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Indian Register of Shipping

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TOUCH OF CLASS

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Message From The Executive Chairman's Desk



Dear Reader,

The global maritime industry stands at a defining moment in its evolution. Geopolitical situation, changing trade patterns, environmental imperatives and rapid technological advancement are reshaping the way ships are designed, built and operated. While these developments present significant challenges, they also offer an extraordinary opportunity to reimagine shipping for a future that is safer, cleaner, smarter and more resilient.

Ships are becoming increasingly sophisticated platforms, integrating automation, advanced materials and complex energy systems. As technology advances, classification must evolve alongside it—not merely ensuring compliance, but enabling innovation through sound engineering, technical assurance and proactive risk management.

Decarbonisation remains a defining challenge. Alternative fuels, energy-efficiency technologies, electrification, will all contribute to the transition, with solutions varying across vessel types and trades. Nuclear propulsion, though subject to significant safety, regulatory and infrastructure considerations, could emerge as a dark horse in the longer-term pursuit of low-carbon shipping. The industry must remain open to emerging possibilities while ensuring that innovation is underpinned by rigorous engineering and safety standards.

Digitalisation is transforming ship design, maintenance and operations, but increasingly connected systems also bring cybersecurity risks and new demands on human oversight. Ultimately, the maritime industry's greatest asset remains its people. Developing the skills, adaptability and technical judgement of seafarers, engineers, surveyors and shipbuilding professionals will be essential to navigating this transformation safely and successfully. Thus, supporting India's ambition to strengthen domestic shipbuilding, expand maritime infrastructure and emerge as a significant force in the global maritime ecosystem.

The future of shipping will belong to those who combine technological ambition with engineering integrity, sustainability with commercial pragmatism, and global standards with indigenous capability. IRS looks forward to being a trusted partner in building a safer, smarter and more sustainable shipping.

I wish the readers a pleasant reading...!!!

Managing Director's Message



Dear Reader,

The maritime industry is entering a transformative phase, shaped by technological advancement, decarbonisation, digitalisation and a renewed focus on supply chains. For India, these developments present a significant opportunity to strengthen its maritime capabilities. At the Indian Register of Shipping (IRS), we see our role as not only supporting this transformation but actively contributing to its progress.

IRS continues to support the maritime industry through classification, statutory services on behalf of Flag Administrations, plan approval, surveys, certification, technical consultancy and training. Additionally, over the past few years, IRS has continued to expand its capabilities in emerging areas of maritime technology and sustainability. Our work in energy efficiency and greenhouse gas emissions verification, digitalisation, ship recycling, cyber security supports shipowners in navigating an increasingly complex regulatory landscape. We are also strengthening our engagement with indigenous manufacturers through Type and Works Approval, facilitating the development and acceptance of Indian-made marine equipment and systems.

The outlook for Indian shipbuilding is particularly encouraging. The Government of India's boost to revitalise shipbuilding and maritime capabilities, together with initiatives to develop shipbuilding clusters, expand existing yards, improve financing and strengthen technical skills, provides an important foundation for long-term growth. These measures, aligned with Maritime India Vision 2030 and Maritime Amrit Kaal Vision 2047, offer an opportunity to move beyond incremental growth towards a stronger domestic shipbuilding and marine manufacturing ecosystem.

India's maritime ambitions offer an opportunity to build not just more ships, but a stronger and more self-reliant maritime ecosystem. At IRS, we look forward to working alongside our stakeholders to translate this opportunity into lasting progress and contribute to India's emergence as a leading force in global shipping and shipbuilding.



Mr. Kapil Zaveri
Sr. Surveyor, Technical Software Development Group - PAC

A Smart Digital Platform for Maritime Technical Knowledge

The Indian Register of Shipping (IRS) continues to strengthen its digital capabilities through the development of software solutions aimed at enhancing technical efficiency and knowledge accessibility. In line with this endeavour, IRS has developed NEURON, an in-house digital knowledge platform designed to provide streamlined access to technical publications and facilitate efficient retrieval of technical information across the organisation.

Developed by the Technical Software Development Group of the Plan Approval Centre, NEURON was launched in January 2025. Initially conceived as a digital repository for IRS technical publications, the platform has progressively evolved into a comprehensive knowledge management system serving both internal users and the wider maritime community.

NEURON currently provides access to a broad range of IRS technical publications, including IRS Rules, Classification Notes and Guidelines. The platform is regularly updated with the latest publications and continues to incorporate new digital capabilities to enhance functionality and user experience.

AI-Assisted Technical Knowledge Retrieval

A significant enhancement to NEURON is the introduction of IRS's first AI-assisted technical chatbot, currently available in beta for internal users. The chatbot utilises a Retrieval-Augmented Generation (RAG) architecture integrated with Large Language Models (LLMs) to enable natural-language interaction with the NEURON knowledge repository.

Users can submit technical queries in natural language, following which the system identifies and retrieves relevant information from the repository and generates responses based on the retrieved content, along with references to the corresponding source documents. This enables users to locate relevant technical information more efficiently while maintaining traceability to the underlying IRS publications.

The AI-assisted chatbot is currently undergoing further development and refinement. Following adequate validation and training, the capability is envisaged to be extended to the wider maritime community, providing an intelligent interface for accessing IRS technical knowledge.



Access for the Maritime Community

NEURON is accessible to external users through the IRS website, providing the maritime community with a single digital point of access to current IRS technical publications. The platform incorporates Rule Seeker, a smart-search facility that assists users in locating relevant information across the available publications.

By integrating technical publications with intelligent search capabilities, NEURON facilitates efficient access to the information required by ship designers, shipyards, owners, consultants and other stakeholders in the maritime industry.



Supporting IRS's Digitalisation Initiatives

NEURON forms part of IRS's growing suite of indigenous digital solutions developed to support technical activities across the organisation and the maritime industry. Another notable example is NovaHull, an indigenously developed rule-based scantling compliance tool widely used by shipyards and designers for preliminary-stage design verification.

With the introduction of NEURON, IRS has further expanded its digital technology portfolio from specialised engineering and compliance tools to intelligent knowledge-management solutions. The platform reflects IRS's continued focus on leveraging software development, digital technologies and artificial intelligence to improve access to technical knowledge and support efficient technical activities.

Mr. Amresh Negi
Sr. Surveyor, Strategic Research,
RDAREA Division



Ship Drift: A Ship Trajectory Prediction Tool



An Indigenously Developed Tool to Track Disabled Vessels—saving lives, marine assets and sea environment

When a ship loses power in the middle of the sea, it becomes a drifting object at the mercy of wind, waves, and currents. Few questions arise, in this regard. Where will it go? Will it run aground on the coast? Will it collide with another vessel or marine structure? Or will it disappear into the expanse of blue, leaving search and rescue operations to rely on guesswork?

These are real-life scenarios that maritime authorities face more often than we realize for disabled ships. In this context, the Indian Register of Shipping (IRS) in collaboration with Indian Institute of Technology, Bombay (IIT Bombay) has developed a prediction tool designed to try and answer one critical question: Where might a disabled ship end up after a certain time duration?

A Ship Without a Compass

The importance of developing ship drift prediction capabilities can be better understood in the Indian context, through a few real-life incidents that occurred in the recent past. In 2011, MV Pavit a massive cargo vessel, washed ashore on Mumbai's Juhu Beach after drifting for weeks in the Arabian Sea. In another incident, MV Maa grounded near Visakhapatnam in 2020. Such incidents not only create navigational and environmental hazards but also expose the limitations of existing monitoring systems once a vessel loses propulsion or control. With a robust ship trajectory prediction tool, preliminary information about a drifting vessel's possible path can be made available in advance. This early insight can help maritime authorities to take timely preventive actions such as issuing alerts, coordinating rescue or towing operations, safeguarding coastal infrastructure and thereby preventing costly and risky groundings before they occur.

Technical Details

This tool Ship Drift) is built on a Lagrangian framework, which tracks individual particles (which represent virtual vessels) as they move through space and time. The model treats the disabled vessel as a particle

subject to primary environmental forces, which serve as the forcing functions that govern particle drift trajectory. By calculating the combined effect of these forces at any given moment in time and space, the model computes the vessel's instantaneous velocity and updates its position accordingly. The model accounts for three primary forces:

Wind Force
The force exerted by wind on the ship's exposed structure (the part above water).

Ocean current
The underlying water movement that pushes the vessel in a particular direction.

Wave force
The drift forces due to surface waves, which can significantly alter a ship's trajectory.

To account for uncertainty in real-world conditions, the model adopts a stochastic particle-based approach. When a ship becomes disabled, its exact position is often uncertain and only an approximate location is known. To address this, the model releases multiple “virtual ships” (particles) within a predefined radius around the reported location. Each particle drifts independently under the influence of environmental forces, thereby simulating a range of possible trajectories. This produces a probabilistic spread of the ship’s potential paths, offering rescue teams a realistic estimate of where the vessel might be, instead of relying on a single deterministic prediction.

How does the Tool Work?

As shown in Figure 1, the ShipDrift tool provides an interactive and user-friendly graphical interface that enables users to simulate and analyse the drift trajectory of disabled ships. The interface allows input of key parameters such as ship identification details, principal dimensions, initial geographical coordinates, simulation settings, and temporal information.

The outputs generated by the ShipDrift tool are designed to provide a comprehensive understanding of a vessel’s drift behaviour under varying environmental conditions. It provides a complete trajectory

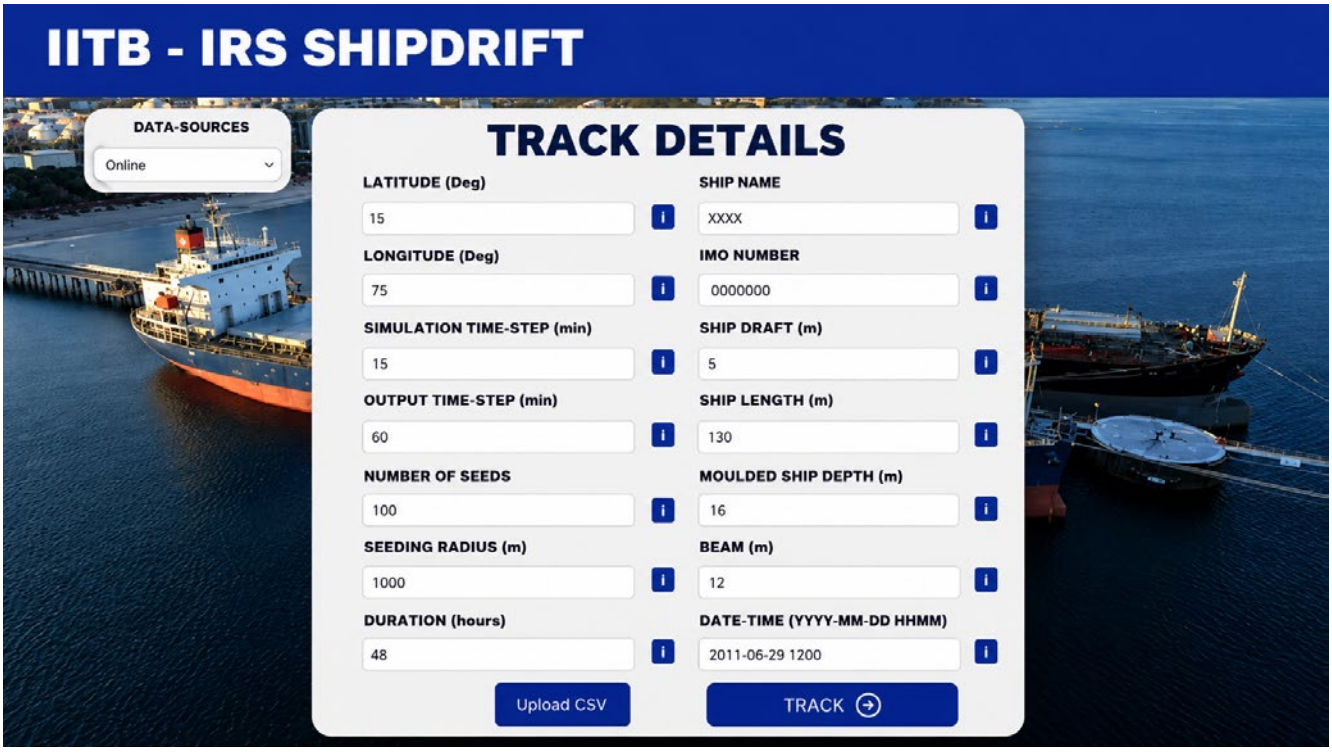


Fig. 1: GUI of ShipDrift

plot along with corresponding data in CSV formats for detailed evaluation. Three-hour interval centroid plots and centroid radius data are produced to track the drift's evolution over time. A log file keeps track of the run details, and a summary report gives a concise overview of the main results. Additionally, an animation file visually illustrates the ship's drift motion throughout the simulation, showing how the trajectories evolve over time. Figures 2 and 3 present snapshots from this animation, depicting the simulated drift patterns of multiple virtual ships under different environmental conditions.

