

Mélange

September 2024



Monthly Magazine of The Institute of Marine Engineers (India)





The Institute of Marine Engineers (India)

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- MEO Cl. I (FG) : 2- months course (OFFLINE) - 02nd Nov 2024 / 02nd Jan 2025 / 01st Mar 2025 / 02nd May 2025 (followed by Simulator course) **Discount on combined bookings of Class I Course with Simulator**
- MEO (CEO – NCV) – STCW 2010: 2 month course (OFFLINE) – 2nd November 2024
- MEO (SEO – NCV) Part-A - STCW 2010: 2-month course (OFFLINE) – 01st February 2025
- MEO (SEO – NCV) Part-B - STCW 2010: 4-month course (OFFLINE) – 1st November 2024
- MEO Cl. IV (NCV) - STCW 2010 - 4 months course (OFFLINE) – 2nd January 2025
- MEO (CEO – NCV) BRIDGING COURSE: 15 Days (OFFLINE) – 01st October 2024/ 16th December 2024
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- MEO CL. II (FG): 4-month Course (OFFLINE) – 01st Oct 2024 / 01st Nov 2024 / 01st Dec 2024 / 02nd Jan 2025 / 01st Feb 2025 / 01st Mar 2025 / 01st April 2025 / 02nd May 2025 (Discount on combined bookings of Class II Courses with Simulator)
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- ENGINE ROOM SIMULATOR MANAGEMENT LEVEL (3 DAYS) COURSE FOR MEO CLASS I (OFFLINE) – 29th Oct 2024/ 4th Nov 2024/ 7th Nov 2024/ 28th Dec 2024/ 2nd Jan 2025/ 6th Jan 2025/ 26th Feb 2025/ 1st Mar 2025/ 5th Mar 2025/ 28th Apr 2025/ 2nd May 2025/ 6th May 2025
- ENGINE ROOM SIMULATOR MANAGEMENT LEVEL (5 DAYS) COURSE FOR MEO CLASS II (OFFLINE) – 1st Oct 2024/ 26th Oct 2024/ 02nd Nov 2024/ 26th Nov 2024/ 2nd Dec 2024/ 26th Dec 2024/ 2nd Jan 2025/ 27th Jan 2025/ 1st Feb 2025/ 24th Feb 2025/ 1st Mar 2025/ 26th Mar 2025/ 1st Apr 2025/ 25th Apr 2025/ 2nd May 2025/ 27th May 2025
- ENGINE ROOM SIMULATOR OPERATIONAL LEVEL (3 DAYS) COURSE (OFFLINE) - 14th Oct 2024 / 18th Nov 2024 / 16th Dec 2024
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From the Editor's Desk

Greetings, esteemed readers!

Embark with us on the September 2024 edition of *iMélange*, a voyage through the ever-evolving maritime landscape.

A recent seminar, where I had the privilege of presenting a paper, highlighted the critical role of alternative fuels like LNG, ammonia, hydrogen etc. in reducing greenhouse gas emissions. However, the transition to these new fuels presents unique challenges, particularly in ensuring safe storage, handling and operation. It is imperative in today's age that we take cognizance of the growing importance of alternative fuels and operational safety in the maritime industry. As the global push for sustainability intensifies, the International Maritime Organization (IMO) and its Maritime Safety Committee (MSC) have been working tirelessly to balance environmental

concerns with operational safety.

Being a part of the Correspondence Group within the IMO on the above agenda, it gives a great sense of fulfilment to be a part of focused set instrumental in addressing these challenges keeping the safety of seafarers as the utmost priority. Through its work, the group is developing new safety protocols, harmonizing standards and ensuring that existing regulations are aligned with the evolving landscape of alternative fuels.

The maritime industry is undergoing a transformative shift, driven by a relentless pursuit of sustainability and efficiency. Cutting-edge technologies are reshaping the landscape, from innovative power conversion systems to advanced emissions control measures. Fuel cells, nuclear power, solar energy, and wind propulsion are emerging as viable alternatives to traditional fossil fuels. Meanwhile, energy storage solutions like lithium-ion batteries and supercapacitors are enhancing vessel autonomy and reducing reliance on external power sources. To further optimize efficiency, technologies such as wind-assisted power, air lubrication, and hull form optimization are being deployed. Additionally, the industry is investing in emissions control technologies like ammonia and CO₂ abatement to mitigate its environmental impact. As these innovations continue to mature, the maritime sector is poised to embark on a greener and more sustainable future.

While the transition to a greener future is imperative, it is equally important to prioritize safety. By working together, the maritime industry, regulatory bodies and technology providers can create a sustainable and secure future for shipping.

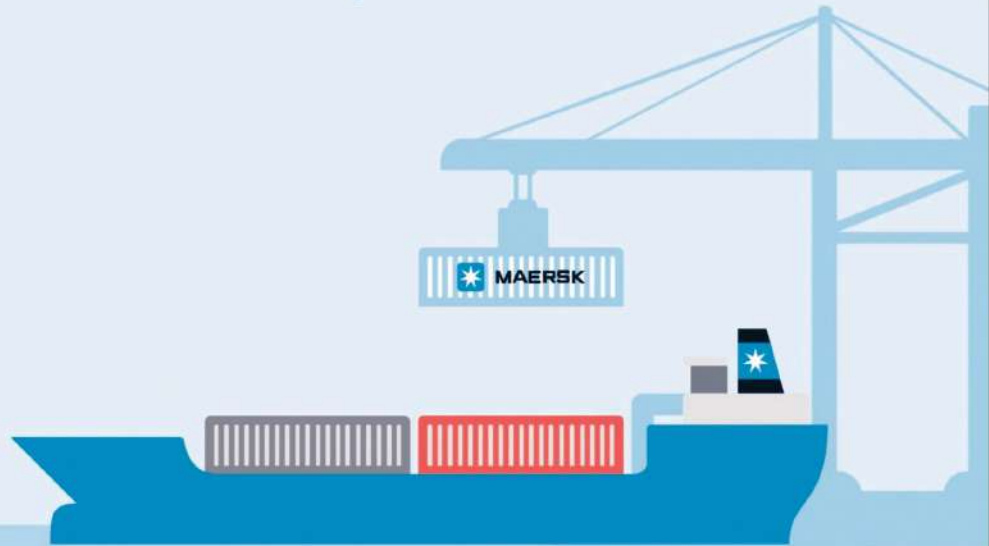
We trust this issue of *iMélange* shall navigate you through the currents of maritime progress, offering both knowledge and intrigue. As always, your voice holds the greatest value. We eagerly await your feedback and maritime narratives, which you can send to editornewsletter@imare.in by 7th October 2024. These very contributions are the wind in our sails, propelling us towards a future edition even richer in content.

SUNIL KUMAR
Honorary Editor – *iMélange*

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IME(I) Mumbai Branch's 41st AGM: Highlighting Achievements and Honouring Excellence

The Mumbai Branch of the Institute of Marine Engineers (India), along with its Navi Mumbai and Gujarat Chapters, held its 41st Annual General Meeting on Saturday, 31st August 2024, at Emerald Hall, Hotel Kohinoor Continental, Andheri Kurla Road, J.B. Nagar, Andheri (East), Mumbai.

Mr. Sanjeev Mehra, Honorary Secretary of the Mumbai Branch, opened the meeting by welcoming all members and invited the Honorary Chairman, Mr. David Birwadkar, to deliver the welcome address. Mr. Birwadkar extended a warm welcome to the guests and led the assembly in paying homage to members who had passed away over the past year.

Following this, the Honorary Secretary presented the agenda items, including an overview of the Branch's activities and achievements over the past year. He also

highlighted the contributions of various sub-committees and presented the audited accounts for approval.

The 5th Meritorious Service Award for 2023-2024 was conferred upon **Shri. B.B. Badwal** (F-166) and **Shri. Naresh Nanda** (F-4267), who expressed their gratitude for the honour. Additionally, **Shri. Vijay Arora**, ex- Managing Director, Indian Register of Shipping was felicitated for his outstanding contributions to the maritime industry and to the IME(I).

The meeting included a technical seminar on "The Role of Additives in Minimizing the Environmental Impact of Transporting Goods by Sea," presented by **Ms. Ritu Chaudhari** of Enmarol Petroleum India Pvt Ltd. The evening concluded with a vote of thanks delivered by **Mr. Rajesh Kasaragod**, Honorary Treasurer of the Mumbai Branch.

