iMélange

August 2024

Monthly Magazine of The Institute of Marine Engineers (India)

The Institute of Marine Engineers (India)

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

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Features: Experienced Faculty, Individual Attention

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From the Editor's Desk

Dear Valued Readers,

Welcome to the August 2024 edition of *iMélange*, where we share the latest developments and perspectives from the maritime industry.

As we celebrate Independence Day—a day that signifies freedom, self-determination, and the power to chart our own course—it's essential to reflect on how these principles translate into our professional lives. The maritime industry, traditionally known for its structured paths, is now witnessing a shift, particularly with the rise of Gen Z professionals who value flexibility and versatility.

Recently, I had the opportunity to participate in a panel discussion organized by the Maritime Trainer's Guild. The question being deliberated was a very pertinent one: Should our curriculum cater to knowledge in allied sectors like ports, logistics, etc., to enable the present Gen Z—known for changing sectors quite easily? In my opinion, the answer is a resounding yes.

My own journey is a testament to the evolving nature of careers in marine engineering. Starting as a seafarer with the ultimate goal of becoming a Chief Engineer, my path was typical of many in the industry—linear and focused on a singular destination. However, my career trajectory took various turns, from class surveyor to technical manager, to CTO & VP, and finally finding my calling in training. Each transition was a result of hands-on experience and trial and error, with no formal structure guiding these moves.

Today's marine engineers, especially those from Gen Z, approach their careers differently. They are not bound by the traditional expectations of staying in one sector or role for their entire careers. They seek out opportunities that align with their evolving interests and lifestyle needs. This shift in mindset calls for a transformation in how we educate and prepare future maritime professionals.

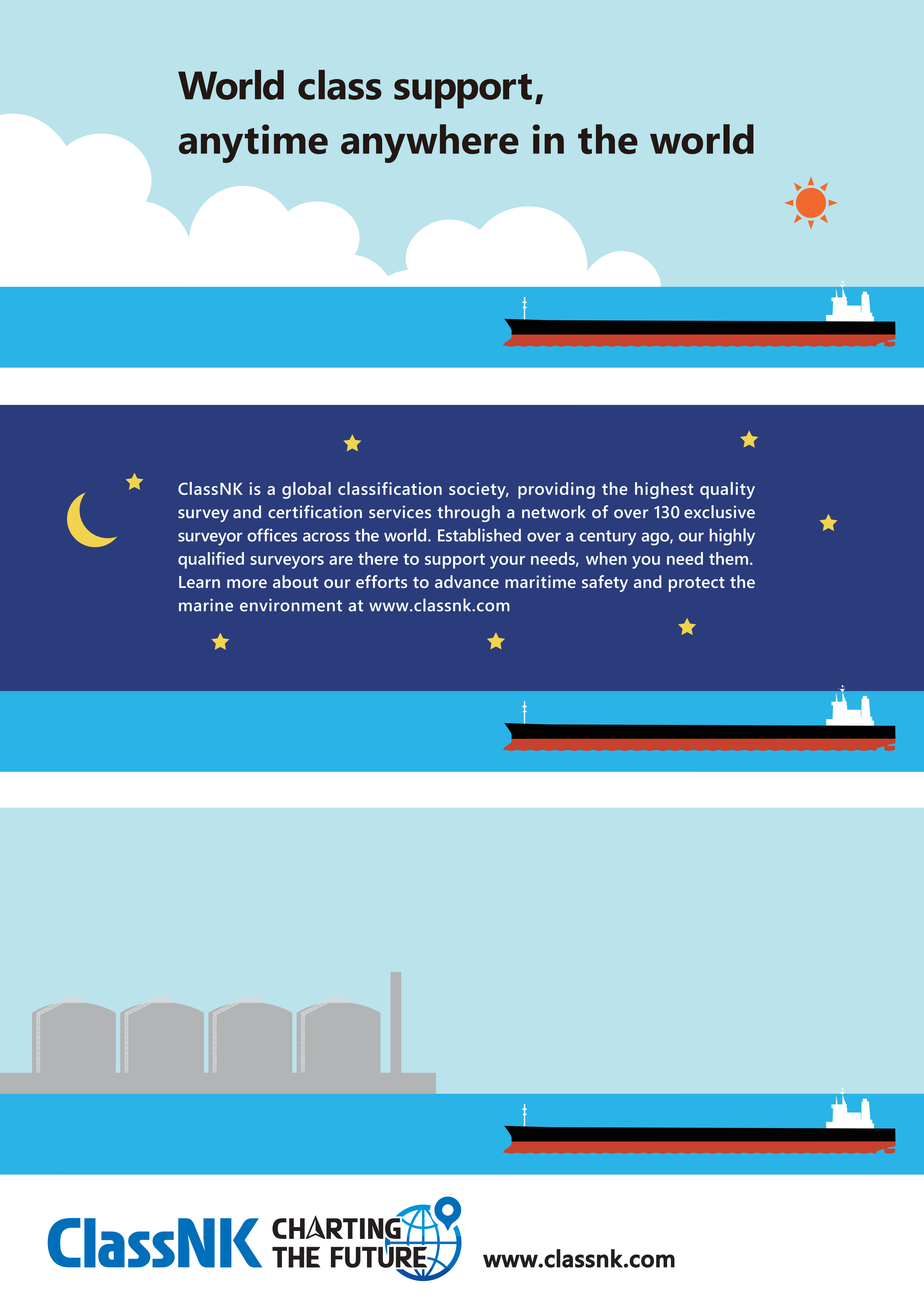
Incorporating knowledge from allied sectors such as ports, logistics, and supply chain management into the marine engineering curriculum is not just a good idea—it is essential. It's vital for versatility and adaptability, operational efficiency, and global competitiveness.