As the simulation progresses in space and time, the model continuously tracks these particles. Once a particle (i.e. vessel) reaches the coastline, it is considered grounded and is no longer included in further computation. The coastal boundaries are represented using high-resolution shoreline data, ensuring accurate land-sea demarcation during simulation.

Sample Simulations

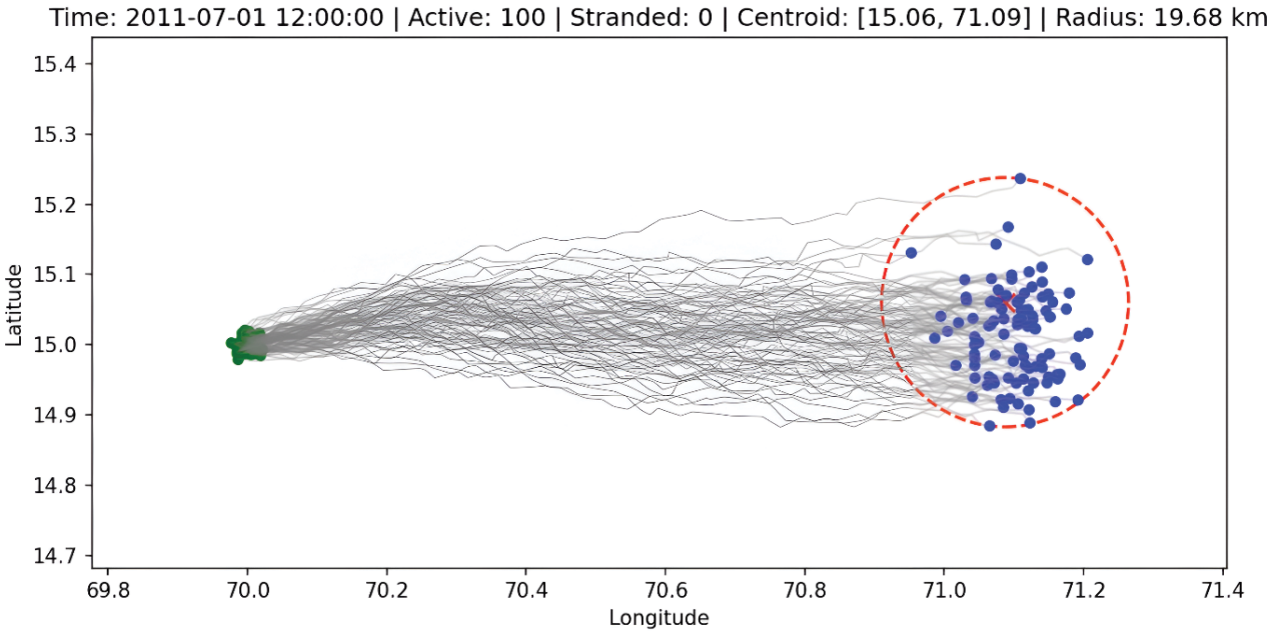


Fig. 2: Open-ocean simulation showing 100 virtual ships drifting (particles) freely

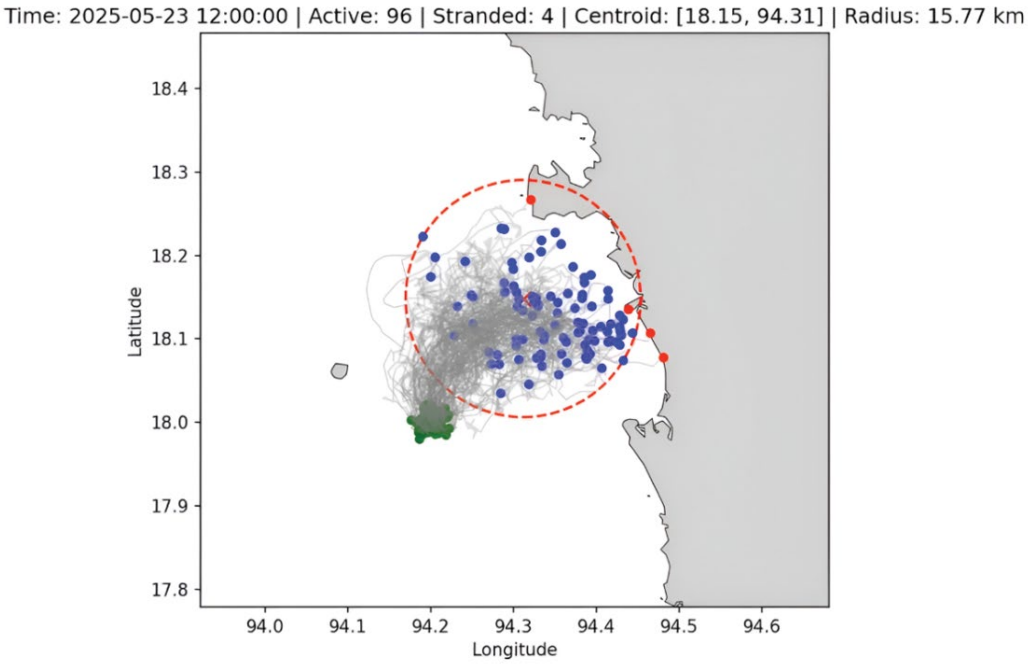


Fig. 3: Near-coastal simulation for 100 virtual ships (particles)

Figures 2 and 3 show how the ShipDrift tool simulates the movement of 100 ships (particles) under different ocean conditions. At the start, these particles are placed around an initial location, and as the simulation progresses, they begin to drift under the influence of wind, waves, and ocean currents. The green points represent the initial positions, which turn blue as the ships start drifting over time. At each time step, the model calculates a centroid, and a red dashed circle is drawn to mark the probable search and rescue zone based on the spread of the particles, thereby indicating the likely final location of each ship In Figure 2, which represents an open-ocean scenario, none of the ships become stranded, showing a free and consistent drift pattern. In contrast, Figure 3 captures a near-coastal simulation where four ships became grounded on the shoreline. This clearly demonstrates how the tool can capture the difference between open-sea and nearshore drift behaviours, valuable information that can help authorities plan targeted and timely rescue operations.

Key Features and Benefits

The developed tool offers several key features:

1. Real-Time Tracking: Continuous updates on the drifting trajectories of disabled ships for the given duration of trajectory simulation.
2. Search Area Estimation: Calculation of the mean position and spread radius to draw a circular area. This defines a probable search and retrieval zone.
3. Time-Stamped Predictions: Forecast snapshots at regular intervals as specified by the user. This helps in indicating how the drift area evolves over time e.g. Where the ship is likely to be in the next 6 hours?
4. Visual and Data Outputs: Intuitive color-coded trajectory maps (green for initial position, blue for active drift, and red for grounded), centroid plots showing spread dynamics, and detailed CSV data files with temporal and spatial stamps.
5. Multiple Options to include Environmental Data: Offers options to operate in both online and offline modes for using real-time environmental data.
6. Figure 4 highlights the various advantages offered by a ship trajectory prediction tool, including its role in enhancing maritime safety, improving response planning, and supporting efficient search and rescue operations.

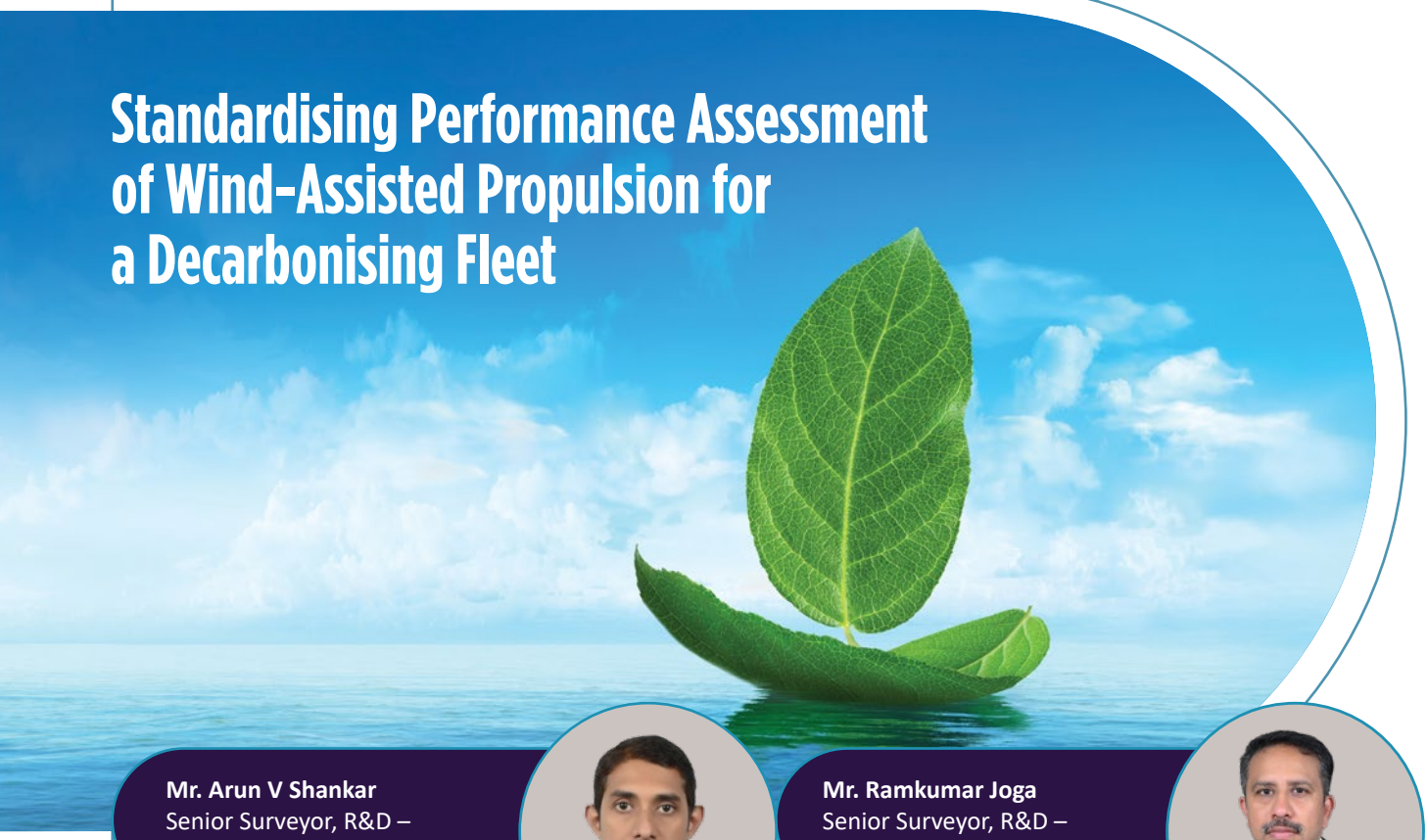


Conclusion

The presented ship trajectory prediction service has been developed by IRS to support maritime stakeholders by providing timely insights into the potential drift behaviour of disabled ship and the probable search-and-rescue zones. The tool is intended to support decision-making during emergencies and improve overall response preparedness.