Glimpses of the Event









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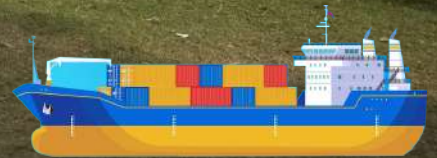


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Virtual Seminar on the Role of Classification Societies in Marine Engineering

Recognising the importance of continued education for marine engineers and students, the Institute of Marine Engineers, India, Karnataka Chapter, hosted a highly informative virtual seminar on 10th August 2024. The session focused on the topic, "The Role of Classification Societies in Marine Engineering," and attracted professionals, faculty, and students from the marine engineering sector.

The event's keynote speaker, **Mr. Ranjeet Singh**, Chief Surveyor at the Indian Register of Shipping, delivered an insightful presentation on the crucial role of Classification Societies in ensuring the safety, reliability, and regulatory compliance of ships. Drawing from his extensive experience, Mr. Singh covered a range of topics, including the history and evolution of Classification Societies, their regulatory framework, technological advancements, and their role throughout a vessel's lifecycle.

The session provided invaluable insights to all participants, offering a unique opportunity to learn directly from an industry expert. The event concluded with an engaging Q&A session that covered various aspects of the Classification Societies' role in the maritime industry. Attendees asked questions on diverse topics, such as shipbuilding, stagger tests of tanks on large vessels, cybersecurity, and the future role of Classification Societies in emerging technologies like autonomous ships.

This virtual seminar underscored the indispensable role that Classification Societies play in marine engineering, acting as custodians of safety, reliability, and statutory compliance. The event fostered collaboration among marine professionals and students, emphasising the need for continued learning and dialogue within the community.

The meeting was skillfully moderated by Ms. Rupali Joshi, Hon. Secretary of the Karnataka Chapter.





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Kochi Branch Hosts LPG Reliquification Webinar and Expands Facilities for Future Courses

On 27th August 2024, the Kochi branch hosted a webinar on “Efficient and Practical Operations of LPG Reliquification Systems,” presented by **Mr. Shaun D’Souza**, a veteran Chief Engineer with extensive LPG vessel experience. His insightful presentation on LPG carrier processes was highly valuable to both current and retired marine engineers.

Facility Enhancement:

To meet DG Shipping requirements and regularly offer VICT and RUT courses, the Kochi branch has acquired a new 450 sq. ft. room and is currently



furnishing it. DG Shipping approval is awaited to start classes. Meanwhile, the branch has renewed its lease for the entire space for an additional five years, with an option to vacate with one month's notice if needed.





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IME(I) Mumbai Branch Hosts Seminar on Minimizing Environmental Impact of Maritime Transport Through Fuel Additives

The Institution of Marine Engineers (India) Mumbai branch successfully hosted a highly informative technical seminar on a very critical topic, "The Role of Additives: To Minimize the Environmental Impact of Transporting Goods by Sea." The event, held at The Kohinoor Continental Hotel, brought together industry experts, maritime professionals, and environmental advocates to discuss innovative solutions for reducing the ecological footprint of marine transport. The seminar commenced with an insightful introduction by **Mr. Shobhit Kapoor**, Exec. Committee Member, IME(I) Mumbai branch, who underscored the growing relevance of fuel additives in addressing recent challenges faced by fuel pumps, filtration systems, and purifiers. He highlighted that fuel stability and compatibility are pivotal factors contributing to these issues. Setting the stage for an in-depth exploration of the subject, Mr. Kapoor introduced the evening's distinguished speaker, **Ms. Ritu Chaudhri**, Director of Enmarol Petroleum India Private Limited.

Ms. Ritu Chaudhri, an MBA graduate from the University of Connecticut, USA, and a seasoned expert in the marine fuel, brought a wealth of knowledge to the seminar. Having founded Enmarol Petroleum India Pvt. Ltd. in 1996, Ms. Chaudhri has been at the forefront of importing heavy fuel and white kerosene through Nhava Sheva Port, in 2002 ventured into fuel additives, distributing marine fuel additives in collaboration with Innospec Limited (UK). Her extensive experience and exceptional speaking skills made her the ideal candidate to address the seminar's theme.

Thereafter **Mr. David Birwadkar**, Chairman of IME(I) Mumbai Branch welcomed Ritu Chaudhri and requested her to commence the presentation.

During her comprehensive presentation, Ms. Chaudhri delved into the multifaceted role of fuel additives in minimizing the environmental impact of maritime transport. She began by introducing marine fuel additives as essential tools for improving onboard fuel efficiency and reducing emissions. Highlighting the Octamar™ marine fuel treatment chemicals distributed by Enmarol Petroleum India

Private Limited, she emphasized their effectiveness in stabilizing Very Low Sulfur Fuel Oil (VLSFO) and controlling fuel aging and waxing issues.

Ms. Chaudhri's presentation covered a range of critical topics, including the stability challenges of various fuels such as Heavy Fuel Oil (HFO), VLSFO, Marine Gas Oil (MGO), and biofuels. She discussed the issues of asphaltene instability, sludge formation, and oxidative stability, providing valuable insights into the complexities of fuel management. Furthermore, she explored the environmental impact of biofuels, particularly those blended with Fatty Acid Methyl Ester (FAME), and the associated performance issues.

Through case studies and trials, Ms. Chaudhri demonstrated the significant fuel savings and improved efficiency achieved with the use of Octamar additives. She highlighted the economic and environmental benefits of using combustion catalysts like Octamar Ultra HF & Octamar Complete, which can possibly reduce fuel consumption up to 2-3%, thereby offering substantial cost savings and reducing emissions.

In her concluding remarks, Ms. Chaudhri provided a fuel treatment guide and proposed solutions for decarbonizing shipping. She advocated for regular testing and monitoring of fuel performance, along with the application of appropriate fuel additives, as essential measures to enhance fuel efficiency and minimize the environmental impact of maritime transport.

This was followed by a very passionate Q&A session which really demonstrated thorough knowledge of the subject by Ms Chaudhri.

The seminar concluded with a heartfelt memento presentation to Ms. Ritu Chaudhri by Mr. David Birwadkar and **Capt. M.P. Bhasin**, Master Chairman of CMMI, in recognition of her exceptional contribution. **Mr. Rajesh Kasargod**, Hon. Treasurer, delivered a vote of thanks, expressing gratitude to all attendees for their participation and making the event a meaningful and productive gathering. The evening culminated in a cocktail reception, drinks, and dinner, providing a fitting end to a successful and enlightening event.

Glimpses of the Seminar



Engaging Seminars Empower Kochi Students: Time Management, Career Planning and NOX Compliance



As part of the Student Chapter activities, the Kochi Branch hosted a seminar at the Kunjali Marakkar School of Marine Engineering (KMSME) on 25th July 2024. The seminar featured **Mr. S.M. Balasubramaniyan**, M.S., Chairman and Chief Mentor of Digicore Technologies, who presented on "The Art of Time Management." His innovative and interactive presentation engaged the student attendees, demonstrating that careful and judicious time management ensures that tasks are never cancelled or postponed due to time constraints.

- The second event in this series occurred on 2nd August 2024, featuring a talk by **Mr. Rajan Neithetilath**, Hon. General Secretary of IME(I) Kochi Branch, on "Career Planning and Job Opportunities." The presentation offered valuable and timely insights for students nearing the end of their courses and preparing to enter the job market.
- The third event took place on 12th August 12, where **Mr. P. J. Jeyesh**, Superintendent Engineer at Synergy Ship Management Kochi, addressed the student members at METI, Cochin Shipyard. His talk on the "NOX Compliance Programme" was highly beneficial, with students engaging actively in the subsequent discussions and Q&A session.



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This Course ensures that the Core publications namely, the STCW Convention and the Code and the Quality Management System is familiarized and well understood by the trainee.

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Assessment, Examination and Certification of Seafarers

Dates: 11th November 2024

Time: 9am - 5pm

Course Fee: Rs.15500/- (per participant inclusive of Taxes)

VENUE: IMEI HOUSE, Plot No.94, Sector-19, Nerul, Navi Mumbai- 400706

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Chennai Branch's Annual General Meeting - Highlights and Key Proceedings

The Annual General Meeting (AGM) of The Institute of Marine Engineers (India), Chennai Branch, for the financial year ending 31st March 2024 was held on 13th September 2024, at the Alumni Club, Anna University, No. 1 Boat Club Road, Raja Annamalai Puram, Chennai.

Mr. Suresh Shenoi, Chairman of the IME(I) Chennai Branch, warmly welcomed all members present.



The Hon. Secretary, **Mr. R. Muthusamy**, requested members to observe a minute of silence in honour of those who passed away during 2022-23 before proceeding with the agenda.

1. Mr. R. Muthusamy presented the branch activity report.
2. **Dr. K. Sivasamy**, the Hon. Treasurer, presented the audited financial report.
3. The re-appointment of the Auditor was confirmed, with the same remuneration as the previous term.