On this Independence Day, as we celebrate the freedom our forefathers fought for, let us also work towards the freedom of choice for the next generation of mariners. The slogan "Sail Beyond the Sea" encapsulates this spirit. It urges us to look beyond traditional boundaries and prepare for a future where mariners are not just masters of the sea, but of the entire maritime ecosystem.

As we move forward, let's ensure that our maritime education evolves to meet the needs of today and tomorrow. By embracing change and expanding our horizons, we can create a generation of maritime professionals who are versatile, adaptable, and ready to take on the challenges of a rapidly changing world.

We trust you'll find this issue of *iMélange* both informative and engaging. As ever, your feedback is invaluable to us, and we're eager to bring you more news and stories from the maritime sector. We welcome your insights and contributions, which you can send to *editornewsletter@imare.in* by 7th Sept 2024, for a prospect to be featured in our next edition. Your continued support and active participation are what propel us forward.

SUNIL KUMAR
Honorary Editor – iMélange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Seminar on Underwater Radiated Noise: A Step Towards Sustainable Maritime Practices

The Directorate General of Shipping, Indian Register of Shipping and The Institute of Marine Engineers (India) Mumbai Branch, in collaboration with the International Maritime Organization (IMO), proudly conducted the "GloNoise URN Seminar" which was held on 9th August 2024 in the IRS auditorium. This seminar focused on the critical issue of the Underwater Radiated Noise (URN) and its impact on marine life and maritime operations.

The seminar commenced with a warm welcome by **Shri. Mahesh Korade,** Engineer & Ship Surveyor-cum-Dy. DG (Tech), Mercantile Marine Department, Mumbai. He along with **Ms. Sonali Banerjee,** Principal Surveyor, Indian Register of Shipping (IRS) conducted the role of Emcees for the seminar. The seminar commenced with the lighting of the traditional lamp by the distinguished guests **Shri. Shyam Jagannathan (IAS),** Director General of Shipping, **Shri. Ajithkumar Sukumaran,** Chief Surveyor, DGS, Government of India, **Shri. Arun Sharma**, Chairman, IRS, **Shri. Vikrant Rai**, Principal Officer, MMD, Kolkata and **Shri. David Birwadkar**, Chairman, Institute of Marine Engineers (India) Mumbai Branch. The event was formally inaugurated by **Shri. Shyam Jagannathan.**

Distinguished Speakers:

1. **Ms. Sevtap** Özdoğan **-** Maritime professional specialised in maritime policies and blue economy, currently managing the GloNoise project at the International Maritime Organization (IMO).
2. **Ms. Norhasliza Mat Salleh -** Deputy Undersecretary of the Maritime Division, Ministry of Transport, Malaysia.
3. **Ms. Miora Rabemiafara -** Head of the Environment Department, Agence Portuaire, Maritime et Fluviale Madagascar.
4. **Nino Bagdavadze -** Head of International Relations Division, Maritime Transport Agency of Georgia.
5. **Mr. Arnab Das -** Founder & Director, Maritime Research Center (MRC), Pune and Managing Director, M/S NirDhwani Technology Pvt. Ltd. (NDT).

Team from Indian Register of Shipping

1. **Ms Sonali Banerjee** – Principal Surveyor.
2. **Mr. Sharad Dhavalikar -** Vice President
3. **Mr. Akula Chaturvedi -** Senior Surveyor

Mr. Vikrant Rai, Principal Officer Cum Joint Director General Technical, Mercantile Marine Department, Kolkata summarised the discussion of the event and reiterated India's commitment to the cause.