For further details or inquiries about the service, you may write to us at ho@irclass.org.

Standardising Performance Assessment of Wind-Assisted Propulsion for a Decarbonising Fleet



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Senior Surveyor, R&D – Long-term Strength Assessment

Mr. Ramkumar Joga
Senior Surveyor, R&D – Hydrodynamics & Multi-Physics



For most of maritime history, wind was the only means of propulsion the industry knew. The diesel engine displaced it so widely that, for over a century, sails survived mainly in heritage vessels and yachts. Today, wind is returning to commercial shipping — not out of nostalgia, but out of necessity. The IMO's 2023 GHG Strategy targets net-zero emissions from international shipping by or around 2050, with indicative checkpoints of at least 20% reduction by 2030 and 70% by 2040. In line with these targets energy efficiency regulations governing both new construction and the in-service fleet provide a clear framework to progressively reduce the carbon footprint, while market-based measures such as the EU Emissions Trading System are creating direct commercial incentives for reducing fuel consumption.

Against this backdrop, wind occupies a unique position among decarbonisation options: it is free, abundant, delivered directly to the ship at the point of use, and entirely independent of the availability and cost of alternative fuels. Wind-assisted ship propulsion (WASP) does not seek to replace the main engine but to augment it: the auxiliary thrust generated by the wind reduces the load on the engine, so that fuel consumption and emissions reduce for a given speed, or a higher speed is achieved for the same power. Uptake is accelerating — from roughly two dozen commercial ships fitted with wind-assisted systems at the start of 2023, the in-service fleet has grown rapidly, with current installations typically delivering fuel and greenhouse-gas savings in the range of 5–15%, and dedicated newbuild concepts targeting substantially higher contributions from wind.

Wind Propulsion Technologies

Modern wind propulsion bears little resemblance to traditional sail. The technologies now being fitted to tankers, bulk carriers, ro-ro vessels and general cargo ships fall into a few broad families. Rotor sails (Flettner rotors) are tall rotating cylinders that exploit the Magnus effect: the spinning surface deflects the airflow and generates a lift force with a useful forward thrust. Rigid wing sails are aerofoil-shaped structures, often with multiple elements or flaps, which operate much like a vertical

aircraft wing. Suction wings (turbo sails) are thick aerofoils with boundary-layer suction, enabling very high lift coefficients from a compact unit. Kites deploy from the bow and harvest the stronger, steadier winds at altitude, while modernised soft-sail concepts revisit the traditional sail with contemporary materials, automation and control.

Each technology has its own aerodynamic character, structural implications and operational envelope, and each interacts differently with the hull, superstructure, propeller and engine. The saving actually achieved on a given ship depends not only on the device, but on the routes and wind, climate, the number and placement of Wind Propulsion Units (WPU's), the control strategy, and the behaviour of the propulsion train under varying load. This makes performance prediction for wind-assisted ships a genuinely multidisciplinary problem, and there is a need for transparent prediction methods.

The Challenge: Performance Prediction and Regulatory Compliance

The rapid pace of adoption has outstripped the supporting framework. Prospective owners need reliable, independently verifiable predictions of fuel savings before committing to an installation; financiers and charterers need to compare competing technologies on a like-for-like basis; and Administrations and classification societies need consistent methods for reflecting wind propulsion in statutory instruments such as EEDI, EEXI and CII. While IMO guidance (MEPC.1/Circ.896) provides a method for accounting for innovative energy-efficiency technologies including wind propulsion, significant gaps remain in how aerodynamic performance is established, how model tests and CFD analyses should be conducted and reported, and how class rules across societies should treat these installations.

The WiSP Joint Industry Project

The Wind-assisted Ship Propulsion (WiSP) series of Joint Industry Projects, coordinated by MARIN (Maritime Research Institute Netherlands), was conceived to close exactly this gap. WiSP 1 and WiSP 2 made progress on transparent performance prediction methods and regulatory gap analysis. Building on that foundation, WiSP 3 was launched by MARIN in cooperation with the International Wind Ship Association (IWSA) and a large community of participants spanning technology suppliers, shipyards, owners, operators, design offices, universities and classification societies.

WiSP 3 focuses on the standardisation of performance predictions for wind-assisted ships and on updates to the regulatory framework, including EEDI, EEXI and CII, so that fuel savings and emission reductions can be predicted and compared fairly across different wind propulsion technologies. Its work packages span harmonisation of class rules and regulations; industry standards for model testing and wind-tunnel testing; improved performance predictions, including full-scale validation against onboard measurements; further assessment of aerodynamics; the impact on propeller and engine operations; manoeuvring, seakeeping and the behaviour of wind-assist devices in unsteady conditions; continued development of the weather-routing application; and the impact of WASP controls and design considerations on in-service performance.

IRS Participation in WiSP 3

The Indian Register of Shipping (IRS) is participating in the WiSP 3 and is closely involved in aerodynamic performance of a wind propulsors configuration on a ship. The scope of this work package involves the investigation of aerodynamic interaction effects between Wind Propulsion Units (WPUs) and the ship superstructure, effect of atmospheric boundary layer, and the influence of transient wind conditions on the performance of wind-assisted propulsion systems (WAPS). These effects play a significant role in determining the net thrust generated by the propulsion devices and, consequently, the overall energy-savings of the vessel which require high fidelity modelling of the WPSs. The importance of high-fidelity numerical methods for aerodynamic performance prediction has been reinforced in the latest ITTC Recommended Procedure 7.5-02-03-01.9, "Predicting the Power Saving of Wind Powered Ships (2024)," which recognizes Computational Fluid Dynamics (CFD) alongside wind tunnel testing for evaluating the performance of WPUs.

As part of the Aerodynamics Work Package, IRS is actively contributing to the development of CFD-based best practice guidelines for the aerodynamic assessment of various Wind Propulsion Units. The objective of these guidelines is to establish a harmonized methodology for CFD-based performance predictions across the maritime industry. The guidelines provide recommendations on selection of environmental conditions, computational domain dimensions, physics boundary conditions and

convergence requirements for CFD assessments. Along with numerical requirements recommendations on modelling approaches, validation procedures, and reporting requirements to support class approval are also elaborated. This involvement gives IRS a hands-on role in shaping how the aerodynamic performance of WASP technologies will be numerically assessed and verified going forward.

A significant component of IRS's contribution involves participation in industry-wide numerical benchmark studies on both rotor sails and wing sails. These benchmark exercises are carried out collaboratively with leading research organizations and industry partners participating in the WiSP 3 project. In these studies, multiple organizations are independently performing CFD analyses on identical geometries and operating conditions using their respective numerical methodologies. The resulting datasets will be systematically compared to evaluate consistency, identify sources of variation, and establish best practices for harmonising numerical aerodynamic performance prediction.

Benchmarking of this kind where independent organisations analyse the same configurations and compare results is pivotal to establish confidence of CFD assessments. The collaborative validation task of this JIP will provide valuable insights into modelling sensitivities and numerical uncertainties, ultimately supporting the development of robust, standardized CFD procedures that can be uniformly adopted by designers, shipowners, and classification societies across the project's other work packages, IRS remains actively engaged as a strategic participant through the Participant Steering Group, taking part in the periodic meetings where project progress, findings and direction are reviewed and agreed with the wider participant community.

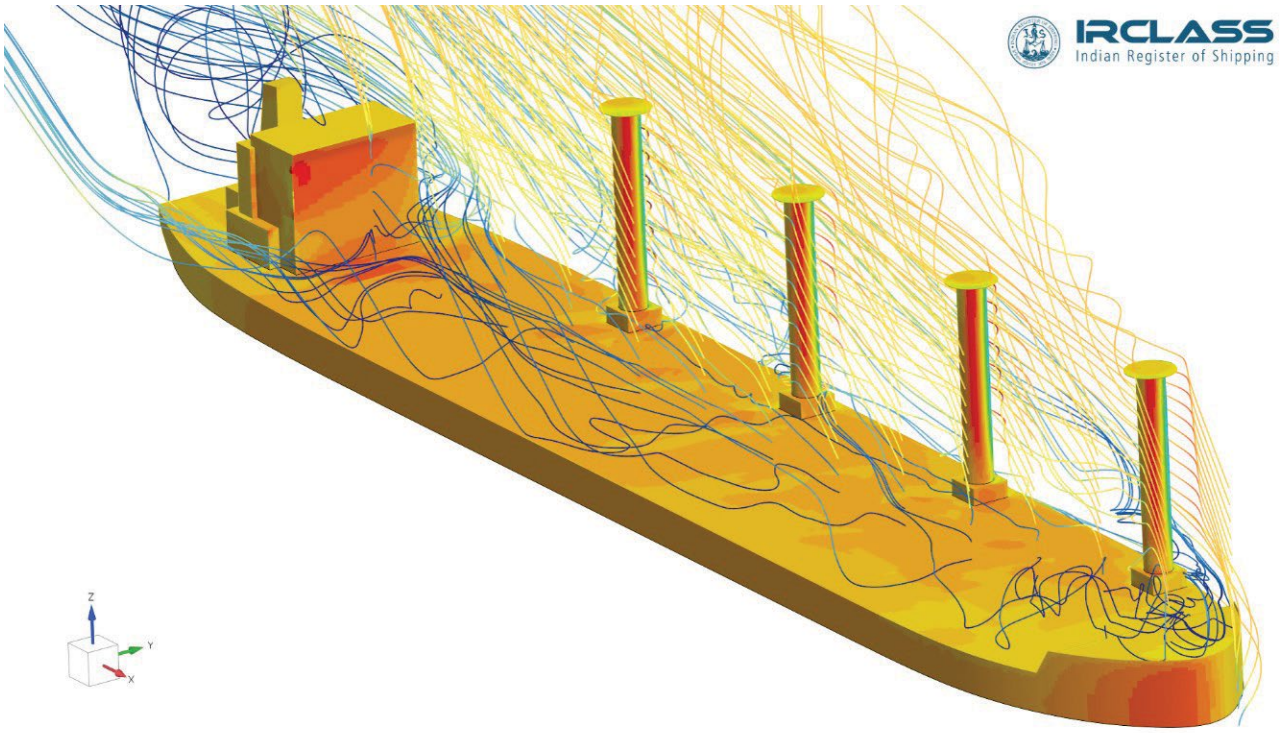


Figure 1. Velocity Streamlines for a Flettner Rotor Configuration on a Bulk-Carrier

