

iMélange

February 2023

The eMagazine of IME(I) Members



Special Coverage



INSA organises
Technical paper competition

Exclusive Coverage



IME(I) - INA Cooperation
Centre

Branch News



IME(I) Kochi Branch
Highlights

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iMélange

eMAGAZINE OF THE INSTITUTE
OF MARINE ENGINEERS (INDIA)

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OBITUARY

Dear Valued Readers,

Welcome to the February issue of *i-Melange*, your go-to source for the latest news and updates of maritime industry.

As we all know, climate change is a critical issue facing the world today. The marine industry, which transports about 90% of global trade, has an important role to play in reducing its impact on the environment. We must find a way to balance economic growth with environmental responsibility, and it's heartening to see that there are efforts being made in this direction.

From the Editor's Desk ***iMélange*** Honorary Editor, ***Sunil Kumar***



In India, the shipping sector plays a vital role in the country's economy, with a large portion of international trade being conducted through its ports. The government of India has initiated several initiatives to promote sustainable shipping practices, including the development of a vision for the country's maritime sector and goals for reducing carbon emissions.

The recent Technical Paper Competition of INSA saw enthusiastic participation from various maritime institutes across India. It was heartening to see young minds coming up with innovative ideas and solutions for the challenges facing the marine industry. We hope that this competition will inspire more students to pursue careers in marine engineering and contribute to the industry's growth.

In other news, we are excited to report that INA (Institute of Naval Architects) and IME (I) - Institute of Marine Engineers India have joined hands to collaborate on various events and initiatives. This collaboration has the potential to drive the growth of the marine industry in India and pave the way for sustainable practices.

To end on a thought-provoking note, we leave you with a quote from Rachel Carson, "In every outthrust headland, in every curving beach, in every grain of sand there is the story of the earth." Let us all work together to ensure that the story of the earth is one of sustainability and responsibility.

Finally, we invite our esteemed members and their loved ones to share their interesting anecdotes, travelogues, memoirs, enriching articles, jokes & trivia, personal achievements, coverage of noteworthy events & conferences, photography, artwork, cartoons, poetries, and more. Please send your inputs to editornewsletter@imare.in by 7th March 2023 for them to be included in our March issue.

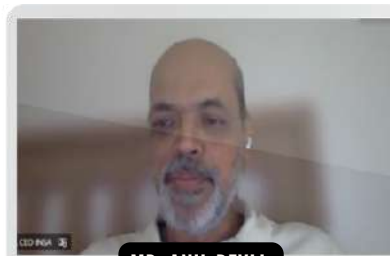
Thank you for your continued support, and we hope you enjoy this month's issue.

Happy reading!

A stylized signature in purple ink, followed by a fountain pen nib pointing to the right.



SHRI. AJITHKUMAR SUKUMARAN



MR. ANIL DEVL



DR. B. K. SAXENA



MR. SUNIL KUMAR



MR. DAVID BIRWADKAR

INDUSTRY NEWS

INSA organises a Technical Paper Competition on the theme 'Socio Economic Impact of Futuristic Technologies for the Marine Industry'

The 3rd Technical Paper Competition, organised by the Research & Training Committee of the **Indian National Shipowners Association (INSA)**, was held on **January 14, 2023**, on a web platform. The theme of the event was "**Socio Economic Impact of Futuristic Technologies for the Marine Industry.**"

On behalf of the Research and Training Committee of INSA, **Mr. Sunil Kumar, CTO and Head of the T&A Department at The Great Eastern Shipping Co. Ltd.**, warmly welcomed all guests as the Master of Ceremony. **The CEO of INSA, Mr. Anil Devli**, then delivered the welcome address, expressing his appreciation for the presence of dignitaries, candidates from various Maritime Training Institutes, and judges for their challenging work in selecting the Paper Presentations.

The event was inaugurated by the **Chief Guest, Mr. Ajithkumar Sukumaran, Chief Surveyor-cum - Additional Director General of Shipping (Engg.) of the Government of India.** He praised the initiative taken by INSA in encouraging young people to present technical papers, show interest in innovation, and think creatively. He also noted that the shipping industry is going through a major transition in the coming years, with a focus on reducing greenhouse gas emissions, decarbonisation, and the adoption of digitalisation, which are

both technical and economic challenges. He wished INSA and the participants success in the event and great learning experiences.

Dr. B. K. Saxena, Chairman of INSA's Research & Training Committee, praised Mr. Sukumaran for his succinct and informative speech on various aspects of shipping. He noted that the students present were fortunate to receive insight from an industry expert like Mr. Sukumaran. He provided context for the Paper Presentation Competition organised by INSA, highlighting its objectives and purpose. Dr. Saxena also extended a warm welcome to all participants and wished them the best of luck in the competition.

Mr. Sunil Kumar then invited **Mr. David Birwadkar, Advisor/ Head, GEIMS** to explain the rules and regulations of the event. Mr. Birwadkar expressed his gratitude towards all the dignitaries for marking their presence in the event.

Mr. Sunil Kumar invited first presenter Om Dhamdhere, and Om Navghane from Tolani Maritime Institute in Pune who enlightened on the topic of Solar Propulsion System as an alternative propulsion system. Mr. Kumar then introduced second presenter Jeevan James and Jagath K. from IMU Chennai, to deliver a thought-provoking presentation on the topic of Carbon Neutrality and how to achieve the goal of Net Emission Zero while minimising the risk of whale strikes. Third team Arkajyoti Mukherjee and Gautam Saxena from Tolani Maritime

Institute in Pune provided a comprehensive overview on the topic of a futuristic approach towards safe pilot transfer arrangements. Romil Talaich from Tolani Maritime Institute in Pune delivered the fourth presentation, to discuss the promising potential of hydrogen as a marine fuel alternative. The fifth presenters of the day were Abhijeet Kumar & Akshay Havelar who on behalf of Tolani Maritime Institute in Pune shared their thoughts on "Futuristic ideas for reducing logistics cost. An extensive study & research into the phenomena and potential of wing in ground effect".

During the break, video on Navik Jeevan was played for the audience. Sixth presenters of the day, Nidhi Poojary & Shubham More from UVPCE, Ganpat University. They enlightened on the topic "Influence of satellite in marine industry". The seventh presenters of the day Harshit Gupta and Anshuman Saini from The Great Eastern Institute of Maritime Studies, Lonavala, delivered a thought-provoking presentation on the topic of "Digitalisation: Challenges & Opportunities in Maritime Sector". Eighth presenters of the day Vetri Venthan and Arunkumar from Hindustan Institute of Maritime Training, Kalpakkam, provided a comprehensive overview on the topic of Digitalisation: Opportunities & challenges in maritime sector. Their presentation is sure to be enlightening and thought-provoking. Ninth presenter, Ankush Mangal & Saurabh Rawat from International Maritime Institute, discussed



DR. SUJATA NAIK



MR. DILIP MEHROTRA



MR. CHITTA DASH



MR. A. B. DUTTA



MR. LOKANATH TRIPATHY

on the topic Alternative fuels - Pros & Cons / Challenges. 10th presenters were Karan Rautela & Manav Gurjar who on behalf of Tolani Maritime Institute in Pune shared their thoughts on "Black Carbon a Pollutant, Impacts & Control Measures".

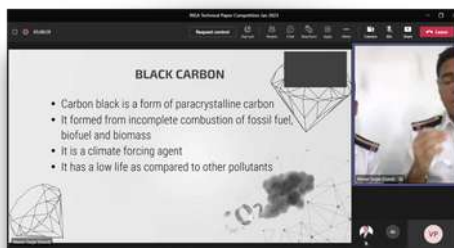
At the conclusion of each presentation, the audience engaged in a lively Q&A session moderated by Mr. Sunil Kumar. The participants expertly addressed a variety of thought-provoking questions from the audience, demonstrating the prominent level of interest and engagement generated by the study.