Chairman Mr. Shenoi then invited **Mr. Suresh Kamath**, General Manager of WMTC 2024, to brief the members about the upcoming **World Maritime Technology Conference** scheduled for 4th – 6th December 2024 at The Leela Palace, Chennai. Mr. Kamath provided a detailed overview of the event and encouraged all members to attend and contribute to its success.

The meeting concluded with a vote of thanks delivered by Hon. Secretary Mr. Muthusamy.



WORLD MARITIME TECHNOLOGY CONFERENCE Chennai, India 2024

GLOBAL SHIPPING – A BATTLE FOR SURVIVAL OR A TORCH BEARER OF HOPE ?

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Charles Dickens comes to our minds as we reflect upon the state of shipping today. Juxtaposed between Trade Wars, Galloping Technology, Regulatory Challenges and Climate Change issues, we could be looking like a deer caught in the headlights, unable to comprehend where our future lies.

The Lehman Brothers crisis of September 15, 2008, now close to 15 years ago; yet we have not been able to overcome its impact, just as we have never been able to avoid the odd bout of flu every winter, and of course the Covid-19. There has been a continuous stream of regulations, in the wake of galloping technology, escalating political gamesmanship across nations, and also with safety management continuing to be an issue, duty of care towards crew remains questionable.

Is it the first choice industry for an entrepreneur? For the hopeless romantics, it is!

We would like stakeholders in the industry to come forward to make a case for Shipping. We invite you to Chennai and fearlessly present views to make the industry safe, environment friendly and investor supportive. In Chennai, one of India's largest cities and its cultural capital, you would find the rhythm and the beat to speak your mind, with an unwavering conviction and unfounded joy.

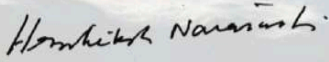
On behalf of the Organising Committee and The Institute of Marine Engineers (India), Chennai Branch, we extend a warm invitation to you and your organisation to actively participate and support the three day event, between December 4-6, 2024 in Chennai. We provide you in attachment, a copy of the canvas, and we hope to engage you in cool pre-winter periods in India.

World Maritime Technology Conference (WMTc - 2024)

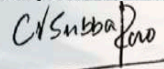
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{AMIDST TECHNOLOGY, REGULATIONS, GEO-POLITICS & CLIMATE CHANGE}

Is Shipping a good story? Let us debate.

Looking forward to meeting you in Chennai
On behalf of the Organising Committee, WMTc 2024


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Black & White Full Page	24	24000	300		

PAPERS
Papers are invited from Financial Institutions, Business Managers, Ship Owners and Managers, Shipping Associations, Regulatory Institutions, Classification Societies, Analysts, Brokerage Houses, Academic Institutions, Shipbuilding & Repair Yards, Professional Bodies, Engineers, Designers, Manufacturers, Students, Researchers, Recyclers, Salvors, Adjudicators etc.
NAVIGATING THE FUTURE - Blockchain, AI, Data Analytics and Digital Transformation
MANAGING AND HEDGING RISK - Asset, Cargo and Currency
SHIP BUILDING AND REPAIRS - Can India grab a share of the market?
SHIPPING MARKETS - Can we predict the future?
MARINE MONEY - Do Banks believe in Shipping? - The Basel and The Poseidon Narrative
DUTY OF CARE - Safety Management and Crew Welfare
REFORMING (OR ROMANCING) THE FUTURE - Is Education the same as Schooling?
CLASSIFICATION SOCIETY - A voice of Influence or just an IMO ally?
THE BUGLE OF GEO POLITICS - Sounds of the 21 st Century for Shipping
SUSTAINABLE DEVELOPMENT - Is it only about climate change?
POWERING ACADEMIC RESEARCH - Hulls, Propulsion Equipment, Vibration & Underwater Noise
THE CONNECTIVITY CONUNDRUM - Linking Rivers, Ports and Railways
ADVANCEMENTS IN PRODUCT TECHNOLOGIES - Fuel Lubricants, Paints, Chemicals & others
COST LEADERSHIP IN MAINTENANCE
MANAGING LEARNING - What can Shipping learn from other Industries?


41st Annual General Meeting of IME(I) Concludes with Key Resolutions and Award Announcements

The 41st Annual General Meeting (AGM) of the Institute of Marine Engineers (India) was held on 21st September 2024, at IMEI House, Nerul, in a hybrid mode. A total of 32 members attended in person, while 25 members joined online.

The meeting was chaired by the Hon. General Secretary, **Shri. Sunil Kumar**, who began by welcoming all participants. A minute's silence was observed to honour the departed members before the proceedings officially commenced.

Shri. Kumar then invited **Shri. Rajeev Nayyer**, President of IME(I), to deliver the welcome address.

During the meeting, the General Body reviewed the Council Report for the period from 16th July 2023 to 15th July 2024. It was noted that no amendments or changes were made to the ORP after the 40th AGM up to the 100th GCM within the reorganised ORP. The following key resolutions were passed:

1. Approval of the minutes of the 40th AGM held on 23rd September 2023.
2. Approval and adoption of the audited accounts for the financial year 2023-2024.
3. Re-appointment of statutory auditors, Rajendra Trivedi & Co., for the financial year 2023-24, with a remuneration of 80,000 per year plus taxes.

Several awards for technical papers were also announced and presented to the following deserving authors:

H.S. Rao Memorial Award:

- **First Place:** "Digital Twins: A CFD Model for Vessel Motion Data Analysis" Authors: Dr. Sheeja Janardhanan, Dr. Rajoo Balaji, Piyush Raj, Anantha Krishnan A (Published in the April 2023 issue of Marine Engineers Review, India).
- **Second Place:** "Importance of the Concept of Seaworthiness" Author: Dr. Brijendra Saxena (Published in August 2023).

P.C. Jain Student Memorial Award:

- **First Place:** "Black Carbon: A Pollutant, Impacts & Control Measures" Authors: Karan Rautela, Manav Gurjar (B. Tech, Marine Engineering, TMI, Pune, Published in August 2023).

Additionally, the R.L. Jain Memorial IME(I) Lifetime Achievement Awards for 2024 were conferred upon **Shri. Indra Nath Bose**, **Shri. Umesh Grover**, and **Shri. NMC Nair**. The jury for the 2025 awards will comprise **Shri. CV Subba Rao**, **Shri. Bimdhru Mohan**, **Shri. Sanjiv Vakil**, along with the President and HGS of IME(I).

The HGS also announced the election committee for the next term (2025-2027), which includes **Shri. V.A. Kamath**, **Shri. M.B. Prasad**, and **Shri. Manteshwar Kumar**.

The AGM concluded with a vote of thanks delivered by **Shri. Sanjeev Mehra**, Hon. Secretary of IME(I) Mumbai Branch.

Glimpses of The Event







Seminar on “India’s Role in MSC: Ensuring Safer & Sustainable Shipping”

On 13th September 2024, a significant seminar titled “India’s Role in MSC: Ensuring Safer & Sustainable Shipping” was held at the IRS Auditorium in Powai, Mumbai. The event was organised by the Directorate General of Shipping in partnership with the Indian Register of Shipping (IRS), The Company of Master Mariners of India (CMMI), The Institution of Naval Architects (India) (INA), and The Institute of Marine Engineers (India) IME(I). The seminar was organized to address the critical aspects of maritime security and sustainability. The event brought together key stakeholders from the maritime industry to discuss and deliberate on the latest developments, challenges and solutions in maritime safety and security, post MSC 108.

The seminar was graced by the virtual presence of **Shri. Shyam Jagannathan, IAS**, Director General of Shipping, who served as the Chief Guest. Despite joining online, his involvement was crucial, highlighting the importance of this event in shaping India’s maritime future. The ceremony also welcomed a distinguished array of dignitaries including **Shri. Ajithkumar Sukumaran**, Chief Surveyor, DG Shipping; **Shri. Pradeep Sudhakar**, Chief Ship Surveyor (I/C), DG Shipping; **Shri. K. M. Rao**, Principal Officer, MMD, Chennai; **Shri. P.K. Mishra**, Managing Director of the Indian Register of Shipping; **Shri. Rajeev Nayyer**, President of the Institute of Marine Engineers (India); **Capt. M.P. Bhasin**, Chairman of The Company of Master Mariners of India; and **Shri. J. Dasgupta**, President of the Institution of Naval Architects.

The seminar began with an opening address by **Shri David Birwadkar**, Chairman of the IME(I) Mumbai Branch. His brief introduction set the stage for the event, followed by a traditional lighting of the lamp by the dignitaries, symbolising the illumination of knowledge and the collaborative spirit of the seminar.

Shri. Shyam Jagannathan delivered the inaugural address online, offering a succinct overview of the seminar’s focus and its significance in the context of global maritime safety and sustainability initiatives. This was followed by a keynote address from **Shri. Ajithkumar Sukumaran**, who provided a comprehensive analysis of the seminar’s themes, underscoring their relevance to the industry and highlighting the imperative for continuous improvement and adaptation in maritime practices.

