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NNOVATION

in the Management of Ships:

Challenges and Opportunities



FluidInspectIR®
Inline for Marine Oil
Condition Monitoring
Neil Conway

Powering
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Pallavi Naik Editor-in-Chief

In today's dynamic Maritime environment, Ship Management Solutions and Innovations are essential to optimize operations and ensure strict adherence to numerous international regulations for the Maritime Industry. It is necessary for the Shipping and Ship Management companies to keep updated and adapt themselves with the regulations and innovations. Additionally, the evolution of advanced equipment also brings about new risks that were not previously encountered onboard.

The Introduction of Artificial Intelligence, Big Data, Blockchain is helping to collect accurate data and analysing the same which is enhancing the decision-making process. Sensors on the ships are a reason for Superintendents can monitor the ship from the remote space ie. from land. It is helping to save money and time. Considering the Financial instability of the shipping industry which depends on the freight rates, fuel costs, Geopolitical tensions etc., the Managers should also be efficient to accommodate with the changes and take the decisions accordingly.

In line of the above factors, the implementations of New Technologies and Innovations are helping the Shipping Industry for considerably increasing the efficiency and success of the operations. The Ship Management companies and the Managers must adapt themselves to accept and support this transformation of the industry.

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Introduction

Ship management is a complex and dynamic industry that faces the brunt of the many challenges in the current market conditions, such as environmental regulations, cybersecurity threats, crew welfare and the impact of geo-politics. Dealing with a multitude of stakeholders in an everchanging landscape amidst a technological environment that is largely stuck in the early 2000s is no easy task. Due to the historic challenge of extremely expensive connectivity the world's shipping assets were left in a time warp three to four connectivity generations ago. Whilst the world around us marched onto 5G technology, vessels, were largely speaking, stuck in the 1G/2G period. Now, with affordable bandwidth becoming exponentially prevalent it also offers many opportunities for innovation and improvement, in arenas such as digitalisation, automation, optimisation, and sustainability. In this article, we will touch on some of the main innovation trends and developments impacting the management of ships and how they can benefit the industry and its stakeholders whilst also being aware of the challenges.

Digitalisation and Data Analytics

One of the most prominent areas of innovation is digitalisation particularly in the realm of data analytics. Digitalisation refers to the use of digital technologies and platforms to enhance the efficiency, performance, and transparency of processes. Data analytics refers to the collection, processing, and interpretation of large amounts of data from various sources, such as sensors, satellites, and databases, to generate insights and solutions for ship management challenges. Digitalisation and data analytics can help managers to monitor and optimise various aspects of their vessels, such as fuel consumption, emissions, speed, route, maintenance, and safety. They can also help ship managers to communicate and collaborate more effectively with their vessel owners, suppliers, regulators, and other stakeholders. Some examples of digitalisation and data analytics applications in ship management are:

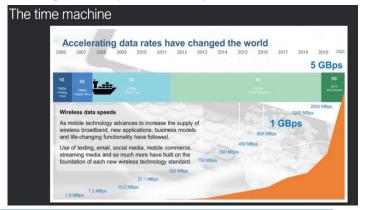
• Remote monitoring and control to help improve the safety, security, and efficiency of the vessels, as

COVER STORY

well as reduce the need for physical inspections and interventions.

- Predictive maintenance by using data analytics and machine learning to reduce the operational costs, downtime, and risks of the vessels, as well as extend equipment lifespan and performance.
- Performance optimisation using analytics and optimisation algorithms to enhance the performance and profitability of the vessels by reducing fuel consumption, emissions, and voyage costs of the vessels.

However, data infrastructure remains at its infancy; data input and exchange standards are still highly variable across systems and the complexity to bring legacy assets and records into modern systems is a mountain of a task not only in terms of effort but also cost. Glimmers of hope are emerging from the more progressive players and with increased mandatory reporting complexity this area is no longer wishful thinking but an operational imperative.



Automation and Artificial Intelligence

Another area of innovation in ship management is automation and artificial intelligence. Automation and artificial intelligence can help ship managers to improve the safety, efficiency, and quality of their vessels, as well as to reduce the human error, fatigue, and labour costs. They can also help ship managers to cope with the increasing complexity and uncertainty of the maritime environment, such as congestion, weather changes, and regulatory changes. Whilst some well cited examples are shaping the understanding of autonomy in the industry, the real development is the step change in automation capabilities that is taking place as key waypoints on the path to autonomy. Some examples of automation and artificial intelligence applications in ship management are:

- Autonomous vessels that can operate with limited human intervention reducing the operational costs, risks, and emissions of the vessels, as well as increase their availability and flexibility.
- Smart assistants that can assist and support the human crew and operators of the vessels, enhancing the situational awareness, decision making, and performance of the human crew and operators, as well as reduce their workload and stress.
- Machine learning can help ship managers to discover new patterns, trends, and insights from the data collected by their vessels, and to develop new models, algorithms, and solutions for their ship management challenges.

However, this topic in particular poses many technical, legal, and ethical challenges, such as reliability, liability, and accountability. Key for this area to develop will be regulatory sandboxes - safe spaces where path breaking innovation and trials can co-exist with a regulatory environment that is unfolding as the innovation is developing. This is easier said than done. Notwithstanding the high level of data quality, security, and transparency a high level of trust, cooperation, and coordination between humans and machines will underpin the developments. This is as much a cultural transformation for the industry's experienced veterans as it is a technological one.

Sustainability and environmental impact innovation

A third area of innovation in ship management is sustainability. Sustainability refers to the ability of the industry to meet its current and future needs, without compromising the environment, society, and economy. A key part of this will be to address the development and adoption of new technologies, practices, and policies that can reduce the environmental impact and enhance the social responsibility of the industry. Sustainability embedded in innovation can help ship managers to comply with the increasing environmental regulations and expectations of their stakeholders, such as customers, investors, and regulators. They can also help ship managers to improve their reputation, competitiveness, and profitability, by reducing their costs, risks, and emissions, and by creating new value and opportunities. Some examples of environmentally focused innovation in ship management are:

COVER STORY

- Alternative fuels to help drive the pathways towards net zero ambitions.
- Energy efficiency technologies and practices that can reduce the energy consumption and demand of the vessels.
- Carbon capture and storage technologies to help address the environmental impact of vessels.

However, these require significant investments, infrastructure, and a clear regulatory construct, as well as technical and operational challenges to be addressed. Coordination and collaboration among the stakeholders is key however the technical competence, financial muscle, and willingness to drive the agenda forward are not always simultaneously present therefore the ultimate challenge here is the alignment of incentives to enable motivated progress.

Crew Training and Welfare

A fourth area of innovation in ship management is crew training and welfare. Crew training refers to the provision of education, skills, and knowledge to the human crew and operators of the vessels, to enable them to perform their tasks and functions effectively, safely, and professionally. Crew welfare refers to the provision of health, well-being, and social support to the human crew and operators of the vessels, to enable them to cope with the physical, mental, and emotional challenges of their work. Crew training and welfare can help ship managers to attract, retain, and motivate their human capital, as well as to comply with the increasing human rights and labour standards of their stakeholders, such as seafarers, unions, and regulators. They can also help ship managers to improve the productivity, quality, and safety of their vessels, by reducing the human error, fatigue, and turnover. Some examples of crew training and welfare innovations in ship management are:

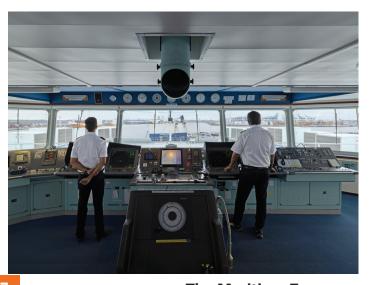
- Online and blended learning to deliver and enhance the learning and development of the crew and operators. This can provide the crew and operators with more flexibility, accessibility, and personalisation of their learning, as well as more feedback and assessment of their progress.
- Virtual and augmented reality can provide the crew and operators with more realistic, engaging, and

experiential learning and training, as well as more feedback and assessment of their performance.

