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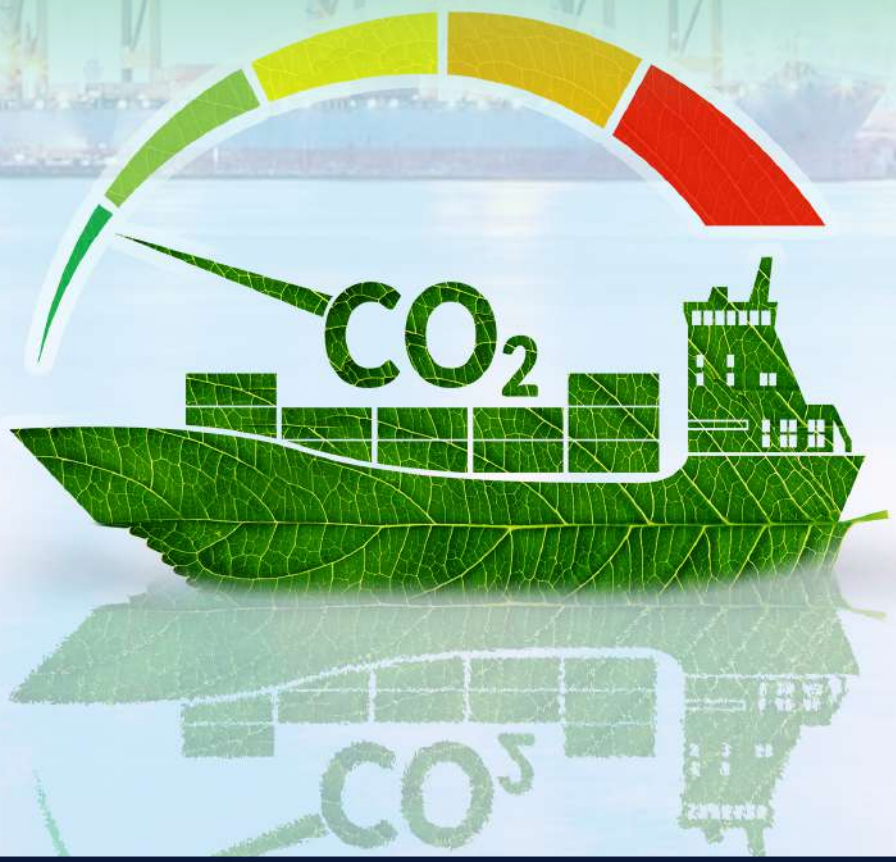
Green Transportation imperative for a sustainable future



Shipping through the eyes of the "Next Generation" - Capt. Melvin Mathews

Decarbonisation Toolkit- Decarbonising the Maritime Industry for a Better, Greener Future - Inmarsat

The Growing Danger of Cargo Fires in Container Shipping - Naveen Gavara

Pallavi Naik
Editor-in-Chief

The shipping sector is representing 3% of total CO_2 emissions and its adverse impact on the environment is the increasing concern. Recognizing the essentiality, the International Maritime Organisation (IMO) aims to reduce the Green House Emissions from International Shipping by half by 2050.

Achieving this is a difficult task and needs a lot of effort and co-ordination by Policy Makers & Regulators, Port Authorities, Shipping Lines, ShipBuilders and Other key Stakeholders of the industry. Various initiatives like Alternative Fuel, Ballast Water Management, Slow Steaming of the Ships, Reducing Empty Containers, Implementing Exhaust Sulphur Scrubber Systems, Green Shipping Corridors and various other possible solutions are being discussed and some are already being implemented globally to achieve the set target for Green Shipping.

The succession of the ultimate motive is not subjected to any one body but it's the combination and co-operation of the entire supply chain to lead the industry in Efficient and Sustainable manner.

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Content

Cover Story

Articles

Green Transportation imperative for a sustainable future

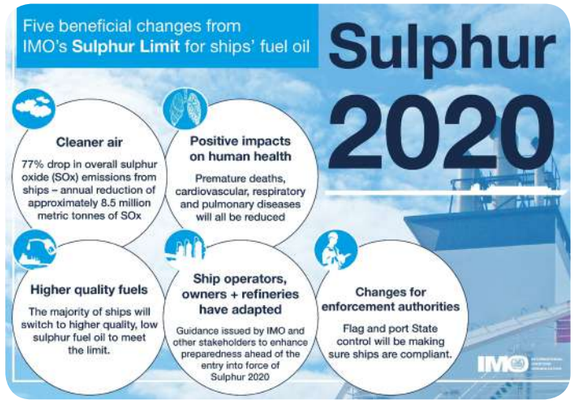
The shipping industry uses more than 300 million tons of fossil fuels every year, roughly 5% of global oil production: ***Camille Bourgeon***, a specialist in air pollution and energy efficiency in the marine environment at the IMO.

Cargo ships of different types and sizes are powered by large marine diesel engines, which can consume large quantities of fuel. A cargo ship could burn 20 to 400 tons of fuel per day, depending on its size and speed; if findings are to be believed, that's equivalent to the amount of fuel used by approximately 1,000 cars in a single day.

Any seagoing vessel that contributes towards improving the present environmental condition can be labelled as a 'green ship'. Green ship technology adopts procedures to decrease emissions, consume less energy, and be more efficient.

It was also learnt (from a report) that the shipping industry consumes 300 million tons of fuel every year, releasing around 3% of the world's carbon dioxide emissions into the atmosphere. Green transportation, with the assistance of green shipping technology, plays an important role in decarbonization. The International Maritime Organization (IMO) continues to endeavour to reduce the 'harmful' impact on the marine industry by regulating exhaust emissions, anti-fouling, ballast water, and more.

In all details related to shipping and shipbuilding — from building of a new vessel and through its decommissioning, the environment must be considered. As global activities and businesses continue to grow, transoceanic shipping will grow too. Hence, the shipping industry and its regulators not only see a need for change, but are actively involved to make it happen. Turning away from traditional petroleum-based marine fuels to low-carbon alternatives will considerably reduce shipping's climate impact.



The IMO 2020 regulation, which limits sulphur in ships' fuel oil, was enhanced from 1 March 2020, with the entry into force of a rule to ban the carriage of non-compliant fuel oil. The 'regulation' limits sulphur in ships' fuel oil to a maximum 0.50% (reduced from 3.50%). The regulation has been in force globally since 1 January 2020, under IMO's MARPOL treaty, with benefits for the environment and human health from a reduction in sulphur oxides in the air.

The IMO has called for ships to halve their total greenhouse-gas emissions by 2050 and the demand for IMO-compliant products will continue to rise.

Health experts had estimated that once the 2020 sulphur cap comes into effect, cleaner marine fuels will reduce ship-related premature mortality and morbidity by 34 and 54%, respectively, representing a ~2.6% global reduction in particulate matter 2.5 ($PM_{2.5}$) cardiovascular and lung cancer deaths and a ~3.6% global reduction in childhood asthma. According to IMO, five changes for sulphur limit are: Cleaner air, Positive impacts on human health, Higher-quality fuels, Ship owners and operators' adoption, and Changes to enforcement authorities.

The complementary International Convention for the Prevention of Pollution form ships (MARPOL) amendment prohibits the carriage of non-compliant fuel oil for combustion purposes for propulsion, or operation on board a ship — unless the ship has an approved exhaust gas cleaning system (scrubber) fitted.

"IMO and various governments have set ambitious targets for zero emission towards a sustainable future. There are many new technologies under development, and trials at various stages. ClassNK is collaborating with front-runners to support these initiatives by providing support for alternative designs, Approvals in Principle (AiP) and Innovation Endorsement. A few viable technologies could emerge — may be Ammonia, or Hydrogen, or Carbon capture. We are gearing up for all of them."

– **Sumithran Sampath**, General Manager (India & Sri Lanka), ClassNK

In designated emission control areas (ECAs), the maximum sulphur limit in fuel oil is 0.10 %. The four ECAs are: the Baltic Sea area; the North Sea area; the North American area (covering designated coastal areas off the United States and Canada); and the United States Caribbean Sea area (around Puerto Rico and the United States Virgin Islands).

Green Shipping solutions include: Switching to low-sulphur fuel, Slowing ships' travel time, Incorporating a ballast-free system, Using LNG and similar marine fuel options (including green hydrogen), Implementing an exhaust scrubber system, or sulphur scrubber system, Using speed nozzles to save fuel, Applying good quality anti-fouling hull paint, Having a proper waste heat recovery system, Using wind energy with the sail and kite propulsion system, Using exhaust gas re-circulation system, Streaming underbelly bubbles, Employing submarine robot cleaners to improve fuel efficiency, Plying battery-powered boats, Using rotor

sails to harness the wind, Reducing fuel by using more efficient steering gears, Reducing empty containers, Using the Sandwich Plate System, and Applying cargo tank coatings with improved cleaning capability.