Shri P.K. Mishra then took the floor, delivering a short but impactful speech that reinforced the critical nature of the topics at hand. **Shri K.M. Rao** further set the tone for the seminar by elaborating on the key areas of discussion,

emphasising the importance of integrating innovative solutions and best practices into maritime operations.

The seminar featured a series of insightful presentations:

1. **Cdr. Sandeep Kumar (IRS), Mr. Jatesh Chandra and Mr. Anish S (CSL), and Capt. S. Kishore (CMMI)** addressed the topic of “Maritime Autonomous Surface Ships (MASS) – Present & Future.” Their presentation explored the current advancements in autonomous shipping technologies and their potential future impact on the maritime industry.
2. **Capt. Anish Joseph**, Deputy Nautical Advisor, DG Shipping, presented on “Role of MSC in Maritime Security and Anti-Piracy/Armed Robbery.” This session provided valuable insights into how the Maritime Safety Committee (MSC) is pivotal in addressing maritime security challenges, including piracy and armed robbery.
3. **Shri. Sunil Kumar**, Honorary General Secretary, and **Shri. Rajeev Nayyer**, (IME(I)) discussed “Alternate Fuels and Operational Safety.” Their presentation highlighted the growing importance of alternative fuels in reducing maritime emissions and enhancing operational safety.
4. **Shri. Srinivas R (IRS) and Capt. Viraf Chichgar**, (CMMI) tackled the topic of “Cybersecurity Regulations and Practical Solutions.” They offered a detailed examination of the regulatory landscape for cybersecurity in the maritime sector and practical measures for safeguarding digital infrastructure.

The seminar concluded with a summary and closing remarks by **Shri. Nebu Oommen**, Ship Surveyor-cum-DDG(Tech), DG Shipping, also highlighted Directorate General of Shipping’s proposal to establish a state-of-the-art technical portal aimed at revolutionizing the Indian shipbuilding and repair industry. This initiative seeks to create a central hub for information, resources, collaboration and innovation. **Capt. Vivek Bhandarkar**, Secretary General of CMMI, delivered the vote of thanks, expressing gratitude to all speakers, participants, and attendees for their contributions and engagement.

This seminar was a testament to India’s ongoing commitment to advancing maritime safety and sustainability. By bringing together key stakeholders and facilitating robust discussions, the event reinforced the collective effort required to address the evolving challenges of the maritime industry and to ensure a safer and more sustainable future for shipping.

Glimpses of the Seminar







Workshop on Comprehensive Review and Enhancement of the STCW Convention

The Directorate General of Shipping, in collaboration with the Company of Master Mariners of India (CMMI) and the Institute of Marine Engineers (India), IME(I), successfully conducted a workshop on 27th August 2024, to review and refine the STCW (Standards of Training, Certification, and Watchkeeping for Seafarers) Convention and Code. This workshop focused on integrating emerging technologies and addressing contemporary maritime challenges, with the outcomes to be submitted at the International STCW Working Group (ISWG-STCW1) session in October 2024.

The event, hosted at the MSC Crewing Services Pvt. Ltd. in Mumbai, served as a crucial platform for discussions on India's preparations for the upcoming ISWG-STCW1 session. The workshop brought together a diverse group of maritime professionals, regulators, and stakeholders, all committed to enhancing the STCW Convention in light of evolving industry needs.

An introduction of the workshop was given by Mr. David Birwadkar, Chairman, IME(I) Mumbai Branch. He also introduced the Chief Guest Shri. Shyam Jagannathan, IAS, Director General of Shipping and other dignitaries including Capt. M.P Bhasin, Chairman, CMMI and Shri. Senthil Kumar, MMD, Mumbai. The workshop commenced with an opening session led by which included a cultural rendition of *Saraswati Vandana*. This was followed by a presentation outlining the key areas of focus for the ISWG-STCW1 session and India's proactive measures in preparation.

Shri. Jagannathan, DGS, delivered the keynote address, highlighting the critical importance of the STCW convention in maintaining global maritime safety standards. He underscored India's commitment to fostering a high standard of seafarer training and certification, aligning

with international expectations and emerging technological trends.

The workshop proceeded with chapter-wise presentations by team coordinators, each providing a detailed overview of specific aspects of the STCW convention. These presentations aimed to identify gaps, propose amendments, and incorporate contemporary developments in the maritime sector, such as digitalisation, automation, and sustainability.

Following a networking lunch, the afternoon sessions resumed with continued chapter-wise presentations, fostering rich discussions among participants. The workshop featured a dynamic Q&A session where members and participants shared their insights, offered feedback, and posed questions on critical topics. This interactive segment facilitated a constructive exchange of ideas, addressing key issues and generating innovative solutions to contemporary maritime challenges.

The workshop concluded with closing remarks that summarised the day's discussions and highlighted the importance of collective efforts to refine the STCW Convention. The next steps were outlined, emphasizing the preparation for India's contributions to the ISWG-STCW1 session in October 2024.

The vote of thanks was proposed by Mr. Sunil Kumar, CTO & Head - T&A Dept., The Great Eastern Shipping Co. Ltd. The workshop achieved its goal of fostering a collaborative environment for reviewing and enhancing the STCW Convention in response to emerging technologies and evolving industry demands. Key recommendations and outcomes from the workshop will be documented and presented at the upcoming ISWG-STCW1 session, reinforcing India's proactive stance on maritime safety and regulatory compliance.



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Faculty Name : Mr. Kishore Khopkar , B.E.(Elect.)

Ex - Sr. Faculty for Marine Automation, Control Engineering and Electronics for Six Years at
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Registration Link : <https://linktr.ee/imeim>

Glimpses of the Event



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Advanced IGF: 22nd Oct 2024/ 26th Nov 2024/ 10th Dec 2024

Time: 8:30am - 4:30pm

Registration Link: <https://imeimum.marineims.com/course/register>

MEO CL-I (FG)	2 Months	02nd Nov 2024 / 02nd Jan 2025 / 01st Mar 2025 / 02nd May 2025	Rs. 30000/-	CLICK HERE
MEO (CEO – NCV)	2 Months	02nd November 2024	Rs. 30000/-	CLICK HERE
MEO CL-II (FG) - NEW	4 Months	01st Oct 2024 / 02nd Nov 2024 / 01st Dec 2024 / 02nd Jan 2025 / 01st Feb 2025 / 01st Mar 2025 / 01st April 2025 / 02nd May 2025	Rs. 40000/-	CLICK HERE
MEO (SEO – NCV) Part- A	2 Months	01st February 2025	Rs. 28000/-	CLICK HERE
MEO (SEO – NCV) Part- B	4 Months	02nd Nov 2024	Rs. 40000/-	CLICK HERE
MEO. CL-IV NCV	4 Months	2nd January 2025	Rs. 36000/-	CLICK HERE
Diesel Engine Gas Combustion Simulator for MEO Class I	3 Days	29th Oct 2024/ 4th Nov 2024/ 7th Nov 2024/ 28th Dec 2024/ 2nd Jan 2025/ 6th Jan 2025/ 26th Feb 2025/ 1st Mar 2025/ 5th Mar 2025/ 28th Apr 2025/ 2nd May 2025/ 6th May 2025	Rs. 12000/-	CLICK HERE
Engine Room Simulator Management Level for MEO Class II	5 Days	1st Oct 2024/ 26th Oct 2024/ 02nd Nov 2024/ 26th Nov 2024/ 2nd Dec 2024/ 26th Dec 2024/ 2nd Jan 2025/ 27th Jan 2025/ 1st Feb 2025/ 24th Feb 2025/ 1st Mar 2025/ 26th Mar 2025/ 1st Apr 2025/ 25th Apr 2025/ 2nd May 2025/ 27th May 2025	Rs.14000/-	CLICK HERE
Engine Room Simulator Operational Level for MEO Class IV	3 Days	14h Oct 2024 / 18th Nov 2024 / 16th Dec 2024	Rs.7500/-	CLICK HERE
Refresher Updating Training Course for all Engineers (RUCE)	3 Days	8th Oct 2024/ 22nd Oct 2024/ 7th Nov 2024/ 25th Nov 2024/ 9th Dec 2024/ 26th Dec 2024	Rs.7000/-	CLICK HERE
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for Marine Engineers, Electro Techno Officers & Superintendents

Faculty Name : Mr. Pravin R Marathe, Ex- Chief Engineer (MEO Class I)

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- To understand Principle of operation of various hydraulic equipments such as pumps, control valves and actuators.
- To understand the symbolic representation of various hydraulic equipments so as to read and analyse the hydraulic circuit diagrams.
- To know the correct dismantling and assembly procedure for various hydraulic equipments.
- To understand safe operation and trouble shooting of hydraulic systems.