Participants:

The seminar saw active participation from online attendees from our twinning countries: Malaysia, Madagascar and Georgia. Their involvement underscored the international collaboration essential for addressing URN. The event also welcomed colleagues from the Directorate General of Shipping, Mercantile Marine Department, Maritime Research Centre, Indian Register of Shipping, Indian National Shipowners Association, International Chamber of Shipping Association, and other representatives of the Indian Maritime Industry. Special recognition was given to the girl cadets present from various MTIs, who are currently undergoing training to join the merchant navy.

Key Highlights:

The seminar commenced with an inspiring speech by the Chief Guest, Shri Shyam Jaganathan. He emphasised the importance of addressing underwater radiated noise and its implications for marine life and maritime operations. This was followed by insightful addresses from Shri Ajithkumar Sukumaran and Shri Arun Sharma, who highlighted the regulatory and technical measures being undertaken to mitigate URN.

Ms. Sevtap Özdoğan, managing the GloNoise project at IMO, delivered a comprehensive presentation on the project's objectives, emphasizing the need for global partnerships and stakeholder engagement to effectively address URN. She highlighted the importance of developing a global toolkit for noise assessment and fostering international policy dialogue.

Shri. Vikrant Rai began the summary by emphasising the importance of collaborative efforts. Mr. Rai mentioned that the India is prepared to support national, regional, and global efforts to enhance maritime safety and environmental protection. He stressed that achieving comprehensive results requires active participation from all stakeholders, from the design stage to the operational stage of ship. In his concluding remarks, Shri. Rai reiterated the commitment to national, external, and global efforts in maritime management and environmental protection.

Shri. David Birwadkar gave vote of Thanks.

Summary of Proceedings:

The seminar provided a platform for meaningful discussions and knowledge exchange on URN. Key points included the need for:

- Enhanced awareness and capacity-building initiatives.
- Development and implementation of noise mitigation technologies.
- Strengthening international collaborations and policy frameworks.

The event concluded with a call to action for all stakeholders to work collectively towards sustainable maritime practices, ensuring the protection of marine ecosystems while promoting operational efficiency and economic viability.

Upcoming Events:

Participants were invited to the upcoming IMO workshop on underwater radiated noise action policies and strategies, scheduled for October 15-16, 2024 to be held at WMU. This workshop aims to further the dialogue and collaboration initiated at the seminar.

Report prepared by: Shobhit Kapoor, Head Technical Committee, Institute of Marine Engineers (India) - Mumbai Branch

Glimpses of The Event




























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78th Independence Day Celebration at IME(I) House

The 78th Independence Day 2024 commemorated with great pride and enthusiasm at the IME(I) House. The event was marked by the hoisting of the National Flag by **Mr. Rajeev Nayyer,** President of IME(I), in the presence of a distinguished gathering.

The ceremony was attended by **Mr. Sunil Kumar,** Honorary General Secretary, and **Mr. Arun Kumar Gupta**, Chairman of the Navi Mumbai Branch, along with esteemed members of IME(I). Faculty, staff, students, and their families also participated in the celebration, underscoring the sense of unity and patriotism that the occasion embodies.

The event reflected the collective spirit of the IME(I) community, bringing together individuals across different segments to honour India's journey to independence and its ongoing progress.

Glimpses of the Celebration

Kolkata Branch Annual General Meeting: Review of FY 2023-24

The Annual General Meeting of the Institute's Kolkata Branch for the financial year ending 31st March, 2024 was held on 26th July, 2024 at Princeton Club, Kolkata.

In his opening speech, Chairman of Kolkata Branch Mr. Gautam Sen welcomed all present, and informed how the past year was taken up with the process of converting the Kolkata Branch office space into a maritime training institute conforming with DG Shipping's specifications. It had been a mammoth task, involving much expenditure, reconfiguring of the office space, repeated alterations, procurement of manuals and publications, electronic hardware and software, specialised training equipment, etc. Several regulatory requirements had to be complied with, with some local clearances still pending, which might yet hold up the final go-ahead from DG Shipping. It had been over a year since the project had been conceived.

The Chairman said this work, as well as repeated indisposition of some Committee Members and staff, had also caused the planned annual functions of the Branch to be shelved. He thanked members for bearing with the situation in such difficult times.

The Chairman then stated, that in the middle of all this, there had been a couple of positives for the Branch. At the very end of the financial year, the Kolkata Branch nominee for the Government of India's prestigious annual

Sagar Samman Varuna Award, Shri. D. K. Sanyal, had been declared the awardee for 2024. Also, Dr. Kalyan Mitra, nominated by Kolkata Branch, had been given the Omkarnath & Chuni Wazir Award for Excellence in Education by the Institute. Never before, at least in recent memory, had any nominee from Kolkata Branch been chosen for any national award, leave alone two awardees in the same year!