Organisms and pathogens found in ballast water and sediments in ballast tanks have had an economic and ecological impact on marine biodiversity in many regions. Hence, ballast water management is quite important.

IMO World Maritime Theme 2022

'New technologies for greener shipping' had been chosen as the World Maritime theme in 2022, reflecting the need to support a green transition of the maritime sector into a sustainable future. This theme provides an opportunity to focus on the importance of a sustainable maritime sector and the need to build back better and greener in a post pandemic world. It (the theme) will allow for a range of activities to delve into specific topics related to promotion of inclusive innovation and uptake of new technologies to support the needs for a greener transition of the maritime sector, especially in the context of developing countries, and in particular the small island developing States (SIDS) and least developed countries (LDCs).

Also, the theme is linked to the United Nations Sustainable Development Goals (SDGs), particularly SDGs 13 and 14 on climate action and sustainable use of the oceans, seas and marine resources; SDG 9 on industry, innovation and infrastructure; and SDG 17, which highlights the importance of partnerships and implementation to achieve these goals.

Decarbonization, marine plastic litter, and biofouling are among the topic areas already being addressed by the major projects of IMO, including the Global MTCC Network (GMN), GloFouling Partnerships, GreenVoyage2050 and GloLitter Partnerships. All of these projects aim to support and promote innovation and green technologies.

Green Shipping Corridors Framework

In support of the effort to achieve global net-zero greenhouse gas emissions by no later than 2050, and in support of the effort to achieve zero greenhouse gas emissions from the international shipping sector by the same year, the United States is charting a course to advance domestic and international green shipping corridors.

Green shipping corridors can spur early and rapid adoption of fuels and technologies that, on a lifecycle basis, deliver low and zero-emissions across the maritime sector, placing the sector on a pathway to full decarbonization. The United States envisions green shipping corridors 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. There are multiple pathways through which a fully decarbonized corridor can be achieved. Therefore, this green shipping corridors framework provides maritime stakeholders the flexibility to choose the path that best suits their needs.

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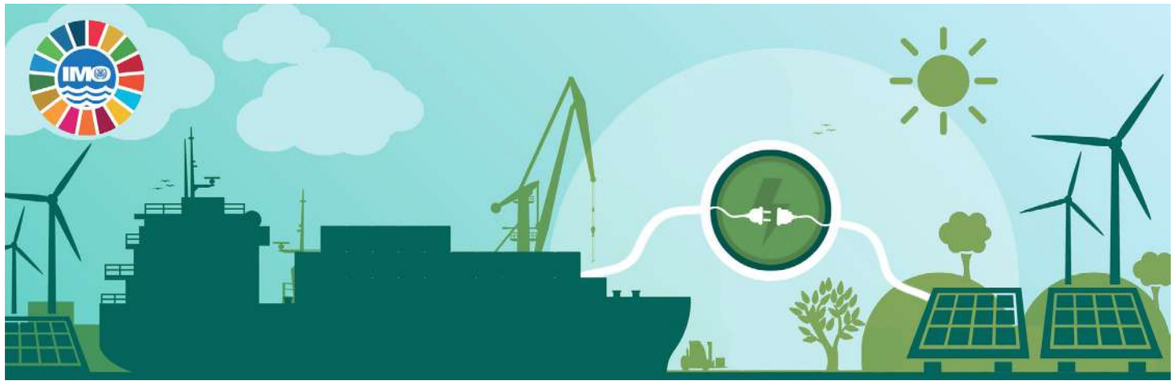
Mr. Nishit Doshi
Midknight Creatives



Article

SHIPPING THROUGH THE EYES OF THE "NEXT GENERATION"

One hears repeatedly about the future of shipping in terms of future environmental regulations and stricter local laws, the spread of digitisation and innovative technology, unique designs and more efficient ships, etc. A combination of all these is expected to bring about disruption not just in the business of shipping but in our future way of life. However, these changes will not be possible without the oil that lubricates all of these gears.

What is this super smooth enabler that we are talking about? Business, regulations, technology, design, etc. do not come out of thin air. They are made possible by people, and it is people who will make possible change and disruption. To understand the future of shipping, one needs to understand the different kinds of people affecting the shipping market today and to predict the mind-set of those who will influence the market in the near future. Let me attempt to describe these different kinds of people briefly:

Baby Boomers

Born roughly between the end of WW2 and 1965, baby boomers are sometimes also known as the "original generation". Unlike their parents they had a lot more opportunities for good work and a good life. It is believed that no generation has had it as good, because they enjoyed good benefits while working and can retire with generous pensions. The oldest among them have either retired from decision-making roles in shipping or soon will.

Gen X

Born roughly between 1965 and 1984, they are believed to be in a permanent state of anxiety, which makes them somewhat cynical and perhaps resistant to change. Those on board vessels are career seafarers and are either senior Captains or senior Chief Engineers. On the shore side, they are either senior managers or mid-level managers with some at the decision-making level. The oldest among them will begin retiring in another decade.

Gen Y

Also called the millennials, born roughly from 1984 to 2000. They are the primary shapers of modern technology and count among them the youngest self-made billionaires. They are comfortable sharing their entire life online and live by the slogan "let's take a selfie". They are generally considered to be self-regarding and selfish. The oldest among them have become Captains and Chief Engineers on board or are mid-level managers ashore.

Gen Z

Those born post-2000. They are described as the "original digital natives" or sometimes called "screenagers". Growing up in a world of political chaos and recession, they are mature, smart, play it safe and genuinely want to change the world. They are true global citizens, don't believe in boundaries and want to make the world a better place. The oldest among them are now past teenage and have either already entered the shipping industry or will do so in the coming few years.

Gen Alpha

This is the last group, born post-2010. It's said that over 2.5 million of them are born on this planet every week. Born into a world of tablets and smart phones, they are capable from the cradle of sharing a thought or an idea worldwide. It is believed that unlike earlier generations, Alphas will spend the bulk of their formative years completely immersed in virtual learning and using technology. In my opinion this generation will not use emails (it only quickened the pace of what the postman brought). They will use instant messaging, pictures and video. In an age of hyper-connectivity, within seconds they will have the capability of reaching out to and interacting with any person or stranger they choose to on the planet. Devices will not be seen as tools but as an extension of their lifestyle. They will probably be cadets on the last series of sister ships ordered today.

Generational Evolution

It is fascinating to look at how the different generations in shipping have evolved, not just in how they work and use information, but also in how they use technology. Let me attempt to explain this based on the age-old practice of sending 'noon reports' from ships.

The baby boomers thrived in an environment dominated by a top-down management style. They got all their information from their many managers, who in turn got all their information from the front line. In the case of ships, it meant a report sent at noon stating the ship's position, ETA next port and fuel ROB (mainly only the most pertinent information).

Gen-X wants to know a lot more about what is happening on board. Triggered perhaps by their generational anxiety, the daily noon report evolved into a massive onboard data-gathering process. In the morning, data is manually and systematically collected from various kinds of equipment and machinery—sensors, instruments, etc. (most of which is irrelevant and unused unless there is an incident and a need to go back and investigate what happened).

Gen-Y is not really interested in all the detailed information contained in noon reports. They find most of it irrelevant to them and a waste of time. They are keen to change things but can't do much while the management styles of the previous two generations are still in place. They believe that if new technology exists, it should be tried, tested and used. They suggest, for example, automating the noon report and distributing only the relevant information to those who need it.

Gen-Z is generally more outspoken and will not be limited by the management styles of previous generations. Since they live in a world of information overload, they ignore irrelevant information and only focus on subjects that genuinely interest them. Like much else, they view the noon report as an inheritance from "the dinosaur age", and may want nothing to do with the generic information contained in them. They will expect ship data that is specifically relevant to them, made visual in a manner they prefer. Each Gen-Z'er may demand their own unique user interface to data.

The evolution of the work habits of Gen-Alpha can at best only be guessed. Their response to the ship's noon report may be: "What is that?" and then they might google it on their personal devices to learn its history. The likelihood is that they will not work behind a desk at the company office. As digital nomads, their office will be wherever they are or wherever they go. Possibly with generative-AI they will code their own software to customise and personalise their devices to meet their work and entertainment needs, so they won't need separate work and personal gadgets. Their future will perhaps consist of unmanned transportation, and

remote monitoring and management.

What should we focus on?

Understanding the people of the future is perhaps more important than predicting the future as we see it, because how we see the future may be a lot different from how the next generation sees it. Strategies for attracting fresh talent and more importantly retaining them must evolve, taking into consideration different mind-sets and what drives them. Design, technology, and visual interfaces must cater to the needs and preferences of the generation that is going to use them.

Today there are drones, AI driven machines and one day there may be AR and VR robots and autonomous ships everywhere, that have no need for seafarers, and I hope it happens soon. However, until we get there, let us create technology that the next generation can easily use, modify and evolve. I believe that understanding the next generations should be our number one priority.