Dr. Sujata Naik, the Chairperson of Tolani Shipping and Director of INSA, delivered a compelling closing speech. She expressed her immense satisfaction with the successful completion of the event and congratulated the entire team on their arduous work. She praised the participants for their depth of knowledge and their confidence during the Q&A session. Dr. Naik expressed her sincere gratitude to the Research and Training Committee of INSA and eagerly anticipates future projects of this caliber.

The judges, **Mr. Dilip Mehrotra, Mr. Chitta Dash and Mr. A. B. Dutta,** praised the participants for their challenging work and confidence during the presentations. They noted that the quality of the papers submitted was exceptionally high and that it was a challenging task to narrow down the selection to the best. They also extended their congratulations and well wishes to all participants, even those who did not make it to the final round, for a successful future ahead.

Mr. Sunil Kumar invited Mr. Birwadkar who announced the results of the competition, with the fifth position going to Mr. Abhijeet Kumar and Mr. Akshay Havelar from Tolani Maritime Institute, Pune. Mr. Jeevan James and Mr. Jagath K from Indian Maritime University Chennai Campus secured the fourth position. The second runners - up were Mr. Om Dhamdhare and Mr. Om Navghane from Tolani Maritime Institute, Pune. The first runners - up were Mr. Ankush Mangal and Mr. Saurabh Rawat from the International Maritime Institute. The first position was awarded to Mr. Karan Rautela and Mr. Manav Gurjar from the Tolani Maritime Institute, Pune. Mr. Birwadkar congratulated all participants for their challenging work and dedication.

Lastly, **Mr. Lokanath Tripathy, Head of QST at Greatship India Ltd,** proposed vote of thanks and appreciated the efforts of all the concerned in organising this successful event.



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KARNATAKA

SESSION ON "EMOTIONAL WELLBEING OF SAILORS"

IME(I)'s Karnataka Chapter conducted a session on **12th January 2023 at Eden Club, Karnataka** on the topic "**Emotional Wellbeing of Sailors.**"

Shri. Pavithran Alokkan, Chairman, Karnataka Chapter welcomed the gathering. Shri. Amitava Bhargava, Hon. Treasurer, introduced the guest speaker **Dr. Krithishree** to the audience. Dr. Krithishree is a leading Psychiatrist in Mangalore having more than 14 years of experience in this field.

She spoke about the hard working conditions of Marine Engineers especially during Covid and gave various strategies to overcome the emotional hardships and to cope up with the present life. She also spoke on how to handle anger pangs. The session was appreciated by all. Hon. Secretary Shri. Keshav Rao proposed the vote of thanks.



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Be-spoke training	As desired	Navigational Audits	1 day



KOCHI

BRANCH HIGHLIGHTS

IMEI Kochi branch joined Mariners Society, a joint organisation of IME(I) Kochi and CMMI Kochi, in holding an event named "Kattamaram" on 20th January, 2023. The name "Kattamaram" belongs to a simple water craft used in ancient times in Kerala coast for fishing and water transport. The word "Kettumaram" in Malayalam means two wooden pieces tied together and the craft was exactly that and the name of the craft evolved from that word. Early European visitors to the Kerala coast anglicised the word into "Catamran" and the design of the modern twin-hull craft was inspired by the "Kattamaram". The unique safety feature of Kattamaram is that it is virtually unsinkable!

The main part of the event was a seminar titled "Emerging Technologies in Marine Transportation" with three sessions on three related subjects. Dignitaries including Mr. V. K. Jain, President, IME(I), Mr. Sajan John, COO, Kochi Water Metro Ltd., Mr. Shammy K, Principal Surveyor & Head of IRS Kochi Survey Station, Dr. K. A. Simon, President, Mariners Society and past President IME(I), Mr. S. Krishnankutty, Chairman IME(I) Kochi Branch, Mr. N.M.C. Nair, past Chairman, IME(I) Kochi Branch & Dr. Yogamala H. L Head, i/c, School of Maritime Management Indian Maritime University Cochin Campus, Kochi took part in the discussions held in three sessions during the day.

We also maintained an independent stall in the venue, namely Bolgatty Palace Hotel, and played the IME(I) promotional video and displayed IME(I) merchandise.



Mr. Jain was presented with a memento by Mr. Ajay S. Pillai



Lighting of Lamp

KOCHI

COCHIN BOAT SHOW

IME(I) Kochi branch joined Mariners Society, CMMI, Nautical Institute and Merchant Navy Club in maintaining a stall in the above show held on 27 th and 28 th January, 2023. IME(I) merchandise like Tee shirts, ties, lapel pins, books etc. were displayed and the promotional video of IME(I) was played.

The Kerala Minister of transport Mr. Antony Raju who inaugurated the show visited our stall and signed the visitors' wall.



Mr. V.K. Jain being shown exhibits in the Cochin Shipyard

VISIT TO COCHIN SHIPYARD LTD

On the day after the event, a visit for Mr. V.K. Jain was arranged to the Cochin Shipyard in which he was accompanied by Kochi Branch Secretary. In CSL Mr. Jain met Mr. Binoy Bhaskar, Director Technical, CSL and Mr. Shivram, General Manager, CSL (a member of EC, IME(I), Kochi Branch). They discussed the subject of co-operation between IME(I) and METI, the Training Division of CSL in carrying out training of students to appear various examinations conducted by MMD for sea farers, especially the latest requirement of fire-fighting training on board Gas Carriers, using the enhanced facilities in Cochin Shipyard for the same. The subject of opening of an IME(I) Students' Chapter in Kochi and inclusion of students of METI into it was also discussed.

FOOTBALL MATCH

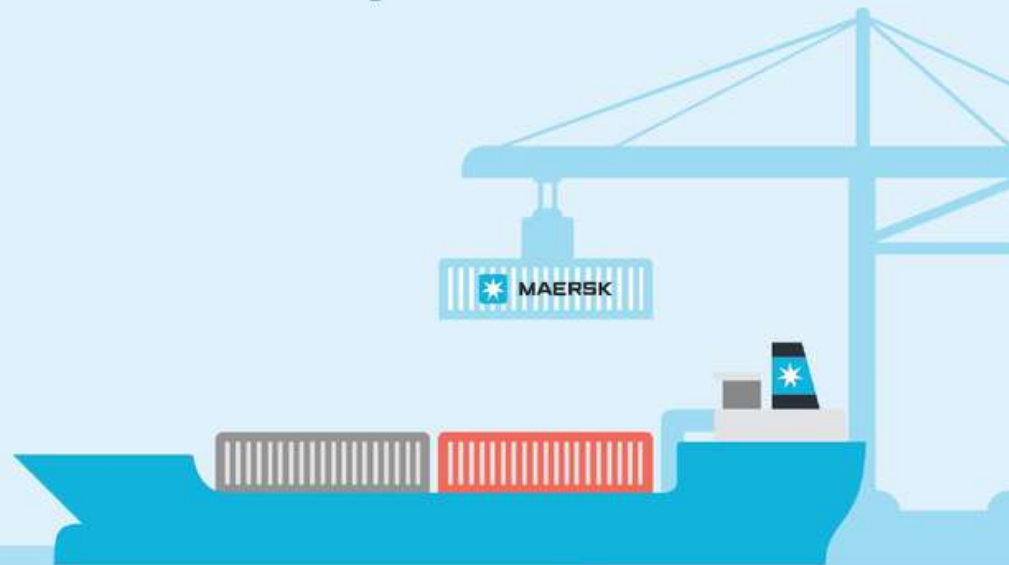
The students and faculty of the Institute took part in a football tournament organised as part of Maritime Day celebrations.