Venue : Web Platform / Zoom

Time: 0900 hrs to 1700 hrs

Fees :

Members - Rs. 11,800/- (Inclusive of GST)
(IMEI, CMMI and INA Members)

Non Members - Rs. 14,160/- (Inclusive of GST)

MORE INFORMATION

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Ms. Neetha Nair: 91-9930977647



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The Institute of Marine Engineers (India) Mumbai Branch
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Bamboo Plantation Drive at Mumbai Port

In a significant step towards environmental sustainability, the Directorate General of Shipping and the Mumbai Port Authority (MbPA) have jointly launched a large-scale bamboo plantation drive.

Inaugurated on 18th September 2024, the initiative aligns with the Maritime India Vision 2030 and aims to contribute to the government's "Panchamrit" commitments for environmental, economic, and social sustainability.

The plantation drive was marked by the presence of MbPA Chairperson **Shri. Rajiv Jalota (IAS)**. The event also saw participation from environmentalists, industry leaders, and students. DGS **Shri. Shyam Jagannathan (IAS)** extended his best wishes for the success of the drive.

Speaking at the inauguration, Rajiv Jalota emphasised the importance of green initiatives in port operations. "Bamboo, with its rapid growth and environmental benefits, is an ideal choice for our plantation drive. This initiative will not only enhance the green cover around the port but also contribute to carbon sequestration and biodiversity conservation."

The ANA, a non-profit organisation, has partnered with WICCI and HariMitti Foundation to execute the plantation project. The foundation, known for its expertise in bamboo cultivation, will provide technical guidance and support.

The plantation drive is expected to have a significant positive impact on the environment.

Bamboo, a rapidly growing plant, is known for its ability to absorb carbon dioxide and generate oxygen. It also helps in soil erosion control and groundwater recharge. Additionally, the plantation will enhance the aesthetic appeal of the port area.

The initiative has received support from various organizations, including Gulf Turbo Solns, Informa Markets India, Zener Maritime Solns, First Policy Insurance Brokers, Bry Air, MSC Shipping India, Material Recycling Assn India, Hindustan Institute of Maritime Training, V Ships India Pvt Ltd, Capt Ajay Achutan, Vigma Maritime Services, Offing Group Pvt Ltd, Armaturen Wolf, Arun Kumar Agarwal, Bhandarkar Shipping, and NSUI

"We are grateful for the overwhelming support from our partners and stakeholders," said **Mr. Saanjeev v Mehra**, Hon. President - ANA. "This initiative is a testament to our collective commitment to environmental sustainability and our belief in the power of community action."

As part of the plantation drive, over 1000 bamboo saplings were planted on vacant MbPA land. The ANA aims to further expand the green cover around the port in the coming years, contributing to India's goal of increasing its green belt by 20%.

As per directives from the centre and following its circular, two skits / Street plays were performed by students of IMU (T.S.CHANAKYA) and MTI SCI on Swach Bharat and tree plantation.

Glimpses of the Event



जिंदगी का मोल

बिखरे हुए बाल, कुछ तंग से कपड़े
आंखों में शरारत, बदन में थिरक
थोड़ी बेताब, थोड़ी चंचल
बड़ी अश्लील सी है ये जिंदगी

तवायफ की तरह नजारा दिखाती है
और जब जरूरतें परवान चढ़ती हैं
तो कहती है, जो चाहिये सब मिलेगा
लेकिन पूरी कीमत चुकानी होगी

बड़े घर, लम्बी गाड़ियां,
दौलत, शौहरत
सब है मेरे पास तुझे देने के लिये
कीमत चुका और ले जा

रातों की नींद और दिन का चैन देना होगा
जज्बा जज्बात सब खर्चने होंगे
कितना समय लगेगा ये भी नहीं बताऊंगी
लेकिन जिस भी इच्छा पर तेरी नजर पड़ी है
वो समझ उसी समय तेरी हुई, जब तू ने उसकी चाह की
बस दाम भर और ले जा

है हिम्मत
है हिम्मत तो उठा ले गांडीव
उतर जा महाभारत के मैदान में
पांव लड़खड़ाएँ तो सारथी तेरी मदद करेंगे
लेकिन इन्दपृथ्वी चाहिये तो युद्ध जीतना होगा

टाल मटोल, अगर मगर, किन्तु परन्तु
ये खेलना है, तो देखता रह नजारा
ना तू अन्दर जा सकेगा ना तेरी चाहतें
बाहर आ कर तुझ से मिल सकेंगी

और एक दिन तेरी भूखी नजरें
यू ही अपना अलाव खो देंगी
बंद हो जायेंगी तरसते तरसते
कोई और भोगेगा तेरी चाहतें,
जिसमें हिम्मत थी, पूरा दाम भरने की

यही है प्रकृति का नियम
इच्छाएँ सज धज के बैठी हैं
दरवाजों पर, दहलीज पर
के कोई आये और ले जाये उन्हें
भोग ले जी भर के

बड़ी अश्लील सी है ये जिंदगी

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Olfactory Senses and A Thrust Block

As much as **sounds** play an important role in an Engineer's observation and inspection of an Engine Room, **smells** play an equally important, if not a more important role in detecting anomalies with the operation of different machinery.

Old Socrates saying: "He who smells the crispness of dollars, comes into money".

Old Chief Engineers' saying: "He who smells something in the Engine Room, smells trouble"

There are so many smells that pervade the Engine Room that to assimilate them and differentiate between them sometimes becomes a problem. One has to train himself (or herself, in today's shipping world) to patiently - and laboriously - trace a smell to its source and, after identifying the source of the smell and rectifying the fault, file it away in memory for future reference.

This way, various smells can be identified quickly and the Engineer can home-in on to the primary source.

Electrical smells are, relatively, the easier ones that can be identified. An electrical wire insulation burning gives a slightly different smell from a motor burning.

Compressed air that is leaking, apart from the sound, gives a rich smell of oxygen as well as a slight smell of humidity that reminds you of rains at home.

Freon leaks from the 'Fridge or AC Systems give out a very distinctive smell. One has to be very careful around this smell, as it causes respiratory problems. Freon gas release in close proximity to an open flame, results in formation of phosgene gas, dangerous.

A Main Engine cylinder that is having a 'blowpast' gives a peculiar, half burnt smell. You then rush to see which exhaust temperature is shooting up and take appropriate action.

And then there are the different smells of the different oils.

Heavy Fuel Oil (heated to 120 to 140 deg C), when leaking, gives off a 'hydro carbon' smell that straightaway leads you to the leak.

Here I have to digress a bit to warn Engineers of the dangers of a ruptured High Pressure Fuel Pipe, the pipe from the Fuel Pump to the Fuel Injector. The rupture of this pipe can be smelt from all over the Engine Room. The escaping fuel - leaking from either a ruptured pipe or a

connecting joint - will be in the form of a mist, due to its pressure coming down from 800 bar to atmospheric in a fraction of a second. *If anyone approaches and comes within the vicinity of this mist / spray, he will immediately be subjected to third degree burns.* The temperature of the mist will be much higher than the heat given to the HFO (140 deg C) due to the pressure increase - after fuel pump - to around 800 bar.

Moreover, all the exhaust pipes being hot, an immediate fire can result.

The first two actions should be to

1. Stop the FO Booster Pump and FO Circulating Pump.
2. Inform Bridge and stop the Main Engine.

In the old days, these pressure pipes were merely thickly lagged.

Luckily, modern engines have double skinned pipes, where, if the internal pressure pipe was to rupture, the outer skin seals it off from being released into the vicinity. Instead, the fuel oil accumulating between the two skins drains down via pipes and is led to the Fuel Oil Drain tank. A High Level Alarm fitted in the tank warns the Engineer of impending trouble.

Sawdust sacks should not be kept on the Boiler Platform. The dry air in the vicinity will trigger the spontaneous ignition of the sawdust and will emanate a smell of wood burning.

Then there are the various smells from the galley, which comes through the blowers, reminding you of what's cooking. This is mainly on older ships, where there were no Engine Control Rooms.

(Reminds me of an incident on this same ship, the 'Chennai Sadhanai'. I used to regularly check the galley for any electrical faults, so that I can inform the EO to repair same and also check for any accumulation of oils and fats on various surfaces, as they can be considered as fire hazards. On one such occasion, I mentioned to the Bhandari - the cook for the crew - that I can smell his morning parathas in the Engine Room every morning. After that, he promptly made it a point to send down - to the ER - a plate of hot parathas and some 'sabji' at 6 every morning. I can still taste it).