Let us know your thoughts.

Capt. Melvin Mathews
Founder of 'Capture High'
& 'Advance Higher

EMBRACING SUSTAINABLE SHIP RECYCLING:

Opportunities and Challenges for the Shipping Industry

The shipping industry is poised for a significant surge in ship recycling activities, driven by tightening regulations on greenhouse gas emissions. This optimistic outlook brings forth a busy and promising period for ship recyclers worldwide. Recent analysis from BIMCO indicates that the anticipated wave of ship scrapping candidates may surpass previous projections, propelled by stringent environmental regulations and the aging global merchant fleet. By 2032, it is forecasted that more than 15,000 ships or 600 million deadweight tonnes, equivalent to over a quarter of the current trading fleet, could be recycled—a remarkable growth of over 100% compared to the past decade.

During the previous ten years, 7,780 ships with a combined deadweight capacity of 285 million tonnes were recycled, with the majority originating from vessels built in the 1990s. However, BIMCO projections now indicate that ships built during the 2000s, a period of significant fleet expansion, will serve as the primary source of recycling over the next ten years.

The expected increase in ship recycling ushers in a cheerful and active period for the shipping industry. As stricter greenhouse gas emissions regulations prompt the early retirement of older vessels, ship recyclers are gearing up to meet the rising demand. By embracing ship recycling as an integral part of the circular economy, the industry can make substantial strides toward a more sustainable future.

Rohith Agarwal, ship recycling consultant at Alang, offers his opinion on the projected surge in ship recycling. Agarwal commends the industry's efforts to address greenhouse gas emissions through retiring older vessels. He highlights that ship recycling, when conducted in compliance with internationally recognized standards, significantly contributes to reducing the shipping sector's carbon footprint. Moreover, the circular economy benefits from the reuse and recycling of valuable materials obtained from decommissioned ships.

However, Agarwal stresses the importance of ensuring safe and environmentally sound ship recycling practices.Furthermore, he calls for addressing potential social and economic implications arising from increased ship scrapping. This includes providing support to workers in the ship recycling industry, particularly in regions heavily dependent on this sector. Additionally, measures must be taken to prevent improper disposal of hazardous materials and promote responsible ship recycling practices.

The expected surge in ship recycling presents an opportunity for the shipping industry to align with sustainability goals. By adhering to international standards and investing in greener and more efficient vessels, the industry can contribute to a more environmentally friendly and socially responsible maritime sector. Embracing sustainable ship recycling practices is not only a legal obligation but also a chance to pave the way for a brighter and greener future in the shipping industry.

Rohith Agarwal
Chief Executive officer
Guideship Consulting Services

Decarbonisation Toolkit - Decarbonising the Maritime Industry for a Better, Greener Future

"Although regulatory compliance is motivation enough to improve the environmental performance of a vessel or fleet, shipowners ought to look beyond the bare minimum requirements and embrace a proactive approach to emissions reduction based on data analysis and careful planning"

Marco Cristoforo Camporale, Senior Director Strategy, Inmarsat Maritime.

The International Maritime Organization (IMO) has set ambitious objectives for the reduction of greenhouse gas emissions from shipping by 2050, and measures such as the Carbon Intensity Indicator (CII) will be crucial to meeting these targets.

Outside of regulatory compliance, a proactive approach to emissions reduction based on data analysis can harness the full potential of decarbonisation tools to significantly improve operational efficiency while saving time, effort and money.

This is according to the Decarbonisation Toolkit – Decarbonising the Maritime Industry for a Better, Greener Future, a recently published report commissioned by global mobile satellite communications provider Inmarsat and compiled by UK-based maritime innovation consultancy Thetius.

Based on Thetius' research and drawing on the experiences of various maritime businesses, Decarbonisation Toolkit provides an accessible blueprint to realising a more efficient and environmentally sustainable shipping industry. This takes the form of a 'three-by-three' framework consisting of three phases, each containing multiple actions steps, and three domains of maritime energy transition to which these actions can be applied.

Discover, Understand, Execute

Phase 1 – Discover – involves defining internal and external emissions-reduction targets, gathering relevant data, and analysing this data to benchmark the company's performance against its goals. Here, the report recommends a gap-analysis study, for example comparing an attained CII rating with a required CII rating to illustrate the gap between compliance and non-compliance.

At phase 2 – Understand – the company uses the insights obtained in phase 1 to diagnose the challenges it faces. It then identifies the most appropriate tools to overcome these challenges and achieve its desired strategic outcomes.

In the final phase – Execute – the business consolidates all information on its challenges, identified solutions and anticipated outcomes to produce an achievable decarbonisation plan for implementation across the three energy transition domains: Operation, Ship and Human Element.

The three domains of maritime energy transition

Operation:

At the operational level, decarbonisation can be achieved using a variety of tools and processes. In September 2022, Scandinavian shipping company Wallenius Wilhelmsen announced its intention to adopt an AI-based voyage optimisation system across its 120-vessel fleet. The announcement followed the company's 18-month trial of a performance-routing solution that yielded a 6.9% increase in vessel efficiency, equating to a projected 170,000-tonne reduction in emissions when rolled out fleet-wide.

Alongside voyage optimisation, collaboration and data sharing is another means of achieving operational decarbonisation. In February 2023, KCC Chartering and integrated energy company Raízen signed a three-year contract of affreightment targeting more energy-efficient operations through improved charterer–cargo owner communications and data exchange. By minimising legs in ballast and improving the efficiency of loading and discharge processes, the partnership is expected to result in a 40% reduction in the carbon intensity of its agreement.

Other effective methods of operational decarbonisation presented in the Decarbonisation Toolkit include port-call optimisation and green corridor schemes.

Ship:

One vessel decarbonisation solution that is rapidly gaining traction is carbon capture and storage. In February 2023, ship management company Eastern Pacific announced the successful installation of carbon capture and filtering technology on board chemical tanker Pacific Cobalt. Installed in the ship's stack, the system will capture up to 40% of the vessel's carbon dioxide emissions, filtering out sulphur and particulate matter from the exhaust gases.

Enhanced hull design, meanwhile, can greatly improve vessel efficiency. In late 2018, NYK Line unveiled an 'exploratory' design for a pure car and truck carrier named 'NYK Super Eco Ship 2050'. In conjunction with a remodelled hull form that decreases water friction and reduces the weight of the superstructure, the vessel would feature hydrogen fuel cells, waste heat recovery technology and an advanced propulsion system. NYK believes its design would yield a 70% reduction in overall energy consumption compared to a conventional vessel of the same type and dimensions.

Energy-saving coatings and devices, wind power, and connectivity and data exchange infrastructure can also contribute to more environmentally friendly ships, while the deployment of alternative fuels will be critical to maritime decarbonisation in the long term.

Human Element:

The tools of a human-led decarbonisation strategy include behavioural economics and change management in addition to the formation of skilled decarbonisation teams. Crews must be trained in the new technology and processes that enable greener shipping operations, and they must be willing to embrace the changes that maritime energy transition entails.

Ultimately, the key to maritime decarbonisation at the company level is implementing an achievable, data-driven plan for the application of solutions that support greener and more efficient operations today and for decades to come. As a long-standing technology partner to international shipping, Inmarsat remains committed to supporting maritime businesses in overcoming challenges, seizing opportunities and achieving decarbonisation goals.

Article by

inmarsat

The Growing Danger of
CARGO FIRES IN CONTAINER SHIPPING

Introduction

Cargo fire risks pose a significant threat to the safety and profitability of the shipping industry. Every year, countless cargo fires occur, resulting in devastating consequences such as property damage, loss of goods, and even loss of life. The potential causes of cargo fires are diverse, ranging from hazardous materials to poor packing practices. As a result, shipping companies and individuals involved in the transportation of goods must be aware of these risks and take proactive measures to mitigate them. This includes implementing proper safety measures, adhering to international regulations, and investing in advanced fire detection and suppression systems. By prioritizing cargo fire prevention, the industry can safeguard not only its assets but also the well-being of those working within it. In this article, we will delve into the various factors contributing to cargo fire risks and explore effective solutions to minimize these dangers, ensuring a secure and efficient shipping environment for all.

Fire Risks Continue to Rise

Fire poses a significant risk in the shipping industry, leading to general average claims and total losses. In the past five years, 64 ships have been lost due to fires. The high number of containers onboard vessels increases the likelihood of fires originating from containers. Detecting and combating fires at sea is challenging for small crews of 20 to 30 people.

Even a small container fire can quickly escalate, overwhelming the crew's ability to control it and potentially resulting in vessel abandonment and loss. Recent incidents include the ZIM Charleston fire in August 2022, damaging approximately 300 containers, and the sinking of the TSS Pearl in the Red Sea in October 2022, as the crew had to abandon the ship. Fires at ports and warehouses have also occurred, such as the 2022 fire and explosion at a container depot in Chittagong, Bangladesh, which claimed the lives of 40 people.