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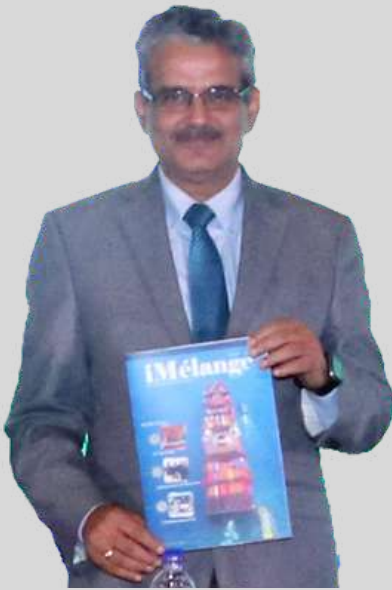
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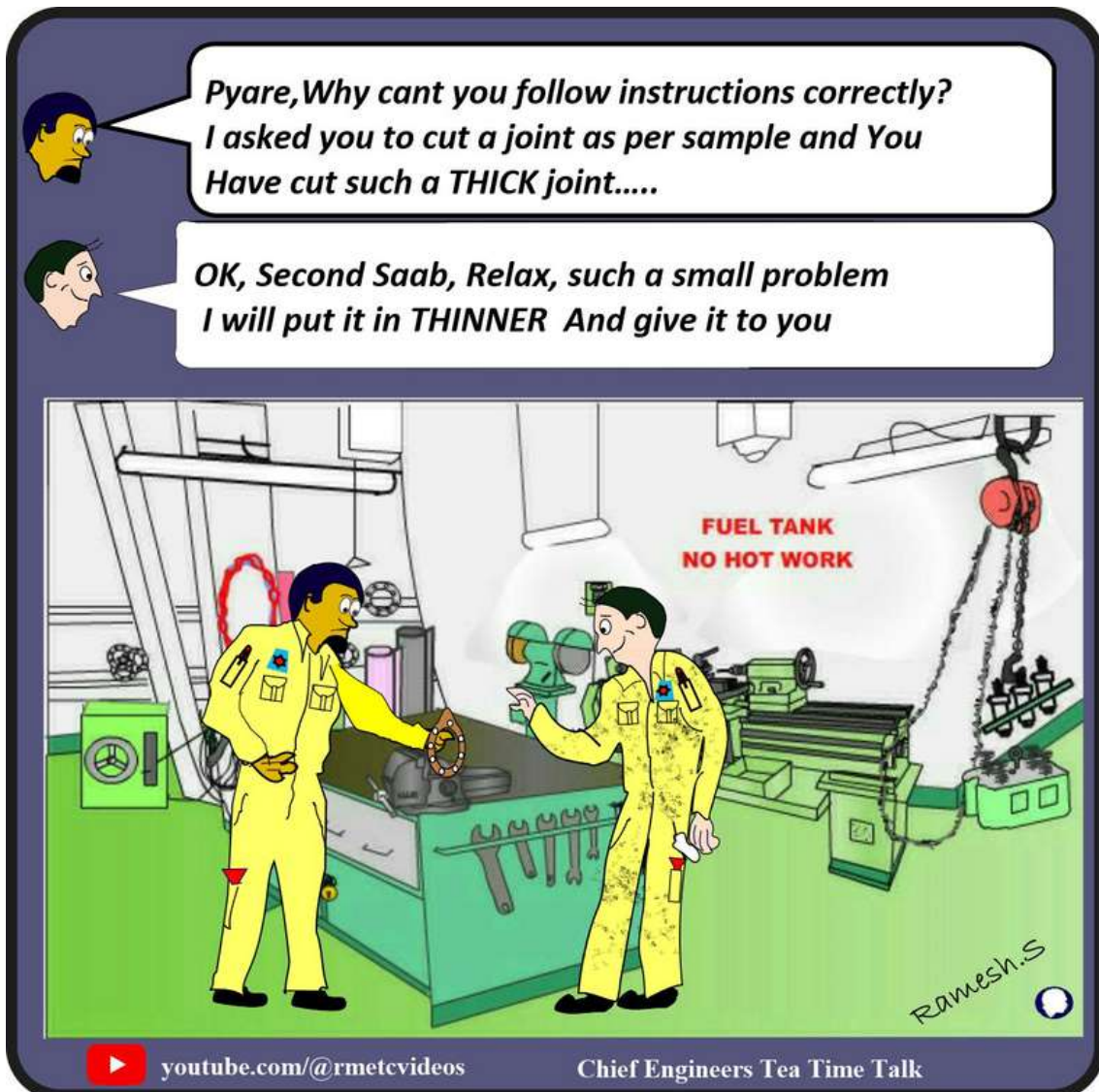
Congratulations!



We wish him immense success in all his new role!

Dr. Sanjeev Ranjan Appointed as Chairman of National Shipping Board

Dr. Sanjeev Ranjan, Secretary, Ministry of Ports Shipping and Waterways has been appointed as the Chairman of National Shipping Board with effect from 1st February 2023. Dr. Ranjan is a 1985 batch IAS officer and has taken charge as the Secretary of Ministry of Ports Shipping and Waterways on April 30 2020. Prior to this, Dr. Ranjan served in various positions in the Government of India and Government of Tripura, including as the Secretary of MoRTH, Chairman of NHAI, Chief Secretary of Tripura, Additional Secretary and Financial Adviser in the MoRTH, Shipping and Tourism, Joint Secretary in the Ministry of Defense, Resident Commissioner of Tripura, Director in the Ministry of Heavy Industries, and District Magistrate and Collector of North Tripura district in the Tripura Government. He has also served on the Board of a number of companies in the infrastructure, power and tourism sectors including NHIDCL, SCI, ITDC, OTPC, NEEPCO and National Dairy Development Board.



Creativity : Mr. Ramesh Subramanian



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Chief Engineers Tea Time Talk



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LEARNINGS

SOLAR PROPULSION

INTRODUCTION

Around 80% Of International Trade Is carried out by Maritime Industry. These merchant ships consume heavy number of fuels so this fuel emits heavy pollutants such as SO{x}, NO{x}, N2O, Black Carbon. So, these pollutants contribute as a major factor for GLOBAL WARMING. So, there is a need for renewable energy as a substitute for fossil energy.

Solar propulsion for ships was utilised for the first time in the year 2008. Solar propulsion benefits include a high reduction in the poisonous carbon dioxide emissions. Solar propulsions are capable of generating a capacitance as high as 40 kilowatts (kW).

The addition of solar panels directly also adds to the amount of power generated. More The Panels More Is the Power Generated. Big container ships



SOLAR PROPELLED VESSEL

SOLAR ENERGY PRODUCTIVITY

have huge engines, 40,000 kilowatts, and their fuel consumption can be over 100 tons per day. Generating 40,000 kW with solar panels would require a large area. Although With The current technology and limitations the solar energy cannot fulfill all the needs. But we can use this energy to use for other power meting operations so that the consumption of fuel is decreased. If installed as many as 35 solar panels, where the addition of a number of solar panels as much as 7 units as backup power when the solar intensity less than 1000 W/m2.

With extensive consideration of the deck platform is still able to accommodate the number of solar panels The amount of power generated by the solar panels is in 5 hours is: $8400 \text{ W} \times 5 \text{ hours} = 42000\text{-Watt hour} = 40 \text{ kWh}$ of solar panel quantity A container ship such as the Jules Verne use for propulsion a Man Diesel engine, with a maximum power (MCR) of about 70,000 kw. Current photovoltaic technology allows to get about 30% of the maximum solar power available that is about 100 W / square meter.

Solar Panels Installed On Vessel



SOLAR PANEL WORKING DUNCTION

Solar panels have bunch of solar cells connected together made of silicon semiconductors that absorb sunlight and create an electric current. These individual cells are connected together to make one solar panel. They're made of two types of semiconductors: a positive (p-type) and a negative (n-type) silicon layer.

Most solar cells are a few square centimeter's in area and protected from the environment by a thin coating of glass or transparent plastic. Because a typical 10 cm × 10 cm (4 inch × 4 inch) solar cell generates only about two watts of electrical power (15 to 20 percent of the energy of light incident on their surface), cells are usually combined in series to boost the voltage or in parallel to increase the current.

These solar panels usually take solar energy from sun and then stores them which is then converted to AC Current. That current is then passed on by converter which then converts it to DC current with the help of rectifier. With the help of transformer, we can then supply it to the machinery we need. Although the output is less, we still can use to supply the machinery or use it for galley lightings etc. We can use inverters so that the energy can be stored in them and use it during night and rough weather conditions.

