K. Lines, Ltd. (MOL) and Shanghai Merchant Ship Design and Research Institute have received approval in principle from ABS.

The second ship of the world's largest 24,100 TEU container ship series, MSC Nicola Mastro, was christened and delivered by Jiangnan Shipyard in cooperation with China Shipbuilding Trading for Bocom Leasing and MSC.

Marine fast charging network Aqua superPower continues to add installations to its global network, with new chargers at Lake George in New York State, Lake Maggiore in Italy's Lake District and 10 sites along the south coast of the United Kingdom.

The UK's National Subsea Centre and Robert Gordon University are collaborating on a data project to add artificial intelligence technology to subsea inspection operations.

Ships over 5,000 GT are to be included in UK's emissions trading scheme from 2026.

The European Union (EU) has put forward an ambitious proposal to achieve net-zero emissions in the shipping sector by 2050.

Finnish technology group Wärtsilä has been contracted by Swedish ferry operator Stena Line to convert some of its vessels to operate on methanol fuel.

South Fork Wind, New York's first offshore wind farm, has achieved its "steel in the water" milestone with the installation of the project's first monopile foundation.

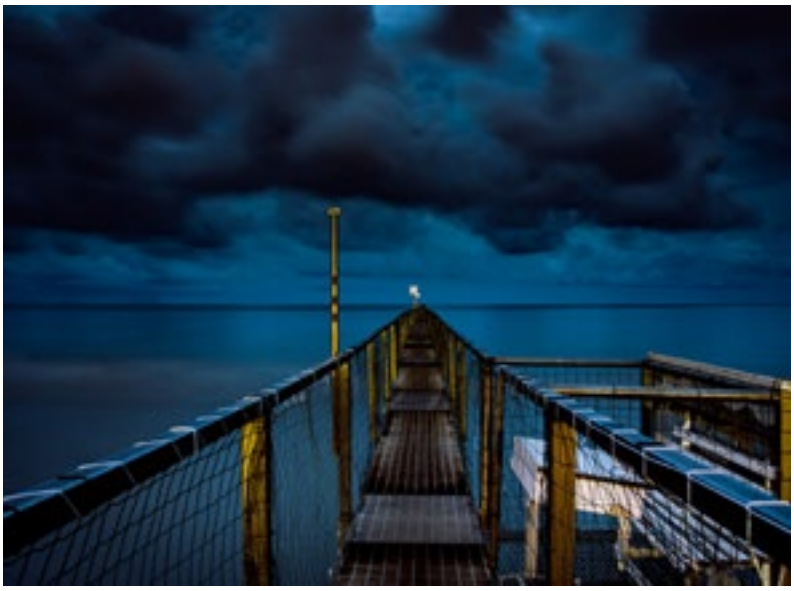
Marine e-drive manufacturer, eD-TEC, has completed intensive testing of its eD-QDrive 1 high-performance electric drive.

Safety Briefings

TSB PUBLISHES ITS ANNUAL REPORT

The Transportation Safety Board of Canada (TSB) has released its annual report for the fiscal year 2022-23, highlighting significant safety issues in the country's transportation system. For marine, TSB received 1209 reports of marine transportation occurrences in 2022 (241 accidents and 968 incidents), including 7 fatalities. As in previous years, the highest proportion of the fatalities (three of the seven) was related to commercial fishing (Canadian-flag vessels in Canadian waters). According to Transport Canada, 2022 marine activity (commercial vessel-kilometres) for Canadian commercial non-fishing vessels with a gross tonnage of over 15 (excluding passenger vessels and cruise ships) was 10% above the 2013-to-2021 average while the 2022 accident rate was 3.0 accidents per million commercial vessel-kilometres, lower than the 2013-to-2021 average of 4.0.

Download the full report at **https://bit.ly/3rhUUp2**. Or scan the QR code.



RMI STRESSES THE NEED FOR PROPER INSPECTION AND MAINTENANCE OF IMMERSION SUITS

The Republic of the Marshall Islands (RMI) Maritime Administrator has published a Marine Safety Advisory to reaffirm the importance of proper inspections and maintenance of immersion suits. The RMI Maritime Administrator continues to observe a significant number of deficiencies (both during flag and port State inspections) relating to the condition of immersion suits. Since 1 January 2023, immersion suit defects account for nearly one-third of all lifesaving related deficiencies issued during flag State inspections of RMI-flagged ships. Commonly observed defects include:

- Defective or inoperable zippers
- Failed seams
- Holes or other defects in immersion suit material
- Inoperative or missing light and/or whistle
- Overdue air pressure testing

Deteriorated or inoperable zippers account for the largest percentage of observed defects. Defects of the zipper rarely affect only one immersion suit on board. Many times, numerous suits are found with the same defect when closely examined following the identification of one unacceptable immersion suit.

Defects or failures of seams of immersion suits are the next most commonly observed defect. Deficiencies issued following flag State inspections indicate that the seams at the hands, feet, and zipper are most susceptible to failure. Similar to defective zippers, the Administrator's records indicate that seam failure rarely is found isolated to only one immersion suit, often with many found on board in the same condition.

Issues related to the overall condition of immersion suits on board RMI-flagged vessels are often identified during inspections. This includes deterioration or defects in the suit's material, overdue air pressure testing, and missing or inoperable light and/or whistle (for suits designed to be worn without a lifejacket).

In several instances, immersions suits manufactured in China by "Dongtai City Jianghai Lifesaving & Firefighting Equipment Limited Company" and "DongTai City Dong Fang Marine Fitting Co., Ltd.," were found to be significantly deteriorated despite being only about five years old.

Recommendations

The Administrator recommends that all owners, operators, Masters, and crewmembers of RMI-flagged vessels take the following actions to raise awareness of the importance of properly inspecting and maintaining immersion suits:

- Review the requirements on immersion suits and thermal protective aids contained in RMI Marine Notice 2-011-37, Life Saving Appliances and Systems;
- Review the requirements prescribed by the Company's safety management system (SMS) relating to the periodic (monthly) inspection of all immersion suits to ensure they adequately address the requirements contained in IMO Circular MSC/Circ.1047;
- Ensure zippers are fully closed and opened during monthly check to ensure smooth operation throughout the zipper's length;
- Ensure crewmembers responsible for conducting periodic inspections of immersion suits are properly trained and knowledgeable in the inspection procedure;
- Review the requirements prescribed by the Company's SMS relating to air pressure testing of all immersion suits to ensure they adequately address the requirements contained in IMO Circular MSC/Circ.1114;
- Confirm that the number of immersion suits required on the Safety Equipment Certificate Form E are on board, in serviceable condition, and immediately available at the locations prescribed in RMI Marine Notice 2-011-37;
- Ensure that all crewmembers are familiar with the location on board where immersion suits are stored;
- Immediately notify the Administrator if defective immersion suits are identified and the number of immersion suits in satisfactory condition does not meet that required by Form E.

CRACKS IN A MUFFLER LED TO FIRE ON TOWING VESSEL REVEALS NTSB REPORT

Cracks in a muffler coupled with the use of combustible materials in accommodation spaces caused a fire on a towing vessel last year on the Gulf Intracoastal Waterway near Freeport, Texas, is the key finding in the National Transportation Safety Board's (NTSB) report.

On June 25, 2022, the towing vessel, Mary Dupre, left Port Comfort, Texas, bound for Houston. She was pushing a single barge loaded with bio-diesel fuel. The fire broke out the following day. No injuries were reported, and nearby Good Samaritan towing vessels retrieved the barge, extinguished the fire, and evacuated the crewmembers. However, the Mary Dupre was a total loss, with damages estimated at $1 million.

The fire started behind wood-paneled bulkheads in the pilot's stateroom, which was located between the stacks containing engine exhaust mufflers and piping. Cracks in the welds of the muffler inside the starboard stack allowed hot exhaust gases to escape into the stack area.

Whilst investigating, NTSB discovered that a disconnected exhaust blanket on a muffler left a section of it uninsulated, which allowed heat to radiate into the stack area. This, combined with leaking exhaust gases from a crack in the muffler, is believed to have raised the temperature in the stack area. The crew was unaware of cracks or disconnected blanket due to the size of the stack preventing personnel from entering the space.

NTSB determined that the fire on the Mary Dupre was caused by undetected cracks in the starboard muffler, which allowed exhaust gases to ignite wooden structures in the accommodation space. Contributing to the damage was the use of combustible materials in the joinery, outfitting, and furnishings.

"Engine and other machinery exhaust systems generate heat—which can radiate from exhaust components—and are potential ignition sources," the report said. "These systems often run through tight spaces that are difficult to access and inspect and are often located near materials or equipment that obstruct entry and direct observation. It is good practice to include these areas in periodic fire safety inspections. When conducting inspections of these systems, vessel owners and operators should consider using handheld equipment—such as inspection mirrors, video equipment, or thermal imaging equipment—to detect deficiencies."

Download the NTSB report: **https://bit.ly/3PL4bAf**. Or scan the QR code.

CARGO FIRE & LOSS INNOVATION INITIATIVE CALLS FOR FIRE DETECTION SOLUTIONS

The Cargo Fire & Loss Innovation Initiative is calling for innovators to come forward with solutions for early-stage fire detection, one of the most important issues in the drive to mitigate container loss.

Following extensive knowledge sharing among the group, the need for improved fire-detection systems in container cargo holds has been identified as the most pressing area of focus. The Initiative is therefore calling on technology companies to come forward with suitable solutions in early-stage fire detection for cargo holds.

This open call is looking for low-cost, robust solutions with the appropriate form factors to operate in the cargo-hold environment. Interested technology companies should outline how the proposed solutions will deliver these requirements. Early fire detection, or identifying a fire-risk prior to ignition, is critically important to minimise the likelihood of a large-scale fire, therefore advancing successful containment without the creation of significant loss and any associated marine impact.

Launched in February this year by Safetytech Accelerator, the programme comprises Lloyd's Register, Seaspan, Evergreen Line, HMM, Maersk, the Offen Group and ONE and was established with the aim of reducing cargo loss at sea by shaping joint requirements, identifying technology solutions, undertaking carefully designed trials and developing best practices and recommendations.

"Ships are larger in size and have exponentially increased their carrying capacity, including dangerous goods, increasing the risk of threat to the safety of lives, vessel, cargo, and the environment," said Alfred Gomez, Director Marine Standards and Designated Person Ashore (DPA) at Seaspan Corporation.

MAIB REPORT PUBLISHED INTO THE DEATH OF ONE PERSON OVERBOARD FROM STERN TRAWLER COPIOUS

At about 0300 on 18 February 2021, a deckhand fell overboard from the twin rig stern trawler Copious (LK 985) approximately 30 nautical miles south-east of the Shetland Islands. The deckhand was conscious, wearing a lifejacket and was quickly brought alongside the vessel. However, the crew's attempts to recover the casualty back on board were unsuccessful. He was unresponsive when recovered from the water by a coastguard helicopter and pronounced dead on arrival at hospital.

Safety Issues

- The deckhand fell overboard while attempting a repair to the trawl gear. There was no attempt to stop and consider the repair and the activity was not effectively risk assessed or mitigated.
- When he lost consciousness in the water, the incorrectly worn lifejacket did not hold his airways clear and he drowned due to complications of immersion.
- The available man overboard recovery equipment was not supplemented by the training and equipment necessary for the recovery of an unconscious person.

Recommendations

A recommendation (2023/102) has been made to the Maritime and Coastguard Agency to amend regulations to require fishing vessels to have an efficient means to recover an unconscious person from the water that is demonstrable during surveys and inspections.

Download the report at **https://bit.ly/43fEomO**

MAIB has also issued a safety flyer following this accident. The document summarises the circumstances and contains four key points reminding fishers of safety steps that could help save lives. This is especially important if recovering an unconscious person from the water.

Download the safety flyer: **https://bit.ly/3O1xhKB**

Inadequate supervision is the cause of 35% of reported incidents...

CHIRP Maritime has published analysis that identifies the key causal factors of safety incidents reported to them over the past year. These include inadequate leadership or supervision, issues with visual detection, inadequate risk assessment, and the need for proactive safety risk management.

According to CHIRP Maritime, 65% of reports received concerned near-misses and only 35% were regarding actual incidents. This is nevertheless a significant improvement on the previous year, where near misses made up only 14% of reports.

FACTORS

CHIRP's analysis of all received reports revealed 88 different factors that contributed to safety incidents or near misses, with an average of 5 identified factors per incident.

The top-10 factors by frequency of occurrence are as follows:

- Inadequate leadership or supervision occurred in 35% of all reported incidents. This suggests either lack of availability of operational leaders or lack of competency.
- No/wrong/late visual detection also occurred in 35% of reported incidents and are often the result of high workloads, distraction or inattention.
- Inadequate risk assessment was present in 32% of all incidents. Common causes for this are inadequate hazard identification (an issue of experience), or lack of time to adequately assess and address the identified risks.
- Proactive safety risk management is like the above, but at the organizational level. It highlights the need for improved implementation of hazard identification and risk management practices. This was a factor in 31% of reports.
- Reactive safety management assurance occurs when risk assurance measures lack effectiveness in identifying and rectifying safety shortcomings. This was present in 23% of all reports.

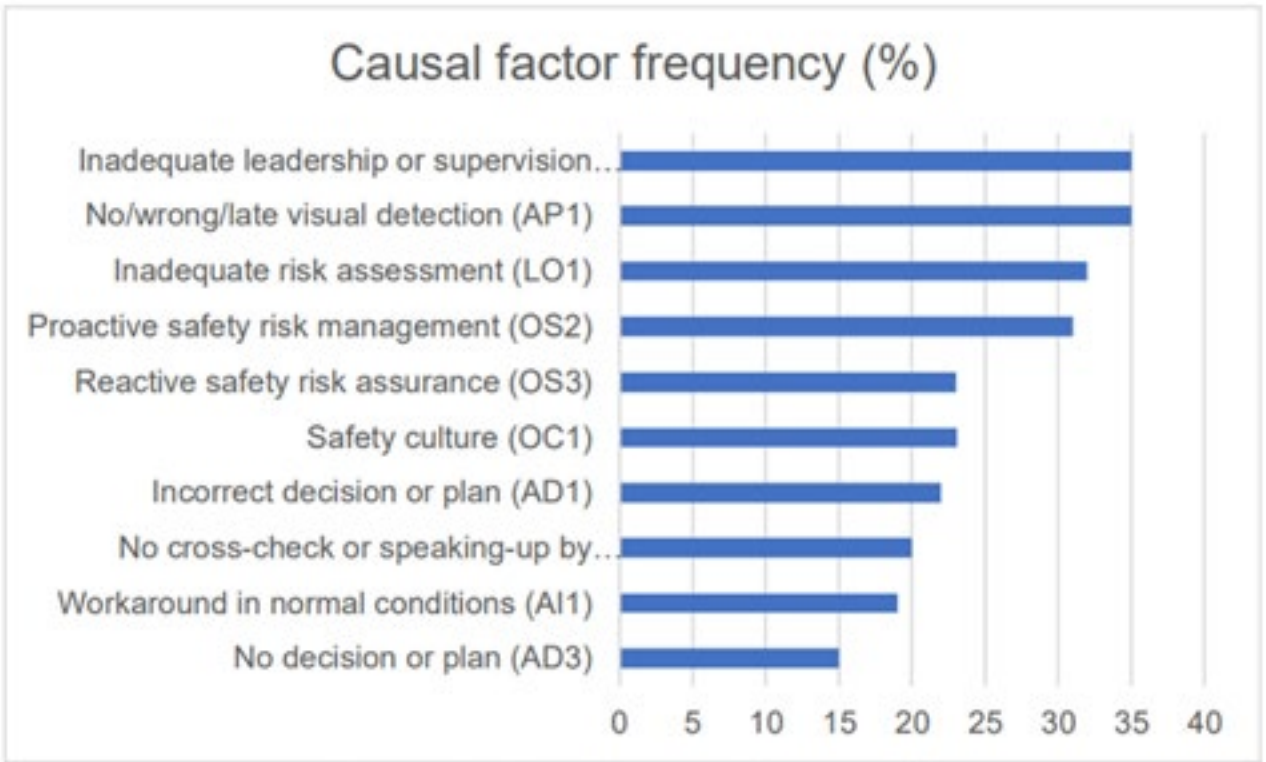


Figure 1: Top 10 causal factors (%)

A recurring pattern to all the most frequent causal factors is the presence or otherwise of sufficient – and sufficiently experienced – personnel so that adequate time and attention can be allocated to the preparation and supervision of maritime activities.

"The findings raise questions about the alignment of current minimum Safe Manning levels with the tempo of maritime operations, particularly on short sea shipping routes," stated A Parnell, Director, CHIRP Maritime.

OUTCOMES

Almost every incident reported to CHIRP resulted in personal injury or damaged equipment. These findings are similar to last year's outcomes, although fatalities reported to CHIRP (<2%) have fallen compared to last year (10%).

REPORT SOURCES

The most common vessel types mentioned in received reports (figure 4) were bulk carrier (16%), container vessels (14%) and tankers (13%), closely followed by superyachts (11%).

"Overall, this analysis of maritime reports underscores the importance of confidential incident and near miss reporting in enhancing safety at sea, " said ... noted A Parnell.

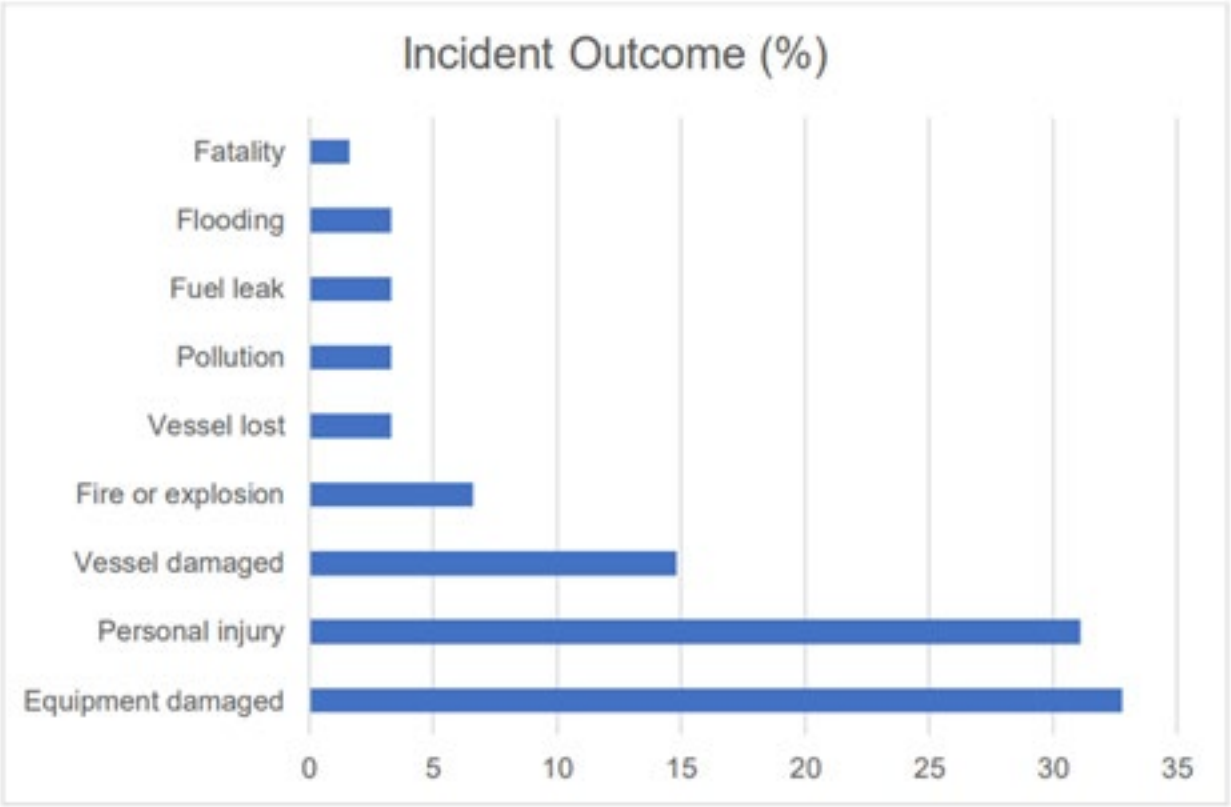


Figure 2: Incident outcomes

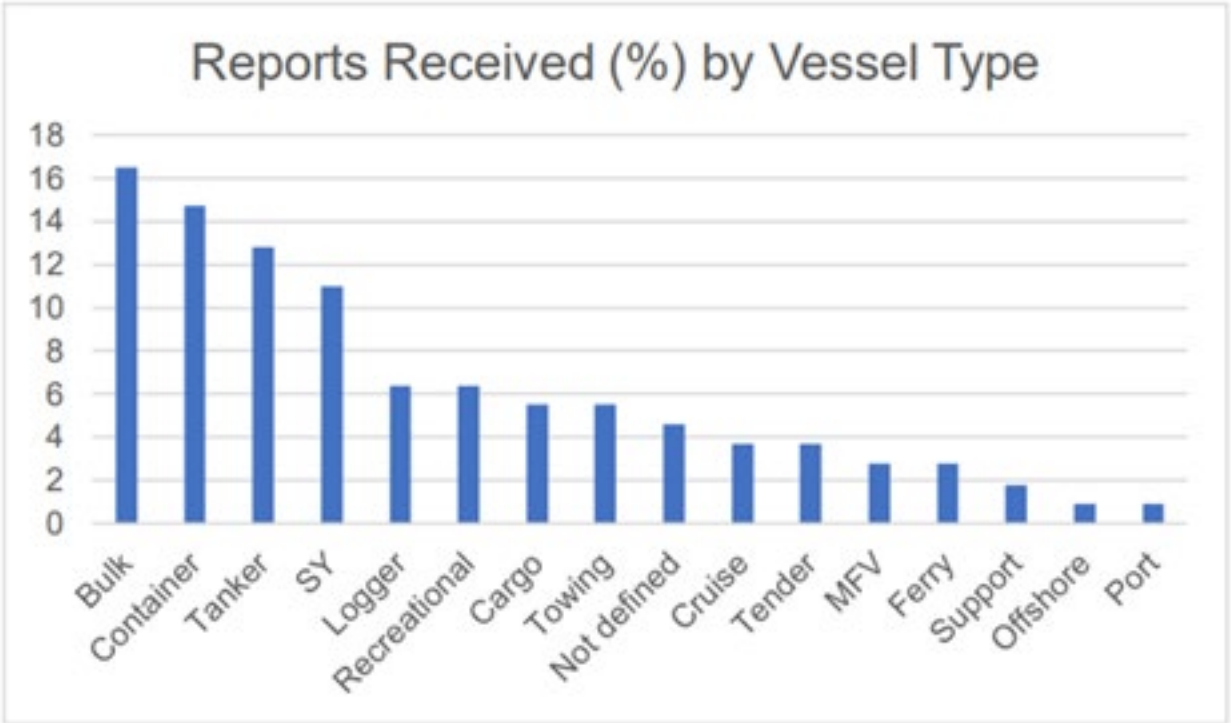


Figure 3: Received reports by vessel type

IIMS AGM, Dinner and Conference 2023 Report

Over three days in early June, IIMS hosted its first international in-person event since the pandemic in and around the Southampton area in the UK. The event consisted of a Directors' dinner, quarterly management board meeting, formal dinner, Annual General Meeting and the main conference itself.

The dinner, held at Chilworth Manor Hotel, drew over 50 attendees from all branches of the surveying profession. The beautiful evening allowed diners to congregate outside on the patio before dinner was serves. David Pestridge said Grace, followed by Peter Broad, who proposed the Loyal Toast. Guest speaker, Neil Roberts, Head of Marine & Aviation at Lloyds Market Association gave an excellent address after dinner.

Peter Broad had chosen as his charity this year the Tall Ships Youth Sailing Trust

At the Conference dinner, IIMS chose to publicly recognise two people who have made a big contribution to Institute life, but in very different ways. Here is a transcript from Mike Schwarz's dinner speech announcing the presentations, which were presented by Peter Broad, IIMS President.

He said, "It is now my pleasure to announce two prestigious Blue Water Awards and in doing so, I am recognizing two people who have been fundamental in underpinning the work of the Institute over many years. Both are long-standing friends and colleagues from entirely different industry sectors and backgrounds.

"Karen Brain is someone who has never shied away when I have asked her to give a talk to members, or to write an article for The Report Magazine. She has run the very successful PI insurance scheme for IIMS members and has helped many a surveyor who has faced insurance challenges, particularly in recent times post Brexit. I am immensely grateful to you Karen and it gives me huge pleasure to invite you to come up to receive the first Blue Water Award this evening.

"IIMS subsidiary, the Marine Surveying Academy, has had great success in the area of superyacht coatings inspector training through its Registered Marine Coatings Inspector qualification over the past nine years. Some years ago, we publicly recognized Ken Hickling for his help in this area. Ken is here tonight but sadly I can't give you another award Ken, although Hilary and I remain deeply grateful for everything you have done to develop and promote the RMCI programme.

"I can, however, publicly recognize Gareth Thomas of Akzo Nobel who, along with Ken, has done the most impressive job of repurposing the RMCI content and reinvigorating the programme. I met Gareth on my first trip to METS in Amsterdam when he was but a sallow youth and me a mere young middle-aged man! Look what's happened since! Gareth it gives me great pleasure to ask you to step forward to accept this Blue Water Award."

Dinner Hosts: Mike Schwarz and Peter Broad

Guest Speaker: Neil Roberts

Karen Brain receiving her award

Gareth Thomas receiving his award

Peter opening the AGM

Mike's Chief Executive Officer report in progress

Some of the board presenting their reports

Ian Bartle presenting on lithium ion batteries

AGM & Conference 2023 on 7th June

Although the numbers attending, both in-person and online, were lower than expected, the quality of the presentations was of the highest order. President, Peter Broad, opened both the AGM and Conference proceedings and was generous in his praise of the head office secretariat. He went on to share his personal concerns about the drop in surveying fees and where the next generation of marine surveyors is likely to come from.

IIMS, Mike Schwarz, said, "I am immensely proud of the imaginative programme that we collated for this event. Great speakers on a variety of on-trend topics, coupled with good food and excellent company, made this a memorable event. If I have one sadness, it is simply that not enough members engaged with the programme and that causes me to think about how (and if) we might deliver a similar event in the future."

Annual General Meeting

A small audience was in the room and were joined by more online to participate in this year's AGM. Mike Schwarz gave a thorough overview of the Institute. In his opening slide he commented, "A pleasing year of steady profitable growth across the organisation, encompassing further technological enhancements and sensible investments."

Online voting on just two matters was closed at 16.00 the day before the AGM. The results of the voting were as follows:

a) Re-election of the Management Board en-bloc

In favour	25
Against	1
Abstain	3

b) Proposed fee structure for 2024 membership

In favour	22
Against	6
Abstain	3

The acceptance of the proposed fee structure means they will rise in 2024 by Area 1 (4%); Area 2 (2%) and Area 1 (1%).

One decision that will affect all members was taken at the earlier management board meeting. It has been decided that from 2024 plastic membership cards will not be automatically issued in an attempt to further reduce the carbon footprint of the Institute. Cards will be available electronically to all members, but there will be a mechanism in place to enable those who wish to have a plastic card to request one.

The video of the AGM is freely available to view on YouTube at **https://bit.ly/46Cy4ca**. *Run time: 1 hour 48 minutes.*

Conference

After a short address by Peter Broad and a quick presentation by Mike Schwarz, the morning's plenary session was underway and opened by Ian Bartle, something of an expert in lithium-ion batteries. His presentation included frightening imagery which he used as a means to demonstrate the challenges associated with this technology.

Dr Mike Lewus, author of the IIMS Professional Qualification in Marine Corrosion, never disappoints his audience and once again he enthused delegates with his in-depth encyclopaedic knowledge of marine corrosion. He concluded his presentation with a live scientific experiment which included a fish tank, electrodes and some locally sourced seawater.

After an excellent buffet lunch provided by the Axis Conference Centre, the room and audience divided in two.

In the commercial ship arena, veteran marine surveyor, author and educator, Mike Wall, spoke eloquently having travelled to attend from Thailand. His subject? Developing Technologies and Practices Within Commercial Marine Surveying.

Dr Alexandros Ntovas and George Alexios Ntoules, both based locally, joined the meeting to give an insightful update on the progress with autonomous shipping and a glimpse into what lies ahead.

The Institute was especially pleased that Per Åge Nygård was able to accept an invitation to speak having come from Norway to present. In his presentation, entitled 'Buyers' perspective when appointing a marine surveyor' he delivered an expectation and understanding of what is required to ensure a successful business relationship between buyer and surveyor.

The last presentation of the day for commercial ship surveyors was delivered by Jeff Wilson, Managing Director of Van Ameyde Marine, an international firm employing over 70 surveyors. As he spoke about his topic - Future challenges for marine survey – the sting and surprise was most certainly left until his very last slide!

Over in the other room, yacht and small craft surveyors were famously entertained by the legendary Sir Robin Knox Johnston. He spoke about some of the challenges he has faced between his company Clipper Ventures and maritime regulators over the years. He took a number of audience questions and then answered some that had been sent in prior to the event, many keen to know about his circumnavigation of the globe back in 1969.

Paul Madeley, based in Palma, followed to share his extensive knowledge of electrical surveying on large yachts and demonstrated not just his expertise, but also his enthusiasm for this subject, which is often misunderstood by surveyors due to its complexity.

Friend of IIMS, Karen Brain from Matrix Insurance Ltd, the conference sponsor, was in the room to close the day as she discussed the duty of care that a surveyor is expected to provide from a legal standpoint. As always, the audience listened intently as she spoke knowledgeably about her topic.

To conclude this highly successful event, Peter Broad and Mike Schwarz came together to host a 20 minute discussion and brief explanation of AI technology and, in particular, ChatGPT. This involved asking some questions through the platform itself relating to marine surveying, the accuracy of answers which surprised and impressed everyone.

Dr Mike Lewus and his live experiment

The final session with Mike and Peter

A group shot at the end of the day of some of the attendees

A series of photos taken at the various events have been posted on the IIMS website and can be viewed at **https://bit.ly/432EoGH**.

NEW 4 DAY RESIDENTIAL SURVEYING COURSE FOR YACHT AND SMALL CRAFT SURVEYORS ANNOUNCED

IIMS recognises that those with less or limited marine surveying experience, especially those who plan to study, or who are already learning, or who have completed a Professional Qualification with the Institute, may struggle with those early surveying assignments. Am I inspecting this boat correctly and in sufficient detail and is my report up to scratch are just two of the key questions a surveyor is likely to ask him or herself.

IIMS is launching a new 4 day residential programme which will run at the Boat Building Academy in Lyme Regis, Dorset, UK from 13 to 16 November 2023.

The key aim is to offer delegates a blend of face-to-face theory and practical marine surveying tuition with the final test being to write a simple pre-purchase survey report on a boat that has actually been inspected earlier in the week, which will then be marked and assessed. Senior and experienced yacht and small craft surveyors will be on hand to assist, tutor and advise delegates as they inspect and survey the boats in depth.

The plan is to spend two days surveying two boats of different construction materials (subject to availability) in the Lyme Regis area. A further day will be devoted to detailed report writing tuition plus a review of the surveyor's tool kit.

The cost for the training programme is just £650 (No VAT) without accommodation, or £995 (No VAT) to include quality accommodation. Food, drink, and travel are at own cost.

IIMS is inviting expressions of interest from those keen to take advantage of this unique opportunity. Please note that by making an expression of interest, you are not giving a final commitment to attend.

To express your interest without commitment at this stage, please use the online form at **https://bit.ly/3OalY36**.

FORTHCOMING DATES FOR YOUR DIARY

Online Report Writing seminar - 2 November 2023

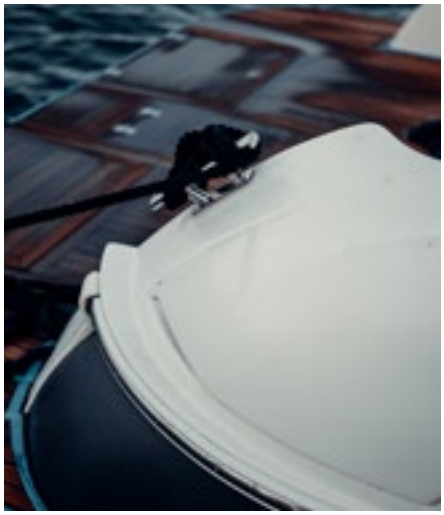
One day Yacht & Small Craft Training at Axis Conference Centre, Nr Southampton and online on 7 November 2023

IIMS 4 day residential Practical Surveying Course at the Boat Building Academy, Lyme Regis, Dorset from 13 to 16 November 2023

IIMS Scotland Yacht & Small Craft Working Group training, Royal Northern Yacht Club, Rhu, Scotland from 15 to 16 November 2023

IIMS week long residential Practical Boatbuilding Course, Lyme Regis, Dorset from 10 to 16 December 2023

Check the IIMS website What's On page at **https://bit.ly/35an0n8**.



GRAHAM LANE IS THE LATEST RECIPIENT OF THE JOHN EXCELL AWARD FOR OUTSTANDING EXCELLENCE

Graham, a UK based inland waterways marine surveyor, has been a keen advocate for the IIMS and the institute's Professional Qualification courses. He approached his course with a refreshing attitude and the belief that it should be challenging, but with the aim of not just getting through it, but keen to learn as much as possible. Graham always went far beyond what was required in his assignments. He remarked that completing the assignments was, for him, a way to build up a manual of knowledge for his future in surveying. As a graduate member he is already building up CPD, attending two recent IIMS training events. And he has accepted an invitation to join the Education Committee.

Based on his achievements, IIMS has given him the John Excell Award for Outstanding Excellence and his name will be added to the honours board in the boardroom.

His assessor gave the following feedback on his work.

"The time and effort put into this work is impressive, way over the criteria requirement."

"The overall level of work and exhaustive and comprehensive coverage of each subject at a knowledgeable level."

"It is an excellent piece of work, thorough, detailed, and well researched."

"I wish him success - he deserves to be successful if he takes his theoretical knowledge of business management skills and applies them to practical surveying."

The John Excell Award for Outstanding Achievement is open to all students enrolled on the distance learning diploma in marine surveying. It is awarded on a periodical basis to deserving students - those who deliver not only outstanding academic achievements, but who also demonstrate first-class interpersonal skills.

John Excell, who was an Honorary Fellow member of the Institute, died in April 2021 following a long illness at the age of just fifty-one. He held high office within the Institute and was Director of Yacht & Small Craft Surveying, a member of the management board and an MCA coding examiner. John was passionate about training and sharing his knowledge with fellow surveyors and gave generously of his time to do so. The award is named and presented in his memory.

John Excell AWARD for Outstanding Achievement

RECENT NEW IIMS MEMBERS AND UPGRADES

Full members

Vladimir Chorbadzhiev	*MIIMS*	UK
Garry Cooke	*MIIMS*	Canada
Snigdhajyoti Kar	*MIIMS*	Bahrain

Associate members

Himadri Nag	*AssocIIMS*	India
Dustin Norlund	*AssocIIMS*	Canada
Jason Ponvelle	*AssocIIMS*	USA
Mark Sutton	*AssocIIMS*	Grenada
Sydnee Munnings Wallace	*AssocIIMS*	Bahamas

Graduate members

Graham Lane	*GradIIMS*	UK
Nimrod Palzur	*GradIIMS*	Israel
Tom Thorley	*GradIIMS*	UK

Affiliate members

Samuel Benson	*AffiliIIMS*	Tasmania
Berk Efe	*AffiliIIMS*	Turkey
Goksoy Gokmen	*AffiliIIMS*	Turkey
Diptiman Guha	*AffiliIIMS*	Dubai
Spiro Jurisic	*AffiliIIMS*	Croatia
Aisha Suliman Louw	*AffiliIIMS*	South Africa

Technician members

Yevgen Savkov	*TechIIMS*	Germany
Massimiliano Lo Re	*TechIIMS*	Italy

Corporate members

Aequora Marine Consulting	*CorpIIMS*	USA

IIMS congratulates Graham Lane, Nimrod Palzur and Tom Thorley for completing their studies in the ***IIMS Professional Qualification in Yacht and Small Craft Marine Surveying***

MARINE SURVEYING ACADEMY

Specialists in skills based training and accreditation for the marine industry

The Marine Surveying Academy Ltd (MSA), is a wholly owned subsidiary of the International Institute of Marine Surveying Ltd (IIMS). As an organisation, MSA is dedicated to providing the best quality marine surveyor-based training, although it operates in other specialist marine-related areas too, including marine accreditation.

Find out more at:

International Registered Marine Insulation Inspectors

Registered Marine Coatings Inspectors classification

International Institute of Marine Surveying

eCMID AVI Accreditation Scheme

marinesurveyingacademy.com

MARINE SURVEYING ACADEMY

RMCI CLASSIFICATION

IRMII Subsea Pipe Insulation

eCMID SYSTEM AVI

INTERNATIONAL INSTITUTE OF MARINE SURVEYING

New SOLAS amendments on lifting appliances and anchor handling winches are just one of several new requirements from IMOs MSC 107 meeting:

The 107th session of the IMO's Maritime Safety Committee (MSC 107) from 31 May to 9 June 2023 has adopted new requirements in order to improve safety, including mandatory requirements for lifting appliances and anchor handling winches, and new mandatory requirements for ventilation of totally enclosed lifeboats.

In addition, a new Code of Safety for Diving Systems to enhance the safety of divers in fixed and portable diving systems was adopted. Interim guidelines for the safety of ships using LPG fuels were approved, as well as interim guidelines for the safe operation of onshore power supply services in ports. DNV has provided an analysis of the key issues discussed as follows:

Meeting highlights

- Adopted new mandatory requirements for onboard lifting appliances and anchor handling winches.
- Adopted SOLAS amendments to prohibit the use of perfluorooctane sulfonic acid (PFOS) in firefighting foams.
- Adopted SOLAS amendments to mandate electronic inclinometers for containerships and bulk carriers.
- Adopted mandatory navigation and voyage planning requirements for non-SOLAS ships operating in polar waters.
- Adopted new mandatory requirements for ventilation of totally enclosed lifeboats.
- Adopted STCW amendments to accommodate the use of electronic certificates and documents for seafarers.
- Approved a new Code of Safety for Diving Systems, 2023.
- Approved interim guidelines for the safety of ships using LPG fuels.
- Approved interim guidelines for the safe operation of onshore power supply.
- Approved draft amendments to extend the SOLAS requirements for emergency towing devices to all new ships over 20,000 GT.
- Approved draft amendments SOLAS and related instruments to enhance the fire safety of ro-ro passenger ships.

Onboard lifting appliances and anchor handling winches

The draft new SOLAS Regulation II-1/3-13 requires relevant onboard lifting appliances and anchor handling winches to be designed, constructed and installed in accordance with classification rules or equivalent rules accepted by the flag administration. Associated guidelines for lifting appliances and for anchor handling winches were approved.

Non-certified existing lifting appliances, installed prior to entry into force of the new regulation, are required to be tested and thoroughly examined no later than the date of the first renewal survey on or after 1 January 2026. The new regulations will enter into force on 1 January 2026.

Electronic inclinometers for containerships and bulk carriers

MSC 107 adopted amendments to SOLAS Chapter V and the certificate forms to mandate electronic inclinometers for the measurement of heel angles for containerships and bulk carriers of 3,000 gross tonnage and upwards. The requirements are not applicable to cargo ships occasionally carrying cargo in bulk and general cargo ships carrying containers on deck. The amendments will enter into force on 1 January 2026.

Ventilation of totally enclosed lifeboats

MSC 107 adopted amendments to the Life-Saving Appliances (LSA) Code to mandate ventilation of totally enclosed lifeboats. A ventilation rate of at least 5 cbm/hr/person should be provided to prevent high CO2 concentrations inside the lifeboat.

MSC 107 also approved consequential amendments to the:

- Revised recommendations on testing of lifesaving appliances" (MSC.81(70)), addressing testing with respect to the new ventilation requirements
- Revised standardized life-saving appliance evaluation and test report forms (survival craft) (MSC.1/Circ.1630/Rev.1)
- Requirements for maintenance, thorough examination and operational testing of LSA (Resolution MSC.402(96))
- The LSA Code amendments will enter into force on 1 January 2026 and be applied to survival craft installed on or after 1 January 2029.

The International Maritime Solid Bulk Cargoes (IMSBC) Code

MSC 107 adopted amendment 07-23 of the IMSBC Code. The draft amendments include:

- New individual cargo schedules for celestine concentrate, celestine, crushed granodiorite fines, ground granulated blast furnace slag powder, and magnesite fines.
- Alignment of the stabilization requirements for fish meal with the IMDG Code, and classification as MHB (SH) instead of class 9.
- Alignment of the IMSBC Code with SOLAS on the declaration of solid bulk density, and a new MSC circular on bringing the issue to the attention of stakeholders.
- The amendments to the IMSBC Code will enter into force on 1 January 2025.

Electronic certificates and documents for seafarers

MSC 107 adopted amendments to the STCW Convention and Code to accommodate the use of electronic certificates and documents for seafarers. The amendments will enter into force on 1 January 2025.

Maritime autonomous surface ships (MASS)

MSC 107 progressed the development of the new MASS Code and agreed in principle that the code would apply to SOLAS cargo ships and high-speed craft and be complimentary to SOLAS and other relevant IMO instruments. MSC 107 further agreed that the code should contain a risk-analysis-based approach following the structure of MSC.1/Circ.1455 and should utilize suitable risk analysis methods.

A definition of "modes of operation" was agreed in principle to determine the conditions of the various functions that, together, safely operate a ship for its intended purpose, noting that the various functions may move between multiple modes of operation.

Interim guidelines for the safety of ships using LPG fuels

MSC 107 approved new interim guidelines for the safety of ships using LPG fuels. The interim guidelines are goal-based and intend to provide provisions for the arrangement, installation, control and monitoring of machinery, equipment and systems using LPG as fuel to minimize the risk to the ship, its crew and the environment.

IGF Code – Safety for Ships using Gases or other Low-flashpoint Fuels

MSC 107 approved draft amendments to the International Code of Safety for Ships using Gases or other Low-flashpoint Fuels (IGF Code), based on experience with the code since its entry into force in 2017. The draft amendments are technical and editorial, and relate to:

- Definition of ships constructed on or after 1 January 2026.
- Amendments to the provisions for bunkering manifolds and bunkering operations.
- Clarification of the requirements related to the capacity of the fuel tank's pressure relief valves.
- Clarification of the requirements for control of tank pressure and temperature.
- Clarification of the requirements for single fuel installations redundancy and propulsion capability.
- Clarification of the requirements for the venting of segments upstream of gas consumers.
- Clarification of the requirements to design pressure of the outer pipe or duct of fuel systems.
- New requirements for portable dry powder extinguishers in the fuel preparation room.
- Clarification of the hazardous area zone requirements.

The draft amendments are expected to enter into force on 1 January 2026, subject to adoption by MSC 108 (May 2024).

Loss of containers at sea

MSC 107 approved draft amendments to SOLAS Chapter V to mandate reporting of the loss of containers. Consequential draft amendments to the MARPOL Convention to avoid double reporting were agreed and will be submitted to MEPC.

Prohibition of asbestos in the MODU Code

Provisions in SOLAS Chapter II-1 have restricted the use of new materials containing asbestos since 2002 and have prohibited their use since 2011. Unified Interpretations and guidance to SOLAS Regulation II-1/3-5 are available in MSC circulars. The 2009 MODU Code has prohibited the use of asbestos on new units from 2012, but no provisions in the 1979, 1989 or 2009 MODU Codes restrict new installations which contain asbestos on existing units, and no guidance has been available.

MSC 107 approved draft amendments to the MODU Codes to implement the wording and guidance for an asbestos ban on new installations on existing units in the non-mandatory MODU Code in alignment with that contained in SOLAS. The amendments will be effective on 1 January 2024.