The transportation of hazardous cargo on large vessels amplifies the consequences of fires, leading to more extensive losses and longer delays. Restoring large container ships comes at tremendous costs, and only a limited number of ports and shipyards are equipped to service and repair such vessels.

Risks from Li-ion batteries

The ongoing decarbonization and electrification efforts in the shipping industry have introduced new types of cargo, some of which are more hazardous than conventional goods. However, this shift has introduced new challenges, particularly concerning the transportation of goods containing Li-ion batteries. The increased use of Li-ion batteries found not only in electric vehicles but also in various consumer goods, has raised safety concerns in container shipping.

Li-ion batteries pose several hazards, including fire, explosion, and thermal runaway, a rapid self-heating fire that can lead to an explosion. They can also release irritating, corrosive, or toxic gases in confined spaces. Manufacturing defects, damaged cells, overcharging, and short-circuiting are common causes of battery fires. Fires involving Li-ion batteries in electric vehicles (EVs) can burn more ferociously and are challenging to extinguish fully. They can even reignite spontaneously hours or days after being seemingly put out. Unfortunately, many ships lack adequate fire protection and detection systems to effectively handle such incidents, especially given the growing size of modern vessels.

The surge in Li-ion battery demand has resulted in numerous manufacturers entering the market, raising questions about quality control. Malfunctioning or damaged batteries have been linked to fire incidents, emphasizing the need for collaboration among manufacturers, carriers, and regulators to ensure safety and reliability. Rigorous quality control measures and adherence to industry standards are crucial in minimizing these risks.

In addition to long-term solutions, preventive measures must be taken to mitigate immediate dangers. Providing proper training for staff and crew, equipping ships with firefighting equipment, improving early detection systems, and developing comprehensive emergency plans are essential steps. These measures facilitate a coordinated response to fire incidents, minimizing damage and ensuring the safety of crew and cargo.

A debate is underway within the shipping industry regarding the necessity of dedicated Roll-on/Roll-off (Ro-ro) vessels for transporting electric vehicles (EVs). Purpose-built vessels designed specifically for EV transportation can significantly reduce the risk of fire incidents. Incorporating fire-resistant materials, specialized ventilation systems, and advanced fire suppression mechanisms enhances safety standards. However, reaching a universal solution requires further research, collaboration, and industry-wide discussions.

Lower freight rates pose a challenge to fire safety and decarbonization investments. While advantageous for cargo owners, it risks the container shipping sector. Profits in the container industry have supported advancements in fire safety, decarbonization, and alternative fuels. However, worsening market conditions may hinder progress in these initiatives. Maintaining a focus on safety, sustainability, and fire prevention is crucial to prevent setbacks in the face of changing market dynamics.

Mis-Declared Cargo – A Root Cause of Cargo Fires

Mis-declared dangerous goods, such as chemicals,

batteries, and charcoal, have been increasingly linked to cargo fires. Improper declaration and packing hinder firefighting efforts. To evade higher costs, some companies try to circumvent this by labeling items such as fireworks as toys or lithium-ion batteries as computer parts for example.

Several large container shipping companies have turned to technology to address this issue, using cargo screening software to detect suspicious bookings and cargo details, while several large container operators are imposing penalties. However, currently, each shipping company and administration has its requirements, while the rate of container inspections in many countries remains low.

Progress on container ship fire safety

In 2017, the IUMI and IMO collaborated on amendments to enhance fire control provisions in containerized cargos under SOLAS. The amendment process, despite COVID-19 delays, is ongoing.

Additionally, the European Maritime Safety Agency conducted the CARGOSAFE study in March 2023, assessing fire risks on container ships. and evaluating prevention measures. The study will be reviewed by the IMO, along with industry proposals, to enhance firefighting capabilities. The private sector has also developed technical solutions, including sensors and thermal imaging, while the Cargo Fire & Loss Innovation Initiative aims to mitigate cargo fire risks.

Conclusion

Addressing these risks requires a multifaceted approach, including improved quality control, preventive measures to mitigate risks, and unified international regulations. By prioritizing safety and sustainability, the industry can navigate market challenges while ensuring the safety of crew members, protecting the environment, and safeguarding the valuable cargo being transported.

As the industry continues to evolve, collaboration, innovation, and regulatory compliance will be crucial to effectively mitigate cargo fire risks and promote a safer and more sustainable shipping industry for the future

- **Naveen Gavara** (B.Tech Naval Architecture & Ocean Engineering Student, Institute of Marine Engineering, Science & Technology (IMarEST))

Sources : 1.ACGS Allianz, Safety and Shipping Review 2023, May 2023 | 2.Port Technology, General Average declared following ZIM Charleston cargo fire, August 23, 2022 | 3. The Loadstar, Blaze-hit TSS Pearl sinks in Red Sea after crew abandon ship, October 13, 2022 | 4. Port Technology, Chittagong supply chain feeling aftershocks of container depot fire, June 27, 2022 | 5. European Maritime Safety Agency, CARGOSAFE study, March 16, 2023

ELECTROFITTING : A CALL TO REVIVE THE MARINE INDUSTRY

Are you aware that non-renewable fuel sources may eventually run out? If so, you mayalso be aware that this issue has been permeating a number of industries for a while, and the marine sector is not an exception. It is a known fact that in the past and even inthe present, the marine industry has been heavily dependent on the use of fuel to run its boats.

The main reason why the maritime industry is looking forward to moving towardselectric boats is the rising Opex, or operational expenditure and increasing competition. Not just this, but there are multiple other challenges like damage to the ecosystem, engine noise that affects both travellers and operators alike, and the newly-introduced emission norms which makes it necessary to switch over to electric boats.

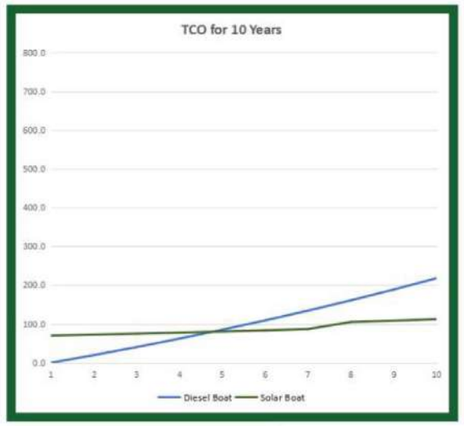
Getting a brand new electric boat to replace the conventional boats may not be an ideal decision as the transition can be highly expensive. It is in this scenario that electroretrofitting becomes the holding hand that will help with the change in the best possible way.

In this article, we are trying to understand how electric retrofitting is better for the streamlined functioning

Advantages of Electric Boats

Switching over to electric boats comes with multiple advantages, and let us look through them one by one:

1. Reduced Operational Expenditure: Through adapting to electric boats, there willbe a significant reduction in the use of fuel sources. To be a bit more clear in thisparticular context, we can take an assumed example of the expenses incurred ona diesel-driven boat and its comparison to an electric boat:



A diesel OBM powered boat with 60 HP diesel OBM taking 10 trips of 5 km consume almost 64 litres of diesel a day which translates to 19,000 litres assuming 300 days operations. With the current diesel price of 98 Rs per litre the approx diesel cost will be 19 Lakhs. Another 1 lakhs will be maintenance cost for diesel engine. So total yearly OPEX will be 20 lakhs.

We can replace the diesel OBM with a 25 kW electric OBM and 100 kWh battery pack and 5kWp PV system which cost around 70 Lakhs without compromising the operations. With the grid cost of 8 Rs per unit the annual OPEX will be approximately 2 lakhs.

From the graph its clear that vessel will break even in less than 5 years. If the solar panel array can be increased the battery size can be reduced and offers a faster breakeven

2. Bringing down pollution: There is a credible reduction in emissions like CO2, NOX, SOxandotherparticulatematters, aselectricboatsdonotproduceanykind of polluting or nauseating smell of gases that have adverse effects on the environment and marine life. The chances of oil spills also decreases drastically.

3. Better comfort for passengers : The travel in the boat is further enhanced with reduced noise and the trip or cruise becomes more aligned with comfort. The vibration of the boat caused by the engine is also considerably reduced as we switch over to electric boats.

4. Simplified maintenance and guaranteed performance for operators: Operators who function with fuel-powered boats day in and day out favour electric boats because of their smoother operating functionality and lower maintenance hurdles.

How adoption of electric retrofitting revitalises the marine industry ?

As we speak of the benefits of adapting towards a better tomorrow with the help of electric boats, there will definitely be questions hampering the industry about how to easily transition with limited expenditure. The answer to this is the new-age discovery of the process of electrofitting.