The energy we can save it in form of solar/rotor cells which we can use to for the power utilisation. The solar cells are usually covered with protective layer or the type can be changed to lead acetate cells or lithium cells.



INDIAN NAVY USING SOLAR PROPELLED VESSELS

Towards furthering 'Green Initiatives', Indian Naval Ship Sarvekshak has undertaken an innovative project for provision of electricity onboard using solar energy. The ship has installed 18 light weight flexible panels of 300 W each, which are 100% marine compatible. This power source can be used at sea as well as in harbor. This green initiative of the Indian Navy saves approximately 89.1 kg of carbon emission per day when compared

NYK LINE'S AURIGIA SHIP IS A RO-RO VESSEL HAVING PANELS ON THE UPPER DECK

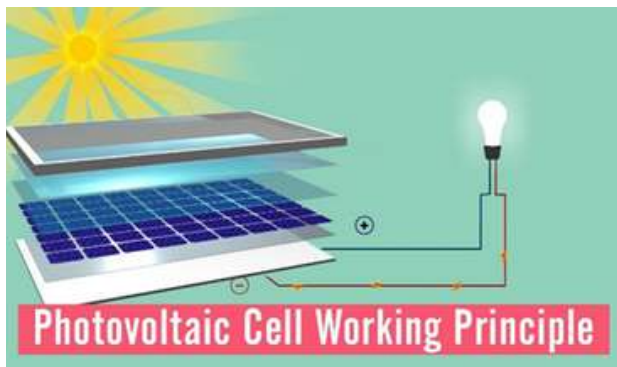
to diesel generator. Vice Admiral A R Karve, AVSM Flag Officer Commanding-in-Chief Southern Naval Command visited the ship and inspected the fitment of the flexible solar panels as part of Green Initiatives of the Indian Navy.



Important Personell On Indian Naval Ship Sarveshak

MAJOR SHIPPING COMPANY TESTS SOLAR FOR CARGO SHIPS

NYK has also shown off other carbon-cutting shipping ideas. The NYK Super Eco Ship 2030 concept uses liquified natural gas-powered hydrogen fuel cells to reduce greenhouse gas emissions by 69%. The Auriga's panels will direct power into the main electrical grid to power everything from the ship's thrusters to hydraulics for the steering gear. Aurigia Is an RO-RO vessel So its upper deck can be utilized for installations of solar panels. Although the limitations of the space we can use them for the better output. NYK hasn't yet made concrete plans to mass produce the Auriga Leader. For the next few years, NYK will conduct field experiments to check the ship's endurance against saltwater damage, wind pressure, constant vibrations, and more.



How The Energy Is Produced By Solar Energy

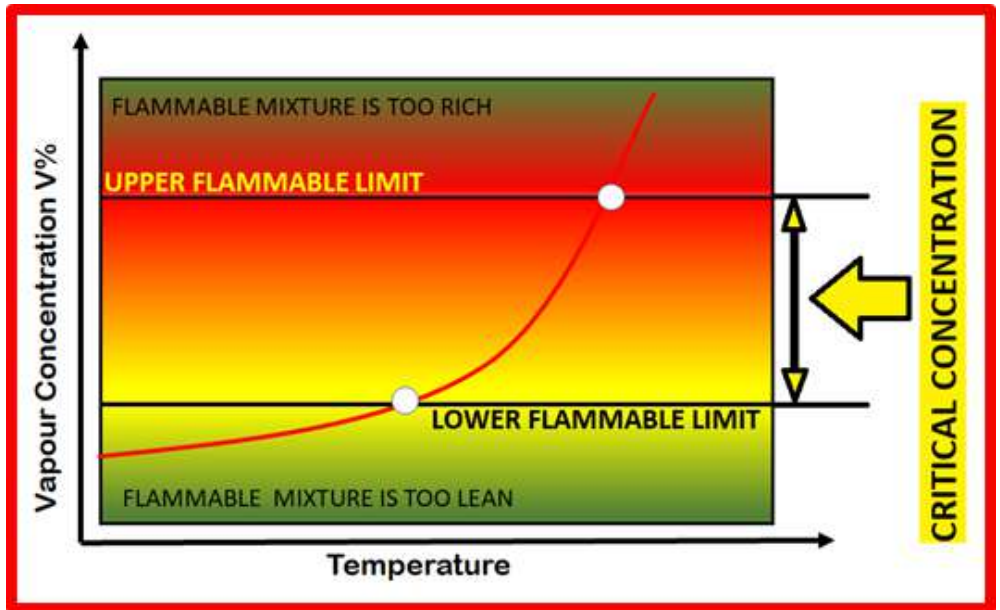
Write-up by :

**Om Rajesh Dhamdhare
& Om Hananjay Navghane**
B.Tech, 2nd Year,
Tolani Maritime Institute

LEARNINGS

CRANKCASE EXPLOSION RELIEF VALVES

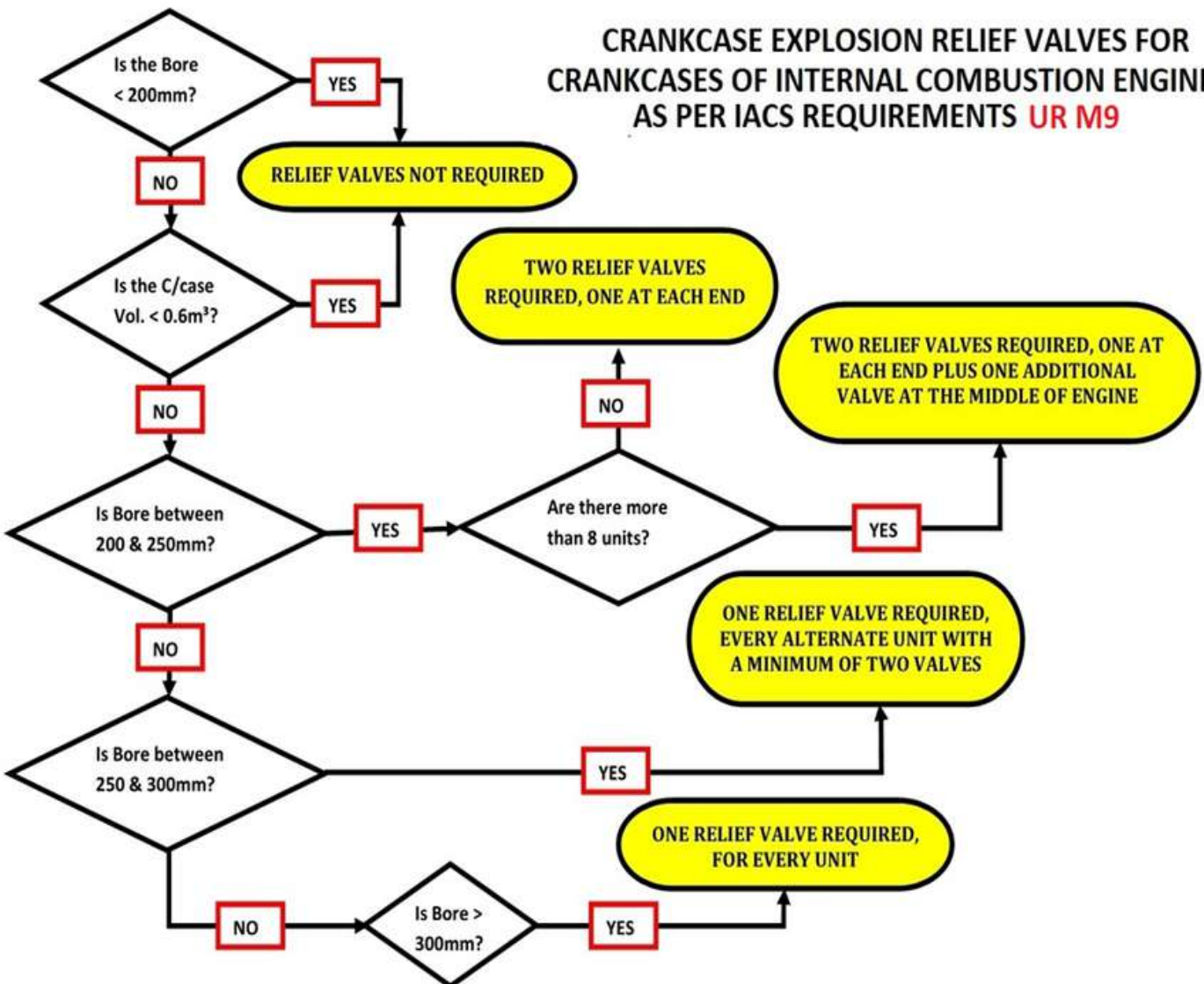
A *hotspot* in a crankcase along with hydrocarbon vapour in critical concentration as illustrated is a perfect recipe for a crankcase explosion. Whereas oil mist in the crankcase cannot be avoided, hotspots can definitely be avoided. Avoiding hotspots therefore is the primary defence against crankcase explosions.