Emergency towing equipment

MSC 107 approved draft amendments to SOLAS II-1/3-4 to extend the SOLAS requirements for emergency towing devices to all new ships over 20,000 gross tonnage to facilitate emergency assistance and towing operations, and thereby reduce the risk of ship wreckage and pollution. It was further agreed that the Sub-Committee on Ship Design and Equipment should develop a new set of guidelines for emergency towing arrangements on new ships other than tankers. The draft amendments are expected to enter into force on 1 January 2028, subject to adoption by MSC.

New Code of Safety for Diving Systems

MSC 107 adopted a new International Code of Safety for Diving Operations, 2023 (2023 Diving Code), noting that the 1995 Diving Code will continue to apply for existing diving systems.

The significant updates include:

- Provisions for portable diving systems and surface supplied diving systems.
- Provisions for ships with diving systems installed.
- Provisions for integration between the diving systems and the ships carrying them, including integration of the ships' ISM system with the diving contractors' safety management system.
- Measures to ensure evacuation of divers all the way to a place of safety.
- The 2023 Diving Code will be effective on 1 January 2024.

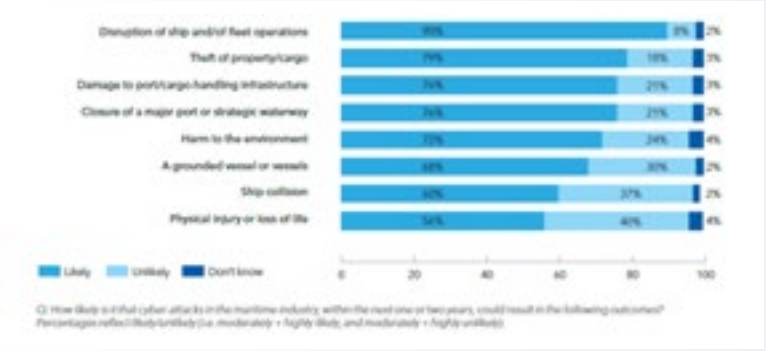
DNV MARITIME CYBER PRIORITY 2023

DNV has published the Maritime Cyber Priority 2023 report which examines the maritime industry's cyber risk challenges as well as measures for resilience.

According to the report, less than half (40%) of maritime professionals think their organization is investing enough in cyber security at a time when vessels and other critical infrastructure are becoming increasingly networked and connected to IT systems.

Three quarters of maritime professionals believe a cyber incident is likely to force the closure of a strategic waterway (76%). More than half expect cyber-attacks to cause ship collisions (60%), groundings (68%), and even result in physical injury or death (56%) as an overwhelming majority (79%) of professionals say the industry considers cyber security risks to be as important as health and safety risks.

Credit: DNV



"With ship systems being increasingly interconnected with the outside world, cyber-attacks on OT are likely to have a bigger impact in the future," said Svante Einarsson, Head of Maritime Cyber Security Advisory at DNV.

Five key challenges facing the sector are highlighted in the report.

1 Insufficient funding
Despite the threat of cyber-attack in today's maritime sector, and the many factors potentially driving investment, industry professionals say their biggest cyber-related challenge is insufficient funding.

2 Effectiveness of regulation
If businesses are to regard cyber regulation as the baseline for cyber security, it is concerning that many in today's sector appear to be struggling to comply with the existing rules. One way that regulation can help maritime businesses strengthen their security postures is by reframing cyber security risks as safety risks, in recognition that cyber-attacks on OT systems can cause harm to life, property and the environment.

"Regulation only sets a baseline for cyber security. It doesn't guarantee security. Rather than taking it as our goal, the maritime industry should use it as a foundation, on which to further improve and adapt to the changing threat landscape," said Svante Einarsson.

3 Supply chain vulnerabilities
Achieving a more cyber-secure supply chain is far from easy. For this to happen, operators need to thoroughly audit their vendors' cybersecurity requirements during procurement, installation and operation of equipment, systems, and software.

At the same time, suppliers must ensure they have the right measures in place to defend products and systems and should conform to industry standards and practices.

"We need a more in-depth risk assessment at each stage of that shift, to ensure we consider the impact on cyber security," warned UK Chamber of Shipping's Peter Aylott.

Credit: DNV

4 Lack of information sharing
According to the survey, barely 3 in 10 (31%) maritime professionals believe that organizations within their sector are effective at sharing information and lessons learned about cyber security risks, threats and incidents.

Such reluctance to share information may be counter-productive at a time when businesses will benefit significantly from hearing first-hand about the challenges faced by their peers and the methods they are adopting as a result.

5 Workforce vulnerabilities
Workforce challenges are not limited to finding the right experts. Another people-related issue relates to employees inadvertently enabling cyber-attacks through carelessness, which points to an underlying problem with the training being made available to staff. Better and more consistent training will play an important role in establishing a more risk-aware workforce and cyber-secure culture.

New technologies such as AI may help organizations improve their security posture by reducing the workload of an already stretched workforce and giving teams greater visibility of vulnerabilities, threats, and attacks. Companies are, for example, using ChatGPT to help coders identify and fix loopholes before they use software or release it into the supply chain.

Key recommendations according to DNV:
Consider cyber security as an enabler
Treat cyber risks like safety risks in an operational setting
Champion insight-sharing across the industry
Reframe regulation as the baseline to improve cyber security posture
Rethink how to manage supply chain vulnerabilities
Resource a strategy for more effective training
Maintain an 'analogue fallback option' amid the shift to connected systems.

"As we pursue greener, safer, and more efficient global shipping, the digital transformation of the industry is deeply dependent on securing these inter-connected assets," said Knut Ørbeck-Nilssen, CEO Maritime at DNV.

Download the 23 page report at **https://bit.ly/42C3OLg**. Or scan the QR code.

Credit: DNV

10th EDITION SHIPPING LAW REVIEW 2023 PUBLISHED by HFW

Now in its tenth year, the aim of the Shipping Law Review 2023, compiled by HFW, is to provide those involved in handling shipping disputes with an overview of the key issues relevant to multiple jurisdictions. As with previous editions of The Shipping Law Review, it begins with cross-jurisdictional chapters looking at the latest developments in important areas for the shipping industry, including international trade sanctions, ocean logistics, offshore, piracy, shipbuilding, ports and terminals, marine insurance, environmental and regulatory issues, decommissioning and ship finance.

HFW has invited contributions on the law of leading maritime nations, including both major flag states and the countries in which most shipping companies are located. The review also includes chapters on the law of the major shipbuilding centres and a range of other jurisdictions. Each of these jurisdictional chapters gives an overview of the procedures for handling shipping disputes, including arbitration, court litigation and any alternative dispute resolution mechanisms. Jurisdiction, enforcement and limitation periods are all covered, as are the key provisions of local law in relation to shipbuilding contracts, contracts of carriage and cargo claims.

In addition, the authors address limitation of liability, including which parties can limit, which claims are subject to limitation and the circumstances in which the limits can be broken. Ship arrest procedure, which ships may be arrested, security and counter-security requirements, and the potential for wrongful arrest claims are also included. The authors review the vessel safety regimes in force in their respective countries, along with port state control and the operation of both registration and classification locally. The applicable environmental legislation in each jurisdiction is explained, as are the local rules in respect of collisions, wreck removal, salvage and recycling. Passenger and seafarer rights are also examined. The authors have then looked ahead and commented on what they believe are likely to be the most important developments in their jurisdiction in the coming year.

Download the 689 page book in pdf format at **https://bit.ly/3DjBIKs**. Or scan the QR code.

BLACK SEA MoU PORT STATE CONTROL ANNUAL REPORT 2022

The Black Sea MoU has published its Annual Report on Port State Control in the Black Sea region, covering the period between 1st January and 31st December 2022.

Over the course of the 2022 calendar year, 4,972 inspections, involving 3,501 individual ships, were carried out on ships registered by 77 Flag Administrations in the Black Sea Region. The war in Ukraine has heavily affected shipping in the Black Sea Region, including Ukrainian ports. In early 2022, before the onset of the war on 24 February, the number of inspections (958) returned to the pre-Covid and was slightly more than the total number of inspections in this period of 2019 (848).

After the onset of the war, from 24 February to 22 July, the number of inspections of Ukraine immediately dropped 84.6 per cent as compared with the same period of the previous year, from 1,006 to 157, while the regional number of inspections also dropped nearly 30.0 per cent from 2,422 to 1,697.

Out of 4,972 inspections in 2022, 2,981 of the inspections were found with deficiencies. The percentage of the inspection with deficiencies in 2022 (59.96%) increased by 6.56% compared with 2022 (53.40%).

Download the report at **https://bit.ly/46tP6Jv**. Or scan the QR code.

CROWLEY RELEASES SECOND ANNUAL SUSTAINABILITY REPORT

Crowley has released its second annual sustainability report, which details progress toward its sustainability goals in 2022 and previews continued efforts for 2023 and beyond.

The 2022 Crowley sustainability report demonstrates how the company has accelerated the integration of sustainability throughout its business, which includes advancing its decarbonization strategy, evolving Diversity, Equity and Inclusion (DE&I) goals and establishing new and enhanced business growth and priorities, among other accomplishments.

"We have been able to advance, and even exceed, some of the goals laid out in our inaugural report," said Tom Crowley, chairman and CEO. "This year was about our people, listening to feedback and taking action to continue to build a strong company culture. The progress we made in just one year speaks to our employees' dedication and vision, which aligns with the importance of these issues to our business, customers and other partners."

Highlights from the 2022 Crowley sustainability Report include:

- Publication of short-term emissions reductions goals and initial results toward its long-term goal to achieve net-zero emissions by 2050.
- Formalized DE&I plan, including representation strategy and goals for women, LGBTQ+ and Black employees.
- Established Crowley Wind Services, a new business unit that supports offshore wind development. Crowley already has plans for offshore wind development in Salem, Mass., and Humboldt Bay, Calif., and is building a service operations vessel for the wind industry.
- Received a $14.6 million grant to electrify its terminal at JAXPORT (Jacksonville, Fla.) and reduce emissions. This, in part, contributes to Crowley's vision for a "Port of the Future" that illustrates how new zero- and low-emission technologies could be integrated to optimize performance, enhance efficiency and reduce climate impact of port infrastructure.
- Achieved 40% of procurement spend on small business suppliers, surpassing its 2030 goal.

Partnered with various NGOs, industry groups and companies to support its sustainability strategy in the U.S. and Central America. For example, Crowley has partnered with EcoVadis to assess supplier sustainability practices across its value chain to support sustainable development.

Credit: Crowley

"Looking back at 2022, we are proud of what we have accomplished, and know there is more to be done, to make an impact for our employees and the communities we serve," said Meaghan Atkinson, Crowley's vice president of sustainability. "Our path forward will embed sustainability into our day-to-day operations while creating innovative services and solutions to help lead decarbonization in the maritime industry."

Download the report at **https://bit.ly/3JmKURR**. Or scan the QR code.

SHELL REPORT 'ALL HANDS ON DECK' ASSESSES THE ROAD TO DECARBONISATION IN THE SHIPPING INDUSTRY

Shell, in collaboration with Deloitte, has released All Hands on Deck 2.0, focusing on six tangible actions to accelerate the decarbonisation of the shipping industry.

The report features research and analysis based on insights drawn from leaders across all segments of the shipping sector to provide a high-level overview of progress made in decarbonising the marine sector since 2020 and assess the prevailing views, sentiments and concerns in the industry. It emphasizes a selection of specific actions the sector can act on without delay including:

- Scaling up demand for low-carbon fuels and low-emission vessels
- Taking a segment-specific approach for tailored solutions
- Leveraging local/regional regulation for momentum and anticipating global regulations
- Driving clarity on fuel pathways and investment in demonstration projects
- Adopting an integrated view on asset improvement, including efficiency measures and retrofits
- Activating the first green corridors as tangible proof points

Download the report at **https://bit.ly/3NZgnei**.
Or scan the QR code.

2022 PARIS MOU ANNUAL REPORT PUBLISHED

The Paris MoU has published its 2022 Annual Report, which provides an overview of its activities and statistics for last year. According to the report ship inspections have normalised compared to the two previous years. Inspections could be carried out again at a level that is customary for the Paris MoU.

COVID-19 was no longer a major concern on imposing restrictions. However, the information on inspection results from 2022 was difficult to compare with the two previous years because of the different circumstances regarding numbers of inspections and deficiencies due to the pandemic. In some cases, it has therefore been decided to use the pre-COVID year 2019 as the reference point instead of 2021.

In 2022, 10 Refusal of Access Orders (bans) were issued. This is a significant decrease compared to the 25 bans issued in 2019. The detention percentage has risen to 4.18% (3.49% in 2021), the highest in 10 years. Consequently, the number of detainable deficiencies has also increased to 4,873 (3,352 in 2021). The number of inspections carried out was 17,289 which compared to the number of inspections in 2019: 17,916.

In the past three years 21 ships have been banned for multiple detentions. Eight ships were banned "failing to call at an indicated repair yard". In the same period, four ships were banned for a second time.

Over a three-year time span the flags of Comoros and the Republic of Moldova have recorded the highest number of bannings. Looking briefly at the Paris MoU White, Grey and Black Lists, a small shift is noticeable from one category to another resulting in a smaller Grey List and a larger Black List compared to 2021. The total number of 39 flags on the White List is one less than that of 2021. The Grey List contains 18 flags (21 in 2021) and the Black List 9 flags, increasing from 7 in 2021.

Download the report at **https://bit.ly/3reU1xG**.
Or scan the QR code.

IMCA eCMID SYSTEM ANNUAL REPORT 2022/23 HIGHLIGHTS AREAS OF CONCERN WITH VESSEL INSPECTIONS

New in-depth analysis from the International Marine Contractors Association (IMCA)'s industry vessel inspection programmes, eCMID and eMISW, reveals ongoing concerns around technical inspections, the controlled entry into confined spaces, cyber security, as well as defects to life-saving appliances.

IMCA eCMID System Annual Report 2022/23 analysed the 1,539 reports on vessel inspections undertaken and uploaded to the eCMID database between April 2022 and April 2023, finding common themes of concern.

Of the 761 eCMID inspections, around 10% did not have a technical inspection carried out by the vessel operator, 9% did not have enclosed space entry adequately controlled, 13% had no formal cyber security incident response process, and 7% had defects recorded on their life-saving appliances.

Of the 778 eMISW inspections for smaller vessels, 7% had not addressed hazards within the machinery space, 6% did not carry the required number/type of lifebuoys and 6% did not have a planned maintenance program.

The IMCA eCMID system provides the marine and offshore industry with standardised formats for vessel inspection. Offering a safety management system (SMS) 'health check', it improves the quality and consistency of inspections while reducing their frequency on individual vessels through the adoption of a commonly recognised process.

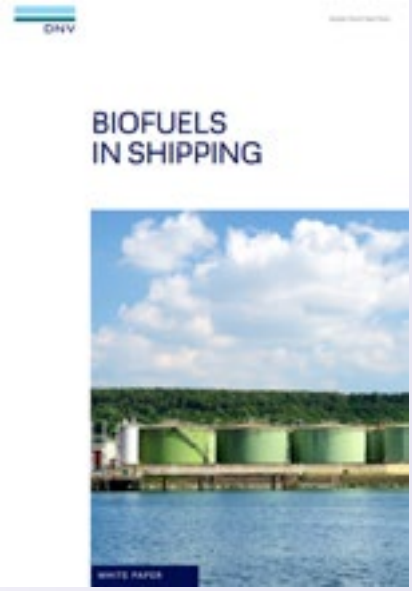
Mark Ford, Marine & Quality Manager at IMCA, said: "The high number of ISM non-conformances revealed in this analysis demonstrates very clearly why the eCMID and eMISW are credible and justifiable vessel inspection tools which allow us to identify, monitor and drive down unsafe practices for vessel owners and operators which have the potential for accidents and safety incidents.

"This analysis will enable IMCA and its membership to focus efforts on reducing both the number of findings and highlighting areas where we can support by pointing to existing guidance or working with the industry to develop new standards. I know that if we all work together, we can drive down the number of negative findings next year.

"We also hope that the findings will ensure independent Assured Vessel Inspectors (AVIs) can reduce inconsistency in reporting and will feed into training enhancements and system improvements."

Download the report at **https://bit.ly/44cfoOf**. Or scan the QR code.

EXPLORING THE POTENTIAL OF BIOFUELS IN SHIPPING



DNV's new white paper – "Biofuels in shipping" – provides an overview of the role of biofuels in shipping's future energy mix. The study provides insights into the current availability of biofuels to the maritime industry and forecasts future production potential based on stringent sustainability criteria.

With the maritime industry increasingly looking for ways to decarbonize, demand for biofuels is on the rise. Biofuels – in the form of methane, methanol or fuel oils – are seen as a convenient way for shipping companies to reduce their carbon emissions because of their ability to be used as a "drop-in" fuel.

This means that biofuels can be mixed with similar versions of fossil fuels and used to power existing engines. This is an extremely attractive decarbonization solution for shipowners as it negates the need for large-scale capital investments which are necessary for other decarbonization options, such as the retrofitting of engines to dual-fuel capability.

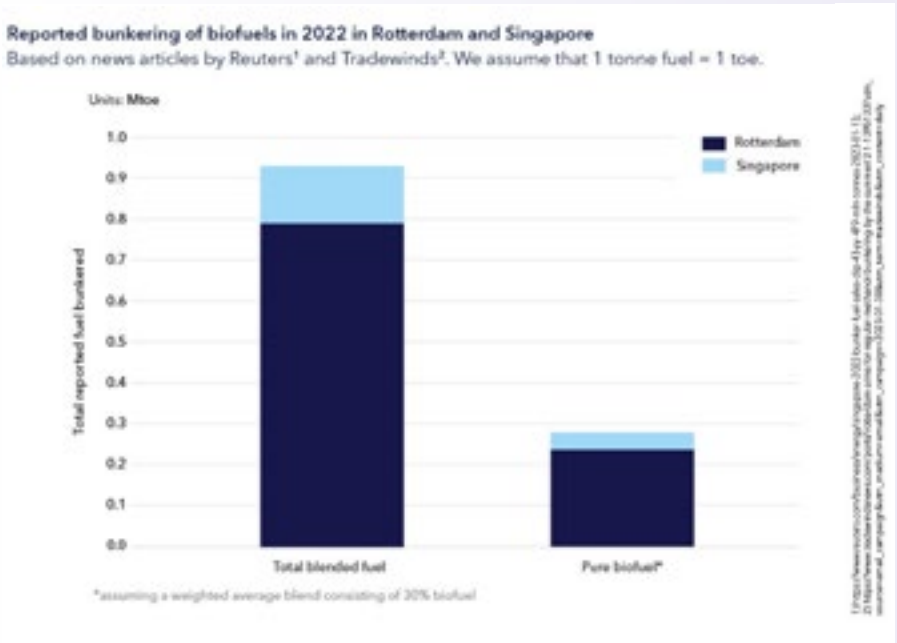
Biofuels in shipping today

Biofuel use in shipping has so far been extremely low. Before 2022, this was limited to a number of demonstrations, pilots and trials carried out onboard ships. However, in 2022, this seemingly accelerated with reports of around 930,000 tonnes of blended biofuel being bunkered in Singapore and Rotterdam.

"Blended biofuels typically consist of around 30% biofuel so we concluded that these figures from Singapore and Rotterdam accounted for around 280,000 tonnes of pure biofuels," says Eirik Ovrum, Principal Consultant in DNV Environment Advisory and co-author of the biofuels white paper. "Whilst this might seem like a large number, it still accounts for just 0.1% of total maritime fuel consumption of 280 million tonnes of oil equivalent (Mtoe) per year."

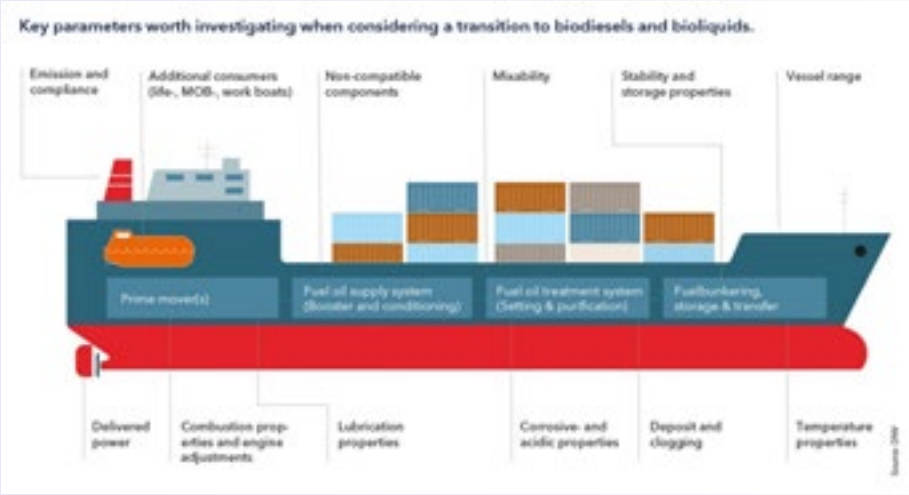
Practical considerations for use of biofuels onboard

Although biofuels are regarded as relatively easy and straightforward to use, they still have the potential to damage equipment onboard a vessel if not dealt with correctly. Due to the lack of long-lasting trials, there is a shortage of experience with regard to biodiesels and bioliquids and their compatibility with existing onboard machinery. Therefore, it is important to evaluate biofuels on a case-by-case basis to make sure that the fuel specification and quality is compatible with the intended applications onboard the vessel.



With this in mind, the white paper stresses the need for several practical considerations to be taken before biofuels are adopted by shipowners.

"All biofuel options should be mapped so that users are aware of their properties, such as what feedstock they are based on, how they are produced and what their ideal storage conditions are," says Ovrum. "Dialogue should be held with engine manufacturers and equipment suppliers to make sure that there are no compatibility issues with certain biofuels. Seafarers and other personnel should be provided with relevant training related to the application of biofuels."



Are biofuels sustainable?

Biofuels are made by converting organic matter, also known as biomass, into a fuel product. Biomass absorbs CO2 from the atmosphere during growth, which gives biofuels the potential to be carbon-neutral, even though CO2 is emitted when combusting most biofuels. The sustainability of biofuels is dependent on the feedstock. Biomass sourced from agricultural main products is usually referred to as conventional and not sustainable. Biomass from non-food or non-feed sources is termed advanced and has the potential to be regarded as sustainable, depending on the criteria.

"The EU Renewable Energy Directive (RED II) applies strict guidelines for which biofuels can be considered sustainable," says Ovrum. "This is largely confined to the use of waste biomass as feedstock and we used this strict criteria when calculating the potential supply of sustainable biomass which can be used in shipping."

Current supply of biofuels

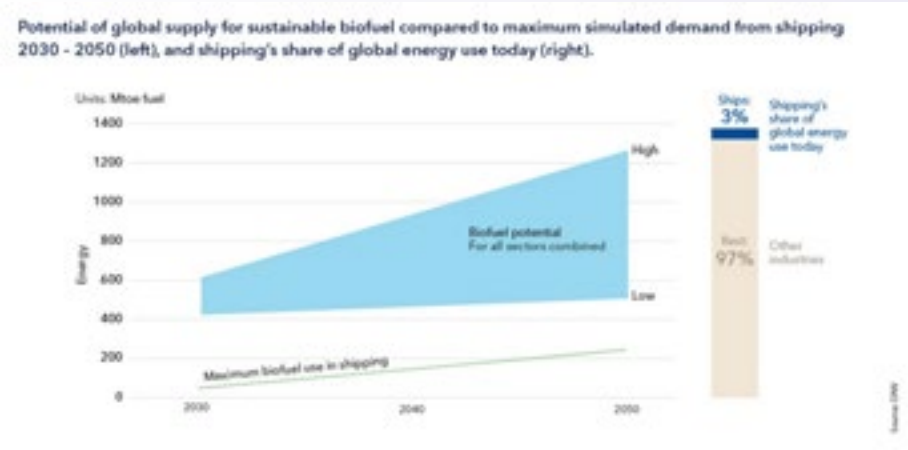
DNV's white paper assesses the current and future global biofuel production capacity by drawing on its own database of biofuel plants currently in operation, as well as visible planned biofuel production projects. This draws on a range of different public sources and databases and provides one of the most comprehensive overviews of biofuel production available. The database identifies around 5,000 biofuel production facilities worldwide and predicts how biofuel production is expected to develop through to 2050.

According to the paper, global production of advanced biofuels stands at 11 Mtoe per annum in 2023. A significant number of projects involving production from advanced biomass sources are expected to come on-stream between now and 2026, bringing total sustainable biofuel production levels up to 23 Mtoe per annum. Whilst this represents strong growth, it still falls short of the volume of biofuels that shipping would need in order to make a big impact on decarbonization efforts.

How much of the biofuel supply can shipping obtain?

If shipping was to decarbonize fully by 2050 primarily using biofuels, in combination with energy efficiency measures, 250 Mtoe per annum of biofuels would be required. DNV's white paper estimates that the global sustainable and economical supply of biofuels could reach 500–1,300 Mtoe per year by 2050, which means that shipping would need between 20% and 50% of this supply if it was to decarbonize primarily using biofuels. Total global energy demand today is around 10,500 Mtoe per year and shipping accounts for around 3% of this. It is, therefore, unlikely that shipping will be able to obtain such a high share of biofuels.

Shipping is considered a hard to abate sector and there are many in the industry who feel like it should be prioritized for biofuel supply over other sectors like road transport, due to the difficulties in, for example, electrifying the maritime fleet. Nonetheless, competition for supply will be fierce, particularly from sectors like aviation and road transport, which have already established a foothold in the biofuels market.



Download the white paper at **https://bit.ly/46j3i7R**. Or scan the QR code.

The future of biofuels and shipping

DNV's white paper concludes that it is likely that biofuels will play an important role in shipping over the coming decades. However, limits to production capacity and competition from a range of other sectors mean that shipping cannot rely on biofuels as the only solution to reaching its decarbonization targets. The maritime industry will, therefore, have to continue to explore other options to reach net zero.

NEW REPORT: 10 TRENDS INFLUENCING GLOBAL COMMERCIAL SHIPPING

In a recently published report, World Maritime University presents 10 trends influencing global commercial shipping.

According to the *'Transport 2040 – Impact of Technology on Seafarers – The Future of Work'* report, identifying global trends within the maritime industry is critically important since such knowledge helps stakeholders select trend relevant technologies. The 10 trends identified in the report are as follows:

1 Increasing e-commerce and digital consumption
Shopping behaviours are shifting towards specialized channels that employ sophisticated targeting strategies, such as demographic categorizations using search engine optimization, social media marketing and media marketing where the statistics provided by these channels are used to promote and understand consumer culture.

2 Expanding role of the blue economy
Under the Blue Economy scheme, the main activities are fisheries; aquaculture; tourism (in coastal and marine areas); extractive offshore industries within and beyond national jurisdictions; freshwater generation; renewable energy offshore production; maritime transport, port, shipbuilding, shipping and other related services; and water disposal and other supportive services in the maritime field. Climate change and renewable energies are important topics of this trend.

3 Rise of new business models and ecosystems driven by technology
The technologies currently driving change include blockchain, AI-applications, the Internet of Things (IoT), digital supply chains and logistics management. These developments require businesses to deal with cybersecurity, 6G technologies and smart contracts.

4 Expanding green economy
Green economy trends seek to mitigate climate change and reduce the world's negative externalities by restructuring the world economy in support of such goals.

The path to establishing a low-carbon economy requires the reduction of fossil fuel-based energy consumption, implementing renewable energy sources, and where possible, embracing a zero-waste approach in production processes.

A new CE Delft analysis shows that ships can achieve 36-47% emissions reduction by 2030 compared to 2008 levels by deploying 5-10% zero or near-zero emission fuels, wind-assist technologies, and by 'climate optimizing' the speed of ships.

5 Increased geopolitical volatility
Forecasting geopolitical events and their risks is inherently impossible, which is why risk-hedging and management protocols are widely adopted to prepare countries for fluctuations in the financial and trade markets.

Recent global geopolitical disruptions have included Brexit, the COVID-19 pandemic and the Ukraine/ Russia crisis. Future disruptions may emerge owing to factors such as the price of petroleum and commodities, new pandemics, the use of cryptocurrencies, wars and terror attacks.

6 Increasing role of technology regulation and governance
Defining standards for technology within the governance area is a complex process where topics such as diplomacy and science at local, national, transnational and global levels must be codified on a regulatory framework.

7 Widening economic and skills inequalities
The trend towards supporting skills-learning and personal opportunity through digitalization is especially important within maritime transport where addressing inequality will require the reskilling of seafarers and other employees as well as investment in assistive technologies, such as broadband Internet.

To remind, yesterday, an industry summit in Philippines to discuss the upskilling and reskilling of seafarers.

8 Increasing concerns about and solutions for cybersecurity and digital transparency
Cybersecurity has become a growing concern for industries due to the increase of digitalization (IoT, blockchain, Cloud, ICT) and the associated cyber threats. For instance, The Tokyo MOU PSC database, APCIS, suffered an outage in July 2022 due to the unforeseen reason, likely a cyber-attack. The failure resulted the unavailability of the whole system for a couple of weeks and the restoration of full data for several months.

Allianz in its Safety and Shipping Review 2023 highlights its vital that investment in cyber risk education and security is not neglected at this time, despite economic and decarbonization pressures, as this risk has the potential to have catastrophic consequences, given the right confluence of events.

In support of this trend, the International Maritime Organization (IMO) adopted Resolution MSC.428/98 regarding Maritime Cyber Risk Management in Safety Management Systems, which requires shipowners to address cyber risks and cybersecurity attacks in the design and deployment of Safety Management Systems (SMS). In January 2021, it became mandatory to deploy SMS and to consider cyber risks as potential threats.

9 Increased use of smart ships
The future ship will be smarter; data-driven; greener due to flexible powering options; and offer full onboard WiFi and digital connections through global satellites and mobile communications.

Such ships will also integrate with the wider global fleet as well as shore-side supply chains to enable Big Data Analytics (BDA), thereby providing information on a wide range of issues, including operations and maintenance costs, the reliability of the vessel, logistics, life cycle designs, energy consumption, emissions levels, and cargo monitoring.

In addition, smart ships will offer gains within efficiency and ease of transport, which is why stakeholders are likely invest more in such ships.

10 Rising importance of autonomous ships
Ships will become situationally aware, self-governing and capable of doing tasks with limited external intervention (i.e. become autonomous). Currently, a wide variety of global projects have been established to build MASS prototypes.

However, stakeholders may eventually consider investing in this full-scale transition due to the anticipated economic, environmental and operational benefits the technologies promise, although there are several inhibitors, such as safety and technical issues and social awareness of the potential negative consequences to employment.

The 107th session of the IMO's Maritime Safety Committee (MSC 107) made further progress on the development of a non-mandatory goal-based instrument regulating the operation of maritime autonomous surface ships (MASS) expected to be adopted by 2025. It is anticipated that onboard and onshore seafarers (i.e. e-farers or operators) would need to be reskilled and upskilled to adapt to MASS.

The full 247 page report is available in pdf format at **https://bit.ly/46l7DaR**.
Or scan the QR code.

ELECTRIC BOAT AND SHIP MARKETS GAINING MOMENTUM, SAYS IDTECHEX

In its new report "Electric Boats & Ships 2024-2044," technology company IDTechEx has provided granular 20-year forecasts in unit sales, battery demand and battery market value for the electric ferry, electric cargo/container, electric Ro-Ro, electric cruise, electric OSV, electric tugboat and electric recreational boats by power class. It also shared technology analysis and price information on marine Li-ion battery systems ($/kWh 2020 – 2044) and electric propulsion systems.

The company pointed out that across the land-based electric vehicle sectors, there is mostly a transition to battery-electric propulsion systems over the next two decades, but the case is not so simple for the marine one. Due to the scale of the power, energy and distance requirements for merchant vessels, reducing maritime emissions will require solutions ranging from giant Li-ion battery systems to green hydrogen fuel cells and other alternative fuels, IDTech said.

The report found that cumulative battery deliveries since 2013 are set to surpass the milestone of 1 GWh in 2023, but while growth has been strong in inland and coastal marine sectors, uptake in larger deep-sea vessels is less rapid.

However, IDTechEx noted that is gaining momentum as unprecedented global emissions regulations upcoming from the IMO and EU, which initially targeted NOx, SOx & PM, now focus on carbon & GHG emissions.

To note, the new IMO policy includes an Energy Efficiency Existing Ship Index (EEXI) and the Carbon Intensity Indicator (CII). EEXI ensures a ship is taking technical steps, in terms of how it is equipped and retrofitted, to reduce greenhouse gas emissions, and CII is a measure of the carbon emissions per amount of cargo carried per mile and targets reducing emissions operationally. The measures are expected to become mandatory from 2023, with the first ship ratings given in 2024.

The maritime sector is, therefore, under increasing pressure to decarbonize and meet broader climate goals, IDTechEx said, adding that the solutions are potentially emerging into 'multiple silver bullets', each of which can target a specific subsector. For example, batteries for pure electric ferries and tugboats, and green fuels (often paired with batteries) in hybrid sea-going vessels.

The company further said that pure battery-electric ships are often the best solution where operationally possible, in terms of reducing emissions and, typically, lifetime ROI costs.

It concluded: "By volume, electric recreational & leisure boating is the largest market, with tens of thousands of electric propulsion systems sold yearly… In contrast, several hundred hybrid deep-sea vessels are in-service today. Yet, this sector has the largest market value and demand for maritime batteries in the future due to the vessel sizes and high energy requirements involved, leading to giant battery systems per vessel."

"Despite high initial CAPEX and energy density limitations, what is clear is that marine battery systems will continue to add value to both the smallest recreational boats and the largest sea-going ships, either by facilitating the leap to pure zero emissions operation or by improving the fuel economy of engines, and even fuel cells, driving a hybrid market."

BV GLOBAL ENERGY TRANSITION REPORT

Bureau Veritas has published the 'Global Energy Transition report 2023: Accelerating the energy transition' after collecting insights from over 800 market experts and industry leaders from February to April 2023.

The report explores the major short-term barriers that need to be removed to keep accelerating the energy transition and unveils insights on the very real constraints the industry faces.

The world is at a turning point
Respondents were truly divided when it came to the ability of the world to transition at the required pace to reach the Paris 1.5°C target, and the contribution the energy sector will be able to make. If 81% agree that we will see a significant acceleration towards 2030, only 60% believe sufficient progress will be made in removing barriers in the short term.

Removing barriers: change comes from the top
Respondents firmly believed that government policy is the number one factor driving the transition. Lack of policy support, constantly changing regulation and red tape are all obstacles to developing new assets. By contrast, positive policy signals effectively open access to, and encourage investment in, new technologies and manufacturing hubs.

Download the report in pdf format at **https://bit.ly/44mRD67**. Or scan the QR code.

Supply chain transformation also poses risks
Geographical concentration of raw materials and component manufacturing is the number one concern today, cited by 90% of respondents as a top 3 challenge. Governments in the US, Europe and India have launched ambitious plans to develop domestic manufacturing. But this exponential scale-up is a fierce uphill battle given the enormous installation targets. It will need to go hand-in-hand with thorough assessments of supplier quality, sustainability and resilience.

Recruit, reskill, retrain and repeat
The scale-up in workforce required between now and 2030 will demand one of the biggest recruitment and training programs any industry has ever seen. Increased renewables deployment and manufacturing will require an additional 25 million people to join the energy industry. Companies are already feeling the pressure, citing recruitment of engineers and technical staff as an enormous challenge.

Looking ahead
As the report concludes, only 40% of industry leaders believe that today's technology will enable us to reach net zero. Collaboration between industry players, throughout the value chain, will be essential to develop the more efficient renewable assets and energy storage systems the world needs.

CARGO TANK VENT SYSTEMS AND SELECTION OF ELECTRICAL EQUIPMENT: REVISED INTERPRETATION BY IACS

The International Association of Classification Societies (IACS) has revised the Unified Interpretations of the cargo tank vent systems and the selection of electrical equipment. This Unified Interpretations document (UI SC70 Rev4 Corr1 CLN) was published on 1 April 2023.

This document refers to the interpretation of SOLAS II-2/11.6.2.2 and SOLAS II-2/4.5.4.3.1.

According to SOLAS regulation II-2/11.6.2, the requirements for openings for small flow caused by thermal variations are as follows:

6.2 - Openings for Pressure Release:
The openings must be positioned with the maximum height possible above the cargo tank deck to ensure the widest dispersal of flammable vapours. The height should not be less than 2 meters above the cargo tank deck.

The openings should be located at the farthest distance feasible, but not less than 5 meters, from the nearest air intakes, enclosed spaces containing a source of ignition, and deck machinery and equipment that may pose an ignition hazard. It is important to note that openings such as those for the anchor windlass and chain locker are considered ignition hazards.

For tankers built on or after January 1, 2017, the arrangement of these openings must comply with regulation 4.5.3.4.1.

Interpretation:
The classification of areas must be conducted according to the principles outlined in IEC 60092-502:1999.

A1 - Zone 1:
Areas on the open deck or semi-enclosed spaces on the open deck that are within 3 meters of cargo tank ventilation outlets, allowing the flow of small volumes of vapor or gas mixtures caused by thermal variation, are categorized as Zone 1, as specified in IEC 60092-502:1999 paragraph 4.2.2.7.

A2 - Zone 2:
Areas located within 2 meters beyond the zone specified in A1 are considered Zone 2 (instead of the 1.5 meters defined in IEC 60092-502:1999 paragraph 4.2.3.1).

A3 - Electrical Equipment in Hazardous Areas:
Electrical equipment or cables should generally not be installed in hazardous areas. However, if necessary for operational purposes, electrical equipment may be installed in accordance with IEC 60092-502:1999.

As stated in SOLAS regulation II-2/4.5.3.4.1:
The openings and air intakes must be positioned at a minimum horizontal distance of 10 meters from enclosed spaces containing a source of ignition, as well as deck machinery and equipment that may pose an ignition hazard.

Interpretation:
Similar to the previous section, the classification of areas must adhere to the principles defined in IEC 60092-502:1999.

B1 - Zone 1:
Areas on the open deck or semi-enclosed spaces on the open deck that fall within a vertical cylinder of unlimited height and a 6-meter radius centered upon the outlet, as well as within a hemisphere of 6-meter radius below the outlet, which allow the flow of large volumes of vapor or gas mixtures during loading, discharging, or ballasting, are categorized as Zone 1, as specified in IEC 60092-502:1999 paragraph 4.2.2.8.

B2 - Zone 2:
Areas situated within 4 meters beyond the zone specified in B1 are classified as Zone 2, as indicated in IEC 60092-502:1999 paragraph 4.2.3.2.

B3 - Electrical Equipment in Hazardous Areas:
As a general rule, electrical equipment or cables should not be installed in hazardous areas. However, if it is essential for operational purposes, electrical equipment may be installed in accordance with IEC 60092-502:1999.

Notes:
Revision 4 of this UI (Unified Interpretation) must be uniformly implemented by IACS (International Association of Classification Societies) on ships contracted for construction on or after July 1, 2022.

The term "contracted for construction" refers to the date when the contract to build the vessel is signed between the prospective owner and the shipbuilder. For more detailed information regarding the date of "contract for construction," please refer to Procedural Requirement (PR) No. 29.

ACCEPTANCE OF MINI-ECDIS FOR SMALL VESSELS IN COMMERCIAL USE BY GIBRALTAR MARITIME ADMINISTRATION

The Gibraltar Maritime Administration has issued a shipping guidance notice (SGN 116) regarding the acceptance of Electronic Chart Plotting Systems (Mini-ECDIS) for small vessels in commercial use.

The Gibraltar Maritime Administration (GMA) will accept the use of electronic chart plotting systems complying with the specifications and standards described within this notice, on small commercial vessels of under 24 metres. Manufacturers, or their agents, will be required to provide a signed statement confirming compliance with the standards developed by the United Kingdom Sea Fish Industry Authority (SFIA). A certified copy of the statement must be retained on board the vessel.

To satisfy the statutory requirements vessels must comply with these standards, including the provision of suitable back up arrangements which are detailed within section 5 of this notice.

Introduction/background
1.1 There is widespread use of chart plotting systems using privately produced electronic chart data. Such systems do not satisfy the international carriage requirements for charts. Nonetheless, it is in the interest of navigational safety that mariners are able to maximise the benefits obtained from modern electronic systems.

1.2 SFIA, in partnership with the United Kingdom Maritime and Coastguard Agency (MCA), and the United Kingdom Hydrographic Office, led an initiative in developing a performance standard for a physically smaller Electronic Chart Display and Information Systems (ECDIS) referred to herein as Mini-ECDIS. SFIA has been designated as the lead authority, for the development of technical specifications for an electronic chart system.

1.3 The GMA considers this specification to be suitable for various small commercial vessels up to 24 metres load line length, certified under the Code of Practice for sport or pleasure, workboat and pilot boats ((MGN 280) (Code Vessels)), or the Workboat Code.

IACS REVISED GUIDELINES FOR SURVEYS, ASSESSMENT AND REPAIR OF HULL STRUCTURES OF DOUBLE HULL OIL TANKERS

The International Association of Classification Societies (IACS) has revised the Guidelines for Surveys, Assessment and Repair of Hull Structures of Double Hull Oil Tankers. This manual provides guidelines for a double hull oil tanker designed for bulk oil transportation.

The guidelines focus on survey procedures by IACS Member Societies, but are valuable for other regulatory bodies, owners, and operators. The manual covers preparation guidelines for surveys, emphasizing safety, necessary access facilities, and required preparations. It highlights the main structural areas of the hull and provides examples of structural deterioration and damages. It explains how to identify signs of damage, possible causes, and recommended repair methods. Note that the manual is based on the best available information and is discretionary for Surveyors.

THE DUTCH MINISTRY OF INFRASTRUCTURE AND WATER MANAGEMENT HAS PUBLISHED THE LIST OF THE CONCLUDED IMSBC AGREEMENTS

Published on 15 June 2023 and entering into force on the same date.

If a solid cargo intended for bulk transportation is not listed in Appendix 1 of the IMSBC Code, the shipper must provide the relevant port authority at the loading port with the cargo's characteristics and properties, as specified in Section 4 of the IMSBC Code, prior to loading. Based on this information, the competent authority will evaluate whether the cargo can be safely transported.

If it is determined that the proposed solid bulk cargo falls under Group A or B as defined in Section 1.7 of the IMSBC Code and may pose hazards, advice must be sought from the competent authorities at the unloading port and the flag State.

These three authorities will establish initial conditions for the safe transport of this cargo through a Tripartite Provisional Agreement (TPA).

If it is determined that the proposed solid bulk cargo does not present any specific transportation hazards and falls under Group C, the transportation of this cargo will be authorized. The port authority at the unloading port and the flag State will be informed of this authorization.

Download the revised list at **https://bit.ly/434Am0N**. Or scan the QR code.

ENVIRONMENT RULES TO PREVENT AIR POLLUTION FROM BOATS COME INTO FORCE IN NEW ZEALAND

In New Zealand, new Marine Protection Rules targeted to reduce emissions from boats came into force. The rules are part of New Zealand's accession to MARPOL Annex VI. Part 199 applies to New Zealand commercial vessels and recreational boats that operate in the sea. Vessel and boat owners have a part to play in protecting the marine environment. The Part 199 rules don't apply to vessels that operate solely in inland waters such as lakes or rivers.

REQUIREMENTS FOR HYDROGEN FUELED VESSELS PUBLISHED BY ABS

The American Bureau of Shipping (ABS) has issued the requirements for Hydrogen Fueled Vessels. These requirements have been developed to further support the application of hydrogen as fuel to ABS Classed vessels. Where the requirements are proposed to be used for compliance with the IGF code, such application is subject to approval by the vessel's flag Administration prior to the issuance of relevant statutory certificates on behalf of the same flag Administration by ABS.

The applicable edition of the Marine Vessel Rules is to be used in conjunction with this document.
This document has been developed to provide guidance for the design, construction, and survey of vessels using hydrogen as fuel and focuses on systems and arrangements provided for the use of hydrogen for propulsion and auxiliary systems.

