



IRCLASS
Indian Register of Shipping



January 2025

TOUCH OF CLASS

Golden Jubilee Edition - Volume 2





CONTENTS

Message From The Executive Chairman's Desk	02
Managing Director's Message	03
From the Editorial Board	04
Navigating the Challenges: Growth and Evolution of IRS	05
Rule Development History: Part II	08
Reflections of Leadership: Mr. H. K. Taneja Shares Golden Memories with IRS	11
Legacy Of Leadership: Mr. K. Madhok Reflects on IRS Journey	12
Leadership Chronicles: Mr. Vijay Arora on His Remarkable Journey With IRS	13
Three Decades of Dedication: Mr. Ulhas Kalghatgi's Journey with IRS	14
GRSE & IRS - A Synergy towards Sustainable Shipping	16
IRS and APSEZL: A Partnership Through the Years	18
MASS CODE - Manoeuvring the Navigational challenges	19
Underwater Radiated Noise (URN) from Ships: Part 2- Numerical Approach	22
Celebrating Collaboration: Indian Ocean Memorandum of Understanding (IOMOU) Applauds IRS at 50	26
A Journey of Collaboration: IMEI (India) and IRS	28
Preparing for FuelEU Maritime Regulation	30
NovaHULL: A New Rule-based Scantling Calculation Tool	32
Kongsberg Maritime: A Growing Force in India's Maritime Sector	34
ISSPL - Project Finance Services Capital Flows: A New Era in India's Financing Avenues	36
Hearts to Bravehearts – A Tribute to Kargil War Heroes	40
Key Press Releases	42
Events, Seminars & Conferences	44
Vessels – Classed, Launched & Delivered	48
Academy	50
Training	51
Employee Corner	52



Message From The Executive Chairman's Desk

Dear Reader,

As Indian Register of Shipping approaches the glorious milestone of its Golden Jubilee in April 2025, it is heartening to see that the seed which was planted half a century ago is now flourishing and continues to grow, with several branches providing technical services beyond class, in addition to the primary objective of classification services to the maritime industry.

Shipping industry has embarked on a journey towards decarbonisation which is not only challenging but also an opportunity to innovate and drive the transition towards a sustainable future. As we all know, the key to this transformation lies in alternative fuels - with a galaxy of options under consideration. Friends from the industry often voice their opinion that the regulators need to arrive at one or two candidates in order to reduce the uncertainty. This is a daunting task, as every type of fuel has advantages and disadvantages, considering various factors such as geo-politics, environment performance, cost, bunkering infrastructure, safety and storage. The point worth noting is that investors, charters and consumers are actively encouraging those who are taking steps towards mitigating climate change.

An often overlooked aspect in this transition is the human element. While a lot is being discussed about the technological and environmental challenges of adopting alternative fuels, it is the designers, manufacturers, shipbuilders, regulators, and the leadership guiding this change who will ultimately determine the success of this transition. Safety protocols will need to be revised and training programs recalibrated to ensure that all seafarers are fully capable of safely managing these new fuels. We will realise the full potential of alternative fuels only when we recognise the importance of human element by investing in training and safety needs and manoeuvre the teams through these challenges. At IRS, we are striving to make a meaningful contribution and we encourage one and all to join us in this exciting transformation.

I take this opportunity to thank all our stakeholders who have been a part of this incredible journey of IRS and invite you to join us in the various initiatives being planned for IRS Golden Jubilee.

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



Managing Director's Message

Dear Reader,

As we unveil the second edition of the Touch of Class Golden Jubilee series, it is indeed a proud moment to reflect on 50 years of Indian Register of Shipping (IRS). From humble beginnings to global recognition, our journey has been defined by resilience, innovation and excellence.

This remarkable growth is a tribute to our exceptional team. Your dedication and commitment have shaped IRS into the institution it is today. Thank you for your unwavering efforts.

The maritime industry is evolving rapidly and IRS has embraced this transformation. Through initiatives in digitalisation, decarbonisation and alternative fuels, we are addressing modern challenges while fostering safer, greener and more efficient operations.

To our customers and stakeholders, your trust and collaboration have been integral to our success. Your confidence inspires us to continuously raise the bar and deliver greater value.

Looking ahead, we will focus on sustainability, emerging technologies and global expansion. By staying true to our values and leveraging our expertise, we are confident in our ability to navigate the future and achieve greater milestones.

Together, let's build on the legacy and shape the next chapter of excellence.

From the Editorial Board

Dear Reader,

We are delighted to present to you this special edition of Touch of Class, which is the second in our Golden Jubilee Trilogy. As in the previous edition, this edition features technical and topical articles, experiences of stalwarts in the industry and reflections of IRS Veterans commemorating this milestone. We are happy to include the 2nd part of the history of IRS, depicting its growth and evolution through the challenges during the period 1991-2010. Rules and Regulations are an integral part of any Classification Society. IRS is no exception. The journey (1991-2010) from research and formulation of Rules to deliberation at Technical Committee and to publishing is continued in the article on 'History of Rule Development'.

Articles on Underwater Radiated Noise (URN) and Fuel EU Maritime Regulation are included to add technical flavour, which are of interest in the maritime fraternity.

This milestone is not only a celebration of our achievements but also a tribute to the incredible support and trust that our stakeholders have extended to us throughout the journey. We thank Garden Reach Shipbuilders and Engineers, Adani Ports & SEZ Ltd., Indian Ocean MOU, Institute of Marine Engineers (India) and Kongsberg for commemorating our Golden Jubilee and sharing their experiences. Your insights and perspectives are invaluable. We welcome articles from other esteemed stakeholders to feature in our subsequent editions.

As we look ahead, we remain committed to facilitating the industry through its transformation by providing quality classification services, as well as several value-added services. Together, we can embrace the opportunities and challenges that lie ahead, and we are confident that the future will be as glorious as the past.

Pleasant Reading!
- Editorial Team



Navigating the Challenges: Growth and Evolution of IRS – (1991-2010)



This article is in continuation to "Setting Sails" published in the previous edition

By the early 1990s, IRS had made great strides domestically with support of the Indian Government and industry stalwarts. With about 773 ships, totalling 5.19 million gross tonnage, it had established itself as the national classification society with a repertoire of certification services catering to the local needs of the maritime sector.

However, this was a period when the shipping industry in India was at the cusp of a major transformation, which coincided with the broader economic liberalisation that reshaped the country's industrial landscape. With the introduction of economic reforms in 1991 (including liberalisation of trade, deregulation, and encouragement of private sector participation) the shipping industry began to open up to global competition and foreign collaborations. In the world of ship classification services, this increased exposure brought about introduction of digital tools, advanced ship inspection techniques, and the demand for tailored solutions to align the needs of the shipowner to the standards of Flags and Organisations.

In this backdrop, IRS's vision expanded to the global shipping industry. To gain a foothold, the initial step was to obtain membership in the International Association of Classification Societies (IACS). At the time, over 90% of the world mercantile marine fleet was under the umbrella of IACS Member Societies.

Anecdotal testimonies from the leadership of IRS during this period paint a picture of the effort and sheer determination that was needed to establish itself. This goal was finally achieved on

3rd December 1991 when IRS became an Associate Member of IACS within a short span of 16 years since inception. It then had the opportunity to participate and contribute to the ongoing technological developments surrounding ship safety and environment.

This also helped gain recognition from Flag Administrations towards offering services on an international scale.

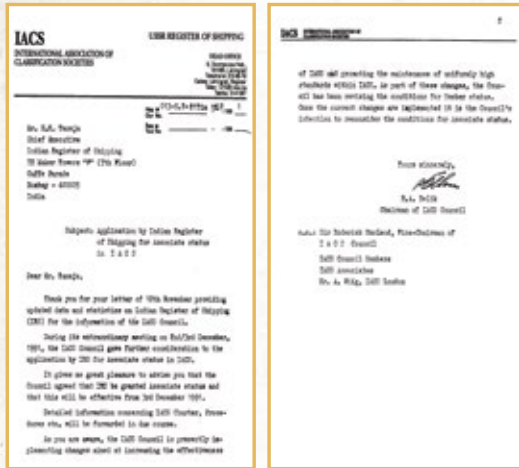


Dr. C. P. Srivastava, Chairman IRS announcing the Associate Membership of IACS



Fortuitous for this publication, the idea of a journal called "Touch of Class" was also conceived in this period and the first edition was released in January 1991.

The increased global collaboration precipitated the need for quality control. In 1991, IACS introduced a mandatory Quality System Certification Scheme (QSCS) requiring all its members to undergo external audits. This led to the establishment of a Quality Management System inline with QSCS. While as an associate member, it was not mandatory to subject itself to an external IACS audit, IRS was determined to achieve this voluntarily. The vision and mission set then are its guiding principles even today.



Associate Membership of IACS - 1991

As the global shipping industry began to liberalise and integrate with international markets, the influence of classification societies also expanded. Broadening its role as a certification body, the Indian Register Quality Systems (IRQS) was established in 1993 for certification of QMS systems of the time like IS 14000/ISO 9000/EN 29000.

IRQS quickly achieved a major milestone when it became the first Asian certification body to receive accreditation from Raad voor Accreditatie (RvA), the Dutch Accreditation Council widely recognised

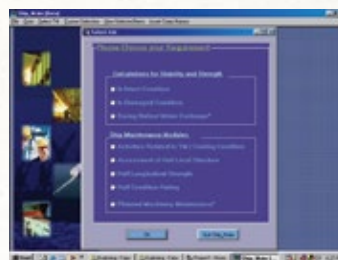


Mr. Ratan Tata receives the QMS Certificate from Dr. C. P. Srivastava, then IRS Chairman

in Europe and world over. This certification gave IRQS the opportunity to diversify into myriad industrial sectors.

On the technical front, IRS had to go the extra mile to catch up with the decades of experience of other IACS members. By the early 90s IRS had well established rules for seagoing/inland vessels and research & rule development for Mobile Offshore Drilling Units, High Speed Crafts and other non-conventional vessels were in the works. IRS's increased footprint globally also offered opportunities to participate in IMO committees, IACS Working Groups and EU Projects to contribute to the safety needs of the day.

This period also marked a major shift in ship design due to the advent of advanced software tools. These tools enhanced design accuracy and optimisation, enabling the creation of safer, more efficient ships. As software evolved, the



Optimising process efficiency - Introduction of LAN, use of computer software and numerical tools



First international office in Colombo, Sri Lanka

shipbuilding industry became more integrated and capable of tackling more complex challenges. To keep abreast of this change IRS developed numerical tools including Ship_Mate, IRHULL and IRWAVE.

While the initial years of IRS were its formative period in a safe and nurturing cocoon, IRS saw an evolution, both within itself and outside in the shipping industry, during the two decades surrounding its silver jubilee. It emerged with a hard-earned technical reputation as its backbone, a quality management system as a framework for expansion and many verticals offering services "Beyond Class", all of which provided a platform for innovation and growth in the coming years.

.....To be continued in next edition



Commemorative postal stamp celebrating IRS' 25th Anniversary

Our Chairmen at the helm



Mr. M. Ramakrishnaiyya
(1975-1977)



Capt. J. C. Anand
(1978-1986)



Mr. K. M. Sheth
(1986-1990)



Mr. Ashok Goenka
(1990-1991)



Dr. C. P. Srivastava
(1991-1994)



Capt. P. P. Radhakrishnan
(1995)



Capt. J. C. Anand
(1996-2012)



Mr. Arun Sharma
(2012-Present)

IRS Rule Development History: Part II – 1991-2010



IRS became an Associate Member of IACS in 1991. With this milestone, IRS started getting the opportunity to engage in IACS meetings and contribute towards development of IACS Unified Requirements and Interpretations which also helped the process of rule development and streamlining of rules with IACS documents.

Mr. R. L. Pai who took over as Technical Committee Chairman in 1989 continued as Chairman during this period. The rule development activity also consisted of incorporating some of the amendments to IACS and IMO requirements. At the 43rd meeting of the Technical Committee in July 1995, Mr. B. M. Ghildiyal was elected as the Vice Chairman of the Committee.

In 1995, when IACS quality audits started, IRS, being an Associate Member, voluntarily subjected itself to the IACS quality audit for the first time. This audit was an eye opener for the Rule Development activity of IRS. A major finding of the audit was that IRS has not published its Rules since 1988 and as a result the available Rules were not addressing the latest IMO and IACS requirements. This major finding resulted in setting up a process for rule development with periodical update in IRS. The first challenge was to immediately identify the gaps with respect to the latest IMO and IACS requirements and update the Rules in a short time. With the untiring effort of all the available personnel at IRS Head Office, guided by Mr. D. G. Sarangdhar and Mr. S. Kumar, this process was successfully completed when the 1996 Rules were published. This finding was closed subsequent to a re-audit in 1996.



Since 1996, IRS has set up procedures in place to ensure that Rules are regularly updated and the consolidated Rules are published every year.

In 1997 at the 49th TC Meeting, Mr. B. M. Ghildiyal was appointed as the Chairman of Technical Committee and Mr. P. Mitra was elected as the Vice Chairman. At that meeting Rules for Inland Waterways Vessels and Part 5 'Special Ship types' were discussed.

At the 52nd meeting in 1998, the Technical Committee approved the Rules for Mobile Offshore Drilling Units (MODU) which were first published in 1999.

It was around this time that due to the developments in IT and software, PowerPoint presentations became the normal practice for IRS to introduce the rule changes to the Technical Committee.

Noting that the 1994 IMO HSC Code was already in force and there was an immediate need for Rules for High Speed and Light Crafts (HSC & LC), IRS initiated developing these Rules during this time. The Technical Committee discussed these Rules at the 53rd and 54th Meeting in 1999 and the IRS Rules for High Speed Crafts and Light Crafts were first published in the year 2000 and have been extensively used for such crafts including FRP vessels.

At the 53rd TC Meeting in September 1999, Mr. S. Govindrajan was appointed Chairman and Mr. M. V. Ramamurthy was elected Vice Chairman of Technical Committee.

The Rule development activity continued in subsequent years with incorporation of many IACS resolutions and IMO requirements which came into force during that time. At the 57th meeting in 2001, a major re-arrangement was made to the Periodical Survey requirements specifying the requirements for various types of vessels in separate sections for ease of reference.