As a secondary defence Crankcase Explosion Relief Valves are installed in the crankcase. The functions of crankcase explosion relief valve are:

- Effective Flame arrestors to prevent the spread of flame outside the crankcase
- Release excessive pressure that is built up in the crankcase.
- Post explosion; close promptly and remain gas-tight to prevent the ingress of oxygen (air) into the crankcase to prevent a secondary explosion.

CRANKCASE EXPLOSION RELIEF VALVES FOR CRANKCASES OF INTERNAL COMBUSTION ENGINES AS PER IACS REQUIREMENTS UR M9



The numbers of crank case explosion relief doors that are required to be installed in an Internal Combustion engine depend on various factors including the crankcase gross volume, cylinder bore and number of cylinders. The flowchart enunciates the IACS requirement (UR M9) for crankcase explosion relief valves.

A crankcase explosion relief valve should be designed and constructed to be fully open at pressure not greater than 0.2bar. To achieve this requirement, the selection of the return spring becomes critical.

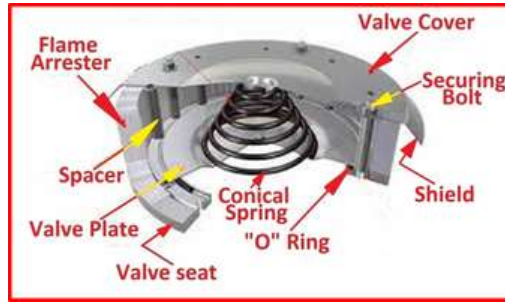
Further the free area of each relief valve must be not less than 45 cm². What is implied thereby is that:

- The free area provided by the flame arresting mesh must be ≥ 45 cm². Free area is the dimension between adjacent parallel wires. With regard to free area reference may be taken from USCG - 46 CFR § 56.50-85 that states: *Vent outlets from all tanks which may emit flammable or combustible vapours, such as bilge slop tanks and contaminated drain tanks, must be fitted with a single screen of corrosion-resistant wire of at least 30 by 30 mesh, or two screens of at least 20 by 20 mesh spaced not less than one-half inch (13mm) nor more than 1 1/2 inches (38mm) apart. The clear area through the mesh must not be less than the internal unobstructed area of the required pipe.*
- The valve lift provided should adequate to ensure there is unrestricted release.

For example: If the valve is of circular design, then $\pi D^2/4 \geq 45$ or $D^2 \geq 57.3$ or $D \geq \sqrt{57.3} \geq 7.57$; Minimum LIFT to be provided = $D/4 \geq 1.9$ cm

To ensure adequate protection for a given crankcase, the Total Free area of all the valves installed must be 115 cm² per m³ of the gross crankcase volume.

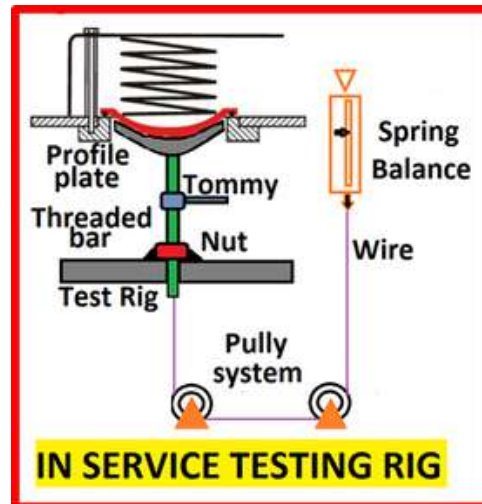
The crankcase explosion relief valve cover is proud of the valve so as to deflect any flame on to the crankcase doors. A typical Crankcase Explosion Relief Valve is illustrated below.



IN-SERVICE TESTING OF CRANKCASE RELIEF DOORS

Objective of the test is to verify the effective closure of the valve post explosion, i.e. the ingress of air into the crankcase must be effectively prevented.

Explosion relief valves are to be periodically inspected visually. The valve should be inspected for damage, deformation, leakage and loose fittings. Particular attention should be paid to the condition of the flame arrester to ensure that it has not become choked. It is vitally important that the flame arrester is in good condition. A damaged flame arrester will render it useless, and will result in the ignition of the oil mist outside the crankcase.

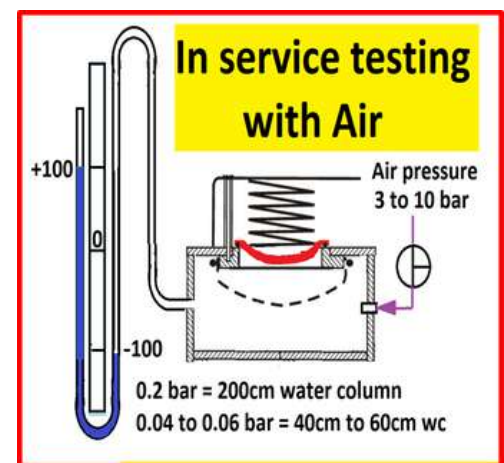


The illustration shows a simple jig that can be used for testing the relief valves. The Profile plate is attached to a spring balance through a system of wire and pulleys. The profile plate is moved up by the threaded spindle such that it exerts force on the relief valve to open at a pre-set pressure.

For example if the valve has a diameter of 30 cm then the weight to open the valve is $30 \times 0.2 = 6$ kg. This weight will be registered on the spring balance.

Air pressure testing of explosion relief valve can be carried out using a suitable test rig assembly as illustrated. The valve seat must be clean before lowering onto the rig. Bolt the valve on to the test rig. Connect a clean air supply 3 to 10 bar to the test rig and open the ball valve. Audible chattering of the valve plate opening/closing will be observed. Close the ball valve and observe the gauge pressure.

Further a pressure of between 40 and 60 mbar should be held for one minute to demonstrate the valve tightness. If the pressure is not held for one minute, the valve should be dismantled and the rubber O-ring renewed.





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EU ETS: PRELIMINARY AGREEMENT TO INCLUDE SHIPPING IN THE EU'S EMISSION TRADING SYSTEM FROM 2024

Relevant for ship owners, managers and charterers.

January 2023

The EU's legislative bodies have reached an agreement on including shipping in its Emission Trading System (EU ETS). Subject to final adoption, ships above 5000 GT transporting cargo or passengers for commercial purposes in the EU will be required to acquire and surrender emission allowances for their CO₂ emissions from 2024. Offshore ships will be included from 2027. This statutory news summarizes the current information on EU ETS.

The European Parliament (EP), Council of the European Union, and the European Commission have reached an agreement on including shipping in the EU's Emission Trading System (EU ETS) from 2024. There is no consolidated text available yet and this newsletter is based on the available information about the agreement and otherwise the Commission proposal from 14 July 2021. The EP and Council are expected to formally adopt the revised directive later. Further details on the requirements and processes can be expected as the final text is adopted, and the European Commission adopts related implementing and delegated acts.

The EU ETS is an emission cap-and-trade system where a limited amount of emission allowances – the cap – is put on the market and can be traded. The cap is reduced each year, ensuring that the EU's emission target by 2030 of 55% reduction, relative to 1990, can be met while becoming climate-neutral by 2050.