Electric boats are expensive, and disregarding fuel-induced boats is not an ideal choice, which is one of the reasons why people rethink when it comes to changing to electric boats.

The answer to the said dilemma is the new-age solution of electric propulsion retrofitting. The benefits of electric retrofitting are as follows:

1. ***Cost-Effective:*** *There is no requirement to buy a brand new electric boat, as retrofitting an existing boat with electric propulsion can help bring down the costs to a great extent. The entire hull of the existing fuel-powered boat can be used in the electrofitted boat. The amount invested towards electric propulsion retrofitting will break even within a span of five years and also extend the life of the boat to 20–25 years.*

2. ***Less time intervention:*** *Without any further delay, electric propulsion retrofitting can help the boat stay in the loop and in working mode. It takes only a few hours to convert.*

3. ***Safer for the environment:*** *The lower impact that electric boats cause on the environment is a known factor, and electrofitting aligns with overcoming this shortcoming of fuel-powered boats. There are lesser scrap vessels as the old ones can be recycled as a fully-functional one thus reducing waste accumulation.*

Let us now look at a few successful retrofitting real-life global examples:

Implementing an electric retrofitting propulsion kit with a 40-mile battery packtransformed the New York water taxi, called MV Clipper City. The adjustment reduced pollutants by 80%.

The San Francisco Bay Ferry System used electric retrofitting to reduce boat emissions in 2017. Their two classic ferries use diesel and battery generators. The ferry's emissions dropped 90%.

Yesen Sustain has been thriving to find its scope in the arena of electric retrofitting for quite some time, and the research and development invested has enabled us to bring to the table our pioneering solution, E-marine.

We have introduced our newly equipped solution and currently collaborating with two different prestigious projects which has the capability to revolutionise the Indian Marine Industry and they are:

- *Electrifying a 1500-ton self-propelled barge and signing LOI for 29 similar and larger barges to create India's largest fleet of electric vessels.*

- *We are set to electrify a 22-knot passenger yacht for a renowned Mumbai tourist boat operator.*

We base our retrofitting projects on different systems, like:

1. ***Solar Electric Boats:*** *This type of electric retrofit is done using solar panels. The solar panels are installed on the boat and convert sunlight into electricity. This is an ideal option for boats that have limited use and operate in calm waters.*

2. ***Pure electric boats:*** *These are fully operated using batteries, which are charged using shore power. Ideal for calm waters and short-range requirements.*

3. ***Electric Hybrid Boats :*** *The boats are battery-powered and have generators for charging batteries or other needs. This method works for high-end boats.*

4. ***Solar Electric Hybrid:*** *The solar electric hybrid electric boats have the benefits ofsolar panels and batteries. In case the need arises to power up those batteries,there is an additional provision of diesel generators.*

Now that you have understood the idea of electric retrofitting, this technology faces multiple issues like overheating, less functionality, lower operating temperatures and so on.

Yesen Sustain introduces the E-marine solution as a propulsion integrator. Each component of the solution is crafted to work in tandem with the others. To guarantee optimal performance and compatibility, we offer tailored solutions.

The element that makes our solution stand apart is the class-approved liquid cooledbatteries which are aligning every need to the marine industry. We are the only firm inIndia which offers this. Class-approved liquid-cooled batteries ensure:

- *High Safety Standards,*

- *Built-in Temperature Management Modules,*

- *Firefighting Modules, and*

- *Remote Monitoring*

In the era of committing to the use of sustainable resources, Yesen Sustain yearns for the use of electric retrofitting on boats and collaborates together for a better tomorrow. To make this feat achievable, there is an effective need for the Indian government to grant subsidies for converting the existing vessels to electric. Banks and other financial institutions should also come forward to provide financial assistance to end customers to help promote electric retrofitting in the marine industry.

Adopting this technology offers a number of advantages, such as decreased OPEX, decreased emissions, and improved passenger and operator comfort. It is essential for stakeholders to embrace electric retrofitting as a viable route to a more environmentally friendly future as the industry develops.

Article By

Arjun Bhaskar
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GRSE signs MoU with Kongsberg Maritime for Licensed Production of Water Jets in India

Taking Giant Strides Towards Aatmanirbharta- GRSE signs MoU with Kongsberg Maritime for Licensed Production of Water Jets in India

Kolkata: Garden Reach Shipbuilders and Engineers (GRSE) Ltd and Kongsberg Maritime (KM), Finland signed a Memorandum of Understanding (MoU) for co-production of indigenous Water Jets (WJs) of up to 3.5 MW on Monday, June 19, 2023.

The MoU was signed by Cmde P R Hari, IN (Retd), Chairman and Managing Director, GRSE and Mr Ottar Ristesund, SVP, Sales, Propulsion and Engines, Kongsberg Maritime (KM), in the presence of Vice Admiral Sandeep Naithani, AVSM, VSM, Chief of Materiel, Indian Navy.

Waterjet Propulsion Systems are extensively used onboard Indian Navy & Indian Coast Guard ships and therefore, this collaborative effort of GRSE & Kongsberg Maritime (KM) has huge market potential in the coming years.

Taking giant strides towards Aatmanirbharta, GRSE had earlier signed a MoU with M/s Rolls Royce for co-production of high speed Marine Diesel Engines. The shipyard has also recently signed a contract worth (Approx.) Rs 250 Crs for manufacture and supply of 30 MM Naval Surface Guns to the Indian Navy. ●

Damen unveils zero emissions Multi Cat 1908 Electric

Innovative vessel draws on 25 years of Multi Cat experience.

Damen Shipyards Group has announced a new vessel design that brings a significant boost to workboat sustainability. At the Seawork exhibition in Southampton on 13th June Damen unveiled the Multi Cat 1908 Electric. The vessel represents a powerful combination, pairing a quarter of a century of experience in Multi Cat construction with cutting-edge technology to make zero emissions workboat operations a reality.

A versatile work platform

The Multi Cat is a multi-purpose workboat designed for operations in both shallow and deeper waters. Over the years, Damen's Multi Cats have gained a well-deserved reputation for reliability and efficiency. Now, with Damen's ambitions firmly fixed on becoming the world's most sustainable shipbuilder. The company has developed a fully electric version fit for the future.

Damen has designed the MuC 1908 E to operate inland, in harbour and along the coast, up to 20 nautical miles from shore, undertaking diverse tasks including pushing, towing, anchor handling, buoy recovery, surveying, bunker supply, waste/oil recovery and support duties.

Proven innovation

Despite its innovative character, the vessel is based on a proven platform; the Damen Multi Cat 1908, a vessel that has demonstrated its capabilities during over 25 years of successful operation. Damen has also developed considerable experience in the delivery of electric and hybrid vessels, including tugs and ferries, examples of which can be found operating throughout the world. The MuC 1908 E is able to operate for up to twelve hours on a single charge, bringing a full day's work comfortable into range. The batteries are, additionally, able to power the vessel for up to a decade following delivery.

Connected ship technology

The Multi Cat also benefits from Damen's experience in digitalisation. The vessel features Triton, Damen's award-winning connected vessel platform. From sensors located throughout the vessel, Triton collects data to put the operator in control. As well as providing a comprehensive overview of battery performance, Triton provides the means to optimise efficiency and conduct preventive maintenance.

Total maritime solution

In line with its philosophy of supporting its clients with tailored services packages throughout the lifecycle, Damen aims to go beyond the delivery of a vessel, taking on an integrator role. In the case of an electric vessel, this can include providing consultancy and advice, for example relating to the local electricity supply and the infrastructure require to work with it. Additionally, Damen is able to provide additional equipment, for example the onshore charging infrastructure. The company also offers training for crews in order to familiarise them with the operation of an electric vessel. Jeroen van Woerkum, Commercial Manager at Damen Shipyards Hardinxveld said, "With our commitment to increased maritime sustainability, we wanted to create a versatile workboat that could bring zero emissions performance to a wide range of operations. A Multi Cat is the perfect vessel for this, thanks to its flexibility and versatility. Further to this, the MuC 1908 suggested itself for the task, having been so successful over the years. What we have done, is taken a proven platform, and combined it with the experience we have gained in recent years in electrification, to create an innovative vessel that has the potential to make a considerable impact on maritime emissions." Based on its practice of building its standard vessels in series and keeping them in stock to facilitate rapid delivery, Damen is planning to commence construction of the first MuC 1908 E in Q4 2023 at its Hardinxveld yard in the Netherlands. ●

Maersk Orders Six Methanol Powered Vessels

Copenhagen, Denmark – A.P. Moller - Maersk (Maersk) has made an order of six mid-sized container vessels – all having dual-fuel engines able to operate on green1 methanol. Yangzijiang Shipbuilding Group will build the six 9,000 TEU vessels which will be delivered in 2026 and 2027.