• Wellness and engagement programs that can promote and improve the physical, mental, and emotional wellbeing and satisfaction of the crew and operators aiding the health, happiness, and motivation of crew, as well as increase social and cultural interaction and diversity.

However, underpinning this topic for progress requires reliable internet connectivity, digital literacy, and learner engagement. These will also require the upgrading of access to encompass better hardware, software, and content, as well as user acceptance and comfort. Given the extent of the talent challenge coupled with the proliferation of lower cost connectivity, this is an arena we can expect transformational progress in over the coming period.

Put very simply, as the maritime industry battles to find its modern relevance in a world where all its historic assumptions are in flux, the challenge is not to take the industry into the future, its first challenge is to leverage the unleashing of connectivity that vessels are finally experiencing. Implementing Industry 4.0 technologies and principles in an industry with large, expensive assets that were simply left behind must be the priority. Bringing the industry into the present must be the first priority to drive a culture of innovation, and this also requires ongoing discussions with fellow industry leaders. I look forward to speaking alongside experts at the upcoming Asia Pacific Maritime 2024, seeking their insights on how we can work as an industry to dissect the struggles in innovation to continuously foster innovation.





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FluidInspectire Inline for Marine Oil Condition





Summary

The established process for oil condition monitoring on board ships and vessels is to periodically take a sample and have it analysed in an oil laboratory. Customers rely on this periodic data to react to oil condition trends to plan servicing and maintenance and to reduce asset downtime from failure.

Spectrolytic's Inline Oil Condition Monitoring system - FluidInspectIR® inline - is an OEM proven, robust and affordable oil condition monitoring sensor that gives customers meaningful and understandable real time data of the same parameters and in the same units as they are commonly receive it from their oil laboratory analysis

1. Introduction

Oils and lubricants play a critical role in industry and in the operation of plant equipment on board ships and vessels such as the operation of diesel engines, hydraulic equipment, rotating equipment such as compressors and gears and on the ship's propulsion system where EAL (environmentally Acceptable Lubricants) are conventionally used.

Conventionally, plant engineers operating and maintaining high value assets rely on taking oil samples periodically and sending them to a laboratory for analysis. It can take up weeks and sometimes even months from sampling to receiving the oil report and introduces a large time lag in the reporting of the oil condition. This process is shown in figure 1.



Figure 1: Typical oil analysis process in an industrial environment and the positive effects of at-line or real time oil analysis

The benefit of having real-time monitoring of the oil condition is vast. Customers will not only have the satisfaction of being in complete control of their asset, but the Cost of Ownership (COO) will also decrease as:

Potential failure modes can be spotted in the data and can be corrected immediately.

ARTICLE

- A more effective maintenance and service process can be established as the status of the oil/engine will be known at the time of sending out an engineer.
- Oil change intervals can be confidently extended and moved from time based to condition-based intervals.

Spectrolytic has developed a unique range of oil analysers that measures the most relevant oil degradation and contamination parameters like TAN,TBN, ipH, oxidation, nitration, sulphation, water, soot, additives.

For the inline analyser additional modules can be added to house a viscometer, particle or wear sensor or any sensor that the customer wishes to use to merge with the data stream.





Figure 2: FluidInspectIR® Inline Analyser modules

2. Oil Condition Sensor Platform

The sensor platform developed by Spectrolytic utilises the powerful analytical technique of midinfrared spectroscopy to measure a variety of relevant degradation parameters in an oil sample. With each measurement the sensor determines the changes of the oil at a molecular level using the same analytical technique and data extraction as employed by oil laboratories around the world.

3. Analyser Hardware

Spectrolytic's FluidInspectIR® Inline allows seamless installation on board vessels. The kit installation is plug and play and can be carried out remotely with the support of our Field Service Engineers.

The Inline Analyser can be integrated into the main

oil flow of the asset via a bypass or alternatively oil can be extracted from an oil sump or oil tank using an integrated pump.



Figure 3: Installation on Marine Diesel Engine with chemical composition, Viscometer and Wear Sensors.

4. Marine Applications

In the marine industry we have installations on:

- Diesel engines monitoring Total Base Number (TBN), water, soot, oxidation, sulphation, Kinematic Viscosity at 100C and wear particles.
- Propulsion Systems using EAL monitoring Total Acid Number, Oxidation and water the key by products of the hydrolysis of these Ester-based EAL.
- Hydraulic and compressor systems monitoring
 Total Acid Number, water and oxidation.



Figure 4: Installation on ship propulsion system

5. Sensor Accuracy

There is an excellent agreement between predicted sensor data and reference analysis as shown in plot below. The plot also displays 'rogue' measurements from reference analysis that the sensor does not display. This is likely some error in sample taking or sample measurement. The sensor therefore removes all human involvement from the oil analysis process and provides customers with accurate, understandable and actionable oil analysis data 24/7

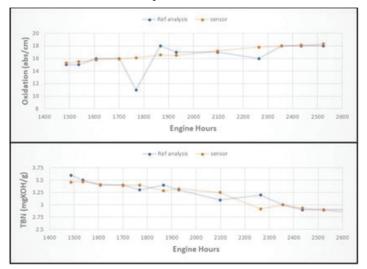


Figure 5: Sensor vrs Oil Lab data for Marine Diesel engine installations

6. Real time Sensor Data Benefits

The power of the real time data via the FluidInspectIR® inline sensor can be exemplified in a user case on a marine diesel engine.

Figure 6 is a cloud dashboard data plot for water (in ppm) for a diesel engine installation with LTE connectivity.

We typically monitor oxidation, sulphation, TBN, soot, KV100C and water. During this period the sensor started to pick up water increase and spiking and the FSE was alerted to this via our data analytics. The customer subsequently found a faulty cooler leaking water into the engine oil.

The spiking regime is deemed to be related to the

engine not running and the oil being cooler and having higher water content.

The customer feedback was that our sensor has saved the main engine from potential failure from detecting the failing cooler.

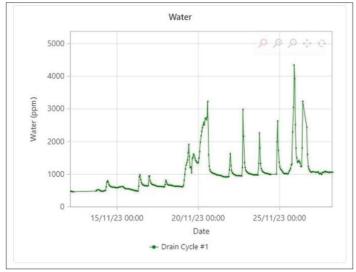


Figure 6: Dashboard viewer example of water ingression trend

7. Distributed Network

The Inline FluidInspectIR® inline unit is used as standalone asset for one-off applications but for multiple equipment we have developed a distributed sensor network where we use our FluidInspectIR® inline-mini to allow up to 7 different systems installed at different points of a customer's asset. We can also work with any sensors such as optical particle counting sensors, wear sensors, viscosity sensors and the Data transfer is either to the cloud or directly to the customer PLC.

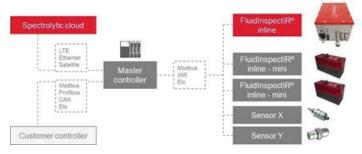


Figure 7: Distributed network of FluiInspectIR Inline and FluidInspectIR Inline-mini and sensors.



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In the quest for sustainable maritime practices, energy boats emerge as a beacon of innovation and hope amidst mounting environmental concerns plaguing the maritime industry. Traditional fuel-based propulsion systems have long been a primary source of carbon emissions and marine pollution, contributing significantly to global warming and ecosystem degradation. The reliance on fossil fuels not only exacerbates climate change but also poses threats to marine biodiversity, with oil spills and exhaust emissions wreaking havoc on fragile ecosystems.

Against this backdrop, the adoption of renewable energy sources by energy boats represents a paradigm shift towards mitigating these environmental challenges. By harnessing technologies such as batteries, hydrogen, wind, and solar power, these vessels offer a promising alternative that significantly reduces carbon emissions and minimizes their ecological footprint. Advanced sail designs, kite sails, and solar panels are integrated into their architecture, enabling them to capitalize on natural resources while minimizing reliance on fossil fuels. This transition towards cleaner energy sources not only addresses immediate environmental concerns but also aligns with global efforts to combat climate change and promote sustainable development.