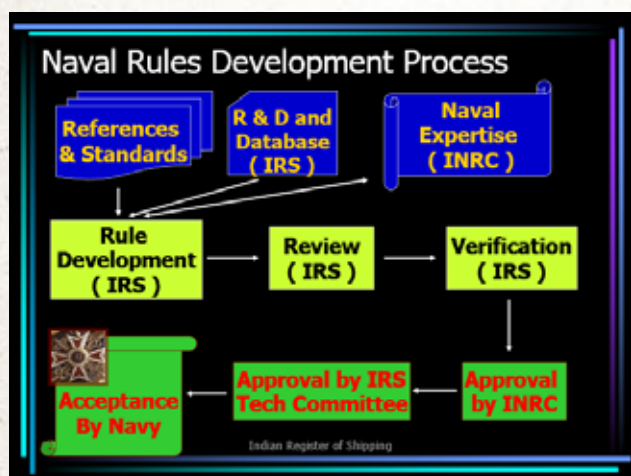
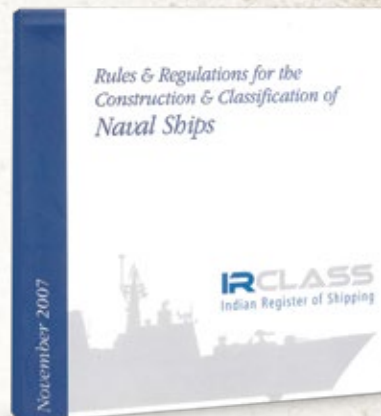
Extensive amendments were made during this time to the HSC & LC Rules to incorporate IMO's HSC Code 2000 which came into force in July 2002. Damage Stability requirements became stringent with the addition of bottom raking damages.

Mr. M. V. Ramamurthy was appointed as Chairman of IRS Technical Committee at the 61st TC meeting in June 2003 and Mr. S. D. Bhat was appointed as the Vice Chairman. With Mr. Ramamurthy's wide experience in all technical aspects of shipping, IRS Technical Committee's activities saw remarkable improvement and progress under his Chairmanship. It is a testimony to his technical expertise and dedication that Mr. Ramamurthy has been the longest serving Chairman of IRS Technical Committee so far.

In 2005, IRS initiated developing Rules for Naval Ships in consultation with the Indian Navy. The Indian Navy was also interested in applying Class

requirements to their vessels like the practice being adopted by other Navies. After further discussions, it was decided to form a separate committee called IRS Naval Rules Committee (INRC) for this purpose consisting of representatives from various professional Directorates of the Indian Navy. An inaugural function was held in New Delhi on 6th July 2006 for the development of Naval Rules which was attended by senior personnel from the Navy including Chief of Naval Staff Admiral Arun Prakash.

The Rules were proposed to be developed in two phases involving non-combatant and combatant vessels.



The first meeting of INRC was held in New Delhi on 23rd August 2006 chaired by Cmde. R. Ghosh, PDNA when the Part 1 - General Requirements and chapters of Part 2 of the Naval Rules were discussed. This was followed by continuous development of Rules with regular meetings till the 10th meeting on Oct 15, 2007, when Phase I of the development Rules for non-combatant ships was completed. The development of Naval Ship Rules was carried out by a team under the able guidance of Mr. D. G. Sarangdhar.

The Rules developed by the INRC were discussed with the Technical Committee for approval. For this purpose, Principal Directors of various professional Directorates of the Navy were co-opted to the Technical Committee at the 68th TCM. The Naval Rules for non-combatants were discussed at the 71st and 72nd meetings of the Technical Committee in 2007 and they were released at a function in New Delhi on 15th November 2007.

At the 78th Meeting in May 2008, Mr. U. C. Grover was elected as the Vice Chairman. At this meeting, the committee approved provisional rules for Air Cushion Vehicles which were developed by IRS. These Rules were approved as provisional with a view finalising them after gaining experience ACVs.

The rule development activity continued in further years mainly focusing on IMO and IACS requirements as well as adding new chapters on special requirements to the Rules for Naval Ships. At the 78th Technical Committee Meeting in July 2010, the Chair suggested that Rule development should be enhanced and IRS should increase the frequency of Technical Committee Meetings though the minimum requirement according to the Rules is only two meetings in a year. Later on, with further efforts and strengthening of the Rule Development team at IRS, it has become a regular practice to hold four TC meetings in a year.

Thus, this period (1991-2010) with IRS as an associate member of IACS saw important changes in the Rule development process resulting in regular publication and updating of the Rules complying with IACS quality systems requirements. The development of Rules for new types of vessels like Mobile Offshore Drilling units and High Speed Crafts and Light Crafts as well as publication of Rules for the Naval Vessels were some of the significant milestones for IRS Rules during this time.

.....To be continued in Part III

Reflections of Leadership: **Mr. H. K. Taneja** Shares Golden Memories with IRS



Mr. H. K. Taneja,
(With IRS from 1975-1994
Chief Executive, 1990-1994)

It gives me immense pleasure to share my thoughts and memories on the momentous occasion of IRS reaching the Golden Jubilee milestone. I would like to congratulate and appreciate everyone who has been part of this journey and has contributed in some way.

I joined IRS in 1975 and served the organisation for nearly two decades. The journey was indeed great which included immense learning, mentoring, contributing to projects of national importance and achieving significant milestones. And I must say many sweet memories and a truly fulfilling career were made along the way!

Indian Register of Shipping was established in 1975 with the vision for India, a leading maritime nation to have its own classification society. I am confident that over the years, it has been diligently fulfilling the objectives with which it was established i.e. to provide faithful and accurate classification services to the stakeholders and to establish standards and Rules for the safety of ships and their machinery. I was the Chief Executive of IRS from 1990-1994 during which period, we gained recognition as Associate Member of IACS which was a significant feat achieved in a short period from its establishment.

Touch of Class magazine is very dear to me as I was fortunate to be leading the organisation when we first launched it and had the privilege of writing the first message in the Inaugural Edition in 1991! It was started with the thought that an organisation's communication internally as well as with the outside world is vital. It was intended to include articles of a technical nature and information about progress made by IRS in various fields. It is heartening to see that this essence is still retained in the subsequent editions of Touch of Class over the years.

I once again congratulate everyone associated with this great organisation for the significant milestone and wish them all the best for the future.

Legacy of Leadership: **Mr. K. Madhok** Reflects on IRS Journey



Mr. K. Madhok,
(With IRS from 1976-2007
Chief Executive, 1997-2007)

I joined IRS on the eve of its first year, i.e. 2nd April 1976 and retired in December 2006. My tenure of more than 30 years in IRS was a learning experience. Our seniors guided us with their experience. A culture of working together and sharing each other's experiences was instilled and passion to see the growth of IRS. This was inculcated in all of us mainly by our first Chief Executive, Late Mr. H. S. Rao who used to talk to us very often. This culture and passion kept us all in IRS.

Initially, we young Surveyors had to work against many odds as we were considered an extra burden by owners' representatives. However patience, guidance from our seniors and constructive dialogue to resolve the issues in safe and acceptable manner did change their perspective.

I learnt a lot from our seniors Mr. Khare, Mr. Taneja, Mr. Chandra, Mr. Thamba and others. After working in Mumbai, I was posted at Rourkela, Visakhapatnam, Chennai and relocated to the Head Office in Mumbai. During my tenure as Surveyor - Incharge of above offices, I tried to instil the 'IRS culture' and the passion to see the growth of IRS in my colleagues with a message that growth of IRS is your growth.

My posting at various places gave me vast experience in different environments. It also gave me opportunities to meet and interact with many officials. This broadened my outlook.

In 1996, I was appointed as Chief Executive and later redesignated as Managing Director. I had the privilege of expanding IRS services abroad by establishing offices in Colombo, Qingdao, Dubai and a site office in Korea. It is heartening to note that IRS has grown leaps and bounds since then and achieved many milestones such as getting full membership of IACS and recognition from EU. Icing on the cake was Chairing IACS.

I take this opportunity to congratulate all associated with IRS - past and present, on 50 years of IRS and am sure that IRS will keep growing and soon will become the most preferred Classification Society.

Jai Hind!

Leadership Chronicles: **Mr. Vijay Arora** on His Remarkable Journey with IRS



Mr. Vijay Arora
(With IRS from 1990-2024
Managing Director, 2021-2024)

Happy 50-year milestone! A half-century of dedication, leadership, and remarkable contributions by all who dreamt, made it possible and shaped this great organisation “Indian Register of Shipping (IRS)” with their unwavering commitment, expertise, positive influence and whose legacy is woven into its fabric. This journey of 50-year anniversary is a beacon of inspiration, a source of pride and admiration for many who still work at IRS.

Congratulations to each and everyone associated with IRS and who contributed to its growth on reaching this incredible milestone of 50 years. It is a great honour to celebrate this remarkable milestone with all of you currently associated with IRS.

I have my own sweet memories associated with my tenure at IRS. I joined IRS at the age of 30 in 1990 and worked at various Survey Stations in India and abroad as a Surveyor and Head of Survey Station before being posted at Head office in the year 2006 where I was engaged with various departments viz. Operations, Technical, Quality and Training. All the things I had learnt as a shipboard engineer and as a Surveyor after joining IRS, gave me huge confidence. During my last eighteen years while working at Head Office, I attended various meetings of the International Maritime Organization (IMO) and I represented IACS as Member and/or Chairman of various panels/expert groups/General Policy Group.

I received excellent training and coaching in my early years at IRS from all my seniors who were passionate and dedicated. IRS started growing at a fast rate and was accepted by IACS as a member and obtained recognition from European commission besides being recognised by many Flag Administrations which helped IRS grow the fleet under its Class Tonnage, Surveyors and the Survey locations in India and abroad grew exponentially.

I worked with IRS for such a long time as it was very close to my heart and gave me passion to work. I retired at the end of June 2024 as the Managing Director.

Once again Cheers and Wishing everyone in celebrating the 50-year anniversary of IRS and all the best for a bright future.

Three Decades of Dedication: **Mr. Ulhas Kalghatgi's** Journey with IRS



Mr. Ulhas S. Kalghatgi
(With IRS from 1988-2021)

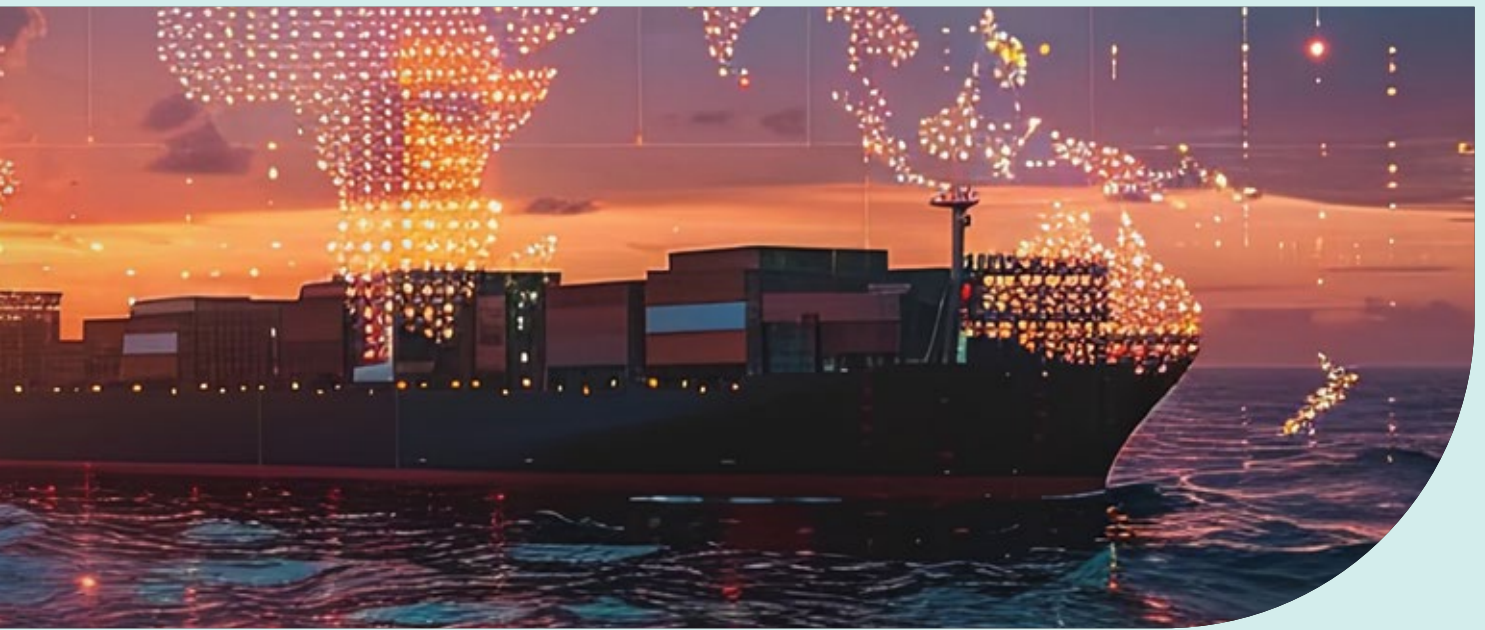
Before I begin my narrative about the years spent in IRS, let me congratulate IRS on its glorious 50th Anniversary, which began with its formation in 1975, establishing its credentials across the maritime community, able to stand shoulder to shoulder with the other leading Classification Societies, culminating in becoming a full member of IACS, with dogged perseverance, and finally becoming a force to reckon with amongst the global maritime fraternity. What an achievement! Made possible with noteworthy contributions from known and unknown people.

Reflecting on my journey at Indian Register of Shipping, I am proud of the personal and professional growth I have experienced. When I first joined, I was eager to learn and make a difference. Over the years, I have developed a deep understanding of our industry, honed my analytical and leadership skills, and learned the value of resilience and adaptability. The challenges I faced and the projects I led have shaped me into a more confident and capable professional. I am filled with a sense of gratitude and accomplishment. I am indebted to my senior colleagues, amongst them I must mention two senior professionals, Shri. H. K. Taneja and Shri. A. R. Chitnis. IRS culture was an enabler in maintaining a very healthy and cordial atmosphere within the organisation and leadership was of transformative style.