This document provides Classification requirements, standards and criteria for the arrangements, construction, installation and survey of machinery, equipment and systems for vessels operating with hydrogen as fuel to minimize risks to the vessel, crew and the environment.

These requirements apply to both new construction and existing vessel conversions, regardless of vessel/ unit size, including those of less than 500 gross tonnage, utilizing hydrogen as fuel in internal combustion engines, fuel cells, or other hydrogen combustion equipment (e.g., boilers).

Download the requirements at **https://bit.ly/3XsgtPQ**. Or scan the QR code.

CHINA CLASSIFICATION SOCIETY PUBLISHES THE GUIDELINES FOR SURVEY OF LEAN DUPLEX STAINLESS STEEL

The objective of these Guidelines is to ensure the safe operation of liquid tank boundaries and process pressure vessels for oil, gas, and water, as well as other components of bulk chemical tankers constructed with lean duplex stainless steels.

These guidelines cover various aspects such as chemical composition, delivery condition, mechanical properties, pitting corrosion resistance performance, a list of suitable products for carriage, and control of the construction process during the intended service life.

Application
These Guidelines are meant to be applied for works approval and survey of lean duplex stainless steels that are manufactured in accordance with the requirements specified in CCS Rules for Materials and Welding. They are applicable to lean duplex stainless steels used in the construction of cargo tanks, process pressure vessels for oil, gas, and water, and other components of bulk chemical tankers.

In addition to the provisions mentioned in these Guidelines, lean duplex stainless steels must also comply with the relevant requirements for hull structural steels outlined in Chapter 3, PART ONE of CCS Rules for Materials and Welding.

This document became effective from 1 July 2023.

CLEAN SHIPPING ACT OF 2023 INTRODUCED

Perhaps sending a signal that legislators in many parts of the world can't wait for IMO to act, Congressman Robert Garcia (CA-42), and Senator Alex Padilla (D-Calif.) have now introduced the Clean Shipping Act of 2023 in the US.

According to its sponsors, "the Clean Shipping Act of 2023 would set a path to eliminate greenhouse gas emissions from all ocean shipping companies that do business with the United States. The bill aims to clean up the shipping industry, protect the health of port communities, address environmental injustice, and provide solutions to the climate crisis by giving the Environmental Protection Agency the authority to regulate carbon intensity standards for maritime fuel. Technological pathways exist to make this possible."

Essentially, the legislation seeks to amend the Clean Air Act by requiring the Administrator of the EPA to establish standards to limit the carbon intensity of the fuel used by ships.

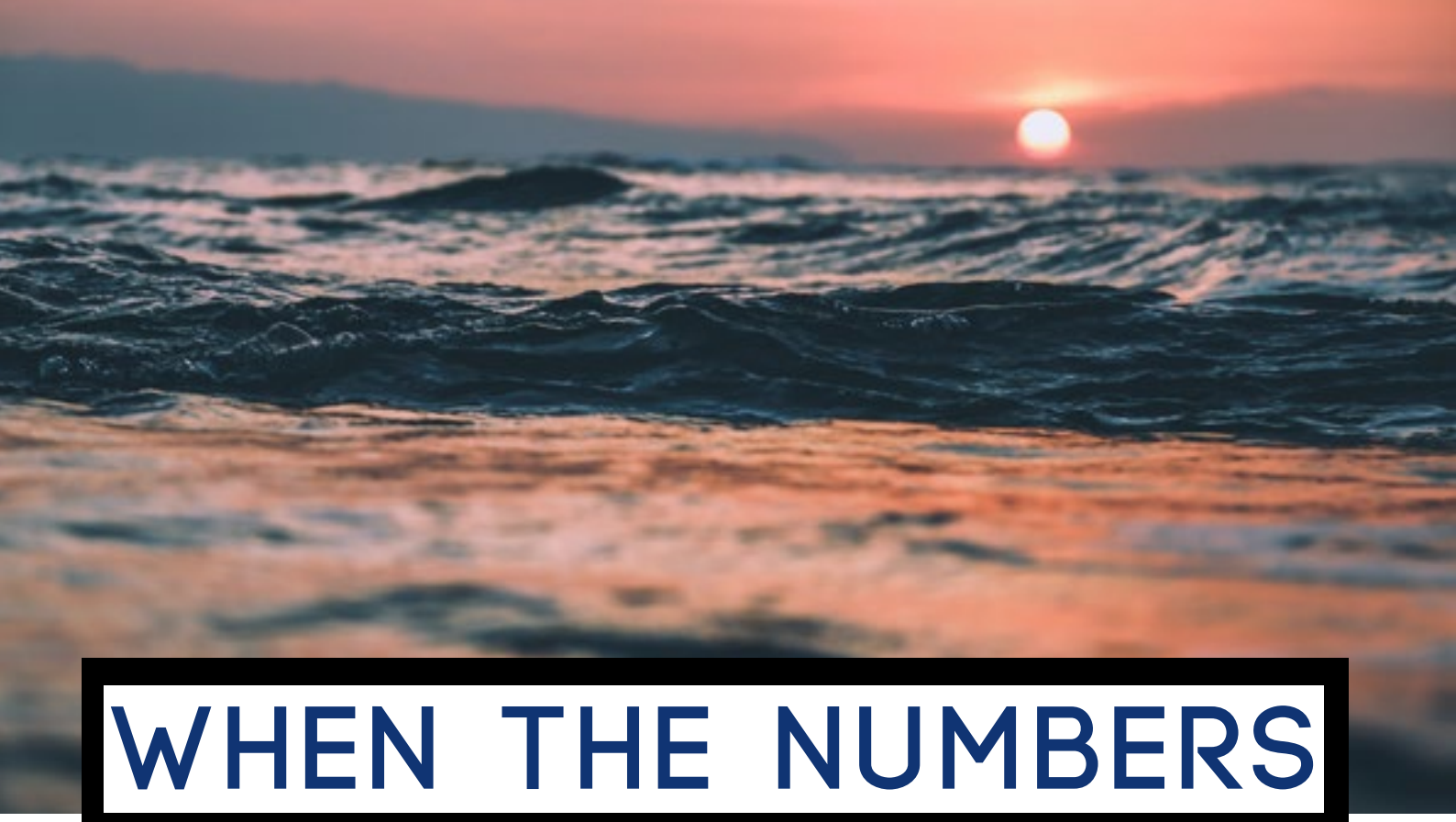
In part it reads:

The Administrator shall, by regulation, require each vessel on a covered voyage to comply with standards for the carbon intensity of the fuel used by such vessel so that such carbon in-tensity is:

A) in each of calendar years 2027 through 2029, at least 20 percent less than the carbon intensity baseline;
B) in each of calendar years 2030 through 2034, at least 45 percent less than the carbon intensity baseline;
C) in each of calendar years 2035 through 2039, at least 80 percent less than the carbon intensity baseline; and
D) in calendar year 2040 and each calendar year thereafter, 100 percent less than the carbon intensity baseline.

Zero carbon by 2040 is of course way more ambitious than anything in the works at IMO and the International Chamber of Shipping's goal of reaching net zero by 2050.

"The Clean Shipping Act of 2023 is a strong, necessary step that will make our maritime ports greener and address ongoing challenges contributing to the global climate crisis," said Congressman Garcia. "Not only does this bill drastically decrease shipping emissions in the United States, but it brings long-awaited justice to our port-adjacent communities that have suffered the consequences of port pollution for far too long."



WHEN THE NUMBERS BECOME DANGEROUS

An opinion article by Michael Grey

Michael Grey MBE is a distinguished maritime journalist and former editor of Lloyd's List. He has been an observer of the shipping industry for decades and shares his forthright opinions based on many years' maritime experience. He was at sea for twelve years with the Port Line of London and holder of a British Foreign Going Master's certificate. When he came ashore, Michael worked in the safety and technical department of the UK Chamber of Shipping, before moving into and developing a successful career in maritime journalism.

Probability, it has been said, can lull you into a false sense of security. We have been reminded of the ill-fated ocean liner Titanic just recently and it is worth recalling the reasons why this beautiful new ship departed on her maiden voyage with lifeboats unable to carry her full complement. Even disregarding the supposed "unsinkability" of the design, it was honestly believed that the risks of a fatal collision with an iceberg and the lack of any helpful assistance in a busy shipping route were perfectly acceptable. After all, why clutter the promenade decks with a lot of pointless boats?

"It wouldn't happen to us" has been a reason for endless inadequacies throughout history and it is the same today. Statistics can be very comforting as a reason for proceeding "as usual", or avoiding expenditure in safety equipment, which hopefully will never be used.

"There are still plenty of people who will assert that 99.999 per cent of containers don't catch fire, so we maybe don't need to do anything too drastic."

In recent years there have been real scandals, like the number of seafarers killed in lifeboat drills using equipment that really needs to be re-thought, or those lost in enclosed spaces. However, they don't happen that often and individually involve only a few lost souls, so the reasons for urgent reform are reserved for more dramatic events. It takes patient aggregation of accident statistics, like those provided by InterManager or the individual efforts of Dr Neil Baird on ferry safety to show us that the reliance on a sort of "percentage game" is both hazardous and immoral.

Yet it takes quite a lot to change attitudes and persuade regulators

and industry of the need for change. Take the issue of container fires, which regularly destroy ships and goods as well as cost lives. It has been talked about for long enough, it has become an escalating concern with the sheer number of boxes on individual ships, but there are still plenty of people who will assert that 99.999 per cent of containers don't catch fire, so we maybe don't need to do anything too drastic.

The latest concern is that of electric vehicles (EVs) and the very real risks of fires involving lithium-ion batteries, with more of these vehicles emerging every month to require carriage on Ro-Ro ferries. They have been around a fair time now and more of these older cars are rocking up at the ferry terminals, with possibly deteriorating batteries that might just possibly have been damaged in use. It was notable that after the loss of at least two big car carriers, the lines have been persuaded that damaged vehicles, which are often shipped abroad for parts, will not be permitted on their ships, and you couldn't blame them for this precautionary policy.

The Ro-Pax ferry Euroferry Olympia ablaze in international waters off the Greek island of Corfu in February 18, 2022. The incident, which left 11 people dead, was believed to have occurred after one of the vessel's embarked lorries caught fire.

But the general industry awareness of battery fires, it has been suggested, remains low and a useful meeting involving Stream Marine Technical, and some industry experts has set out some of the issues that the batteries and EVs are throwing up. And in particular, as the numbers of EVs increase, there is a pressing need for specific training of crews on Ro-Ro and Ro-Pax ferries who may be confronted with car deck fires involving these difficult customers.

"We maybe ought to consider the risks of something really awful happening, more urgently, rather than waiting for the STCW convention to be suitably updated."

At the present, mandatory training in tackling fire aboard ships is specified by the STCW requirements, which effectively deal with the subject as it was regarded in a "pre-EV" age and now needs updating to cope with the new hazard.

The meeting outlined just some of the things that can go wrong to make the batteries dangerous: an incorrect charging regime, incorrect installation, or malfunction, all of which can damage a battery and make it combustible. Then there is the risk of thermal runaway, which makes the fire virtually impossible to extinguish. Everyone has heard of the "fire triangle" that, by removing one of its sides, provides a pathway to a successful extinguishing of the conflagration. The EVs' "fire tetrahedron" with a chemical chain reaction, the meeting was assured, is another matter entirely.

It was pointed out that there had been 387 battery fires since 2012, and that there are now 16-metre EVs motoring around, but the lack of training to deal with them rather dulls the significance of this ratio. It is just worth considering all the cars, some of which may be in a potentially hazardous state, boarding Ro-Ro and Ro-Pax ferries all around the world, the numbers immeasurably swelled at holiday times when the priority is sailing on time. Statistics aside, we maybe ought to consider the risks of something really awful happening more urgently, rather than waiting for the STCW convention to be suitably updated. Of course, there are responsible ferry operators that already have proper training and plans in place, but there are inevitably others that have concluded the statistics are on the side of inactivity. And we maybe ought to be thinking about car shuttle trains in tunnels or indeed multi-storey car parks.

Think about practice, not just relying on numbers.

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Scrubber discharges come under renewed fire

Metals and other environmentally hazardous substances in ships' scrubber discharge water are putting the marine environment at risk, according to a new study from researchers at Sweden's prestigious Chalmers University of Technology. When the researchers calculated the contaminant load from these emissions into the marine environment in four ports, they found that water discharged from ships' scrubbers accounted for for more than 90% of the contaminants.

"The results speak for themselves. Stricter regulation of discharge water from scrubbers is crucial to reduce the deterioration of the marine environment," says Anna Lunde Hermansson, a doctoral student at the Department of Mechanics and Maritime Sciences at Chalmers.

Traditionally, environmental risk assessments (ERA) of emissions from shipping are based on one source at a time. For example, the ERA might look at the risk from copper in antifouling paints. But as with all industries, shipping is an activity where there are multiple sources of emissions.

"A single ship is responsible for many different types of emissions. These include graywater and blackwater, meaning discharges from showers, toilets and drains, antifouling paint, and scrubber discharge water. That is why it's important to look at the cumulative environmental risk in ports," says Lunde Hermansson who, with colleagues Ida-Maja Hassellöv and Erik Ytreberg, undertook the new study.

Used to remove sulfur from heavy fuel oil in order to meet the limits imposed by IMO in 2020, scrubbers (or exhaust gas cleaning systems) use seawater in the cleaning process.

The only problem, says Chalmers, is that the water not only takes up the sulphur from the exhaust gases, leading to acidification of the scrubber water, but also other contaminants such as heavy metals and toxic organic compounds. The contaminated scrubber water is then most usually pumped directly into the sea.

"There is no cleaning step in between – so up to several hundred cubic meters of heavily contaminated water can be pumped out every hour from a single ship," says Lunde Hermansson.

"Although new guidelines for ERAs of scrubber discharges are in progress, the ERAs still only assess one source of emissions at a time, which means that the overall assessment of the environmental risk is inadequate."

In the study, the researchers at Chalmers looked at four different types of port environments to determine contaminant concentrations from five different sources. Actual data from Copenhagen and Gdynia were used for two of the ports. They were selected due to high volumes of shipping traffic, and a substantial proportion of these ships having scrubbers.

The results showed that the cumulative risk levels in the ports were, respectively, five and thirteen times higher than the limit that defines acceptable risk.

Port descriptions used internationally in ERAs were utilized for the other two port environments. One of these environments has characteristics typical of a Baltic Sea port, while the other represents a European port with efficient water exchange due to a large tidal range.

The researchers found that three out of the four port environments were prone to unacceptable risks according to the assessment model used. They also saw that it was emissions from antifouling paint and scrubber discharge water that accounted for the highest levels of hazardous substances in the marine environment and had the highest contribution to the risk. More than 90 per cent of the environmentally hazardous metals and PAHs (polycyclic aromatic hydrocarbons) came from scrubber discharge water, while antifouling paints accounted for the biggest load of copper and zinc.

"If you look at only one emissions source, the risk level for environmental damage may be low or acceptable. But if you combine multiple individual emissions sources, you get an unacceptable risk. The marine organisms that are exposed to contaminants and toxins don't care about where the contaminants come from, it is the total load that causes the damage," says Lunde Hermansson.

The only port environment that showed an acceptable risk in the researchers' ERA was the model with the highest water exchange per tidal period, meaning that a high volume of water is exchanged in the port as the tide moves in and out.

"It's important to remember that the contaminated water doesn't just disappear – it is transported elsewhere. In the port environments studied, there might be a kind of acceptance of environmental damage – that in this particular environment we have decided that we will have an industry and that it will result in pollution. However, when the contaminated water is washed out to sea, it can end up in pristine sea areas and have even greater consequences. This is something we address in our research. We look at the total load, how much is actually discharged into the environment," says Lunde Hermansson.

Scrubber discharge bans

A number of jurisdictions have already banned scrubber discharges (the Britannia P&I Club published its most recent listing of them in November 2022). That list could grow.

The Swedish Agency for Marine and Water Management and the Swedish Transport Agency have submitted a proposal to the Swedish Government to prohibit the discharge of scrubber water into internal waters, that is, waters that lie within the Swedish archipelago.

"It's a step in the right direction, but we would have liked to see a stronger ban that extends across larger marine areas, while we also understand the challenge for individual countries to regulate international shipping," says Erik Ytreberg, an associate professor at the Department of Mechanics and Maritime Sciences at Chalmers.

Controversy

Closed loop scrubbers that retain discharge water on board are available as are open loop scrubbers that can be converted to closed loop. Those options cost more and the majority of scrubbers in operation are open loop systems that discharge wash water directly to sea.

The study findings are not likely to find a warm welcome from the Clean Shipping Alliance, which represents shipowners who use the technology, or the EGCSA (Exhaust Gas Cleaning System Association), which represents manufacturers.

Handling of lithium-ion batteries onboard: a big challenge!

By Rainer Daniel, FISACON

"The safe handling onboard of lithium-ion batteries is the biggest challenge in recent decades," said the GM of an international organisation of professional shipping. The largest insurers in the industry confirm that he is right and they are now trying to get this problem under control by all means possible as a matter of urgency. Unfortunately, often, due to a lack of specialist knowledge, without the desired success. It is therefore very important that everyone involved in this topic works together to find workable solutions, be it through training, education or new technical systems.

FISACON started the development of mobile active boxes for the safe handling of lithium-ion batteries in 2017. The pivotal point at the time was a meeting with Special Forces members who asked us if we could develop a lightweight box to handle their batteries - in all operational conditions.

Since we knew that such a box would eventually be transported on an airplane or vessel, we began scientific experiments to determine all relevant data that happens before, during and after a thermal runaway event. Today we have built up one of the most comprehensive databases in this area. Even universities, institutes and insurers are asking us for information.

First, it was important to find a fireproof, explosion-proof, and lightweight composite. In addition to reproducible tests, we also commissioned a company to determine pressure wave loads in the box with the help of numerical simulations. It turned out that impulse pressures of over 7 bar occur. We then developed a special frame for the box with particularly low thermal conductivity.

Due to the very high temperatures in the box of +800°C, we opted for an active extinguishing and cooling system which, controlled by sensors, sprays an environmentally friendly fluid over the battery in the event of a fire. Because the box is waterproof, the battery is flooded and cooled to such an extent that the cells stop responding. This reduces the temperature inside to below 130°C and outside to below 60°C.

A very important topic that is hardly considered with lithium-ion batteries, is the production of hydrofluoric acid (HF) in the event of a fire. It is one of the most aggressive acids of all. It penetrates the skin without pain and causes severe internal injuries that can be fatal.

To prevent HF from escaping, we have developed an exhaust with integrated filter elements that absorbs 100% of this acid. Therefore, HF free smoke comes out of the RACLAN box, which has a temperature of just 80°C. Without this exhaust we measured exhaust gas temperatures of +700°C, which means they will ignite anything flammable in the area.

If the temperature in the RACLAN box rises above 80°C, the external power supply is interrupted and the system reports an alarm. Even a blackout is not a problem, as the box has an emergency power system that provides energy for six months.

The RACLAN Box was the first and so far only one to pass a three-part test (explosion, fire, and filtering of toxic substances) at DMT-TÜV Nord and was certified for it.

FISACON has specialised its developments for the maritime sector. A larger box will be available from October, tailored specifically to water toy batteries, often found on superyachts.

For larger vessels and superyachts the company supplies bespoke cabinets that connect to the onboard fire alarm system and can also accommodate large equipment such as a Seabob with chargers.

ABOUT THE AUTHOR

Rainer Daniel has been a security consultant for over three decades. He works worldwide as an expert for critical infrastructure protection and is one of the few specialists who develop and manufacture safety solutions for batteries on vessels. He holds several patents in this area. His company is based in northern Germany.

For more information:
https://www.fisacon.com/home.html

THE RISE OF THE BOTS PART 2:

Conversational Artificial Intelligence (AI) Bots

[Challenges misuse and how we might address them]

by Nick Parkyn
- IIMS accredited Yacht and Small Craft Surveyor
- Owner of Marine ML (AI consultancy to the marine industry)

There are great opportunities combined with controversy that AI will unleash.

Machine Learning abilities are used by ChatGPT for generating automated personalized chatbot-human conversations. The AI-based chatbot is designed to understand data with minimal human intervention.

ChatGPT uses a combination of supervised and unsupervised methods of Machine Learning. These help the AI-based chatbot to filter data and provide the best response to prompts and queries.

"Machine learning is not magic," . "It's about augmenting our thought processes to help prove – or disprove – a hypothesis we have."

- Nick Cafferillo, chief data and technology officer at S&P Global

Since Part 1 of this article many challenges are emerging with respect to Conversational AI Bots, stimulated by the usage of ChatGPT.

1. Strike by Writers Guild of America (WGA)
2. Strike by Screen Actors Guild (SAG)
3. Ongoing uncertainty in the Music Industry
4. Copyright Case against OpenAI

The Eagles' Guitarist Joe Walsh expressed his indifference toward AI in a recent interview with The Associated Press. He stated that he will not feel threatened by the technology's encroachment on the music industry...

"When AI knows how to destroy a hotel room, I'll pay attention to it,"

- Joe Walsh (Eagles Guitarist)

Strike by Writers Guild (WGA)
The debate focuses on the use of mini-rooms and artificial intelligence. In the case of mini-rooms, producers hire a skeleton crew of writers and ask them to sketch out a season of shows or a movie in a few days. These writers are paid the minimum salary for those days and then are promptly let go after the first drafts are done.

All this virtually guarantees the use of AI-generated screenplays. After all, if producing a movie is now effectively the same as producing a widget on an assembly line, the human element can be dispensed with.

A.I. is one of the main reasons that Hollywood writers are on strike: 'Too many people are using it against us and using it to create mediocrity'.

- JAKE COYLE AND THE ASSOCIATED PRESS

Strike by Screen Actors Guild (SAG)
Amongst other aspects the Screen Actors Guild (SAG) is seeking guarantees that artificial intelligence (AI) and computer-generated faces and voices will not be used to replace actors.

Ongoing uncertainty in the Music Industry
AI can certainly enable the creative process. Rick Beato (Music producer and YouTube personality) insists that it won't replace human songwriters. It is crucial for artists who want to remain relevant to come up with unique melodies, chord sequences, harmonies, and backing tracks. People will still listen to music created entirely by AI, but there will always be a place for human creativity and emotion in the world of music.

AI-generated music "is just gonna scour what's already been written and mash them all together," so the machines really aren't creating anything new and fresh.

- Rick Beato (Music producer and YouTube personality)

Copyright Case
The US comedian and author Sarah Silverman is suing the ChatGPT developer OpenAI and Meta for copyright infringement over claims that their artificial intelligence models were trained on her work without permission.

Sarah Silverman has filed the suits along with two authors, Christopher Golden and Richard Kadrey, in which they claim the AI models developed by OpenAI and Meta used their work as part of their training data. The lawsuit against OpenAI claims the three authors "did not consent to the use of their copyrighted books as training material for ChatGPT.

The OpenAI suit includes exhibits claiming that, when prompted, it summarised three books written by the authors.

The lawyers representing the three authors, have indicated that since the release of ChatGPT they have been hearing from writers, authors and publishers expressing concern about the "uncanny" ability of ChatGPT to generate text like the copyrighted material.

Underlying Issues

- Proof and Trust in the data used for training Conversational Artificial Intelligence (AI) Bots
- Garbage in equals garbage out
- Misuse by humans

Proof and Trust

Unlike similar information found in newspapers or television broadcasts, information available on the Internet is not regulated for quality or accuracy; therefore, it is particularly important for the individual Internet user to evaluate the resource or information.

- Georgetown University

Almost anyone can publish anything they wish on the Web. It is often difficult to determine authorship of Web sources, and even if the author is listed, he or she may not always represent him or herself honestly, or he or she may represent opinions as fact. The responsibility is on the user to evaluate resources effectively. The user of a Conversational Artificial Intelligence (AI) Bot is not aware of the data used for training and consequently the proof and trust or lack of it is hidden from the user. For example, it is claimed that ChatGPT sources training material from the internet which has no guarantee of proof or trust. Therefore, to what extent can we trust the output of ChatGPT? It is crucial that the user knows how to evaluate the trustworthiness of information using external, reliable, and trustworthy sources.

An expert system is a computer program that uses artificial intelligence (AI) technologies to simulate the judgment and behaviour of a human or an organization that has expertise and experience in a particular field. Expert systems are usually intended to complement, not replace, human experts.

Garbage in equals garbage out
"Garbage in, garbage out" (GIGO) or Rubbish in, rubbish out (RIRO) is a classic saying in computing about how problematic input data or instructions will produce problematic outputs, which is especially relevant in Artificial Intelligence (AI) and Machine Learning (ML). However, data quality is often less of a concern in AI and ML research and education, with these issues often being missed and passed over, but should be a fundamental concern for users of AI and ML based systems.

Supervised machine learning, in which models are automatically derived from labelled training data, the quality of the data in the model is only as good as the quality of that data that was used for training.

Garbage data is a concern when you're working with machine learning because there are two opportunities for the garbage to mess up your results. First, if you train your machine learning model with garbage data, you have baked bad data into the underlying algorithm. Feed good data into a neural network trained on garbage and your results may be inaccurate. Alternately, you could train your neural network on great data and then run garbage data through the well-trained algorithm. Either way, your output will be at best questionable but probably garbage.

Misuse by Humans

The big problem about technology misuses can be summarized in two words: culture and education. Some people aren't sufficiently cultured to use technology properly as a tool because they use it as an easy way solution or as fashionable trends. Also, these people do not have education to use it correctly.

- The Computer Revolution | Security (Wikibooks)

In no other field is the ethical compass more relevant than in artificial intelligence. These general-purpose technologies are re-shaping the way we work, interact, and live. The world is set to change at a pace not seen since the deployment of the printing press six centuries ago. AI technology brings major benefits in many areas, but without the ethical guardrails, it risks reproducing real world biases and discrimination, fuelling divisions, and threatening fundamental human rights and freedoms.

- Gabriela Ramos Assistant Director-General for Social and Human Sciences of UNESCO

Misuse by humans has unfortunately already in many ways compromised the value and potential of the internet as among other challenges there can be proof and trust for the information provided.

Ethical AI

"In a society where access to generative AI tools will become as essential as access to the internet, we must balance our obligation to mitigate serious risks with allowing diverse values to flourish."

- Dave Willner (Trust & Safety at OpenAI)

Experts say the rise of artificial intelligence will make most people better off over the next decade, but many have concerns about how advances in AI will affect what it means to be human, to be productive and to exercise free will.

Conversational Artificial Intelligence (AI) Bots like ChatGPT can often generate answers that sound reasonable, they cannot be relied upon to be accurate consistently or across every domain. The model may offer an argument that doesn't make sense or is wrong. Other times it may fabricate source names, direct quotations, citations, and other details. Additionally, across some topics the model may distort the truth – for example, by asserting there is one answer when there isn't or by misrepresenting the relative strength of two opposing arguments. For these reasons, it's crucial that the user knows how to evaluate the trustworthiness of information using external, reliable sources.

Copyright

Copyright and ChatGPT is another minefield. If ChatGPT or other Conversational Artificial Intelligence (AI) Bot has been trained using copyrighted text (data) then the output may contain copyrighted material. Who is the copyright infringer, ChatGPT and the company that developed it OpenAI) or the user of ChatGPT or both? Currently those who are seeking to sue for copyright infringement are going after the company Open AI as it is for now more cost effective as they have "deep pockets". However, anyone who has used ChatGPT and published its derived work could also be a target – users beware!

Text Classifiers

Classifiers such as the OpenAI AI text classifier, ZeroGPT and others can assist in detecting AI-generated content, but they are far from foolproof. These tools will produce both false negatives, where they don't identify AI-generated content as such, and false positives, where they flag human-written content as AI-generated. Additionally, students may quickly learn how to evade detection by modifying some words or clauses in generated content. In addition, the OpenAI AI text classifier is narrow in scope, and not a tool for detection of other things such as plagiarism from, e.g., the use of copied text from the internet or other sources.

False positive
A false positive, or false positive error, is a result that indicates a given condition exists when it does not.

False negative
A false negative, or false negative error, is a test result which wrongly indicates that a condition does not hold.

For these reasons, classifiers or detectors should be used only as one factor out of many when used as a part of an investigation determining a piece of content's source and making a holistic assessment of academic dishonesty or plagiarism. Setting clear expectations for students up front is crucial, so they understand what is and is not allowed on a given assignment and know the potential consequences of using model generated content in their work.

As an example, I took the text from Part 1 of this article and submitted for analysis by both GPT Text Classifier and ZeroGPT. The results are indicated in figures 1 and 2. ChatGPT text classifier indicated "The classifier considers the text to be very unlikely AI-generated" and ZeroGPT indicated "Your text is likely human written, may include parts written by AI/GPT". This is correct as the article was created by the author without any AI assistance, however it did contain transcripts of conversations with ChatGPT which may validate the response from ZeroGPT. ZeroGPT also provides the likelihood of the text being AI generated which in this case is 34.87%. A value of 50% would indicate a 50:50 chance (**the text is equally likely to be AI generated or not AI generated**). If any decision is based on this percentage probability, then the threshold used would have to be 60% or greater, before you could with any degree of certainty allege that that the text was AI generated.

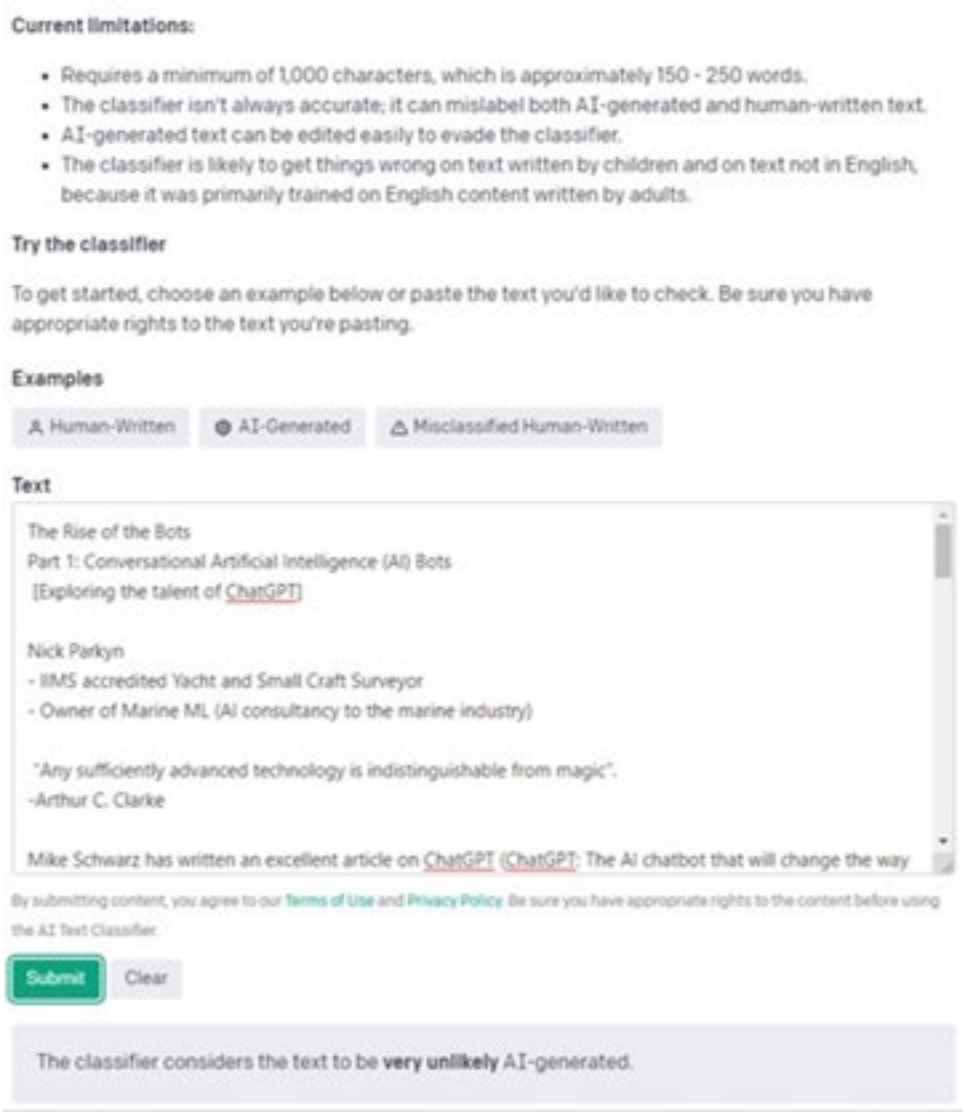
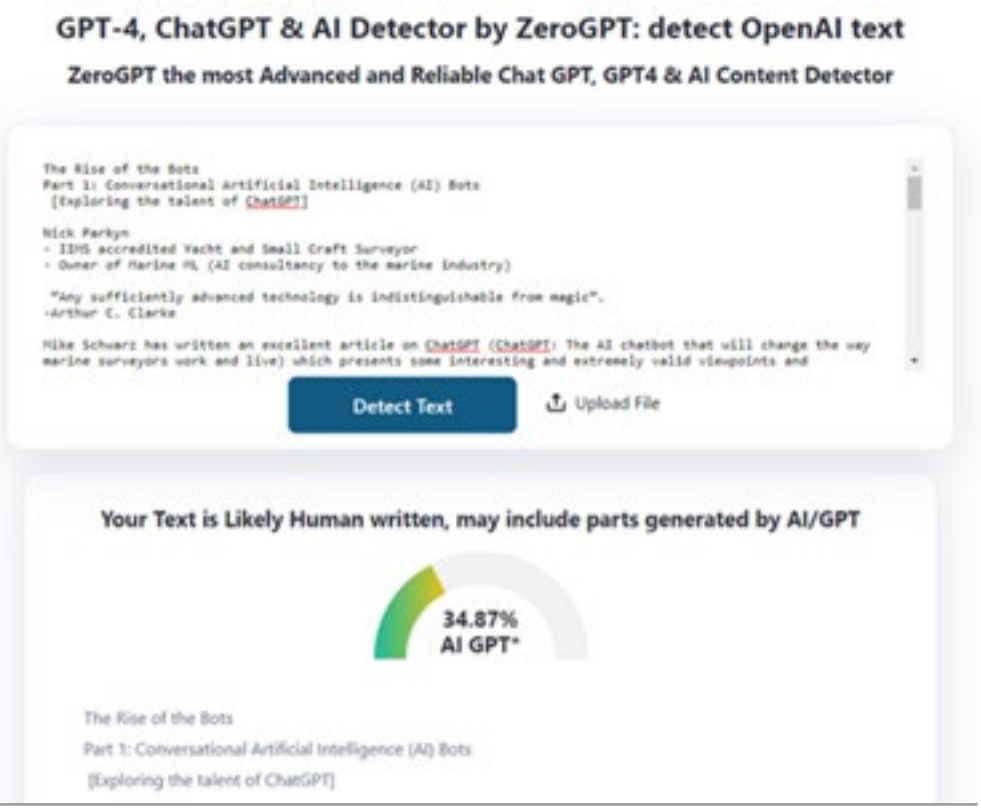


Figure 1: ChatGPT Classifier

Figure 2: ZeroGPT



Conclusions

"Would you tell me, please, which way I ought to go from here?

That depends a good deal on where you want to get to."

- Lewis Carroll, Alice in Wonderland

As we all understand, Marine Surveyors are responsible for inspecting marine vessels, focusing on safety, quality and making sure the vessels comply with industry standards and specification requirements. Consequently, marine surveying is a very "hands on", "on site" activity.

Thus far we have investigated and explored the publicly available version of ChatGPT.

Public versions of Conversational Artificial Intelligence (AI) Bots (including ChatGPT) have no value in the Marine Surveying lifecycle:

- There is no proof and trust related to the training data and consequently their responses (garbage in = garbage out)
- Marine surveyors must personally inspect, interpret, and report on what they see - which is beyond the capability of the bot.
- No part of any marine survey reports can be generated except the structure of the report document, but this adds little value as the structures are well known.
- ChatGPT based on the training dataset used is unable to share previous problems experienced with particular types of craft and even if it could the information could not be trusted.
- There is risk of "inferred" copyright infringement.

It is in the authors opinion and based on the insights provided that its is irresponsible and unprofessional to use publicly available Conversational Artificial Intelligence (AI) Bots to create marine survey reports, associated artefacts, or any part thereof.

Conversational Artificial Intelligence (AI) Bots can and will play an important role in marine surveying, but only those that are privately hosted and used. They would be trained on a specific marine surveying data set for which proof and trust is well established. They will be utilised initially as Expert System and other usage will evolve over time.

As an example, the IIMS could host a private version of a Conversational Artificial Intelligence (AI) Bot in the cloud and train it on data provided by marine surveying professionals including technical articles, handy guides, and survey reports provided and other data provided by individual surveyors.

This would provide a source of information underpinned by proof and trust that could be accessed anywhere by IIMS marine surveyors in a conversational manner. It would also provide a means of capturing data from active marine surveyors as well as those who are retiring or retired to ensure knowledge retention.

OpenAI has a private version of ChatGPT and other similar offerings are on the horizon.

The IIMS will play a leading role in AI usage guidelines and ethics in Marine Surveying and provide recommendations and guideline for insurers and boatowners regarding the validation of authenticity of marine survey reports and usage of AI / ML.

You cannot escape the responsibility of tomorrow by evading it today.

- Abraham Lincoln

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Tritex NDT Multiple Echo Ultrasonic Thickness Gauges

The Drone Thickness Gauge
Multigauge 6000

The Underwater Thickness Gauge
Multigauge 3000

The ROV Thickness Gauge
Multigauge 4000

The Surveyors Thickness Gauge
Multigauge 5650

Tritex NDT specialize in the manufacture and supply of Multiple Echo Ultrasonic Metal Thickness Gauges, used for verifying corrosion levels and measuring metal thickness from one side only, without removing any protective coatings. The Multigauge 5650 Surveyor Gauge can measure both metal and GRP, in one gauge, and also switch from Multiple Echo to Echo - Echo with the simple press of a button, using the same probe.

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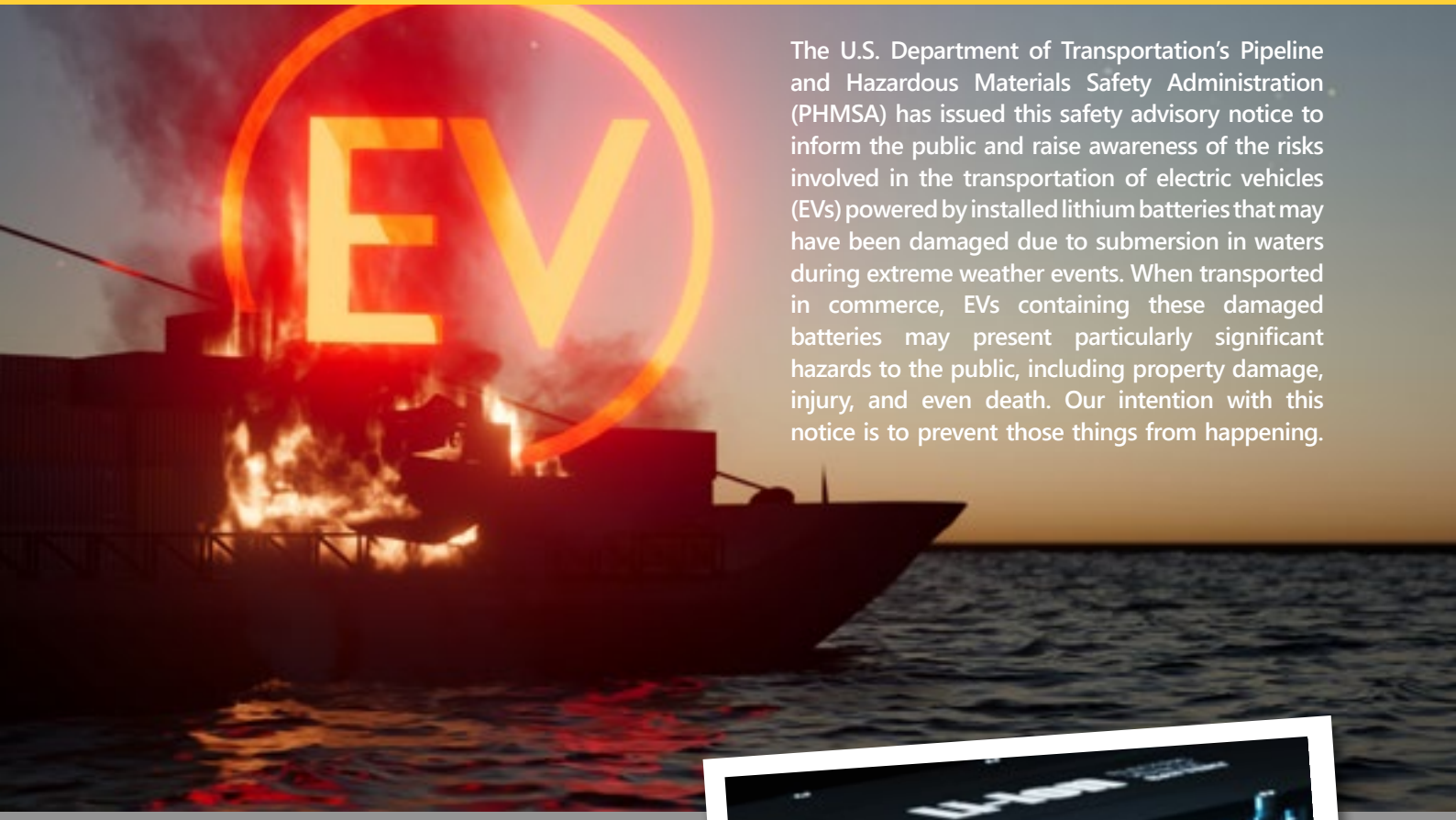
SAFETY ADVISORY NOTICE:
TRANSPORTATION OF ELECTRIC VEHICLES CONTAINING LITHIUM BATTERIES DAMAGED BY EXTREME WEATHER EVENTS.



The U.S. Department of Transportation's Pipeline and Hazardous Materials Safety Administration (PHMSA) has issued this safety advisory notice to inform the public and raise awareness of the risks involved in the transportation of electric vehicles (EVs) powered by installed lithium batteries that may have been damaged due to submersion in waters during extreme weather events. When transported in commerce, EVs containing these damaged batteries may present particularly significant hazards to the public, including property damage, injury, and even death. Our intention with this notice is to prevent those things from happening.

Furthermore, PHMSA wishes to remind potential shippers of EVs—including vehicle owners, salvage companies, and vehicle transport companies—that they have a responsibility to assess EVs for potential damage to their installed lithium batteries and to observe the specific requirements in the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) for both the transportation of EVs containing lithium batteries, and for the transportation of damaged and/or defective lithium batteries in commerce.

PHMSA's mission is to protect people and the environ-ment by advancing the safe transportation of hazardous materials in commerce. To achieve this mission, PHMSA works with its modal partner agencies to establish national policy, set and enforce regulations (published in the HMR), educate stakeholders, and conduct research to prevent hazardous materials incidents. Additionally, federal hazardous materials law authorizes the Secretary of Transportation (the Secretary) to "prescribe regulations for the safe transportation, including security, of hazardous materials in intrastate, interstate, and foreign commerce" 49 U.S.C. 5103(b)(1).

The Secretary has delegated this authority to PHMSA in 49 CFR 1.97(b). PHMSA's regulations (i.e., the HMR) are designed to achieve three primary goals:

1. Ensure that hazardous materials are packaged and handled safely and securely during transportation. This document contains guidance provided to help the regulated community understand how to comply with regulations, but its contents are not substantive rules themselves and do not create legally enforceable rights, assign duties, or impose new obligations not otherwise contained in the existing regulations and standards.

2. Effectively communicate the hazards of the materials being transported to transportation workers and emergency responders.