The EU ETS and EU MRV requirements

Under the EU ETS each company with ships trading in the EU/EEA is required to surrender emission allowances corresponding to a certain amount of its GHG emissions emitted over a calendar year starting with 2024. The requirements apply to the shipping company which is the shipowner or any other organization or person, such as the manager or the bareboat charterer, who has assumed the responsibility for the operation of the ship including duties and responsibilities imposed by the ISM Code. The emissions will be reported and verified through the existing EU MRV (Monitoring, Reporting and Verification) system, which will be revised and extended to cover necessary GHG emissions, ship types and sizes.

Emission scope

Ship types and sizes

From 2024 the EU ETS will include ships above 5000 GT transporting cargo or passengers for commercial purposes. The EU MRV system will be extended from 2025 to apply to offshore ships above 400 GT and general cargo ships between 400 and 5000 GT transporting cargo for commercial purposes. Offshore ships above 5000 GT will from 2027 be included in the ETS. By 2026 the European Commission will

review whether general cargo and offshore ships between 400 and 5000 GT will also be included in the ETS.

TypeSize (GT)EU MRVEU ETS

Ships transporting cargo 5000+In force2024 or passengers

General cargo and 400-5000 2025To be offshore ships evaluated

Offshore ships5000+ 20252027

Greenhouse gases (GHGs)

From 2024 the EU ETS will include CO₂ emissions only, while the EU MRV will be extended the same year to include reporting of methane (CH₄) and nitrous oxide (N₂O) which are two other greenhouse gases (GHG) emitted by ships. From 2026 the EU ETS will also include these two GHGs.

GHGEU MRVEU ETS

CO 2 In force2024

Methane (CH

4), Nitrous oxide (N₂O)20242026

Voyages

All 100% of emissions on voyages and port calls within the EU/EEA, and 50% of emissions on voyages into or out of the EU/EEA are subject to the EU ETS. To avoid evasive behaviour, container ships stopping in transshipment ports outside the EU/EEA but less than 300 nm from an EU/EEA port, need to include 50% of the emissions for the voyage to that port as well, rather than only the short leg from the transshipment port. The EU will provide a list of transshipment ports.

Voyage scopeEU MRVEU ETS

Emissions on voyages and port calls 100%100% within the EU/EEA

Emissions on voyages into and out of 100%50% the EU/EEA

Phase-in

The emissions in scope for surrendering allowances will be gradually phased-in, starting with 40% of emissions according to the scope described above for 2024, increasing to 70% for 2025 and to 100% for 2026 onwards.

Phase-in 2024 2025 2026

Share of emissions subject to the EU ETS 40% 70% 100%

Exemptions and derogations

Certain activities are exempted or have reduced obligations to surrender allowances, such as certain ice classed ships, certain ships servicing low population islands without rail or road link or located in the outermost regions, and ships performing public service obligations.

Compliance process

Each company will need to be registered with an administering authority. For companies registered in the EU, the administering authority will be the member state where it is registered, while for companies outside the EU it is the member state with the largest number of port calls from voyages performed by the ship company the last two monitoring years, or, if it has not traded in the EU the last two years, the member state of the first port call in the EU. The EU will prepare a list of the administering authorities per company, which will be updated every two years.

Within three months after entry into force of the revised directive (to be decided at adoption), an updated ship EU MRV monitoring plan must be verified by an accredited verifier and submitted to the administering authority of the company. The monitoring plan shall describe the method for monitoring and reporting of methane and nitrous oxide. From 1 January 2024, each ship needs to start reporting according to the revised monitoring plan.

By 31 March each year from 2025, a verified company emission report needs to be submitted to the administering authority. The company emission report aggregates the emissions within the scope of the EU ETS reported and verified for each ship under the responsibility of the company during the reporting period (i.e., the calendar year). Note that this in practice means that the ship emissions report needs to be verified and submitted a month earlier than under the current EU MRV system. By 30 September (indicated, subject to confirmation) each year the necessary emission allowances are required to be surrendered to the administering authority.

Penalties

Ships that fail to comply with the EU MRV requirements for two or more consecutive periods may be expelled and denied trading in the EU. Companies that fail to surrender allowances are liable to an excess emissions penalty of €100/tonne CO₂, and are still liable for the surrendering of the required allowances. Companies that fail to comply for two or more consecutive periods may be denied entry in the EU for all ships under its responsibility.

How will biofuels and e-fuels be handled?

The EU ETS allows using a zero CO₂ emissions factor for biofuels, renewable fuels of non-biological origin, and recycled carbon fuels fulfilling the sustainability and GHG emissions saving criteria under the EU's Renewable Energy Directive (RED). The RED revision proposal, which is still under negotiation, sets this GHG emissions saving criteria to 70% for transportation fuel. However, the EU has not finalised the delegated act defining the rules for renewable fuels of non-biological origin and recycled carbon fuels under the RED.

How to acquire emission allowances?

Ship companies will not receive any free allowances. Emission allowances can be acquired in the primary market through auctions arranged by the European Energy Exchange (EEX) which is currently contracted by the EU to handle this. There is also a substantial secondary market where allowances can be traded bilaterally or through various derivatives offered by financial institutions.

Where do the revenues end up?

The revenues from the auctions are distributed to various recipients. The introduction of shipping into the EU ETS means that an additional approximately 80 to 100 million emission allowances will be put on the market. Of these, auction revenues from 20 million emission allowances will go to the Innovation Fund to be used for shipping specific projects. The remaining revenues will go to the EU member states and will not be earmarked for specific purposes beyond climate and energy-related activities.

Recommendations

DNV recommends that companies with ships within the scope of the EU MRV and EU ETS from 2024, prepare for the updated monitoring and reporting requirements. Companies with ships within the scope of the EU ETS are recommended to make the necessary updates to contractual arrangements and to start considering how to acquire the necessary emission allowances. DNV will inform customers about further developments of the EU ETS through Technical and Regulatory News, webinars, podcasts and more.

References

- [Decarbonize shipping information hub](#)
- [MRV topic page](#)

IMO-SDC 9 BRIEF REPORT

The 9th session of the Ship Design and Construction sub-committee of IMO was held from 23 to 27 January, 2023 at London.

Meeting Highlights :

- To reduce the risk of drifting and grounding in case of an emergency, subcommittee agreed to extend the requirements, to on-board emergency towing devices to all new ships over 20,000 gross tonnages. It be noted that currently, tankers of 20,000 DWT and above are required to have an emergency towing device. Other cargo ships and passenger ships must have a towing procedure, but are not required to have specific suitable equipment. Increased ships' sizes in general complicates emergency towing to a safe place without suitable equipment.

- Committee initiated revision of the interim explanatory notes to the Safe Return to Port requirements in SOLAS. This to improve unified implementation of the concept that passenger ships shall be able to return safely to port after a fire or flooding casualty. The Safe Return to Port (SRtP) concept was introduced in SOLAS in 2010 to ensure the tolerance of passenger ships. The SRtP regulations apply to passenger ships with a length of 120 metres or more or with three or more main vertical zones.
- Provisions in SOLAS Chapter II-1 have restricted the use of new materials containing asbestos since 2002 and have prohibited their use since 2011. Sub Committee agreed to implement an asbestos ban in the MODU Code on new installations on existing units in alignment with that in SOLAS. The 2009 MODU Code has prohibited the use of asbestos on new units from 2012, but no provisions in the 1979, 1989 or 2009 MODU Codes restrict new installations which contain asbestos on existing units, and no guidance has been available.

- Sub Committee agreed to a draft revision of the Guidelines for the Reduction of Underwater Noise from Commercial Shipping to address Adverse Impacts on Marine Life (MSC.1/Circ.833). A draft work plan for the continued work on the underwater-radiated noise and implementation of the draft revised guidelines were endorsed. These would be further discussed at MEPC 80 in July 2023.

Progressed the development of goal-based requirements for SOLAS Chapter II-1



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“INVESTIGATING THE MARINE INVESTIGATION”

The shipping industry experiences incidents that range from major accidents to near misses. These incidents should be investigated since many flag administration regulations require it; and industry initiatives encourage it. Incident investigation is a process that is designed to help organizations learn from past performance and develop strategies to improve safety.