3rd October 1988 became an important day in my life because I began looking forward to finding my feet ashore and in a Classification Society, as I joined IRS, and till my superannuation on 31st December 2015, as a Chief Surveyor and Senior Vice President, i.e. 27 years and thereafter as a technical advisor till 30th September 2021. There was never a dull moment for me because every day I was looking forward to more and more challenges. 33 years of my life was spent in this glorious organisation which shaped my career, moulded me into a person imbibing professional skills, ready to take up any challenge, and gave me ample opportunities to become a person of some standing in the maritime community, both within India as well as globally. IRS became a launching platform to fulfil my aspirations.

I will spread my tenure in IRS in several phases, each spanning over 5 years. I had made my decision when I signed off from a ship owned by The Shipping Corporation of India Ltd. to take up shore job. This decision stemmed from the emotional moment caused by the separation from my family at the time of joining a vessel. SCI has also played a significant role in my professional career.

My first five years were spent learning the nuances of ships' surveys, what is classification, and what is the role of a Surveyor. My seniors helped me pick up the threads of survey and certification of ships, as well as new construction of ships. While I was cutting my teeth in learning the ship surveys and certification, my posting at the expansion of fertiliser plant at Bharuch, paved the way to learn about different welding processes, welding techniques, and non-destructive testing, industrial inspections, which enabled me to hone my metallurgical knowledge about ferrous and non-ferrous materials. This was a unique experience that boosted my confidence considerably. I absorbed everything that I came across at the inspection site.



The next five years and thereafter were spent consolidating my position in the organisation and gaining acceptance amongst my seniors. I was fortunate enough to have been picked up for various professional courses, personality development, auditing of quality systems of various companies and safety audits of ships. Every day of my career in IRS became a challenge and opportunity to become a person acquiring many skills all along.

A call from the top management to join the Head Office in the plan approval department became a turning point, that further added to my professional knowledge, changing my perspective as a Surveyor, gaining not only immense technical knowledge but also about management. Here, I must acknowledge the complete freedom given to me by heads of the department to pursue my academic goals, and this was really the most satisfying moment in my long and illustrious career with IRS, because it infused in me both practical and theoretical knowledge.

As I got inducted into the senior management position, I got further insights into the dynamics of corporate-level strategies and added to my managerial and commercial skills. My long association with Indian naval projects was instrumental in learning about defence organisations, and this was possible only because IRS allowed me to spread my wings across the defence sector.

It would not be out of place to mention that when IRS took the IACS Council Chair under the Chairmanship of Shri. Arun Sharma, he delegated many tasks to me reposing his trust in me, which further established my credentials as a worthy IRSian.

To summarise, I could not have asked for a better organisation than IRS and my growth within IRS vindicated my decision to join IRS, in fact taking up a marine profession after my graduation was a momentous decision on my part.

I have no hesitation in stating that this organisation gave me everything which I wanted to achieve and never curtailed the freedom to grow professionally with a humane touch. Empowerment was the key to my success.

I consider IRS as my “alma mater” filled with treasure house of knowledge for anyone willing to seek and imbibe. I hail and acknowledge the contribution made by the “Information Services” cell at IRS, ever willing to support the quest for seeking information on various subjects and an impactful role played by the Information Technology cell.

I wish IRS all the very best and may it add several feathers to its hat as it grows from strength to strength in the coming years.

“Jai Hind”

Garden Reach Shipbuilders & Engineers Limited (GRSE) & Indian Register of Shipping (IRS) - A Synergy towards Sustainable Shipping

Cmdr. P. R. Hari, IN (Retd)
Chairman and Managing Director, GRSE



As Indian Register of Shipping stands at the threshold of its Golden Jubilee milestone, I and my colleagues at Garden Reach Shipbuilders & Engineers Limited (GRSE) would like to extend our best wishes to IRS and all its employees.

The maritime industry plays a vital role in global trade and national security. The collaboration between shipbuilders and classification societies is crucial for ensuring safety, quality and efficiency of marine vessels. The relationship between Garden Reach Shipbuilders & Engineers (GRSE) and Indian Register of Shipping (IRS) exemplifies this synergy, driving innovation and enhancing the country's shipbuilding capabilities.

Established in 1884 in Kolkata, GRSE has earned a reputation for delivering high-quality ships that include naval ships, patrol boats and commercial vessels; meeting stringent national and international standards. Indian Register of Shipping, our national maritime classification

society, is responsible for establishing and maintaining standards for the design, construction of marine vessels and offshore structures. IRS plays a critical role in ensuring that ships are seaworthy and compliant with international regulations.

GRSE and IRS work closely right from the design phase of shipbuilding projects. IRS provides technical guidance and classification rules, ensuring that the vessels are designed with safety, efficiency and environmental sustainability in mind. Further, during construction, IRS conducts inspections and surveys throughout the shipbuilding process which ensure that construction adheres to the prescribed standards and regulations. By integrating IRS's expertise into the quality assurance process, GRSE enhances reliability and safety of its vessels.

In 2022 GRSE received 'Raksha Mantri's Award for Excellence' for designing the most silent



ship for Indian Navy for ASW SWC operations. We were extremely satisfied with the technical services provided by IRS for this project. Earlier this year, we signed a Memorandum of Understanding (MOU) with IRS and this partnership marks a significant step towards fostering Innovation and 'Atmanirbharta'. It will facilitate our foray into the new technology arena, especially autonomous vessels and green shipping, further cementing the long-standing relationship that GRSE shares with IRS.

Our recent successful launch of 'Dheu', a New Generation Electric Ferry with aluminium hull and FRP superstructure, constructed under IRS class, is a testimony to our shared commitment towards green maritime technology.

GRSE and IRS recognise the importance of skilled workforce development and regularly organise training programs and workshops to enhance technical capabilities of our personnel. This not

only improves the quality of shipbuilding but also ensures that the workforce is equipped to handle the complexities of modern maritime operations. Streamlined processes and shared expertise lead to faster project completions and reduced costs, benefiting both shipbuilders and end users.

Coordination and synergy between GRSE and IRS demonstrate the significance of collaboration in maritime industry. Our partnership also contributes to overall growth and sustainability of the maritime sector. As the industry continues to evolve, this collaboration will be crucial in meeting future challenges and seizing opportunities in the global maritime seascape.

On this glorious occasion of golden jubilee, I wish IRS, its leadership and all employees continued success in future endeavours. We look forward to many more years of collaboration in our journey to fulfill the maritime vision.

IRS and APSEZL: A Partnership Through the Years



Captain Unmesh Abhyankar
CEO - Dredging, Adani Ports

As the Indian Register of Shipping (IRS) celebrates Golder Jubilee, Adani Group acknowledges IRS's pivotal role in advancing India's maritime sector. Over five decades, IRS has driven progress in maritime safety, efficiency, and sustainability.

Since its establishment in 1975, IRS has evolved into an internationally recognised and independent ship classification society, becoming a cornerstone of maritime safety and innovation. Over the years, IRS has not only ensured the safety and efficiency of our maritime operations but has also been instrumental in our growth and success.

Our relationship with IRS began during the construction of new tugs, dredgers, and other ancillary marine flotilla. Their expert guidance and timely support ensured that our projects were always on schedule. We were confident of IRS's ability to monitor all our new builds in Japan keeping in mind the owner's interest and hence we did not feel the need for company's supervision during the construction and sea trials.

IRS has consistently demonstrated exceptional responsiveness in conducting class surveys and inspections. Their meticulous approach has guaranteed compliance with class requirements, enhancing the operational effectiveness of our fleet. IRS possesses a deep understanding of the challenges faced by Indian shipping companies. Their support has been pivotal in helping us navigate these challenges, ensuring that we remain competitive in a globalised economy. IRS's guidance has allowed Indian shipping companies, including APSEZL, to operate with confidence and efficiency.

By implementing thorough classification and inspection procedures, Indian Register of Shipping (IRS) has significantly elevated the safety standards of Indian ships, leading to a substantial decrease in maritime accidents. Towing is one activity where we frequently interact with IRS. Furthermore, IRS leads efforts in eco-friendly maritime practices, minimising environmental impacts. For instance, Ambuja Shipping Services Limited ASSL, one of our group companies, uses biofuel for its vessel's main engine, thanks to the proactive support from IRS. The results on our vessels have been promising. We look forward to collaborating with IRS on more projects towards greener and sustainable shipping.

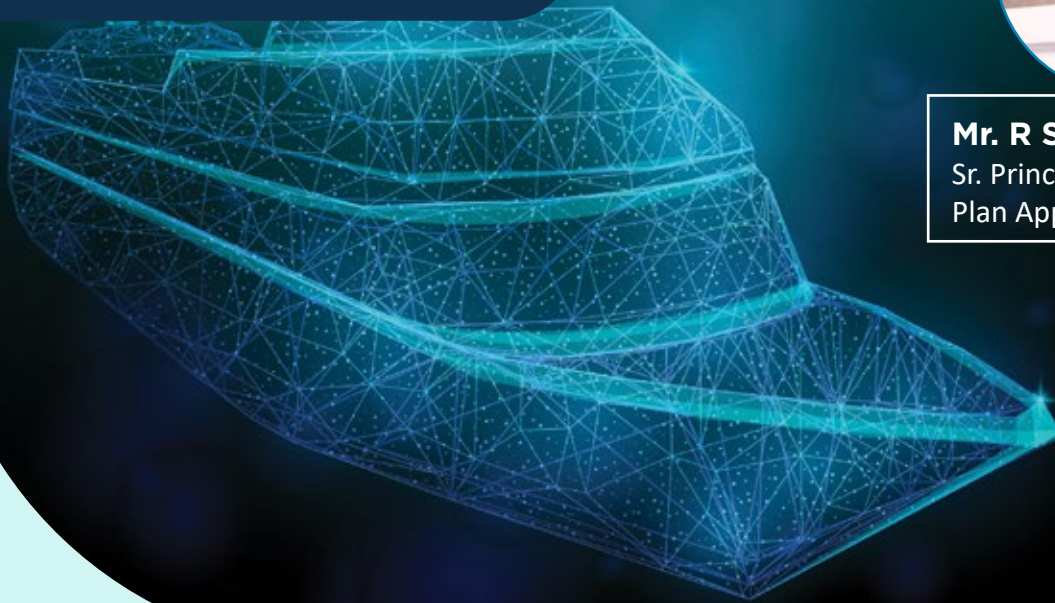
IRS's contributions extend beyond safety and sustainability. Through their comprehensive training programs, IRS has educated countless maritime professionals, ensuring that knowledge and best practices permeate the industry. Their certification arm, IRQS (Indian Register Quality Systems), has provided invaluable certifications, enhancing the operational standards of our fleet and port facilities.

As APSEZL expands globally, we anticipate strengthening our partnership with IRS. Their dedication to quality and excellence has earned them global acclaim. Celebrating their golden jubilee, we extend sincere gratitude to IRS for their invaluable support and look forward to continued collaboration in the years ahead. Congratulations to IRS on achieving this significant milestone, and my sincere thanks for being an invaluable partner in our growth story.

MASS CODE – Manoeuvring the Navigational Challenges



Mr. R Srinivas,
Sr. Principal Surveyor,
Plan Approval Centre



Introduction

Advancements in digital technology, smart sensors, communication systems and state of the art software systems are bringing about the design and development of vessels with advanced autonomy. The maritime industry is seeing a rise in projects that demonstrate remote-controlled and autonomous vessels. International Maritime Organisation (IMO), acknowledging the development of these technologies, initiated a scoping exercise in 2017 to determine how safe, secure and environmentally sound Maritime Autonomous Surface Ships (MASS) operations are and how it might be addressed by IMO instruments.

Autonomy is the result of applying "advanced" automation to a vessel so that it implements some form of self-governance, and can present / select alternative operating options without human intervention.

This article intends to provide a brief overview of the background of IMO MASS code presently under development and challenges specific to autonomous navigation.

Background

IMO's Maritime Safety Committee (MSC) published Circular 37, titled "Automation in Ships" in 1967. Building upon this foundation, Circular 55 (1968), Circular 66 (1969), and Circular 78 (1970) were subsequently introduced to establish a baseline for the introduction of automation and autonomy onboard ships. These early efforts demonstrate that the integration of technology onboard vessels has been a longstanding focus for the IMO.

While the integration of technology is not a novel subject for IMO, the emergence of autonomous ships represents significant progress and has necessitated a review of the legal and regulatory aspects.

IMO initiatives

The rapid development of autonomous ship projects in the last decade worldwide encouraged IMO to initiate a Regulatory Scoping Exercise in 2017. This exercise was conducted by three IMO committees, the Maritime Safety Committee, Legal Committee, and Facilitation Committee.

The Maritime Safety Committee defined Maritime Autonomous Surface Ships (MASS) as: "A ship that operates at various levels independent of human interference".

Based on this definition, the IMO proposed four

degrees of autonomy starting with manned ships with automated processes and decision support (Degree 1), remotely controlled ships with seafarers onboard (Degree 2), remotely controlled ships without seafarers onboard (Degree 3) and fully autonomous ships (Degree 4).

It is important to note that these degrees were established during the Regulatory Scoping Exercise as a guide for discussions and may be subject to change as MASS regulations continue to evolve.

After a series of meetings and discussions in 2021, the outcome of the regulatory exercise revealed the importance of addressing high-priority concerns related to the safety of navigation in conventions including SOLAS, MARPOL, COLREGs, and STCW and the need to revise them to address MASS.

MASS CODE

The non-mandatory Maritime Autonomous Surface Ships (MASS) Code is anticipated to be ready for adoption by 2025 and would form the basis for the development of mandatory MASS Code which may be adopted in 2030.

Unlike traditional legislation which imposes prescriptive requirements, this Code adopts a goal-based and technology-agnostic approach which has the benefit of creating an adaptive regulatory environment suited to the constantly changing technology.

This Code addresses the functions needed to obtain safe and reliable operations of MASS in cases where they are not adequately or fully addressed in IMO instruments, while ensuring

that required safety levels are maintained or enhanced through the implementation of remote control, or autonomous operation.

The Structure

The code is being drafted in the following parts

Part 1 - General

Includes Principles, Purpose and Objectives (or Goals) along with Code Structure, Application, Terminology and Definitions.