Minutes of the previous AGM held on 21st July, 2023 were confirmed by a show of hands. The Branch Activity Report for the year 2023-24 was presented in PowerPoint form by Hon. Secretary Mr. Abhijit Banerjee. Balance Sheet and Audited Accounts of Kolkata Branch for the year 2023-24, which had been posted earlier to the members, were accepted without any amendment. The auditors were reappointed for the Institute's Kolkata Branch for the financial year 2024-25. Under 'Any Other Matter', various points raised by members present were answered or taken note of. Also, Capt. Bibhas Pal, Principal designate of the proposed MTI, was introduced to the members. Then a formal vote of thanks was proposed by Hon. Treasurer Mr. Soumitra Neogi.

The meeting concluded with a sponsored dinner.

Technical Meeting Hosted by IME(I) Chennai on Biofuels and MARPOL Annex VI

The Institute of Marine Engineers (India), Chennai Branch, held a technical meeting on 9th August 2024 at 6:00 pm in the Seminar Hall of the Seafarers Club, Chennai. **Mr. R. Muthusamy,** Hon. Secretary of IME(I) Chennai, welcomed the attendees, introduced the meeting's concepts and ground rules, and expressed gratitude to the members for their participation.

The meeting featured presentations on two key topics by industry experts. **Mr. Suresh Shenoi**, Project Manager at V-Ships and current Chairman of IME(I) Chennai, delivered an insightful presentation on "Biofuels." Following this, **Mr. Raajesh Asokan,** Surveyor-1 at IRS Chennai, presented on "MARPOL Annex VI - New Regulations Implementations." Both speakers engaged the audience with their well-received and interactive presentations.

The session was moderated by Mr. Muthusamy, who also led a 15-minute Q&A session, where many attendees actively participated, showing keen interest in the topics discussed.

As a token of appreciation, mementos were presented to the speakers by Past Chairman **Mr. V. Mohanan.** The meeting concluded with a vote of thanks from **Dr. K. Sivasami**, Hon. Treasurer of IME(I) Chennai, who expressed gratitude to the speakers and participants for making the event a grand success.

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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.

This Course also covers the techniques of assessment and developing written tests and conduct of oral and practical assessments

Assessment, Examination and Certification of Seafarers

16th September 2024/11th 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

For Registration:- CLICK HERE or click on - https://imeimum.marineims.com/course/register

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In the world of competitive sports, the journey to the Olympic podium is often shaped not just by the athlete's dedication but also by the unwavering support of their family. In this exclusive interview, with **Shri. Ramkishan Bhaker,** a Chief Engineer in Merchant Navy and the proud father of **Ms. Manu Bhaker,** who recently made headlines by winning two bronze medals in shooting at the 2024 Paris Olympics. With a career that has taken him across the seas and a commitment to his daughter's dreams that has anchored their family's journey, Shri. Bhaker shares the unique challenges and triumphs of balancing his demanding profession with nurturing an Olympic champion with **Rashmi Tiwari,** Sub-editor, iMélange.

Anchoring Dreams:

A Father's Journey from the High Seas to the Olympic Podium

iMélange: As a marine engineer, your career has undoubtedly been demanding. How did you manage to balance your professional responsibilities with being a supportive father to your daughter, especially during her intense training and competitions?

RB: *I feel incredibly blessed to have the support of a wonderful family. My wife and son have been instrumental in this ongoing journey, providing the emotional and logistical support needed to keep everything running smoothly.*

I made it a priority to be present for my daughter during her competitions. This was possible thanks to careful planning and the excellent cooperation of shipping managers, especially those at Synergy Maritime. Their timely support and the office staff's dedication allowed me to balance my professional commitments with my role as a father.

iMélange: How has your career as a marine engineer influenced your daughter's journey in becoming an Olympic champion? Were there any specific values or lessons from your profession that you passed on to her?

RB: *As a mariner, the unique blend of glamour and challenges that come with life at sea was something my daughter and family experienced firsthand. My wife, Dr. Sumedha Bhaker, along with my daughter and son, would often join me during voyages, especially during the summer holidays. Those times were not just about being together—they were an adventure for us, filled with memorable experiences that brought us even closer as a family.*

On behalf of the iMélange team, we extend our heartfelt congratulations to him and his family!