Furthermore, the emergence of energy boats fosters collaboration and innovation within the maritime industry to address pressing environmental issues. Research and development endeavors are accelerating to enhance the efficiency of renewable energy technologies tailored for maritime applications. Collaborative initiatives seek to expedite the transition towards sustainable shipping practices through knowledge sharing and resource pooling. As stakeholders across the maritime sector unite behind the vision of a greener future, energy boats stand as tangible manifestations of progress, embodying the collective resolve to navigate towards a cleaner and healthier planet.

Article by : Ms. Mahipooja

In the pursuit of sustainable maritime practices, Team Sea Sakthi, a group of 15 students from Kumaraguru College of Technology, emerges as a beacon of innovation and hope, epitomizing the transformative potential of renewable energy in the maritime world. As the sole representatives from India, they prepare to embark on their third consecutive participation in the Monaco Energy Boat Challenge, hosted by the esteemed Yacht Club of Monaco. Their remarkable track record, securing 6th positions globally and winning the Communication Prize in the previous two editions, underscores their prowess and dedication to advancing sustainable maritime solutions.

In their inaugural foray into the competition, Team Sea Sakthi blazed a trail by pioneering the use of battery and solar energy as the primary power sources for their vessel. This groundbreaking initiative not

ARTICLE

only showcased their unwavering commitment to sustainability but also garnered global recognition for their innovative approach. Building upon this success, they boldly ventured into uncharted waters in subsequent editions by adopting hydrogen fuel cells as the main energy source, marking a significant milestone as the first Indian team to implement this technology in a catamaran.

As they gear up for their latest endeavor, Team Sea Sakthi continues to push the boundaries of innovation while embracing the ethos of eco-conception. Their meticulous practices, such as incorporating natural fibers like pineapple fiber for the cockpit, underscore their dedication to integrating sustainable materials into maritime innovation. Through their evolving energy boat, they epitomize a steadfast commitment to contributing to a greener and more sustainable

maritime industry, setting a shining example for future generations.

The Monaco Energy Boat Challenge, with its unwavering vision of sustainability, aligns perfectly with the aspirations of young minds like Team Sea Sakthi. By participating in such prestigious events and pushing the frontiers of innovation, they not only leave an indelible mark in the present but also lay the groundwork for a better, greener future for maritime transportation. Through their collaborative efforts with esteemed organizations like the Yacht Club of Monaco, Team Sea Sakthi envisions a day when their contributions will catalyze a paradigm shift towards a more sustainable and environmentally conscious maritime industry, echoing the sentiments of a global community striving for a healthier planet.





Shailendra Shukla is the Executive Director at Marine Electricals Limited, India with over 30 years of experience in the Maritime & Defence Technology Sector. He has served at many senior level positions for Multi-National Companies in the Marine Industry previously. His experience and association spans around the world with a focus on developing and implementing innovative & technologically advanced solutions in the industry. He has been instrumental in driving the growth and success of Marine Electricals Limited & its affiliate companies in the Middle East over the past years.

I. TELL US ABOUT THE 4 DECADES JOURNEY OF MARINE ELECTRICALS LIMITED.

Marine Electricals began its journey as a Switchgear and Electrical solutions provider and over the last 4 decades, MEIL has focused on creating a niche market for its ever growing portfolio of products and services within the country and, has successfully ensured in

expanding its horizon to serve every stakeholder in the Maritime & shipping industry. With its recent foothold in Port Management and Vessel traffic Management Systems (Titan Sentinel), MEIL has kickstarted its plan to develop an indegenous VTMS & PMIS solution for India. The reliable, mission-proven, TITAN platform has been selected and successfully implemented for several major maritime projects around the world, including projects overseen by IMO and funded by the World Bank. MEIL aims to focus on the importance of ensuring safe and efficient port operations, not only for the benefit of our clients, but also for the environment and the surrounding communities. Thus, our VTMS solutions are designed to minimize the environmental impact of port activities, whilst also improving the overall safety and security of the port & commits to innovation and excellence in Port efficiency Solutions. Through its commitment to quality, innovation, and customer satisfaction, Marine Electricals has become a leading player in the marine electrical and electronics industry with 50%+ market share & recognition as a TIER 1 Supplier for the Indian Navy & for all major global shipyards. MEIL's success is not only due to its focus on quality and innovation, but also its commitment to sustainability. The company is dedicated to reducing its environmental impact and promoting sustainable practices in the marine industry. As MEIL continues to expand its reach and offerings, it remains committed to providing exceptional products and services to its customers.

2. HOW DO YOU SEE SHIPBUILDING INDUSTRY, BOTH COMMERCIAL AND DEFENCE PROSPERING IN INDIA?

With the government's focus on Make in India initiative, the shipbuilding industry is expected to see significant growth in the coming years. The commercial sector has already seen some success with the construction of vessels for transportation of crude oil and petroleum products & with India's geographical advantage of having a long coastline, this nation has the biggest goldmine awaiting to be explored more.

In the defence sector, there has been a renewed focus on indigenization and self-reliance. This has led to increased opportunities for Indian shipyards to participate in the construction of naval vessels for the Indian Navy. With the government's emphasis on modernization and expansion of the naval fleet, the shipbuilding industry is expected to play a crucial role in meeting the defence needs of the country.

Furthermore, the shipbuilding industry has the potential to create employment opportunities and contribute to the country's economic growth. With the right infrastructure & technology, the shipbuilding industry in India can prosper in both commercial and defence sectors and can be a force of influence on the world economy itself.

Keeping in mind these opportunities, MEIL also has drawn out its path of growth for the coming years focusing on both Commercial as well as Defense segments with its key focus on expanding solution offerings & promoting its expertise in providing complete installation package for Naval Ships and targeting service contracts for Weapon Systems.

3. ON THE COMMERCIAL SHIPBUILDING PART, WHAT ARE THOSE DRIVERS / INITIATIVES THAT CAN INCREASE

BUSINESS IN INDIA?

With the country's strategic location and strong maritime history with a coastline of over 7,500 kilometres, India has a vast potential for shipbuilding and, the government has been actively promoting the industry through various initiatives and policies including the 'Make in India' initiative. The growth of the shipbuilding industry in India has not only created employment opportunities but also contributed to the country's economy by generating foreign exchange through exports. As the demand for ships increases globally, India's shipbuilding industry is poised for even greater growth in the coming years. The main initiative that can increase more business in the commercial shipbuilding in India are:

- The implementation of advanced technology, manufacture ships at a faster pace and at a lower cost, making them more competitive in the global market.
- Training programmes aiming to increase skilled workforce By investing in training and education, India can produce a highly skilled workforce that can meet the demands of the industry.
- Focused government support in the form of subsidies, tax breaks, and policy reforms can provide a favourable environment for the growth of the industry.

4. MARINE ELECTRICALS LIMITED HAS RECEIVED RAKSHA MANTRI'S AWARD FOR EXCELLENCE IN INNOVATION & TECHNOLOGY, PLEASE SHARE MORE INSIGHT ON THE SAME

Marine Electricals Limited was given this honour for its innovative solutions that have helped advance the state of the art in naval technology. We develop a range of electrical systems that are designed to meet the demanding requirements of the Indian Navy. These systems are highly reliable, efficient, and easy to maintain, which makes them ideal for use in naval applications.

This award is a testament to Marine Electricals' commitment to excellence and innovation. The company has a long history of working closely with the Indian Navy to develop advanced electrical systems that meet the stringent requirements of the maritime

INTERVIEW

industry. By receiving this award, Marine Electricals Limited has demonstrated that it is a leader in the field of electrical engineering and a key player in India's defense industry.

5. TELL US ABOUT THE OVERSEAS COMPANIES MARINE ELECTRICALS LIMITED REPRESENTS IN INDIA

We are the authorized partner for product supply and services for some of the major OEM players in the world. One of our longest associations in the region is with Northrup Grumman Sperry Marine. With over 100 years of history and expertise in navigation systems for both commercial as well as defence sector, Sperry Marine has established themselves as a major global provider for reliable and efficient navigation solutions. Apart from them, we also represent an array of original manufacturers including NAVICO, Zentiel Danelec, skipper etc.

At MEIL, we understand that success in the industry is not only about meeting the needs of our customers, but also the needs of other stakeholders such as suppliers, partners and employees. It is with this principle in mind that we have formed strong partnerships with industry associations that provide us stability as well as resilience against the emerging trends, regulations and technologies that affect our business.