"With this order, we take another step in the green transformation of our fleet and towards our target of becoming net-zero in 2040. As with all our other vessel orders for the last two years, these ships will be able to run on green methanol."

Rabab Boulos
Chief Infrastructure Officer at Maersk

In 2021, Maersk ordered the world's first methanol-enabled container vessel following a commitment to the principle of only ordering newbuilt vessels that can sail on green fuels. Just two years later, the global orderbook stands at more than 100 methanol-enabled vessels.

By ordering additional six vessels, Maersk now has 25 methanol-enabled vessels on order.

"For these six container vessels, we have chosen a design and vessel size which make them very flexible from a deployment point of view. This will allow these vessels to fill many functions in both our current and our future network, thereby offering the flexibility our customers demand. Once phased in, they will replace existing capacity in our fleet."

Rabab Boulos
Chief Infrastructure Officer at Maersk

Later this summer, the first methanol-enabled vessel, a 2,100 TEU feeder vessel, will be delivered to Maersk.

About the six new vessels:

1. They have a capacity of 9,000 containers (Twenty Foot Equivalent - TEU)

2. Yangzijiang Shipbuilding Groupwill build the six vessels in China

3. The ships will be delivered from 2026 and with last delivery in March 2027

4. All of them have dual fuel engines making them able to operate on both fuel oil and methanol

5. Upon delivery, the vessels will replace existing capacity in the Maersk fleet

6. Replacing vessels in a similar size segment, the new

vessels will reduce Maersk's annual greenhouse gas emissions by about 450,000 tons CO2e per year on a fuel lifecycle basis when operating on green methanol.

1 Maersk defines "green fuels" as fuels with low to very low GHG emissions over their life cycle compared to fossil fuels. Different green fuels achieve different life cycle reductions depending on their production pathway. By 'low' we refer to fuels with 65-80% life cycle GHG reductions compared to fossil fuels. This covers, e.g., some biodiesels. "Very low" refers to fuels with 80-95% life cycle GHG reductions compared to fossil fuels. For commodity biofuels like, e.g., biodiesel for road transport, the minimum GHG savings are typically governed by standards like the EU Renewable Energy Directive (RED), and we align our minimum reduction thresholds for fuels to the RED. For future fuels like methanol where Maersk is involved in the project design and development, we strive to achieve higher GHG reductions than the legislative thresholds. commence construction of the first MuC 1908 E in Q4 2023 at its Hardinxveld yard in the Netherlands. ●

Maersk to pioneer first container vessel conversion to methanol dual-fuel engine

Copenhagen, Denmark – As the first in the shipping industry, A.P. Moller - Maersk (Maersk) will retrofit an existing ship to a dual-fuel methanol powered vessel and thereby able to sail on green methanol1. The first engine retrofit in the industry is scheduled to be conducted medio 2024 and it is the intent to replicate on sister vessels when going for special survey in 2027.

"We have set an ambitious net-zero emissions target for 2040 across the entire business and have taken a leading role in decarbonising logistics. Retrofitting of engines to run on methanol is an important lever in our strategy. With this initiative, we wish to pave the way for future scalable retrofit programs in the industry and thereby accelerate the transition from fossil fuels to green fuels. Ultimately, we want to demonstrate that methanol retrofits can be a viable alternative to new buildings."

Leonardo Sonzio
Head of Fleet Management and Technology at Maersk

Maersk has signed an agreement with MAN Energy Solutions (MAN ES) who will retrofit the engine.

"In 2021, we ordered the world's first methanol-enabled container vessel following a commitment to the principle of only ordering newbuilt vessels that can sail on green fuels. Concurrently, we have explored the potential in retrofitting existing vessels with dual-fuel methanol engines. Having teamed up with MAN ES, we are now ready to demonstrate how retrofitting vessels with methanol dual-fuel capabilities can be done."

Leonardo Sonzio
Head of Fleet Management and Technology at Maersk

Besides aiming to achieve net-zero in 2040, Maersk has also set tangible near-term targets for 2030 to ensure alignment with the Paris Agreement and Science Based Targets initiative (SBTi) methodology. This translates to a 50% reduction in emissions per transported container in the Maersk Ocean fleet compared to 2020, and furthermore 25% of its container volume will by 2030 be transported using green fuels.

Project to begin next year

Replacing engine parts and thereby making the engine able to operate on methanol is a rather complex task, but only a part of the larger retrofit operation. For instance, new fuel tanks, fuel preparation room and fuel supply system are also a part of the retrofitting the vessel for green methanol.

"Detailed engineering for the first retrofit is ongoing and the actual implementation will take place in the middle of 2024. Meanwhile, discussions with potential yards are ongoing."

Ole Graa Jakobsen
Head of Fleet Technology and responsible for the retrofit project at Maersk

Maersk is currently operating more than 700 vessels with around 300 of them being owned by Maersk.

1 Maersk defines "green fuels" as fuels with low to very low GHG emissions over their life cycle compared to fossil fuels. Different green fuels achieve different life cycle reductions depending on their production pathway. By 'low' we refer to fuels with 65-80% life cycle GHG reductions compared to fossil fuels. This covers, e.g., some biodiesels. "Very low" refers to fuels with 80-95% life cycle GHG reductions compared to fossil fuels. For commodity biofuels like, e.g., biodiesel for road transport, the minimum GHG savings are typically governed by standards like the EU Renewable Energy Directive (RED), and we align our minimum reduction thresholds for fuels to the RED. For future fuels like methanol where Maersk is involved in the project design and development, we strive to achieve higher GHG reductions than the legislative thresholds.●

1. ABB will supply two newbuild Havfram Wind NG20000X-HF Wind Turbine Installation Vessels (WTIVs) with a comprehensive bridge-to-propeller solution

2. ABB's integrated power, control and propulsion technology to enable efficiency, safety and operational flexibility for the newbuilds

3. The advanced, future-proof and next generation WTIVs will stand out for their high capacity and energy efficiency

ABB wins large systems order for Havfram Wind's two new offshore wind turbine installation vessels

ABB has secured a large order with one of the largest offshore shipbuilders in China, Yantai CIMC Raffles Offshore Ltd., to deliver an integrated bridge-to-propeller technology for Havfram Wind's two new NG20000X-HF Wind Turbine Installation Vessels (WTIVs). The vessels, incorporating the latest battery-hybrid drivetrain technology, will be among the most energy-efficient designs to operate in the offshore wind industry. Other features are the capability of installing offshore wind turbines with a rotor diameter of more than 300 meters, as well as XXL monopiles weighing up to 3,000 tons at water

depths of up to 70 meters.

ABB scope comprises four Azipod® electric main propulsion units with a total propulsion power of 17 MW; the Onboard DC Grid™ power distribution system; a 4.1MWh energy storage installation; ABB Ability™ Marine Pilot Control with Dynamic Positioning System for advanced vessel control, as well as a comprehensive package of automation and digital technology. Once in operation, the vessels will be able to leverage the benefits of connecting digitally to the ABB Ability™ Collaborative Operations network for remote support and predictive maintenance.

As turbine numbers multiply and sizes increase, latest predictions by the independent expert in assurance and risk management DNV1 suggest that by 2050, offshore wind will provide as much energy as offshore oil. The Havfram Wind vessels will have specific capabilities that future-proof them as the offshore wind sector is progressively moving further offshore. These capabilities include instant load power and enhanced dynamic performance available to batteries, plus the maneuverability and station-keeping accuracy brought by Azipod® propulsion. In addition, weight benefits provided by Azipod® propulsion system can be up to 30 percent compared to traditional mechanical thruster solutions.

Designed to optimize vessel responsiveness, efficiency and safety across the entire operating profile, ABB Ability™ Marine Pilot Control allows for seamless transition from position control to joystick maneuvering. The DP2 functionality adds redundancy in technical design, ensuring that in the event of a single system fault, the vessel's position will be maintained. This is particularly important for safe and reliable operations of construction and wind farm vessels working alongside fixed structures.

"The performance of our Wind Turbine Installation Vessels will be pivotal in meeting the needs of the offshore wind market today and tomorrow. To ensure superior performance, we chose the broad scope of ABB power, control, propulsion and automation technology, complemented by the through-life support from ABB's remote diagnostics and global service capabilities," said Even Larsen, CEO Havfram Wind.

The new Havfram Wind vessels will benefit from ABB's extensive experience in closed-bus and closed-ring solutions for dynamically positioned vessels. Closed bus-tie and closed ring operations bring significant benefits and efficiency gains compared to traditional open-ring solutions which require a greater number of online engines and total installed power. Moreover, they meet critical safety regulations, increase operational flexibility, efficiency, and allow cost savings.