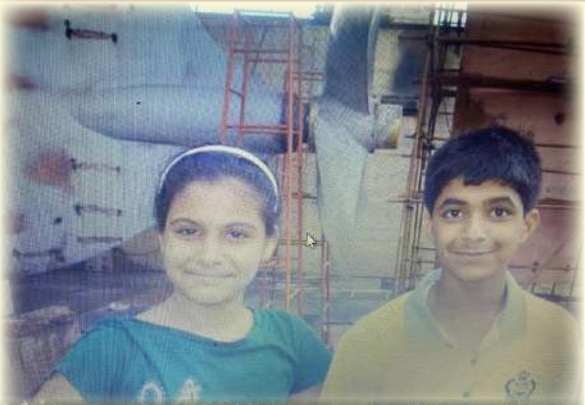
iMélange: Both of your careers require immense dedication and hard work. Can you share some of the challenges and sacrifices your family faced, and how you overcame them to support your daughter's Olympic dreams?

RB: *As a seafarer, I was fortunate to be able to provide for my family financially. However, my absence during long periods at sea made it challenging for my kids to attend all their competitions. During those times, our extended family truly stepped up, offering invaluable support and ensuring that my children could pursue their passions despite my being away.*

iMélange: Marine engineering, much like competitive shooting, demands a high level of precision and discipline. Do you see any parallels between your work and your daughter's sport? How did these shared qualities help in her development as an athlete?

RB: *During my Chief Engineer classes in the UK in 2007, I noticed that our professors often managed their stress through shooting. Intrigued, I tried it a few times myself and found it to be an excellent stress reliever.*

When I returned to India in 2008, I decided to establish a shooting range at Universal School in Goria, Jhajjar, which is



run by our family. We even appointed a retired military officer to oversee it. I would occasionally visit the range myself to unwind.

It was in this very range that Manu began shooting in 10th grade as a new hobby. Her dedication and talent quickly shone through—by 11th grade, she had become a world champion, and by 12th grade, she had earned the titles of Commonwealth champion and Youth Olympic champion. Being part of a family-run school allowed her the flexibility and support she needed to excel in her training and competitions.

iMélange: When your daughter won the bronze medal at the Olympics, it must have been a moment of immense pride for you as a father. How did it feel to see her hard work pay off, and what message would you like to share with other parents who are supporting their children's ambitions while balancing demanding careers?

RB: *Manu Bhaker, our daughter, is truly a pride of India, and we couldn't be prouder as her parents. Our message to all parents is simple: support your children in every way you can, and never stop believing in their potential. Jai Hind!*

Alumnus Assures US$10 Million towards Indian Maritime University's Endowment Portfolio

India's largest maritime University set to establish a Centre of Excellence in its oldest Campus at Kolkata

Indian Maritime University held an Alumni and Industry Meet on 5th August 2024 at the Mumbai Cricket Association Recreation Centre, which was attended by its Alumni and maritime industry leaders. This meet marked a significant milestone for the University with the announcement of two strategic collaborations that will enhance its academic and research capabilities.

The first major highlight was the inking of a MoU with RK Malhotra Holding Pvt. Ltd., a subsidiary of the Foresight Group. The Group was founded by Dr. Ravi Mehrotra, CBE an Alumnus of IMU, (former DMET Kolkata), is set to invest 100 crores to establish the Dr. Ravi Mehrotra Centre of Excellence in Maritime at the Kolkata Campus of the University. The Centre will focus on developing capabilities in emerging technologies in the maritime sector, research studies and innovation. **Dr. Malini V Shankar, I.A.S. (Retd.),** Vice Chancellor of IMU and **Shri. Amulya Mohapatra**, Director and Vice President, of Shipping, Foresight Group exchanged the MoUs setting an auspicious beginning.

The second highlight was the signing of a MoA with the Institute of Marine Engineers (India), IME(I) establishing a sponsorship of 15 lakhs to two Junior Research Fellows (JRF), who will pursue research studies at IMU. The sponsorship is expected to add to the growing research interest in the maritime sector. The JRFs will be able to pursue their Doctoral studies also with the University. Several industry-relevant research projects will be decided jointly by IME(I) and IMU. The MoA was signed by Dr. Malini Shankar and **Mr. Rajeev Nayyer**, President IME(I).

The event was graced by the presence of, **Dr. Rajoo Balaji**, Pro-Vice Chancellor of IMU, **Capt. Kishore Sundaresan**, Professor of Practice, **Capt. Mihir Chandra**, Director of IMU's Navi Mumbai Campus, **Cmde. (Dr.) Vivek Chawla (Retd.) (IN),** Director of IMU's Mumbai Port Campus, and **Rear Admiral (Dr) Rangachari P J (Retd.) (IN),** Director of IMU's Kolkata Campus.

Shri. R. K. Malhotra, Group Managing Director of RKMHL expressed his enthusiasm about the partnership and said, "I am excited to support Indian Maritime University in its mission to advance Research and Innovation in the maritime sector. The Centre of Excellence reflects our commitment to foster innovation and creating better opportunities for students and researchers. It was my mission to contribute to give back to my alma mater." He urged the other Alumni to join hands with IMU in its pursuit of excellence in maritime education and research.