What is the goal of an investigation process?

The overall goal of the incident investigation process is to ensure that the proper safeguards are in place and functioning to prevent and mitigate incidents. If adequate safeguards are provided, any losses that do occur will be acceptable losses. This is the same goal as proactive analysis.

Individuals in the organization may have specific investigation objectives, such as the following:

- Protect the safety and health of workers and the public
- Preserve the organization’s human and capital resources
- Improve quality, reliability, and productivity
- Ensure continued service to clients and customers
- Comply with regulatory and insurance requirements
- Comply with organizational and industry policies
- Respond to legal, regulatory, organization, community and/or employee concerns
- Educate management, staff, and employees
- Demonstrate management concern and promote employee involvement
- Advise others of unrecognized risks and/or more effective risk management strategies

All these specific objectives are enveloped by the overall goal of ensuring that adequate safeguards are developed and are functioning within the organization.

Which incidents to investigate?

In most cases, due to the paucity of time and resources, it may not be possible to carry out meaningful investigations and learnings derived for all incidents.

In such cases, (at least) the following incidents should be selected:

- a) A large consequence incident
- b) A near miss to (a) above
- c) A set of smaller (and similar) incidents

The investigation team?

It should comprise of:

- At least one person knowledgeable in the process or activity involved
- A team leader with appropriate knowledge and skills to investigate and analyze the incident
- For catastrophic incidents, a lead investigator may be subject to additional training in advanced investigation approaches

What may be the immediate response activities?

Some thoughts that should be kept in mind by the incident investigation team immediately following an incident include:

- Ensure that actions of investigators do not lead to another incident
- Follow all directions and limitations issued by the onsite incident commander
- Follow all directions and limitations about safe work practices for controlling hazards
- A job risk analysis or job safety analysis may have to be performed to determine how the investigation activities can be performed safely Access to the incident site (and any associated records) should be controlled to preserve all relevant incident data.

Evidence collection?

During the evidence collection phase investigators build a detailed picture of the occurrence or safety issue being investigated. Evidence gathered may include:

- Site observations and mapping, including recording wreckage distribution and witness marks
- Relevant components and wreckage, materials, and recorded data (including on-board flight, voyage and event recorders, GPS, images, video, system equipment data, and voice recorders) for subsequent analysis
- Human performance information such as work and rest patterns and time awake, workload, perceptual limitations, communications, and social norms
- Testing or procuring test and examination reports such as fuel quality-tests, manufacturer’s test procedures, simulation studies, metallurgical analysis
- Interviews with involved parties, witnesses, and subject matter experts
- Operational records such as logbooks, technical logs, maps or charts, trip reports, weather observations, job sheets, repair records, training records and performance checks, and audit reports
- Technical documentation such as procedures and manuals, training manuals, maintenance manuals, troubleshooting guides, design drawings and system safety assessments, and
- Data on similar occurrences in Australia and overseas and other occurrence data.
- Examination and analysis

Data Analysis?

Marine investigators aim to use the collected evidence to build a detailed understanding of the circumstances surrounding a transport safety occurrence or issue. During this phase, evidence is reviewed and evaluated to determine its relevance, validity, credibility, and relationship to other evidence and to the occurrence.

The following is usually carried out:

- Undertake detailed data analysis (use tools such as 5-Whys, Fault Trees, Causal Factor Charts, etc)
- Create simulations and reconstruct events
- Examine company, vessel, and other records
- Examine wreckage and test components
- Research human factors associated with the evidence
- Conduct further interviews, and
- Determine the sequence of events.

What does “Root Cause” literally mean?

Root Cause may be understood as the depth in a chain of events to a level where an intervention could reasonably be identified, and where management has the power to implement change and thereby prevent re-occurrence.

Examination and analysis requires reviewing complex sets of data, and available evidence can be vague, incomplete and or contradictory. This may prompt the collection of more evidence, which in turn needs to be analysed and examined, potentially adding to the length of an investigation.

Investigation review?

Once the examination of the evidence is complete, the investigation team will test a series of hypotheses to arrive at several safety factors that could have contributed to the incident, or otherwise increased safety risk.

The investigation team then convenes a review with the management concerned. This is a rigorous internal review of the progress of the investigation, its preliminary findings and focus. This involves the investigation team presenting their evidence and analysis to reach consensus on the investigation findings. Once consensus is achieved, the report drafting phase of the investigation can begin.

Final report: Drafting

Most reports contain the following sections:

- Executive summary—a one-page summary of the transport safety occurrence, the findings and any safety action taken as a result, as well as any broader safety messages.
- The occurrence—a description of the sequence of events related to the occurrence and, if relevant, the consequences in terms of injuries and damage.
- Context—of evidence collected as part of the investigation that is necessary to help the reader understand the occurrence and safety analyses, or the broader safety issues for research purposes.
- Safety analysis—a demonstration of how the evidence justifies the investigation findings
- Findings—a list of contributing factors and other safety factors identified during the safety analysis.
- Safety issues and actions—a summary of safety issues that were identified during the investigation and details of what safety action has been taken or is planned to be taken by relevant parties to address those issues.

During the drafting of the report, it may be necessary to return to the evidence collection or examination and analysis phases of an investigation. There will often be significant overlap in time between the evidence collection, examination and analysis and final report drafting phases.

Suggested recommendations or preventive measures?

The most desirable recommendations are generally those that eliminate the hazard, while the least desirable are those that perform emergency response after the consequences of the incident have occurred:

- Eliminate the hazard (For example, removing flammable items from the ship’s galley, etc)
- Make the system inherently more reliable or safer (a classic example is moving on from the single hull to the double hull tanker designs)

- Prevent the incident occurrence (improved maintenance procedures/supervision of personnel etc.,)
- Detect and mitigate the loss (Fire detection/firefighting equipment etc.,)

Management responsibilities?

Management has several responsibilities to ensure that recommendations are properly resolved. Their responsibilities include the following:

- Review recommendations to evaluate feasibility, practicality, and effectiveness
- Establish schedules for implementing accepted recommendations
- Assign individuals responsibility for implementing accepted recommendations
- Evaluate recommendations as management of change items
- Ensure that affected personnel receive necessary information/training about the recommendations
- Ensure that resolutions are documented and tracked.

To summarize :

The goal of incident investigation is not only to understand the “what” and “how” of an incident, but also, why it happened.

The goal is first to identify the causal factors for the incident. Causal factors are those contributors (human errors, problems, and external factors) that, if eliminated, would have either prevented the occurrence or reduced its severity.

Once the incident is understood, root causes are identified for each causal factor. Root causes are deficiencies of management systems that allow the causal factors to occur or exist.

Finally, recommendations are developed and implemented to eliminate the root causes and prevent the causal factors from occurring again.

List of references:

1. [https://www.atsb.gov.au/about_atsb/investigation-process_\(Australian Transport Safety Bureau ATSB – Investigation process\)](https://www.atsb.gov.au/about_atsb/investigation-process_(Australian%20Transport%20Safety%20Bureau%20ATSB%20-%20Investigation%20process)_)
2. [Guidance Notes On The Investigation Of Marine Incidents \(American Bureau of Shipping\)](#)



Write up by :
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IME(I) – INA COOPERATION CENTRE

A Centre-of-Cooperation to address the growing need of the national maritime technology advancement has been established between The Institute of Marine Engineers (India) and the Institution of Naval Architects (INA) at the IME(I) House Nerul on the 28th January, 2023.

The Centre was inaugurated by Prof. R.P. Gokarn, Retd. Prof. Head (NA & ME) & Dean Academics IIT Kharagpur & Retd. Prof. IMU, and a consultant to OERC during its formative years. The Centre was inaugurated by the traditional 'lighting the lamp', ushering an era in pursuit of knowledge by Marine Engineers and Naval Architects. The two professional bodies have been collaborating in the past by holding INMARCO-INAvation conferences in 2010 and 2014 and working to support the various endeavours by the industry and government over many years. Among those physically attending the event included other eminent Maritime professionals e.g. Shri M. V. Ramamurthy, Shri Arun Kumar Gupta, Shri Rajeev Nayyar, Cmde. Bhupesh Tater (Retd.), Shri Sahai Raj, Shri Naresh Chugh, Shri Ashwini Kumar, Shri A. J. Das, Shri Avinash Upadhye, Shri H. V. Ramesh etc.