"We at ABB are in these projects to support the customer throughout the vessel lifetime, and being able to deliver future-proof solutions is of utmost importance for us. I am especially proud of this order, demonstrating the benefits of efficiency, safety and reliability our bridge-to-propeller solution can deliver to our customers in this rapidly growing and demanding market," said Juha Koskela, Division President, ABB Marine & Ports. ●

Royal Caribbean's Icon of The Seas Sets Sail For The First Time

The First-of-its-kind Vacation Returns from its Initial Sea Trials, the Next Construction Milestone Ahead of its Debut in January 2024.

June 2023 - The highly anticipated vacation, Royal Caribbean's Icon of the Seas, is one step closer to its debut in January 2024. The all-new ship successfully sailed the open ocean for the first time after completing its first, crucial sea trials in Turku, Finland, where it is under construction at the Meyer Turku shipyard. More than 450 specialists ran four days of preliminary tests on the ship's technical areas, like the main engines, bow and propellers, and even noise and vibration levels – all in preparation for the second sea trials that will push Icon to its limits later this year.

MIAMI – The results are in: Royal Caribbean International's highly anticipated Icon of the Seas is in ship shape. Today, the all-new vacation reached the next construction milestone after successfully completing its initial round of sea trials and sailing the open ocean for the first time.

Icon returned to the Meyer Turku shipyard, where it is under construction, after four days of preliminary tests on a lineup of its latest technologies and equipment. From the main engines to the hull, to the brake system, to steering as well as noise and vibration levels, the hundreds of workers on board covered an extensive checklist of key technical areas.

Between preparations and the trials, the important step in the journey to bring Icon to life involved more than 2,000 specialists, hundreds of miles traveled, four 37- to 67-ton tugboats and more than 350 hours of work. Next up will be a second round of sea trials later this year, which will be when the first Icon Class ship is pushed to its limits ahead of its debut in Miami in January 2024.

As the first-of-its-kind combination of the best of every vacation, Icon will introduce a new era of vacations for years to come. From the resort getaway to the beach escape and theme park adventure, every type of family and kind of adventurer can make memories together and on their own terms without compromise across record-breaking thrills, relaxing ways to chill, a neighborhood designed for young families, more than 40 ways to dine, drink and be entertained, and more.

Icon will sail 7-night Eastern and Western Caribbean vacations from Miami all year. Vacationers on board will island hop from destinations like Royal Caribbean's award-winning private island destination, Perfect Day at CocoCay, The Bahamas; Cozumel, Mexico; Philipsburg, St. Maarten; and Roatan, Honduras. More details about what Icon has in store are available at www.RoyalCaribbean.com/Icon. ●

Shri Sarbananda Sonowal lays Foundation Stone of Cochin Fisheries Harbour worth 169.17 crores

MoPSW and the Fisheries Department are working together to make this project a reality. This project would boost the export of fish and fish products by Rs. 1500 crores per annum: Shri Sarbananda Sonowal

This Sagaramala project includes infrastructural facilities with international standards at Cochin Fisheries Harbour. Sagarmala Boosting economic growth through welfare of the fishing community.

Union Minister of Ports, Shipping and Waterways Shri Sarbananda Sonowal and Union Minister for Fisheries, Animal Husbandry and Dairying Shri Parshottam Rupala laid the foundation stone of Modernisation and Upgradation Works of Cochin Fishing Harbour at Thoppumpady, Kerala.

This project is being developed at an estimated cost of 169.17 crores. The overall project is funded through Grants from Pradhan Mantri Matsya Sampada Yojana (PMMSY) Scheme under the Department of Fisheries (Rs.50 Crores) and the Sagarmala Project scheme of MoPSW (Rs.50 Crores) and investment of PPP Operator is Rs.55.84 Crores.

The first stage of the project includes construction of three air-conditioned Auction Halls, one non-air-conditioned hall, one fish dressing unit and other ancillary units. Under this project, internal roads will be constructed, loading and unloading platforms will be built, waste management area will be developed and there will be canteen facilities, drivers' waiting area, dredging work, areas machinery and equipment etc. The construction of four temperature-controlled auction halls of 60mx18m with mechanical retrieval and conveyance will increase the capacity of the fishing harbour by 415 tonnes of fish per day.

During the inauguration, Shri Sarbananada Sonowal said, 'our Hon'ble Prime Minister Shri Narendra Modi believes in doubling production and boosting the fisheries sector. Under his leadership, both MoPSW and the Fisheries Department are working together to make this project a reality. Development of Cochin Fisheries harbour will support the fishermen and will boost the economy.'

'It is envisaged the export of fish and fish products will be Rs. 1500 crores per annum on completion of the project. In addition, there will be substantial improvement in the hygienic conditions', Shri Sonowal added.

The Thoppumpady harbour witnesses 10 months of fishing activity with peak season during August to November. On average, there are about 40 to 60 boats landing in the harbour, which contributes to a catch of 250 tons per day. The major fish items landed at the harbour are shrimps, cuttlefish, carangids, ribbon fish, seer fish, tuna and marlins.

The flagship Sagarmala Program of MoPSW is leading the Maritime development of the country with 802 projects worth Rs. 5.5 lakh Crore targeted to be executed by 2035. Out of which, 202 projects worth Rs. 99,281 Crore have been completed. A total of 29 projects worth Rs. 45,000 Crore have been successfully implemented under PPP model, thus, reducing the financial burden on the exchequer. Additional 32 PPP projects worth Rs. 51,000 Crore are currently being implemented. Further, there are more than 200 projects worth Rs. 2.12 lakh Crore under construction and expected to be completed in 2 years' time.

Under Sagarmala, MoPSW has partially funded 171 projects worth Rs. 10,900 Crore across coastal states and UTs. Out of 171 projects, 48 projects worth Rs. 2,900 Crore have been completed and 123 projects worth Rs. 8,000 Crore are under various stages of implementation and development. In FY 22-23, 37 projects worth Rs. 2500 Crore have been sanctioned by this Ministry under the Sagarmala Scheme. To harness the efficiency of the private sector in operations, 52 projects worth Rs. 40,200 Crore have been completed at Major Ports in Public Private Partnership (PPP) mode. Further, 84 projects worth Rs. 49,500 Crore are under various stages of implementation and development. In addition to the above, Sagarmala Development Company Limited has invested Rs. 530 Crore in 4 projects in Andhra Pradesh, Odisha, and West Bengal, which have been completed.

It is to be noted under the Sagarmala Programme of MoPSW till now 9 fishing harbour projects worth Rs 620 crores have been completed: benefitting 30,000 fishermen. Apart from this, modernization of 5 fishing harbours has been done at a cost of ~Rs. 550 crores.

Shri Sarbananda Sonowal launches 'SAGAR SAMRIDDHI' Online Dredging Monitoring System to bring transparency & efficiency

Online Dredging Monitoring System is aimed at accelerating 'Waste to Wealth' campaign of MoPSW

'Following on PM Shri Narendra Modi ji's vision of Zero Defect & Zero Effect, the system is designed to minimise human error': Shri Sonowal

Union Minister of Ports, Shipping & Waterways (MoPSW) and Ayush Shri Sarbananda Sonowal launched 'SAGAR SAMRIDDHI' - the online dredging monitoring system - in order to accelerate 'Waste to Wealth' initiative of the Ministry here today. Secretary of MoPSW Sudhansh Pant along with other senior officials of the Ministry, Major Ports and Organisations also attended this programme.

This system has been developed by National Technology Centre for Ports, Waterways and Coasts (NTCPWC) the technological arm of MoPSW. The new technology brings in marked improvement against the old system of Draft & Loading Monitor (DLM) system. The system will bring in synergy among multiple input reports like daily dredging report, the pre and post dredging survey data before processing and producing real time dredging report. The 'Sagar

Samriddhi' monitoring system will also allow Daily and monthly progress Visualisation, Dredger performance and downtime monitoring, easy location track data with snapshot of loading, unloading and idle time .This system strengthens the Atmanirbhar Bharat and Make in India vision of PM Modi.

Speaking on the occasion Shri Sonowal said, ***"Hon'ble Prime Minister Shri Narendra Modi gave us the mantra of ZERO DEFECT and ZERO EFFECT and MoPSW is following his vision. In the era of advanced technology, it is essential to apply technology for monitoring the system so that human error can be minimised. From now onwards the Major Ports would be able to utilise the Online Dredging Monitoring System and bring about significant change in project implementation and bring down cost of dredging through use of the dredged materials. This will help in environment sustainability and will bring down the operational costs of the ports, bringing in more transparency and efficiency'."***

"The monitoring system is expected to enable better productivity, better contract management and also effective reuse of dredged material with waste to wealth concept", said Sudhansh Pant, Secretary, MoPSW.