Part 2 - Main principles for MASS and MASS Functions

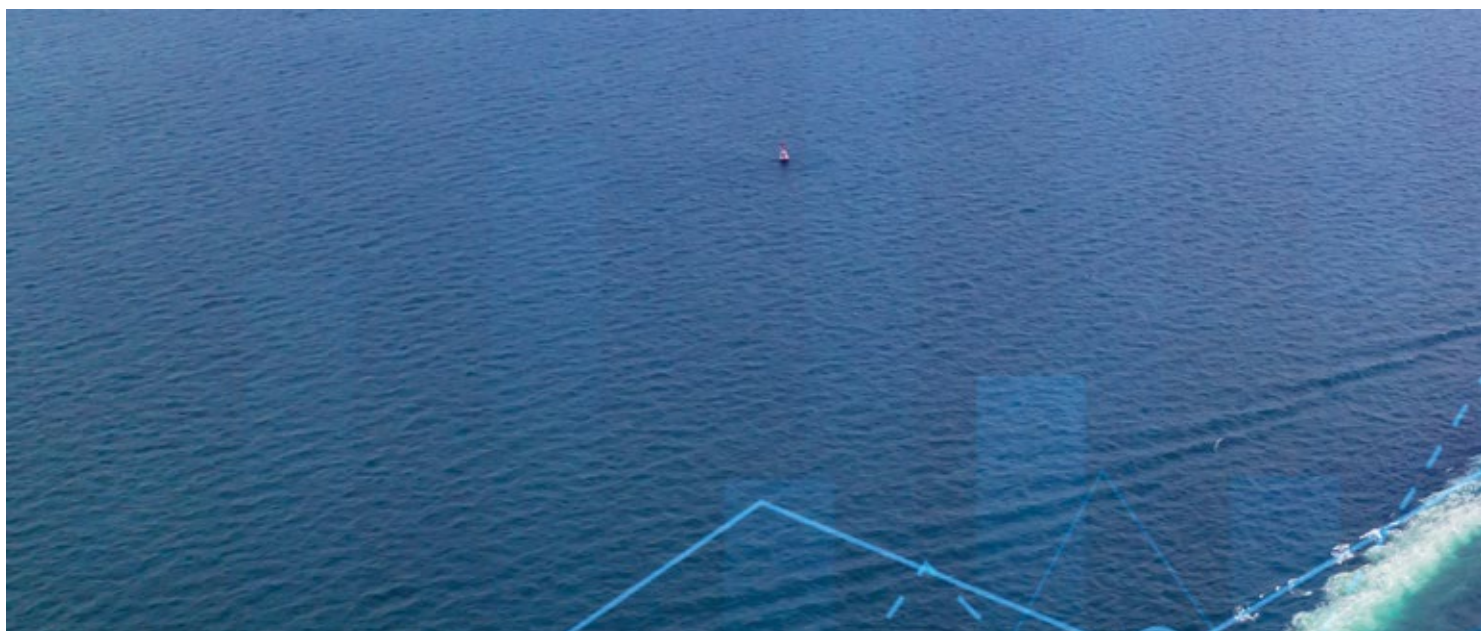
Addressing the Operational Context, High Level Functional Requirements, and Safe States.

Part 3 - Goals and Functional Requirements

Addressing the Goals and Functional Requirements for the functions of a ship and structured very much along the lines of the SOLAS Convention including sections covering Navigation, Fire Safety, Life Saving, etc. but also including other areas that could be considered as requiring specific attention in the context of MASS, such as Remote Operations.

Navigation Challenges

Of all the functions carried out on the bridge, gaining situational awareness through lookout and navigational sensors and subsequent analysis of the situation based on the knowledge of an experienced navigator is a vital function. The challenge is to mimicking the real-world bridge environment - both internal and external to the bridge, as close to reality as possible when viewed from a remote location.



One of the important concepts of the MASS Code is that a designated human "master", responsible for overseeing the operation of each autonomous vessel from a remote operations centre. This role will introduce new training and certification standards mirroring those of the STCW.

The human master remains responsible for MASS, regardless of the degree of autonomy or operational mode, and should intervene when necessary. Under specific circumstances, one or more Remote Operations Centres (ROCs) could be responsible for a MASS on a single voyage. The role and responsibilities of Master in different MASS operating scenarios are yet to be established. The MASS Code is expected to address all training, certification, and competency requirements, with STCW Code forming the basis.

Environmental Factors

Extreme weather events such as storms, fog, and heavy rain can significantly affect sensor visibility performance, CCTV and disrupt communication systems. This aspect also needs to be addressed.

Technological Limitations and Communication Challenges

Sensors used by MASS, such as cameras, radar, and lidar have to be extremely reliable.

Reliable communication is crucial for MASS navigation. The challenges posed by various types of communication are different in terms of bandwidth, speed, latency, distance etc. The availability of backup communication and local regulatory restrictions are some of the constraints to be addressed.

Cybersecurity:

The MASS data is vulnerable to cyberattacks, especially the ship to shore data which could compromise the vessel navigation systems and control functions.

Decision Support System:

Limited availability of data to train the machine learning (ML) and deep learning (DL) models for various scenarios is a challenge.

Operational Challenges

Apart from the regulatory challenges, there are other major operational challenges such as:

- Collision Avoidance: MASS must be able to accurately detect and avoid other vessels, obstacles, and marine life in a complex maritime environment
- Human-Machine Interaction: Effective human-machine interaction is necessary for remote operators to monitor and control MASS safely and efficiently
- Training
- Traffic separation and interaction with VTMS systems
- MASS Response to vessels under distress, search and rescue

Addressing these challenges will require significant advances in technology, international cooperation, and the development of robust regulatory frameworks. As MASS technology continues to evolve, it is essential to prioritise safety and sustainability.



Underwater Radiated Noise (URN) from Ships: Part 2- Numerical Approach



Mr. Akula Chaturvedi
Senior Surveyor,
Research & Development



The ocean, once a secluded and calm environment, is increasingly becoming a noisy place. Human activities, particularly shipping, have significantly contributed to the rise of underwater radiated noise (URN). This silent threat poses a serious risk to marine life, disrupting their vital behaviours such as communication, navigation, and feeding. The International Maritime Organization (IMO) has recognised the growing concern over URN pollution from ships. To address this, the IMO has revised its guidelines and launched the GloNoise project. India, through DG Shipping, IRS, Ministry of Earth Sciences (MoES), Maritime Research Center (MRC), and the Institute of Marine Engineers (India), has been actively involved in raising awareness and participating in global initiatives to reduce URN, including the Experience Building Phase (EBP).

As outlined in Part 1 of this article, URN levels have been steadily increasing over the past few decades. The expansion of global shipping, coupled with advancements in marine technologies, has led to a surge in underwater noise pollution. This escalation can have detrimental effects on marine ecosystems, including habitat degradation, stress, and injury to marine animals.

To mitigate the impact of URN from commercial shipping, a comprehensive understanding of its sources, propagation, and effects is crucial. By analysing the source-receiver path, researchers can identify the key factors influencing noise levels and develop strategies to reduce noise emissions. This article investigates the numerical techniques used to model and analyse ship-generated noise by simulating the complex interactions between sound sources. Numerical modelling techniques, such as finite element analysis (FEA), computational fluid dynamics (CFD), and boundary element method (BEM), are employed to simulate the generation and propagation of sound waves in the ocean. This knowledge is essential for developing effective noise reduction measures and ensuring the long-term health of marine ecosystems.

Numerical Modelling of Underwater Radiated Noise (URN)

Underwater Radiated Noise (URN) prediction concentrates on far-field scenarios, typically at distances exceeding 100 meters from the ship. In the far field, sound propagates as spherical waves, and the sound pressure level diminishes with increasing distance, adhering to the inverse square law. Ships, which can be approximated as a monopole sound source, comprise multiple noise sources, such as machinery noise, propeller cavitation, and hydrodynamic flow noise. The calculation of the URN signature of the ship involves two primary steps:

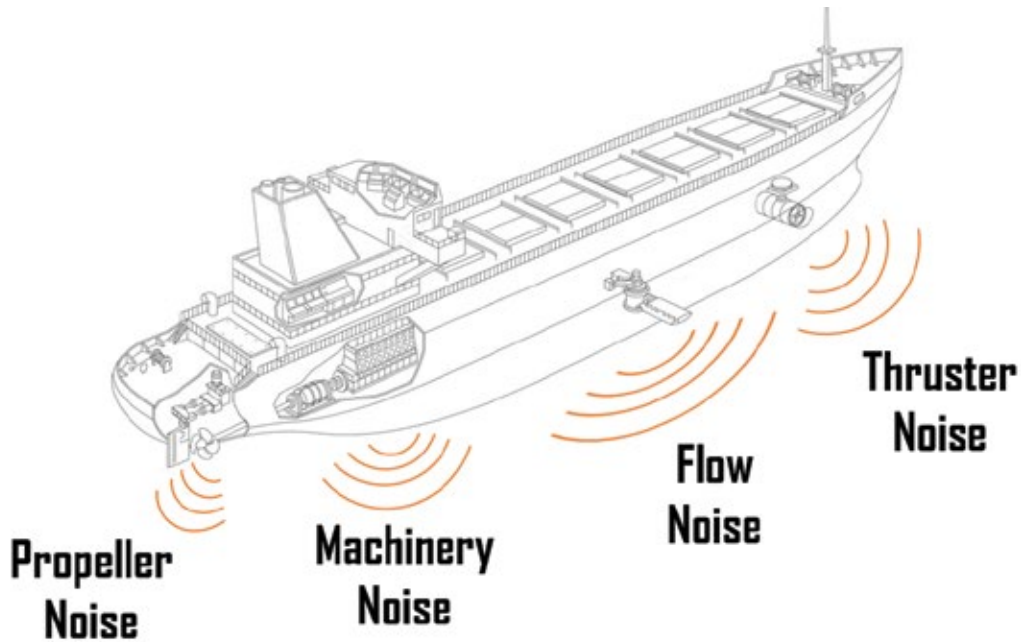
1. Radiated Noise Level (RNL) Calculation:

This step determines the noise signature of a specific ship in the far field. This signature can then be converted to a near-field representation using a geometric spreading correction factor.

2. Source Level (SL) Calculation:

The SL represents the noise level emitted by the ship. This is calculated by using RNL corrected with propagation losses. By combining the SL with operating environment conditions, we can estimate the underwater noise levels generated by the ship at various distances.

By analysing the SL of different ships and their operating conditions, researchers and policymakers can identify areas with high noise levels and implement measures to mitigate the impact on marine biodiversity.

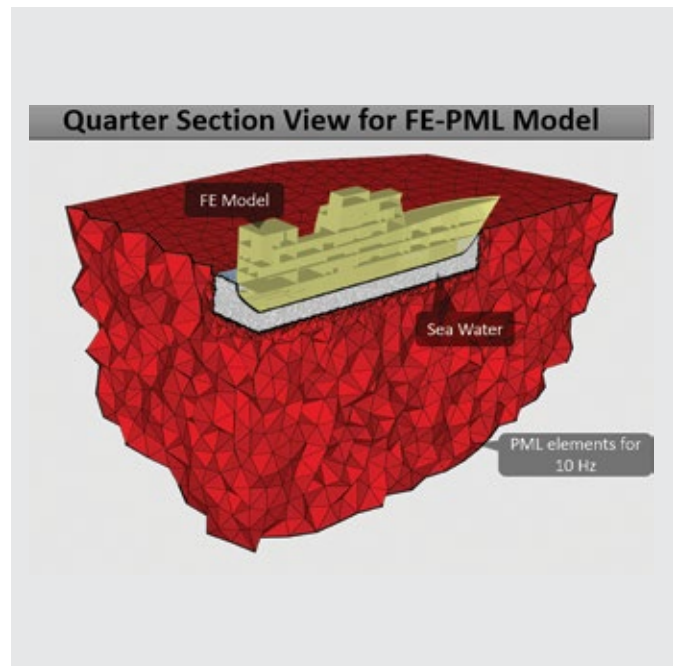


IRS has been employing advanced numerical techniques, including Finite Element Analysis (FEA), Statistical Energy Analysis (SEA), Computational Fluid Dynamics (CFD), and Boundary Element Method (BEM), to assess and mitigate underwater radiated noise (URN) in both commercial and naval ships for over five years. These techniques are discussed in brief in the below sections.

Finite Element Analysis (FEA):

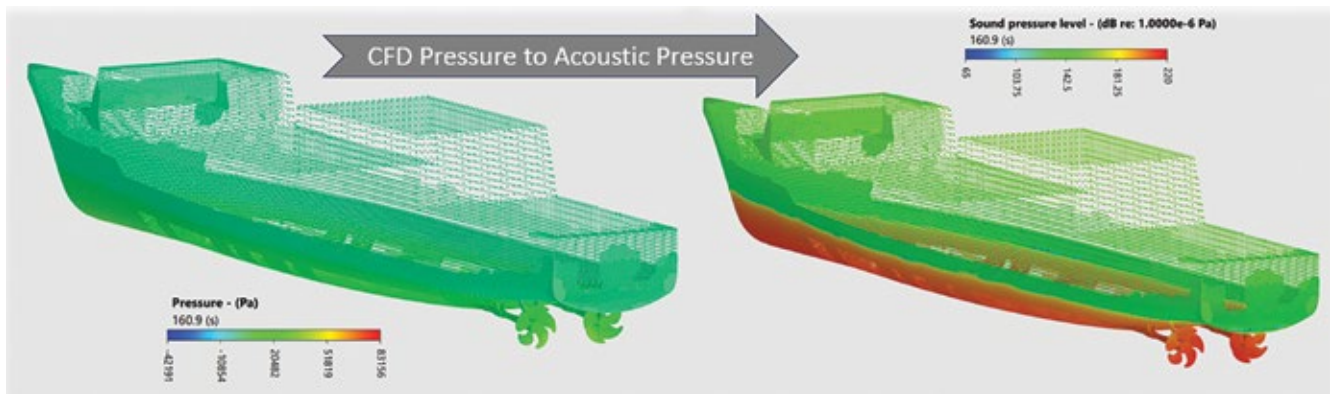
This technique is suitable for low-frequency structural analysis, particularly for frequencies below 500 Hz. The Perfectly Matched Layer (PML) technique is used to model absorbing outgoing waves without reflections. By using an adaptive PML model, in conjunction with Finite Element Analysis (FEA), the acoustic layer surrounding the hull surface can be accurately modelled, with seawater properties. The PML layer thickness is typically set to 30% of the acoustic wavelength at the centre frequency of each "PML frequency band." These frequency bands are automatically generated to effectively handle a wide range of frequencies.