3. Minimize the consequences of an accident or incident should one occur.

As part of its safety mission, PHMSA regulates the transportation of lithium batteries, including those that are installed in or are intended for use in EVs.2 Lithium batteries pose a risk in transportation, and the HMR contain provisions intended to address the risk in transport and ensure safety of the public whether the lithium batteries are installed in an EV being transported or are transported separately. Damaged or defective lithium batteries pose a unique risk because they are more likely to experience thermal runaway and ignite during transportation. Consequently, shipments of damaged or defective lithium batteries have additional restrictions - see 49 CFR 173.185(f) - compared to newly manufactured, used, or undamaged/properly functioning batteries. It should also be noted that damaged, defective, or recalled lithium batteries must be prepared for shipment in accordance with the relevant provisions of the HMR and may be shipped only by highway, rail, or vessel transportation and are strictly forbidden for commercial transportation by aircraft.

There have been fires associated with lithium batteries installed in EVs that were submerged in floodwaters following extreme weather events. Saltwater is especially harmful to lithium batteries as residual salt within the battery or battery components can form conductive bridges that can lead to short circuit and self-heating of the battery, resulting in fires. The time frame in which a damaged battery can ignite varies, from days to weeks, and EV battery fires can be extremely time - and resource-intensive for responders. In addition, responders face safety risks related to the emission of toxic and flammable gases from damaged lithium batteries, and the unpredictability of thermal runaway and reignition. As such, lithium batteries from EVs that have experienced flooding or other exposure to the elements in a manner other than designed are at significant risk of damage, resulting in elevated potential for producing a dangerous evolution of heat, fire, or short circuit.

PHMSA understands that assessing whether a battery is damaged may require input from the manufacturer and recommends that shippers consult with the manufacturer of the battery to assist in such a determination. However, it is ultimately the shipper's responsibility to determine when a battery is damaged and therefore requires additional consideration for packaging and transportation. Specifically, in accordance with 49 CFR 173.22(a), the shipper must properly class and describe the hazardous material being offered for transportation and determine whether the packaging or container is an authorized packaging. In addition, shippers are forbidden from offering for transportation or transporting electrical devices, such as batteries and battery powered devices—including EVs—that are likely to create sparks or generate a dangerous evolution of heat, unless packaged in a manner which precludes such an occurrence.

Lastly, when movement of an EV with a damaged lithium battery on a motor vehicle is necessary to protect life or property in an emergency, certain requirements of the HMR are waived. See 49 CFR 177.823(a)(3). Additionally, the National Highway Traffic Safety Administration has published guidance on their website for towing and recovery operators and vehicle storage facilities that describes how to properly handle EVs in the event of damage, fire, or flooding.

What are the packaging and marking requirements to transport damaged, defective, and recalled lithium batteries? *See 49 CFR 173.185(f):*

> Place the battery in an individual, non-metallic inner packaging that completely encloses the battery.

> Surround the inner packaging with non-combustible, electrically non-conductive, and absorbent cushioning material.

> Place each inner packaging into its own specification outer packaging rated to the Packing Group I performance level. This means only one damaged, defective, or recalled battery per inner packaging, and only one inner packaging per outer packaging.

> Mark the outer packaging as "Damaged/defective" and identify the battery type. The marking—reading "Damaged/defective lithium-ion battery" or "Damaged/defective lithium metal battery"—must be in characters at least 12 mm (0.47 inches) high

What are the packaging requirements to transport EVs powered by lithium batteries that have not been damaged? See 49 CFR 173.220(d):

> EVs with their batteries installed are forbidden for transport aboard passenger-carrying aircraft.

> Lithium batteries contained in vehicles, engines, or mechanical equipment must be securely fastened in the battery holder of the vehicle, engine, or mechanical equipment, and be protected in such a manner as to prevent damage and short circuits (e.g., by using non-conductive caps that cover the terminals entirely).

> Except for vehicles, engines, or machinery transported by highway, rail, or vessel with prototype or low production lithium batteries securely installed, each lithium battery must be of a type that has successfully passed each test in the United Nations (UN) Manual of Tests and Criteria, as specified in 49 CFR 173.185, unless approved by PHMSA's Associate Administrator.

> Where a vehicle could possibly be handled in other than an upright position, the vehicle must be secured in a strong, rigid outer packaging. The vehicle must be secured by means capable of restraining the vehicle in the outer packaging to prevent any shifting during transport that would change the orientation or cause the vehicle to be damaged.

> Where the lithium battery is removed from the vehicle and is packed separate from the vehicle in the same outer packaging, the package must be classified as "UN3481, Lithium-ion batteries packed with equipment" or "UN3091, Lithium metal batteries.

5 See "Interim Guidance for Electric and Hybrid-Electric Vehicles Equipped with High-Voltage Batteries" at: https://www.nhtsa.gov/sites/nhtsa.gov/files/811576-interimguidehev-hv-batt_towing-recovery-storage-v2.pdf packed with equipment" and prepared in accordance with the requirements specified in 49 CFR 173.185.

What are the packaging requirements to transport EVs powered by lithium batteries that have not been damaged? See 49 CFR 173.220(d):

> For vehicles with batteries installed, the batteries shall be protected from damage, short circuit, and accidental activation during transport.

> Each lithium battery must be of a type that has successfully passed each test in the UN Manual of Tests and Criteria unless approved by PHMSA's Associate Administrator.

> A vehicle showing any signs of leakage or electrical fault—such as inability to start or move under its own power—or signs of prolonged exposure to water, is forbidden for transportation onboard a vessel.

> Where a lithium battery installed in a vehicle is damaged or defective, the battery must be removed and transported according to 49 CFR 173.185(f), unless otherwise approved by PHMSA's Associate Administrator.

Note: This is not an exhaustive list of regulatory requirements to ship damaged or defective lithium batteries, or EVs powered by lithium batteries. Depending on shipping scenarios, stakeholders may need to comply with other conditions such as training or shipping paper requirements.

Additional Lithium Battery Resources from PHMSA

PHMSA has created additional resources on lithium battery regulations that complement this safety advisory notice. These resources include:

- PHMSA's website: https://www.phmsa.dot.gov/lithiumbatteries
- PHMSA's Lithium Battery Guide for Shippers - go to https://bit.ly/3pIOYFq
- PHMSA's recorded presentation on how to use the Lithium Battery Guide for Shippers
- PHMSA's Hazardous Materials Information Center (HMIC)
- Telephone number: 1-800-467-4922
- E-mail: **infocntr@dot.gov**
- The HMIC is staffed Monday through Friday, 9:00 a.m. to 5:00 p.m. EST. If you contact the HMIC outside of normal business hours, leave a message and someone will return your call the next business day.

Future Plans

PHMSA will continue to work with their safety partners to more fully understand the risks of flooded EV batteries. As such, we plan to conduct research and issue updated guidance when additional information is available.

INTRODUCING THE HISTORY OF CERAMIC COATINGS

By Claire Steel, CeraShield with contributions from Alejandro Exposito, OPTIMIZA

Ceramic coatings, or to give them their full and correct technical name, Polysilazanes, were introduced into the superyacht sector in the early years of the 21st century, as a transparent, durable protective coating.

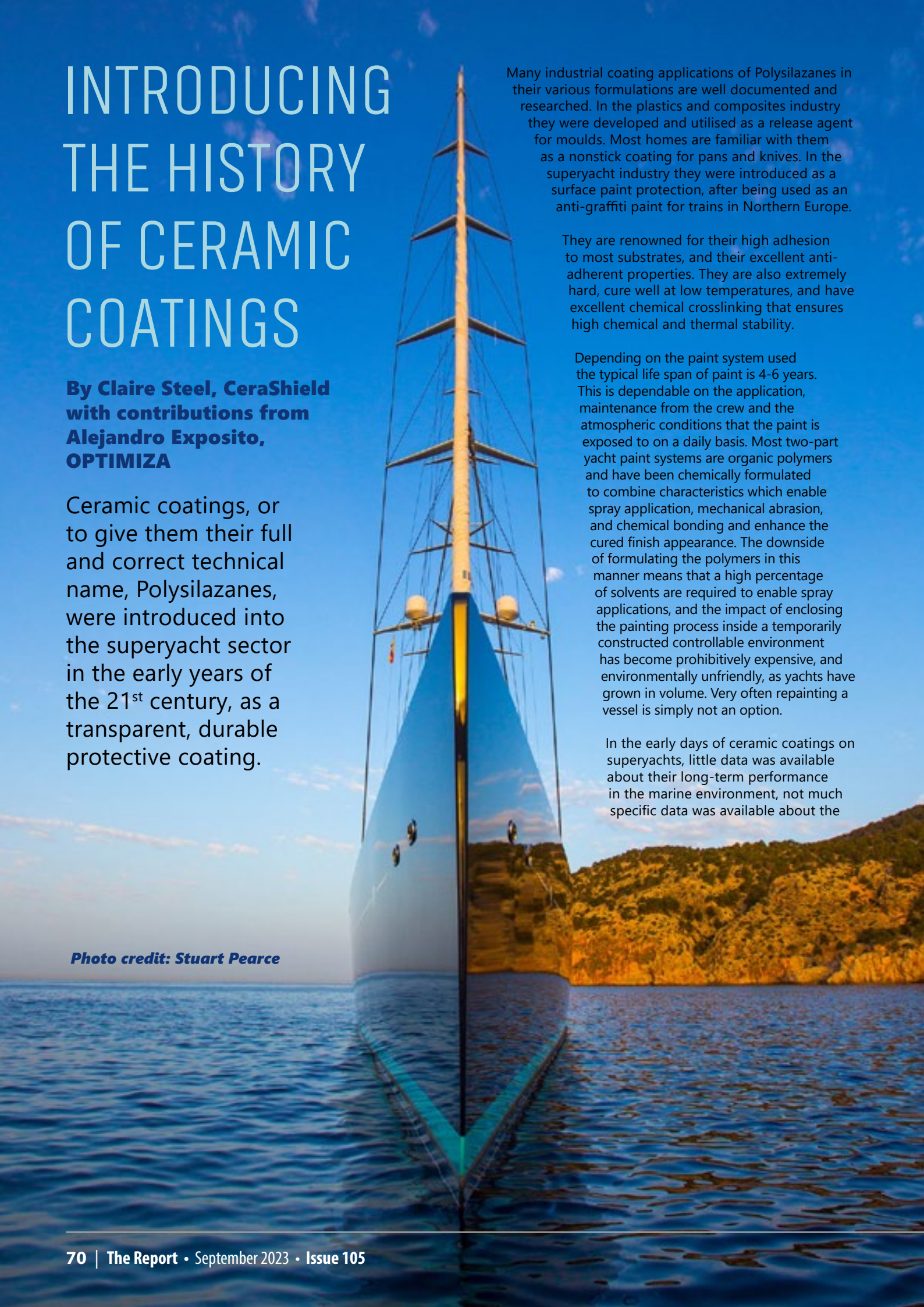


Photo credit: Stuart Pearce

Many industrial coating applications of Polysilazanes in their various formulations are well documented and researched. In the plastics and composites industry they were developed and utilised as a release agent for moulds. Most homes are familiar with them as a nonstick coating for pans and knives. In the superyacht industry they were introduced as a surface paint protection, after being used as an anti-graffiti paint for trains in Northern Europe.

They are renowned for their high adhesion to most substrates, and their excellent anti-adherent properties. They are also extremely hard, cure well at low temperatures, and have excellent chemical crosslinking that ensures high chemical and thermal stability.

Depending on the paint system used the typical life span of paint is 4-6 years. This is dependable on the application, maintenance from the crew and the atmospheric conditions that the paint is exposed to on a daily basis. Most two-part yacht paint systems are organic polymers and have been chemically formulated to combine characteristics which enable spray application, mechanical abrasion, and chemical bonding and enhance the cured finish appearance. The downside of formulating the polymers in this manner means that a high percentage of solvents are required to enable spray applications, and the impact of enclosing the painting process inside a temporarily constructed controllable environment has become prohibitively expensive, and environmentally unfriendly, as yachts have grown in volume. Very often repainting a vessel is simply not an option.

In the early days of ceramic coatings on superyachts, little data was available about their long-term performance in the marine environment, not much specific data was available about the

application parameters, and little to no research had been carried out on their proper removal when required.

To add to the concerns about this new technology from the wider coatings sector, there was some very unprofessional behaviour on the part of some ceramic applicators, who were winging it at this point... and very often unhelpful, or simply uncontactable, when problems arose.

For every ceramic project with a successful outcome, in these initial stages, there was at least the same amount or more that were on the wrong end of terrible customer service, sub-standard application and no label products.

The type of problems that frequently arose, ranged from complete failure of the ceramic coatings, such as hazing, cracking and discoloration (predominantly due to incorrect application, poor surface preparation, or defective materials).

One of the main components in a ceramic coating is PDMS ´Polydiimetilsiloxane´. One of the drawbacks of certain types of PDMS is that when sanded during a paint project they can become airborne and if the tent is not cleaned sufficiently, they can contaminate the application of the topcoat and cause craters. This is due to the difference in surface tension from the topcoat to the PDMS found in ceramic. This is the reason why if a ceramic is applied it must be removed prior to a repaint. If it's not removed properly, it can be the cause of some major rows and costly litigation. Consequently, ceramics developed a negative reputation, and many yachts just steered well clear of the technology. Some of the criticism was deserved, but much of it was driven by other agendas.

THE EVOLUTION OF CERAMIC COATINGS, AND THEIR ACCEPTANCE IN THE MARKET

As the number of mega yachts has become larger, (the number of yachts over 75 metres has increased from approximately 50 in 2008 to over 200 in 2023), the scale, cost, and complexity of superyacht paint projects has increased exponentially. In general, every additional 10 metres of LOA increased the painted surface area by up to double as volume and surface area increase in exponential proportion to LOA.

Many of the larger yachts are painted relatively early in the build process, and final delivery to the client can be as much as 12-18 months later, during which time vessels may sit in fit out berths, exposed to the environment, receiving minimal surface cleaning. This results in the paint down glossing before the owner has even received the vessel. Many captains are opting to apply a ceramic coating from new to maintain the gloss levels at new build stage.

The increase in the size of yachts also created a problem for their routine upkeep. Washing down the hull of a 100 metre plus yacht in a thorough way, removing salt particles, dirt, and contamination, and rinsing the cleaning agents fully, is challenging, to say the least. Ceramic coatings will provide a hard protective layer that will stop the contamination engraining into the paint pores and make cleaning easier.

Yacht paint down glosses, on average, at 10% per year, due to the impacts of salt water, exhaust emissions, UV exposure, and aggressive cleaning agents. After 5 years of exposure to the elements, yachts commonly exhibit highly uneven gloss readings of 20-70%. Down glossing is by no means uniform, and affects mostly areas that become contaminated, such as exhaust areas, brows and horizontal surfaces which are more exposed to UV degradation. Many clients apply a ceramic coating to stop the down glossing.

Efforts to clean contaminated areas, very often cause the paint to become more porous, due to cleaning agents with high alkali/acid contents used by crew. This can, and often does, lead to a cycle of ever more aggressive and time-consuming maintenance to keep the hull clean and free of staining.

So, to summarise, we have an increasingly costly paint process, which often leads to dispute, and is subject to ever tighter regulation from environmental protection interests. The paint has a finite life span, which is not uniform across its surface, and requires frequent reapplication. The demand for an alternative solution to re-painting every 5 years was growing, but there remained a widespread resistance to ceramics.

To add to this perfect storm of circumstance, the following EU **Directive 2004/42/EC**, of the European Parliament and of the Council dated 21 April 2004, on the ***limitation of emissions of volatile organic compounds due to the use of organic solvents in decorative paints and varnishes and vehicle refinishing products and amending Directive 1999/13/EC,*** created a more regulated environment, and shipyards and major paint manufacturers were challenged to reduce VOC emissions, or face the consequences of not doing so.

The stage was set for a *supplementary* means of preserving the painted surfaces, and ceramics have occupied that role to an increasing extent over the last 10 years.

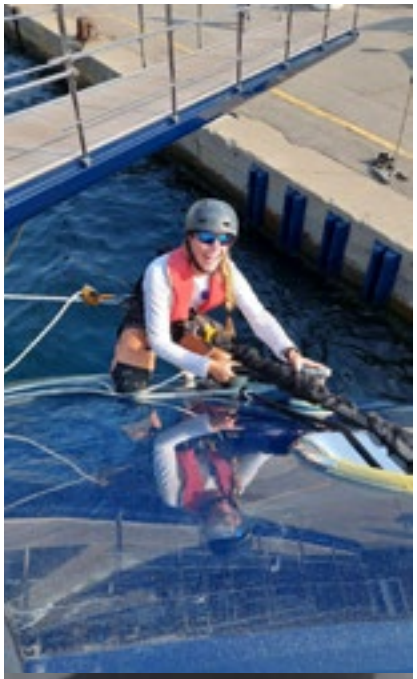
Yacht Captains, managers, and owner's reps, looking for a solution to the challenges presented by the financial cost, environmental impact and lengthy downtime of repainting, have opted to apply ceramic coating to either extend the life of existing topcoat or to protect the paint from new.

On average, the cost of restoring and sealing with ceramic, per sq. metre of surface area, is around one quarter of the cost of full repaint per sq. metre. A ceramic coating, once applied over a well-prepared surface, will down gloss at a lesser rate than paint, but the process of a ceramic application is far less disruptive to the yachts availability for use, and a small fraction of the repaint cost. It is also possible to work on surfaces in a localised way, which more closely reflects the uneven rate and

causes of down glossing, addressing areas of high wear and exposure, and so creating a shorter shipyard period, lower costs, and reduced VOC emissions, while preserving and maintaining gloss levels at a consistent level.

Another significant benefit of ceramic coating, due to their high anti adherent quality, is the ease of cleaning and maintenance. Areas coated with a ceramic, which become contaminated quickly, such as water lines, and exhaust areas, can be easily and regularly cleaned, without either mechanical assistance or aggressive cleaning agents. This leads to lower man hours of cleaning, and more time available to focus on other, more important aspects of operation.

This combination of circumstances has driven the continued demand for ceramic coatings, despite the early challenges.



CERAMICS IN THE PRESENT DAY

The superyacht industry is demanding accurate product information, fully documented work process, and proven solutions.

At CeraShield the team has a proven certified removal system. We have developed a ceramic removal product and invested in laboratory testing with Optimiza Laboratories.

Following the complete removal of the ceramic, using the Cerashield removal gel, the paint work on each project is independently inspected and tested using an FTIR machine that can detect PDMS particles. This process determines that the paintwork is ceramic free, and the findings are documented, and shared with all relevant parties.

Here's what Alejandro Exposito from OPTIMIZA Consulting had to say.

CeraShield is a market leader in Ceramic removals and applications. CeraShield has made a big investment in research and working with Optimiza, a reputable independent materials consultancy and laboratory. The R&D projects included the study of different ceramic in the market, applications, accelerated ageing test, high performance chemical and physical test to understand the behavior of the ceramic coating on surfaces with topcoat and identify the best procedure to verify and qualify an efficient removal process prior to sanding to assist with a harmonious relationship between ceramic and paint applicators.

A large quantity of ceramic products from the automotive and yacht industry have been chemically identified in the laboratory with a specific fingerprint using advanced analytical techniques.

After thousands of hours of accelerated testing on salt, fog, condensation and UV chambers we observed that many of the coatings we tested, and their compounds (PDMS) will be lost during ageing depending on the hardness of the ceramic coating and the paint and the specific environmental exposure. Nevertheless, the residue PDMS that had tightly adhered to the surface was difficult to remove and the most efficient methods to ensure complete removal is by power tool cleaning (sanding) or suitable chemical stripping (removal gel).

The removal process of Cerashield consists of using specific chemicals tested in the laboratory. We tested the removal gel to make sure that there would be no damage to the topcoat during the removal process.

The procedure was qualified by the independent laboratory. The process needs to be carried out by trained technicians.

The removal process consists of several passes of the diluted chemical (removal gel) to the surface. After several accelerated and analytical tests, it was concluded that ceramic coatings and compounds can be fully and properly removed prior to sanding a painted surface.

During the research several panels were prepared and tested in the laboratory. We were also searching for a reliable method that could be used on a repaint project away from the lab to ensure complete removal.

Several techniques have been used in the laboratory to identify ceramics and ensure removal such as GC-MS, SEM/EDX, ToF SimS, contact angle analyzer and FT-IR-ATR. T We found a way to correlate the results of the laboratory using a specific FT-IR-ATR spectroscope on the field directly connected to the laboratory database to identify the removal of ceramic products on site by nondestructive means.

The result of the test needs to be very carefully interpreted by an experienced and knowledgeable technologist. A misinterpretation of the results can result in catastrophic failure and costs for the shipyards and owners.

The evaluation protocol consists of leaving a little reference area without applying the removal gel and mapping the complete surface to be sanded and painted with several measurement spots. The comparison of the reference area with the on-site measurement spots and the on-line real time connection with the laboratory data base indicates those areas where

the ceramic is fully removed, or the removal gel needs to be reapplied until a full removal is guaranteed.

This is a big step forward in the industry where owners, management companies, shipyards and captains can make quick decisions and may have the information in real time by non-destructive means without the need to cut painted surfaces by destructive means and send to a laboratory and wait approximately 2 weeks until receiving the results.

The on-site NDT testing connected to the laboratory is an own developed Optimiza independent laboratory procedure called CRT (Ceramic removal test) and has been successfully used during the last season in more than 8 superyacht paint refit projects in the Mediterranean shipyards.

Photo credit: Stuart Pearce

Captain 70m superyacht

"CeraShield ceramic coatings were applied onboard the vessel. At the time the original topcoat was only 3 years old but had endured a tough life and was showing gloss levels far below average. Claire's team of expert polishers and applicators were able to quickly and efficiently prepare and coat approximately 70% of the entire vessel in a matter of weeks. The end result was incredible. Gloss levels were restored to the 90s and troublesome areas were able be cleaned with ease.

Since the application we cruised non-stop for 2.5 years with only minor signs of deterioration.

The ceramic coating was eventually removed in January 2020, prior to the start of our full paint job in February 2020. The removal process was straightforward, with the paint application company and paint surveyor happy with the result. At the start of the repaint an initial test patch of primer and topcoat was applied to the hull, which had no adverse effects or any signs of contamination. The paint job has since been completed to a high standard, with no sign of CeraShield being the cause of any contamination issues.

In summary, I would highly recommend CeraShield. Their product and service are excellent. Our paint was restored, and our inevitable paint job was prolonged by at least 3 busy seasons. The removal process was thorough and if managed and communicated openly with paint applicator and paint surveyor, I see no issues why there should be any negative affects when it comes to repainting.

P.A. Bergsma BAS MP BBM Owner/Director Coating Survey & Inspections S.L

"We recommend the 7-Micron ceramic coating version from CeraShield. This application has been extensively field tested and inspected by our company, including measurable data with excellent results. Application and subsequent removal of the ceramic coating and the influence this has on the integrity of the paint film prior to refinishing is non-existent. We would not hesitate to recommend CeraShield, and we are available to any client who might have questions or concerns on its application and intended use".

DAVID FRYER Director Storm Shipyard

"This project was quite daunting as all external areas had been treated with ceramic and records of products and when / how applied were not available. The ceramic coating had been applied in different periods, some reapplied after failure of the first application; CeraShield however were ***not*** *the company that had applied the ceramic. The time frame for the repaint was short, a 9-week window to repaint including a 545 undercoat.*

A team from CeraShield had got the contract to remove the coatings. The team was headed by Stan who has also extensive experience in paint application. CeraShield removal Gel was used for removal and done in a methodical sequence and in some areas up to 4 times. The team clearly had a procedure and control plan. This had obviously worked and all the topcoat paints had zero problems related to contamination.

From this experience, which is probably a worst-case scenario we cannot stress the importance of using professional crews for the application of ceramics, document exactly where its used and make an agreement at time of application for removal. Ceramic definitely has a place in our industry but should be used professionally.

Charting the Course Ahead: The Future of AI in Marine Cargo Survey Businesses

By Jeff Wilson, Managing Director, Van Ameyde Marine

Introduction

The marine industry has long relied on the expertise and knowledge of cargo surveyors to ensure the safe and efficient transport of goods across the world's oceans. In today's rapidly evolving information age, knowledge and expertise is not just power—it is a strategic asset that drives innovation, growth, and competitive advantage. As marine survey businesses navigate an increasingly complex landscape, the integration of artificial intelligence (AI) has the potential to revolutionise the way knowledge is harnessed, analysed and applied across all industries, and the marine survey industry is no different.

The foundation of knowledge businesses – such as marine surveying- lies in the ability to efficiently access, organise, and interpret vast amounts of data and information and then use that data and information productively and profitably. AI technologies, such as natural language processing, machine learning and semantic analysis are empowering organizations to use data and extract meaningful insights from unstructured data sources such as text documents, research papers and online content.

Moreover, AI-driven knowledge management systems are revolutionising information retrieval and knowledge sharing within organizations. By employing sophisticated algorithms, these systems can automatically tag, categorise and connect relevant pieces of information, allowing for efficient search and retrieval of and then fostering collaboration between teams and facilitating knowledge transfer across organisations.

AI is also propelling knowledge businesses toward data-driven decision-making. By leveraging predictive analytics AI algorithms can identify patterns in data, predict trends and generate accurate forecasts in markets, resourcing needs, skills demands and pricing, empowering businesses to make decisions with confidence. This enables organisations to stay ahead of the competition, anticipate market changes and adapt to dynamic customer demands.

Additionally, AI-powered virtual assistants and chatbots are transforming customer service and support in knowledge businesses. These intelligent agents can provide instant, personalised assistance both inside the business and to its clients. With natural language understanding and machine learning capabilities, virtual assistants offer unparalleled access to support and knowledge and have the potential to transform knowledge businesses in the future.

The forward path of the marine cargo surveying industry will be tied to the development of AI and future applications of AI, there can be no doubt about that. AI's ability to analyse vast amounts of data, learn from patterns, and support intelligent decision making is poised to revolutionise the way marine businesses work, enhancing efficiency, accuracy, and sustainability.

Before we look into one possible game changing application of AI in marine surveying and consulting, it's worth defining what we mean by AI, and what we do not currently define as AI.

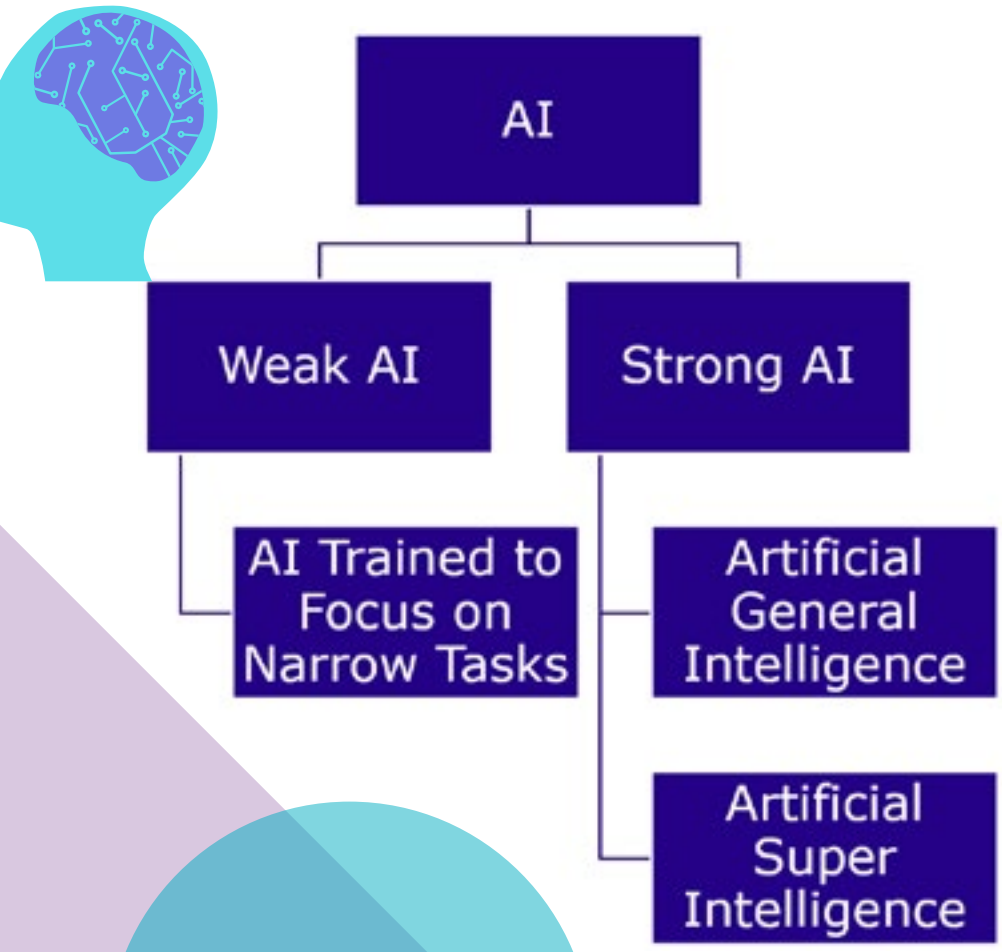
What Is AI?

The term "artificial intelligence" is often ill-defined and occasionally mis defined so it's useful to consider what AI is and it is not, at least at the time of writing this article.

Is AI a computer and algorithm driven system able to perform tasks that would require human intelligence? Is it machines that copy intelligent human behaviour or the simulation of human intelligence processed by machines? Is AI a set of systems that think like humans? Or is it systems that act like humans? Or systems that think and act rationally (in a way that humans may not always act)?

Or is AI a combination of machine learning based on user inputs and deep learning where the machine examines its own algorithms and adjusts them to get better at a task?

AI is all of this, depending on the application and the context of the application. We must be clear about what AI is not at this moment in time and for that we have to split AI into two broad groupings of Weak AI and Strong AI.



Weak AI – Your Helpful Friend, Today

Weak AI refers to artificial intelligence systems or technologies designed to perform specific tasks or solve specific problems within a limited domain. Unlike strong AI, which aims to mimic human intelligence and possess general intelligence across multiple domains, weak AI focuses on accomplishing well-defined tasks with a narrow scope.

Weak AI systems are built to excel in specific areas and are trained or programmed to perform a particular function or set of functions. They operate based on predefined algorithms and rules and rely on data input to generate outputs or make decisions. These AI systems are task-specific and do not possess the ability to understand or generalise beyond their specific domain.

Examples of weak AI applications are applications that provide speech recognition, image recognition, recommendation systems, virtual assistants, and autonomous vehicles. For instance, voice-activated virtual assistants like Siri or Alexa can understand and respond to user queries within a limited context, but they lack the comprehensive understanding and reasoning capabilities of human intelligence.

Weak AI systems are typically developed using techniques that leverage large datasets to learn patterns and make predictions or classifications within their designated domain of work. However, these systems do not possess consciousness or self-awareness and are not capable of independent thinking or understanding the broader context of their actions. While weak AI systems may exhibit impressive performance within their specific tasks, they lack the flexibility and adaptability of human intelligence. They are designed to excel in well-defined and constrained environments, making them valuable tools for solving specific problems and enhancing productivity. However, they are limited in their ability to transfer knowledge or generalise their learnings to different domains.

Strong AI

Strong AI, also known as Artificial General Intelligence (AGI) or human-level AI, refers to artificial intelligence systems or technologies that possess the ability to understand, learn, and apply knowledge across a wide range of domains and tasks at a level equal to or exceeding human intelligence. Unlike weak AI, which is designed for specific tasks, strong AI aims to replicate human-like intelligence and cognitive abilities.

The goal of strong AI is to create intelligent machines that exhibit consciousness, self-awareness, and the capacity for independent thought. These systems possess the ability to understand natural language, reason, learn from experience, solve problems, and adapt to new situations. Strong AI seeks to mimic the cognitive processes of human beings and exhibit a level of intelligence that is indistinguishable from human intelligence, capable of autonomous learning and reasoning. They can understand and process information from diverse sources, make sense of complex data, and apply their knowledge to solve problems across various domains.

Artificial Superintelligence (ASI) is an additional strand of Strong AI and refers to a theoretical future state of artificial intelligence where machines surpass human intelligence across virtually all domains and tasks. ASI represents a level of intelligence that exceeds human capabilities to such an extent that it is difficult for humans to comprehend or predict its full range of capabilities and implications.

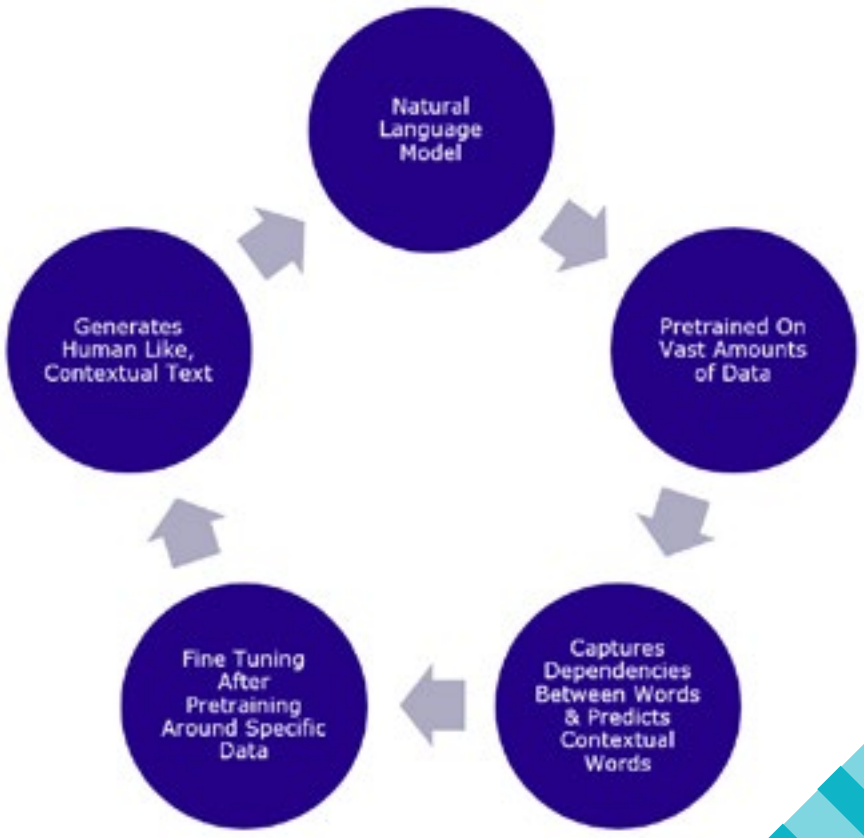
ASI would possess not only the ability to understand and reason but also the capacity for unlimited learning, creativity, problem-solving, and adaptability. It would be capable of self-improvement, constantly enhancing its own intelligence and surpassing the limitations of its initial programming. ASI would have an unparalleled ability to process and analyse vast amounts of data, make accurate predictions, and generate innovative solutions to complex problems.

The implications of ASI are profound and uncertain. Some argue that ASI could bring unprecedented advancements, leading to solutions for complex global challenges, advancements in science and medicine, and breakthroughs in technological innovation. However, the development of ASI also poses significant risks and challenges. The impact on society, including job displacement, economic disparities and ethical considerations are subjects of intense debate. Safeguarding against the risks associated with ASI requires careful consideration of safety measures, transparency and ethical frameworks.

While still an ongoing pursuit, achieving strong AI would have profound implications requiring careful consideration of its ethical, societal and philosophical impacts, leaving aside the obvious implications for all knowledge industries.

Generative Pretrained Transformers – A Weak AI Making a Difference Now
We're not living with Strong AI at this point, but Weak AI is everywhere. Almost every consumer smartphone application is a form of Weak AI, supporting human decisions by providing prompts based on the prior behaviour of the user. A simple autocorrect function in a texting application is a form of Weak AI, and it takes little time to identify the other Weak AI that each of uses every day. However, the recent emergence of one particular application is especially worth investigation in the context of the immediate future of marine survey businesses.

One of the most prominent and intriguing emerging Weak AI applications is the Generative Pretrained Transformer, GPT. These have been discussed in the pages of this journal before, but it's worth digging into GPTs and looking at how they can support businesses now. GPTs are artificial neural networks, pretrained on large data sets of unlabelled text and able to generate novel, human-like content. In effect, the user asks the GPT to perform a task and the GPT produces content the responds to the question that has been asked via a natural language model. Use of a GPT requires absolutely zero technical coding capability and access to a GPT is by a chatbot. Ask it a question – and in particular a detailed and complex technical question – and you'll get a complex and detailed technical answer.



GPTs – at present – produce astonishing detail in technical content. At a recent live demonstration of a GPT at the IIMS Conference a GPT produced a detailed procedural plan for the loading of steel coils on to a vessel, and when secondary and tertiary questions were asked the detail of the plan became even more impressive in real time. The potential of that capability should be self evident, but it has to be balanced against the reality that GPTs do not possess understanding or reasoning capabilities and – at this stage of their development – they can act as support to decision making and thereby free up technical expert time to concentrate on the reasoning element of decision making, the procedural piece having been generated by the GPT.

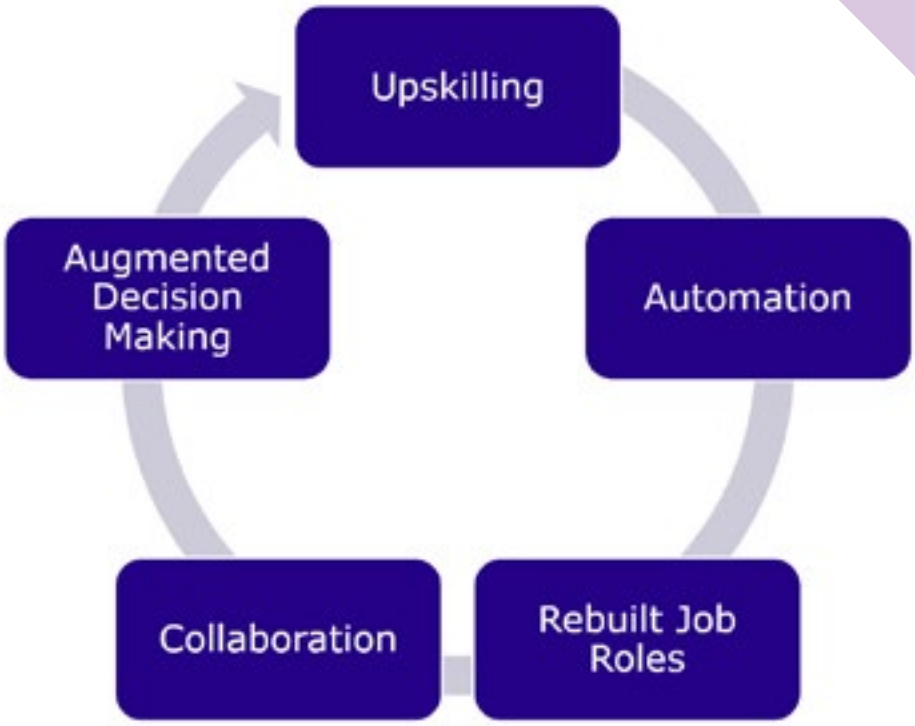
GPTs rely on statistical patterns learned from training data to generate text, and their output is based on the statistical likelihood of certain sequences of words. If under trained they can produce responses that are grammatically corrent but semantically incorrect. However, further pretraining and then specific fine tuning can iron out that problem and there can be little doubt that the GPT application will become a disruptor in the same way that Google began democratising knowledge 25 years ago.

ChatGPT – one of several GPTs - was released in November 2022 with ChatGPT-4 released in March 2023. The latest version of ChatGPT takes images as well as text and produces informational summaries from visuals and diagrams as well as text.

It has been shown to be capable of passing professional examinations at the level of the top 10% of students in fields such as oncology, engineering and plastic surgery. In April 2023 Microsoft and Epic Systems announced plans to provide healthcare providers with GPT-4 powered systems to assist in responses to patient questions and with analysis of patient records. Clearly, something is happening around the latest generation of GPTs and their ability to summarise and contextualise complex technical questions, and everybody in every consulting industry needs to be aware of these tools and their ability to support, impact and disrupt business environments.

Very clearly, the integration of GPTs into consulting type businesses and their use as a procedural content generator at this point is something that all expert professions should take seriously and consider as they build their practices now and into the future.

Five Thoughts on AI In Business



More generally, AI has the potential to transform the marine survey business in numerous ways, offering opportunities for automation, collaboration, augmented decision-making, upskilling, and changing job roles.

Automation: AI can automate repetitive and mundane tasks, freeing up human resources to focus on more complex and strategic activities. By leveraging machine learning algorithms businesses can streamline repetitive workflows, improve operational efficiency and reduce errors. Automation also minimizes

errors and accelerates processes, leading to increased productivity and scalability. Obvious applications are the extraction of data from forms, management of invoicing and financial data the production of standard reports and data validation work, all of which take many, many hours of laborious work when done by people. We'd do better freeing people from that kind of drudgery and put them into a position where they can bring their creativity to bear in the business.

Collaboration: AI technologies enable enhanced collaboration among teams and across departments. Intelligent chatbots and virtual assistants are an unbeatable source of rapid information sharing amongst a team and provide a fast and accurate platform for collective problem-solving. Using a GPT in a team setting allows procedural plans to take shape quickly in real time and then frees the team to perform their actual task and get their expertise into play.

Augmented Decision Making: Machine learning algorithms can analyse vast amounts of data, identify patterns, and generate predictions or recommendations. An obvious application would be that of scenario modelling in project cargo operations, where an AI would run several different heavy lift scenarios and simulations to quickly discard expensive or less effective options ahead of time. That frees up hours of project time that can then be spent on more productive tasks, and also points up the truth that a machine is much more capable of performing this type of work accurately and quickly.

Upskilling: AI can support the upskilling and professional development of employees. Businesses can leverage AI-powered learning platforms to deliver personalized training, adaptive learning experiences and skill assessments. This allows businesses to foster a culture of continuous learning and adaptability, ensuring that employees possess the necessary skills for evolving job roles.

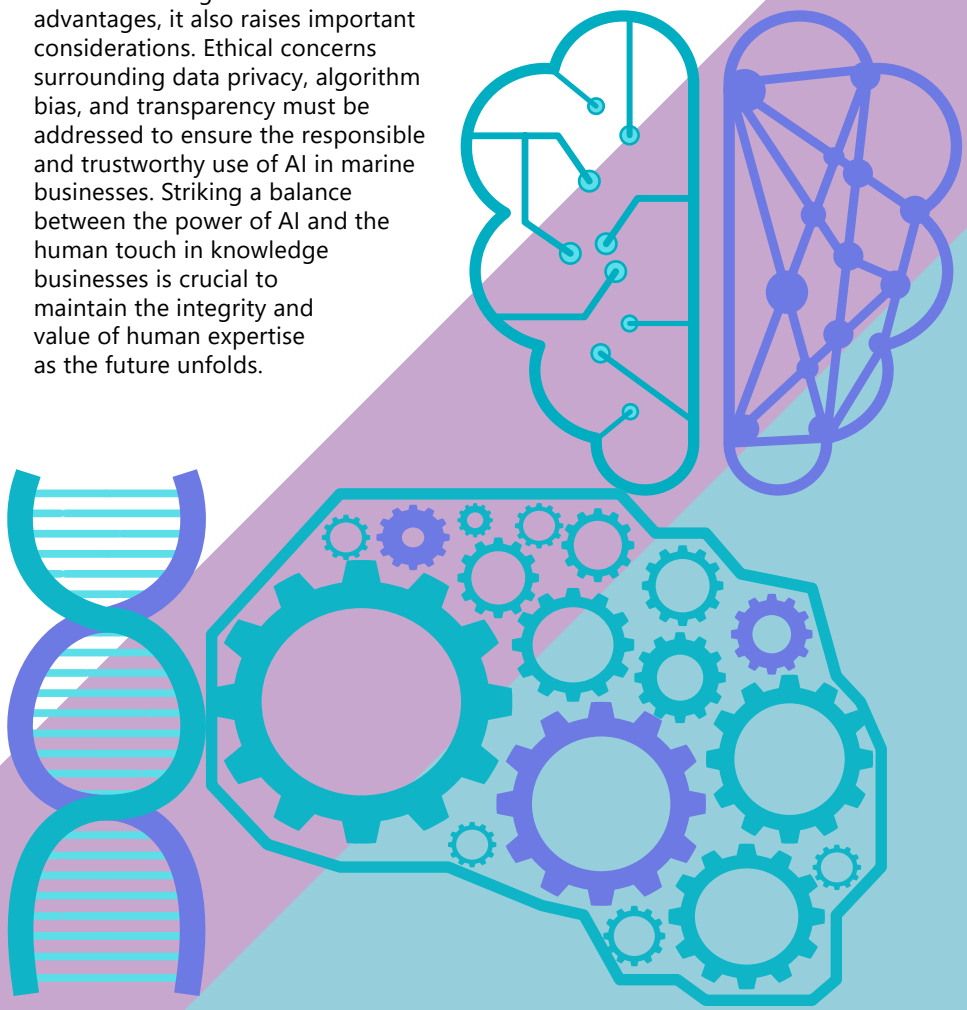
Changing Job Roles: AI will reshape job roles and create new opportunities, no doubt. While automation may eliminate certain repetitive tasks, it also leads to the emergence of new roles that require human-AI collaboration. Businesses can focus on leveraging human skills such as creativity, critical thinking, problem-solving, and empathy, which are complementary to AI capabilities. This encourages the evolution of job roles towards more strategic and value-added activities.