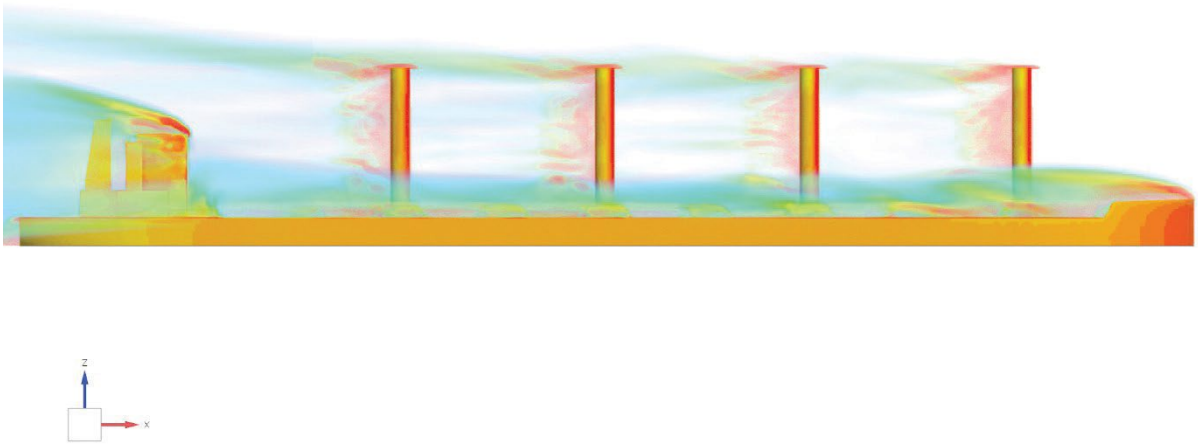


Figure 2. Vorticity Contour for a Four Rotor Configuration

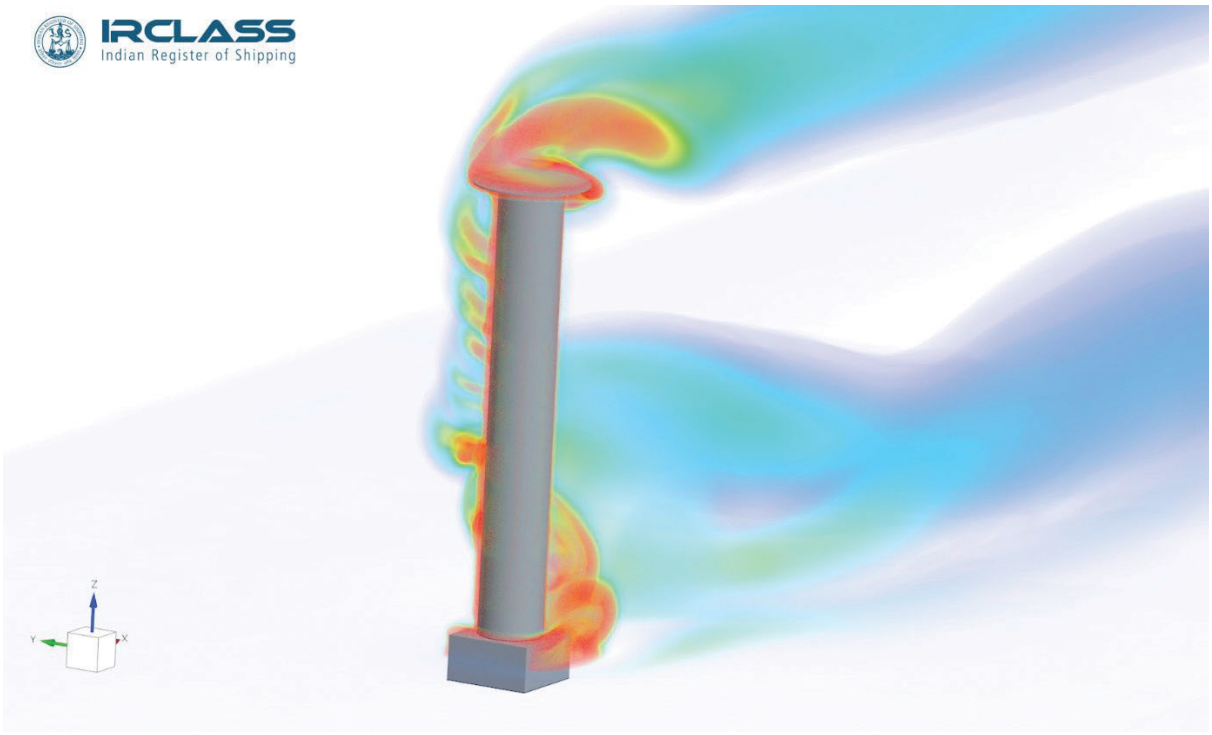


Figure 3. Vorticity Contour Plot for Single Rotor Configuration

Way Forward

Wind propulsion is moving from a niche fitment towards mainstream adoption, and the questions the industry asks are shifting accordingly, from "does it work?" to "how much does it save on my ship, on my routes, and how is that verified?" Answering those questions credibly requires standardised prediction methods, validated numerical practices and a harmonised regulatory framework that rewards genuine performance. Through its participation, IRS is developing early, first-hand knowledge of how wind propulsion is evaluated and regulated, and building the in-house CFD assessment capability needed to support designers, yards and owners through classification and statutory compliance ready to help the Indian and global maritime industry harness a propulsive force that has always been there, waiting to be used again.

MASS CODE – Addressing the Navigational Challenges

Mr. R. Srinivas
Head - New Advanced Technology, PAC



Introduction

Advances in digital technology, smart sensors, communications and software are enabling vessels with increasing levels of autonomy. Recognising this development, the International Maritime Organization (IMO) initiated a Regulatory Scoping Exercise in 2017 to examine how safe, secure and environmentally sound Maritime Autonomous Surface Ship (MASS) operations could be addressed within existing IMO instruments and subsequently commenced work on draft MASS code.

In May 2026, the IMO Maritime Safety Committee adopted the non-mandatory International Code of Safety for Maritime Autonomous Surface Ships (MASS Code) through Resolution MSC.595(111). The Code entered into effect on 1 July 2026 and provides a goal-based framework addressing areas including risk assessment, safety of navigation, connectivity, remote operations, cybersecurity and human oversight.

The adoption of the Code marks an important transition from developing autonomous technologies to demonstrating that they can be operated safely. This paper considers the principal challenges in implementing the navigation function under the MASS Code and how technical guidance and practical experience can support this transition.

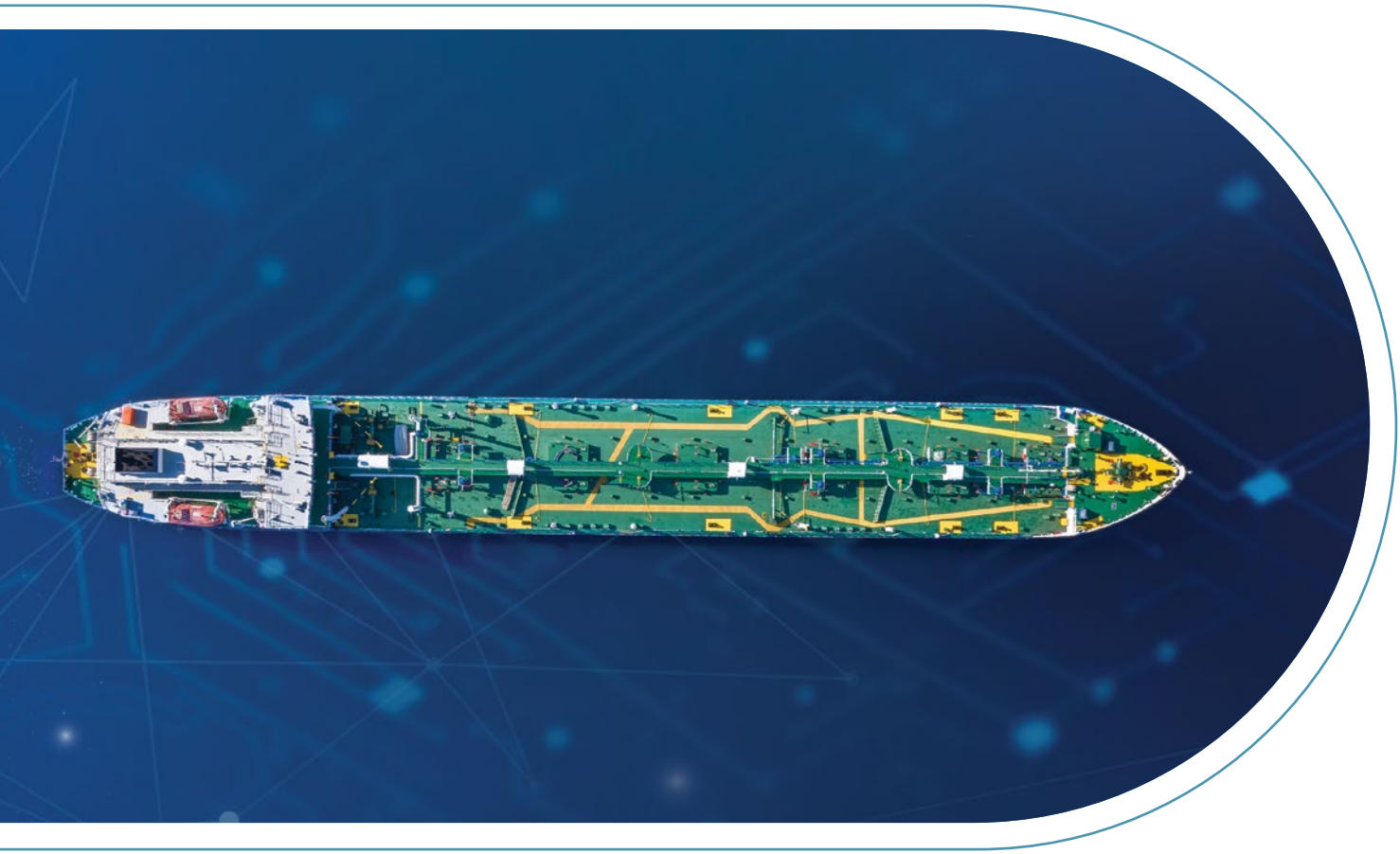
Navigation – The Core Challenge

Navigation is one of the most challenging functions to transfer from the conventional bridge to autonomous or remotely operated systems. A navigator combines information from radar, AIS, ECDIS, GNSS, visual observation and other sources to develop situational awareness, assess risk and take action.

In a MASS, these functions may be distributed among sensors, software, control systems, communications, autonomous decision-making systems and a Remote Operations Centre (ROC). The implementation challenge is therefore not simply to automate individual functions, but to demonstrate the reliability of this complete chain under normal and abnormal conditions.