By combining FEA with the PML model, the radiation and scattering of Structural Borne Noise (SBN) from the hull surface into the seawater can be efficiently captured.



Computational Fluid Dynamics (CFD) and Boundary Element Method (BEM):

For hydro-acoustic predictions, a two-step approach is employed. First, CFD is used to simulate the flow around the hull and the propeller, and then BEM is used to calculate the acoustic field radiated by the propeller along with the appendages.



Fluid loading plays a significant role in the vibration of the hull, especially at low frequencies. FEA-PML model is employed to analyse the impact of fluid loading together with the hydroacoustic pressure.

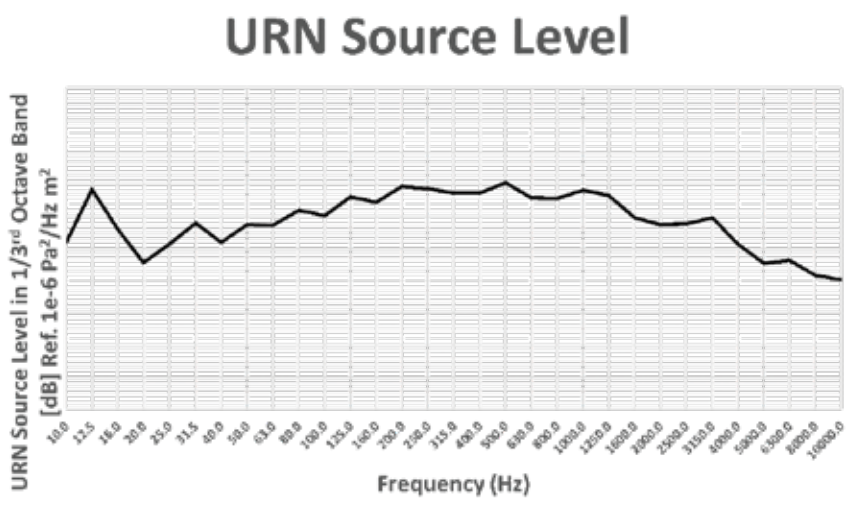
Accurate prediction of propeller noise is crucial for overall URN assessment. Conventional techniques, such as the Ffowcs Williams-Hawkings (FW-H) equation, provide quick results but have limitations in modelling scattering effects from the hull and free surface.

To overcome these limitations, the Boundary Element Method (BEM) is used to predict underwater radiated sound in the exterior domain. BEM models incorporate Fluctuating Fan Source (FFS) to represent the rotating propeller surface and account for scattering effects from nearby structures.

Overall Radiated Noise Level (RNL):

To determine the overall radiated noise level (RNL) of a ship, it is essential to consider the contributions from various noise sources, such as propellers, machinery, and hydrodynamic flow. These noise sources are generally incoherent, their individual contributions are combined logarithmically. This method is based on the principle of sound intensity addition, where the total sound intensity is the sum of the individual intensities.

Once the total RNL signature is obtained, the next step is to calculate the URN source level (SL). The RNL signature is measured at a specific distance from the ship.



The URN source level (SL) is calculated from the total RNL signature corrected with propagation losses. By combining the SL with operating environment conditions, we can estimate the underwater noise levels generated by the ship at various distances. By combining the calculated SL with information about the ship's operating environment, such as speed of sound, ocean depth, and bathymetry, it is possible to estimate the underwater noise levels generated by the ship at various distances. This involves considering factors like propagation loss, scattering, and absorption of sound in water.

Further Work on Numerical Models

Sound propagation in the ocean is a complex phenomenon influenced by various factors, including depth, temperature, salinity, and seabed characteristics. To accurately predict sound propagation, researchers employ a variety of numerical techniques based on the wave equation. These techniques, such as ray tracing, normal mode, and parabolic equation models, consider the intricate interactions between sound waves and the ocean environment.

While significant progress has been made in understanding sound propagation, further research is needed to refine these models, particularly for specific regions like the Indian coastline. The unique bathymetry and oceanographic conditions of the Indian Ocean present specific challenges that require tailored modelling approaches.

By incorporating factors such as temperature, salinity, and sound speed profiles into numerical models, researchers can develop more robust and accurate predictions of sound propagation. This deeper understanding will enable us to assess the impact of URN on marine ecosystems and develop effective mitigation strategies.

IRS is actively working on developing advanced numerical models to simulate sound propagation in the ocean environment. By leveraging these tools, IRS aims to contribute to the ongoing efforts to mitigate the adverse effects of underwater noise pollution.

Way Forward: The Interaction of Energy Efficiency and Underwater Noise

The International Maritime Organization (IMO) and the International Association of Classification Societies (IACS) have placed significant emphasis on energy efficiency in shipping. Concurrently, the growing concern over underwater radiated noise (URN) pollution has led to a focus on reducing noise emissions from ships.

A fascinating aspect of this dual challenge is the potential interrelationship between energy efficiency and URN. By optimising ship design for energy efficiency, it may be possible to reduce URN as well. For instance, energy-efficient propellers often exhibit lower levels of cavitation, a major source of URN.

Numerical modelling offers a powerful tool for analysing the complex interplay between energy efficiency, and URN. IRS is actively involved in advancing numerical modelling capabilities to support the development of energy-efficient, quiet ships.

नौका शब्दं हरेमः, समुद्रजीवानां संरक्षणाय।
"Nauka shabdam haremah, samudrajeevaanaam samrakshaNaaya."



Mr. Achintya Bikash Dutta
Secretary,
IOMOU Secretariat

Heartiest Congratulations On 50 Years of Outstanding Service of The IRS Towards Shipping and Industries

Warm greetings from the Secretariat.

It gives me immense pleasure, both personally and as the Secretary of the Indian Ocean Memorandum of Understanding (IOMOU) with its member Authorities, to extend my heartiest congratulations to the Indian Register of Shipping (IRS) on this momentous occasion of completing 50 remarkable years of service in 2025.

Since its establishment in 1975, IRS has stood as a beacon of excellence, contributing significantly not only to India's maritime industry but also to the global shipping community. I have had the honour of witnessing IRS's journey of dedication, innovation, and commitment since 1987, when my professional association with this esteemed organisation began. Over these decades, I have seen IRS evolve into a distinguished classification society, always maintaining the highest standards of safety, quality, and compliance.

The commitment of IRS to safety, regulatory oversight, and industry best practices has greatly influenced the maritime landscape, earning its rightful place among the International Association of Classification Societies (IACS). IRS's valuable contributions to ship safety, environmental protection, and maritime governance have truly been an inspiration to us all.

From the early days of our association, I have been deeply impressed by IRS's proactive approach, its vision for the future, and its unwavering commitment to the development of the Indian Ocean maritime domain. As the Secretary of the IOMOU, I have had the privilege of collaborating with IRS on various initiatives that have strengthened maritime safety and environmental sustainability in the region. IRS's pivotal role in our mutual endeavours has been instrumental in advancing the cause of safe, secure, and efficient shipping.



This 50-year milestone is a testament to IRS's enduring legacy of excellence, professionalism, and leadership. The journey it has embarked on, guided by an unwavering dedication to improving standards and fostering innovation, continues to inspire all of us in the maritime industry. Your efforts in promoting collaboration and forging strong relationships with stakeholders have paved the way for a safer and more sustainable future.

As IRS celebrates this golden anniversary, I would like to personally express my deepest appreciation for the enduring relationship between IRS and IOMOU. The cooperation and support of IRS have been invaluable in enhancing our mission to ensure the highest standards of Port State Control within the Indian Ocean region. We look forward to continuing our close collaboration in the years ahead, as we work together to address emerging challenges and seize new opportunities.

Once again, congratulations to all the stakeholders of IRS on this remarkable achievement. May the next 50 years be filled with even greater success, innovation, and service to the global maritime community.

A Journey of Collaboration: The Institute of Marine Engineers (India) and Indian Register of Shipping



Mr. Rajeev Nayyar,
President, IME(I)



The Institute of Marine Engineers (India) is privileged to extend heartiest congratulations to the Indian Register of Shipping on reaching its remarkable milestone of 50 years. This occasion is not only a significant chapter in IRS's history but also a moment for reflection on the impact this organisation has had on the maritime industry in India and beyond.



The journey of IRS over the past 50 years shows the strong dedication and hard work of its leaders and teams. Their ongoing commitment to providing high-quality classification services and focusing on maritime safety has made IRS a trusted and innovative organisation in the shipping industry. The initiatives they have launched have improved standards for maritime operations and encouraged shipowners around the world to prioritise safety and responsibility.



At IME(I), we have built a long-lasting and enriching relationship with IRS. Through events, seminars and workshops, we have formed a partnership that goes beyond just a collaboration. IRS works closely with IME(I) to develop and promote seminars making them accessible for all members. Several members from IME(I) having domain expertise have been a part of IRS programmes, ensuring that knowledge transfer is executed by experienced professionals who understand maritime operations deeply. IRS also designs seminars and courses tailored to the needs of local shipping and associated companies, making training practical and relevant. In addition, IRS provides facilities for these training activities and extends support to enhance programme effectiveness.

IME(I) members are also a part of the expert Technical Committee which is responsible for review and approval of technical rules and amendments to existing rules formulated by IRS, for classification surveys, building of ships, their machinery and equipment.

In the **Classification Sub-Committee** too, IME(I) has the representation to add industry insights for matters connected with the classification of ships. As a professional body, IME(I) aligns with IRS's vision by actively seeking ways to reduce our environmental impact and promote ecological responsibility among our members and industry partners.

As the Indian Register of Shipping (IRS) celebrates its golden jubilee, its enduring partnership with IME(I) highlights a shared commitment to advancing India's maritime sector. Together, IRS and IME(I) have created impactful platforms for innovation, knowledge sharing and industry growth, reinforcing India's influence in global maritime circles.

One of the pillars of this collaboration is the International Maritime Conference and Exhibition (**INMARCO**), hosted by IME(I) every four years since 1982. INMARCO is a flagship event organised by IME(I) that gathers maritime industry professionals, engineers and experts to discuss advancements in marine technology, regulatory updates and sustainable practices. IRS has been a consistent partner at INMARCO, contributing expertise through technical presentations and panel discussions that elevate India's maritime presence. This partnership demonstrates IRS's dedication to advancing safety and innovation, showcasing India's strengths on the global stage.

The World Maritime Technology Conference (**WMTC**) is a premier international event bringing together industry leaders, innovators, and professionals from across the maritime sector to explore pioneering advancements and address shared challenges. Held every three years with global participation, WMTC offers a unique platform for the partnership between IRS and IME(I) to showcase India's contributions to the international maritime arena. With IRS providing critical insights into regulatory standards, safety practices, and technological progress, WMTC exemplifies the collaborative spirit driving India's maritime advancements. The event fosters global cooperation in maritime technology, underscored by IRS's extensive expertise. Returning to India after 12 years, WMTC took place in December 2024, co-hosted by IME(I) and IRS. This prestigious event underscores India's growing influence in maritime technology and innovation, providing a collaborative platform to highlight advancements and explore solutions that propel the global maritime industry forward.

Further strengthening this relationship, the Global Maritime Seminar (**GLOMARS**), happens once in every four years, offers a forum for industry experts to discuss and showcase progress in the maritime sector. The active involvement of IRS in GLOMARS

enhances the seminar's focus on classification standards and environmental policies, allowing manufacturers and service providers to connect with IRS specialists. This offers networking opportunities and deepens industry ties, aligning with IRS's mission to advance maritime safety and sustainability.

IME(I) also organises regular seminars to keep industry stakeholders informed on regulatory updates and environmental standards. IRS's role in these events—providing technical guidance on international standards and sharing insights from IMO committee meetings—ensures that the Indian maritime community remains well-informed and prepared to meet evolving industry demands.

As IRS marks 50 years of service, its collaboration with IME(I) continues to drive India's maritime ambitions, underpinned by a dedication to innovation, safety, and sustainable growth. Together, IRS and IME(I) remain committed to advancing India's position in the maritime sector, strengthening the industry through knowledge, expertise and a shared vision for the future.



IME(I) is truly honoured to work alongside IRS and extends best wishes to its esteemed leadership, officers, and staff for their continued accomplishments and progress. With deep gratitude, IME(I) looks forward to witnessing IRS's inspiring journey ahead, strengthened by renewed purpose and steadfast dedication. We wish them every success in all their future endeavours.

Preparing for FuelEU Maritime Regulation



Mr. Kunal Sharma
Senior Surveyor,
Ships & Technical Services



Under the European Climate Law, the European Union (EU) has committed to reduce its net greenhouse gas emissions by at least 55% by 2030 compared to 1990 levels. One of the key regulatory instruments adopted as part of this package is the **FuelEU Maritime Regulation (Regulation (EU) 2023/1805)**, which was agreed upon by European Parliament and European Council in March 2023 based on proposal from the European Commission. Emissions Trading System (ETS), Renewable Energy Directive (RED) and Alternative Infrastructure Regulation (AFIR) are the other important shipping legislations included in the EU's Fit for 55' package.

The FuelEU Maritime Regulation prescribes the following requirements:

- From 2025, ships arriving at, or departing from EU ports, or while at EU ports are to gradually decrease the GHG intensity of the energy used on board over time, by 2% in 2025 to as much as 80% by 2050. The FuelEU Maritime Regulation covers GHG emissions from Well to Wake (WtW) basis.

$$\text{GHG intensity } \left[\frac{\text{gCO}_2\text{eq}}{\text{MJ}} \right] = f_{\text{wind}} \times (\text{WtT} + \text{TtW})$$

- From 2030, container ships and passenger ships are required to use shore power, or zero-emission technologies when at berth in a Trans-European Transport Network (TEN-T) major EU maritime port. From 2035, this requirement will apply to all EU ports where shore power is available.
- The 2% of the energy used on board by a ship from 1st January 2034, to be covered by Renewable Fuels of Non-Biological Origin (RFNBOs). [only if the share of RFNBOs in the energy mix for the reporting period 2031 is less than 1%]

From 1st January 2025, FuelEU Maritime Regulation applies to all ships of above 5000 GT that serve the purpose of transporting passengers or cargo for commercial purposes*, regardless of their flag. The regulation's scope covers 100% of energy use for voyages within the EU, 50% for voyages between an EU and non-EU port and 100% of energy use while the ship is at an EU port of call.