Capabilities of 'Sagar Samriddhi' include:

1. Real time dredging progress report

2. Daily and monthly progress Visualisation

3. Dredger performance and downtime monitoring

4. Easy location track data with snapshot of loading, unloading and idle time

To address the objective of carrying out dredging with essential technical investigation the MoPSW issued 'Dredging Guidelines for Major Ports' in 2021. The Dredging Guidelines outlined the procedure for planning and preparation, technical investigations, dredged material management, estimating the cost of dredging etc., to enable the Major Ports to formulate the dredging projects in order to complete in time. In March 2023 Ministry issued Addendum to the Dredging Guidelines 2021 for Major Ports for disposal of dredged material by incorporating a necessary provision in bidding documents which will help in reducing the dredging cost in form of 'Waste to Wealth'. It outlines a wide range of beneficial use of dredged material including engineering use for construction purposes, environmental enhancement including beach nourishment etc. to bring down the cost of the dredging.

The annual maintenance dredging at Major Ports and Waterways is around 100 million cubic meters, for which about Rs.1000 crores are spent each year by the Ports and IWAI. Now with implementation of the Addendum of the Dredging guidelines and by using the Sagar Samriddhi, online dredging monitoring system, the dredging cost will be greatly reduced along with bringing in more transparency and efficiency in the overall system.

The MIV 2030 enables preparation of roadmap for taking up projects including dredging projects. The MIV also envisages developing Major Ports as transshipment hubs wherever possible and increasing their capacity by way of deepening their channels and near berths. Hence, dredging requirement will increase during the next decade with deep draft Ports of more than 18 meters' draft.

Presently Cochin Port and Mumbai Port, have adopted the system and on New Mangalore Port and Deendayal Port it is running on trial basis. Now, MoPSW has mandated all Major Ports and IWAI to monitor the dredging activity through this system with customisation from NTCPWC. Accordingly, new dredgers will be using this system along with the old dredgers, which will be upgraded and equipped with the new system.

The NTCPWC was established under the Sagarmala Programme of MoPSW with the total investment of â‚¹ 77 Crores at IIT Madras which was inaugurated by the Minister on 24th April 2023. The aim of the centre is to enable research & development for the marine sector, enabling solutions towards achieving the ultimate goal of building a robust marine industry in the country. This state-of-the-art centre has world class capabilities for undertaking the 2D & 3D investigations of research and consultancy nature for the Port, Coastal, and Waterways sector across all disciplines. Modelling of Ocean, determining the Coastal & Estuarine Flows, Sediment transport and morph dynamics, planning of Navigation and Manoeuvring, estimation of Dredging & Siltation, consultancy in Port and Coastal Engineering – designing the Structures and Breakwaters, Autonomous Platforms & vehicles, Experimental & CFD modelling of flow & Hull interaction, Hydrodynamics of multiple hulls, Ocean renewable energy coupled with port facilities are some of the areas where NTCPWC has already contributed to optimise capability of marine sector of India. The laboratories created are among the best in comparison with other International Labs in the specific domain. ●

Odfjell chooses Alfa Laval OceanGlide to enhance energy efficiency and reduce emissions with fluidic air lubrication

Odfjell Ship Management has partnered with Alfa Laval in their decarbonization effort by selecting the Alfa Laval OceanGlide fluidic air lubrication system to be installed on one of their tankers. Alfa Laval OceanGlide is the name of Alfa Laval's newly acquired air lubrication system, which is based on patented fluidic technology. This technology is the latest addition to Alfa Laval's sustainable portfolio, aimed at supporting shipowners in addressing fuel and emission challenges.

Alfa Laval has signed an agreement with Odfjell, a leading chemical tanker company, to install OceanGlide on one of their tankers, later this year. Odfjell is known for embracing new technologies for improving the energy efficiency and sustainability of its global deep-sea fleet. By installing OceanGlide, Odfjell aims at enhancing further its tanker operations by gaining the advantage of this new innovative technology.

OceanGlide integrates fluidic technology into air lubrication to optimize energy saving. This patented and class-approved system utilizes fluidic oscillators to generate an even layer of micro air bubbles across a vessel's entire flat bottom, reducing friction and drag. By reducing the vessel's resistance, the OceanGlide system offers a proven method for reducing fuel consumption and CO2 emissions.

"We are delighted that Odfjell has selected OceanGlide to enhance their vessel's energy efficiency," says Anders Lindmark, Business Unit President, Heat & Gas Systems, Alfa Laval. *"We strive to develop and bring innovative and environment-friendly technologies, such as OceanGlide, to our customers which support them in meeting their decarbonization targets and enable them to sail efficiently."*

"Odfjell has installed more than 130 energy-saving devices on its vessels since 2014. In Q1 2023 we reported a historical low carbon intensity – more than 50% below the IMO baseline for our fleet. Our decarbonization efforts do not stop with this achievement - now the time has come to start deploying more enhanced technologies. We believe fluidic air lubrication technology is a natural next step for us, and we look forward to deploying the OceanGlide system to further reduce our carbon intensity", says Erik Hjortland, Vice President Technology at Odfjell.

Leveraging the power of air lubrication based on fluidic technology

One of the key advantages of Alfa Laval OceanGlide is the ability to regulate power consumption through oscillation bands. OceanGlide uses fluidic technology to create streamlined sections on the vessel's flat bottom, each with its own fluidic band that generates bubbles. The independent steering of each band allows a more controlled and streamlined flow of air bubbles for ensuring optimal efficiency, maximum coverage, and reduced compressor power.

"The unique configuration of bands into sections for a regulated flow of air bubbles is a distinguishing feature of the OceanGlide system. This set-up allows for precise control and optimization of power consumption, and we look forward to documenting its energy-saving effect on our chemical tankers," says Erik.

The OceanGlide fluidic air lubrication system's high efficiency in producing bubbles not only ensures an effective air layer with fewer compressors but also provides the added advantage of conveniently positioning them anywhere on board. The system requires no structural modifications or vessel recertification, which makes it ideal for retrofitting as well as for new builds. The fluidic bands, designed with a low profile and no moving parts, can be configured underneath the ship at any shipyard with ease.

Enabling adherence to environmental regulations

Air lubrication technology is recognized by the International Maritime Organization (IMO) as an "Innovative Energy Efficiency Technology" to lower carbon emissions. The technology supports compliance with Energy Efficiency Existing Ship Index (EEXI), Energy Efficiency Design Index (EEDI) and the reduction of carbon intensity to meet IMO's carbon Intensity Indicator (CII) requirements. Besides this, the innovative fluidic air lubrication technology minimizes CO2 emissions thereby helping in limiting CO2 tax. ●

Maersk secures green methanol for maiden voyage of the world's first methanol-enabled container vessel

Copenhagen, Denmark – A.P. Moller - Maersk (Maersk) has successfully secured green methanol for the maiden voyage of the world's first methanol-enabled container vessel. Achieving this green fuel milestone is a significant step for the company and the industry's efforts to reduce greenhouse gas emissions.

Maersk has signed a deal with Dutch producer OCI Global on the delivery of green1 bio-methanol for the maiden journey. The 21,500 km trip from Ulsan, South Korea to Copenhagen, Denmark – more than halfway around the globe – will provide real operational experience for Maersk seafarers handling the new engines and using methanol as fuel, as the company prepares to receive a fleet of new, large ocean-going methanol-enabled ships from 2024.

"The green methanol market is still in its infancy and frankly we had not expected to be able to secure a maiden voyage on green methanol for this vessel. So, we are very proud to have achieved this significant milestone. We expect a diverse green fuel mix for the future, with green bio-methanol from biomass waste being available now."

Morten Bo Christiansen
Head of Energy Transition, A.P. Moller - Maersk

OCI produces its green methanol at a US-based facility by using captured biogas from decomposing organic waste in landfills. The biogas is upgraded to biomethane and injected into the gas grid and the methanol is produced from the biomethane in the grid on a mass-balance basis. This way, green methanol can be produced in existing facilities using existing infrastructure and plants enabling a quick production. The method can contribute to a greener gas grid while capturing harmful methane emissions that would arise from the waste feedstock if left untouched. OCI's green methanol is certified by International Sustainability & Carbon Certification (ISCC) in accordance with the EU Renewable Energy Directive.

To meet the ambitious 2040 target of net zero greenhouse gas emissions in time, A.P. Moller - Maersk aims to transport a minimum of 25% of Ocean cargo using green fuels by 2030, compared to a 2020 baseline. The 2,100 TEU (twenty-foot-equivalent) landmark methanol-enabled feeder vessel is an important step toward the long-term objective of gradually renewing the entire fleet to operate solely on green fuels.

For more info about our fuel milestone, please check out the latest episode of our Decarbonisation webinar series on the Maersk YouTube channel.

1 We define 'green fuels' as fuels with low to very low GHG emissions over their life cycle compared to fossil fuels. Different green fuels achieve different life cycle reductions depending on their production pathway. By 'low' we refer to fuels with 65-80% life cycle GHG reductions compared to fossil fuels. 'Very low' refers to fuels with 80-95% life cycle GHG reductions compared to fossil fuels.

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