These associations also provide us with a platform to share best practices and collaborate with other likeminded organizations, which ultimately help us to improve our own operations and deliver even greater value to our customers. We believe that by working together with our industry partners, we can achieve sustainable growth and drive positive change in the industry as a whole.

In short, our commitment to building strong relationships with industry associations is a key part of our strategy for success. We are proud to be a one-stop solution for all our customers' needs and continue to work tirelessly to meet the evolving demands of the market.

6. WHAT ACCORDING TO YOU IS THE MOST IMPORTANT SUCCESS FACTOR OF MARINE ELECTRICALS LIMITED?

Marine Electricals Limited has achieved great success in the maritime industry due to several factors, but one stands out as the most important: their dedication to providing high-quality products and services. The company has developed a strong reputation for reliability and excellence, which has allowed them to establish long-lasting relationships with their clients. Another important success factor is their commitment innovation. Marine Electricals Limited has consistently stayed ahead of the curve by investing in new technologies and developing innovative solutions to meet the evolving needs of the industry. Finally, the company's focus on employee development and training has also played a significant role in its success. By providing their employees with the tools and resources they need to excel, Marine Electricals Limited has built a team of dedicated professionals who are committed to delivering exceptional results.

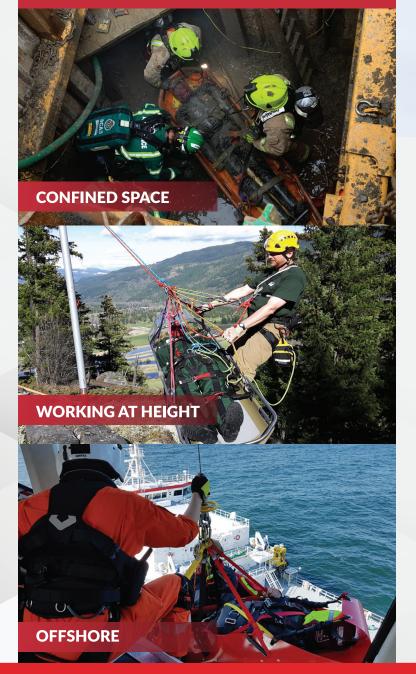






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Ship & Boat International Expo 2024 and Maritime Transport & Logistics Summit 2024 Concludes with a Great Success

Mumbai, India - The Ship & Boat International Expo 2024 and Maritime Transport & Logistics Summit 2024, held from February 28 to March 1, 2024, at Bombay Exhibition Centre, Mumbai, concluded on a high note, marking a significant milestone in the maritime industry.

The inauguration ceremony, graced by esteemed dignitaries, set the stage for three days of intensive deliberations, networking, and the unveiling of state-of-the-art innovations in the maritime Industry. Chief Guest Shri. Shyam Jagannathan, IAS, Director General of Shipping, alongside Guest of Honor Capt. Binesh Kumar Tyagi, Chairman and Managing Director, Shipping Corporation of India Ltd., and Guest of Honor Mr. Arne Jan Flolo, The Norwegian Consul General of Norway in Mumbai, collectively emphasized the pivotal role of collaborative endeavors in shaping the future of maritime industry and Multimodal Logistics.

With a participation of over 130 exhibitors and an impressive footfall exceeding 3800 visitors and 300+ delegates, the expo provided a comprehensive platform for industry stakeholders to explore technologies, forge strategic alliances, and exchange insights. The event featured insightful conferences spanning diverse facets of the maritime domain, including:

• Symposium on Multi-Modal Transport Operators (MMTOs) highlighting various topics such as seamless integration of various transportation modes and the associated challenges, Cross Border Regulations including Customs Regulations, Sustainability and Green Logistics, Showcasing successful MMTO implementations and their impact on Global Supply Chains and Technological Innovations, Analyzing the regulatory and legal frameworks governing MMTOs on national and international levels and Technological

Innovations to optimize MMTO Operations. Various eminent speakers from the Multimodal Logistics Industry were gathered at the Symposium to share their knowledge.

- Symposium on Ship Financing, Purchase, Leasing and Mortgage underscored several key topics, including Tax and Regulatory Considerations in Ship Leasing & Impact of Indian Financial Service sector (IFSC); Ship Financing Options such as Loans, Leasing, Structured Finance; Case Studies in Successful Ship Leasing and Financing Deals; Understanding the Basics & Types of Ship Leases: Operating Leases Vs. Finance Leases and Future Trends in Ship Leasing & Financing and Liability Underwriting.
- International Green Ship Recycling Conference highlighted on Impact of Regional and Global Laws on Ship Recycling; Circular Economy Practices & Environmental Impact Assessments; Transparency, Accountability & Skills for Safety in Ship Recycling Practices.

The inaugural edition of **The Maritime Economy Awards** was also organized by Oceantrade Media, powered by **The Maritime Economy Publications**, which was a resounding success. The Maritime Economy is The Global Maritime Business News Portal and Publications that aims to Serve the Blue Economy, covering a wide spectrum of the entire Ocean-based Economy within India and the Worldwide.

The list of Awardees is as below:

- Next Generation Ship Design Company Buoyancy Consultants and Engineering LLP
- Best Shipyard Facility: Government -Mazagon Dockyard Shipbuilders Ltd

PRESS RELEASE

• Emerging Ship recycling Technology - Marine Mechanics

 Emerging Maritime Robotics -Clear Boat

- Excellency Award (Engineer) Mumbai Region Mr. Vijay Arora, Managing Director Indian Register of Shipping
- Maritime Excellency Award (Nautical) Mumbai Region -

Capt. Yashoverman Sharma, Head, True North Competency Management

- Maritime Leadership Award Mumbai Region Mr. Umesh Grover, Secretary General, Container
 Freight Station Association of India (CFSAI)
- Youth Mentor for The Maritime Community Late. Capt. Purnendu Shorey, Co-founder, Offing Group
- Seamless Shipping Solution of the year -

Balmer Lawrie & Co. Ltd

- Container Freight Station of the year -Landmark CFS (P) Ltd.
- Innovation in Shipping Award -Smart Ship Hub
- Holistic Exim Service Provider of the year -Om Freight Forwarders Pvt. Ltd.
- Global trade facilitator of the Year MPRS Shipping & Logistics Pvt. Ltd.
- Integrated Digital Innovation -Digital Freight Alliance by DP World

As Ship & Boat International Expo 2024 and Maritime Transport & Logistics 2024 come to a successful close, participants and exhibitors alike reflect on the fruitful exchanges, innovative showcases, and strategic partnerships forged during the events.

Glimpses of the show



Inaguration:

(From L to R): Shri. Shyam Jagannathan, IAS, Director General of Shipping; Mr. Sagar Kadu, Director Logistics, Ministry of Commerce and Industry; Capt. B.V J. K. Sharma, CEO, Navi Mumbai International Airport; Mr. Arne Jan Flolo, Counsel General, Royal Norwegian Embassy in Mumbai; Mr. Dushyant Mulani – Chairman, Federation of Freight Forwarders Association in India (FFFAI)



A team of Buoyancy Consultants busy in interaction with Visitors

Conference on Multimodal Transport Operators



(L to R):Mr. Amit Kamat – Elect Chairman, Federation of Freight Forwarders Association in India (FFFAI); Capt. B.V J. K. Sharma, CEO, Navi Mumbai International Airport; Mr. Atul Kharate – Chief Operating Officer, IAV Biogass, IndianOil Adani Ventures Ltd.; Mr. Nailesh Gandhi – Managing Director, Express Group of Companies



(L to R): **Dr. Visshal Bisen** – Managing Director, **Samveda Logistics InfraResources Pvt. Ltd**; **Landmark CFS (P) Ltd**; **Mr. G. Sambasiva Rao** – Managing Director, **Sravan Shipping Services Pvt Ltd**; **Mr. Shankar Shinde** – Chairman, **International Federation of Custom Brokers Association (IFCBA)**; **Capt. Mohit Chaturvedi** – Sr. Vice President, National Head - Sales and Business Development Container Terminals, **JM Baxi Port and Logistics**