*For the time being, offshore vessels are not covered under the FuelEU Maritime Regulation.

A Port of call is a port where ships stop to load or unload cargo or to embark or disembark passengers.

Stops for the sole purpose of refuelling, obtaining supplies, relieving the crew, going into dry-dock or making repairs to the ship, its equipment, or both; stops in port because the ship is in need of assistance or in distress, ship-to-ship (STS) transfers carried out outside ports; stops for the sole purpose of taking shelter from adverse weather or rendered necessary by search and rescue activities; and stops of containerships in a neighbouring container transshipment port are excluded from the definition of port of call for the purpose of this regulation.

The entity responsible for compliance with FuelEU Maritime Regulation is the Company responsible for compliance of the ship with the International Safety Management Code, thus the ISM Company. It can be either the shipowner or any other entity organisation and person, distinct from the shipowner.

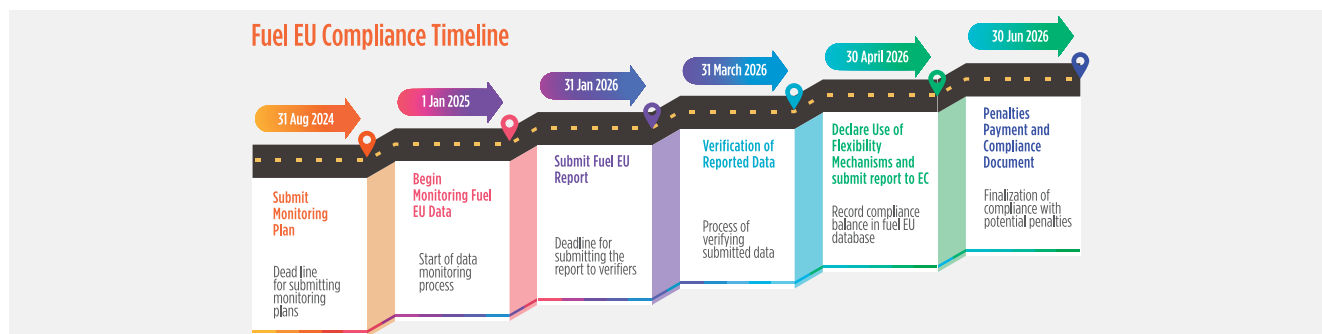
Use of Onshore Power Supply

FuelEU Maritime Regulation requires passenger ships (i. e. ferries and cruise ships) and containerships to use shoreside electricity (SSE) or alternative equivalent zero-emission energy sources at berth from 2030 onwards.

Flexibility Mechanisms

The Regulation offers flexibility mechanisms - banking, borrowing, pooling - for ships not meeting the required GHG intensity, and for ships achieving better compliance. Banking applies in case a ship has a compliance surplus either on the GHG intensity or the sub-target for RFNBOs, the company may bank that compliance balance and use it for the same ship in the following reporting period. Borrowing of advance compliance is not permitted under the following scenarios:

- The compliance balance exceeds more than 2 per cent of the threshold GHG intensity multiplied by the energy consumption of the ship.
- Used for two consecutive reporting periods.
- In addition, in case the vessel has a compliance deficit in a reporting period, the company may borrow an advance compliance surplus of the corresponding amount from the next reporting period. Emissions can also be pooled between two or more ships to achieve compliance per individual ship, including ships managed by different companies. The total pooled compliance must be positive and each ship can only be included in one pool per reporting period. Ships with negative compliance balance after any banking, borrowing, or pooling will have to pay a penalty.

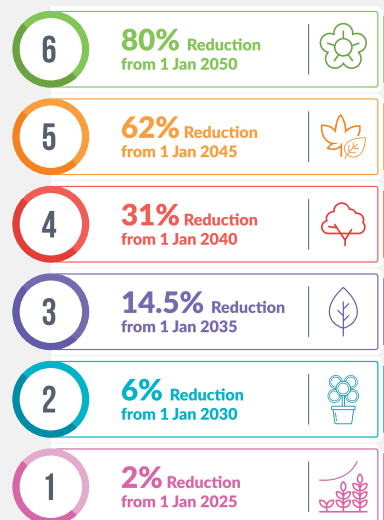


What should the Shipowners / Managers do?

The first step is to prepare and submit a FuelEU Monitoring Plan to verifiers for approval. From 1st Jan 2025 and each year thereafter ships under the scope of FuelEU Maritime Regulation are to collect and report data according to the monitoring plan, for 100% of energy used for voyages between two EEA ports of call and at berth, on a well-to-wake basis and 50% of energy used for voyages between EEA and non-EU ports. Based on satisfactory verification of the submitted data, ships are to obtain and carry a valid FuelEU DoC onboard ship by 30th June 2026 and each year thereafter.

The baseline for the calculation of the annual GHG targets is set at 91.16gCO₂e/MJ. Ships will have to comply with the following energy GHG intensity reduction targets:

GHG intensity of the energy used on board by a ship under FuelEU Maritime Regulation



Reference value of 91,16 grams of CO₂ equivalent per MJ

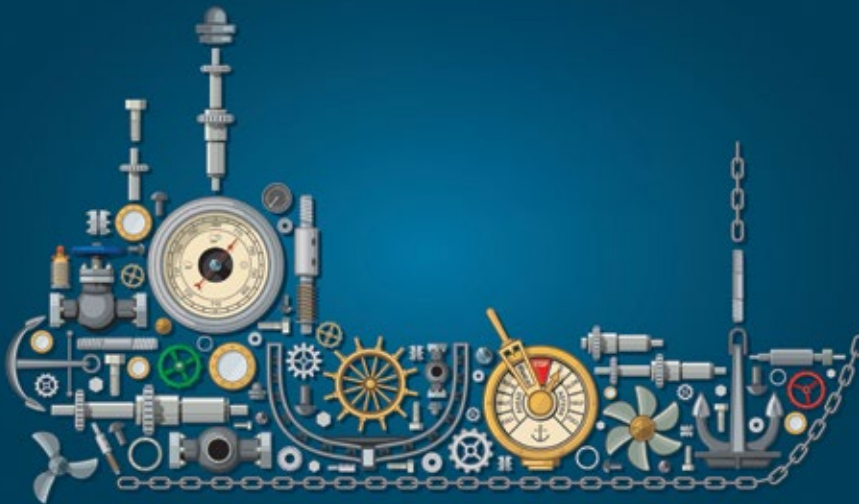
NovaHULL: A New Rule-based Scantling Calculation Tool



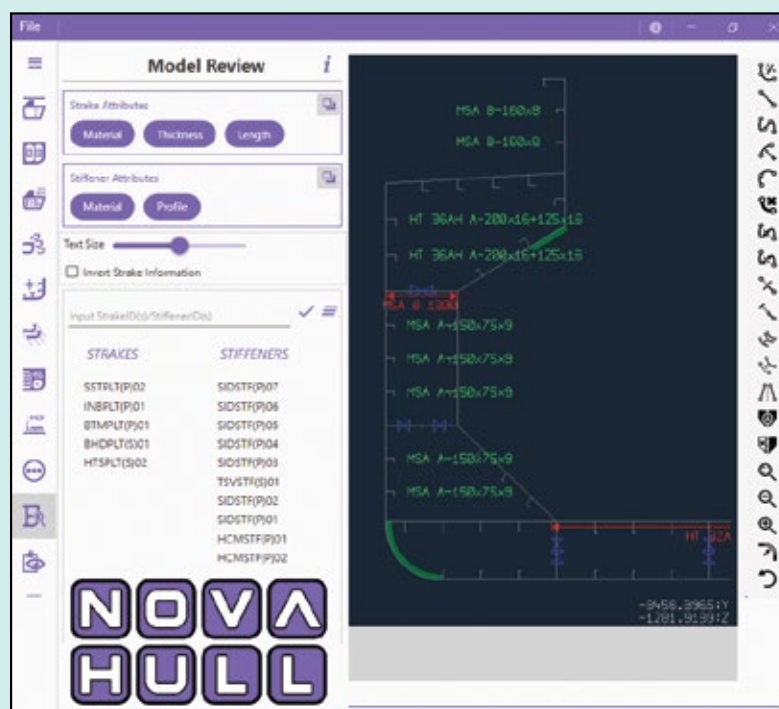
Mr. Kripakar M Marur
Sr. Surveyor, Plan Approval Centre



Mr. Naveen VR
Surveyor-I, Plan Approval Centre



With the General Hull Requirements (Part 3) of Indian Register of Shipping's Rules and Regulations for the Construction and Classification of Steel Vessels are reviewed and updated in line with current IACS Unified Requirements A new rule-based scantling calculation tool is developed to succeed the existing IR-Hull application. NovaHULL takes the features of IR-Hull and improves its functionality and efficiency while adding new calculation engines for multiple classification services.



The need for a new software

As a result of the change in Rules and how ship structures need to be evaluated based on these Rules, the calculation process for checking compliance of ship structures have become more numerically and computationally intensive. A new software was needed to handle this requirement as efficiently as possible while being easy and intuitive from the user's perspective.

Succeeding IR-Hull

IR-Hull has served as the primary rule-based scantling calculation tool for Plan Approval services for seagoing, inland and high-speed crafts. Built on a development language of Visual Basic, IR-Hull will continue to provide scantling analysis for inland and high-speed vessels from July 2024, while NovaHULL will handle the analysis for seagoing vessels contracted for building on or after July 2024.

Insights and feedback gained from the development and maintenance of the IR-Hull application across the years have proven to be a great asset for development of NovaHULL. NovaHULL builds on the established user-facing features of IR-Hull and adapts them to the requirements of the updated Rules and Regulations.

In-house developed graphics engine

NovaHULL uses a Graphics Engine that is developed fully in-house, removing any requirement for third-party CAD modelling interfaces. This Graphics Engine incorporates all the CAD modelling tools available in IR-Hull. The indigenous CAD interface provides the development team with the freedom to implement better features – including an integrated post-processor, on-screen displays for coordinates & legends, a robust undo-redo chain for modelling actions and specific tools like custom curve mirroring and composite curve generation.

Computation Capabilities

Like IR-Hull, NovaHULL is capable of analysing transverse sections for global strength, local yield and buckling compliance, and analysing transverse primary supporting members for scantling compliance based on July 2024 rules for vessels of lengths less than 90m and greater

than 90m. Once the ship information is input, the application is able to carry out detailed iterative analyses of sections within a few seconds.

On top of rule-based scantling assessment, NovaHULL has been expanded to handle calculations required for longitudinal strength assessment for thickness surveys and CAP (Condition Assessment Program) surveys at the vessel's diminished state. It has also been equipped with a calculation engine for computing and reporting residual strength of ship sections that have undergone damage, enabling our Emergency Response Services in delivering quicker global strength results.

With the numerically intensive calculations involved in compliance checks using the updated Rules, it was important that computational efficiency was prioritised at all stages in the application's development. NovaHULL manages to improve on completion times of complex iterative calculation by ~80% compared to previously developed scantling computation applications.

A host of new features

With the aim of improving user experience, NovaHULL brings forward a range of new features. This includes:

- Post-Processor module which allows the users to view the results of calculation
- Annotations module for adding comments to elements and reports
- Model Review module for users to quickly check the modelled entities in any given section against structural plans
- Import utility to seamlessly convert IR-Hull section models into NovaHULL model
- Improved reporting and summary reports
- Contextual help content available at each wizard for user Guidance

Future developments

The development team for NovaHULL continues to work on expanding the capabilities of the application such as specialised tools like Impact and Slamming evaluators, specific graphic visualisers for compliance results and improved help documentation for users.

With the user's feedback and continued support, the development team aims to make NovaHULL better, faster and more robust in the future.



Where to download

Users can download the NovaHULL application for free at the IRClass website.
<https://www.irclass.org/research-and-development/software/novahull/>

Kongsberg Maritime: A Growing Force in India's Maritime Sector



Mr. Harsh Puri

General Manager, South Asia,
Kongsberg Maritime India Pvt Ltd



On behalf of Kongsberg Maritime, I extend our congratulations to Indian Register of Shipping on the occasion of their Golden Jubilee. Kongsberg Maritime, a global leader in maritime technology, which is making significant strides in India's maritime industry and Indian Register Shipping have a shared commitment to excellence and quality. The company's strategic expansion, marked by the inauguration of a new facility in Cochin, underscores its commitment to bolstering India's maritime capabilities. Kongsberg Maritime's influence extends to India's maritime forces. Between 1980-2000 a total of 57-65 nos. various types of UT-design offshore support vessels were built in India and abroad for Indian owners like ONGC, SCI, Essar and Great Eastern. Between 2000-2019 a total of 32 nos. UT-755 PSV's were built and delivered for (mainly) foreign and domestic owners – three UT-517 Indian Coast Guard vessels, and one UT-755S Buoy Handling Vessel for DGLL were built at Indian yards like CSL, ABG and Bharati. 23 nos. of these Kongsberg UT design vessels were built by Cochin Shipyard Limited.

We have always received excellent support from IRS for certification of our equipment and have witnessed thorough professionalism in the approach of IRS team.

Kongsberg Maritime's new facility, strategically located adjacent to the Cochin Shipyard's International Ship Repair Facility (ISRF), is poised to provide specialised technical support for new building projects and other maritime operations within the shipyard. It will also support the assembly and overhaul of Kongsberg's renowned Kamewa waterjets and strengthens Kongsberg Maritime's local presence fostering technological advancement, upskilling of the workforce and job creation within the region. We look forward to working with IRS on these projects.

Broad portfolio breadth and capabilities to deliver
next level customer value



These waterjets offer exceptional manoeuvrability and speed, crucial for modern naval operations. Their reliability and efficiency make them a preferred choice for the Indian Navy, ensuring optimal performance in diverse maritime conditions.