In conclusion, AI in business has become increasingly prevalent and transformative across various industries. AI technologies are revolutionising how organizations operate, make decisions, and engage with customers. From automation and process optimization to data analysis and customer personalization, AI is proving to be a powerful tool that drives efficiency, productivity, and innovation. While the integration of AI in knowledge businesses brings remarkable advantages, it also raises important considerations. Ethical concerns surrounding data privacy, algorithm bias, and transparency must be addressed to ensure the responsible and trustworthy use of AI in marine businesses. Striking a balance between the power of AI and the human touch in knowledge businesses is crucial to maintain the integrity and value of human expertise as the future unfolds.

Jeff Wilson has spent 38 years in the marine industry. Starting his career as a deck cadet with Shell in the 1980s, he is a Master Mariner with an MSc in Strategy and Economics who has held senior roles in shipowning and shipmanagement and in the last decade occupied senior roles in London based marine consulting and survey companies.

After five years as Managing Director of a worldwide survey services Company, in October 2022 he moved to Van Ameyde Marine as Managing Director of Van Ameyde's UK marine business.

Van Ameyde Marine is a global marine surveying and consultancy firm that offers marine services including cargo survey, casualty investigation, project cargo & heavy lift and loss prevention. With over 100 staff marine surveyors and consultants worldwide, Van Ameyde Marine is one of the largest single service providers for the marine industry.



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New Zealand leads recreational boating with design and production

With its diverse marine environments, from protected harbors to rugged ocean waters, New Zealand has made an exceptional impact on the global market. By focusing on the design and build of recreational products, New Zealand marine companies emphasize the use of materials that can withstand a diverse range of conditions, have a long lifespan, and can be used year-round.

The kiwi boatbuilding expertise and equipment hardware capabilities have grown out of a thriving and ever-expanding recreational marine culture. From high-quality boat design to composite construction, interior fittings, woodwork and marine electronics, the country has emerged as a leader of the marine industry.

As a global leader in boat design and construction, New Zealand brands such as Stabicraft, which has shown profound growth as the largest aluminum boat manufacturer in the country, are sought after internationally. An exemplar of New Zealand's widening sphere of influence, Stabicraft recently announced its first manufacturing facility in North America, located in Port Angeles, Washington. This expansion serves as just one example of New Zealand's widening sphere of influence. Due to a rising demand in the United States that exceeds their production capacity in New Zealand, Stabicraft will enhance accessibility to their high-quality marine products by designing their models in New Zealand and building them in the United States. This includes the first model to be built at the new facility, the limited edition 2250 Ultra Centercab Alpha.

New Zealand's companies have not only excelled in traditional boat design but have also produced a range of world-class recreational vehicles and marine equipment, such as Manta5's Hydrofoiler water bike. Taking the world by storm as a revolutionary, first-of-its-kind product, the water bike allows customers a surreal cycling experience on water.

The cleanest, safest, and easiest to use of its kind on the market, Manta5's Hydrofoiler water bike represents New Zealand's innovation on a global scale. Now, a second generation of the bike is hitting the market, providing consumers with a no noise, no wake, and emission-free alternative personal watercraft.

New Zealand professionals design marine equipment of all kinds, including VETUS Maxwell's anchoring solutions by Maxwell Marine. With over 50 years of industry expertise and continuous hands-on research and development, Maxwell's anchoring solutions are designed to

Stabicraft © New Zealand Trade & Enterprise

Photo © New Zealand Trade & Enterprise

alleviate the stress of anchoring for the full spectrum of customers from recreational to superyachts.

With its high production standards and uncompromising stance on quality materials, VETUS Maxwell places great value on the reliability and functionality of its products, as well as customer-focused service. Their innovative and elegant design solutions are consistently leading the market.

When it comes to essential boat components such as thru-hull fittings, there is no room to compromise on quality. Designed and manufactured in New Zealand, Tru-Design Certified Ball Valves are specifically crafted for use in marine applications, both above and below the waterline. Manufactured from a glass-reinforced nylon composites, the full line of Tru-Design parts is lightweight, durable, and high-strength. These parts are immune to corrosion and electrolysis, and are also electrically non-conductive, requiring no electrical bonding. The ball and sealing rings use a PTFE polymer to ensure smooth operation and minimal fouling of the internal ball. Additionally, the ball valves can be locked in the closed position to comply with toilet waste outlet regulations and each part undergoes a 100% leak test before leaving the factory. With a wide operating range of -40 degreesF to over 230 degreesF and built-in U.V. resistance they are suitable for all marine conditions, making this a must-have product for any recreational boater.

Tru-Design Plastics has recently expanded its production and research capabilities by relocating to a new 3,000 square meter facility near Auckland's International Airport in the Airport Oaks precinct. The company has a close partnership with GEMLUX, a Florida-based distributor of Tru-Design / GEMLUX products throughout North America.

"We are confident that regardless of the type of product you need, if it says, 'New Zealand made,' it is of the highest quality and designed by some of the most innovative minds," said Scott Wentworth, New Zealand Trade and Enterprise's US-based Business Development Manager for Marine. "We are very proud of the distinguished New Zealand brands that manufacture boats, parts and accessories for the marine industry and echo their pride in identifying themselves as New Zealand companies."

The New Zealand marine sector is highly regarded in the global industry, with a worldwide reputation for producing high-quality products across multiple segments of marine products. Characterized by an ongoing commitment to innovation and advanced technology, New Zealand will continue to produce world-leading marine products and services across all sectors.

VETUS Maxwell. Photo © New Zealand Trade & Enterprise

LPG SAFETY ISSUES ON INLAND WATERWAYS BOATS

by Tom Keeling

Tom Keeling works as a marine surveyor, BSS examiner, and gas safe registered engineer on the inland waterways in the United Kingdom. He is a chartered marine engineer and a full member of IMarEST. Throughout 2021-2023, Tom completed an MSc degree in Engineering for Marine Professionals via MLA college / Plymouth University. The main project focused on LPG as a domestic fuel on inland waterways boats.

The aim was to improve boater safety by reviewing key elements of gas safety, while linking design, commissioning and maintenance together as crucial factors to gas system success. There is scant academic work existing that relates to the inland waterways, and virtually no academic research into gas safety on boats. It is hoped this project will open the debate and encourage other projects.

Why LPG on boats?

- LPG is in widespread use on boats for cooking and heating: with an estimated 60,800 of 80,000 vessels, or 76% understood to have LPG systems.
- The sector is undergoing demographic change: it's estimated the liveaboard population has grown from 15% in 2011, to 27% in 2020 (CRT research).
- There are areas of intense concentration of liveaboard boaters, for example there are an estimated 5,000 liveaboard vessels in London alone (CRT research in 2018), mainly off-grid and using LPG daily.
- Correct gas system installation, testing and maintenance is obviously crucial to safety.
- But it's not just fire and explosion risk, longer term health considerations, such as chronic CO exposure and other products of combustion e.g. formaldehydes, need to be considered.
- Academic work in other sectors shows link between neurological illness and poor appliance operation; Prof Ben Croxford is a notable author in this area.

Research Method

The figure illustrates the interdependency of the three key elements for a successful system:

Each of the three key elements depends on the other for our safe system to exist. For each of the key elements, there are other interdependent factors that must all be present. When these factors are lacking or missing, the key elements are at risk of failure and that compromises out safe gas system. The research project considered each of these factors throughout and the method was designed with these in mind.

The research method had three main focus areas:

- Incident data gathering.
- Stakeholder interviews.
- Experiment and assessment.

However, throughout the project there was relevant Standards analysis, including:

- ISO 10239, the British Standard for LPG installations on boats;
- PD 54823, a guide for maintenance and commissioning;
- Gas Safety Installation and Use Regulations (1998) which defines the UK legal position.

For incident data gathering, the main source was the Boat Safety Scheme database, with results from 89,000 BSS examinations used; the support of the BSS was crucial to this. These results enabled analysis of gas leak incidence, correlation of leaks to specific faults, and comparison between the private sector and hire sectors. Research also included HSE data (e.g. RIDGAS) and other gas industry sectors such as domestic and caravans were considered, however, the available data is poor and boats are rarely featured in RIDGAS data.

Interviews included three sections.

Consumers: 55 in-person boater interviews were completed (including a London location for diversity). Boaters were asked a variety of questions relating to gas safety and in particular service habits and understanding of relevant safety frameworks and legislation. Reasons for service habits were gained and considered against the changing boater demographic.

Registered gas engineers: 30 in-person interviews were completed. Engineers were asked to explain what issues they see in the sector, where the current problems for safety lie and about their general understanding of legislation. This enabled understanding of view from the professional engineer group.

Corporate: This included varied industry suppliers and manufacturers including appliance manufacturers and BSI, who were interviewed regarding specific issues relevant to boat gas safety. Uptake from organisations was disappointing, and lack of expert knowledge or historical context was apparent due to staff turnover.

Experiment and assessment Involved testing of gas systems in theory and practice to assess the design; unique testing that has not previously been completed on this scale. In some cases it was the first time a vessel had been assessed by a marine professional.

Two main experiments were completed:

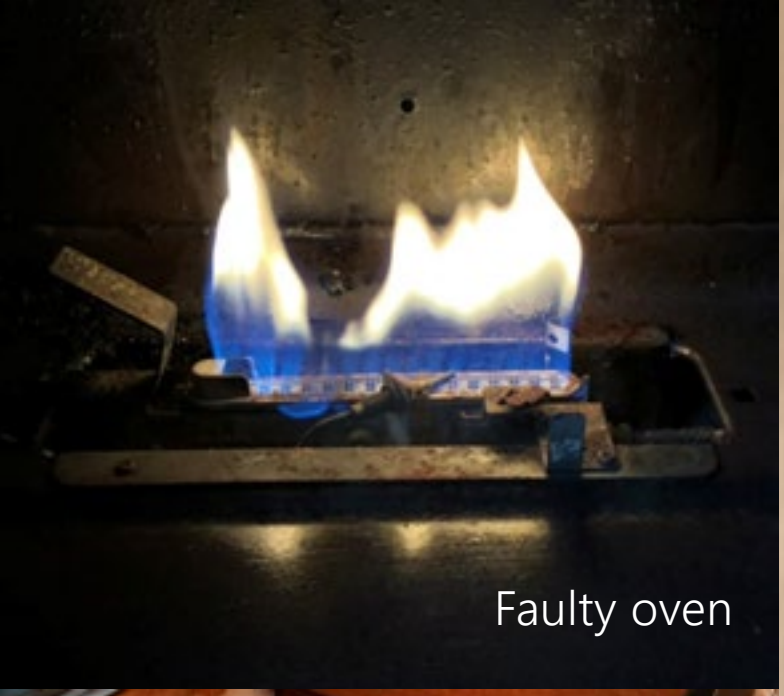
Theoretical assessment of 59 gas systems with a bespoke made "installer's mate" calculator. 59 in-service boat gas systems were physically measured and data from appliances gathered, and the system assessed for design correctness.

Practical assessment of 55 of the 59 gas systems followed, with manometer testing to PD 54823:2016 to confirm how the system performed / operated. This allowed the research to see whether a system was a) operating and performing correctly, and b) if not, why not; be it design, maintenance or component failure.

The results are incredibly interesting and, in some cases startling, for the first time give an overall picture of boat gas safety in the UK, including future challenges. The work identifies errors in standards, issues with national training frameworks, low levels of safety awareness among consumers and misinformed engineer knowledge. Early results include changes to training materials, direct input to the ISO 10239 review, a HSE investigation, representations made to BSI, CEN and ISO including a paper for mandatory system commissioning (http://www.smallcraftservices.com/technical). Presentations to stakeholder groups have been made, calling for an overhaul of the national training framework and alterations to published documents. Several important future work areas have also been identified.

Watch out for more details of the survey findings and action points from Tom, which will be published in a future edition of The Report.

Tenanted boats, River Lee



Faulty oven

Faulty hob burner

Soot-stained water heater

Expert Witness CVs:
What to include in your court report

By Nick Deal, Bond Solon

The section on qualifications and experience in expert court reports often causes concern. While some experts worry they don't have enough material, others find it hard to cut material out.

The procedural rules mandate the inclusion of qualifications. The term "qualifications" is probably intended to be interpreted broadly, to include all relevant expertise, whether from academic qualifications or practical experience.

How to approach this section of your report?

There are two principles to follow:

(i) Relevance

The court must know whether or not the expert is competent (or "qualified") to give opinion evidence on the issue before it; this part of your report is where you demonstrate that competence and qualification.

Your focus must therefore be on the issues before the court. The court is not going to be interested in the entirety of your career to date, but only the relevant knowledge, skills, experience, training, or education you may have which can help the court reach a decision on those issues.

(ii) Clarity of information

Comments by the President of the Family Court, Sir Andrew McFarlane, in the case of Re:C [2023] EWHC 345 (Fam), related to the issue of an unregulated psychologist giving expert evidence but the principles can be applied across the board by all expert witnesses.

One lesson he draws from the case, at paragraph 97, is:

"the need for clarity as to an expert's qualifications and/or experience. The more diffuse and unstructured a CV, the less effective it is likely to be in transmitting information crisply and clearly. In this regard, lawyers, magistrates and judges are lay readers. They need to be able to see with clarity, in short form, the underlying basis for an individual's expertise".

Sir Andrew identifies registered membership of the relevant regulatory or professional body as a "reliable, one-stop, authentication method" which can be taken as "sufficient qualification to offer an opinion within that field of practice".

That is, of course, only the starting point and specific further knowledge may additionally be necessary.

Where such additional information is needed it should be set out "shortly and clearly", to identify any "formal qualifications, posts held and published work" (see paragraph 102 of the judgment).

Do...

Focus on the issues for the court.

- Tailor your CV accordingly.
- Set out relevant formal qualifications and registration status first.
- Think about other relevant experience:
  - authorship of relevant published papers or text books;
  - relevant training or teaching which you have delivered;
  - relevant studies you have carried out; and/or
  - relevant panels or committees you have sat on.
- Consider including a short narrative section, describing your current practice and how frequently you deal with the same issue which is now before the court.

Include relevant qualifications as an expert witness, e.g. the Cardiff University Bond Solon Certificate or the Aberdeen University Bond Solon Certificate, once you have attained them.

Don't...

- Include everything you have ever done.
- Include hobbies, interests and prizes.
- Run over more than 1 or maximum 2 pages.
- Include every publication ever written.
- State how many times you have given evidence as an expert witness.

Court report CV vs Marketing CV

Remember, there is a difference between a court report CV and a marketing CV to send out to instructing solicitors. Your marketing CV can certainly contain everything that you would put in the court version and the following:

CPD in your area of expertise.

- CPD as an expert witness.
- How many reports you have written for court. How many times you have given evidence in court.
- Any positive comments from judges on your evidence.
- The balance of instructions you receive from claimants or applicants or the prosecution and from the defence or respondents.

Above all, remember that you are aiming your report CV at the judge, to assure them that you are qualified to give your opinion on the issues before them.

If in doubt, keep it short, relevant, and clear.

About the author

Nick is a qualified barrister, called to the Bar in 1989. He held a common law practice and represented clients before all levels of courts in the UK. He has trained for Bond Solon, the UK's leading Expert Witness Training company, since 2003. Nick trains professionals across all disciplines to help ensure they can fulfil the role of the expert witness compliantly, effectively and with confidence.

Web: **https://www.bondsolon.com/**

Lightning Protection at Sea. De-Ionisation

*By **Stephen Horsley***
PMIET, MIEEE, MCIGRE, MNSAI. Sales Director Sertec SRL

Venturing across the expansive open sea is an exhilarating yet unpredictable experience, with ever-changing weather patterns constantly threatening the safety of boats, their crew and passengers. Among the most dreaded natural occurrences faced by boat owners are lightning strikes. Fortunately, the advent of advanced technologies, like the Sertec CMCE (Compensador Múltiple de Campo Electroatmosférico) Lightning de-ionising technology, now offers boat owners a dependable solution to shield their vessels from the destructive impact of lightning strikes. A technology that does not allow the conditions for a lightning strike by de-ionisation, creating a protected area into a balanced stable state, so that no build-up of opposite charge exists even in the most severe storm and while under motion; a technology that is passive and requires no power.

One of the key advantages of the CMCE Lightning protection technology is its universal design, enabling installation on various types of boats. Whether you own a sleek yacht, a sturdy fishing vessel, luxurious catamaran, Super Yacht, or work vessel the CMCE can be easily installed.

In 1916, the visionary electrical engineer Nikola Tesla unveiled a groundbreaking invention that would revolutionize the way we safeguard our surroundings from the destructive force of lightning strikes on land and at sea.

Tesla possessed an extraordinary ability to perceive problems from a unique perspective, leading him to question the efficacy of traditional lightning protection technologies like the Franklin rod. He argued that these conventional methods posed a significant danger to society, as they attracted lightning strikes, through ionisation.

Tesla's unparalleled insight into the fundamentals of electrical law inspired him to devise a revolutionary solution based on the principles of charge attraction and repulsion. By de-ionising a protected area Tesla's invention eliminated the accumulation of charge, preventing the conditions of opposite charge attraction and creating a neutral state of safety.

Before Tesla's innovative breakthrough, the widely accepted method of lightning protection relied on the use of lightning arrestors the Franklin rod, invented by Benjamin Franklin in 1752 over 270 years ago. These ionised metal rods, typically affixed to the top of structures, were designed to attract lightning strikes, and conduct the resulting electrical energy safely to the ground through an earth cable.

However, Tesla saw inherent flaws in this approach. By enticing a lightning strike to a particular location, Franklin rods brought forth the full magnitude of a lightning strike, including its colossal current exceeding 30,000 Amps, soaring voltages, scorching heat, harmful radiation, and lightning-fast speeds. Consequently, the protection afforded by such systems was limited, potentially endangering both the structure being protected and the surrounding environment.

On average, it is estimated that there are about 3 to 8 million plus lightning strikes occurring worldwide each day, so in the range of 44 to 100 strikes per second, which can be seen in real time on the incredible free site **www.blitzortung.org**.

Lightning occurs within a cumulonimbus cloud, the Latin cumulus (heaped) and Nimbus (rain) within the troposphere. Cumulonimbus clouds can reach up to the top level of the troposphere, which is the boundary with the stratosphere. This boundary is called the tropopause and it typically ranges from 8-18 km (5-11 miles) in height depending on latitude and season. So some of the largest cumulonimbus clouds can reach heights of up to 18 km (11 miles) above sea level. It is a towering cloud that is associated with thunderstorms and it is characterized by its distinctive anvil-shaped top and dense vertical structure. Cumulonimbus clouds can produce various types of severe weather, including heavy rain, strong winds, hail, lightning and carry several hundred thousand tons of water.

The development of lightning within a cumulonimbus cloud involves several stages:

The first stage of a cumulonimbus cloud's development begins with warm air near the surface which rises, carrying moisture with it. As the warm air ascends, it cools and condenses into a cumulus cloud. As the cumulus cloud continues to grow vertically, it enters the mature stage and it becomes a cumulonimbus cloud. Strong updrafts of warm, moist air continue to feed the cloud, while downdrafts of cool air develop along its edges. This vertical motion

within the cloud creates strong updrafts and downdrafts, resulting in the separation of positive (protons) and negative electrical charges (electrons), within the cloud and stepped leaders are created.

Cumulonimbus contains supercooled water droplets at sub-freezing temperatures. When these droplets come into contact with ice nuclei (tiny particles or dust), they freeze, forming ice crystals. Similarly, when the supercooled water droplets come into contact with freezing nuclei, they form small hailstones called graupel.

Within the thundercloud, updrafts and downdrafts cause the ice crystals and graupel to move around, colliding with each other as well as with supercooled water droplets. During these collisions, the ice crystals and graupel have different masses and electrical properties. As a result, some electrons are transferred from one particle to another, causing an imbalance in charge between the two.

The cumulonimbus cloud becomes charged with an air molecule losing an electron and charge separation has occurred, and the air is ionised… with negative charge at the bottom and a positive charge at the top of the cloud. The negative electron charge at the bottom of the cloud repels the electrons in the ground, causing a positive charge to accumulate on the surface of the earth (land or sea) and a high build-up of charge, creates high attraction to the build-up of opposite charge within the cloud… perfect conditions for discharge to occur.

As the electric field intensifies, a stream of electrons or "leader" moves down from the clouds toward the ground in a series of short jumps, each jump is called a "step."

The leader's path is not a straight line but travels in a zigzag pattern towards the ground. As the leader approaches the ground, a positive charge rises from the ground to meet the leader. When the upwardly rising positive charge and the downwardly moving negative charge meet, they form a channel of electric current.

Once this electric charge channel is completed, it becomes the primary path, and a massive discharge of energy called the "return stroke" occurs from the ground to the cloud. During a thunderstorm, multiple discharges may occur including within the cloud (IC), between clouds (CC), or from the cloud to the ground (CG) and ground to the cloud (GC). These discharges can number in the thousands.

It's important to note that while the stepped leader is responsible for creating the ionised path, it is the subsequent return stroke that delivers the most significant amount of current and is the most dangerous aspect of lightning on the ground or sea. Therefore, it is crucial to take lightning safety precautions during thunderstorms to avoid being struck by lightning.

Lightning strikes can carry extremely high voltages. Typically, cloud-to-ground lightning bolts can reach several hundred million volts (MV), with some exceptional strikes exceeding one billion volts.

Lightning strikes travel at incredible speeds. The initial stage of a stepped leader can propagate at speeds of around 220,000 miles per hour (354,000 kilometres per hour), while the return stroke - the visible flash of lightning - travels at about one-third the speed of light and can be multiple discharges within the original channel. It emits a wide range of radiation, including visible light, infrared radiation, ultraviolet (UV) radiation, and radio waves. The intense light emitted by lightning is what we commonly perceive as the visible flash.

During the final moments before the lightning strike connects with its end point, a sudden surge of current rushes through the leader channel. This intense electrical current rapidly heats the air surrounding the channel to an extremely high temperature, which can exceed 30,000 degrees Celsius (54,000 degrees Fahrenheit). much hotter than the surface of the sun. This extreme heat can vaporize or melt conductive materials, resulting in fires or structural damage. This rapid and extreme heating of the air causes it to expand explosively, creating a shockwave that we perceive as thunder.

The explosive expansion of air occurs almost instantaneously along the entire length of the lightning channel. The speed of sound in air is approximately 343 meters per second (about 1,125 feet per second), and the shockwave generated by the expanding air travels at this speed in all directions. This results in the rumbling sound we hear as thunder.

The distance between the lightning strike and an observer affects the time delay between seeing the lightning flash and hearing the thunder. Since light travels much faster than sound, the lightning flash is seen almost instantaneously, while the sound takes longer to reach the observer's ears. By counting the seconds between the lightning and the thunder, one can estimate how far away the lightning strike occurred (every 5 seconds of delay corresponds to roughly 1 mile or 1.6 kilometres of distance). This is a useful safety measure to assess the proximity of a thunderstorm. However lightning strikes can occur many miles, kilometres outside the original storm, so caution must always be observed.

An example shown around Majorca where thousands of discharges occurred….

One of the key advantages of the CMCE lightning protection technology is its universal design, enabling installation on various types of boats. Whether you own a sleek yacht, a sturdy fishing vessel, or a luxurious catamaran, the CMCE can be easily installed as mentioned previously. There are three specialized CMCE models for marine installation, all constructed to guarantee long-lasting performance in the harshest marine environment conditions, while preventing lightning strikes.

The SERTEC CMCE operates as a passive sensor system that provides permanent protection by balancing and deionising the effects of atmospheric phenomena using one or more compensators. By stabilising the existing electric field in its environment, it creates a 'shield' that cancels the formation of the ascending tracer by draining the electric charges to the earth or surrounding water in harmless milliamperes. This eliminates the formation of lightning within the protected area.

Each capacitor has one of its electrodes referenced to the ground system which is charged with the same polarity as it. The free electrode induces atmospheric charges of opposite polarity to the ground system, balancing internally between its electrodes. This generates a flow of charges to the ground system, which are absorbed from the atmosphere, not allowing the formation of lightning.

The CMCE also has an optional Accessory that shows the CMCE functioning 24/7 in any weather, providing real time data. Storm 7 is a condition monitor for electrical current drainage in milli Amps (mA) humidity, atmospheric pressure, temperature, also providing alarms, which is an advantage for insurance purposes and maintenance. It has a data transfer function via multiple protocols, generating reports.

There are three specialized CMCE models for marine installation, all constructed to guarantee long-lasting performance in the harshest marine environment conditions while preventing lightning strikes.

Specialized Marine Models

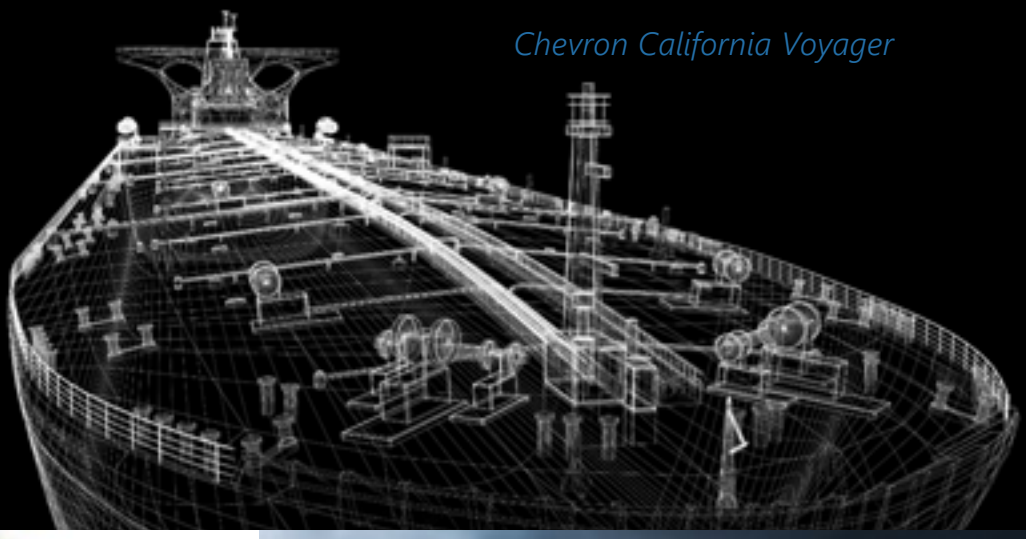
- **CMCE Gold** – Thanks to its small size and weight, it is especially used for small boats, sailboats, marine buoys, etc., protecting 25 Metres radius. Weight: 2.3 lbs, 1.043Kg., Measurements: 4.9 x 8.5 in. 124 mm x 125.9 mm
- **CMCE Platinum** – For use in medium-size fishing or expedition boats, catamarans, small yachts, etc., protecting 55 Metres radius. Weight: 6 lbs 2.722Kg., Measurements: 6.4 x 10 in. 162.56 mm X 254 mm
- **CMCE Diamond** – Developed for maximum protection on yachts, cruise ships, cargo ships, military ships, etc., protecting 120Metres radius. Weight: 13.6 lbs 6.169Kg ., Measurements: 9.8 x 14.9 in. 248.92 mm X 378.46 mm

The safety of people and property is always our top priority. The CMCE Lightning technology offers a practical and reliable solution for boat owners seeking to protect their vessels from the dangers of lightning strikes. Vessel owners can sail the seas with peace of mind by investing in this cutting-edge technology, ensuring that it protects their boats and those aboard from nature's most formidable force.

Case Study

One of our many successful CMCE installations includes the Chevron California Voyager, a 613-foot chemical/oil tanker that primarily operates in the Gulf of Mexico. Lightning can cause severe damage to the ship's navigation and communication systems, in addition to the risk posed by highly flammable cargo on board. To ensure continued operations, Chevron installed one CMCE Diamond and one CMCE Platinum. Both units were grounded to the ship's structural steel.

Chevron California Voyager



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Website: **www.sertecmarine.com**

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Bills of lading:

Basic concepts and issues

A bill of lading is more than a mere contractual or legal or transport document. It evidences several facets of relationships between various parties and continues to be debated in the legal circles regarding its form and significance.

I. Introduction

A bill of lading is a contractual document issued by the carrier by sea of goods which such carrier takes possession of and transports. Generally, a bill of lading would contain details about the transported goods such as the type, quantity, weight, value, and date of shipment of such goods. From a definitional perspective, it is difficult to give a precise definition of a bill of lading, but it could certainly be said to possess the following essential attributes:

(i) It serves as a transport receipt which the carrier gives to the seller for transporting his goods;

(ii) It serves as evidence of contract between the carrier and the exporter; and

(iii) It serves as a document of title for the importer or the buyer.

From the above, it is evident that there are the following parties primarily involved:

Carrier, which transports the goods from the place of exporter to the place of importer;

Exporter, the party which may be the seller or the shipper, who intends to have his goods transported to another place using the carrier's transportation services, and thus gives the physical possession of the goods to the carrier at the loading port; and

Importer, the party which may be the buyer or the importer, who takes the physical possession of the transported goods at the discharge port from the carrier.

The life of a conventional bill of lading might consist of:

Issue by the carrier to the shipper and/or seller of goods;

Endorsement by the shipper and delivery to the bank of the buyer of the goods, where it is presented to obtain payment against a letter of credit;

Subsequent endorsement through the banking chain to the buyer; and

Presentation by the buyer to the carrier at the discharge port. Upon delivery of the goods to the party entitled to them, the contract of carriage has been performed, and the bill of lading becomes 'spent' or 'accomplished'.

- Thanks are due to Metalegal Advocates, the originators of this article -

II. Bill of lading as a proof of transportation

In India, besides the general law of contract (the Indian Contract Act, 1872) and transfer of property (the Transfer of Property Act, 1881), bills of lading are summarily governed by a short law, viz. the Bills of Lading Act, 1856, which is based on the English Bills of Lading Act, 1855.

Section 3 of the Bills of Lading Act, 1856 states that:

"Every bill of lading in the hands of a consignee or endorsee for valuable consideration, representing goods to have been shipped on board a vessel, shall be conclusive evidence of such shipment as against the master or other person signing the same"

Thus, the following points may be drawn up regarding the treatment of bill of lading as a document evidencing transportation:

A bill of lading is an undisputed proof that the transportation of goods has actually taken place as the carrier issues the bill of lading in which all the details of the goods which are to be shipped by him are mentioned such as type, quantity, weight, value and date of shipment of the goods.

A bill of lading also serves the purpose of a contract in which both the carrier and the exporter have entered on agreed terms and conditions, so this contract between these parties is conclusive that transportation of the goods have taken place.

The buyer or importer can only obtain the delivery of the goods when he submits/shows the bill of lading or its copy to the carrier.

III. Bill of lading as a document of title

"Title" refers to the set of facts evidencing ownership over a certain property. Further, ownership consists of a complex of rights, all being rights in rem, resulting that the owner has the right to use, transfer, sell the goods or dispose of the goods according to his or her choice. Generally, a bill of lading serves as a document of title, and its endorsement and handing over evidences the transfer of title from one party to the other. Thus, when a seller of goods transfers the bill of lading to his buyer, the ownership or title of the goods gets transferred from the seller to the buyer.

However, it is important to override the above with the importance of contract (i.e., the intention of the contracting parties). The exact time or place or situation when this transfer of title takes place would primarily depend on the contract. Thus, if the parties do not intend to transfer title with the endorsement or handing over of the bill of lading, the title continues to be governed by the contact.

In international trade, if the contract is silent, this may be governed by standard terms known as the Incoterms (International Commercial Terms) which are published by International Chamber of Commerce. These terms define the exact delivery point from where the responsibility of the seller ends and that of the buyer starts. [There are total 11 incoterms which mainly specifies different delivery points where the title/ownership along with the cost, risk and responsibility get transferred from seller to the buyer.] Of these, Free on Board or Freight on Board (FOB) & Cost and Freight or Cost no Insurance Freight (CNF) are the most common incoterms. In FOB contracts, the transfer of title takes place at the loading port (port of the seller), while in CNF contracts, the transfer of title takes place at the discharge port (port of the buyer).

IV. Amendment of bill of lading

A Bill of Lading can be amended as often as the parties wish to at any time before or after the export of the goods as per the convenience of the parties by payment of certain fees. An exporter can amend BL as many times as he wants to prior to the vessel's date of departure but if the vessel has departed the exporter has to take prior permission of the shipping agent before making any amendment in the bill of lading. However, the importer does not have any specific reason to make an amendment in the bill of the lading as it would cause discrepancies in the manifest of the shipping agent and the bill of lading which in consequence will lead to violation of customs regulations.

V. Conclusion

Bill of Lading is a very crucial document especially for international transportation of the goods. With the introduction of the electronic bill of lading it has now become very convenient for the parties to overview end to end delivery of the goods. A bill of lading must be drawn in careful manner, details regarding parties, goods be entered correctly in order to avoid any issues later. In law, the legal issue regarding the significance and characterization of the bill of lading would continue to be debatable and the answer to it would always lie in the bill of lading and underlying contracts being read and interpreted together.

Mounting calls for leisure marine sector legislation on overboard discharge

By Paul Gullett

In an environment of increased awareness and consumers enthusiasm to tackle pollution, Wave International's Paul Gullett is raising the stakes by calling for legislation for the unregulated marine leisure sector about overboard discharge, especially with grey water.

He says one of the biggest challenges the oceans are facing is that the speed of legislation doesn't match the speed of the pollution. This is not the only area of the marine sector where regulation lags way behind the reality either. Boat owners are often inadvertently pumping tiny particles into the sea on a daily basis. Gullett wants to see environmental protection systems built into all types of vessels, not just the large commercial ones.

"Consider," he says, "all ocean water is polluted with microplastics and microfibres." This matter was recently highlighted by reports from the Ocean Race, which perhaps unsurprisingly found microplastics in every single water sample from around the globe.

"If every boat had a bilge water filter as a minimum, every boat would be putting cleaner water back into the seas and waterways. It's a 'no-brainer'. Install the tech on all vessels with a bilge."

This desire to protect the environment isn't new to him. He's been focused on water filtration since the 1990s when he was working in the oil industry. This was well before there was any widespread knowledge or interest in water pollution, and few even considered the implications of plastics in the oceans and even fewer had heard of microplastics and microfibres.

In 1999, concerned about the short, medium and long term implications of pollution Gullett set up Wave International followed by AFL in 2009, which is a UK-based manufacturer of filters for all types of industrial and commercial applications.

"This was completely new, innovative, environmental technology – most people didn't even understand the issue, let alone have any awareness of it," Gullett says. "I was told, and thought, that bringing new technology to the market would take about five years to gain traction, but it was very hard to generate a market for this new environmental-protection product.

"It's been a long and is still an on-going process," says Gullett. "We started when there wasn't any publicity or interest at all about water pollution. Especially the extremely

tiny particles such as microplastics and microfibres which are invisible to the eye. We used examples of pollution that people could see, such as oily blue-sheen on water from oil or diesel spills, to demonstrate what pollution boaters can cause, and worked with environment bodies such as The Green Blue and The Boat Safety Scheme, owned jointly by the Canal and River Trust and the Environment Agency, to help raise awareness.

"What used to really irk me was the response from industry asking what the Return on Investment was."

How do you measure ROI on the environmental impact of overboard pollution?

"I'm getting less irked now as boatbuilders and boat owners are becoming much more environmentally conscious. But we still get responses such as 'we don't have dirty bilges'. Well, you might not have obvious fuel or oil spills, but I can guarantee you'll be pushing microfibres and microplastics overboard unless you have a bilge filter installed."

Gullett is critical of the lack of legislation to protect the oceans. Although The Boat Safety Scheme checks that a vessel has a control of bilge pump discharge such as a bilge filter (as part of its BSS certification), it's only relevant for inland boats.

"There is very little being done in the non-regulated leisure marine arena. There is currently no enforceable legislation in the UK to prevent leisure boats from discharging polluted, oily or contaminated water either from their bilge or via their grey water systems. Yes it's hugely frowned upon, especially in marinas for example, and generally boaters are careful there, where they are observed, but once out a sea, the pollution isn't so visible, but it's still happening.

"It can be frustrating – boaters believe they are helping the environment using eco-friendly washing up liquids, soaps, shampoos etc, but that doesn't stop all the other pollutants, such as sun tan creams, hair products, makeup, and even the tiny microfibres from plastics within your clothes, from ropes on boats, or scraps of paint, traces of engine oil etc which comes from bilge water and grey water discharge."

There's currently a huge opportunity, says Gullett, in the increased interest and concern about the environment. He says that boat owners and water users, those on charter holidays, and providing boat share schemes are actively promoting awareness about for example, using eco-friendly detergents, soaps, and shampoos.

"This is a good start, but there is a huge opportunity in increasing the awareness of microfibre and microplastic pollution."

Gullett's maintains his range of products are part of the answer to the micro-pollution problem. He cites examples like Wavestream's bilge water filter with its filter-medias which extract hydrocarbons, heavy metals, toxins, oil and fuel, microfibres and microplastics. Products like these are affordable, easy to use and to install. For grey water, the Wavebrite SMART is an example which he says works for the planet and for the business.

"Wavebrite SMART comprises five stages of filtration contained within a single unit, so it can be easily installed as a compact, single unit. It has a separate digital display which gives detailed information – for example on the amount of water being discharged overboard, the flow rate, and also the amount of pollutants being extracted and when the filters need changing."

The company's worked with a number of OEMs and some leading naval architects to ensure the size, shape and design of the Wavebrite SMART meets their needs and, says Gullett, "some of the world's leading boatbuilders are getting Wave products integrated within the build process."

But it's not just new builds which are employing this system. Gullett acknowledges that people are now retrofitting many of these systems onboard. He says this is vitally important as "if anyone is planning to cruise to sensitive sea areas, they might be surprised to find they are breaking the local laws for bilge water discharge quality which could be a low 5ppm. That equates to just five milligrams of oil in a litre of water.

"The innovation is here already," he says. The Wavebrite SMART grey water filter, which has been shortlisted for several awards, takes emissions down to 5ppm and is completely self-contained, in a sound-proofed, robust box.

"The technology for this was available in 2011 but it's taken until now to combine it with an intelligent monitor and display, which shows you how environmentally conscious you really are.

"We've built this unit to suit the demands of OEMs who have been asking for a simple easy to fit, 'plug and play' grey water unit which avoids them having to build in grey water holding tanks. This creates more space within the hull and reduces weight. The Wavebrite SMART not only shows your water use, but also what the filters are collecting and therefore what you are not discharging overboard.

"Getting the Wavebrite SMART to market was key."

That said, Gullett believes that the realisation that the Wavestream filters can also be used as an emergency portable solution marks a jump in our technology. By connecting the Wavestream bilge filters into a floating skimmer head (a bit like a vacuum cleaner) this device can be manoeuvred easily into any location where there is pollution from a light oil spill, for example. Being marketed now as the Wavecleaner, it can be used at marinas, on the riverside, waterside factories/boat yards etc. Anywhere that pollution could enter the waterways or sea.

Now Gullett's looking to increase the company's presence in the commercial and superyacht markets. It took nine years to become a preferred supplier for a major oil water separator company – for ocean going liners and ships – where the system is used within the oil water removal system in order to get discharges down to the very low 5ppm levels. Wave International now supplies them all around the world as a standard fit.

In the meantime he'll keep advocating for a standard fit for legislation to protect the sea from leisure marine users as well as commercial vessels.

AMSA publishes a notice about safe pilot transfer arrangements on ships

The Australian Maritime Safety Authority issued a detailed marine notice about the safe pilot transfer arrangements on 22 June 2023.

PURPOSE

The Marine Notice reminds ship owners, operators, masters, crews, recognized organizations, marine pilots, inspectors, surveyors and pilotage providers about their obligation to provide and ensure continued safe pilot transfer arrangements on ships.

BACKGROUND

Since November 2017, several pilots' lives were placed at risk in multiple separate incidents where a man rope parted or its securing point failed. Additionally, AMSA received several incident reports on safety issues related to pilot transfer arrangements.

Ship owners, operators, masters, and crews are reminded that pilot transfer arrangements, including pilot ladders, must comply with Marine Order 21 (Safety and emergency arrangements) 2016 (MO21), which sets out Australia's obligations under the International Convention for the Safety of Life at Sea (SOLAS) Chapter V Regulation 23 (SOLAS V/23).

PILOT TRANSFER ARRANGEMENT STANDARDS

Whenever a pilot or other person embarks or disembarks from a ship by ladder, they entrust their safety to the pilot transfer arrangements provided by the ship and the pilot boat crew.

SOLAS V/23 sets out the minimum standards for pilot transfer arrangements on ships on or after 1 July 2012.

The International Maritime Organization (IMO) standards related to pilot transfer arrangements are found in:

IMO Resolution A.1045(27) – Pilot transfer arrangements.

IMO Resolution A.1108(29) – Amendments to the Recommendations on Pilot Transfer Arrangements (Resolution A.1045(27)).

MSC.1/Circ. 1428 – Pilot Transfer Arrangements – Required boarding arrangements for pilots.

MSC.1/Circ.1495/Rev.1. – Unified Interpretation of SOLAS Regulation V/23.3.3 on Pilot Transfer Arrangements.

SOLAS V/23.2.3 also states that a pilot ladder shall be certified by the manufacturer as complying with SOLAS V/23 or "with an international standard acceptable to the Organization" and refers to ISO 799-1:2019 "Ships and marine technology – pilot ladders."

Compliance with this particular provision of SOLAS V/23 can be met when a manufacturer has certified the pilot ladder complies with either

of the IMO or ISO standards, noting they are not identical. Where a pilot ladder has been certified under the ISO standard, AMSA expects that the ladder is strength tested according to the standard. Where this test has not been conducted within 30 months, the ladder should not be used until the test is conducted, or the ladder is replaced.

When purchasing a pilot ladder, care should be exercised that the product supplied actually meets the above requirements - relying on the manufacturer's documentation may not be sufficient in some cases. If in doubt, the ship's Recognized Organization should be requested to confirm that the ladder meets the minimum standards.

PILOT TRANSFER ARRANGEMENTS

IMO Circular MSC.1/Circ.1428 illustrates the pilot transfer arrangements required by SOLAS V/23. When using a combination pilot ladder arrangement, the pilot ladder and accommodation ladder are required to be secured to the ship's side.

A common means of securing both the pilot ladder and accommodation ladders is with magnetic pads (see photo 1 below as an example).

Clear and efficient communication with the pilot boat master is essential to ensure the safety of the pilot transfer arrangements before a person uses the ladder. The pilot boat master is best positioned to judge the correct height of the bottom of the ladder and identify any potential issues with the ladder or ropes once in place.