Commenting on the collaboration, Shri. Rajeev Nayyer said, "IME(I) has always been dedicated towards promoting scientific development in maritime and our partnership with Indian Maritime University serves as an extension of our commitment. With this collaboration, we are striving to support the next generation of maritime researchers, opening up greater opportunities for their growth and progression."

Talking about these notable achievements, Dr. Malini V Shankar commented, "The press conference was a significant event for us, underscoring our vision to drive educational and research outcomes in the maritime ecosystem. We are elated and thankful to partner with the RKMHL group for the development of the Centre of Excellence and are looking forward to creating a budding network of young researchers through our joint venture with IME(I). She added that the University's efforts are aligned with the Maritime India Vision of 2030 and also the Maritime Amrit Kaal Vision of 2047."

The event also saw a networking of industry and alumni. Capt. Kishore Sundaresan, impressed upon the industry attendees on the online MBA (Maritime Management) programme, specially designed for seafaring officers. IMU's Samudra Surabhi Campaign was also part of the discussion. The University drew attention to this platform through which alumni and industry stakeholders can contribute to various events and initiatives of the University drawing IT benefits and a good cause for their CSR budgets.

The event was wrapped up with a vote of thanks delivered by Cmde. (Dr.) Vivek Chawla (Retd) [IN]. With such favourable winds, Indian shipping can hope to have smoother sailing into the future.

Glimpses of the Event


Indian Maritime University
Indian Maritime University


Indian Maritime University
Indian Maritime University

THE INSTITUTE OF MARINE ENGINEERS (INDIA)

MUMBAI BRANCH

Hydraulics Workshop – Skill Upgradation Course (Online)

for Marine Engineers, Electro Techno Officers & Superintendents

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

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Time: 0900 hrs to 1700 hrs

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Industry News

Indian Register of Shipping Announces Leadership Appointments

The Indian Register of Shipping (IRS) announced new leadership appointments aiming to strength its management team.At a recent meeting, the Board of Directors approved the appointment of **Mr. P.K. Mishra** as Managing Director and **Mr. T.K. Sahu** as Joint Managing Director, effective August 1, 2024.

Mr. P.K. Mishra has been with the organisation for 26 years and previously served as Joint Managing Director. He brings with him a wealth of experience and a deep understanding of the maritime industry. His vision and leadership skills are expected to drive IRS to new heights, continuing the legacy of excellence and innovation.

Mr. T.K. Sahu will take on the role of Joint Managing Director, having held several key positions over his 22-year tenure with the organisation. His technical expertise and strategic approach will enhance the leadership team, ensuring a smooth transition and continued growth for IRS.

Prior to Mr. P.K. Mishra, **Mr. Vijay Arora** was the MD of IRS. He has completed 34 long years in IRS and made invaluable contribution to the organisation.

"We are excited about the future with Mr. P.K. Mishra and Mr. T.K. Sahu at the helm," said Mr. Arun Sharma, Executive Chairman. "Their combined experience and dedication to the maritime sector will undoubtedly steer IRS towards greater success. These leadership appointments mark a new chapter in the organisation's journey, and we look forward to continued success under the new leadership.'

Mr. P.K. Mishra

Mr. T.K. Sahu

The Institute of Marine Engineers (India) extends its best wishes to the new leaders for their future endeavours.

Source: IRS

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Maritime Trainers Guild- Foundation Day Celebration

The Foundation Day celebration of the Maritime Trainers Guild on 3rd August 2024, at MCA-BKC, was a landmark event underscoring the theme "Adapting to Disruptive Changes in Maritime Education and Training."

The occasion was graced by the esteemed Chief Guest, **Shri. Shyam Jagannathan (IAS),** Director General of Shipping, adding a distinguished presence to the event.

Capt. Kamal Chadha (General Secretary, MTG) welcomed all the members, dignitaries and Chief Guest, Shri Shyam Jaganathan, IAS. **Capt. Prabhat Nigam** (President, MTG) discussed the brief history and the journey of MTG from 2011. He highlighted the need for synchronising the NEP 2020 with MET and informed the audience the importance of MOOC – SWAYAM & NPTEL.

This was followed by an inspiring address by Shri. Shyam Jagannathan (IAS). He spoke on the significance of adapting to rapid technological changes and their impact on maritime education. His remarks set the tone for the day's discussions, emphasising the need for continuous evolution in training methodologies and examination systems to align with industry advancements.

Mr. Rabindra Sah, Chief Technology Officer, Indian Register of Shipping delivered a compelling expert talk on the role of Artificial Intelligence (AI) in maritime education and training. He explored various AI applications such as advanced simulation systems, data-driven decision-making, and personalised learning paths. Mr. Sah's talk highlighted how AI can enhance training effectiveness, improve learner engagement, and better prepare maritime professionals for future challenges.