Getting back to smells, different oils smell differently when burning or heated to above normal temperatures

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Hydraulic oils at high temperatures have a recognisable odour.

So does Main Engine Lubricating Oil, easily recognisable after 60 deg C, especially if one has taken cognisance of the Lub Oil Purifier when in operation.

Which brings me to my topic, “Olfactory Senses and a Thrust Block”.

The “Chennai Sadhanai” was my last Sisco ship. (This was the first generation of “Chennai” ships and not to be confused with later ones bearing the same names). As such, I carry very fond and pleasant memories of that ship, even though a life threatening explosion and a massive fire took place in the forepeak store and a rare type of damage took place on the Main Engine.

I was the Second Engineer. Having no ‘UMS’ those days, we were keeping normal watches.

Good people, good camaraderie and a hard working, happy crew. Throw in good weather (mostly), blue seas full of flying fish, dolphins, an occasional whale, the inspirational beauty of the variety of sun rises and sunsets, going past the Great Barrier Reef and, on occasion actually seeing the Reef in all its beauty - it was contentment for the soul.

Time, at times, flew. At times, it weighed heavily on my hands. Technical books and Instruction Manuals became my companions, preparing for the forthcoming Chief’s exams. Each sunrise and sunset was more beautiful than the one before. My mistress, the Sea, was in her myriad moods and I exulted in her arms. I was at peace with the Cosmos.

It was into this tranquility that I was thrust into one of the very rare types of breakdowns that a Main Engine can suffer.

Then, one day, while on the early morning watch, I smelt burning oil. Following my nose, I noticed slight wisps of smoke - hardly discernible unless you went looking for it, it was so little - coming out of the Michell Thrust Block, from between the shaft and the seal ring.

I found a little bit of smoke issuing out of the Forward and Aft ends of the Michell Block shaft seals. I immediately reduced rpm and felt around the Thrust Block, but found no evidence of overheating.

I called the Chief Engineer down and showed him. On increasing the rpm, smoke was again seen issuing out after a while.

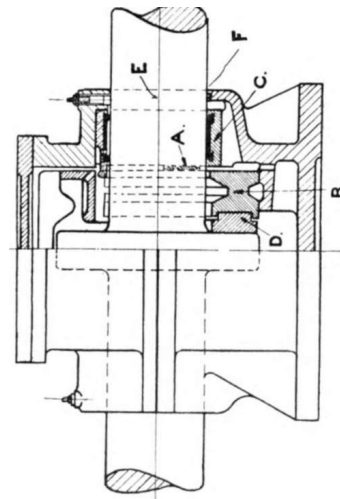
We stopped. We were well away from land, so there were no extraneous dangers.

The small opening for taking clearances was not large enough for a visual inspection.

Unlike modern engines where the thrust block is encased inside the after part of the engine proper itself, this thrust block was located outside the engine. The principles of operation are the same. The method or path of lubrication is slightly different.

On modern ships, oil gets continuously sprayed, through nozzles, on to the thrust pads and thrust face and drains down directly in to the Main Lubricating Oil Sump.

On ships with the Thrust Block located outside the engine, the initial stage of lubrication is the same, through nozzles fed from the Main Lubricating Oil circuit. The difference is in the draining of the oil after lubrication, where the drained oil collects in the bottom of the box-like Michell Thrust Block, after which a drain pipe leads the oil into the Main Lubricating Oil Sump.



An Engineers' view of the Thrust Block

The top cover was opened to check.

All ahead thrust pads were heavily scored, with all of the (white metal) bearing metal missing as well as a bit of the base metal of the thrust pad. If the damage had been limited to only the thrust pads, we would have been fine as, then, it would have been only a matter of renewing the Pads.



Spare Thrust Pads and accessories

The bad news was that the Forward side of the Thrust Collar on the shaft, which takes up the full thrust of the ship when the ship is moving ahead, was badly



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scored. This Thrust Collar, at the time of manufacture, is precisely machined and is machined to a smoothness that beats the softness of a baby's bottom.

Even worse, the shaft had taken a permanent shift forward by 8 mm, which more or less corresponded to the 10 mm white metal bearing coating on the Thrust Pads that had been wiped out.

At this time, we checked all the Connecting Rod Bottom End sides, to ensure they were not rubbing against the webs. We were lucky. If the shaft had shifted another 4 mm, due to heavier damage to the Thrust Collar and more of the base metal of the thrust pads wearing away, we could have had rotating parts rubbing against the webs, causing extreme hot spots and, likely, a crankcase explosion.

A Thrust Block is designed to take up the axial forces transmitted by the Propeller and distribute it to frames in the Engine Room constructed for this purpose.

In yesteryears, the Thrust Block was a separate unit placed aft of the Main Engine and had a bypass feed of Lubricating oil for its lubrication. From the 1980s onwards, almost all designs had the Thrust Block within the Main Engine frame and as an integral part of the Engine, sharing the pressure of the Engine's Lubricating Oil system.

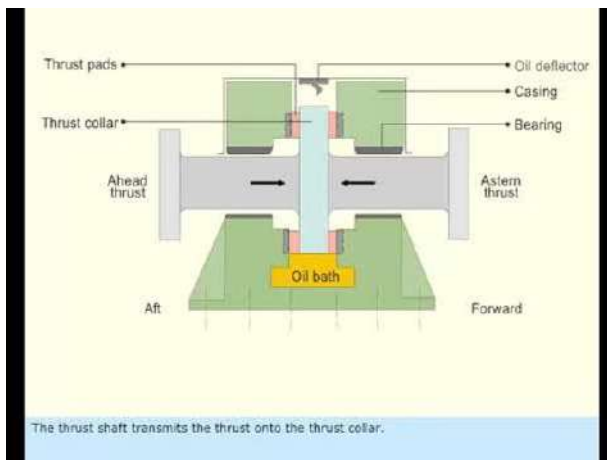
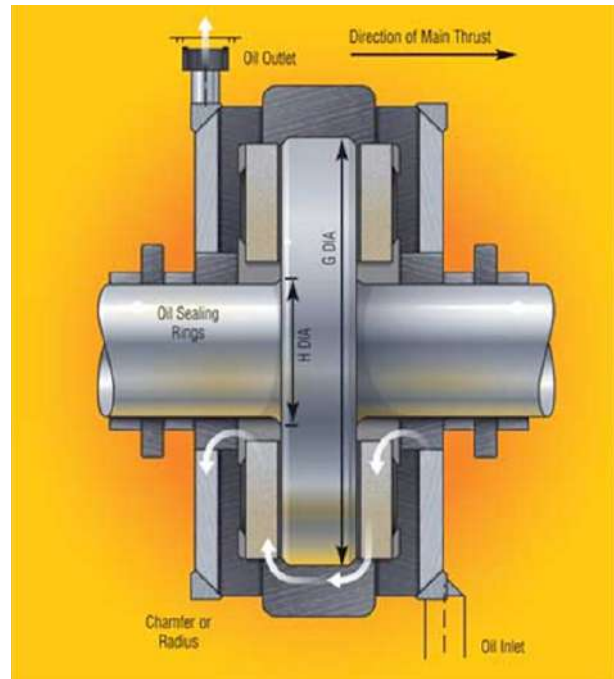


Diagram of a typical and simplified Michell Thrust Block located outside the Main Engine – Thanks to You Tube and DG E Learning ADU Academy.

This is exactly what we had on the Chennai Sadhanai. Although it looks simple in the diagram, it is rather complicated, because each pad was a 'tilting' pad. Removal and replacement of the thrust pads is difficult, requires skill and precision and an understanding of the working of the Thrust Block.

The Ahead Pads were badly damaged. But we could not take them out as the shaft had shifted forward and had jammed the Thrust Pads. So we welded two steel supports on the tank top close to the intermediate shaft flange, fitted two hydraulic jacks and jacked the shaft aft. This loosened the jammed pads which were then removed.



Nearly similar to what we had. Copied from 'Machinery Lubrication' By Heinz P. Bloch

To smoothen out the grooving on the Thrust face of the Thrust Collar, we used disc grinders and different grades of files to file the grooved Thrust Collar, turning the shaft on turning gear simultaneously. After quite a while, we achieved a degree of smoothness which we thought would be sufficient.

Meanwhile, we found the cause of why the Thrust Block failed.

The Michell Thrust Block of those days had a sump at the bottom where the lubricating oil falls after doing its job of cooling and lubricating the Thrust Pads, Thrust Face. This Lubricating Oil that falls into the sump is drained by a drain pipe located about 50 mm above the bottom plate of the Michelle Thrust Block sump. So about 50 mm of oil always remains inside. Over a period of the last 9 years, this remaining oil had turned into sludge and partially choked the 60 mm drain pipe. The sludge slowly got splashed on to the pads and collar, causing fine particles to get lodged between the pads and the collar, resulting in grooving. The white metal of the pads, being the softest metal, sustained damage first, transmitted the damage little by little to the Thrust Face and slowly worsened. The damage to the Thrust Pad damaged the Thrust Collar which, then, damaged the Thrust Pads more. The damage was, thus, cyclical, Once metal to metal contact occurred, smoke emanated from the block.