International Green Ship Recycling Summit



(L to R) Mr. Amod Deshpande - DGM, Indian Register Quality Systems(IRQS); Advt. Capt. Rahul Varma - DGM, Ally Maritime & Legal Services; Mr. Sumithran Sampath - General Manager, Class NK



Dr. Anand Hiremath - Chief Sustainability Officer, **GMS Inc.**, Lead Coordinator, **SSORP**

EC Meeting of Freight Forwarders Association of India (FFFAI)





Conference on Ship Financing, Purchase, Leasing and Mortgage



(L to R): Mr. Ravi Chopra, Director, Corporate Affairs, InterOcean Group; Mr.Ashutosh Sharma, Chief General Manager, IFSC; Adv.Ashwin Shankar, Advocate and Arbitrator, LLM (Maritime Law), London, Chambers of George Rebello; Mr. Suresh Swamy, Partner, Price Waterhouse & Co LLP



(L to R): Capt.Suresh Bhardwaj, Director and Principal, MASSA Maritime Academy; Mr. Amit Oza, Director, Astramar Shipping & Trading Services, India; Mr. Madhvendra Singh, CEO, Gujarat Maritime Cluster; Mr. Janmejay Bhatt, Sr. Manager - Corporate Finance & Accounts, Adani Ports and SEZ; Mr. Amit Oza, Director, Astramar Shipping & Trading Services, India Capt. Vikas Vij, President, ICCSA



(L to R):Mrs.H.K.Joshi, Former CMD, SCI;Mr. Warren Pinto, Chief Financial Officer, Seven Islands Shipping Ltd.;Mr. Shardul Thacker, Partner, Mulla & Mulla & Craigie Blunt & Coroe





Boats on display in **Boat Building Zone**

Visitors attending the Show



Shri. Dilip Savant IG Police, Coastal Security interacting with Exhibitors

The Maritime Economy Awards



Mr. Umesh Grover,
Secretary General,
Container Freight Station Association of India (CFSAI)



Maritime Excellency Award (Nautical)- Mumbai Region Capt Yashoverman Sharma Head, True North Compentency Management



Award Winners of **The Maritime Economy Awards**



Damen Shipyards Group has unveiled a new ship design based on modern defence and security requirements. The Multi-Purpose Support Ship (MPSS) has been co-developed with the Portuguese Navy, the vessel's launching customer. It is a solution for the increasing use of drone technology in combat and surveillance. In addition to its primary function, the MPSS is designed to fulfil a wide range of additional tasks, including auxiliary roles.

Damen has begun construction of the first vessel of this new design. The MPSS range, featuring 7000 and 9000 tons versions, combines the vision of the Portuguese Navy, with Damen's proven process of shipbuilding, using standardised solutions wherever possible. As a result, the vessel can be constructed quickly and offers a reliable, cost-effective platform.

While the electrical, communication and navigation equipment installed on the MPSS will be military class equipment, the vessel will also use commercial off the shelf technology. This includes, for example, the mission specific equipment modules, by which the vessel achieves its multi-functional capability.

In this way, when not required to perform its primary function, the MPSS can be applied to a wide range of duties including managing drones (air, sea, and sub-sea), conducting amphibious support, emergency/disaster relief, search & rescue, diving support, performing submarine rescue operations and helicopter operations.

As a result of its modular approach, the vessel could be utilised year-round and is also easy to maintain. The MPSS Series can remain at sea for periods of at least 45 days. All these factors contribute to the vessel's overall value, significantly increasing uptime.

Piet van Rooij, Commercial Manager of Damen's Defence and Security department, said of the new vessel, "The MPSS range is a response to the increasing use of drone technology that we see in modern combat and

surveillance situations. We could see that such capabilities would be of growing importance for countries looking to sustain their sovereignty. At the same time, this is a multi-purpose vessel that can be applied to wide range of additional operations, thereby offering value for taxpayer's money. This theme is further developed using commercial off the shelf technology, which ensure the cost-effective construction of a reliable platform. We're very much looking forward to showcasing this new vessel, including at exhibitions, in the coming months."





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Shri Sarbananda Sonowal launched projects worth of Rs. 308 crore for North East region Guwahati

Shri Sarbananda Sonowal launches major projects for development of waterways, unveils projects worth ₹308 crore for North East India and inaugurates Passenger-cum-Cargo Terminal at Bogibeel near Dibrugarh, Inland Water Transport Terminal at Sonamura in Tripura and upgraded terminals at Karimganj & Badarpur in Assam

- 19 passenger vessels for NW2 & NW16 to be provided;2 Pontoon terminals on NW-2 at cost of ₹25 crore
- "Dredging Corporation of India to commence dredging operations in North East": Shri Sonowal
- "Modi Ki Guarantee is powering waterways of North East towards Viksit Bharat": Shri Sonowal

The Union Minister of Ports, Shipping & Waterways and Ayush, Shri Sarbananda Sonowal launched major push for the development of waterways with unveiling projects worth of ₹308 crore for North East region Guwahati. The event was simultaneously held at Bogibeel in Dibrugarh, Badarpur in Karimganj, IWAI port in Dhubri as well as Sonamura in Tripura.

The Union Minister was joined by the Minister of Transport, Fisheries & Excise, Assam, Parimal Suklabaidya; the Minister of Health & Family Welfare, Information Technology, Assam, Keshab Mahanta; the MP (Lok Sabha) for Guwahati, Queen Oja while the Union Minister of Petroleum &

Natural Gas and Labour Employment, Govt of India, Rameshwar Teli joined in the programme from Dibrugarh. In Sonamura, the event was attended by the Minister of Transport, Tourism, & Food, Civil Supplies & Consumer Affairs, Tripura, Sushanta Chowdhury among other dignitaries. At Pandu, the event was also graced by the MLA of Guwahati East, Siddhartha Bhattachayya, the Mayor of Guwahati Municipal Corporation (GMC), Mrigen Sarania; the Deputy Mayor of Guwahati Municipal Corporation (GMC), Smita

Roy, the Chairman, IWAI, Vijay Kumar; the Vice Chairman of IWAI, Sunil Kumar Singh, along with prominent social worker Tapan Das among other dignitaries. In Dibrugarh, the event was also graced by the Chairman, All Assam Industrial Corporation (AIDC) and MLA, Dibrugarh, Prasanta Phukan; the MLA of Moran, Chakradhar Gogoias well as the MLA of Chabua, Ponakan Baruah.

The Minister inaugurated Passenger-cum-Cargo terminal at Bogibeel near Dibrugarh, Inland Water Transport Terminal at Sonamura in Tripura and upgraded terminals at Karimganj & Badarpur in Assam. This terminal will play a pivotal role in rejuvenating IWT in the region for both cargo and passenger movement, paving the way for growth of trade & commerce.

He also laid foundation stones for construction of Custom Immigration Office in Dhubri as well as construction of the compound wall for IWAI Jogighopa terminal. The newly inaugurated Bogibeel terminal is being built with an investment of nearly ₹50 crore. This project includes cargo & passenger berths, approach & other internal roads, transit shed, open storage area, truck parking area, passenger waiting area. It will also lead to increase in eco-tourism as well as improve the economies of scale for existing major trade like tea, polymer, coal, fertiliser among others. The length of this terminal will be extended to 100 metres and the construction will start immediately. An integrated officer for Immigration, Customs & IWAI at Bogibeel is also being constructed at a cost of ₹18 Crore.

A project for bank protection and Extension of jetty at Bogibeel Terminal at a cost of ₹12 Cr would also be initiated immediately.

The IWT terminal at Sonamura is developed with an investment of ₹6.91 crore. The upgraded terminals at Karimganj and Badarpur was completed with an investment of ₹6.40 crore. The IWT Terminal at Sonamura has the potential to attract trans-boundary trade including commodities like bagged cement, horticulture, consumer products and other local goods transported via road between India and Bangladesh. This jetty is also being developed as a multi-purpose jetty to support movement of passengers on ferries between the two countries. The renovated and upgraded terminals at Karimganj and Badarpur will further easy and increase the export activities & commodities. The projects have major influence in districts of Cachar, Karimgani & Hailakandi in Assam and adjoining states of Mizoram, Tripura, Manipur and Meghalaya due to the presence of cement industry, stone crushers, coal deposits, food processing units, tea estates, etc.