IRS and Kongsberg Maritime's synergy is instrumental in advancing India's maritime capabilities. By leveraging Kongsberg's advanced technological solutions and IRS' technical expertise for safety and pollution prevention, these shipyards can enhance their operational efficiency and output, ultimately contributing to the growth of India's maritime industry.

The opening of the Cochin facility is a testament to Kongsberg Maritime's long-term commitment to India.

Kongsberg Maritime's strategic initiatives in India, from supplying advanced designs and waterjets to fostering strong industry partnerships and establishing a state-of-the-art facility, demonstrate its unwavering dedication to enhancing India's maritime capabilities. As India continues to expand its maritime horizons, Kongsberg Maritime stands with IRS, ready to be a trusted partner, driving innovation and shaping the future of India's maritime industry.

Along all these endeavours, Indian Register of Shipping has been a great partner and support for which Kongsberg Maritime India looks up to for advice and guidance for the New-building programmes and retrofit projects. With the maritime landscape further aligning towards cleaner fuels, advanced technologies and digitisation, Kongsberg Maritime and IRS will continuously collaborate towards meeting these goals.





Mr. Shailesh Mhatre
National Sales Head (Project Finance),
Industrial Services



Mr. Yash Majhetia
Senior Manager (Project Finance),
Industrial Services

Project Finance Services Capital Flows: A New Era in India's Financing Avenues

India's infrastructure landscape is undergoing a rapid transformation, with investment priorities expanding beyond conventional sectors and embracing emerging technologies and sustainable solutions.

Infrastructure spending which traditionally focused on energy, transportation, and urban development, is now shifting towards innovative sectors such as electric vehicles (EVs), desalination, data centres, and sustainable energy solutions like green hydrogen/Waste-to-energy.

This transformation is being driven by the availability of diverse funding channels. While public budget allocations and commercial bank loans remain foundational, the evolving financial landscape now incorporates multiple investment sources such as Infrastructure Investment Trusts (InvITs), bonds, equity investments and foreign capital. These new mechanisms are bridging the gap between infrastructure demands and financial resources, ensuring sustained momentum for development.

*Data provided is obtained from publicly available documents

Expanding Horizons for Foreign Investments

India's policy initiatives like PM Gati Shakti, the National Logistics Policy and the Bharatmala Pariyojana have fostered an environment conducive to foreign investment. Policies that allow 100% Foreign Direct Investment (FDI) through the automatic route have further fuelled capital inflows. As a result, FDI surged by 72% year-on-year, reaching ₹11.2 trillion in 2023-24 compared to ₹6.5 trillion the previous year.

Global lenders, including the Asian Development Bank (ADB), Asian Infrastructure Investment Bank (AIIB), and Japan International Cooperation Agency (JICA), continue to play a critical role by channelling funds into key projects. For instance, JICA has provided significant loans to the Mumbai Metro, VadHAVAN port, and Chennai Peripheral Ring Road projects. Similarly, ADB has invested in renewable energy, roads in Madhya Pradesh, and the Imphal Ring Road. AIIB, on the other hand, is focusing on InvITs, investing in the Sustainable Energy Infra Trust (SEIT) and seeking a stake in IndiGrid's power transmission assets. These collaborations not only provide funding but also lower risk perceptions for other foreign investors.

IPO Market Supporting Infrastructure Growth

The robust economic environment and pre-election momentum have propelled India's IPO market. Indian companies are leveraging these favourable conditions, raising significant capital

through public offerings. Even IPOs of InvITs like Bharat Highways and AlpeX Solar have drawn considerable investor interest, with subscription rates as high as 303 times. Thus, the overall outlook remains optimistic, buoyed by strong investor sentiment.

InvITs and REITs: Attracting New Investors

InvITs and real estate investment trusts (REITs) have become vital instruments for infrastructure financing, offering stable returns to investors. Fundraising through these vehicles skyrocketed 14 times year-on-year, reaching ₹171.16 billion in 2023. The National Highways Authority of India (NHAI) successfully raised ₹160 billion through its InvIT, while SEIT secured ₹22.62 billion through its public issue. With over 30 SEBI-registered InvITs and REITs managing assets exceeding ₹6.5 trillion, the popularity of these instruments is poised to grow across sectors such as renewable energy, roads, and telecom infrastructure.

Private Equity and Mergers Driving Growth

Private equity and venture capital investments are playing a larger role in the infrastructure sector, increasingly outpacing industries like finance and technology. In 2023 alone, the sector attracted \$11.6 billion across 57 mergers and acquisitions (M&A), marking a 28% increase from the previous year.

Investors are also pivoting toward electric vehicle (EV) opportunities, with significant investments flowing into both start-ups and established manufacturers. For instance, British International Investment committed \$250 million to Mahindra & Mahindra's EV division, while BluSmart raised \$24 million for fleet expansion.

Infrastructure Bonds and Future Financial Frontiers

The surge in infrastructure bond issuances reflects growing interest from both public and private institutions. Major banks, including the State Bank of India and the National Bank for Financing Infrastructure and Development (NaBFID) raised substantial capital through long-term bonds, helping to meet the financing needs of large infrastructure projects. The introduction of GIFT City as an international financial hub provides additional opportunities, enabling Indian issuers to tap foreign currency markets under favourable tax regimes.

Meanwhile, the growing maturity of InvITs, along with increased participation from private equity and venture capital, suggests that India's infrastructure sector is well-positioned for long-term growth.

Strategic Collaborations: The Path Forward

The convergence of diverse financial instruments—ranging from public-private partnerships to international loans—will be instrumental in achieving India's ambitious infrastructure targets. As India aims to become a \$5 trillion economy, efficient capital mobilisation across infrastructure projects will be critical to meeting development goals. Strategic partnerships with global investors and financial institutions will continue to unlock new opportunities, catalysing India's journey toward economic transformation.

Through its adaptive and proactive financing strategies, India is creating a sustainable framework that not only supports infrastructure growth but also aligns with global investment trends. As InvITs, bonds, and equity financing continue to evolve, the future of India's infrastructure development appears bright, with diverse funding avenues driving innovation and expansion.

IRCLASS: Project Finance Service Offerings

Project Finance vertical of IRCLASS provides techno-commercial advisory services to various lenders like Public sector/Private sector Banks, Financial Institutions, NBFCs (Non-Banking Financial Companies), Global Equity/ Alternate Investment Funds. We assist lenders in their investment decisions and guide them through the investment period i.e. construction phase and O&M phase of the project. Our techno-commercial services encompass Techno-Economic Viability (TEV) Study, Due Diligence Study, Business Plan Preparation, Strategic Consulting and Lenders' Technical Advisory Services for Developers, Lenders, Investors & InvITs, Supporting Informed Decision-making for Infrastructure & Industrial Investment Landscape.

Our client portfolio includes multiple types of lenders – PSU banks like State Bank of India/ Punjab National Bank, Private sector banks like HDFC Bank, Financial Institutions like National Bank for Financing Infrastructure and Development (NaBFID), Global Investors like British International Investment (BII) – UK, Infrastructure and Private Equity Investment Funds like NIIF (National Infrastructure and Investment Fund), Investment Bankers like Axis Investment Private Limited, across various sectors like Roads/Highways/Ports and Marine Infrastructure/Renewable Energy/Warehousing & Agri Infrastructure/Chemicals & fertilisers/ Power Infrastructure.

Rajahmundry Godavari Bridge Limited NCLT Resolution Project (Technical Due Diligence Service)



Agri-silo projects across India Cumulative 1,50,000 MT Capacity (Lenders' Technical Advisory)



Floating Dry Dock Project at Mumbai (Techno-Economic Viability Study)



Smart Meter Installation Project 2.18 Million Smart Meters in Assam (Lenders' Technical Advisory)



Solar Power Project (1,100+ MW) (Techno-Economic Viability Study & Lenders' Technical Advisory)



Asia's largest Municipal Solid Waste to Bio-CNG Plant (15 TPD) (Lenders' Technical Advisory)



Port Projects – Bulk Handling (Techno-Economic Viability Study & Lenders' Technical Advisory)



Highway Due Diligence & Monitoring 20+ projects across India (Lenders' Technical Advisory)



Hearts to Bravehearts – A Tribute to Kargil War Heroes



Cdr. Bijay Nair

Vice President - Industrial Services

Kargil Vijay Diwas is celebrated on 26th July every year in honour of the soldiers who fought in the Kargil War. The year 2024 marked 25 years of Operation Vijay (famously known as the Kargil war) - one of those significant events which evokes deep emotions among all Indians.

Besides Indian Army and Indian Air Force; Indian Navy also played a key role during the Kargil war. I was fortunate to be part of the Indian Navy's Operation Talwar during the war. I was posted to P44, K class of ship INS Kirpan which was under Eastern Fleet then.

In 2024, Mahindra and Faujiana came up with a campaign called Hearts to Bravehearts and it was my honour to receive an invitation to be a part of this epic journey. This initiative involved collecting messages addressed to the brave soldiers from all over India, through offices, schools and public places, and delivering them to commemorate this event. These messages were collected from across the length and breadth of the country.



Indian Register of Shipping participated in this great initiative. Employees at IRS expressed their feelings through the messages, both through emails and hand written notes.

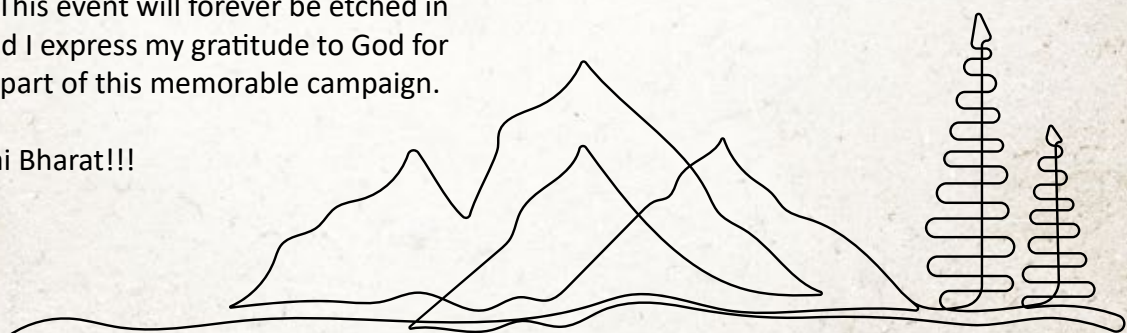
A convoy of vehicles started from Assam in East, Kochi in South, and Tanot in West and converged at Delhi, from where they traveled to Leh via Srinagar and Kargil. I joined the campaign in Delhi and the picturesque journey from Delhi to Leh via Chandigarh, Srinagar and Kargil had many pitstops at Army, Navy and Airforce bases where we had interesting interactions with our brave defence servicemen.

We assembled at Kargil Vijay Path and paid homage at the memorial, with the majestic Tiger Hill in the background. I, on behalf of all the employees at IRS, saluted all those brave hearts who scaled these icy mountains and kept their troops motivated, against all odds. During the Northern Command function to honour 25 years of Kargil war, we were given the tour of Vijay Path by the Army team. It was an emotional moment for all the people present there. I was personally proud to see the Indian Navy wall in the Kargil Museum.

Few of the messages were read out to the Paltans present there, prior to delivering the messages. I can never forget the overwhelming feeling in the eyes of the soldiers, who guard our boundaries even in the most extreme conditions, fighting against all odds.

We departed from Kargil saluting the National Flag and singing National Anthem at the top of our voices. This event will forever be etched in my mind and I express my gratitude to God for making me part of this memorable campaign.

Jai Hind!! Jai Bharat!!!



Key Press Releases



Indian Register of Shipping hosts 50-year commemorative event featuring Chief of the Naval Staff, Adm. Dinesh K Tripathi

IRS hosted the first of a series of commemorative events to celebrate its Golden Jubilee, marking 50 years of rendering excellent service to the maritime industry. The event was held on 14th August 2024 in New Delhi, and the Chief of the Naval Staff, Adm. Dinesh K. Tripathi, PVSM, AVSM, NM, was the Chief Guest.



Indian Register of Shipping and SeaTech sign MOU for International Collaboration on Green Tug Design and Sustainable Initiatives

This MOU highlights a broader international collaboration aimed at advancing sustainable maritime solutions, including the Greentech design and classification of next-generation green tugs and harbour crafts for global operations.



Indian Register of Shipping (IRS) and IIT Guwahati Successfully Complete India's First Underwater Welding Certification Program

The program's success marks a critical step forward for IRS and TIH IIT Guwahati, both in advancing specialised maritime skills and enhancing India's capabilities in underwater asset maintenance.

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



Indian Register of Shipping hosts a commemorative Golden Jubilee celebration event at Visakhapatnam
This was the second celebratory event in IRS' Golden Jubilee year, following the function held in New Delhi on 14th August 2024.

The Chief Guest for the event was Vice Admiral Rajesh Pendharkar, Flag Officer Commanding-in-Chief, Eastern Naval Command, and the Guests-of-Honour were Commodore Hemant Khatri, CMD, HSL & Commodore P. R. Hari, CMD, GRSE.



Indian Register of Shipping Honoured at ShipTek International Awards 2024
Indian Register of Shipping (IRS) is proud to announce its double recognition at the prestigious ShipTek International Awards 2024, recently held in Mumbai. IRS was recognized as the Classification Society of the Year, and its Executive Chairman, Mr. Arun Sharma, was presented with the Lifetime Achievement Award – Maritime Services.



Indian Register of Shipping and National Centre for Polar and Ocean Research ink agreement for Advanced Ocean Research Vessel

This collaboration highlights the dedication of IRS and NCPOR to enhancing scientific research and exploration within marine environments. The ORV is poised to significantly elevate India's oceanographic research and data capabilities, aligning with the Atmanirbhar Bharat initiative.

Indian Register of Shipping and Cochin Shipyard Collaborate on Indigenous Autonomous Vessel Project 'SWAYAT'

As part of this initiative, IRS and CSL have signed a separate cooperation agreement for the development and certification of an autonomous vessel named 'SWAYAT,' which is being constructed at CSL as a fully indigenous pilot project Achievement Award – Maritime Services.