In the brief introductory speech before the technical session that followed the inauguration Mr. J. Dasgupta, President of INA gave a brief background of the initial discussions between the two professional bodies. He thanked IME(I) for

taking the initiative and assured that this Centre of Cooperation will sincerely endeavour to support maritime industry in design and construction for efficient and safe operation of ships and other maritime units. The Centre was dedicated to the young future generation of maritime technical professionals who would have to stand up and take the responsibility to carry the torch for bigger achievements.

The Technical Session following the inauguration was chaired by Prof. R. P. Gokarn consisted of two excellent presentations in Hybrid Zoom format. The first presentation by Shri Avinash Upadhye, Head, International Business Development (Defence and Aerospace), L&T covered "Genesis, Evolution and Future of Integrated Electric Propulsion" wherein the author discussed electric propulsion in naval ships across the globe, the difficulties faced by various navies and how Indian designers are addressing and circumventing the issues to achieve better reliability and efficiency for differing missions.

The second session was a very interesting presentation by Shri Arun Kumar Gupta, Chairman IME(I) Mumbai Branch & Ex. CMD, Shipping Corporation of India on "Chahabar –India's first Overseas Port Project" in Iran at a strategic location east of the Strait of Hormuz in the Gulf of Oman. He covered the strategic importance of this port in the maritime connectivity of Afghanistan, Iran and Baluchistan in West Pakistan, and the land connectivity for trade through this port. Mr. Gupta also covered other port projects under discussions



and development by Indian Government in the Indian ocean region.

Comde. KE Mathew, IN (Retd), Director (Shipbuilding), Hindustan Shipyard Limited, the Chief Guest for the Event, participated on-line from Vishakhapatnam. He congratulated the speakers for their excellent, topical and futuristic presentations of two different genres in the maritime field. He gave a brief outline of the presentations and their utility from his perspective.

The Technical session was concluded with vote of thanks from Dr. V. B. S. Ayyangar of NSTL, Vizag.





Late Shri. Ashok Kumar Jain

5.10.1944 - 21.12.2022

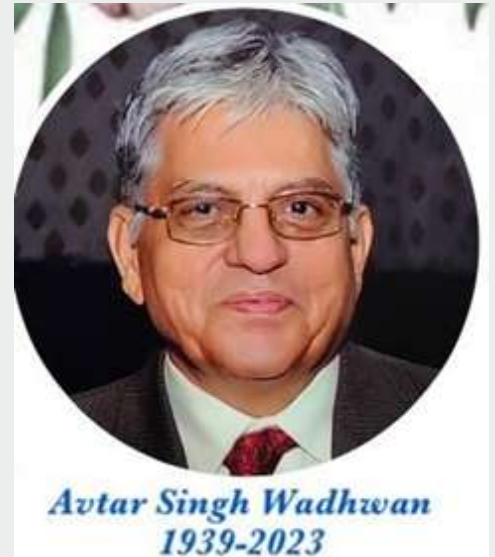
IME(I) deeply condoles the sudden passing away of Shri. Ashok Kumar Jain on 21st October 2022.

He was from 1962-66 batch of Marine Engineering Apprenticeship, Garden Reach Workshops, Calcutta.

He Served in Scindia S.N. Co Ltd, joined Lloyd's Register of Shipping in various positions in Saudi Arabia, Kuwait and China until Super Annuation. There after settled in New Delhi, India.

He is survived by his wife, a son, a daughter and 2 grandchildren. He has left behind a rich harvest of memories to cherish, honour and emulate.

A senior member of the Institute of Marine Engineers (India) Mumbai Branch Shri Avtar Singh Wadhwan left for his heavenly abode on 25th January 2023. He joined and served the Indian Navy till 1965 and thereafter a Hongkong based company till 1972. Then he moved to the Shipping Corporation of India, Mumbai as a Technical Superintendent. At SCI he served the BulkCarrier & Tanker division with distinction as a very effective technical head. During his long and illustrious career he also served Essar Shipping, IMC Singapore and Varun Shipping. He is survived by his wife, two daughters and a son. May the departed soul rest in peace and God give enough strength to the bereaved family to bear the tragic loss.



Shri. Sudesh Kumar Verma was a DMET 1962-66 batch and an Apprenticeship with Indian Naval Dockyard Bombay. He served in Scindia SN Co. Ltd., Mumbai. After Sea career, he joined Drew Chemicals Mumbai, followed by last three years with SAMSON MARINE in India. He was also the Hon. Secretary of IME(I) Mumbai Branch 1991- 93. Shri. Verma migrated to Canada in 2007 where he worked as a Consultant / Non Exclusive Surveyor.

Shri. Verma left for heavenly abode on 11/10/2022 due to massive heart attack at Ottawa, Canada.

Survived by wife, a son, daughter in-law and grandchildren.



Sudesh Kumar Verma

07.05.1944 – 11.10.2022



Jaykar Narpatlal Vyas
10.05.1939 – 26.01.2023

Born on 10th May 1939, Shri. Jaykar Narpatlal Vyas passed out with distinction from DMET, Kolkata in 1960, after doing apprenticeship at Indian Naval Dockyard, Mumbai from 1956 to 1959, and commenced his seagoing career with The Shipping Corporation of India. He obtained the Certificate of Competency as First Class Engineer (Steam & Motor) and quickly rose to the rank of Chief Engineer, before he came ashore and was absorbed as Officer and Lecturer with Directorate of Marine Engineering Training (LBS N&E College) Haybunder campus, at Mumbai for 4 years from 1969 to 1973. Shri Jaykar Vyas cleared the UPSC selection process and moved to the Mercantile Marine Department of the Government of India in 1973. He was soon posted as the Engineer-cum- Ship Surveyor at Jamnagar, a position he held until retirement in May 1997.

He single-handedly controlled the entire Saurashtra shorelines of Gujarat state for over two decades from 1975 to 1997. He was nominated as a Member of the Board of Trustees of Kandla Port Trust, and as a Convenor of the reviewing & redrafting panel on I V Act, of Gujarat Maritime Board.

He held the position of Chairman IME(I) Gujarat Chapter for two terms.

May his soul rest in peace!



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- Advanced Training for Ships using Fuels covered within IGF code **Course Id – 5312** (OFFLINE) – (6 Days) - 13th Feb 2023
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- MEO Cl. IV (NCV) - STCW 2010 -4 months course (OFFLINE) – Commencing Soon
- MEO CL II (FG): 4-month Course (OFFLINE) – 1st Feb.2023 / 1st March 2023 / 1st April 2023 / 2nd May 2023 (Discount on combined bookings of Class II Courses with Simulator)
- REFRESHER & UPDATING TRAINING (RUT - 3 DAYS) COURSE FOR REVALIDATION OF COC FOR ALL ENGINEERS and ETOs (OFFLINE) – 13th Feb. 2023/ 27th Feb. 2023/ 13th March 2023/ 27th March 2023/ 10th April 2023/ 24th April 2023
- ENGINE ROOM SIMULATOR MANAGEMENT LEVEL (3 DAYS) COURSE FOR MEO CLASS I (OFFLINE) – 25th Feb. 2023/ 01st March 2023/ 27th April 2023
- ENGINE ROOM SIMULATOR MANAGEMENT LEVEL (5 DAYS) COURSE FOR MEO CLASS II (OFFLINE) – 01st Feb. 2023 / 23rd Feb. 2023 / 01st March 2023 / 27th March 2023 / 01st April 2023/ 24th April 2023
- ENGINE ROOM SIMULATOR OPERATIONAL LEVEL (3 DAYS) COURSE (OFFLINE) – 20th Feb. 2023/ 20th March 2023/ 17th April 2023/ 15th May 2023/ 19th June 2023
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