Speaking on the occasion, Shri Sonowal said, "Under the dynamic leadership of Prime Minister Narendra Modi our rich and complex web of waterways are being developed with major projects launched. Modi Ki Guarantee is powering the waterways of the North East towards Viksit Bharat. The terminals at Bogibeel will act as a catalyst of economic development for the region, further amplifying trade opportunities for upper Assam as well as Arunachal Pradesh. The Sonamura terminal in Tripura will further trans-boundary trade between India and Bangladesh. The Karimganj and Badarpur terminals will also power trade opportunities. All these projects will go a long way towards realising the vision of Narendra Modi ji towards the North east acting as the powerhouse of India's growth towards becoming Viksit Bharat."

The Union Minister also laid foundation stones for construction of Customs Immigration Office in Dhubri with an investment of ₹7.5 crore. The construction of boundary wall will also start at Jogighopa terminal in Goalpara, Assam. The wall for IWAI Jogighopa terminal, which is being built at a cost of ₹18 Crore, will secure the terminal. 6 Tourist jetties in NER at a cost of ₹8.45 Cr. at Jogighopa, Tejpur, Bishwanathghat, Neamati, Sadiya, Bindakota would also be constructed. Three of these has already been provided and rest of the three will be provided soon. This project is

introduced to upgrade the existing infrastructure along NW-2 and recognising the huge potential for cargo, passenger transportation, riverine tourism.

Two Electric Catamarans at Guwahati will be deployed in Guwahati by August, 2024. The Electric Catamarans, developed by Cochin Shipyard Limited at a cost of ₹36 crore, will enhance communication facilities for the people of Guwahati. The 50 pax Electric Hybrid Catamaran will be used for cross river ferry and pilgrim tourism at Guwahati. It will improve the economies of scale for existing major trade like coal, stone chips, polymer, fertiliser etc through IBP route and from Bhutan through waterways and also encourage employment & economic growth. 19 passenger vessels for NW-2 & NW-16 would be provided and two Pontoon Terminals on NW-2 would be constructed at a cost of ₹25 crore.

Announcing new major initiatives for the development of waterways in the region, Shri Sonowal said, "It gives me immense pleasure to share with all of you that we have decided to deploy 6 tourist jetties on the National Waterways 2; i.e. River Brahmaputra. We have also decided to deploy 2 Electric Hybrid Catamaran at Guwahati which will ease passenger to commute between the two banks along Brahmaputra. Towards achieving Modiji's vision of a powerful North East region, I am happy to share that Dredging Corporation of India will commence dredging operations in the North East region. These initiatives will power our waterways towards transforming North East to become the powerhouse of India's growth story towards becoming a Viksit Bharat, a vision of Narendra Modiji. These transformative projects, under the visionary leadership of Prime Minister Narendra Modi ji, will mark a new era of connectivity and prosperity for the Northeast region, furthering the 'Act East' policy of Modi government. These initiatives reflect Modiji's unwavering commitment to drive inclusive growth and development in the region, delivering on the vision of Modi ji 'Sabka Sath, Sabka Vikas'."

The tourist jetties will enhance the existing infrastructure along Brahmaputra (NW2) further bolstering the promising tourism industry of the state. These jetties are being built an investment of ₹8.45 crore. The Electric Hybrid Catamarans, which are being deployed in Guwahati with an investment of ₹36 crore, will introduce Green energy in inland waterways. The Dredging Corporation of India (DCI), India's premier institution dedicated towards dredging operations, will commence operations on rivers

Brahmaputra (NW 2) and Barak (NW 16). The dredging operations in NER in the Dhubri-Jogighopa stretch of NW-2, Dhubri-Hatsingimari, North Guwahati-South Guwahati, Neamati-Kamlabari and Lakhipur-Bhanga on NW-16 will be done at a cost of ₹124 crore. This project will help maintain constant and adequate draft and help seamless movement of cargo and passengers in the National Waterways of North-East.

Elaborating the scope of work proposed to be done for furthering the strength of waterways, Sarbananda Sonowal said, "Our Cabinet under the visionary leadership of the Prime Minister recently approved the signing of the BIMSTEC Agreement on Maritime Transport Cooperation. This Agreement in the spirit of our Neighborhood First Policy will herald seamless movement of water-borne cargo amongst the seven BIMSTEC countries. This Agreement will result in enhanced trade and commerce, reduced logistic costs as a result of removal of administrative and procedural delays, increase in manufacturing and enhanced employment opportunities. We have also adopted a Roadmap for River Cruise Tourism for developing multiple other routes for cruise tourism on other National Waterways. ₹45,000 Crore would be spent for development of River Cruise Tourism in the coming years. This shows the immense potential that rests in the 20,000 kilometers long and vibrant inland waterways of our country. IWT sector is also witnessing environment friendly green initiatives viz. development of electric catamarans, Hydrogen Powered Catamaran Pax Vessels etc. The initial target is to support transition of 1,000 Vessels, ferries and boats over the next 10 years and eventually achieving the target of all Green Vessels by 2047. This stand as a resounding testament to the critical role of these waterways in propelling economic growth and prosperity. There has been a 700% increase in operational national waterways, from only 3 in 2014 to 24 Operational National Waterways, a phenomenal rise of 56% in multimodal terminals and a 200% increase in investments in National Waterways. The IWT sector is

experiencing an unprecedented surge in terms of trade and transport since 2014. During the last 10 years under the visionary leadership of Prime Minister Shri Narendra Modi, we have made remarkable efforts to develop and explore the full potential of our 20,000 kilometers long Inland Waterways sector."

The strategic significance is underscored by a substantial investment of over ₹1,000 crore in the past couple of years dedicated to advancement of these waterways in the North-East.Projects such as Comprehensive development of NW-2, Ship repair facility at Pandu (₹208 Cr.), Jogighopa IWT terminal (₹64 Cr.), last mile connectivity to Pandu port through alternative road from Pandu Port to NH-27 (₹180 Cr.) are some of the projects that are already underway. IWAI has endeavoured to develop NW-1, passing through the states of Uttar Pradesh, Bihar, Jharkhand and West Bengal, as a reliable cargo logistics route under ₹5,000 crore under Jal Marg Vikas Project (JMVP). From 2013-14 onwards, the cargo movement has increased in the last decade from a mere 6.89Million Ton in 2014 to 126.15 Million tonnes in 2022-23, showing a mammoth growth of 1,700%.

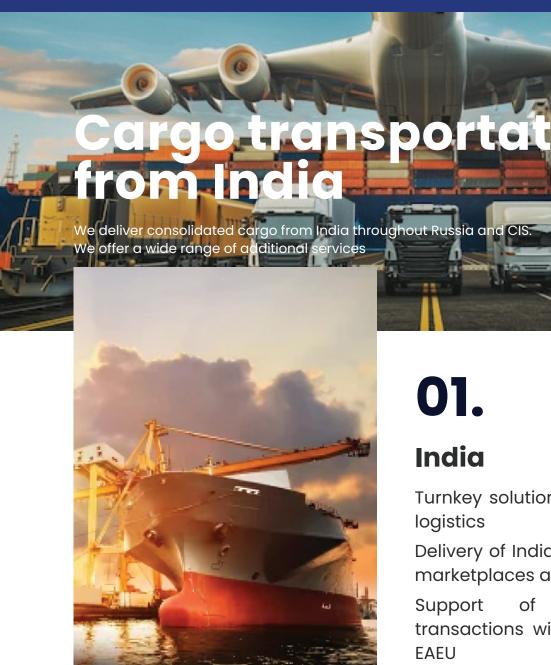
Under the Sagarmala program, aimed at the development of the North-Eastern states, projects exceeding ₹1,000 crore have been initiated, with a particular focus on enhancing inland waterways in Assam, where projects exceeding ₹760 crore are underway.