We used the spare set of Thrust Pads, fitted after a thorough cleaning of the bottom of the Block and flushing out with copious amounts of fresh lubricating oil. The pads were fitted, the block assembled and the jacks removed. We slowly increased the rpm and ran at "Full Ahead" rpm of 60 for nearly a day. But the new



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pads also got damaged, as we were not able to achieve the low 'micron' finish that was needed, with the rough tools that we had.

We were back to square one.

The 'Astern' Pads and the 'Astern' Face of the Thrust Collar were undamaged.

So, we tried steaming astern. After six hours, we had made no progress.

The only alternative was a tow by a sea going tug. The Company arranged for one, which reached after a 3 day wait. A 'messenger' rope from a Line Throwing Apparatus shot accurately brought a thin line, then successive thicker varieties of ropes and finally two thick wire ropes, all handled by winches. After tying the wire ropes, the tow began.

I am not aware of what was the agreement for towing between our Company and the Towing Company. Sometimes a Lloyds Open Form is used.

We were towed at a steady 6 to 7 knots and finally made it to Japan.

A Japanese workshop came, dismantled the Thrust Block, machined the Thrust Face of the Collar using a tool holder that went round and round the shaft (*in situ* machining), fabricated a ring which was screwed (counter sunk screws) on to one end to compensate for the 8 mm of machining done on the Collar (to obtain a smooth, low micron finish) and the axial shift of shaft, assembled everything and, after an Engine trial, left. All this took 3 days of continuous work.

It was precision machining at its best, achieving the micron finish that even a baby's bottom does not have.

This - the accumulation of sludge and the particles from the sludge coming into contact with the Thrust Pads and the Thrust Collar - cannot happen in modern engines as the Thrust Block is located within the Main Engine frame with the Thrust Block access door looking (more or less) exactly like any of the other crankcase door - the last in the series. Moreover, the lubricating oil that is sprayed through nozzles falls into the crankcase floor and the gratings allow it to fall / drain further into the Lubricating Oil Sump. There is no accumulation of oil beneath the thrust block.

The Fleet of the Company, being all sister ships, the others were intimated to carry out a check of the Thrust Block and clean its sump forthwith.

To think that a ship had to be towed, where it had all started with the smell of burning lubricating oil.

Smells are important.

About the Author

Mr. A. Ranganathan, 1970 batch of DMET, now retired worked in Sisco and Barber SM. Of the 38 years at sea, 28 where as Chief Engineer, served on Car Carriers, Container Vessels, Bulk Carriers, MPCs and Self Unloaders. After leaving sea, he has been a Consultant and Vessel Manager with Maersk USA for 6 years.



E-Mail: ranganathan.blog@gmail.com



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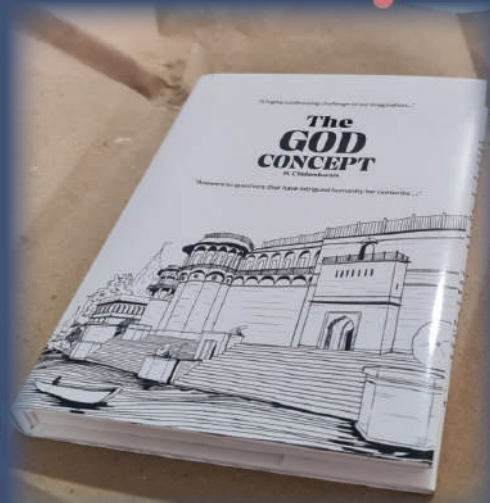
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Shell and Tube Type Heat Exchangers

When any machinery is made to do work, heat is a natural effect. Dissipation of this heat becomes necessary if the machinery has to be operated for extended period of time. Marine engineers have the luxury of an unlimited source of cooling medium. Sea water is used as cooling medium for coolers and condensers, whereas steam is used to heat up fuel oil or cylinder water in the cylinder water pre-heater. Again the heating steam has to be condensed for further use.

Heat exchangers are devices that are used to transfer [thermal energy](#) from one fluid to another without mixing the two fluids. The fluids are usually separated by a solid wall (with high [thermal conductivity](#)) to prevent mixing or they may be in direct contact.

Heat exchangers are typically classified according to flow arrangement and type of construction. The simplest heat exchanger is one for which the hot and cold fluids move in the same or opposite directions.

- **Parallel-flow arrangement:** In the parallel-flow arrangement, the hot and cold fluids enter at the same end, flow in the same direction, and leave at the same end.
- **Counter-flow arrangement:** In the counter-flow arrangement, the fluids enter at opposite ends, flow in opposite directions, and leave at opposite ends as illustrated in **Figure 1**.

The two types of heat exchangers available are Shell and Tube type and Plate type. Plate type is very compact and is preferred where there is a paucity of space.

Another advantage is the ease of cleaning the equipment. However where large amount of heat is to be dissipated, the shell and tube type is very economical. Whereas both types are found in Marine application, it would be interesting to note the in petrochemical industry Shell and tube type heat exchangers are the preferred choice.

How can one distinguish the number of passes in a shell and tube type heat exchanger from an external inspection?

In the following text, for the sake of easy understanding, the fluid that cools/heats is referred to as the **service** fluid and the fluid that gets cooled/heated is referred to as the **serviced** fluid. Typically in a shell and tube type heat exchanger, the service fluid passes through the tubes and the serviced fluid flows around the tubes.

Firstly when the number of passes is referred to, it means the number of times the *service* liquid is made to pass through the tubes

As an example consider a shell and tube heat exchanger having 96 tubes.

If it is a single-pass Heat exchanger, the *service* fluid will enter one end cover, pass through 96 tubes at one go and leave through the other end cover.

If it is a double-pass Heat exchanger, the *service* fluid will enter one end cover; pass through 48 tubes during the first pass in one direction. Thereafter pass through the remaining 48 tubes in the opposite direction and exit from the same end cover.

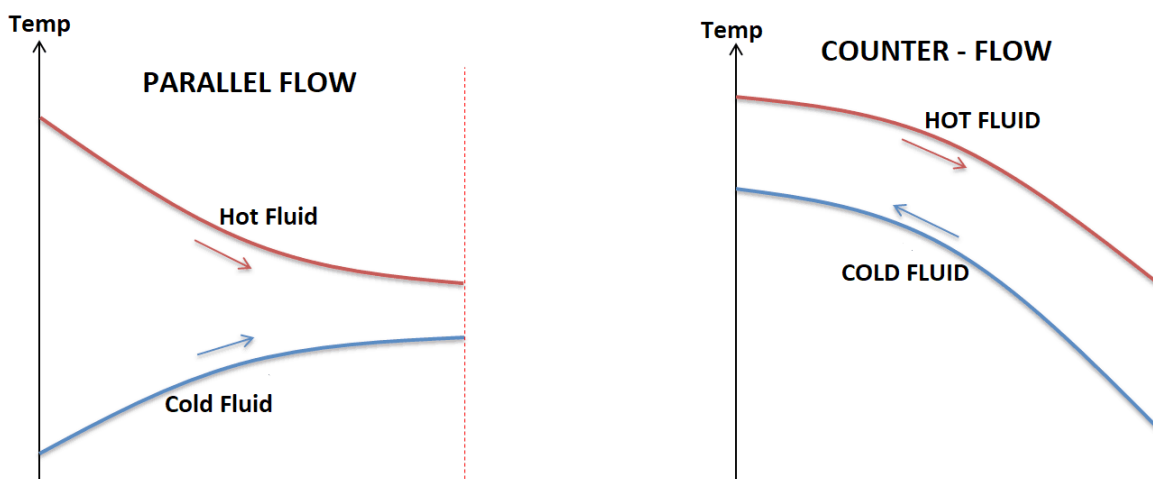


Figure 1. The Fluids Enter at Opposite Ends, Flow in Opposite Directions

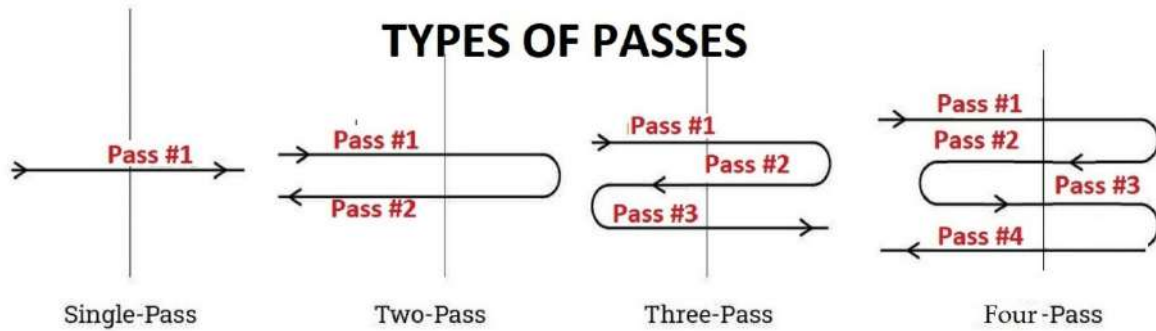


Figure 2. Types of Passes

If it is a triple-pass Heat exchanger, the *service* fluid will enter one end cover; pass through 32 tubes during the first pass in one direction. Thereafter pass through another 32 tubes in the opposite direction and final pass through the remaining 32 tubes exit from the other cover.