Situational Awareness and Collision Avoidance

The sensors providing information for situational awareness may be affected by fog, rain, sea spray, darkness, glare and sea clutter, while different sensors may provide conflicting



information. Autonomous navigation must address sensor fusion, data validation, fault detection and uncertainty. The system must determine not only what it is detecting, but the confidence level of its interpretation.

Collision avoidance presents a related challenge. An autonomous system must detect and track targets, assess the developing situation, apply COLREG, select a manoeuvre and verify its execution. This becomes more complex when several vessels are involved, AIS information is unavailable, visibility is restricted or another vessel behaves unexpectedly.

Thus, implementing COLREG in software is only part of the problem. The system must demonstrate that it can apply the rules appropriately in dynamic and uncertain situations.

Remote Operations and Connectivity (ROC)

The ROC forms an integral part of a remotely operated or autonomous vessel. It should not simply be viewed as a conventional bridge moved ashore, but as one element of a distributed system comprising the vessel, autonomous functions, communications and remote personnel.

A key question is whether the remote operator can establish sufficient situational awareness and intervene within the required time when the autonomous system encounters an abnormal situation. Human-machine interfaces, alarm management, workload and transfer of control consequently become important safety considerations.

Connectivity introduces another challenge. Bandwidth, latency and reliability can vary, and a MASS must be capable of responding to degraded or lost communications. Loss of connectivity should therefore be treated as an operational scenario, with predefined responses based on the vessel's operational context and risk assessment.

Similar principle applies to environmental and equipment degradation. A MASS must recognise when its sensors or other systems are no longer providing adequate information and needs to take a decision to either continue safely with degraded capability or transition to an appropriate safe state.

Cybersecurity and Software Assurance

As shipboard and shore-based systems become increasingly interconnected, cybersecurity

becomes an integral part of navigational safety. A cyber incident could affect navigation information, communications, GNSS, AIS, ECDIS, propulsion, steering or remote control of particular concern is the possibility of incorrect information being presented to the autonomous system as genuine. Protection of systems, access control, network segregation, data integrity, monitoring and incident response therefore need to form part of the overall safety case.

Software assurance is equally important. Autonomous navigation systems may use advanced algorithms and artificial intelligence for object detection, classification, prediction and decision support. Maritime operations, however, include many unusual situations that cannot be represented during development or training. Verification and validation must therefore address software quality, data integrity, system limitations, updates and behaviour outside the expected operating envelope.

Progressing from Technology Demonstration to Safety Assurance

A system may demonstrate autonomous track keeping or collision avoidance successfully under controlled conditions. The greater challenge is demonstrating safe performance when sensors disagree, communications deteriorate, another vessel behaves unexpectedly or human intervention is required at short notice.

Implementation of the MASS Code therefore requires progression from concept to testing in dynamic scenarios, demonstration of safe operation. The Experience-Building Phase planned by IMO will be important in identifying practical issues and lessons that can contribute to the future mandatory MASS Code.

For industry and classification societies, this also requires practical methods of assessing autonomous functions, software, communications, cybersecurity, ROC arrangements and their interaction.

IRS Guidelines and Industry Experience

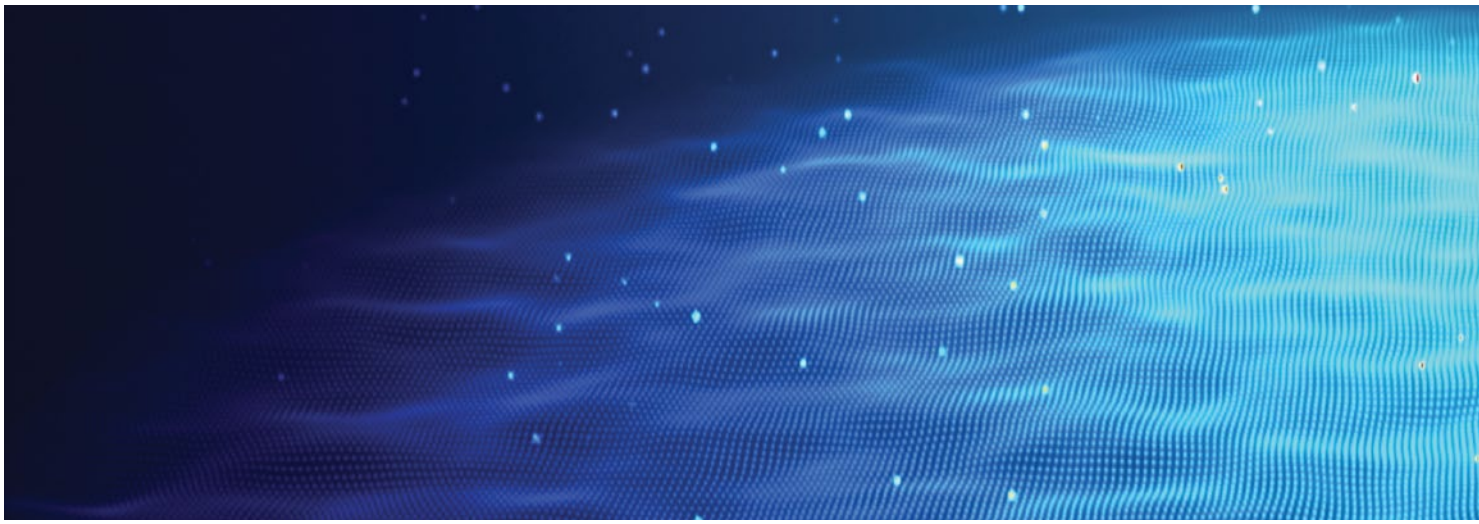
IRS has developed a framework of guidelines covering remotely operated and autonomous vessels, maritime cyber safety and certification of software for computer-based control systems.

The Guidelines on Remotely Operated Vessels and Autonomous Surface Vessels which include provisions for the Remote Control Centre and also address Decision Support Systems and Artificial Intelligence. The guidelines provide a framework for the progressive transfer of decision-making from human operators to autonomous systems. The cyber-safety and software-certification guidelines address the integrity and security of connected systems and assurance of safety-critical software.

The practical relevance of these requirements is supported by following technology-demonstration projects undertaken by IRS with the industry.

In collaboration with Mazagon Dock Shipbuilders Limited, IRS supported demonstration of an autonomous navigation system with dual navigation capability on MT Andaman. The work included simulation, harbour verification and sea trials covering autonomous COLREG compliance and response to loss of controls and communication.

The Advanced Autonomous Navigation & Control Software (A2NCS) developed jointly by Indian Navy's Weapon and Electronic



Systems Engineering Establishment (WESEE) and Bharat Electronics Limited (BEL), and integrated on a Fast Interceptor Boat as an Autonomous FIB, was another significant technology demonstration project wherein IRS was involved in verification and certification. Its validation included simulation and sea trials covering autonomous navigation, COLREG compliance, cyber resilience and fail-safe performance.

Further technology-demonstration work has included a recent project with Accurate Controls, Pune, focusing on autonomous navigation functions. IRS is also working with Cochin Shipyard Limited and other major shipyards towards demonstration of autonomous navigation capabilities in accordance with IRS Guidelines.

An important aspect of these projects is the progressive verification process, beginning with simulation at the developer's facility and progressing through harbour trials to sea trials. This provides an opportunity to verify not only the performance of the autonomous navigation software, but also its interaction with sensors, control systems, communications and other vessel systems under increasingly realistic conditions.

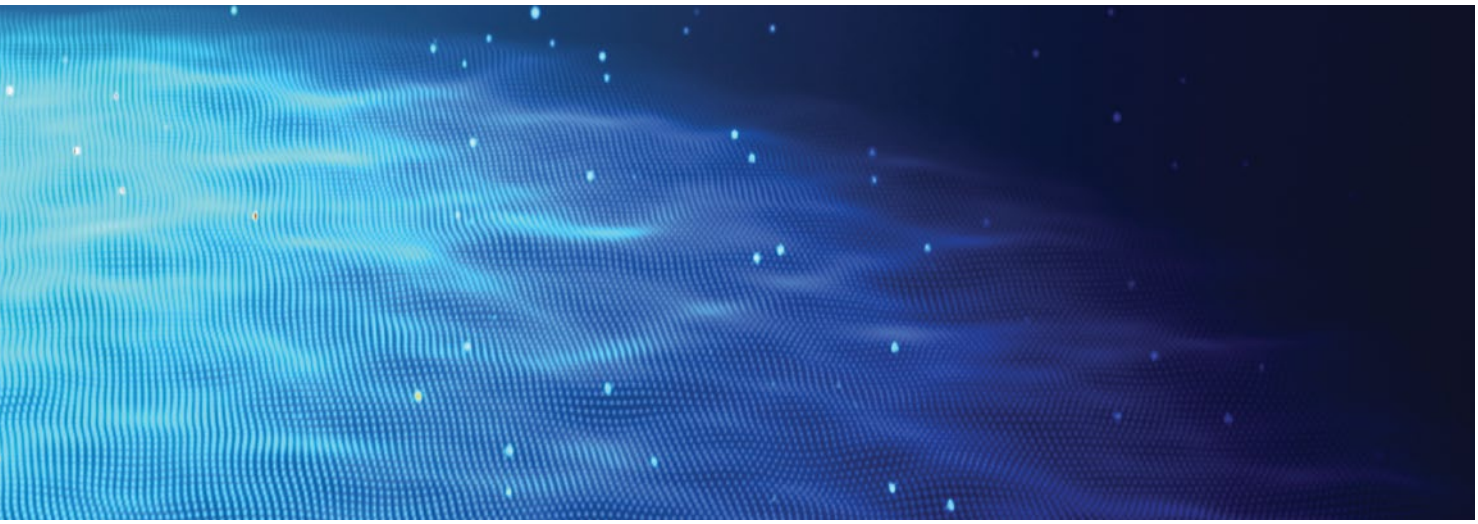
These experiences demonstrate that autonomous navigation cannot be assured by assessing the navigation algorithm alone. Safe operation depends on the combined performance of sensors, software, control systems, communications, cybersecurity, the ROC and the human operator.

Conclusion

The implementation of the 2026 MASS Code represents a shift from demonstrating that autonomous technology 'can work' to demonstrating that it can operate safely within a defined operational envelope, recognise its limitations and respond appropriately when conditions deteriorate.

For navigation, the principal challenges are reliable situational awareness, COLREG application, autonomous decision-making, effective ROC intervention, resilient communications, degraded-mode operation, cybersecurity and software assurance. Implementing technology within a structured framework of guidelines, supported by progressive verification and extensive testing, will be critical to the successful design, development and testing of MASS.

The path towards MASS will therefore be one of progressive assurance, rather than a single technological step. The ultimate test of MASS navigation will be whether the system can sense, understand, decide, manoeuvre and respond safely—not only during normal operation, but also when communications are degraded, equipment fails or human intervention becomes necessary, and most importantly, MASS can coexist safely with conventional vessels in the same maritime environment.



Hong Kong Convention – Inventory of Hazardous Materials: Building a Lifecycle Approach Towards Safe and Environmentally Sound Ship Recycling

Mr. Amol Bande
Principal Surveyor,
Ships & Technical Services



Introduction

Sustainability has become a key priority for the global maritime industry. Beyond improving ship safety, reducing emissions, and enhancing energy efficiency, it also requires that ships at the end of their operational lives are recycled in a safe, environmentally sound, and socially responsible manner, protecting human health and promoting the circular use of resources.
Ships remain operational assets until recycled, with repairs, modifications, and equipment replacements altering the hazardous materials onboard. These materials pose significant environmental, health, and safety risks to crew and ship recycling workers. Recognising these challenges, the IMO adopted the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, 2009 (a.k.a Hong Kong Convention (HKC)), named after the city where it was adopted, establishing a "cradle-to-grave" framework for safe and environmentally sound ship recycling throughout a ship's lifecycle.