One common issue found is that the pilot ladder does not extend the required 1.5m past the accommodation platform when a combination arrangement is used. Photo 2 illustrates an example of a pilot ladder not extending the required height past the platform.

As shown in photos 2 and 3, persons cannot climb the pilot ladder to a level where they can move safely onto the accommodation ladder.

Photo 2: Example of non-compliant combination pilot ladder arrangements. Photo credit: AMSA

Photo 1: Example of securing both the pilot ladder and accommodation ladders with magnetic pads (Reproduced with permission from Fremantle Ports). Photo credit: AMSA

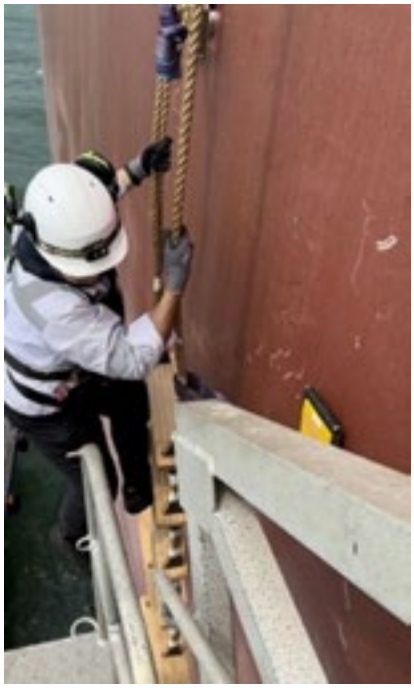


Photo 3: Person unable to safely access accommodation ladder platform from pilot ladder. Photo credit: AMSA

Photo 4: Unsafe pilot ladder securing arrangements (Reproduced with permission from Fremantle Ports). Photo credit: AMSA

Photo 5: Unsafe pilot ladder securing arrangements. Photo credit: AMSA

SECURING OF PILOT TRANSFER ARRANGEMENTS

The pilot ladder is normally secured at its thimble end with shackles. However, due to the varying freeboard at specific loading conditions, the pilot ladder cannot always be secured at full length by the thimble ends. Under such circumstances, it must be secured at an intermediate length.

That can only be done in a safe way by ensuring that the weight of the ladder is transferred from the ladder's side ropes to the approved strong point on deck directly. The ladder's steps, spreaders, or chocks should not be used to carry the weight of the ladder as they are not designed for this and do not have sufficient strength. For this reason, shackles, bars, and tongues should not be used to secure the ladder to the deck. They will damage the ladder and put weight on the parts which are not designed to carry the weight.

Photo 4 shows an example of an unsafe use of shackles to secure pilot ladders.

Photo 5 shows the pilot ladder being secured to the strong point by using a shackle passed through the pilot ladder side ropes. This puts increased load on the single part of the side rope and the chock securing arrangements.

It is a common industry practice to use a rope stopper, usually in the form of a rolling hitch knot, between the pilot ladder side ropes and the approved strong point on the main deck. This will transfer the weight of the ladder arrangement directly onto the designated strong point and will not damage the ladder.

It is suggested that two strong (at least 2 x 24 kN) manila ropes be used to secure the pilot ladder. Photo 6 illustrates a method of tying a rolling hitch knot.

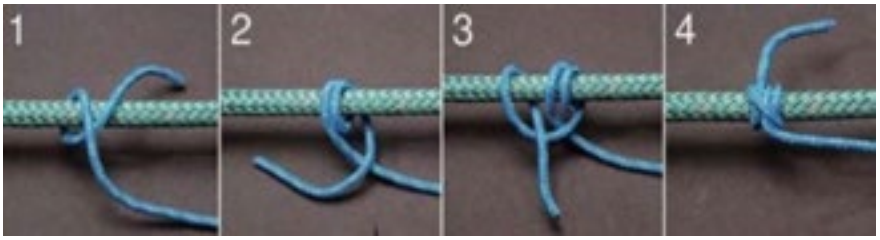


Photo 6: The rolling hitch knot. (Reproduced with permission from Fremantle Ports). Photo credit: AMSA

Photo 7 provides an example of rolling hitch knots being used to secure pilot ladders to approved main deck strong points.

Photo 7: Rolling hitch knots being used to secure pilot ladders to approved main deck strong points (Reproduced with permission from Fremantle Ports). Photo credit: AMSA

INSPECTION AND MAINTENANCE

Ongoing inspection and maintenance of pilot boarding arrangements are an essential part of ensuring their continued safe operation. Paragraph 10.1 of Part A of the International Safety Management Code (ISM) requires ship operators establish procedures to ensure a ship is maintained in conformity with the relevant rules and regulations, including pilot transfer arrangements. Such procedures should include regular inspections of the pilot transfer arrangements and storage to prevent damage to such equipment when not in use.

Common areas of defects can be the thimble ends of the pilot ladder. Corroded end-point thimbles, as illustrated in photo 9, can damage the side ropes leading to failure.

Photo 8: Pilot ladder where side ropes parted when in use (Reproduced with permission of the MAIB). Photo credit: AMSA

Another common area is the frayed or damaged side ropes, as illustrated in photo 10. These should be detected during routine visual inspections.

If side ropes are frayed or in any way degraded, the ladder should not be used. The man ropes used as part of the arrangements should also be regularly inspected.

There have been two recent incidents of man ropes parting during transfer operations. Though rope type is not specified in SOLAS, the Australasian Marine Pilots Institute recommends grade 1 manila be used. These should be tagged and included in onboard inspection and maintenance procedures.

Good practice dictates these should be removed from service at the same intervals of not more than 30 months or sooner if required.

Photo 9: Example of corroded end point thimbles (Reproduced with permission from Fremantle Ports). Photo credit: AMSA

Photo 10: Frayed side rope. Photo credit: AMSA

TRAP DOOR ARRANGEMENTS AND USE OF COMBINATIONS LADDER

There has been an increase in ships fitted with trapdoor arrangements. The additional requirement for their use is "the pilot ladder and man ropes shall be rigged through the trapdoor extending above the platform to the height of the handrail".

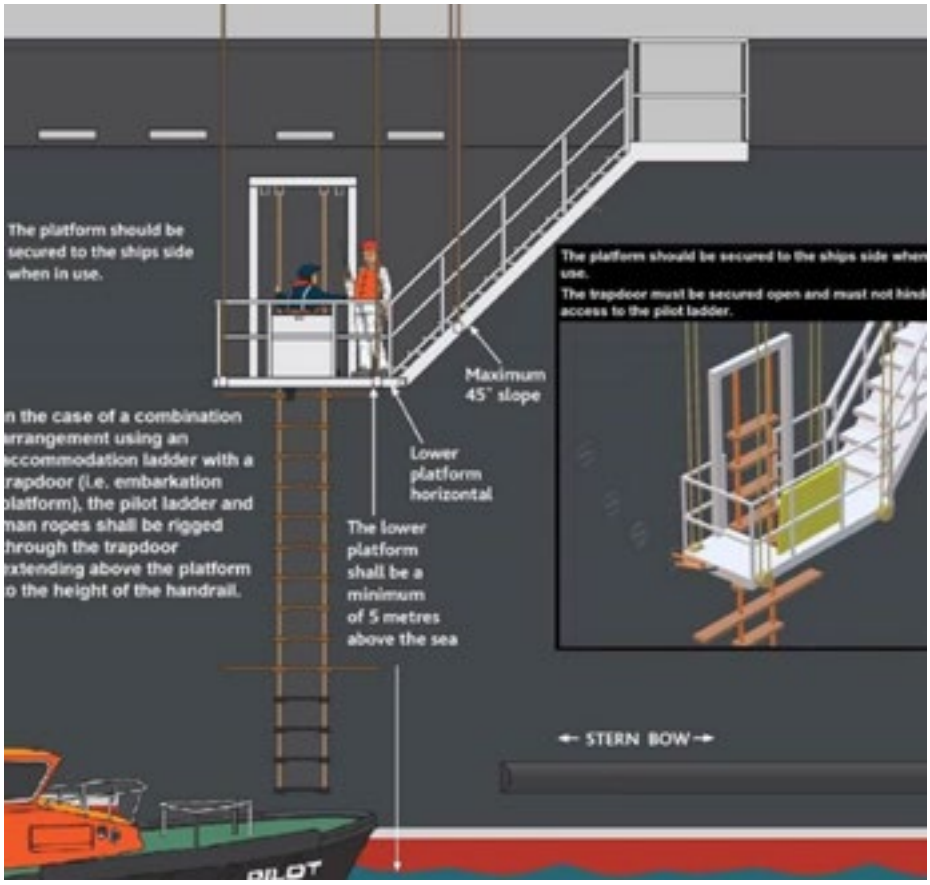


Figure 1: Pilot card depicting trap door arrangements. Image credit: AMSA

If the pilot ladder and man ropes are not rigged through the trapdoor, this creates an unsafe arrangement for persons as illustrated in photo 11.

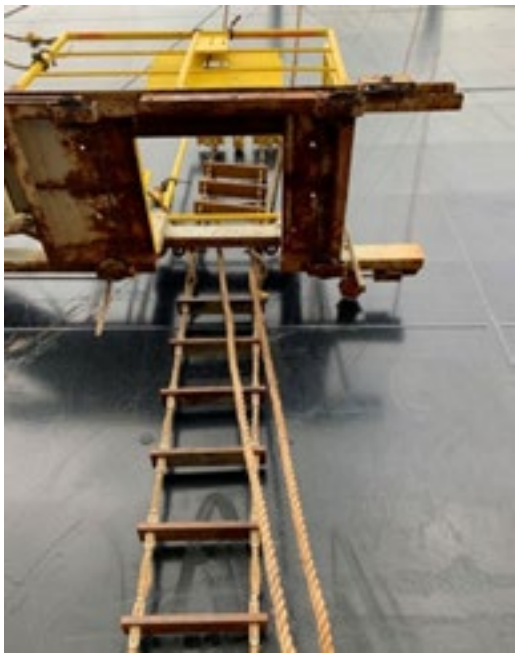


Photo 11: Unsafe trapdoor pilot transfer arrangement. / Credit: AMSA

RESPONSIBILITY FOR SAFE PILOT TRANSFER ARRANGEMENTS

Responsibility for safe practices for personnel transfers rests with each person involved in the activity, including the ship owners, operators, master and crew, pilotage providers, pilots and pilot boat crew, as well as the person being transferred. All parties should observe both the spirit and intent of the regulations, to ensure safety is not compromised.

Where a person suspects that the pilot transfer arrangement provided is unsafe, they should refuse to use the arrangement until it is made safe by the master and crew and report the circumstances to AMSA* and their employer.

**These should be reported using an incident alert (AMSA 18), report (AMSA 19) or marine safety concern.*

Where such situations occur, AMSA will endeavour to follow-up to determine the cause and actions taken. Where a ship is not calling into an Australian port, AMSA will follow up with the flag State.

When not in use, the pilot ladder and man ropes should be stowed appropriately to avoid exposure to contaminants or other elements that will degrade the ladder and man ropes. The ladder and man ropes should be regularly inspected by the ship's crew to ensure they remain ready for use.

ADDITIONAL INFORMATION

The IMO/IMPA Pilot Ladder Poster provides further guidance on pilot transfer arrangements. This and other useful guidance material are available on the AMSA website and in the AMSA Pilot mobile App.

IMPLEMENTATION OF STANDARDS

When conducting port State control (PSC) inspections, AMSA inspectors will pay particular attention to the material state of all equipment and the implementation of Marine Order 21, Res.A.1045(27) as amended by Res.A.1108(29), ISO 799-1:2019, MSC.1/Circ.1428, and MSC.1/Circ.1495/Rev.1. The relevant IMO circulars and resolutions can be obtained from AMSA or **www.imo.org.**

During recent PSC inspections, AMSA surveyors have noted pilot ladders which have been constructed with splices in the side ropes.

Photo 12: Example of non-compliant pilot ladder with splices inside ropes. / Credit: AMSA

Pilot ladders constructed like this are considered non-compliant by AMSA. Ship operators and masters are recommended to check their pilot ladders for splices in the side ropes. It should be noted by operators coming to Australian ports that the availability of compliant pilot ladders is limited in Australia.

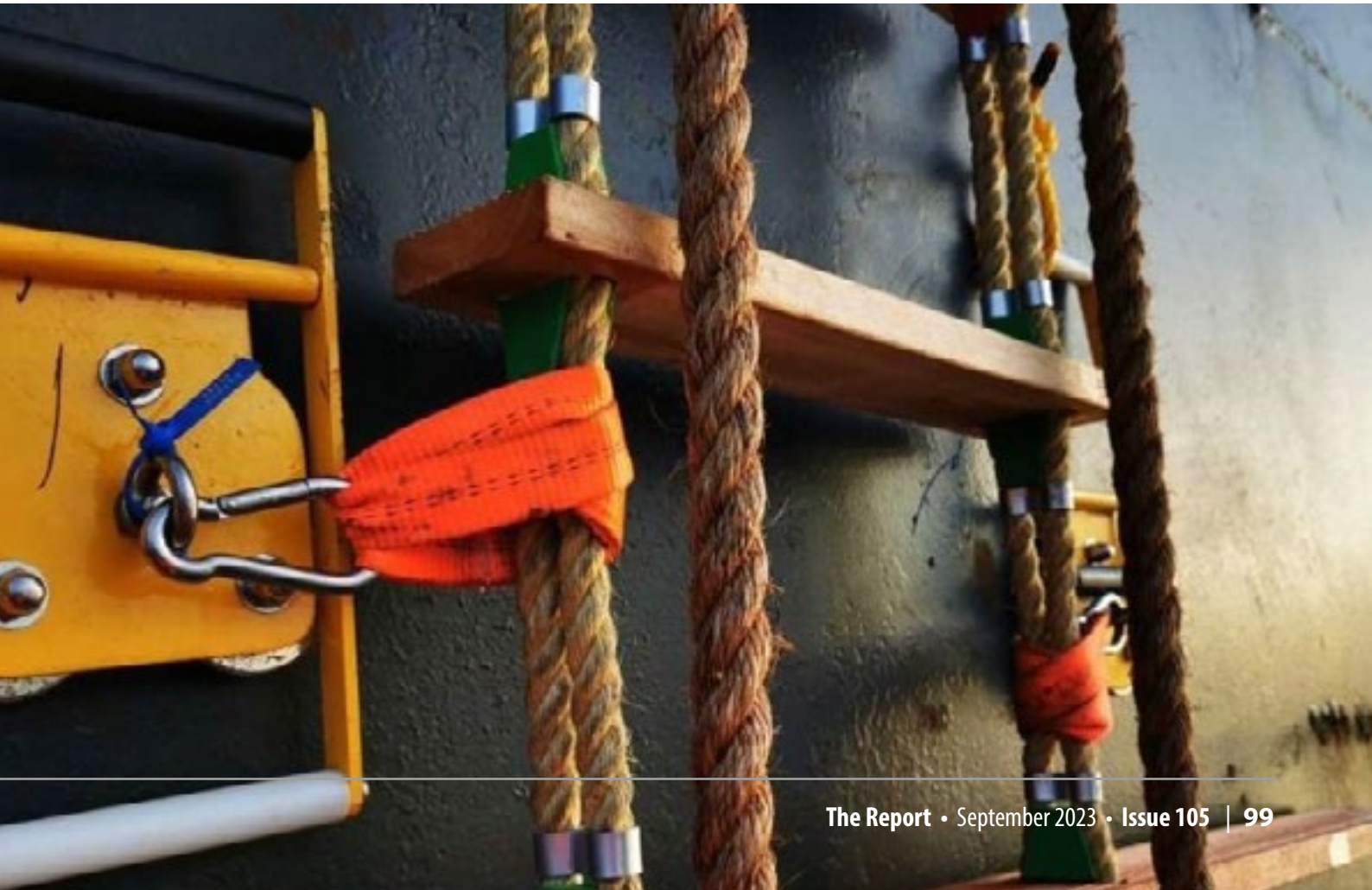
To prevent avoidable delays, operators are recommended to have spare compliant pilot transfer arrangements onboard. Compliance with the referenced standards does not of itself assure safety in each case. A pilot transfer arrangement that complies with the standards but is incorrectly rigged still presents a hazard to anyone using the arrangement.

Crew members assigned to rig a pilot transfer arrangement should be sufficiently familiar with the task. The master or responsible officer supervising the rigging of the pilot transfer arrangements should assess whether supplementary measures, such as lifejackets, harnesses, lifelines, be made available to enhance the safety of personnel rigging the pilot transfer arrangement.

Where a pilot transfer arrangement is rigged incorrectly, this may contribute to evidence that the master or crew are not familiar with essential shipboard procedures relating to the safety of the ship.

A number of documents have been produced as referenced in this Marine Notice to assist in the rigging of a pilot transfer arrangement correctly.

(Reproduced with permission from Fremantle Ports). Photo credit: AMSA



Safety Challenges Faced at Sea

Extracted from the Dryad Global Annual Report 2022/2023

As the world's farthest-reaching and perhaps most vital industry, shipping is especially vulnerable to the risks caused by geopolitical events. Dramatic developments, in war risk, illegal territorial expansion, cybercrime and global health issues all significantly challenged the maritime industry in 2022.

Set against this backdrop. Dryad Global has delivered actionable insights and decision-making support tools to the maritime industry, covering the immediate crisis facing shipping at the outbreak of the Ukraine war, developing geopolitical uncertainties in the Taiwan Strait, Iranian activity within the wider Middle Eastern Gulf, the continued threat of piracy within the Gulf of Guinea and mitigation tools for cybersecurity threats.

Never before has the threat to the commercial maritime market been so multifaceted and required impartial and nuanced analysis. In this report Dryad has have brought together experts from around the world to provide a unique perspective and insight on these global events and the implications for the shipping industry, both now and in the future.

THE STATE OF MARITIME SECURITY

Overview

Dealing with trade backlogs, changing regulations, evolving piracy and complex regional sensitivities, the International Maritime Organisation IMO strives to maintain and improve safety at sea by developing international regulations applicable to all shipping nations.

Frederick Kenney is the IMO's Director of Legal Affairs and External Regulations. A retired US rear admiral, Mr Kenney was formerly the Judge Advocate General of the US Coast Guard. He advises the IMO Secretary-General on IMO legal issues (particularly treaty and maritime law), also managing IMO's role as depositary for its 53 multilateral conventions.

In conjunction with their 2022 End of Year Report, Dryad Global spoke with Mr Kenney about the IMO's maritime safety and security concerns in a drastically changed geopolitical landscape – and possible related legislative changes.

Watch the interview with Frederick Kenney: **https://youtu.be/la1i3YN6p58**

With multiple unprecedented complex geopolitical events unfolding globally, how does the IMO perceive its responsibility to promote safety and security at sea?

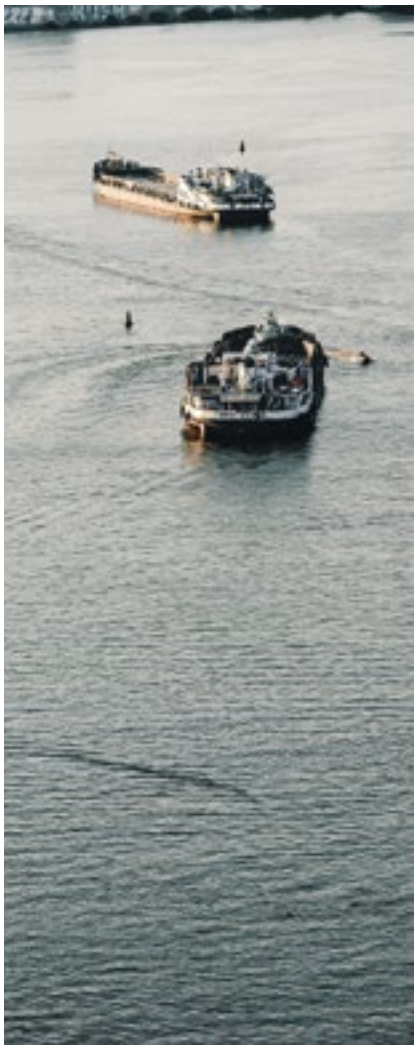
Since inception, the IMO implemented a new version of the International Convention for the Safety of Life at Sea (SOLAS) alongside international maritime conventions and codes relating to search and rescue, traffic and transport. The IMO makes sea trade and travel as safe and secure as possible by managing and mitigating threats via regulations and guidance. This developed significantly with the adoption of the ISPS code in 2002. Without its people, the industry doesn't function. Therefore, seafarer safety and regional preparedness are the IMO's primary concern.

Following 11 September 2001, numerous incidents of misconduct exposed maritime vulnerabilities – making the ISPS Code vital to the industry. How effective has ISPS been in addressing global security issues since then?

The ISPS Code created a brand-new security regime, to be implemented by its Member States. Applicable to cargo and passenger ships over 500 gross tonnage, mobile offshore drilling units, port facilities serving international ships, and high-speed vessels. Concurrent Best Management Practices (BMP) evolved in the shipping industry, outlining appropriate procedures for responding to acts or attempted acts of maritime piracy and armed robbery in specific regions. These were supported and propagated by the IMO. Although it has never been amended, the Code has provided a stable regime that has been effectively implemented, with results that continue to develop and improve.

Cyber security is a growing issue across the maritime industry, affecting shipping companies, cruise lines, large yachts, and their supporting businesses – alongside various continually evolving geopolitical threats.

The IMO saw that ship-based informational and operational technology can be hacked as easily as onshore systems, subsequently implementing cybersecurity guidance in 2021. In doing so, they sought to mitigate potential threats to ships, ports and wider maritime networks by raising industry awareness of and forming protocols for handling such risks.



While no plans exist to significantly alter ISPS Codes, the IMO are focused on specific areas within their security framework, including cyber threats.

THE WAR IN UKRAINE

The war in Ukraine is the most significant risk event to have disrupted global maritime in recent times. The conflict has impacted the shipping industry in several ways, including: restricting freedom of navigation within the Black Sea; commercial disruption with Russia and Ukraine; and having to tackle the burden of sanctions placed on Russia and the associated increase in insurance premiums.

Despite significant limitations on the freedom of navigation throughout the Black Sea, vessels operating in the region and those participating in the UN brokered Grain Deal have been largely unaffected by ongoing military operations. However, vessels continue to face an increased threat from drifting sea mines, geopolitical uncertainty, and increased military traffic. There have been around 50 incidents of drifting sea mines sighted, destroyed, or detonated in the wider Black Sea since the conflict began in 2022, with approximately 30% of these occurring beyond Ukrainian waters.

At the onset of the conflict, a large number of vessels were stranded in Ukrainian ports and at anchor, and their crew members were left with no route to leaving the country. Further still, Russian vessels were severely restricted in available port calls, and more than a dozen Russian-owned yachts have been confiscated due to suspicions of violating sanctions. Russian vessels have been deprived of vital maritime services, and some ports have discontinued bunkering facilities for vessels that are owned or flagged by Russia.

THE INDIAN OCEAN REGION

Throughout 2022, the northern Indian Ocean witnessed several maritime security incidents that had significant implications for the region. These included the targeted

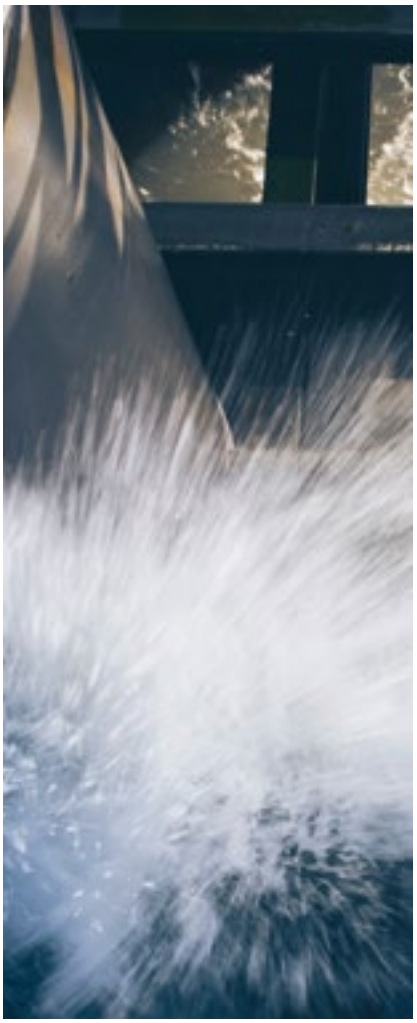
attack on the Israeli vessel M/T Pacific Zircon by Iran in November, a series of incidents involving Houthi rebels offshore of Hodeidah in Yemen and a number of attacks on vessels calling at southern Yemeni ports along the Gulf of Aden coast. Alongside such notable events were a number of smaller but no less tangible maritime security concerns in the form of robberies at key ports in India and approaches recorded within the Bab al Mandab and Gulf of Aden.

In November 2022, Iran's role in targeting the M/T Pacific Zircon, an Israeli-owned vessel, stood out as a prominent maritime security event. The attack on the tanker, reportedly carried out by Iranian forces, involved the use of explosive-laden drones. This act of aggression resulted in substantial damage to the vessel's hull. The incident drew international attention due to its connection to the broader pattern of Iran targeting Israeli-linked vessels in the region.

Simultaneously, Houthi rebels in Yemen played a significant role in maritime incidents offshore of Hodeidah within 2022, originating with the boarding and subsequent detention of the M/V RWABEE 20nm West Ras Isa Terminal in January. Whilst currently involved in a protracted peace process as well as a protracted conflict with the Yemeni government and its international allies, Houthi rebels continue to employ various asymmetric tactics in their actions. These have included the use of naval mines, coastal defence missiles, and unmanned explosive-laden boats. The targets of these attacks included commercial ships and military vessels, posing threats to maritime trade, the lives of seafarers, and the environment due to potential oil spills.

WEST AFRICAN REGION

In 2022, incidents of piracy and maritime crime continued to decline in the waters of Nigeria and the wider Gulf of Guinea. Increased regional and international collaboration likely played a significant role in the drop off in incidents, as governments and organisations worked together to combat piracy. Joint naval patrols, intelligence sharing, and coordinated responses to piracy incidents improved maritime security. Governments in the region also increased their law enforcement presence, deploying more naval vessels and patrol boats to piracy-prone areas. Additionally, counter-piracy legislation and prosecution were strengthened, criminalizing piracy and establishing specialized courts.



In conjunction with their 2022 End of Year Report, Dryad Global spoke with Dr. Okafor-Yarwood who is a Lecturer in the School of Geography and Sustainable Development at the University of St Andrews. She is a specialist in maritime security and governance, with a particular focus on the Gulf of Guinea. Her research has explored a range of issues related to maritime security, including illegal, unreported and unregulated fishing, oil pollution, and climate change.

Watch the interview with Dr. Okafor-Yarwood: **https://youtu.be/6v70PyTbDNM**

What are some of the key challenges facing the Gulf of Guinea in the continued fight against piracy and maritime crime?

The biggest challenge at a regional level is limitation of assets and not being able to coordinate their use between those who have such assets, and those who do not. On an international level, regional events are affected by larger international ones – given the international nature of some maritime crime, particularly piracy. The lack of cooperation and collaboration between nations is an issue in terms of sharing information.

Over recent years, we've seen a reduction in maritime crime rates in the Gulf of Guinea. What's the primary driver behind this?

This is something of a contradiction because, while we're seeing a decrease in some maritime crimes thanks to increased collaboration and cooperation on regional, national and international levels, criminals are unfortunately moving elsewhere: for instance, when it comes to oil theft and drug trafficking, criminals are having more success as our repulsion efforts drive their creativity.

But we are now seeing increased collaboration and cooperation between nations on this front, on regional and international levels.

Speaking of international assistance with deployable regional assets – to what extent can the Deep Blue Project (integrated national security and waterways protection infrastructure) be an effective tool to reduce crime and piracy in the Gulf?

When NIMASA and other Nigerian maritime agencies are fully integrated, I think they'll be able to do far more effective work than they are currently. We're seeing evidence of the Nigerian navy's ability to work effectively and actually lead as an example showing that the Gulf of Guinea countries are able to secure their waters when they have the right assets, information and support.

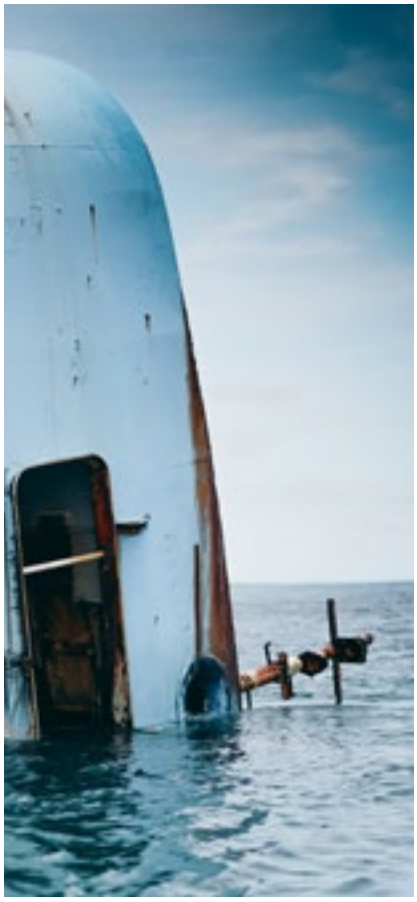
What role should the international community play in safeguarding the maritime interests of the Gulf of Guinea?

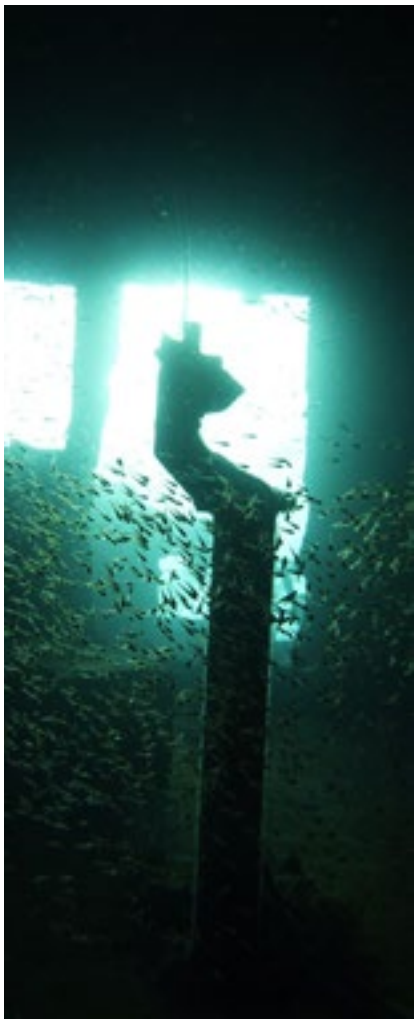
They have a very important role to play. Many times the international community has the information, assets and financial wherewithal – plus the technical knowledge – to do the right thing. However, the reality is that certain nations seem to be very selective in which issues they prioritise. On an international level, there needs to be more honest cooperation and collaboration in how projects are supported, how the support provided is actually what is needed – directed at specific individual challenges. They need to ask "How can we help?"

Solving a problem requires different perspectives and approaches to be considered. At the end of the day, nobody knows it all and trying to solve a problem only looking through a particular lens can be very problematic – especially when there's no real understanding of the social realities on the ground.

SOUTH EAST ASIA

In 2022, South East Asia continued to face a number of unique maritime security concerns. The Strait of Malacca and Singapore and the Philippines experienced high levels of low-level maritime crime. Geopolitical instability persisted in the South China Sea due to territorial disputes, with China's assertive actions exacerbating tensions. Additionally, the potential for conflict in the Taiwan Strait threatened commercial maritime activity. Regional governments and international organizations prioritized cooperation and capacity-building to address these challenges, focusing on enhanced patrols, information sharing, and joint exercises. Efforts were made to promote a rules-based order, freedom of navigation and adherence to international law for stability in the region's maritime domain.





In conjunction with their 2022 End of Year Report, Dryad Global spoke with Gregory B. Poling. Gregory directs the Southeast Asia Program and Asia Maritime Transparency Initiative at the Centre for Strategic and International Studies, a bipartisan, non-profit policy research organization, where he is also a senior fellow. He is a leading expert on disputes in the South China Sea disputes and conducts research on U.S. alliances and partnerships, democratization and governance in Southeast Asia, and maritime security across the Indo-Pacific.

Watch the interview with Greg Poling: **https://youtu.be/BV5_NRZM_vU**

How likely is a Chinese maritime blockade of Taiwan – and what would trigger one?

This is the million-dollar question. It's not particularly likely this year or next but looking back over a decade reveals that there's a not-insignificant chance of Chinese military action against Taiwan.

From the perspective of the maritime industry and commercial shipping – how likely is it that China would impede the lawful passage of commercial shipping in the Taiwan Straits in response to an escalation on either side?

China may not try to block all transit through the Taiwan Strait. But they certainly could try to blockade key Taiwanese ports around Taipei and Kaohsiung.

More likely is that in the case of a conflict, seaborne trade will autonomously choose to divert around potential combat zones. And even if companies were not so inclined, their skyrocketing insurance premiums will ensure that they will be forced to divert around the Strait.

In the event of an escalation, we would see high risk areas posted by the maritime organisations, or insurance increases in JWC (Joint War Risk Committee) designated regions. This could be prohibitive enough for shipping companies and maritime interests to cease trade with Taiwan outright – which could have larger economic impacts.

In this context, companies and governments need to be a bit more sophisticated than simply asking about isolated events: "Will there be a blockade of the Strait of Malacca?" "Will there be a blockade of Taiwan's Straits?"

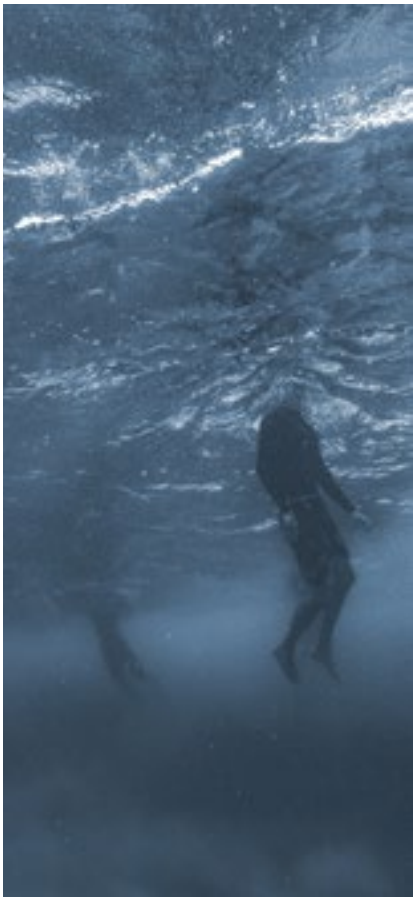
In reality, the spigot of trade into the Indo-Pacific won't be completely turned off in any of these scenarios – but certain ports, certain countries and thus certain parts of whole supply chains will become no-go zones.

In the case of a Taiwan blockade, obviously Taiwan would become one of these zones – and in this case, the trade implication is for semiconductors. In the South China Sea contingency, not all maritime traffic will be lost – but traffic coming to and from Thailand and Singapore will cease – so what are the consequent losses?

A Japanese auto manufacturer could lose its entire supply chain in Thailand. Major Fast Moving Consumer Goods manufacturers, like Samsung, would lose all their modern handheld production in Vietnam because there would simply be no way in or out without going through JWC waters, in the event of a Taiwan blockade.

Which security points from this region are most important for commercial shipping, cruise lines and large yachts in 2023?

Again, the maritime disputes across the Indo-Pacific, and particularly those around the Taiwan Strait, South China Sea and East China Sea, will remain risks for anybody operating in the region for the foreseeable future. We should be realistic about those risks, though – it's unlikely that China or anybody else will seek to directly block commercial transit through these waterways.



GULF OF MEXICO

In 2022, the Gulf of Mexico faced increased maritime security concerns, particularly in the Campeche Bay region. The rise in piracy incidents targeting static platforms, offshore supply vessels, and the local fishing industry was notable. These incidents are often characterised by violence but thus far are understood to not involve kidnapping. There is understood to be significant underreporting of the issue.

In conjunction with their 2022 End of Year Report, Dryad Global spoke with Dr. Alfonso Motta-Allen. Dr. Alfonso Motta-Allen is a Mexican-Canadian political scientist and retired naval officer. He is currently a senior research and project manager at the Independent Consultant. Dr. Motta-Allen has over 40 years of experience in public and diplomatic positions in security and intelligence. He served as a commissioned officer in the Mexican Navy for 25 years, retiring as a Lieutenant Commander. He also served as a diplomat for the Mexican Government in various countries, including the United States, Canada, and the United Kingdom.

Watch the interview with Dr. Alfonso Motta-Allen: **https://youtu.be/geZvsvSkRZc**

Why is there a disparity between the reporting of maritime security incidents in the Mexican media and what is actually reported through the International Maritime Organisation (IMO)?

We need to examine the problem of under-reporting incidents in the Sea of Mexico through a more complex lens.

This under-reporting is created by three intertwined factors: The first being the Mexican people's lack of confidence in their justice system. We're transitioning through a great crisis of impunity – from every 100 crimes that occur, only 6 are reported. For every 100 reported cases of crime, only 14 are resolved. That takes us to a terrible figure – less than 1% of that activity is being resolved.

Long-standing disarticulation between coexisting port authorities: This disarticulation has made the processes of reporting crimes very

difficult. Currently Mexico has been trying to resolve problems by putting most of these agencies under the command of the navy.

How the facts are criminalised in Mexico: piracy is being treated by the navy as a regular armed robbery, assault or attack. This is because in 2005, the Supreme Court of Mexico ruled about an interpretation of the constitution stating that the navy must exercise the rule of law over the waters in which Mexico has sovereign rights.

Even though the Supreme Court took in Article 58.2 of UNCLOS, the court gave more weight to an opportunity to combat the serious problems that Mexico has had for many years, and that is to do with drugs and human trafficking.

The maritime issue reports that were to be sent to the IMO were rerouted: the navy had to initially report to the federal attorney general's office and present to the individuals involved – and that is where the navy's previously permitted actions ended.

They couldn't report further because they would be violating their due process. So technical investigations parallel to the criminal investigations of the justice authorities were never a customary role of the navy.

As a former part of the Mexican navy yourself, you have direct experience and insight. You've mentioned ISPS implementation – what is the Mexican navy doing now to help provide protection in higher risk areas?

In these areas, like the southern Gulf of Mexico, they are trying to increase their effectiveness by implementing permanent patrols and deploying important resources inland – maritime police and intelligence agents – with very good results. In the ports, they're harmonising the obligations that all the port agencies need to follow. They're implementing technological resources to raise their operational effectiveness, and increasing compliance with the ISPS.

CYBER SECURITY IN THE MARITIME DOMAIN

Overview

World trade and supply chains chiefly depend on shipping, a singularly complex, profitable and now vulnerable sector. However, despite its importance to the global economy, the maritime industry, it's people, vessels and infrastructure rely on disparate, outdated information and operational technology.

Dryad Global talked to Prof Jones about the existing maritime cybersecurity landscape and how it is likely to evolve. He shared his views on what the industry ideally needs to do to mitigate cyber threats, and what the potential consequences of inaction or delayed action could be for global supply chains, commerce and security. Professor Jones is the head of the University of Plymouth's Cyber-SHIP Lab. This government-partnered hardware-based maritime cybersecurity R&D platform is part of the University's Maritime Cyber Threats research group.

Watch the interview with Prof Kevin Jones: **https://youtu.be/YoFIn2cDpQQ**

The regulatory landscape has changed over recent years – it's improved through initiatives like IMO 2020 and additional regulations implemented by the US Coast Guard. It's also inevitable that more regulations will follow. But what are the prominent vulnerabilities regarding maritime cybersecurity?

There are several answers here. The first industry problem is awareness: there are still many people who think that even progressive regulations like IMO 2020 and the US Coast Guard's implementations are unnecessary, because the industry "doesn't have a problem with cybersecurity". There's now irrefutable evidence that this is no longer true – while it may have been a while ago, it certainly isn't today. Until the sector catches onto the idea that this is an enduring problem that needs appropriate attention, there's going to be a 'follower' mentality: where people are not proactive in pre-empting and preventing problems.

The lion's share of goods we use are transported by ships – so any attack on the shipping infrastructure (ships, fleet management and physical companies) could potentially have devastating effects on the global economy. How has the attack landscape changed in terms of attack types from five years ago to today?

There were very few targeted attacks on the maritime sector. If there were, they tended to be at nation state level – things like large-scale GPS spoofing to investigate the attackers' capability for doing those things. Maritime cyber-attacks are becoming a profitable mechanism that can be exploited by organisations up to the level of worldwide organised crime. Most of the major shipping lines have been hit at some level or another in the last couple of years, and this wasn't the case five or six years ago. So that change has happened, in the same way as the banking sector: two decades ago they went from "we don't have to worry about it" to "we are a prime target."

With the evolution of cyber and criminal targeting against the maritime industry, do current regulatory frameworks adequately address cyber threats, or is there more that needs to be done?

Firstly, it is good that something is being done, because something is always better than nothing – and the fact that the IMO now has a regulatory framework that requires cyber risks to be considered is clearly a positive step forward. If you really look at the meat of that regulation, it simply states that "cyber risk has to be considered." It doesn't say you have to be able to do anything about it or fully understand the nuances of your consideration.

We've gone from obliviousness and not caring about cyber to driving an awareness that hopefully instils a more responsible future stance and actions from the industry. How do you think the maritime cyber-attack landscape will change over the coming years?

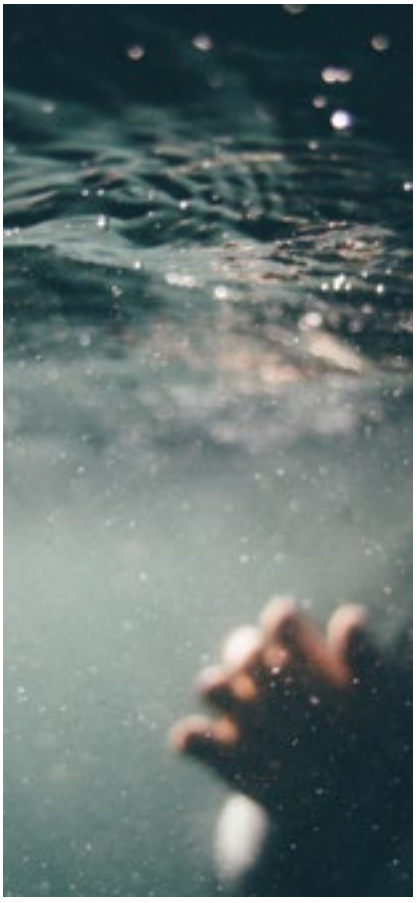
The attack landscape is going to get worse – more and more people will realise the benefits they can get from maritime cybercrime. More and more tools will be developed to specifically target the sector.

If you look at other parts of the space, there are tools that were originally only accessible by the NSA which you can now buy for a couple hundred bucks on the darkweb. So now, fairly low-end criminals have capabilities that were nation state-level just a few years ago.

What we're seeing is increasing numbers of purpose-designed tools being developed by criminals. Maritime is going to be part of that mix.

In summary, the sector's had a bit of a respite that the rest of the world hasn't, in terms of the classic situation of "we're out at sea, we're an island, we don't have to worry about this cyber internet stuff" existing until now.

That period is over: there will be a rapid escalation until the maritime sector achieves the same security level as banking, road transport, power or any of the other sectors. Then it'll be a level playing field for where attention will go – and the intelligent will say, "Maritime is still actually an interesting place for malicious activity, so it's also an interesting place to develop mitigations."



INCREASED QUERIES ON BULK CARGO WEIGHING METHODS REPORTED

Insurer MS Amlin has said that over the last couple of years it had been receiving more and more questions regarding the different weighing methods used when carrying dry cargo in bulk, and the possible consequences of choosing one weighing method over the other, or a combination of weighing methods.

It has therefore issued a circular, written by Ilian Djadjev, Contractual Loss Prevention Consultant, and Robbert Beekman, Technical Loss Prevention Consultant, which looks at the various weighing methods most used in the shipping industry.