Events, Conferences & Seminars

As we enter our **Golden Jubilee Year**, Indian Register of Shipping is honoured to be felicitated at the **Samudra Manthan Awards 2024**



Indian Register of Shipping hosted the 32nd Association of Asian Classification Societies - ACS Executive Committee Meeting on 26-27 November 2024 at Head Office, Mumbai



The Economic Times Global Ports and Shipping Summit - 26th September 2024, Mumbai

Indian Register of Shipping was an 'Industry Association Partner' for Global Ports and Shipping Summit 2024 organised by The Economic Times - ET Infra. Mr. P. K. Mishra, MD, IRS shared insights in a panel discussion on 'Expanding India's Shipping Tonnage'.





International Naval Engineering Conference and Exhibition, incorporating the International Ship Control Systems Symposium (INEC/iSCSS 2024) - Liverpool, UK
 Mr. Srinivas R presented his expert views in the session "Ensuring Maritime Cyber resilience" at INEC/iSCSS 2024 organised by the Institute of Marine Engineering, Science & Technology (IMarEST).

Conference on Aluminium Shipbuilding - 14-15 November, 2024

Mr. H. V. Ramesh, DH, Plan Approval Centre - Chief Guest for the Conference released the 'Technical Volume' of the conference organised by ALEX (Aluminium Extruders' Council)

Mr. S. Velmurugan, Principal Surveyor, PAC delivered technical paper presentations on –

- Application of friction stir welding in shipbuilding
- Additive manufacturing (3-D printing) of nonferrous alloys, its importance and uses in shipbuilding



DIMS 2024 - DOSTAS International Maritime Seminar - 16-17 August, 2024, Kochi, India

Indian Register of Shipping was a 'Silver Sponsor' for DIMS 2024 - DOSTAS International Maritime Seminar. IRS had a stand at the event. Mr. Ram Kumar Joga, Senior Surveyor, R&D delivered a presentation on "Numerical Methods for Propeller Cavitation and Noise".



ISOPE-PACOMS (International Society of Offshore and Polar Engineers - Pacific Asia Offshore Mechanics Symposium) - 13-16 October, 2024, Chennai

Mr. Himanshu Uppal, Mr. Adarsh Ranjan, Mr. Chinapani Prem Kumar, R&D Team presented following technical papers at ISOPE-PACOMS 2024

- Structural Finite Element analysis of a catamaran boat made of composite material
- Towards GHG Reduction: A Quick Assessment Methodology for Predicting Ship's Power Demands during Maritime Operations
- Simulating blast of explosive material inside ship container for QRA Study



IMO-UNEP-Norway Innovation Forum – October 2024, London

Ms. Sonali Banerjee, Principal Surveyor shared her perspectives on 'Global Support Innovation in Maritime Decarbonization' held at IMO Headquarters.



Industry-Academia Meet on CFD-Open FOAM – November 2024

Dr. Joseph Prabhu, Surveyor-I delivered an expert talk on 'Application of CFD in Ship Hydrodynamics' at the Meet organised by the FOSSEE (Free & Open Source Software for Education) project of IIT Bombay.



DQA (WP) West Zone Indian Navy, QA - Industry Partners Conclave – September 2024

Cdr. Amrut Godbole, Senior Surveyor gave presentation on 'Marine Component Certification: A Classification Society Perspective' while Cdr. Premjit Panigrahi, Sr. Principal Surveyor participated in an engaging Q&A session at the Indian Navy Conclave.



International Workshop on Advances in Modelling Wave-Structure Interaction Processes-1 November, 2024, IIT Bombay
 Mr. Amresh Negi, Senior Surveyor, R&D delivered a lecture on 'Hydrodynamics Response of Floating Structures' at the Workshop.



3DEXPERIENCE Forum India – October 2024, Mumbai, India

Mr. Rabindra Sah, Chief Technology Officer presented insights on 'Powering Atmanirbhar Bharat through Innovation' at the Forum organised by Dassault Systemes.



World Maritime Technology Conference 2024, 4-6 December 2024, Chennai

Indian Register of Shipping was 'Knowledge and Technology Partner' for the Conference. Mr. Arun Sharma, EC, IRS addressed the audience during the Plenary Session.

The following Papers were presented by IRS Team of Experts –

- A Holistic Approach for Sustainable Shipping - Mr. P. K. Mishra, MD
- Leveraging Virtual Twin Technology for Marine Classification Services - Mr. Kripakar M. Marur, Senior Surveyor, Mr. Naveen V. R. Surveyor-I & Ms. Sanjida Augustine, AVP-IT
- Technologies and Operational Measures for Improving Vessel Efficiency - Mr. Kunal Sharma, Senior Surveyor & Ms. Megha Sharma, Surveyor-I
- Modeling Underwater Noise for Indian Marine Mammal Conservation - Mr. Akula Chaturvedi, Senior Surveyor, R&D



<https://www.irclass.org/media-and-publications/events/>

Vessels – Classed, Launched & Delivered

Reviving India’s Maritime Heritage: Indian Register of Shipping Plays a Key Role in the Stitched Ship Project

This project embodies India's long-standing connection to maritime trade and innovation. Indian Register of Shipping (IRS) is proud to play a critical role in this project by ensuring that the reconstructed ship conforms with modern safety and design standards. The ship is currently under construction and is expected to be completed in 2025.



Indian Register of Shipping classed tanker ‘MT Elgon’ delivered for operations in Lake Victoria

The vessel, built by Mahathi Shipyard Uganda Ltd., under the classification standards of IRS, will commence operations in Lake Victoria, serving the surrounding nations of Uganda, Kenya, Rwanda, and Tanzania.



Indian Coast Guard’s Pollution Control Vessel, Samudra Pratap (GSL Yard 1267) was launched. It’s designed & built indigenously by defence PSU **Goa Shipyard Ltd** under the Classification of **Indian Register of Shipping**.



Keel laying ceremony of the fifth and sixth tugs (Ojas and Sabal - 25T BP tugs) at M/s Titagarh Rail Systems Limited, Kolkata, being built for Indian Navy under Naval Rules and classification of **Indian Register of Shipping**.



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



M. V. Ripley 22B
Bulk Carrier
Atreya Shipyard
Private Limited

Vessels being built for Indian Navy under classification & Rules of IRS



INS Abhay
Anti-Submarine
Warfare Shallow
Water Craft
(ASW SWC)



INS Nirdeshak (Yard 3026)
Survey Vessel Large (SVL)



Third 25T Bollard Pull (BP) Tug,
Ashva (Yard 337)



LSAM 12 (Yard 80)
Missile Cum Ammunition Barge



LSAM 13 (Yard 81)
Missile Cum Ammunition Barge



IRClass Academy has established itself as a leading provider of value-added training programs within the maritime industry since its inception in 2014. The Academy offers specialised training in Ship Operations, Ship Design and Building, Ship Repairs, Ports and Terminals, Maritime Management Systems, Legal and commercial Aspects of shipping, and mental well-being. Over the years, IRClass Academy has grown exponentially, with its programs reaching professionals in 53 countries worldwide. The number of trainees has doubled in the past three years, reflecting the increasing demand for high-quality training in the maritime sector.

In addition to its global reach, the Academy collaborates closely with Indian defence and maritime entities. Notably, IRClass Academy has provided skill-enhancing training for the Indian Navy, Indian Coast Guard, and leading shipbuilding yards such as Hindustan Shipyard, Cochin Shipyard, and Garden Reach Shipbuilders. Ten batches of Indian Coast Guard officials have received specialised training, enhancing their skills in various maritime disciplines.

IRClass Academy is also known for its collaborative efforts with educational and research institutions. It has worked with Rashtriya Raksha University (RRU) in Ahmedabad to offer PFSO (Port Facility Security Officer) training courses and partnered with IIT Guwahati to provide training to produce the first-ever certification for underwater welders in India. Many other prominent institutions like Krit Maritime Services, Centre of Excellence for For details, visit- <https://www.irclass.org/academy/>



Maritime and Shipbuilding (CEMS), Ally Maritime Services, and Beaufort Marine have joined hands with the IRClass Academy to deliver quality training to the global maritime industry. IRClass Academy has also expanded its reach internationally, conducting training programs in Indonesia, Malaysia and Qatar for senior professionals in the shipping industry in various subjects such as ISM Internal Auditor & DPA, Maritime Risk Assessment, Cyber Safety, and Safety Officer Skills and ISPS (International Ship and Port Facility Security) Code.

The Academy has made significant strides in online training as well, offering courses in subjects such as the ISM Code, DPA, Navigational Audit, HAZMAT Inventory, Mastering IR Hull, Disaster Risk Management & Port Facility Security Officer, Port State Control, Ship Surveys, Cyber Security, Legal & Commercial Aspects of Shipping, SIRE 2.0 and mental well-being of the seafarers. These online courses have been popular with domestic and overseas candidates, highlighting the Academy's global appeal.

Looking ahead, IRClass Academy is focusing on training programs that align with future regulatory changes, such as compliance with MARPOL Annex VI for alternate fuel usage, Welding Procedure Specifications (WPS) for shipbuilding, and best practices in dry docking. These initiatives demonstrate the Academy's commitment to collaborating with the maritime industry for the evolving challenges and improving operational efficiency.

TRAINING

Effective training lays the foundation in the development of a Surveyor. Different training schemes are designed for training of the new incumbent, based on their academic qualification and prior experience. The new recruits are trained to undertake independent surveys along with practical mentoring imparted at Survey Stations.

Over the past 50 years, the method of imparting theoretical knowledge has changed from direct classroom training conducted once in a year, to online modules in the Learning Management System available anytime. We ensure the team stays updated on evolving maritime sector requirements, crucial for their Surveyor roles.

We continuously strive to improve the training pedagogy to make the topics interesting and easily comprehensible by making the study materials with voice over, animation etc. to help Surveyors to keep abreast of the essential changes.

Few of the major trainings conducted recently:

Induction Training: Classroom Induction Training was held from 06-24 May 2024 at the IRS Head Office. Various topics on Survey, Certification, IMO Conventions, newer topics covering the requirements of MARPOL Annex VI regulations like EEXI, SEEMP - Part III, CII; additional requirements in Ballast Water Management; SPS code along with Flag Administration requirements; Remote survey were included as part of the ten-day training programme.

Refresher Training: Refresher trainings are conducted to ensure that the Surveyors upgrade their knowledge about new rules/regulations, change in policies, issues with survey, reporting etc. The session is an interactive workshop wherein the participants share their experiences, discuss upcoming rules, regulations and other specialised activities, in depth and resolve the difficulties encountered. The training provides a good platform for them to interact and to express their views with the subject matter experts



and top management. The last session was held from 26-31 August 2024.

Orientation Training for Fresh Naval Architecture & Marine Engineering Recruits: IRS visits and recruits bright fresh graduates from premier institutes pan India like IIT, CUSAT, IMU, AU. The candidates consist of Naval Architects and Marine Engineers. To transition these freshers from college into IRS family, we have set up a three months training programme. The aim of this programme is to give awareness on IMO, Flag States, IACS, classification societies and their activities, IRS and its functions, roles and responsibilities of Surveyors etc. We also aim to provide a framework for practical application of Naval Architecture and Marine engineering knowledge which they have acquired in college, thereby giving them a strong foundation to commence their journey in IRS. The three-month training session is split into 2 phases. Phase I is one month of classroom theoretical training covering the above topics along with class and statutory rules & regulations Phase II is a two-month practical training on understanding Hull, Machinery & Electrical plans and examining the same at Plan Approval Centre in HO. This programme was conducted for the first time, in 2023 for 26 newly hired graduates. The performance and understanding of these young recruits, regardless of their posting, has been excellent. Taking note of the feedback received, the programme has been fine-tuned and successfully conducted for the 2024 batch, from 15th July to 11th October 2024 at IRS Head Office.

NDT Training: Awareness training on different Non-Destructive Testing processes is a requirement for field Surveyors. The same was being arranged through local NDT experts by respective Survey Stations. In association with NDT team of ISSPL, we have conducted a two - day NDT awareness training covering VT, LPT, MPT, RT & UT including advanced NDT methods like PAUT & TOFD at IRS Head Office, from 28-29 October 2024.

Employee Corner



Independence Day – 15th August 2024

IRClass celebrated Independence Day in a vibrant atmosphere filled with the colours of freedom, cherishing moments of unity and honouring the spirit of our nation!

IRS Employees Join Hands for Ganesh Ghat Clean-Up Drive – September 2024

As part of our unwavering commitment to environmental sustainability, Indian Register of Shipping organised a community-driven cleanup of Ganesh Ghat at Powai Lake after the immersion of idols during Ganesh Chaturthi Festival. Our passionate and dedicated employees enthusiastically participated, in this noble initiative.



Navratri Celebration – October 2024

Navratri - Garba celebration was a vibrant display of team spirit, energy, and culture! From colorful outfits to enthusiastic dance moves, IRClass employees truly embraced the festive spirit.



IRS Flea Market: A Celebration of Talent and Togetherness – December 2024

The IRS Flea Market brought creativity, community, and camaraderie to life! Employees showcased their exceptional talents and entrepreneurial spirit through vibrant stalls and engaging activities. The participation of NGOs brought inspiring support for specially-abled and underprivileged children, making the event truly impactful.



Celebrating Success : Best Wishes to Our Senior Leaders!

With steadfast leadership and exceptional expertise, our senior management team continues to inspire growth and resilience.

With great pride, IRS announces promotions and senior level inductions, fortifying our ability to drive innovation and success.



Mr. H. V. Ramesh
Chief Surveyor
Plan Approval Centre



Mr. Sandeep V. Joshi
Vice President
Divisional Head –
Finance & Accounts and
Administration



Mr. D. K. Gupta
Sr. Principal Surveyor
Marine Technical Services



Mr. Bai Guoping
Sr. Principal Surveyor
Qingdao Survey Station



Mr. Santosh Patil
Vice President
Corporate Affairs





IRCLASS
Indian Register of Shipping



Head Office

52A, Adi Shankaracharya Marg, Opp. Powai Lake,
Powai, Mumbai - 400 072, India
Email: ho@irclass.org
Web: www.irclass.org
Tel : +91 22 3051 9400 / +91 22 7119 9400