The Hong Kong Convention (HKC) provides a globally accepted regulatory framework governing the entire lifecycle of ships—from design and construction through operation and maintenance to safe and environmentally sound recycling.

The HKC places responsibilities on shipbuilders, Equipment manufacturers/ suppliers, shipowners, ship managers, repair yards, recycling facilities, Port States, Flag Administrations and their Recognized Organizations.

A key element of the Convention is the Inventory of Hazardous Materials (IHM), which follows the ship throughout its operational life beginning from the new construction and provides essential information for its safe recycling.

Convention Status and Applicability

The Hong Kong Convention entered into force on 26 June 2025.

The Convention applies to:

- Ships of 500 GT and above engaged in international voyages and flying the flag of a Party to the Convention.
- Ship Recycling Facilities operating under the jurisdiction of a Party to the Convention.

The HKC does not apply to warships, naval auxiliaries, government-owned non-commercial ships, or ships operating exclusively within the waters of their Flag State. However, responsible shipowners may voluntarily apply its requirements to ships outside the Convention's scope.

The HKC operates alongside regional regulation such as the EU Ship Recycling Regulation (EU SRR), which imposes additional requirements on EU-flagged ships. Although the HKC was adopted in 2009 before the EU SRR, the EU SRR has been in force since 31 December 2020 and also applies to non-EU flagged ships calling at EU ports or anchorages, requiring compliance with its Inventory of Hazardous Materials (IHM) provisions.

Compliance Timeline

The Convention establishes different implementation criteria for new and existing ships.

A ship is regarded as a new ship where the building contract is placed on or after 26 June 2025, or, in the absence of a building contract, the keel is laid on or after 26 December 2025, or the ship is delivered on or after 26 December 2027. Such ships are required to comply with the Convention from the design and construction stage itself.

Ships not meeting the above criteria are regarded as existing ships. Existing ships are required to comply with the Convention not later than 25 June 2030 or before going for recycling, whichever occurs earlier.

Inventory of Hazardous Materials – The Core of the Convention

The Inventory of Hazardous Materials forms the core of the Hong Kong Convention. It is much more than a statutory document; it is a lifecycle management tool that records hazardous materials contained within a ship and enables environmentally sound recycling at the end of its operational life.

Prepared in accordance with IMO Resolution MEPC.379(80), the IHM lists hazardous materials present in the ship's structure, equipment, operational wastes, and stores, together with their approximate quantities and locations. This information enables ship recycling facilities to safely plan the identification, removal, segregation, storage, and disposal of hazardous materials while minimizing risks to workers and the environment.

The Three Parts of the IHM

The Inventory is divided into three distinct parts, each serving a specific purpose during the ship's lifecycle.

Part I – Ship Structure and Equipment: Records hazardous materials contained in the ship's structure and permanently installed equipment. Prepared during construction for new ships or developed using Visual/Sampling checks for existing ships, Part I remains onboard throughout the ship's operational life and must be continuously updated whenever relevant materials or equipment are added, replaced, or modified.

Part II – Operationally Generated Wastes: Records operational wastes such as sludge, bilge residues, and waste oil. It is completed only when the ship is intended for recycling.

Part III – Stores: Records consumable stores remaining onboard, including paints, lubricants, chemicals, gases, and other consumables. Like Part II, it is prepared only prior to recycling.

Survey and Certification

The Convention establishes a comprehensive survey and certification regime throughout the ship's lifecycle.

New Ships

New ships undergo only an Initial Survey, during which Part I of the Inventory of Hazardous Materials (IHM) is verified based on the Material Declarations (MDs) and Suppliers' Declarations of Conformity (SDoCs) collected during construction. Upon satisfactory completion, the International Certificate on Inventory of Hazardous Materials (ICIHM) is issued.

Existing Ships

For existing ships, Part I of the IHM is developed through document review and onboard visual/sampling checks. An Initial Survey is then carried out for the issuance of the ICIHM. Thereafter, Renewal and Additional Surveys verify that Part I remains updated following modifications or equipment changes throughout the ship's operational life.

Final Survey and Ready for Recycling Certification

Immediately before recycling, a ship undergoes a Final Survey to verify the maintained Part I of the IHM, together with completed Parts II and III, and to confirm compliance with the Hong Kong Convention. Upon satisfactory completion, the International Ready for Recycling Certificate (IRRC) is issued, enabling the ship to proceed to an authorized Ship Recycling Facility for safe and environmentally sound recycling.

Maintaining the Inventory

One of the most significant features of the Convention is the requirement to maintain Part I throughout the operational life of the ship.

The Inventory is therefore a living document rather than a one-time certification exercise.

Whenever equipment forming part of the ship's structure or permanently fitted equipment is installed, removed, replaced or modified, the Inventory should be reviewed and updated. Typical examples include machinery replacement, cable renewal, accommodation refurbishment, HVAC upgrades, insulation replacement, structural repairs and major conversions.

Supporting documentation in the form of Material Declarations (MDs) and Supplier's Declarations of Conformity (SDoCs) should be obtained for all applicable products to demonstrate whether hazardous materials are not present above the prescribed threshold values.

Changes to the Inventory are normally verified during Renewal or Additional Surveys, with the attending Surveyor endorsing the updated IHM as appropriate.

Procurement and Change Management

Effective IHM maintenance begins with effective procurement.

Companies should integrate IHM requirements into their purchasing procedures by requiring suppliers to provide MDs and SDoCs for all applicable materials, equipment and machinery supplied to the vessel.

A well-developed IHM management system should include document control procedures, revision history, supplier qualification, electronic record management, change management and periodic internal reviews.

Responsibilities of Shipbuilders

For new construction ships, compliance begins during design and construction.

Shipbuilders should establish procedures to identify hazardous materials, obtain Material Declarations and Supplier's Declarations of Conformity from equipment manufacturers, prepare Part I of the Inventory, maintain traceability of installed equipment and coordinate verification with the Administration or its Recognized Organization.
Integrating IHM requirements into procurement, quality management and document control systems at an early stage significantly reduces compliance risks and facilitates certification at delivery.

Responsibilities of Shipowners

For existing ships, responsibility rests with the shipowner to ensure that Part I is prepared, verified, maintained and updated throughout the vessel's operational life.

Shipowners should establish documented procedures for IHM maintenance, obtain MDs and SDoCs during repairs and equipment replacement, nominate responsible personnel to manage the Inventory and retain supporting documentation for future verification.

Before the ship proceeds for recycling, the owner must complete Parts II and III, provide the necessary information to the Ship Recycling Facility and present the ship for Final Survey and issuance of IRRC certificate.

Role of Indian Register of Shipping

As a Recognized Organization authorized by various Flag Administrations, Indian Register of Shipping supports stakeholders throughout the implementation of the Hong Kong Convention. IRS provides statutory surveys for the verification of the Inventory of Hazardous Materials, including Initial, Renewal, Additional and Final Surveys. Where authorized, IRS issues and endorses the International Certificate on Inventory of Hazardous Materials and the International Ready for Recycling Certificate.

In addition, IRS offers technical guidance on IHM preparation and maintenance, approval of IHM Expert Companies and Service Suppliers, training programmes, awareness workshops and technical advisory services for shipowners, shipbuilders, ship managers and ship recycling facilities. IRS also supports Competent Authorities (State Maritime Boards) in the authorization and audit of Ship Recycling Facilities in accordance with the Convention.

Through these services, IRS contributes to improving safety, environmental protection and regulatory compliance throughout the ship's lifecycle and remains committed to supporting the maritime community in achieving the Convention's objectives and advancing environmentally sound ship recycling worldwide.

Mr. Anil Kumar Korupoju
Sr. Surveyor, Research & Development Division



Artificial Intelligence Applications in Maritime Engineering and Classification: Transforming Data into Decisions

Maritime classification relies on the systematic assessment of technical information, engineering risks and compliance with classification requirements to support informed decisions throughout a ship's lifecycle. Today, modern vessels generate unprecedented volumes of operational data, inspection records, technical documentation, sensor information and regulatory reports. While digitalisation has made this information more accessible, it has also increased the complexity of analysing it effectively and extracting meaningful insights in a timely manner.

Artificial Intelligence (AI) is emerging as a valuable capability for addressing this challenge. Rather than replacing engineering expertise, AI enables maritime professionals to process large and diverse datasets more efficiently, identify significant patterns, automate repetitive information-processing tasks and support more informed technical decision-making. When applied responsibly within established engineering processes, AI has the potential to improve consistency, efficiency and situational awareness while maintaining the engineering rigour and accountability that the maritime industry demands.



Figure 1: Maritime intelligence ecosystem integrating vessel data, engineering analytics and digital technologies.

Recognising these opportunities, Indian Register of Shipping (IRS) has been exploring the application of AI across a range of maritime engineering, classification and operational use cases. These initiatives form part of IRS's broader digital transformation efforts to strengthen engineering capability through intelligent use of data while ensuring that technical decisions continue to be guided by professional expertise. As illustrated in Figure 1, maritime intelligence combines diverse operational, engineering and environmental information to provide a more comprehensive understanding of ships and their operating conditions, enabling better-informed technical assessments and decision-making.

AI is particularly well suited to applications where engineers must analyse large volumes of structured and unstructured information that would be difficult or time-consuming to review manually. These include vessel movement records, machinery performance data, weather information, survey reports, technical drawings, inspection records and classification documents. By identifying patterns, highlighting anomalies and correlating information from multiple sources, AI can assist engineers in focusing attention on issues that may warrant further investigation while reducing the effort associated with routine information processing.

Within maritime operations, one area of current work at IRS involves analysing large-scale Automatic Identification System (AIS) datasets to better understand vessel behaviour and support maritime intelligence. AIS data provides valuable information on vessel identity, position, speed, heading and navigational status, enabling a detailed picture of shipping activity over time. However, the sheer scale of modern AIS datasets makes manual identification of unusual vessel behaviour increasingly impractical.

To address this challenge, IRS is exploring AI techniques that analyse historical AIS data, together with meteorological information, to learn typical vessel operating patterns and identify deviations that may require further investigation. Such approaches have the potential to support maritime surveillance, safety monitoring, compliance oversight and operational awareness by identifying unusual route deviations, unexpected speed profiles or abnormal manoeuvring behaviour across extensive maritime traffic datasets. By analysing thousands of vessel movements simultaneously, AI can reveal trends and relationships that would be difficult to detect through conventional analytical methods alone.

IRS has also developed AI-assisted approaches that integrate AIS and meteorological data to support encounter-risk assessment and situational awareness. Vessel interactions are influenced not only by position, speed and heading but also by environmental factors such as wind, visibility, sea state and ocean currents. By combining traffic information with weather data, IRS is exploring ways to provide additional decision-support capability for navigators, vessel traffic services and maritime operators through a more comprehensive understanding of navigational situations.

Beyond numerical data analysis, AI is also being evaluated for knowledge-intensive engineering applications. Retrieval-Augmented Generation (RAG) techniques, for example, enable AI systems to retrieve relevant technical information before generating responses, allowing outputs to be linked to supporting evidence rather than relying solely on the underlying language model. Such approaches can improve transparency, provide greater contextual relevance and help engineers access applicable technical information more efficiently when reviewing complex engineering or regulatory queries.