Panel Discussion 1: "Developing the Future-Ready Curriculum"

Moderator: Prof. (Capt.) Sundaresan Kishore, Professor of Practice, IMU Chennai

Panelists: Capt. Subhendu Hati, Vice Pricipal, SIMS, Lonavala; **Mr. Sunil Kumar,** CTO & Head – T&A, The Great Eastern Shipping Co. Ltd.; **Capt. Ruchin C Dayal,** CEO, Edot Solutions and President, AMS, UK.

This panel discussion addressed the critical issue of designing curricula that are aligned with future maritime industry needs. Prof. (Capt.) Kishore moderated the session, guiding the panelists through discussions on integrating technological advancements, industry trends, and practical competencies into maritime education programmes. The discussion emphasised the importance of flexibility and continuous curriculum updates to ensure relevance in a rapidly changing environment.

Panel Discussion 2: "Equipping the Trainers & Assessors"

Moderator: Mr. David Birwadkar, Consultant, The Great Eastern Shipping Co. Ltd.

Panelists: Capt. M.C. Yadav, Director, Maritime Education and Training, FOSMA; **Mr. Pawan Kapoor,** Group Head, ISF Maritime Services Pvt. Ltd.; **Capt. H Kumar,** Founder & CEO, Seaskills Maritime Academy; **Ms. Shilpa B.,** Surveyor, Indian Register of Shipping.

The second panel focused on strategies for enhancing the capabilities of trainers and assessors. Moderated by Mr. David Birwadkar, the discussion covered key topics such as professional development, integrating new technologies into training, and establishing effective assessment practices. The panelists provided practical insights on ensuring that trainers and assessors are well-prepared to meet the evolving demands of the maritime sector.

The Foundation Day celebration of the Maritime Trainers Guild was a successful event that fostered meaningful dialogue on adapting to disruptive changes in maritime education and training. The presence of Shri Shyam Jagannathan (IAS) added a notable dimension to the event, and the expert talk along with the panel discussions provided valuable perspectives on current and future challenges.

The event's focus on AI integration and curriculum development, coupled with strategies for empowering trainers and assessors, highlighted the Guild's commitment to advancing maritime education. Attendees left with enhanced knowledge and a clear understanding of the steps needed to navigate the evolving landscape of maritime training.

Glimpses Of The Event


Foundation Day
Anniversary Celebration
ADAPTING TO DISRUPTIVE CHANGES
IN MARITIME EDUCATION AND TRAINING


Foundation Day
Anniversary Celebration
ADAPTING TO DISRUPTIVE CHANGES
IN MARITIME EDUCATION AND TRAINING


Foundation Day


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	D. G. Approved Courses	August 2024	September 2024
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2.	Engine Room Simulator - Operational Level	28 - 30	02 - 04, 15 - 16
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4.	Refresher And Updating Training Course For All Engineers	28-30	23 - 25

Value Added Courses

	Value Added Courses	August 2024	September 2024
1.	Practical Marine Electrical (Basic) - Module 1	05 - 09, 20 - 24	02 - 06
2.	Practical Marine Electrical (Advance) - Module 2	12 - 14	02 - 04
3.	Electronics for Marine Engineers - Module 4	01 - 02, 28 - 29	05 - 06
4.	Instrumentation, Process Control & Programmable Logic Controllers - Module 5 & 6	05 - 09	09 - 13, 23 - 27
5.	Auxiliary Diesel Engine and Maintenance Course	05 - 09, 20 - 24	02 - 06, 09 - 13, 16 - 20, 23 - 27
6.	Bridge Manouervering & Engine Control - Management Level	12 - 14	16 - 18
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8.	Hydraulics for Engineers - Advanced	05 - 09	09 - 13
9.	Maritime Crew Resource Management (MCRM)- CAE Accredited	05 - 08, 20 - 23	02 - 05, 09 - 12, 16 - 19 30 - 04
10.	Machinery Maintenance - Skill Enhancement - Module 2	05 - 09	09 - 13
11.	Machinery Maintenance - Skill Enhancement - Module 3	05 - 08, 20 - 23	09 - 12, 23 - 26, 30 - 04
12.	Machinery Maintenance - Skill Enhancement - Module 4	20 - 22, 28 - 30	02 - 04, 16 - 18