Of the various methods to calculate the quantity of cargo on board a vessel, the following two methods are the commonest:

1. Calibrated weighing methods

2. Draft survey

CALIBRATED WEIGHING METHODS

There are different ways to weigh cargo on shore on scales, including:

- weighbridges;
- hopper scales;
- conveyor belts, etc.

The accuracy of the scales ranges from anywhere between 0.01% and 10.0%. Given that the usual trade allowance is about 0.5%, this could result in a substantial shortage claim. Although this tolerance of 0.5% is not legally established, and varies depending on the trade, cargo and jurisdiction, it is often used as a standard and guide internationally.

Since calibrated weighing figures are usually supplied by the shore terminal, MS Amlin said that it was vital that all parties involved be aware of the accuracy of the weighing equipment. Proving the accuracy or inaccuracy of the equipment could be decisive in establishing or defending shortage claims.

Accuracy could be determined by requesting a copy of the certificate of calibration from the owners of the scales (e.g. the shore terminal). If the certificate shows that the accuracy of the scales is not within the percentage commonly accepted as trade allowance, another calibrated scale which was more accurate should be considered.

If the calibration certificate is not presented upon request, a letter of protest (LOP) could be issued.

However, the writers warned that accuracy and calibration were not the only causes of shortages. Various other problems could occur at different stages of the voyage.

For example, imagine a conveyor belt several kilometres long at the port of loading which at the start is empty and full at the end. The scales

are placed at the base, so the cargo left on the belt is taken into account but not loaded on board, despite the cargo being weighed and the conveyor belt weighing system being properly calibrated.

To make matters even more complicated for the sea carrier, imagine that at the end of the voyage this same cargo is unloaded into trucks, some of which simply pass the weighbridge and whose actual weight is never recorded.

Either of these situations could cause a significant shortage, MS Amlin warned.

It was, therefore, vital that an alternative weighing method, in other words a draft survey, was always performed both in the port of loading and in the port of discharge. The numbers in the draft survey in the port of loading and the draft survey in the port of discharge must be in-line, as this would prove that any shortage could not have occurred during the voyage. The numbers also must correspond to the weight stated on the bill of lading.

MS Amlin said that, preferably, the draft survey should be carried out jointly by an independent surveyor and the Chief Officer or Master, in order to confirm that the weight of the cargo on board corresponded to the shore scales figures provided by the shipper or receiver.

Different standards currently in use such as ISO and ANSI, are not specific about the recommended calibration intervals. Having said this, MS Amlin said that it was the task of the owners of the scale to maintain the scale and ensure that it is calibrated at a certain interval within the validity period of the certificate.

DRAFT SURVEY

Another way of determining the cargo quantity is by performing a draft survey of the vessel. This method is carried out by recording all the draft readings of the vessel and calculating the total weight of the vessel by applying the Archimedes Principle.

A successful draft survey depends on various factors, such as:

- the prevailing weather conditions;
- the trained eye of the person reading the draft;
- the accuracy of reading the drafts, sounding of tanks
- and making the required calculations.

Nevertheless, MS Amlin said that a draft survey performed properly in normal circumstances should be accurate enough to provide figures deviating no more than 0.5% from the actual total cargo quantity loaded on board.

If the draft survey figures in the port of loading are in line with the shore figures, one can be reasonably confident that the quantity of cargo which has been received for shipment is correct.

However, if the draft survey figures are not, or nearly not, within 0.5% of the shore figures provided upon completion of loading, caution should be exercised, because this might indicate either an intention to transport more cargo for less costs, or an increased risk of expected 'paper' shortage which the receiver will probably claim at the port of destination. The term 'paper losses' is used to describe situations where the alleged missing part of the cargo has never actually been shipped, but fraudulent or inaccurate documentation has been created to suggest otherwise.

When entering the ship figures on the bill of lading, the carrier should keep in mind that they are not bound "to state or show in the bill of lading any ... quantity or weight which he has reasonable ground for suspecting not accurately to represent the goods actually received, or which he has had no means of checking" (Hague-Visby Rules, Article III Rule 3). Therefore, if a significant discrepancy occurs between ship figures and

shore figures, carriers should insist on entering the ship figures, or at least, where possible, clauses should be included in the bills of lading and other related transport documents with an appropriate remark such as "weight, measure, quantity unknown".

In addition, when faced with such a discrepancy, shippers may often offer to issue a letter of indemnity (LOI) in favour of the carrier in exchange for agreeing to enter the shore figures in the bill of lading. However, the potential risks and pitfalls related to the issuing of LOIs should be taken into account here.

Caution should also be exercised on whether the draft survey readings match the weight on the bill of lading when the vessel is in the port of discharge. If the draft survey in the port of discharge shows there is less cargo on board than that indicated in the bill, then a shortage claim is likely, and advice should be sought with the claims handling authority, this being either the broker or liability underwriters. The claim handler dealing with the matter will then be able to advise the insured on the applicability of possible defences in relation to the particular cargo or jurisdiction. The vast majority of such shortages exist only on paper.

These are far from being the only cause of cargo shortages. In practice, even when the weight has been determined properly, there could be other reasons for a loss of weight of the cargo.

For example, water in the cargo could have evaporated, making the quantity of cargo less than the original quantity as stated in the bill of lading. Therefore, if cargoes with a large water content are carried, it is vital that proper samples are taken, and analyses performed. In addition, maintaining accurate records of the quantity of bilge water pumped out of the cargo hold as well as a ventilation log might help in defending a claim for shortages.

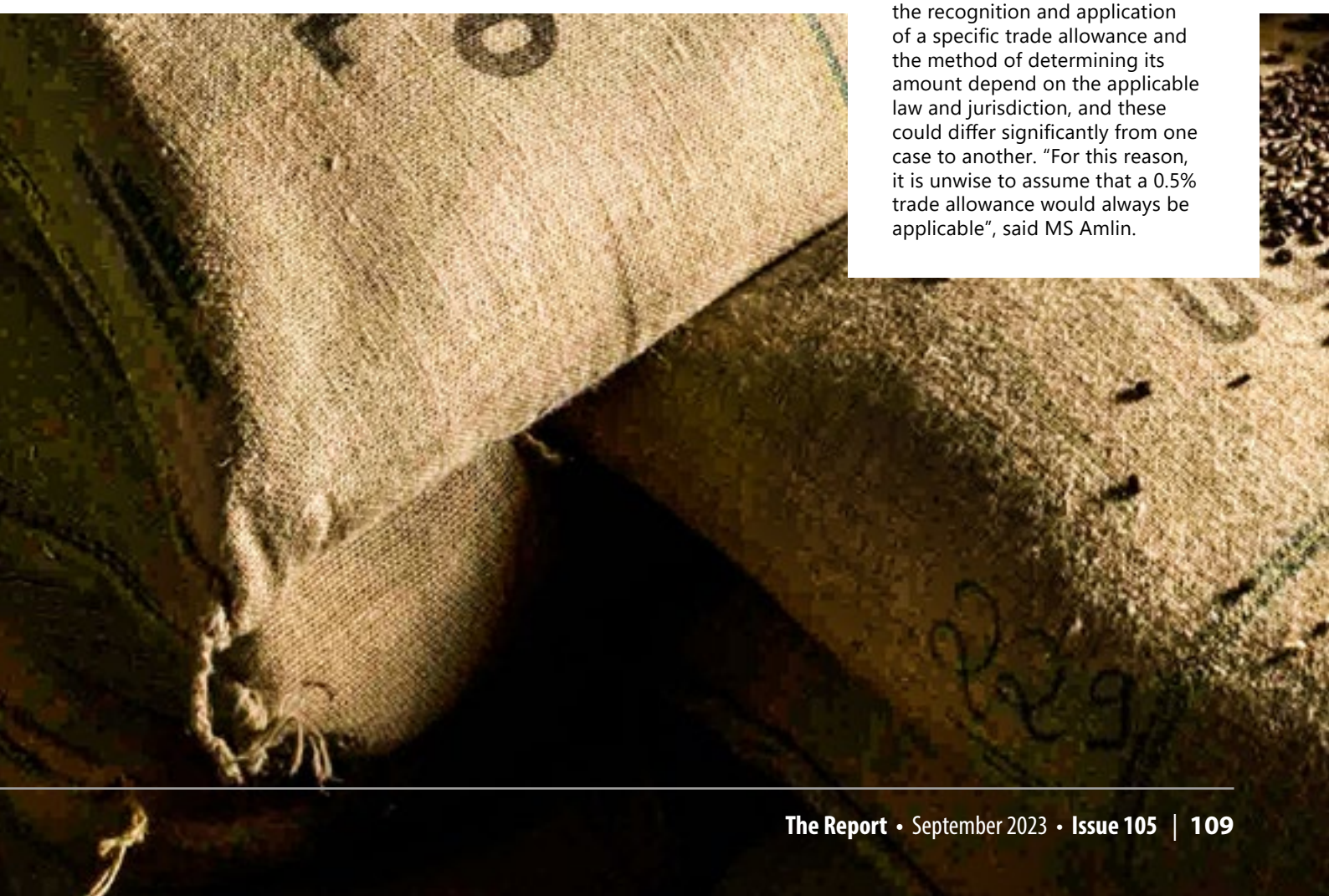
Sometimes, stevedores may also play a role in the shortage of dry bulk cargo. Their actions or omissions may result in cargo mishandling, which could cause cargo spillage on the quay or in the water, especially when cargo is unloaded by grabs. Shortages may also occur due to pilferage by stevedores. Another common reason for shortage claims is entering incorrect information on the bill of lading.

To prevent such misfortunes, a popular precautionary measure is to seal the vessel's holds by putting seals on the hatches and issuing the respective certificates upon completion of loading (when sealing) and in the port of discharge (when unsealing). This provides evidence that the holds were secured and any access to them was barred during the voyage.

Seal numbers and location should be recorded and a sealing certificate issued by an independent surveyor. At the discharge port, unsealing should also be witnessed by an independent surveyor, who verifies that the seals were not tampered with. An unsealing certificate should also be issued. Ideally, hatch sealing and unsealing should be witnessed by a representative of the charterers or cargo interests who should also sign the respective certificates.

THE "TRADE ALLOWANCE"

MS Amlin noted that it was often assumed in the industry that carriers can benefit from a customary trade allowance in relation to the carriage of bulk cargoes. Parties therefore often assume that they are always protected for shortage of cargo as long as it does not exceed 0.5% of the quantities stated on the bill of lading. However, MS Amlin warned that this was not guaranteed, as the recognition and application of a specific trade allowance and the method of determining its amount depend on the applicable law and jurisdiction, and these could differ significantly from one case to another. "For this reason, it is unwise to assume that a 0.5% trade allowance would always be applicable", said MS Amlin.



A Comprehensive Look at The Future of Yachting

By Hans Buitelaar

Hans is a journalist and copywriter, whose written work reaches Dutch and English speaking audiences. He is a keen regatta sailor, publishing in a wide variety of magazines and newspapers.

Exciting new technology will be presented at the next METSTRADE show at the all-new Start-Up Pavilion (STP). The show takes place from 15-17 November 2023 at RAI Amsterdam Convention Centre. In co-operation with Yachting Ventures the show floor area for fresh inventors in the yachting and boating industry will show technology for the improvement of on-water leisure time and nautical businesses.

In this preview, Hans gives some examples of the 'new tech' visitors to this year's METSTRADE will see.

Keen to participate in the first edition of the pavilion, lots of recently started small companies that try to gain attention for the innovations they develop, registered with Yachting Ventures (YV). This London-based platform aims to be the hub for start-ups in the yachting industry, bringing together network, education and opportunities for these pioneers. "The pavilion was filled overnight," YV founder Gabriella Richardson recalls. "We have a very impressive selection of participants. All of these companies also have to meet the quality standards that METSTRADE requires to be a full participant in the show, so not all of these recent starters have been confirmed yet.

Intelligent Video Safety

CAPTAIN'S EYE

AI is emerging everywhere, likewise in yachting. Captain's Eye is a multi-camera monitoring system that can detect smoke, intruders coming aboard, changes in the pattern of system functioning and it allows skippers to watch and review video images taken by the cameras on board, remotely on their mobile devices by using an app. Video can be viewed through a live connection or from previous recordings. The algorithm of the Captain's Eye system teaches itself what the normal operation on board looks like and will issue a warning if the normal modes of operation are disturbed. The program has facial recognition. The owner or captain can take pictures of the crew and authorised people to come on board and the security system will recognise them. Guests can be introduced with a temporary admission. After their stay, the system will issue alerts when they try to re-board the yacht. Using the Captain's Eye app, a yacht captain can control the cameras. A mast-mounted camera for example can be tilted to get a view of the marina or anchorage and see if all is clear. Captain's Eye integrates with existing CCTV (Closed Circuit TV) systems. Smoke and fire aboard is automatically detected and will cause an active alert. The exact location of any misfunctioning aboard will be indicated, allowing the quickest possible action from staff to solve the problem. Developers claim that their AI system can detect smoke sooner than fire detectors. The start-up with the same comes from Israel, where retired Navy Captain Uri Ben-Dor and a defence force Colonel Doron Oizerovich joined forces to create this Artificial Intelligence security system for yachts. The investment fund SixAI, specialising in new technology that combines optics, edge computing and AI, has become the company's major investor by granting 4 million US dollar.

For more information go to www.captain-eye.com

Certified Logging

L.J YACHT & COMMERCIAL SERVICES

Digitization of systems on board is cleverly applied in the digital logbook that gathers data from all the onboard systems. Aboard super yachts, but nowadays also aboard mid-sized yachts, ever more systems are connected. That is the case with the navigational instruments, but also engine controls, sensors, plotters and even the controls of household equipment are increasingly integrated in a central monitoring and control system. A program or app that gathers these data and cleverly organises it, can write a digital logbook. Course, heading and speed are registered, like engine hours, fuel consumption, weather conditions and use of onboard equipment. Names of crew and guests can be entered as well as destination. The eLogbook by L.J. Commercial Services does all of this. It is the brainchild of former superyacht steward and purser Liz Jackson, founder of the company. The digital and automatic recording of a yacht's proceedings and performance as well as the use of resources replaces a whole collection of manual logbooks: the engine room logbook, the navigational logbook, the oil logbook and the guest logbook, to name but a few. What is registered in all of these logbooks is crucial for safety and insurance purposes. The L.J. eLogbook is certified by Lloyds Register and recognised as a suitable replacement of manual logbooks by the UN maritime authority IMO. Having a computer automatically register ship's data and make a logbook from these that is very convenient, L.J. Commercial Services likes to point out.

For more information go to www.lizjackson.co.uk

Traffic Light For Batteries

Electrification of boat equipment and propulsion relies on proper functioning batteries. Fleet managing companies like boat charterers and even yards that agree with their customers to keep track of the maintenance status of their yachts need to be aware of the status of battery packs before they fail. Connecting all the batteries and the battery monitoring devices to the IoT platform of the Czech and Slovak company Battery Check allows remote monitoring (the company has offices in both Prague and Bratislava, re-connecting the two capitals). the app on mobile or desktop devices shows the condition of all batteries in a glance: green means no problems, yellow calls for maintenance and red indicates the need to replace a battery. The clever logarithm recognises battery specifications to understand performance requirements. Any kind of battery can be connected: those of mobile devices, vehicles – like boats and yachts – the household batteries that buffer solar power for nighttime use, electric car batteries and more. If a monitor for any specific battery is not there or not connected to the internet, the company provides an API (application programming interface) that connects the device to the internet and communicates with the Battery Check platform.

For more information go to www.batterycheck.com

The booking.com of Boating?

Versatility appears to be the stronghold of German start-up Metarina, that offers a software platform for marinas and boaters to book berths and that offers marina management tools. A bit like the introduction of hotel booking platforms some decades ago, nowadays the marina booking platforms are competing to take a dominant market position. Three high school friends that all got into yachting after their studies and at some point, occasionally met aboard a yacht in the Mediterranean. They gathered around a commonly felt mission to simplify communication between marinas and boaters and marinas among each other. Connected marinas, that may be commercial enterprises, public and municipal yacht harbours, yacht clubs and even marina associations can centralise their customer information and manage berth occupancy registration. Metarina claims to help marina operators to optimise berth occupation and make operations more efficient. Key to success with a booking platform remains customer acceptance and use. The boater's app is not available on the platforms for mobile apps yet, as the software roll-out is in the development phase.

For more information go to www.metarina.com

Rental Digitised

Working fully remote with skilled colleagues in Amsterdam, London, Alexandria Cracow and Poznan, Floatist embodies the modern innovative software provider. Their platform for yacht charter companies combines connections to the on-board systems with remote monitoring possibilities from the charter company office and an app for the customers. All of the documents for renting a yacht or boat can be handled over the app, the lists of necessities on board that are shown during the check-in is presented in the app, like the manuals of all the equipment on board. Customers can trouble shoot equipment that is not functioning themselves, often to find that some switch should be flipped. From the office, the charter company can register all the paperwork digitally and have all required document related to any yacht brought together. Performance of connected systems, fuel usage if connected, documentation of systems on board and financial details are presented in a single overview, making the administration of boat rental much easier. A track record of maintenance logs for each yacht is registered. Founders, experienced as charter skippers, discovered the need to make charter companies more efficient and make the check-ins and service requests for customers much easier.

For more information go to www.floatist.com

Sail on Air

Air lubrication is a novel technology still in a quite experimental phase in inland shipping and under the hulls of sea going merchant vessels. While the ideas for air lubrication exist for more than two decades and vessels have been equipped with various systems that create a 'carpet' of air bubbles under the ships hull in order to reduce resistance of the hull in the water, the concept has not been presented as a product until now. Progressing from research programs into air lubrication conducted by the Norwegian R&D company Effect Ship International (ESI), start-up Pascal Technologies developed a hull form that is designed to effectively reduce resistance in the water by the use of an air-bubble layer under the hull. While the water resistance of the air lubricated hull is not very different from conventional hulls at low speeds, the increase of resistance that grows with higher speeds is significantly less when the hull rides over its air carpet. The AirHull consists of the air system, driveline, and batteries. All components are integrated and regulated by our ride control system. The platform architecture is scalable for boats from 6 meters to 30 meters. Lower resistance at higher speeds offers possibilities for electric boating. The Oslo-based team of Pascal there for provides the AirHull as a ready-engineered vessel with electric propulsion. The company aims to help reduce emissions in boating and yachting, rather than allowing combustion engine powered yachts to reach higher speeds. AirHull boats can be runabout motor boats, fishing boats, water taxis of passenger ferries.

For more information go to www.pascaltech.com

Tube Engine

ZPARQ

Redefining marine electric propulsion, start-up Zparq from Sweden engineered an electric motor that is lighter, causes less drag and produces more power than electric propulsion has achieved before. Cooling water flows through thew middle of the tube-shaped engine, reducing drag and optimising flow along the propeller blades. As the rotor and stator of the electric engine are directly connected to the propeller blades, there are very little moving parts. The light design reduces raw material and CO2 footprint in the production phase, and the products are designed with a circular approach to reduce environmental impact and climate footprint over their entire life cycle. Zparq originates from a collaboration between the founders and Royal Institute of Technology in Stockholm (KTH), where the technology has been developed and tested on underwater robots and foiling vessels, since 2017. Zparq AB was founded in 2020. Santander InnoEnergy Climate Fund and Almi Invest GreenTech recently funded the start-up with 2.5 million euro to get production and distribution at a larger scale.

For more information go to www.zparq.se

HOW DIGITISATION CAN ENHANCE SAFETY AND CONTRIBUTE TOWARDS A GREENER FUTURE

By Alicia Lee

Global Shipping Business Network (GSBN) Chief Operating Officer, Alicia Lee, explores how digitalisation can be used to enable data sharing and visibility for the transportation of dangerous cargoes.

Shipping and the environment possess a unique symbiotic relationship. While supply chains underpin global trade and deliver a myriad of socioeconomic benefits, there are also very tangible implications on the environment. In turn, the environment affects the operating conditions of such supply chains with implications for infrastructure requirements, maintenance and so forth. When weighing up the cost and benefits, a socio-ecological equilibrium must be struck.

Rightfully sustainability has become the topic du jour in the boardroom, as well as for policy makers. Aligned to this, safe transportation plays an important role in minimising shipping's environmental impact. Unfortunately, it is inevitable that accidents will happen and on occasions with potentially serious consequences for both life and the environment. Earlier this year, a crew member was killed after seawater entered the hull of The Benchamas 2 following a seal malfunction that also led to oil from the vessel spilling off the shores of Thailand.

All too often safe transportation is a discussion which only resurfaces in the wake of an incident. Thankfully, safe transportation has come in leaps and bounds following an increase in awareness of the environmental and financial costs of oil leakage accidents. Strong gains in safety over the past decade have been largely credited to the global regime of safety and environment rules promulgated by the International Maritime Organization (IMO).

However, while the industry acknowledges the importance of safe transportation to the environment and the need to meet stricter regulations, monitoring and enforcement remains hard. Due to the complex nature of global supply chain and its many stakeholders, this has become a largely manual process with lots of inaccurate information and little transparency.

The hidden cost of risk, mitigation and recovery

Accidents, although relatively rare, can result in not only business disruption and heavy financial losses to all impacted, but also devastating environmental damage and subsequent civil and labour actions.

In reality, the total costs incurred by supply chain activities, notably environmental damage, are not fully assumed by service providers and customers. This is due to the inherent distrust resulting from the fact that many often-competing stakeholders are forced to collaborate with each other. There is little incentive to share data resulting in many data siloes and incomplete or untimely data being shared. The challenge is further compounded by the fact that there is a large array of costs ranging from operations and compliance, to quantifying the risk of an event such as a chemical spill or explosion. This poses governance challenges and in the event of an environmental incident this can also potentially impede damage mitigation and recovery efforts.

Enabling more complete and accurate data sharing and visibility of dangerous cargo transportation such as chemical goods will make it easier for supply chain service providers to manage, monitor and enforce transportation safety measures and compliancy to prevent or contain and minimise damage and expedite recovery from an unfortunate catastrophe or incident.

Breaking data siloes and enabling trusted collaboration

At the same time, the shipping industry is undergoing a digital leap of which new technologies are being embraced such as blockchain that offer immutability and verifiability. These technologies collectively offer a practical solution that addresses some of the mentioned challenges by enabling secure data exchange and trusted collaboration between different parties.

Recently COSCO Shipping Lines, Orient Overseas Container Line (OOCL) and the Shanghai Research Institute of Chemical Industry Testing (SICIT) leveraged the Global Shipping Business Network (GSBN)'s blockchain infrastructure to create an industry first proof-of-concept to enhance transportation safety. GSBN is an independent technology consortium whose aim it is to develop and operate digital infrastructure to enable innovation and trusted collaboration for the industry.

As industry best practice, special cargo with designated goods, such as chemicals and lithium batteries, should be certified as safe to transport before they are handed over to logistics and shipping companies for export. This is important because carriers will manage the transportation based on the corresponding certification to mitigate the risk of potential accidents and protect crews, downstream stakeholders and subcontractors.

Consider lithium battery units which are generally safe. However, they may release gas, cause fire or explode if they are damaged during the transportation process with potentially serious consequences, causing danger to life and irreversible environmental damage due to its toxic composite materials.

Considering the rapid demand for lithium batteries, ensuring its safe transportation is of growing concern. Global growth in electric cars and electronics has led to a 65% year-on-year increase in lithium-ion battery production in 2022. With this market expected to grow over 30% annually over the next decade, it is impossible to ignore the risks of its transportation and potential environmental accidents.

It is therefore necessary for certain special cargoes with designated goods, such lithium batteries and other chemicals, to be certified as safe for transportation before they are handed over to logistics and shipping companies for carriage.

For exports from China, SICIT is one of the main organisations authorised to test and issue safe transportation certificates. Traditionally, shippers would collect the certificate from an accreditation body and provide the document either as a hard copy or as a scanned copy to the carriers. However, for the carriers and subsequent transportation companies in the supply chain, certificates shared in this form can be hard to verify, thus carrying risks such as mislabelling and fraud.

By harnessing GSBN's blockchain-enabled platform, a new streamlined process has been designed to ensure that safe transportation certificates and the information they contain can be verified from the original source, and the information is accurate and reliable.

Enhancing supply chain collaboration for safety and quality governance

From an ESG perspective the benefits are clear. From the above it is clear that not only safe transportation contributes towards the environment, but accurate and complete data also benefits socially from a safety perspective as well as enable better governance. Furthermore, aside from the accountability it enables, the biggest benefit of the COSCO, OOCL and SICIT collaboration, is service quality through ability to provide enhanced assurance and confidence to their customers.

Economies, societies and livelihoods depend on functional and safe supply chains. New technologies are helping enhance the safety of supply chains by solving some of the unique challenges faced by the industry when it comes to collaboration. Better information flow, trust and transparency can make great strides in further preserving life, property and the environment.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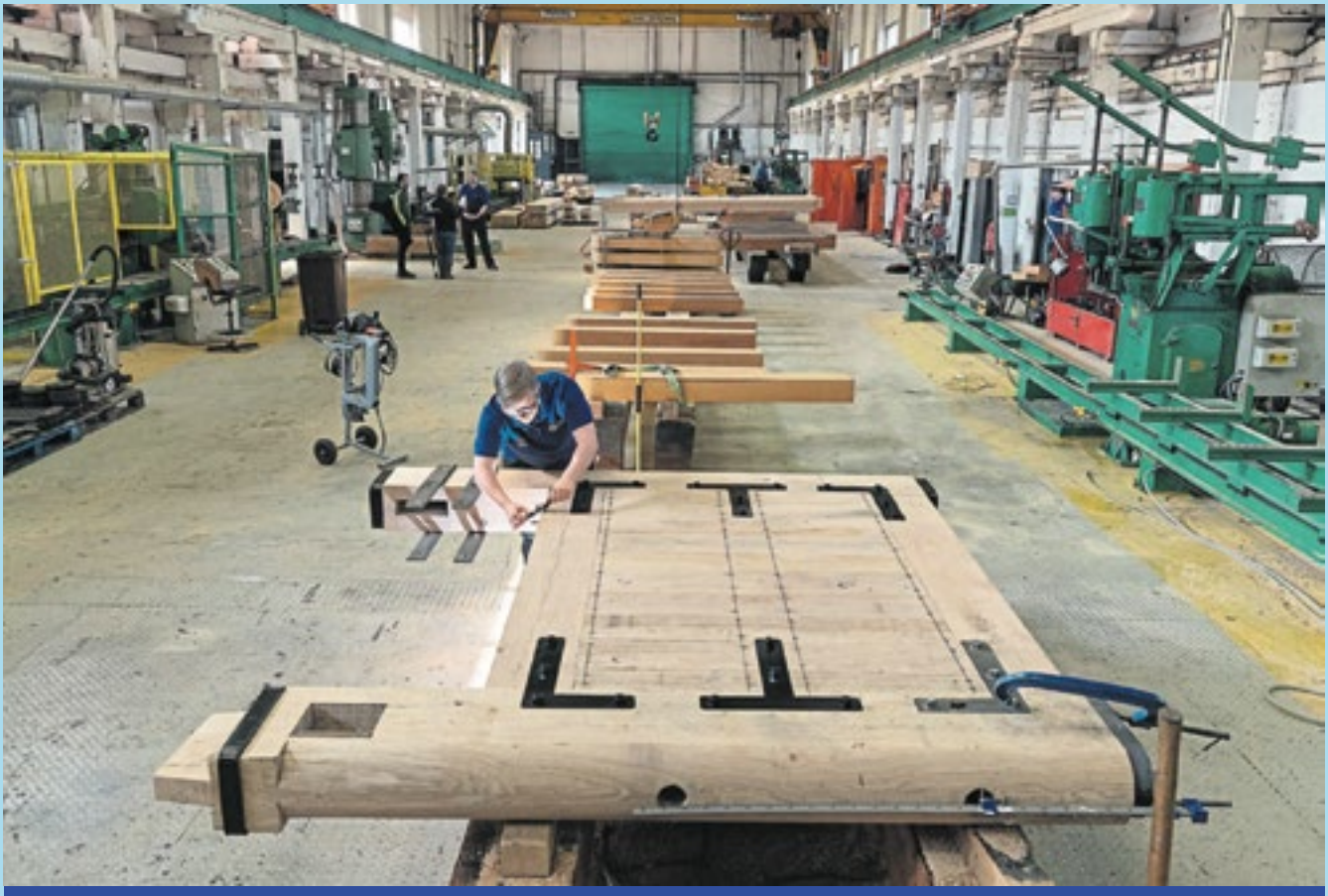
LOCKING AHEAD: THE FUTURE OF MAINTENANCE PLANNING FOR THE UK CANAL NETWORK

In the third article about how the Canal & River Trust maintains its 200-year-old system, national boating manager **Matthew Symonds** looks at some of the challenges that lay ahead.

The UK canal network is one of the nation's greatest regeneration stories. From losing many hundreds of miles of waterways in the last century as canals stopped being used to transport freight, in recent decades they have experienced an extraordinary renaissance.



The specialist lock gate workshop at Stanley Ferry near Wakefield. Photo credit: Canal & River Trust

Today there are more boats on the canal network than at the height of the Industrial Revolution and the network provides vital green space by water and access to nature to more than 10 million people each year.

At the Canal & River Trust, we're proud to be part of that success story. The ongoing maintenance of our canals is at the heart of the work we do, keeping the assets as sound as possible, the infrastructure safe, and the waterways available for navigation. With limited financial resources and with the cost of looking after ageing canals increasing, our rigorous planning process takes in all aspects of risk, targeting the work where it's needed most, while retaining the flexibility to carry out emergency repairs when necessary.

Twenty years after restoration, Anderton Boat Lift needs a major overhaul.
Photo credit: Canal & River Trust

The 250-year-old network, which includes the third largest estate of listed structures in the country, is vulnerable to the increasing impact of climate change and increasingly frequent extreme weather events.

And all the restoration that took place at the turn of the millennium means many of our lock gates, which have a working life of around 25 years, will need to be replaced or have their lives extended. It is more pressing than ever that sufficient ongoing investment is required to keep the canals open and safe for boats, people and wildlife.
Faced with these challenges, we are having to be more innovative and find ways to work more efficiently. We've begun a review of how we carry out our operations and maintenance to make it more efficient and effective.
We will be working with our teams, volunteers, and with boaters and other stakeholders who use the canals the most over the coming months, to hear new ideas on how we could do things differently.

LONG-TERM PLAN

We have already begun working towards longer-term planning, with the intention of being able to give three years' notice of the largest-scale stoppages. While the bulk of our repair work has been carried out over the winter months when there tend to be fewer boats cruising, longer-term planning, that offers plenty of notice to boaters, could enable us to run a year-round maintenance programme. We'd ensure boaters and hire boat companies would have sufficient notice and options to plan alternative routes, and we'd be able to benefit from kinder weather conditions and more hours of daylight.

Winter works on the Caen Hill lock flight. Photo credit: Clare Green

Another possibility would be to close longer stretches in quieter locations to carry out all the necessary works in the area, leaving it free of disruption for years after. We'd be able to save money by bringing all our equipment and materials and working along the cut rather than returning multiple times to nearby sites. This wholesale approach could transform these stretches, without boaters having the frustration of seeing one lock repaired only to run into trouble at the next one.

We are also looking to take advantage of other works and carry out repairs when canals have already been drained. This is already taking place in some areas, with repairs carried out across the north last summer when some canals were closed due to the drought. Active, joined-up planning will help us identify where these synergies exist.

It's important to hear the views of boaters. Our Navigation Advisory Group, which is made up of independent boaters, has a subgroup that focuses on locks. They have been integral in coming up with new ideas for how we can be more efficient, without losing the special character of the canals. They have worked with us to establish how we can refurbish locks to make the gates last longer instead of carrying out full replacements. This could be by replacing the collars, or adding bespoke metal supports to weakened heels, which can add years to the life of a lock gate.

GATE EFFICIENCY

The teams at our specialist lock gate workshops have also been looking at ways to be more efficient. Work is ongoing to create standardised templates for lock gates. While each gate is unique in terms of its precise measurements, different waterways often use the same gate design. If we can develop templates for different waterways, it could save workshops time and money when it comes to crafting new gates.

It's important to keep heritage considerations in mind when we're thinking of how we could make changes to the design of lock gates. The classic lock, with its timber beams painted black and white, is an iconic feature of the nation's landscape. Any new ideas have to respect the important heritage of the canals, while balancing the needs we have, as a charity, to safeguard the future of the ageing network.

An open day at Seend Locks on the Kennet & Avon Canal. Photo credit: Canal & River Trust

A recent saving has been to save painting metalwork below the waterline, which has saved enough time over the year to make an extra set of gates. This retains the characteristic look while having no impact on the overall resilience of the gate.

We know there are some huge challenges ahead. For example, 20 years after it was restored, Cheshire's Anderton Boat Lift, the 'cathedral of the canals', needs to have an overhaul: We've recently been adding additional safety systems on the gates and doing major maintenance on the hydraulic cylinders. In the longer term the control system needs updating and a full repainting of the cast iron structure is required.

We've been planning for this through extensive investigations while the lift was closed last winter, building up a logical approach to the repairs that are required. We've been successful in the first round of pursuing funding from the National Lottery Heritage Fund as the work will cost many millions to complete – and the bid includes improving the overall customer experience at the site.

And Anderton is just one of the thousands of structures, many listed, and many forming an essential part of national infrastructure – that we care for, day in, day out, year on year. We have to adapt if we want to ensure the future of the canals, and the future of boating on the inland waterways. We're confident that the changes we're making will help us work more efficiently and make the most of the tools and resources we have to hand.

But there's only so much we can do in the current climate. We're calling on boaters to continue to support us, to share the importance of canals with others and to help by lobbying their local MP and backing our campaign for appropriate funding. Together, we can help secure a future for canals for the next 250 years.

ABOUT THE CANAL & RIVER TRUST

Canal & River Trust
Making life better by water

The Trust was launched in 2012, taking over the guardianship of British Waterways' canals, rivers, reservoirs and docks in England and Wales and thus heralding the next chapter in the renaissance of the waterways.

Once the nation's industrial arteries, our 200-year-old network transported vital goods and busy people around a booming Britain. When freight declined, the canals too fell into disrepair. Thankfully, our waterways today have risen, phoenix-like, to become treasured local gems. They are places where people can relax, re-connect, rediscover history and spot the abundance of wildlife that calls the canals home.

WHAT THE TRUST DOES

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- It creates new routes to work, places to enjoy and spaces where you want to be
- It builds stronger communities by giving people the chance to protect and improve the places that matter to them
- It helps thousands of people young and old develop their confidence and learn new skills
- It champions the many benefits that the waterways offer and encourages more people to use and enjoy them
- It cares for a 2000-mile long 'green-blue ribbon' that connects hundreds of wildlife habitats, helping you to get closer to nature wherever you live
- It protects this precious heritage so that future generations will be able to connect with this diverse and rich history
- It make sures that 2,949 bridges, 1,582 locks and 280 aqueducts are open and ready for use all day, every day

Website: https://canalrivertrust.org.uk/

It's nearly 45 years since the tragedy on the ANCO Duke where seven crew died at the bottom of the tank they were cleaning.

Enclosed space deaths. Still an issue?

"I was working on chemical tankers then. All the crew felt this terrible loss of life and took on tank entries with a heightened safety focus," says Captain Dave Watkins, Deputy Director of the confidential near-miss reporting service CHIRP Maritime. Since then, enclosed space deaths still occur, although not in the number they did.

Captain Dave Watkins

Watkins has years of experience on chemical and VLCC tankers as an officer and master, and has undertaken hundreds of enclosed space entries on tankers, bulk and general cargo ships. "I was the first in, and I'd be the last out." There was no compromise on his enclosed space entry protocol.

Reflecting on his tanker experience, he says: "You're at the bottom of a 100-step ladder. It can feel claustrophobic and fearful when inside 30,000 cubic meters of a VLCC, ballast tank, or forepeak tank. What reassures you is your trained crew working as a unit with everyone looking out for each other."

Before filling in the enclosed space entry permits and the risk assessment form, Watkins would go into the tank with his breathing apparatus, backup supply, personal O2 meter and multi-gas detector, torch and spare torch. The tanks had been forced-ventilated for days until final testing took place. "Only when we had tested the space remotely, the tank valves isolated with the crew observing, would I proceed with testing the tank locally, including inspecting the tanks for safe physical access."

The crew needed to see leadership in action and procedures followed to the letter. No shortcuts. Discipline continued in the tank. If anyone's alarm was triggered, work stopped, and the tank was tested and reventilated before the entry process was restarted.

Enclosed space tank work demands high alertness and stamina, so the crew should be adequately rested and fit. Tank work must never be rushed, and there should be no pressure and no overconfidence. These are the human factors that lead people to take shortcuts. "When tank inspections are carried out, your sole focus is just this job, nothing else. No conflicting work activities are taking place; the sole focus should be on the men and women working in the tank."

Equally important for reassuring the crew is the support provided by the deck team in case of emergencies. "You need an experienced spotter with good communication skills who can quickly activate an emergency response if something goes wrong. Regular exercises were practiced until we became confident in our ability to carry out a rescue from any enclosed space."

Responding to a casualty in an enclosed space requires specific knowledge, training, and equipment, including the use of gas detectors, respirators, and safety harnesses.

Enclosed space entry drills provide an opportunity to further enhance competence, and Captain Sundeep R Sequeira, Area Sales Director for training provider OneLearn Global, highlights the importance of responding not reacting.

"If a seafarer reacts impulsively and endangers themselves or others, it could create fear and mistrust among the crew. On the other hand, a well-planned and executed response can inspire confidence, trust among the crew, and reinforce the importance of safety protocols."

Of equal importance, is a high level of familiarity with the procedures for notifying the emergency response team and following established communication protocols, says Sequeira.

Enclosed space entry drills provide an opportunity to enhance competence. Image courtesy of OneLearn Global.

It is important to look at enclosed space issues through the dimension of human behaviour, says Raal Harris, Chief Creative Officer at Ocean Technologies Group. "As human beings we have a blind spot for dangers that we cannot see, touch or hear. This is particularly true if we see a space that we have entered without consequence many times in the past." He says it is instinctive to go to the aid of another when no visible danger is present.

Exploring case studies, play-through scenarios and gaming techniques can all be effective in testing the application of knowledge, he says. Can the person make the right decision at the crucial moment? Can they do it under pressure? "Immersive techniques can help to simulate the conditions that people may face and prepare them."

It's a multi-dimensional issue, and training is not able to influence all the factors, he says. "There are many procedural, hardware and ship design factors which are beyond the seafarer's control, and we support initiatives such as those by InterManager to attempt to address these so that we minimize risks wherever possible."

"We are keen to ensure the debate looks beyond any initial mistakes made by those who died," said Captain Kuba Szymanski, Secretary General, Intermanager

InterManager data shows that 347 people lost their lives between 1999 and 2023. The problem may be even greater as there is a lack of consistent recording and reporting within the industry, particularly by Flag States. InterManager's research also shows that widely used IMO Resolution A1050/27 and Code of Safe Working Practices are very confusing. These two documents are, however, the backbone for almost all company-prepared onboard safety management systems. Late last year, the IMO committed to review guidance governing safe working in enclosed spaces, and plans are expected to be confirmed at MSC107 in June 2023.

Captain Kuba Szymanski

InterManager has partnered on a submission that draws attention to industry-led investigations into enclosed space accidents. This has resulted in several distinct themes that require attention: design and construction, gas evolution, movement and entrapment within the ship structure, and the human element prevalent in many enclosed space incidents, such as the rush to rescue a single casualty resulting in the death of many, the disregard of procedures and local adaptation of unsafe practices. Szymanski says: "We are keen to ensure the debate looks beyond any initial mistakes made by those who died."

He would like to see table top exercises for office staff to familiarize them with how to cope in the event of an accident. Everyone involved in the command chain needs to have a better understanding of the dangers of working in enclosed spaces and the procedures needed to ensure safe working. "And I do mean everyone."

THE GREEN AND DIGITAL CORRIDORS

NEW HIGHWAYS TO THE OCEAN

By Vijay Kurup

Green corridors function as 'special economic zones at sea'. They have nodal points for fuel production, and ship operations. They are supported with special policy and the regulatory environment. If successful, in terms of measurable reduction in the GHG emissions, the model can be replicated in other shipping routes.

At the COP27 climate summit, held at Sharm El-Sheikh, Egypt, the maritime community pledged for tighter regulation of Greenhouse Gas (GHG) emissions. The United States and Norway have set up the Green Shipping Challenge. The Green Shipping

Challenge encourages countries, ports, companies, and other stakeholders in the shipping value chain to come forward with concrete announcements that will place the shipping sector on a course to align with the goal to limit global temperature rise to 1.5 degrees C. Countries, ports, and companies made major announcements on issues such as innovations for ships, expansion in low- or zero-emission fuels, and policies to help promote the constructions of next-generation vessels.

The COP26 summit held in 2021, brought together 200 countries, to accelerate action towards the goals of the 2015 Paris Agreement and the UN Framework Convention on Climate Change. The aim of COP26 was to kindle the hope of limiting the global rise in temperatures. The effort was to keep the global average temperature to well below 2°C above pre-industrial levels and pursue efforts to limit the temperature increase to 1.5°C above preindustrial levels.

The baseline of the pre-industrial era pertains to the period 1850-1900. Preindustrial refers to global temperatures that were about 0.8 C cooler than now. But there is a school of thought, who believe that the pre-industrial period was between 1720 to 1800. However, 1850-1900 was chosen because there was more record of temperatures that were being maintained from this period onwards, worldwide.

It was found that the progress thus far was not commensurate with the goals set of capping the rise in temperatures. The maritime sector, ranks among the highest emitters of carbon, nitrogen, and sulphur compounds into the atmosphere. Composition wise, GHG emissions consist of Carbon dioxide (CO2); Carbon monoxide, Methane (CH4); Nitrous oxide (N2 O) and Fluorinated gasses.

However due to lack of concerted effort, force majeure situations such as heatwaves, flooding, droughts, wildfires, and the war in Ukraine, have made the progress imperceptibly slow. If no concerted action were to be taken, then by 2050, emission levels from this sector are projected to be up to 50% of 2018 levels.

The COP27 has gone a step further in delineating the actions taken by countries and major multinational companies to decarbonize the supply chain. The meet had elicited commitments from Governments, major conglomerates, and shipping lines. Forty major announcements have been made.

SOME OF THESE INCLUDE:

- **The Maritime and Port Authority of Singapore (MPA), Port of Long Beach, Port of Los Angeles, and C40 Cities** are coming together to establish a green and digital shipping corridor on the transpacific route, between Singapore and the San Pedro Bay port complex. C40 is a network of mayors of nearly 100 world-leading cities collaborating to deliver the urgent action needed to confront the climate crisis. The three ports and C40 Cities will work closely with other stakeholders in the maritime chain.

- The focus will be on: (i) low and zero carbon fuels and bunkering, and (ii) digital shipping and efficiency to support deployment of low and zero carbon ships. The Port of Los Angeles, MPA, Port of Long Beach and C40, hope to rope in other key players in the maritime and energy value chains.

- On January 28, 2022, **the Port of Los Angeles, Port of Shanghai, and C40 Cities** announced a partnership of cities, ports, shipping companies, and a network of cargo owners to create the world's first green shipping corridor – the Los Angeles – Shanghai Green Shipping Corridor.

- **The trans-Pacific** trade route, from the far east to the US West coast, is one of the busiest sectors. In 2020, about 19,000 ships travelled across this stretch, representing 30% of global container traffic. The Suez Canal also handles around 30% of global container traffic. The trans-Pacific is one of the most carbon-intensive shipping corridors in the global maritime sector.

Australia has signed a Green Economy Agreement with Singapore, to support and accelerate transition to net zero emissions. The agreement includes a specific initiative to cooperate on green shipping, and focus on joint efforts to accelerate implementation and promotion of technologies for decarbonising shipping. This initiative aims to establish the business / government / research partnerships required to implement green shipping corridors. Employ technologies like use of clean hydrogen to reduce emissions in maritime and port operations. The total investment is US$ 30 million.