These developments are intended to enhance situational awareness rather than automate navigational decisions. Collision avoidance, COLREG compliance, bridge resource management and safe vessel operation remain dependent on professional seamanship and sound navigational judgement. AI provides an additional analytical capability to support these activities by presenting relevant information in a more timely and accessible manner.

The ability to interpret large volumes of technical information is equally important within classification activities. Engineers routinely review survey records, inspection reports, statutory documentation and first entry reports originating from different classification societies, often prepared using varying terminology, document structures and reporting conventions. Processing these documents manually is time-consuming and can involve significant effort in identifying surveyable items and preparing consistent technical documentation.

IRS has developed an AI based tool which is used internally to improve the workflow and make the processes more efficient.

The development of such applications also demonstrates the broader role that AI can play in document intelligence within classification. Engineering organisations routinely manage large collections of technical reports, specifications, survey records and regulatory documents. Intelligent information extraction, document search and contextual knowledge retrieval

can significantly improve access to relevant information, particularly when dealing with extensive technical archives accumulated over the operational life of a vessel.

Beyond current operational applications, IRS continues to evaluate emerging AI-enabled technologies with potential relevance to maritime engineering and classification. Current areas of investigation include structural health monitoring, hull optimisation and lifecycle performance assessment, where increasing volumes of engineering simulations, sensor measurements and operational data present opportunities for more data-driven analysis.

These applications seek to convert engineering and operational data into actionable insights that support inspection planning, structural assessment and asset management. AI techniques may assist in identifying abnormal structural response patterns, recognising long-term performance trends and supporting maintenance planning through more comprehensive analysis of available information. As digital twins, connected shipboard systems and condition monitoring technologies continue to evolve, AI is expected to become an increasingly important analytical capability within integrated engineering workflows.

The effective adoption of these technologies depends not only on advances in AI but also on ensuring that solutions remain transparent, traceable and aligned with established engineering processes. As illustrated in Figure 2, trusted maritime AI is achieved by integrating digital twins, engineering analytics and decision-support processes within existing technical workflows, allowing AI-generated insights to complement rather than disrupt established engineering practice.

These initiatives demonstrate how AI can support maritime engineering and classification by improving the way operational, engineering and technical information is analysed and applied. Whether supporting vessel monitoring, situational awareness, technical documentation, classification workflows or emerging engineering applications, the common objective is to improve the quality, consistency and efficiency of technical decision-making.

As maritime systems continue to become increasingly connected and data-driven, the effective application of AI will depend on combining advanced analytical techniques with sound engineering principles, robust technical governance and professional expertise. Through its ongoing work in maritime intelligence, engineering analytics and AI-enabled classification workflows, IRS remains committed to leveraging AI responsibly in support of maritime safety, engineering excellence and operational effectiveness. Used in this manner, AI becomes not a replacement for engineering expertise, but a practical tool that strengthens the ability of maritime professionals to make informed, timely and technically sound decisions.



Figure 2: Trusted Maritime AI integrating digital twins, engineering analytics and controlled decision-support processes.

IRCLASS ACADEMY

YOUR PARTNER IN MARITIME PROFESSIONAL DEVELOPMENT

IRClass Academy continues to play a significant role in strengthening the capabilities of maritime professionals and contributing to the development of a highly skilled, competent, and future-ready maritime workforce in India and across the globe.

Over the past five years, the Academy has expanded its global outreach, establishing a strong international presence and earning reputation for it's high quality and industry-focused training programmes.

The Academy's programmes have been well received across the globe, with a growing number of onsite training programmes being conducted at the invitation of organisations and institutions in various countries. This international engagement reflects IRClass Academy's commitment to sharing maritime knowledge, expertise, and best practices with professionals worldwide.

In India, the Academy has also established collaborations with several leading educational institutions in support of the National Education Policy (NEP) and the development of industry-ready talent. Training programmes have been conducted for the benefit of students and professionals at institutions including Rashtriya Raksha University, AMET University, Gujarat Maritime University, and Maha Kaushal University. Internationally, the Academy has joined hands with Politeknik Ilmu Pelayaran (PIP), Makassar, Indonesia, to offer world-class maritime training to professionals across Southeast Asia.

The Academy has also been instrumental in developing and delivering bespoke training programmes tailored to the specific requirements of organisations. These customised programmes are designed to address operational needs, strengthen technical capabilities, enhance managerial competence, and support continuous professional development.

Notably, IRClass Academy has delivered skill-enhancement programmes for prestigious organisations including the Indian Navy, Indian Coast Guard, and leading Indian shipbuilding organisations such as Hindustan Shipyard Limited, Cochin Shipyard Limited, and Garden Reach Shipbuilders & Engineers (GRSE).

The Academy has further supported capacity-building initiatives for various maritime authorities and boards, including the Gujarat Maritime Board, Andhra Pradesh Maritime Board, Odisha Maritime Board, and Kerala Maritime Board.







The Academy has delivered the following new training programmes during 2026, which received excellent response from the industry:

- Certificate Course in MAN B&W ME Electronic Engines
- Safe Work Practices in Shipbuilding & Ship Repairs, Non-destructive Examination (NDE) in Shipbuilding and Welding Procedure Specification (WPS) for Shipbuilding
- Application of ISM
- Fundamentals of Ship Surveys, Statutory Compliance and Repair Estimation
- Commercial Shipping & Sustainability Training
- International Regulations vs Ship Classification
- Shipbuilding process including technical & practical aspects
- Certification Programme on Ship Recycling in Compliance with Hong Kong Convention IMO Guidelines
- Certification programme on Decarbonisation in Shipping Hydrogen, Methanol & Future Marine Fuels for Maritime Professional
- Course on Emergency Preparedness – Crisis Management and Communication with Media
- Ship Structural Design Concepts for Maritime Professionals
- Certification Programme on Corrosion Protection
- Hydrodynamics in Ship Design
- Shipbuilding Concepts & Material, Types of Welding (WPS & PQR and NDT)

Recognising the challenges faced by participants across different time zones, IRClass Academy has initiated the development of a Learning Management System (LMS) to facilitate flexible and accessible learning for international participants. The LMS is being designed to host self-paced training modules, enabling participants to undertake training at their convenience, irrespective of their geographical location.





Training



Training is an integral part of any classification society and it is not limited to the time of joining; it is a continuous process. Competent and skilled Surveyors are the assets of a service organization. Keeping them abreast of the changes and new requirements, continuously is of utmost importance. The training department ensures this by providing various types of training.

In pursuit of this a three-month training programme was introduced for fresh campus recruits augmenting them to classification-related activities like Class Rules, IMO, IACS, Flag states and their instruments. They were also trained on Hull, Machinery, Stability and Electrical plan approval.. With this foundation training up front, these candidates are performing very well at survey stations and in various HO departments.

Online Learning Management System (LMS) platform which provides and enhances the theoretical knowledge of Surveyors on the prevailing and upcoming regulations, currently hosts over 150 training modules along with assessments. New technologies such as LLM, Generative AI etc. are being explored to improve the training experience,

IRS also supported the Indian Flag Administration in their process of review and upgradation of the Comprehensive Inspection Programme of Maritime Training Institute.

One and a half month training for the new Plan Approval Surveyors with practical exposure at the survey station and shipyards, commenced this year and second batch is nearing completion.



Additionally trainings like Induction training; Refresher training; Mentored on the job training and Awareness sessions on new requirements are conducted as per the training calendar regularly.

Key Press Releases

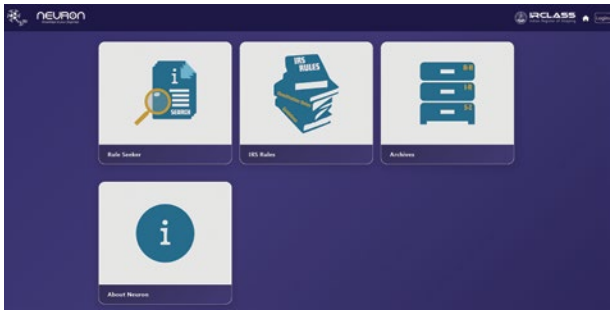


Indian Register of Shipping Sets Sights on Hamburg for European Expansion

IRS is advancing plans to establish its presence in Germany through a new office in Hamburg. The office will support closer engagement with European manufacturers and facilitate their access to the growing Indian maritime and shipbuilding market through IRS's approval, type approval, certification and compliance services.

Indian Register of Shipping Launches NEURON – A Smart Digital Platform for Maritime Rules and Technical Knowledge

NEURON is part of IRClass' broader digital transformation strategy to deliver technology-enabled services and enhance stakeholder experience. The platform reinforces IRClass' commitment to making technical knowledge more accessible while supporting a safer, smarter and more efficient maritime industry.





IRClass Academy Advances Port Security Capacity with Fourth CISF Training on Port Security Awareness

The intensive two-week programme combined theoretical learning with hands-on training & insights on regulatory frameworks, compliance requirements, and the practical aspects of ISPS Code implementation.

Nigerian National War College Delegation Visits Indian Register of Shipping

A delegation from the Nigerian National War College visited Indian Register of Shipping (IRS) as part of its study programme aimed at understanding India's maritime ecosystem, classification services, defence shipbuilding initiatives, and emerging developments in sustainable shipping.



IRClass Academy Delivers Yet Another Successful PFSO Training Program in Mauritius for professionals from the country's port and maritime industry.

The programme featured a series of hands-on workshops and interactive exercises that enabled participants to directly correlate theoretical concepts with real-world operational scenarios.



Indian Register of Shipping Bolsters South American Operations through Strategic Presence in Brazil

Located at Santos, Brazil, the new representation will provide local support to shipowners, ship managers, shipyards, offshore operators and other maritime stakeholders across Brazil and the wider South American region.

Indian Register of Shipping Secures U.S. Coast Guard Designation as Similarly Qualified Organization

IRS has secured designation by the United States Coast Guard as a Similarly Qualified Organization (SQO) under Title 46, Code of Federal Regulations § 28.76, marking a significant regulatory milestone and placing IRS among only three classification societies authorised to provide these services within the United States of America commercial fishing sector.

Vessels – Classed, Delivered & Launched



Indian Register of Shipping Takes One of India's Largest Crude Tankers, VLCC Lila Jamnagar, into Class

Lila Jamnagar, a 298,997 DWT Very Large Crude Carrier (VLCC) is one of the largest vessels to sail under the Indian flag. The classing of Lila Jamnagar demonstrates IRS's capability to provide classification and technical services for large, complex vessels engaged in global energy transportation.



Indian Register of Shipping Certifies India's First Indigenous Autonomous Navigation Software for Unmanned Surface Vessels

The successful IRS certification of the Advanced Autonomous Navigation & Control Software (A2NCS) represents a major milestone in advancing India's maritime autonomy and indigenously developed defence capabilities.



Indian Register of Shipping congratulates the crew of IASV Triveni on successful completion of the Samudra Pradakshina Expedition

IRS is proud to have certified IASV Triveni, after completing independent technical verification of the vessel's safety and seaworthiness, prior to its historic voyage. The indigenously built 50-foot sailing vessel represents the vision of Aatmanirbhar Bharat, reflecting India's engineering excellence, technical innovation, indigenous capability and strategic confidence.