If it is a quadruple-pass Heat exchanger, the *service* fluid will enter one end cover; pass through 24 tubes during the first pass in one direction. Then pass through another 24 tubes in the opposite direction and thereafter pass through another 24 tubes final pass through the remaining 24 tubes exit from the same end cover.

It can be seen that in case of odd number of passes, the *service* fluid enters and exits the heat exchanger from **OPPOSITE** end covers, whereas in case of even number of passes, the *service* fluid enters and exits the heat exchanger from the **SAME** end cover.

Next, the location of the inlet and outlet nozzles should be observed. In case of a single pass Heat exchanger, to minimise the turbulence, the nozzles will be located at the intersection of the polar and equatorial diameter of the end covers.

In case of double pass, the nozzles will be located in opposite hemispheres. If the division plate is on the equatorial diameter, then the nozzles will lie on the polar diameter. In case the division plate is on the polar diameter, then the nozzles will be located on the equatorial diameter.

In case of a triple pass heat exchanger, the inlet nozzle will be located off-centre, while the discharge nozzle will be located on the polar diameter. It should be noted that



the orientation of the division plates can be rotated by 90° to the left or to the right. The nozzle locations will also change accordingly.

In case of a quadruple pass heat exchanger the nozzles will be located in the two different quadrants but in the same hemisphere. It should be noted that the orientation of the division plates can be rotated by 90° to the left or to the right.

In **Figure 3**, two different popular designs of division plates are shown, there could be other designs based on the designers' preference.

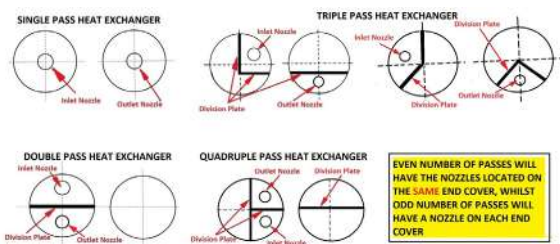


Figure 3. Details of Division Plates and Nozzle Orientation in Shell & Tube Type Heat Exchangers

About the Author



Mr. Ramesh Vantaram an alumnus of D.M.E.T. (1974-1978), embarked on a sea career with The Shipping Corporation of India. He gained MEO CI II certificate, serving with Hongkong-Borneo Shipping Company, then MEO CI I in 1983, with Anglo Eastern Management Services until 1987. He contributed to an FAO (UN)

project for 3 years, aimed at providing fisher-folk alternatives to Outboard Motors. Later, he worked with Lloyd's Register of Shipping from April 1992 to June 2005. He served as Chief Engineer with South India Shipping Company and United Ocean Ship Management Co. In 2008, he joined Great Offshore as Head of Quality, HSE, overseeing the Company's safety certifications. In 2014, he became Senior VP at Ocean Sparkle Limited, eventually overseeing IMS and certifications. Retiring in February 2022, he now teaches part-time at the Institute of Marine Engineers, Navi Mumbai, and writes technical articles for iMelange.

Email: ramesh.vantaram@rediffmail.com

Obituary

Arvind Vasant Chaubal

Shri A. V. Chaubal (F 1110), a distinguished alumnus of DMET (Batch of 1959-63), passed away on 25th August 2024.

He served as the General Manager of the Bulk Carrier and Tanker Division at the Shipping Corporation of India (SCI), Mumbai. From 1986 to 1989, he was deputed to Iran with the Islamic Republic of Iran Shipping Lines (IRISL) as the Principal Advisor to the Chairman and Managing Director. He later became the Principal at the Maritime Institute of India, where he initiated several training programs for

trainers and developed various technical courses for marine engineers.

After his retirement, he continued contributing to the academic field as a faculty member at the Institute of Marine Engineers (India) (IME(I)). He played a key role in developing short courses in engineering and management at MTI and IME(I). Known for his deep expertise and innovative solutions, he was highly respected for his ability to navigate complex challenges in the maritime industry.

May his soul rest in peace.



Kovvuri Chandra Sekhar Reddy

Shri. K.C.S Reddy, FIMarE (F-41) was a native of Rajahmundry, an ancient town on the banks of the river Godavari in Andhra Pradesh. After schooling, he joined the 4-year Marine Engineering Apprenticeship with Visakhapatnam Port Trust (1971-75). He began his sea career with Ratnakar Shipping Co., in 1975 as a Junior Engineer and moved on subsequently to Searland Shipping in the rank of Chief Engineer. Known for his professionalism and ability to think laterally, he was endowed with a fine sense of humor and inclination to help others in need. After 25 years of service at sea, he joined the National Ship Design and Research Centre (NSDR), Visakhapatnam.

At NSDR, he was instrumental in establishing the Maritime Education and Training Division that offered pre-sea and post-sea training courses. He also served as the Director of Praveenya Institute of Maritime Education (PRIME). He always took an active interest in the functioning of the Visakhapatnam Branch of the Institute of Marine Engineers (India), serving as an office bearer and as a member of the National Executive Committee.

He leaves behind his family comprising his wife, two sons, and a daughter-in-law, and his several friends in grief and sorrowful remembrance.



Vijay K. Jain

Shri. Vijay K. Jain (F 441) was a highly respected and senior member of the Institute. Shri Jain had long been settled in the UK with his family but remained closely connected to the community through his unwavering dedication and support.

A passionate advocate for DMECA, Shri. Jain was always ready to lend a helping hand. One simple email was all it took for him to provide assistance to any cadet or ex-cadet in need. His generosity and

promptness were hallmarks of his commitment to the welfare of the members.

In addition to his charitable contributions, Shri. Jain served on the Editorial Board of *iMélange*, where his insights and efforts were deeply valued. His presence and contributions will be profoundly missed by all who had the privilege of knowing him.

May his soul rest in eternal peace.



Obituary

B.V.S Satish

Shri. **B.V.S Satish** (1960-2024), FIMarE (F-6064), after schooling, he joined the 4-year Marine Engineering Apprenticeship with Visakhapatnam Port Trust (1977-81). He began his sea career with Scindia Steam Navigation Shipping Company in 1982 as a Junior Engineer and moved on subsequently to Barber Ship Management in the rank of Chief Engineer. Known for his sincerity, dedication and hard work in solving complex functionalities which made him a perfect gentleman. After 20 years of service at sea, he joined as Marine Engineer in Visakhapatnam Port Trust for a shore job



in late 2002. He was promoted as Senior Marine Engineer and also served in vigilance department. He retired from Visakhapatnam Port Trust in October 2020.

Besides this, he was an all time learner having good interest in Hindustani and Carnatic music and keeps his touch on Veena instrument. Learnt Sanskrit, and enjoyed his passion post his retirement.

He leaves behind his family comprising his wife, son and a daughter, and his several friends in grief and sorrowful remembrance.

SPN Singh

Shri. **SPN Singh** a very Senior Member of IME(I) Mumbai branch left for his heavenly Abode on 14th June 2024 after short illness.

He was fondly remembered as SPN or Shree by his friends and colleagues. SPN was from Calcutta DMET (RN 858), attended IGNR/RSN Workshop for Apprenticeship.

After passing out from DMET, SPN was a True/Dedicated



Mariner & spent all his working life at SEA except a short stint with DGS, Govt of India.

He was a lovable husband, affectionate father and sociable & true dear friend to all of us.

Shree leaves behind his wife, Wife, two sons, a grand son and many colleagues and friends.

Jaswant Singh

Shri. **Jaswant Singh** (M 1232) took his last breathe on 8th September 2024. A highly respected and dedicated member of IME(I), he was an integral part of the community, actively contributing to numerous activities and initiatives.



Shri Singh's unwavering commitment and passion left a lasting impact on all who knew him.

May his soul rest in peace.



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CONTACT DETAILS

For General Queries:

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