The Maritime Amrit Kaal Vision 2047 of the Ministry of Ports, Shipping, and Waterways (MoPSW) prioritizes the expansion of port infrastructure, including the development of six mega ports with capacities exceeding 300 and 500 million tonnes per annum (MTPA). Additionally, MoPSW aims to boost the share of Inland Water Transport (IWT) to 5% by 2030 as part of the Maritime India Vision (MIV), signaling a comprehensive effort towards fostering maritime sector growth and connectivity enhancement.





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Cochin Shipyard Limited (CSL), Cochin, has carried out the steel cutting of the first vessel in series of two vessels of Sea Shuttle zero emission feeder container project being built for Samskip a leading logistics companyheadquartered in Netherlands. This function coincided with the sustainability day celebrations of Samskip held at their headquarters in Rotterdam.

This SEA SHUTTLE project is one of the First Zero Emission Feeder Container Vessel in the World using Green Hydrogen as the fuel. This is an ambitious project admitted under the Norwegian Government green funding programme aimed at emission-free transport solutions by adopting

sustainable path breaking future technologies. In zero emission mode, each vessel is expected to achieve around 25,000 tons of CO2 reduction per year.

In line with Government of India's green hydrogen mission, Cochin Shipyard has also developed India's first fully indigenous hydrogen fuel cell catamaran ferry vessel as a pilot project which was flagged off by the Hon: Prime Minister of India Shri Narendra Modi on 28th February 2024. Cochin Shipyard is also participating

in various Domestic and International projects featuring new green technologies to find sustainable solutions.

These projects provide impetus for using Hydrogen in marine application and early adoption of hydrogen fuel cell technology in the marine sector will provide it a global competitive advantage where by meeting sustainable green energy aspiration of the Industry for net zero emission. Through these projects, Cochin Shipyard is well aligned with its overall business plan to participate in sustainable transportation solutions using new cutting edgetechnologies.





Software and Data Services For Ship Design and Operations





Marine Jet Power (MJP), a global leader in the waterjet propulsion market proudly announces the establishment of MJP India, marking a significant milestone in MJP's commitment to advancing indigenous manufacturing and indigenization efforts in the Indian defense sector.

"Embracing the fusion of innovation and technology, we proudly announce the establishment of Marine Jet Power in India," remarked MPS Gill, Managing Director of MJP India. "This partnership stands as a testament to our deeprooted commitment to India and our valued customers. It marks a significant milestone in our collective endeavor to propel the nation's technological landscape forward, shaping the future of maritime and amphibious vehicle propulsion systems on Indian shores."

With hundreds of MJP waterjet systems including PodJet systems for amphibious vehicles, already installed in India this strategic initiative aligns seamlessly with India's ambitious "Make in India" initiative. The objective to achieve 53 percent local manufacturing and sourcing of components by 2026 underscores a commitment to boosting Indigenous Content (IC) and fostering skill development within the local workforce.

The phased manufacturing plan outlined in the agreement underscores a dedication to skill enhancement, offering local engineers and technicians opportunities to work with cutting-edge technology. Additionally, MJP commits to ensuring the reliability and availability of critical components for both current and future waterjet-enabled

vessels and amphibious vehicle fleets

During a recent visit to India, Jonas Tegström, CEO of Marine Jet Power, reaffirmed the company's commitment to increasing indigenous content in waterjet systems during a meeting at the Indian Navy and Indian Coast Guard Headquarters in New Delhi. Tegström emphasized, "MJP is committed to ensuring a strong foundation for the future of the Indian defense sector. By focusing on indigenous manufacturing and skill development, this collaboration will strengthen

the operational capabilities of the Indian Coast Guard."

"This long-term commitment from MJP signifies a strategic investment aimed at supplying spare parts, waterjets, and PodJets not only to India but to the entire surrounding region. It will fortify our logistical chain, ensuring enhanced support for all our customers." – Jonas Tegström, CEO, MJP Group

About Marine Jet Power (MJP):

Headquartered in Uppsala, Sweden, Marine Jet Power (MJP) has been redefining the waterjet and PodJet market with constant innovation and unsurpassed quality since 1987. MJP's proven stainless steel, mixed-flow and aluminum, axial-flow waterjets are used in many diverse applications, from fast military craft and passenger vessels to luxury yachts, workboats and amphibious vehicles worldwide.

About MJP India:

MJP India represents a collaborative venture between Marine Jet Power and Corporate Alliances, MJP's trusted and valued partner in India for more than 15 years. Together, they are dedicated to advancing local manufacturing and indigenization efforts in the Indian waterjet propulsion market. Through strategic partnerships and a steadfast commitment to excellence, MJP India endeavors to enhance the operational capabilities of the Indian Coast Guard and other maritime and defense stakeholders. Their mission is to provide waterjet propulsion solutions tailored to the specific demands of India's maritime environment.



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Equinor and the Indian fertiliser and petrochemical company Deepak Fertilisers have signed a 15-year agreement for supplies of liquefied natural gas (LNG) with deliveries starting in 2026.

Equinor's growing global LNG portfolio is based on LNG from the Equinor operated LNG Plant in Hammerfest, Norway and LNG supply sourced mainly from the US.

This portfolio will be the base of supply to Deepak, which will use the gas mainly as feedstock for production of ammonia in its newly commissioned plant for manufacturing fertilisers and petrochemicals. The agreement covers an annual supply of around 0.65 million tons (ca 9 TWh) of LNG for 15 years starting from 2026.

Ammonia is a key building block for the society, being

crucial for agriculture and food security. The ammonia which Deepak will produce from the natural gas will be for domestic use.

"Deepak's new ammonia plant has created new gas demand in the growing Indian market. I am very happy that we have landed this agreement with Deepak Fertilisers. The agreement is another proof of how we use our position in the Atlantic basin to strengthen our relationship with key players in the growing Indian market. We look forward to developing our relationship with Deepak and to exploring avenues for

further collaboration on petrochemicals feedstocks such as propane and ethane and on low carbon ammonia in the future", says Equinor's Senior vice president for Gas & Power, Helge Haugane.

"We are very happy to enter into this long-term agreement with Equinor for supply of LNG. The agreement will provide reliable supplies of feedstock which will further strengthen Deepak Fertilisers' value-chain from gas to ammonia, the key ingredient in fertilisers. The agreement will help us absorb global volatility as well as enhance overall margins. We also look forward to exploring with Equinor further collaboration on feedstock and carbon footprint reduction initiatives," said Sailesh C. Mehta, Chairman & Managing Director, DFPCL.









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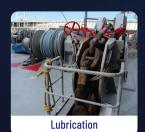
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1. Agreement will create a UAE-based naval manufacturing pipeline worth an estimated 30 billion euro

2. Landmark agreement signed in Rome by EDGE MD & CEO and Fincantieri CEO & MD, in the presence of Undersecretary of State for Defence, Chief of the Italian Navy and Secretary General of Defence/National Armaments Director

Abu Dhabi, UAE/Rome, Italy: EDGE, one of the world's leading advanced technology and defence groups, and Fincantieri, have entered into an agreement aimed at creating a joint venture (JV) to capitalise on global shipbuilding opportunities with a focus on the manufacturing of a broad range of sophisticated naval vessels. EDGE will hold a 51% stake in the venture, which has a commercial pipeline valued at approximately 30 billion euro, with management direction provided by Fincantieri. The Abu Dhabi-based JV will be awarded prime rights to non-NATO orders, especially leveraging on the attractiveness of UAE G2G arrangements and export credit financing packages, along with a number of strategic orders placed by select NATO member countries.

During a recent visit to Rome, Italy, the term sheet to create the JV was formalised through the signatures of Hamad Al Marar, Managing Director and CEO of EDGE Group, Pierroberto Folgiero, CEO and Managing Director of Fincantieri and Dario Deste, General Manager of the Naval Vessels Division of Fincantieri. This agreement grants the JV strong cooperation to market its products with the Navy

of different countries in the world, underlining its global ambition and commitment to developing joint intellectual property and future designs. This strategic agreement significantly enhances EDGE's ability to design and build frigates and other large vessels, broadening its range of operations and marking a crucial advancement in the diversification of its maritime solutions portfolio. The JV also harbours ambitions to develop an underwater program for mid-size submarines. The incorporation of the JV is

subject to a series of conditions precedent, customary for an agreement for this kind.