First IRS-Classed Indigenous Cadet Training Ship 'Krishna' launched at L&T Shipyard in the presence of General Anil Chauhan, Chief of Defence Staff

Constructed under the classification of Indian Register of Shipping (IRS), the vessel incorporates advanced design features with emphasis on ergonomics, enhanced onboard training infrastructure, and efficient maintenance systems. The vessel reflects the highest standards of safety, quality, and operational reliability.

IRS-Classed Fast Patrol Vessel gifted to Seychelles during Prime Minister State Visit, enhancing maritime cooperation in the IOR

Built by Goa Shipyard Limited and classed by IRS, the vessel will strengthen Seychelles' capabilities in the areas of maritime surveillance, EEZ patrol, search and rescue, and coastal security, while demonstrating India's continued commitment to maritime cooperation in the Indian Ocean Region.

Indian Register of Shipping Marks First Overseas Defence Project with Launch of Floating Dry Dock for Sri Lankan Navy

The successful launch of the Floating Dry Dock represents a landmark achievement in IRS's expanding defence portfolio and underscores India's growing role as a trusted maritime partner in the Indian Ocean Region.







Two IRS-Classed Naval Vessels Among Three Indian Navy Platforms Commissioned in Presence of Prime Minister

INS Agray, an Anti-Submarine Warfare Shallow Water Craft (ASW-SWC) & INS Sanshodhak, a Survey Vessel (Large), two of the three Indian Navy vessels simultaneously commissioned and dedicated to the nation in the presence of Hon'ble Prime Minister Shri Narendra Modi Ji on 21st Jun 2026, have been built under IRS Classification.



INS Shachi
Next-Generation Offshore Patrol Vessel (NGOPV)
Indian Navy



ICGS Achal
Fast Patrol Vessel (FPV)
Indian Coast Guard



ICGS Samudra Pratap
Pollution Control Vessel (PCV)
Indian Coast Guard

Type Approval Certification

Indian Register of Shipping Grants Type Approval to Volteo Maritime's Electronic Record Book – WAYSHIP, marking a significant step in supporting the adoption of digital technologies across the maritime sector.



Indian Register of Shipping Issued Type Approval Certification for India's First Indigenously Built Totally Enclosed Lifeboats by SHM Shipcare Pvt. Ltd. Mumbai, validating two models to mark a significant milestone for the domestic maritime manufacturing sector.



Indian Register of Shipping Accords Type Approval Certification to Towbar-less Battery-Operated Tow Tug for Naval Helicopters, supporting indigenisation, innovation, and self-reliance in defence technologies, while enabling industry partners to meet rigorous naval standards.



Indian Register of Shipping Awards Type Approval Certification to GRSE for Marine Hull and Line Valves, encouraging the adoption of type-approved marine equipment, strengthening indigenous manufacturing capabilities, and supporting the nation's "Make in India" vision for self-reliance in marine and defence shipbuilding components.



IRS certified Yanmar Power Solutions Co., Ltd., Japan under the IRS Quality Assurance Scheme (QAS).



For details, visit
-https://www.irclass.org/
media-and-publications/news/



Leading the Way: Congratulations to Our New Leaders!

Indian Register of Shipping has undertaken a leadership realignment aimed at enhancing operational efficiency and enabling greater agility across its functions.



Mr. Saikat Roychowdhury
Chief Operating Officer (COO)



Mr. H. V. Ramesh
Head – Technical



Cdr. Pavan Kumar Varma
Management Representative (MR) and DH – QHSE



Ms. Rupali Nerurkar
Chief Financial Officer - Designate



Mr. Devrup Kabi
Divisional Head - PAC

Regional Manager Elevations - 2026



Mr. Bhogavalli Bapineedu
East Coast of India



Mr. Narendra Singh Thakur
West Coast of India



Mr. Saikat Sinha
South East Asia (Singapore & Indonesia)



Mr. Raghu Ram Achanta
Middle East & Africa



Mr. Naveen Tarlada
Europe, Turkiye & Americas

Events & Highlights







IRS Showcased a Strong Global Presence at SMM Hamburg (1-4 Sep 2026), where the IRS Stand was officially inaugurated on Day 1 by Shri Raakesh Natraj, Consul General of India, Hamburg, and was attended by prominent maritime leaders throughout the event. The IRS leadership team engaged in insightful discussions with key global figures, including H. E. Arsenio Dominguez, Secretary-General IMO & Shri Vijay Kumar, Secretary to GOI, Ministry of Ports, Shipping and Waterways.

Indian Register of Shipping Hosted a Meet with Marine Equipment Manufacturers to Strengthen Industry Engagement – Aug 2026.

The interactive session provided an opportunity for participants to discuss technical, procedural, and regulatory aspects of the Type Approval process. Senior leadership from IRS highlighted the importance of indigenous manufacturing in supporting India's growing maritime and shipbuilding ambitions.



IRS Recorded an Active Footprint at Singapore Maritime Week (SMW) – 20-24 April 2026, where His Excellency Dr. Shilpak Ambule, High Commissioner of India to Singapore, visited the IRS Stand at the India Pavilion. At the India Business Roundtable, Mr. Arun Sharma, EC, IRS, shared perspectives on "Harnessing Technology to Achieve Climate Goals." IRS also hosted a Customer Meet & 7th Singapore Advisory Committee Meeting on 22 April 2026, engaging senior maritime stakeholders across the region.









Indian Register of Shipping Hosted the National Shipping Board Meeting from 16–17 April 2026 at IRS H.O. Mumbai.





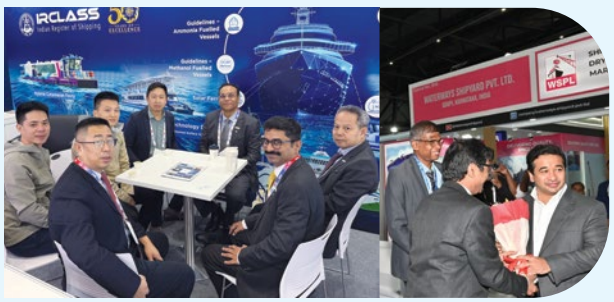
Indian Register of Shipping Hosts Seminar on Emerging Maritime Technologies for Indian Coast Guard - March 2026



Indian Register of Shipping Established a Strong Worldwide Footprint in 2025 by participating in premier maritime exhibitions worldwide. These strategic engagements successfully reinforced IRS' international reach and industry collaboration. Key highlights included: Marintec China (Dec 2025), Europort 2025, London International Shipping Week (LISW, Sep 2025), INMEX Mumbai (Sep 2025), IMW (Oct 2025), and Seatrade Maritime Logistics Middle East (May 2025).







Advancing Industry Dialogue: IRS Perspectives at Major Industry Forums

Mr. Arun Sharma, EC, IRS – Highlighted the role of classification in strengthening India's shipbuilding ecosystem in the panel discussion titled "Expanding the Fleet – Enhancing Range & Scale of Shipbuilding Capability" at the Sagar Sankalp Conclave – Mar 2026.





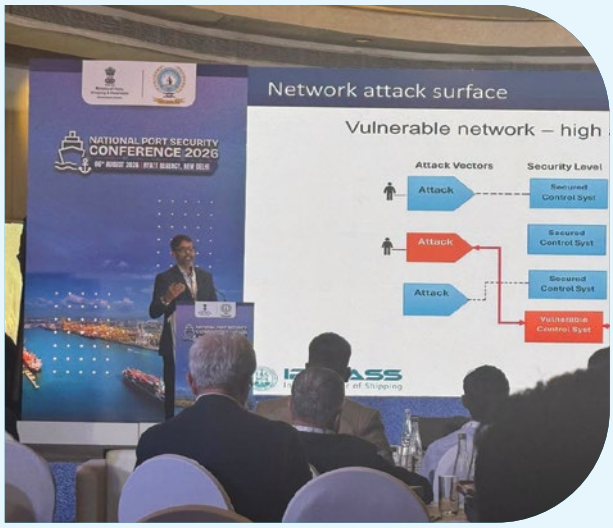
Mr. P.K. Mishra, MD, IRS – "Building a Globally Competitive Shipbuilding & Maritime Manufacturing Ecosystem" at the ET Global Ports and Shipping Summit – Sep 2026.



Mr. H. V. Ramesh, Head – Technical, IRS – "Breaking Import Dependency in Shipbuilding" at DIMS 2026 (Dostas International Maritime Seminar) – Aug 2026.



Mr. Avinash Vaze, Senior Surveyor, IRS – National Port Security Conference 2026 – Aug 2026, New Delhi.



Cdr. Sandeep Kumar, Senior Principal Surveyor – Represented India at the 12th Session of the Sub-Committee on Implementation of IMO Instruments (III 12) at the IMO HQ, London – 20–24 July 2026.



Mr. T. Ghosh, Senior Principal Surveyor – "Classification, Testing & Type Approvals of Valves and Pumps" at the 'PARIVARTAN' conclave – July 2026, Coimbatore.



Dr. Asokendu Samanta, DH, R&D – 'Underwater Technologies and Role of the Classification Societies' at the 'Underwater Robotics Workshop' – Chennai, 02 June 2026.



Mr. Muraleedharan Nair, Principal Surveyor & Mr. Jeevan Ram S, Principal Surveyor – Technical session on "Thin Plate Undulations in New Construction of Vessels" at the Ship Design Workshop 2026 – 03 July 2026, GRSE, Kolkata.



Mr. PK Mishra, MD, IRS & Mr. HV Ramesh, Head – Technical - Samarthya 2026: An INA–DGS Conclave – April



Mr. Karan Doshi, Senior Surveyor – Nuclear Power Applications in Maritime – June 2026



Mr. Rabindra Sah, CTO, IRS – "Digital Transformation, Automation & Smart Ports Ecosystems" at the Marports Global Conference - April 2026, Kerala.



COMARSEM'26 – Cochin Marine Seminar – Jan 2026: Mr. P.K. Mishra, MD, IRS – Green Transition in Shipping: Path Towards Net Zero – Opportunities & Challenges.



Mr. T.K. Sahu, JMD, IRS – Beyond Compliance: Human Health Across the Ship Life Cycle in an Era of New Technologies.



Indian Register of Shipping Honoured with Maritime Industry Awards in 2026

Maritime Safety Excellence Award - ET Infra Global Ports & Shipping Summit, Mumbai – Recognising IRS's cutting-edge safety and compliance frameworks for new fuel and energy-conversion technologies.





Excellence in Ship Classification and Certification - Marports Global Conference Awards, April 2026 – Honouring outstanding technical leadership and benchmark classification services.



Maritime Classification Society of the Year - IMC Golden Shield Excellence Awards – Celebrating global excellence in bridging sustainability goals with robust safety standards.









To mark Day of the Seafarer on 25 June 2026, the Indian Register of Shipping hosted a curated display exhibition dedicated entirely to the global seafaring community. The exhibition, which showcased a rich collection of maritime history and historical literature, was jointly inaugurated by IRS Executive Chairman Mr. Arun Sharma and Guest of Honour Capt. Savio Ramos, General Secretary of the Maritime Union of India.

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Sad Demise



Mr. S. Velmurugan

(1980 - 2026)

Mr. S. Velmurugan joined IRS in 2005 and served with dedication for over 21 years.
His loss is deeply felt and his valuable contributions will be remembered with respect and gratitude.





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