The Green Corridor between Belgium and Sweden is in the advanced stage of completion. The port authorities have agreed on using alternative fuels and facilitating bunkering regulations. They expect to launch the green corridor for seagoing vessels by 2025. As an incentive, discounts on port dues would be available for green vessels and those using cleaner fuels.

The Republic of Korea and the United States have announced technical cooperation to help facilitate establishment of a green shipping corridor. Representatives from both the Governments will undertake a feasibility study to explore the potential of creating a green shipping corridor between the two major cargo ports in Korea and the United States.

MPA Singapore and Port of Rotterdam have inked a MoU to establish the world's longest green and digital corridor to enable low and zero carbon shipping. This would be the world's longest green and digital corridor. The MoU signed between the two nations, will bring together stakeholders across the supply chain to realize the first sustainable vessels sailing on the route by 2027. Singapore and Rotterdam are among the largest bunkering ports in the world, making them influential players on the AsianEuropean shipping lanes.

The Prime Minister Narendra Modi has committed to a graded five point response or 'Panchamrit' towards stemming the global rise in temperatures. The timeline India has set for itself is 2030. First, India's commitment is to take non-fossil energy capacity to 500 GW by 2030. Just for information 1 GW is equal to 1 billion watts (the unit of power). 1GW can power 100 million LED lights. Second, India will meet 50 percent of its energy requirements from renewable energy in the same period. Third, India will reduce the total projected carbon emissions by one billion tonnes from now till 2030. According to a report, 1 million tonnes of carbon is equivalent to charging 321 billion smartphones or producing 4.4 million laptops. Fourth- By 2030, India will reduce the carbon intensity of its economy by less than 45 percent. And lastly by the year 2070, India will achieve the target of Net Zero.

DP World plans to invest up to $500 million across its business to cut CO2 emissions by nearly 700,000 tonnes over the next five years. This planned reduction in carbon emissions represents a 20% cut from 2021 levels. Their plans include replacing its global fleet of assets from diesel to electric, investing in renewable power and exploring alternative fuels.

Amazon stands committed to accelerating the adoption of new solutions that are going to decarbonize ocean shipping. They have indicated their demand for zero-carbon services and fuels to the value chain for Zero Emission Vessels. They hope to see a decarbonized ocean shipping by 2040. To that end they seek to purchase bio-based fuel service to help reduce carbon emissions. Investment in technologies for longer-term, zero-emission solutions through their US$ 2 billion Climate Pledge Fund.

Maersk alone needs approximately 6 million tons of green methanol per year to cover its 2030 milestone fleet emissions target by 2030 and even larger amounts to reach net zero for its entire fleet to reach net zero by 2040. Maersk had advanced its decarbonization commitment from 2050 to 2040. Nineteen vessels are currently earmarked for running on green methanol that Maersk will put in operation during 2023-2025 that would require an estimated green fuel of 750000 tonnes.

A.P. Moller – Maersk and the Spanish Government are looking to explore the opportunities for large-scale green fuels production in Spain. If implemented in full, the collaboration could deliver up to 2 million tons of green fuels per year. The project aims to explore the feasibility of creation of renewable energy sources to bunkering of vessels. The production locations are likely to be in the regions Andalusia and Galicia.

Green corridors have multiple definitions. The Energy Transitions Commission and the Global Maritime Forum refer to them as "specific trade routes between major port hubs where zero-emission solutions are supported. The U.S. Government has a more broad-based definition. It defines them as "maritime routes that showcase low- and zero-emission lifecycle fuels and technologies with the ambition to achieve zero greenhouse gas emissions across all aspects of the corridor in support of sector-wide decarbonization no later than 2050." The emissions reductions should be quantifiable and measurable.

Green corridors function as 'special economic zones at sea'. They have nodal points for fuel production, and ship operations. They are supported with special policy and the regulatory environment. If successful, in terms of measurable reduction in the greenhouse gas emissions from ships, the model can be replicated in other shipping routes.

These corridors are digitally enhanced to eliminate paperwork and increase efficiency. Digital tools such as APIs will be structured into the system to not only support deployment of low- and zero-carbon ships, but would also entail improvement in data flow in container shipping. But digital synchronization across the length of the supply chain is still a challenge. The seamless transmission of data from one system to another, across geographical borders between multiple stakeholders along the supply chain is still beset with problems.

Once the APIs are established there would be substantial improvement in visibility for freight solutions providers giving them real-time responsiveness and as a result, greater reliability, and a better customer experience.

With the availability of the standardized data via APIs, solutions providers, freight forwarders and other third parties can easily integrate real time data into their internal systems which makes their operations vastly more efficient.

The main workhorse document that concerns here is the Bill of Lading (BL). Adoption of an eBL by regulators, banks and insurers is still a way off. It has been around for almost two decades, but has resisted all attempts to enter the system. Its adoption into the digital world would greatly enhance the speed of operations along the length of the chain.

Alternative fuels have their own challenges. What makes a good fuel? An ideal maritime fuel should have several attributes. It should be an efficient energy carrier. Have high energy content. Safe to use and store. Its production should be cost competitive and should have minimal environmental impact.

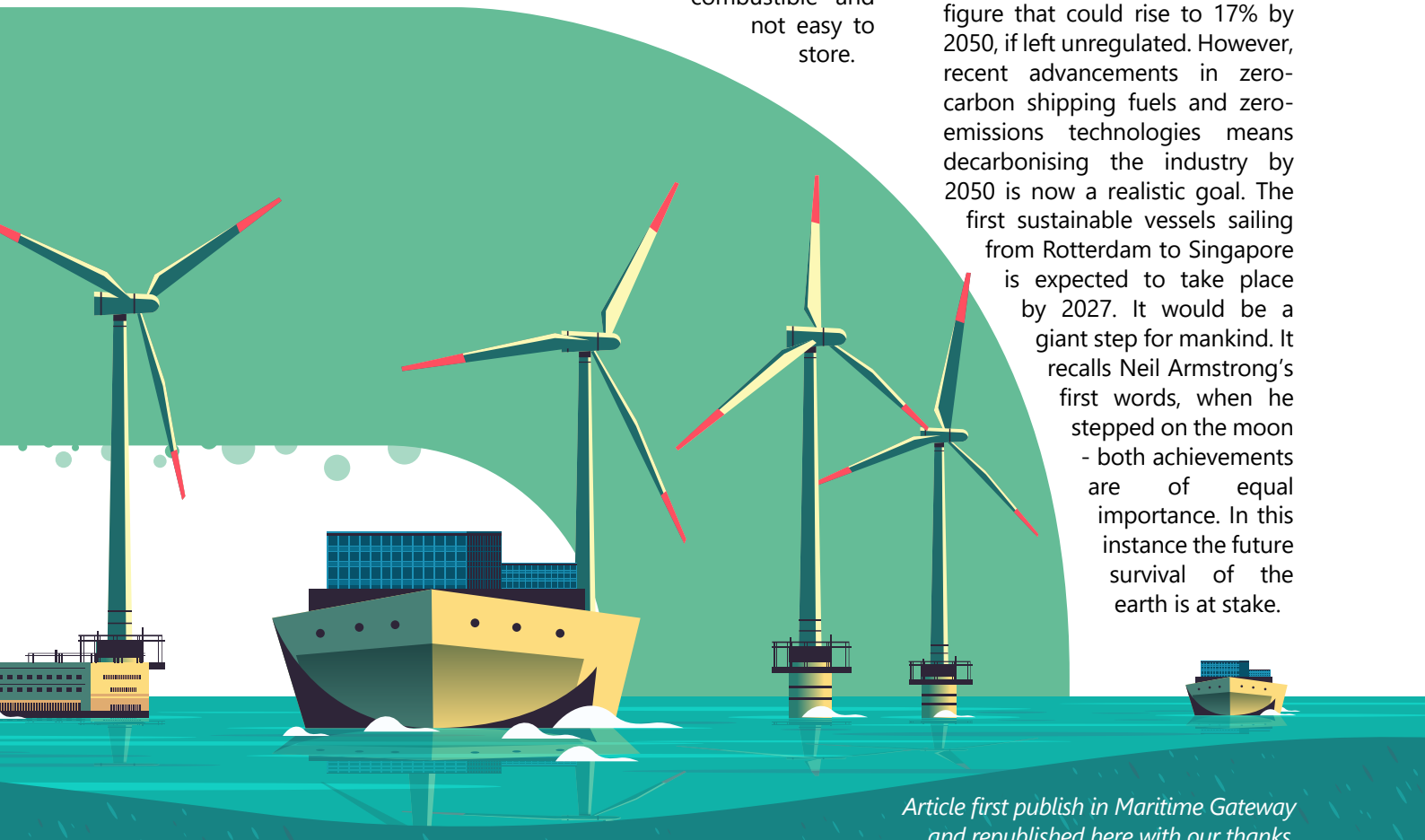
Shipping lines largely use Marine Gas Oil (MGO) and low-sulphur fuel oil. Sustainable alternatives such as biofuels, including biogases, are increasingly being used. Other alternatives such as chemically synthesized methane, hydrogen, and hydrogen-based fuels including ammonia and methanol are still in the trial stage. However, its utility as a green fuel would depend on whether or not the process produces GHG during production.

Several clean fuels are emerging for maritime applications. Hydrogen is the most abundant element. It is present in water. Every molecule of water has two atoms of hydrogen. It has the highest energy content of all chemical fuels. Hydrogen can be produced through renewable energy, which makes it a zero-GHG emission source of fuel. It is highly combustible and not easy to store.

Ammonia is a compound of 3 atoms of hydrogen and 1 atom of nitrogen. Ammonia is a good source of hydrogen. Ammonia is easier to store than hydrogen. Production of Ammonia is also through renewable energy. Pilot projects for production of ammonia as a fuel are progressing, but it is not yet usable on an industrial scale.

aMethanol is an organic chemical that has four atoms of hydrogen for every molecule of methanol. It can be made from corn and other plant materials. Methanol is already available as a shipping fuel today; however, its future as a zero-GHG emission fuel depends on how it is produced. Different fuels bring in their own limitations. A solution acceptable to all needs to be found.

Today, shipping is powered almost entirely by fossil fuels, with the industry accounting for 2-3% of global CO2 emissions, a figure that could rise to 17% by 2050, if left unregulated. However, recent advancements in zero-carbon shipping fuels and zero-emissions technologies means decarbonising the industry by 2050 is now a realistic goal. The first sustainable vessels sailing from Rotterdam to Singapore is expected to take place by 2027. It would be a giant step for mankind. It recalls Neil Armstrong's first words, when he stepped on the moon - both achievements are of equal importance. In this instance the future survival of the earth is at stake.



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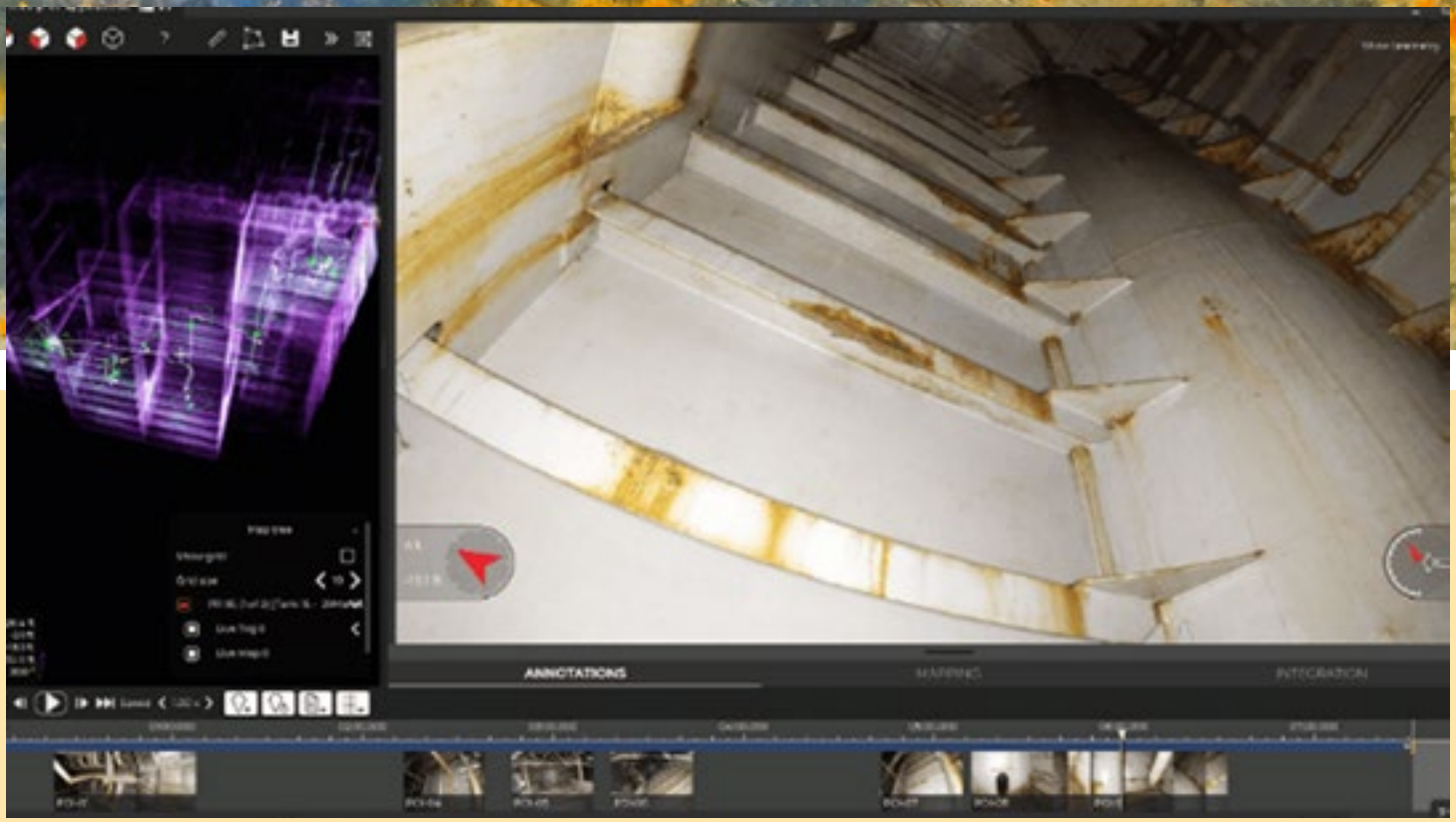
The future of tank inspections...



With the surge in technological developments in recent years, including drones, the once dangerous and filthy activity of tank inspections has changed dramatically. Here is what one company is doing in this area to ensure people no longer have to access tanks for inspection purposes.

Zentech Incorporated, headquartered in Houston is at the forefront of innovation in a rapidly evolving world where efficiency and life-safety drive progress. Zentech is revolutionizing inspections by challenging conventional practices and introducing advanced techniques for enhanced safety.

Through their cutting-edge Zentech Extended Reality (ZXR) platform, they have incorporated unmanned aerial vehicle (UAV) drones to conduct tank inspections more efficiently and securely. Leveraging the state-of-the-art Flyability Elios 3 confined space drone, the ZXR Team can access tanks without the need for human entry, scaffolding, lighting, or atmospheric testing. This advanced technology enables them to capture high-resolution 4K videos, photos, generate 3D point-cloud models, 2D CAD-based drawings, and perform thermal imaging. Regardless of the tank's dimensions, whether it is a 1.8m double bottom

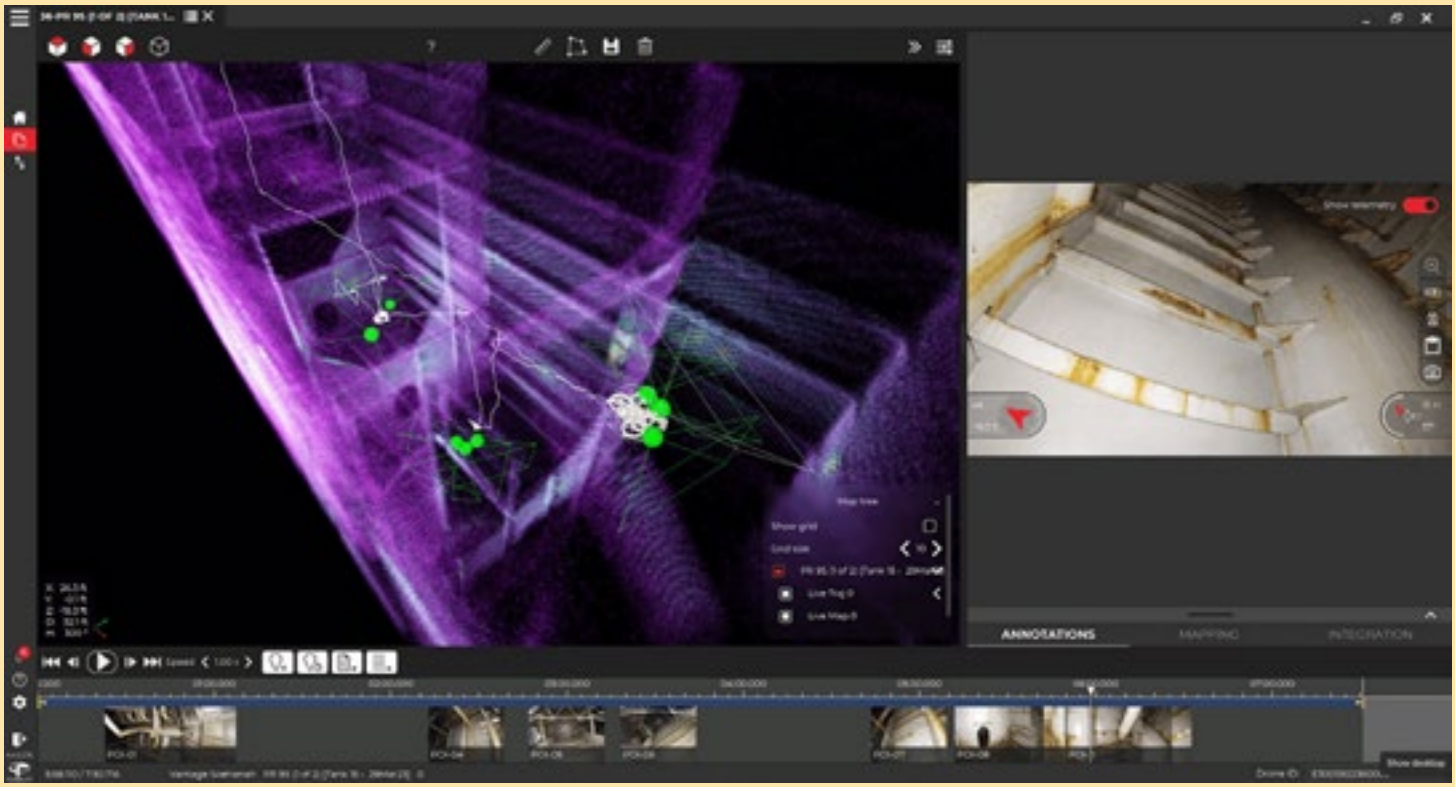
or a full-size preload tank spanning the vessel's hull height, the system can capture accurate data.

The fundamental feature to highlight is the elimination of human entry into these spaces. This visual-based inspection tool enables comprehensive tank assessment while removing potential life-safety risks. Whether it is a roustabout or a class inspector, individuals no longer need to enter the tank until work commences or further examinations are required.

Ravi Maini, Director of Operations and ZXR Team Manager, has nearly two decades of firefighting experience. He emphasizes the paramount importance of life safety. "With our solution, we eliminate risks for individuals that would otherwise need to enter these spaces, ultimately saving lives, time, and costs," he says.

Another key feature is the efficiency of capture. In a recent project, the ZXR Team successfully captured 31 tanks within just 2.5 days. This achievement not only minimized vessel downtime but also exceeded client expectations by enabling visual inspections and facilitating effective planning for the vessel's upcoming 5-year survey by the class society. This efficient tank inspection process only required the two-person ZXR Team and a single roustabout to open and close each tank's manhole. Detailed reports provided to the client highlighted Points of Interest (POI) marked with low, medium, high, and critical notations/recommendations. These POIs guide the client's attention, while the entre flight for each tank is submitted as a comprehensive deliverable, allowing clients to interpret the data at their own pace.

Image quality and its applicability to various use-cases are among the notable features of our technology. Our system ensures exceptional image quality with 4K video and imagery, enhanced by the illumination of up to 10,000 lumens of light. This combination guarantees the production of high-quality graphics as the sole deliverable. In our comprehensive reports, photos of Points of Interest (POI) are time-stamped, allowing for easy reference within the corresponding video footage. Furthermore, the precise location of each image within the 3D point cloud is indicated. It is worth noting that the captured 3D point cloud enables accurate measurements with a precision of +/- 2 cm. This level of accuracy is consistently maintained when the point cloud is integrated into CAD-based software, ensuring reliable and precise data for further analysis and utilization.



Left side of screen: 3D Point Cloud showing position of camera within the model, camera angle and elevation within tank. Right side of screen: Photo capture within video of specific POI.

Traditionally, tank inspections have been arduous endeavours, involving scaffolding, confined space permits, and uncomfortable working conditions in poorly ventilated and humid areas. Neither roustabouts nor inspectors enjoy entering these spaces. However, Zentech ZXR is transforming the landscape by offering innovative solutions and ushering in a new era that replaces old practices.

For more information go to **https://bit.ly/3CpuWIY**.

Torqeedo announces a new battery option for its Deep Blue series of electric drives

The new battery uses lithium iron phosphate (LFP) chemistry and delivers 80kWh of energy storage, twice the capacity of the previous generation of Deep Blue batteries.

"The new Deep Blue Battery 80 doubles the range and runtime for Deep Blue systems," said Fabian Bez, Torqeedo's CEO. "This new battery marks one important step in our new strategy to make Torqeedo even more customer-centric by providing optimised products for specific market segments."

The new battery's cell-to-pack architecture integrates individual battery cells into a pack without the need for intermediate modules or components. The construction offsets the lower energy density of LFP batteries and enables a more compact footprint.

Cheetah unveils electric-ready RIB

Cheetah Marine has revealed what it believes to be the world's first electric-ready RIB, the Cheetah R630. Designed in partnership with RS Electric Boats, the 6.3m RIB comes with either a petrol or diesel outboard but can be converted into a fully-electric RIB at a later stage.

Even using its fossil-fuel engines, reduced emissions are possible thanks to the RIB's lightweight GRP construction which enables a smaller engine to be fitted. The company reports it can achieve 25 knots with a 50hp outboard.

"The R630's been born out of the DNA of Cheetah Marine which is all about efficiency, working platforms, and using smaller engines which deliver performance and also offer fuel economy," said Jon Partridge, RS Marine Group chief executive, adding that the R630 is probably the world's only 6m RIB with an option for a diesel outboard engine.

The R630 also features a completely flush, self-draining deck which can be designed to a customer's unique specifications. Fuel is stored underdeck giving even more deck space.

New era of acrylic topcoats from Alexseal

Acrylic Topcoat X is the newest addition to the Alexseal coating portfolio. It has been formulated to redefine the marine acrylic coating market with brilliant paintwork results and simple, time-saving application.

A successful application result on a yacht depends not only on the quality of the material but also on the application process and its conditions.

The development of Topcoat X considered different impacts that face boatbuilders and yards during application conditions, such as temperature, humidity, and dust. Fast-drying properties help reduce dust inclusions in the coating layer and minimise time-consuming rework. If dust inclusions do occur, excellent buffing properties allow for a fast and straightforward repair when needed.

A high pigment load in the coating offers excellent coverage per square foot and full coverage with no show-through in two coats for most colours. The finish is above the level of existing acrylics in the yacht market and equals polyester topcoats. Less corrective work, fewer coats, easy handling, and proven application parameters provide a quick and smooth path to a high-gloss finish with exceptional DOI.

YANMAR introduces SD60 sail drive rope cutter

YANMAR Marine International is introducing its first rope cutter, an easy-to-install safety feature designed solely for sailing yachts equipped with the YANMAR SD60 sail drive and fixed two or three blade propellers. Suitable for both mono hulls and catamarans, the YANMAR SD60 Rope Cutter is ideal for a range of cruising sailors, charter boat operators and sailing schools, to enhance safety and reduce maintenance costs and downtime.

The new YANMAR option is a circular saw blade mounted directly onto the shaft behind the propeller. It turns with the shaft to effectively stop ropes, weeds, plastic and fishing lines from jamming between the cutlass and the propeller, removing the hazard almost instantly before bearing or other mechanical failures can occur.

Justin Hogen, Product Manager, YANMAR Marine International (YMI), said: "As the industry's first rope cutting solution designed exclusively for the SD60, the YANMAR Rope Cutter provides a simple and effective solution, preventing the need for external intervention should the propellor become compromised. With a rope cutter fitted, rope, weeds and lines are removed quickly, without reliance on the reaction and experience of the skipper and avoiding the requirement for crew to go overboard to manually remove the entanglement."

Award winner launches electric inboards

ePropulsion scooped the Innovations Showcase award for Power and Propulsion at the Seawork show. The engines, which could be used in workboats up to 12 metres, are sized between 10kW and 40kW, which equates to about 30 and 80 diesel horsepower, says Ricky Cole, who runs technical development.

The batteries used are lithium iron phosphate, which are far less prone to exploding than their lithium-ion counterparts, and although they are less energy dense they have a much longer life span.

"The MCA has approved these on a commercial fishing vessel in Scotland," said managing director Steve Bruce. "We are offering the complete solution - the batteries, the control system, the propulsion - everything. It can also be integrated with the ESSA so from the fleet manager's point of view they can get all the information they need."

Mercury Racing unveils new 500hp outboard

Mercury Racing has introduced a 500hp supercharged V8 outboard for owners of fast luxury sport boats. The V8 500R introduces a host of new components engineered to complement the raw power produced by the engine and the challenging demands of extreme-performance boating.

"Capable of delivering more than 500 horsepower in a wide range of conditions, and weighing as little as 720 pounds, the 500R establishes a new benchmark for outboard power density," says Stuart Halley, Mercury Racing general manager. "This motor offers incredible mid-range punch and pulls with unrelenting authority all the way to wide-open throttle. This is the most exciting production outboard to ever emerge from the Mercury Racing shop."

The 500R delivers 50 more horsepower and 10% higher torque than the 450R model. Its 4.6-liter 64-degree V8 FourStroke powerhead is boosted by an exclusive Mercury Racing supercharger. The engine is designed to perform on pump fuel with a minimum 89-octane (95 RON) rating.

To handle this new level of power and to satisfy the most demanding performance boat owners, the 500R features upgraded component designs in the powerhead, cooling system, midsection and steering system. An all-new, 5.9" diameter gearcase, available in R-Drive and R-Drive Sport configurations, efficiently transfers the power to the water while delivering outstanding durability, handling characteristics, and cooling.

New patented fusion technology

Incidence Sails has introduced Aluula Composites onboard the 60ft yacht Biotherm in the around the world sailing race, The Ocean Race. The new generation of ultra-light, strong, and recycle-ready composite material, Aluula Durlyte, has taken two years of testing, both on and off the water, and is now being commercialised.

The material uses a patented, fusion technology to bond technical films to a UHMWPE core. It is primarily being used for critical sail reinforcement areas such as batten pockets, bolt ropes, and high wear points including stanchions and spreaders with additional applications for the material including deck sweepers and sail bags. The material is said to have ten times the abrasion resistance of competing materials and an extremely low friction surface.

Other features include the fact that the material doesn't absorb water, is bacterial growth resistant, and accepts heat welding so it can be seam taped and is thermoformable. It is a single polymer and recycle-ready.

GlobalFix V6 EPIRB laynched by ACR Electronics

Safety and survival technology manufacturer ACR Electronics has announced the launch of the mobile connected GlobalFix V6 EPIRB. It offers a full-featured and versatile option for recreational boat owners and commercial operators. The new ACR EPIRB with Return Link Service (RLS) is now shipping to global distributors.

The EPIRB V6 is an effective safety solution, whether cruising, fishing, working or sailing offshore. Compatibility with RLS alerting ensures the beacon owner will receive a notification to confirm that the international satellite system has received the distress message and location. With NFC (Near Field Communication) technology introduced with the free ACR mobile app, beacon owners can connect to a smartphone to check, current battery life, self-tests results, and beacon diagnostics.

The rugged, robust beacon, with 10-year battery life, includes GNSS (Global Navigation Satellite System) positioning, 406 MHz Cospas-Sarsat distress signal with MEOSAR compatibility and 121.5 MHz local homing signal.

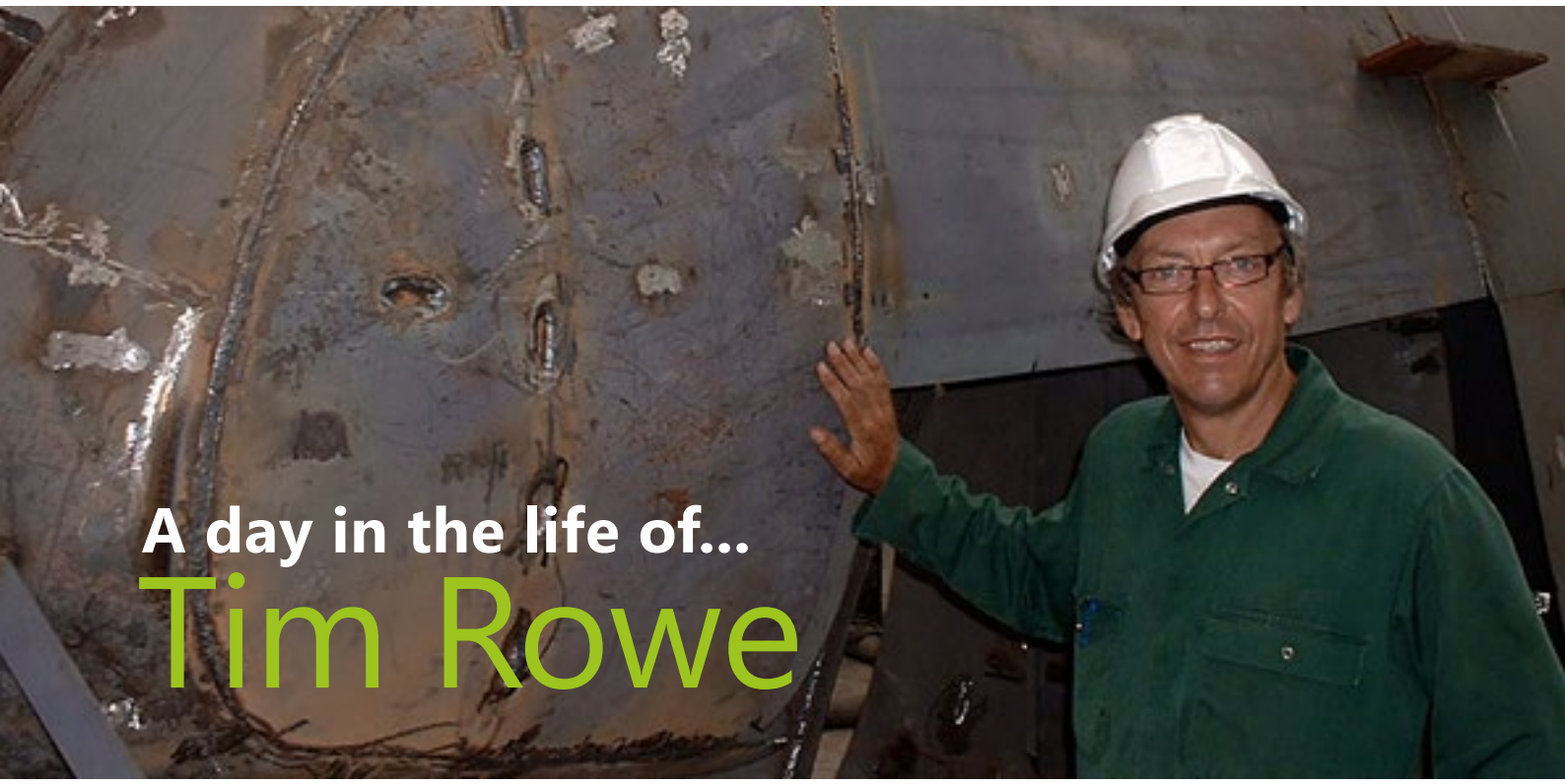
New liferaft from Seago conforms to exacting standards

Supplier of marine safety and water sports equipment, Seago, has launched its new Cruiser Plus liferaft, which is compliant to the latest ISO 2022 standard.

Certified according to ISO 9650-1 Type 2, the Cruiser Plus liferaft is the latest version of Seago's Sea Cruiser liferaft. The liferaft features a new boarding ramp installed in place of a weighed ladder, making boarding easier. It comes packed in a newly designed valise or slimline canister, with a polished finish and is available in sizes from four to ten persons.

"The new ISO standard for liferafts is now in full force and our dedicated team have been working tirelessly behind the scenes, to bring our current range of liferafts up to the new and latest requirements," said Chris Lake, technical director of Seago. "As a manufacturer and supplier of safety equipment, it's vitally important that our products conform to the industries exacting standards, ensuring we deliver the best possible solutions to our customers."

The Cruiser Plus features twin independent butyl rubber chambers for increased buoyancy, four x 55 litre water ballast pockets for additional stability and an insulated floor for increased heat retention.



A day in the life of...
Tim Rowe

Tim Rowe is an experienced yacht and small craft surveyor, these days happily living and operating in Palma, Mallorca. In this interview with Mike Schwarz, Tim talks about his life, work, hobbies and his love of marine surveying.

Q1. I know little about your early life Tim but would like to know more. How did your journey into surveying begin and were you an instant success? Did you fall into surveying almost by accident or was it part of a deliberate career path?

My journey into surveying began a long time before I realized it was even a possibility. My dad had long held grand plans for me to go into accounting or insurance but the schoolboy in me wanted to drive trains, fly planes or build ships. After many deep discussions and finally ruling out the first two, I finally got my way and left home to start an apprenticeship with Appledore Shipbuilders in North Devon. College, however, on day-release in Devonport inside the Naval Base was full of wonderful subjects about ships, their construction and stability.

The final six months of my time in Appledore as a shipwright was spent in the Planning Office and this was just before computerisation.

A quick flash through my CV took me to a foundry, CNC engineering, marine equipment manufacturing and managing a boatyard. It was during the boatyard period that I started a yacht brokerage and later went to work for a well-known chain. During the 10 years or so that I was involved in selling and repairing boats I often felt that I was on the wrong side of the fence. I also noticed that in those days, surveyors drove nicer cars than the brokers so when I got made redundant, within a week I was enrolled on courses to retrain as a surveyor! In the intervening years I can't think how many times I have referred back to my shipyard days as a point of reference. To answer the question though, it was part accident and part deliberate but it would be pushing things to say it was an instant success!

Q2. What in your opinion makes a good marine surveyor?

The accumulation of knowledge and ability takes place over time as more and more vessels are surveyed. Experience is the key to applying that knowledge and ability appropriately. Each vessel has to be seen with fresh eyes, no prejudices, independently and objectively. Every single one has a story to tell about maintenance, use, upkeep and defects to provide a complete history. In short, the vessel shows me what I need to know, so a good surveyor needs to see as well as look, listen instead of talk and at all times avoid becoming complacent.

Q3. Which types of surveys have you found most satisfying and why?

Real satisfaction comes from a survey that is planned to lead to a full-blown refit. This is what happened three years ago when a former Oyster owner decided to go for something completely different. This led to the survey of a 1948 Owens 40 in Greece followed up with a huge refit locally in Mallorca which is the new base. Over a period of just under two years (covid slowed us up a bit) the yacht was transformed. Refastened, new horn timber, new floors and frames, new tanks and plumbing, new electrics, including an induction hob running off an inverter, complete refinishing internally and externally, new upholstery and a new life. The yacht was saved from falling off a cliff-edge.

Q4. Of all the tools of your trade, which one is most used, your favourite, and why?

The cliché is of course the hammer but I would have to say, my favorite tool and certainly my most used tool is my mobile phone. Apart from the secondary use for making calls, it gets used as a: torch, level, camera, glass thickness measurement, note taker, recorder, real time researcher and the list goes on...

Q5. What is the single most important thing you have learned as a marine surveyor over the years that you would like to pass on to the next generation of surveyors?

Eeverything thing matters. Every detail counts. If you genuinely make a mistake - own it. Sorry, that was three!

Q6. How important is it for those making their career as a surveyor to study, gain technical knowledge, keep up-to-date with industry developments and seek out an experienced mentor?

I cannot think of any other way it could be accomplished. Furthermore, it is fascinating and provides great intellectual challenges. My perception about mentoring is that the term is used more than it is practiced in a structured way. That's a shame. Mentoring is a two-way street as well as the best way to apply all that newly found knowledge.

Q7. I know you are currently mentoring a younger surveyor and I am sure you have discussions about the differences between when you started and what he is facing today. What would you say are those key differences and what are the key challenges for surveyors in today's marine world?

A younger surveyor has far greater opportunities to study and gain qualifications but far fewer opportunities to come from a closely related practical background. When I started it was the other way around. Mentoring is the ideal means to balance the two. It is also very good for a mentor to be challenged on what might be entrenched views. In my view, being mentored is a fast track to becoming a competent surveyor and it doesn't have to have an end point. There has been reluctance to mentor in order not to train the opposition. Remote mentoring is now very easy and takes away that problem. In my case the problem doesn't exist because my mentee is already part of my organization.

Q8. What is your vision on how new technology might impact the surveying profession over the next decade?

Everyone is talking about AI. My hope is that it can be used as a tool and not as an entity. For me it is a bit like my mobile phone. I have no idea how it works but I do know how to use it. We are looking closely at report writing software where AI may have some relevance. I can also see a use in diagnostics where large quantities of seemingly unrelated data can be processed to arrive at the best solution. I feel at my age I will be watching AI from the sidelines but with much interest.

New production processes, new materials and moves to net zero will provide plenty of work for us, don't worry about that.

Q10. How long ago did you relocate to Palma, Mallorca and was it surveying that drew you to this idyllic island in the Mediterranean, the lifestyle, or a mixture of both?

I relocated to Mallorca in 2007. Many people say how they would like to do something similar when they retire but most don't. Grown up children in their own careers meant the move was easier and the Mediterranean lifestyle, especially Mallorca was very appealing. The reality of moving into a different culture is challenging and HMRC has nothing on the Spanish equivalent! Learning the language is essential for the long haul and as I found out, surveying is an eminently transportable career. Palma is a major large-yacht centre.

Q9. At some point all surveyors have to hang up their tapping hammers, but what unfulfilled surveying aspirations do you still have, if any.

I am planning to pass on my tapping hammer and so we are in the process of creating a core business that holds the licenses, intellectual property and the customer base. Generally, when a surveyor retires, all that accumulated knowledge, experience and information is lost. That is a sad waste of resources.

We are setting up a limited company whose name will not be associated with any one person. At the moment we have a core of 3 persons including my surveyor in training. With our planned expansion of services, we foresee the core growing to 5. At the same time, we are setting up formal agreements with peripheral service providers to include riggers, engine specialists, ultrasound and scanning specialists and electronic experts. This allows us to provide packaged services to customers under central control and quality assurance.

In this way I can transfer my experience and knowledge into the new company and gradually sell my way out as newcomers take over. We will be making further announcements in the Autumn.

Q11. What was the last good book you read?

Interesting question. A dear friend of mine was moving house and gave me a number of boxes full of books. My first thought was to pick out authors that I recognized and subjects that I knew I would enjoy. That ended up being very few of them, so I decided to work my way through all the boxes, one by one and in no particular order. I ended up reading novels and genres that I would never have pulled off the shelves and with very few exceptions, got real pleasure delving into the unknown. I would recommend this to everyone. Go to a second-hand book shop and just pluck a random selection. Be prepared to be surprised!

Q12. For anyone planning to visit Palma, what would you recommend they must see and do?

Unquestionably stroll around the old-town. This starts across the road from the harbour area and finish off in a tapas bar before going on to a music night somewhere close. During the day look left and right through the many gates. Palma had a high concentration of palaces for the European nobility. Through those gates are some of the most exquisite courtyards.

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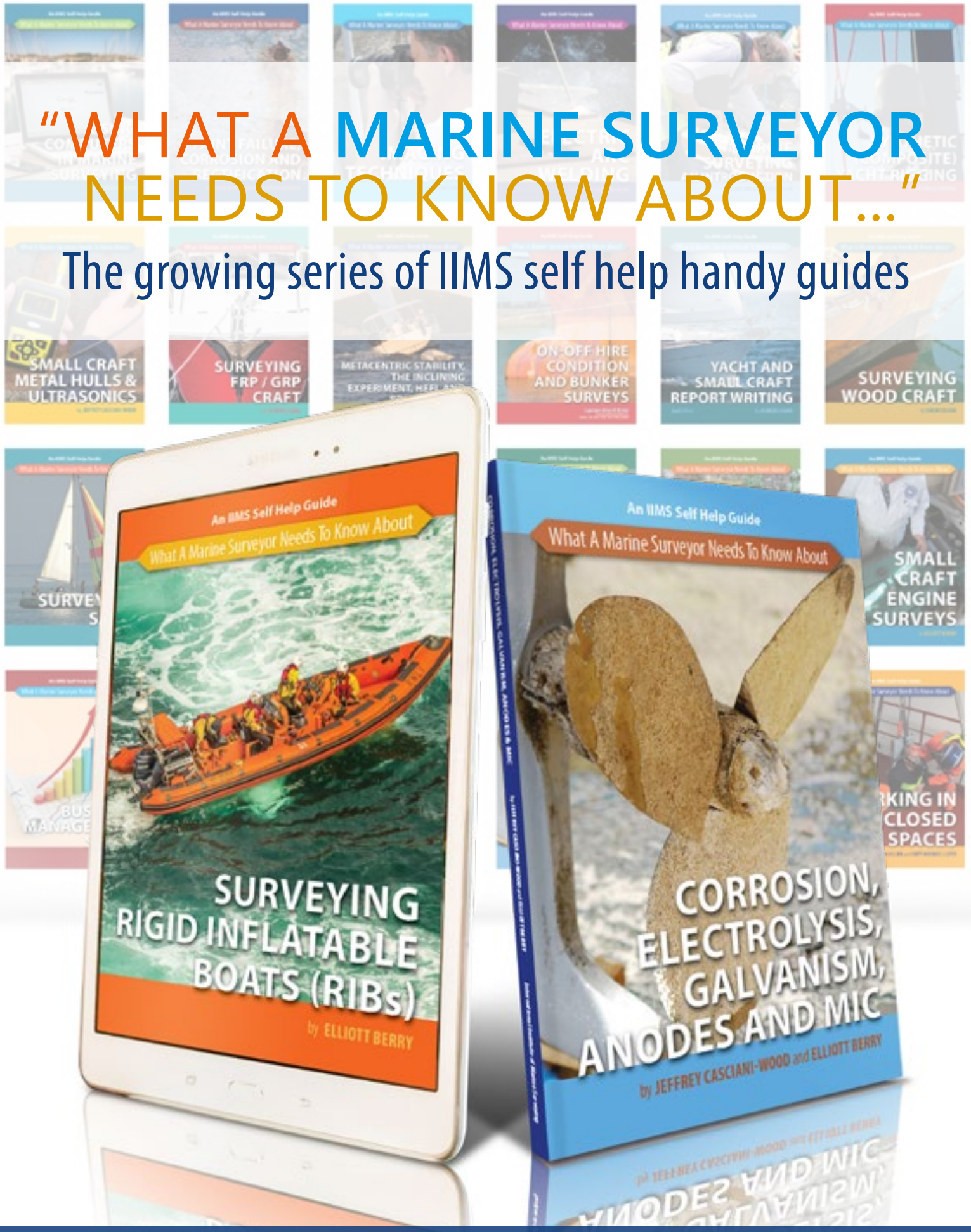

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