Hamad Al Marar, EDGE Group Managing Director and CEO, said: "Through this transformative joint venture with Fincantieri, we are not just expanding EDGE's diverse capabilities in shipbuilding but setting a new benchmark for collaboration and knowledge exchange in the global maritime industry. This partnership embodies our commitment to innovation, leveraging Fincantieri's unmatched expertise to explore opportunities in the global market. This venture is a testament to our strategic vision of growth through collaboration, promising a future of technological advancements and enhanced naval defence solutions."

The JV will concentrate on sales, commercial operations, and engineering for design and service, taking charge of developing shared intellectual property and retaining exclusive rights to all future designs. Furthermore, the JV will set up a dedicated design authority, opening up opportunities for highly skilled Emiratis, and drawing in international expertise to support this innovative and strategic initiative.

Pierroberto Folgiero, Fincantieri Group CEO and Managing Director, said: "We are honoured and eager to join forces with EDGE Group with the aim of creating a unique industrial platform able to address with maximum entrepreneurship and distinctive competencies the sizable

market opportunities originated in UAE and from UAE to the international markets".

Fincantieri brings to the table an illustrious history and extensive future proof expertise, having constructed over 7,000 ships, and its role as a key supplier to various navies

and the cruise ship industry. This collaboration represents a pivotal step in redefining global naval shipbuilding, emphasising both companies' leadership in high-value segments and their commitment to innovation, expertise, and global expansion.



The Bolloré Group and the CMA CGM Group announced the completion on the 29th February, of the sale of 100 % of Bolloré Logistics to CMA CGM, it being specified that the transfer of Bolloré Logistics Sweden AB to the CMA CGM Group remains subject to the latter obtaining foreign investment clearance in Sweden.

The purchase price is 4.850 billion euros, on the basis of the estimated debt and cash on the completion date.

As a leading transport and logistics company in France, and one of the main players in the sector worldwide, Bolloré Logistics achieved in 2022 a turnover of 7.1 billion euros, transported 710,000 TEUs of ocean freight and 390,000 tons of air freight, along with a storage capacity of 900,000 m2.

This is CMA CGM's largest acquisition since its creation in

1978 and constitutes a major step in the CMA CGM Group's logistics development strategy, complementing its historical maritime transport line of business.

Mr. Rodolphe Saadé, CEO and Chairman of the CMA CGM Group, declared: "I would like to thank the Bolloré Group for the trustful dialogue we have established over the last few months to successfully finalize this acquisition. Within the CMA CGM Group, we are proud to welcome a French flagship built on years of work and experience. The

new entity, made up of CEVA and Bolloré Logistics, is the world's number 5 in its sector. We will now be able to offer our customers a complete range of services and extend our expertise to new businesses. On behalf of the CMA CGM Group and my family, I would like to welcome the 14,000 employees who are joining us today. Together, we will combine our talents and accelerate our development!"

Mr. Cyrille Bolloré, CEO and Chairman of the Bolloré Group, added: "This is the beginning of a new chapter for Bolloré Logistics' employees. I am very pleased that they are joining the CMA CGM Group and the Saadé family. They will bring unique expertise and know-how, which have long made the pride of the Group and which will be the pride of CMA CGM tomorrow. It is also a great opportunity for our customers around the world and I would like to take this opportunity to thank them for their trust and loyalty".



DHTHoldings, Inc. (NYSE:DHT) (the "Company") announced it has entered into agreements to build four large VLCCs.

The Company has entered into agreements to build four large VLCCs for delivery between April and December 2026. Two will be constructed at each Hyundai Samho Heavy Industries and Hanwha Ocean (formerly known as Daewoo Shipbuilding & Marine Engineering), in South Korea. The average price is \$128,500,000 for the four ships. The contracts include options for an additional four vessels that can be delivered during the first half of 2027. The vessels have been ordered to high specifications with new Super Eco-designs and premium earning power through improved fuel economics, reduced emissions and large carrying capacity of about 320,000 metric tons. The ships will be fitted with Exhaust Gas Cleaning Systems, be Tier III compliant, hold class ready notations for multiple fuels, and further improve the DHT fleet efficiencies.

President & CEO, Svein Moxnes Harfjeld, stated: "We have secured very early and competitive delivery slots to build the most efficient ships and of the highest quality the market has to offer." He further stated: "We expect our clients to welcome these timely fleet additions through DHT's continued safe, efficient and reliable transportation of crude oil."

The Company does not intend to issue any new capital, but plans to finance the project with cash-flows from operations, available liquidity, and new mortgage debt. These investments are expected to be accretive to the

Company's earnings and the Company will maintain its dividend policy of paying out 100% of ordinary net income to shareholders through quarterly cash dividends.

The vessel supply scenario for the VLCC sector is very constructive:

- 1. The current orderbook with the supply of new VLCCs equals less than 3% of the existing fleet.
- 2. Delivery slots for potential additional VLCC orders are available from 2027 onwards. These potential delivery slots

face competition from several other shipping segments.

- 3. The fleet is rapidly aging. By the end of 2026, close to 50% of the fleet is projected to be older than 15-years of age and over 20% will be older than 20-years.
- 4. About 160 VLCCs, with an average age of 21-years, are estimated to have been involved in sanctioned trades. These vessels have limited, if any, commercial opportunities in the compliant markets and trades.
- 5. IMO's implementation of the Carbon Intensity Indicator (CII) will increasingly constrain the efficiency of the older end of the fleet. Ships in this category may be forced to decrease speed to meet lower emissions targets thereby reducing shipping capacity.

About DHT Holdings, Inc.

DHT is an independent crude oil tanker company. Our fleet trades internationally and consists of crude oil tankers in the VLCC segment. We operate through our integrated management companies in Monaco, Norway, Singapore, and India. You may recognize us by our renowned business approach as an experienced organization with focus on first rate operations and customer service; our quality ships; our prudent capital structure that promotes staying power through the business cycles; our combination of market exposure and fixed income contracts for our fleet; our counter cyclical philosophy with respect to investments, employment of our fleet, and capital allocation; and our transparent corporate structure maintaining a high level of integrity and good governance.



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The ideal gateway on the East Coast of India



Location and connectivity

Ideally located at the centre of a burgeoning hinterland on the East Coast of India covering 8 states within a radius of 750 km.

Proximity to feeder ports like Kolkata, Haldia, Paradip, Chittagong and Yangon enable seamless and cost effective transshipment through Vizag.

Established coastal service connecting the West and East Coast ports in the country.

Already established main line services offer regular and direct connectivity to China, South East Asia, Middle East and Europe.

Automation and seamless process

Real time auto generated EIR to the lines

E-form 13

Electronic Data Interchange (EDI) ease of doing business

Port Community System (PCS)

Online visitor management system

SAP integrated system

Container scanning facility

Road, Rails terminal infrastructure and connectivity

Located on the Golden Quadrilateral

2 dedicated railway sidings inside the terminal Direct rail linkage to Jharshuguda, Kalinganagar,

Hyderabad, Jajpur, ICD Birgunj (Nepal), Guntur,

Raipur, Nagpur and Durgapur

Total quay length: 845 m

Quay cranes : 9 no & RTGs : 19 no Total reefer points : 650 plug points

Reach stackers: 5 no and ECH: 1 no

Container handling capacity: 1.3 Mn TEU

Marine Infrastructure

Natural depth alongside - 16.5 m

Pilot station is only 2 NM from the terminal

No tidal restriction

All weather and round the clock operation

Berth extension by 395 m is completed enhancing the terminal capacity to 1.5 Mn TEU annually

Visakha Container Terminal Pvt Ltd

ISO 9001 : 2015, ISO 14001 : 2015, OHSAS 18001 : 2007, ISO 28000 : 2007, ISO/IEC 27001 : 2013 certified Opp. Town hall, Beach road, Visakhapatnam - 530 001, **T**: +91 891 2877 000 / 2877 009 **F**: +91 891 2739 765 **E**: bdc@jmbaxi.com | **W**: www.jmbaxi.com