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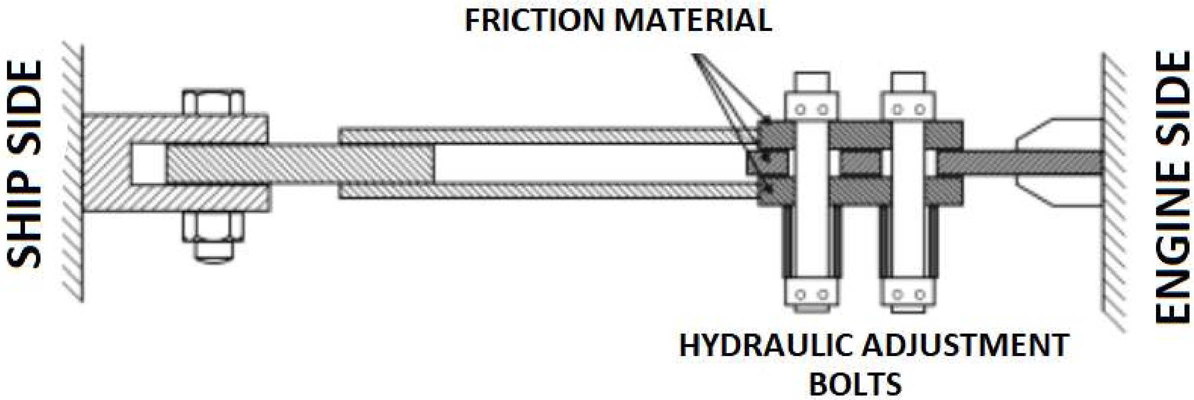
Evolution of Top (Transverse) Bracing



FRICTION TYPE TOP BRACING (Plan view)

Vibration is a very complex subject, and becomes more complex in the marine context. There are many more variables to contend with in this environment than in others. Vibration can be, at best, roughly estimated by empirical formulae, and sister-ship data, but often after the sea-trials, some changes need to be introduced the system. Some MAN B&W engines have a provision to include balancer wheel(s) in the chain drive as a retro-fit option. These wheels are used to reduce out-of-balance forces to an acceptable limit. Note that these balancer wheels are not a part of standard engine supply.

Inclusion of a top bracing is an option used to reduce vibration. The mechanical top bracing were the first to be introduced. It provides stiff connections between the engine and the hull. The top bracing stiffener consists of a double bar tightened with friction shims at each end of the mounting positions. The friction shims allow the top bracing stiffener to move in case of displacements caused by thermal expansion of the engine or different loading conditions of the vessel. Furthermore, the tightening is made with a well-defined force on the friction shims, using disc springs, to prevent overloading of the system in case of an excessive vibration level.

As an improvement, a hydraulic transverse bracing was introduced. More recently, the two-way hydraulic top bracing has been designed to provided for vibration attenuation of a marine engine particularly, to absorb the lateral vibration generated by the running of the main engine, and in particular, the lateral vibration generated during resonance. It reduces the amplitude of the vibration to minimize the vibration transmitted to the hull in case, when the vibration of the hull and the engine occurs at a specific RPM, the top bracing dampens the vibration transmitted from the hull to the engine and the vibration transmitted from the engine to the hull.

Top bracing detached from hull

Ruptured lube oil pipe in Chain Casing

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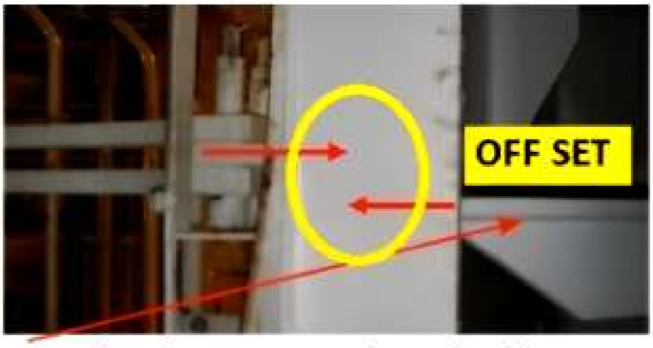
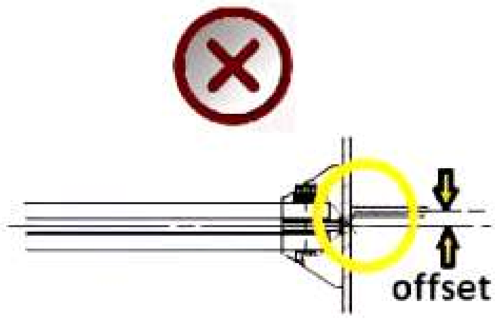


Top bracing support found offset



Bracing support offset with Top bracing

Bracing support in-line with Top bracing

Excerpts from an article from Executive Ship Management News Bulletin (Dec 2020) about the consequences of top bracing failure are as follows:

In one instance during manoeuvring the ship staff noticed a sudden drop in lube oil pressure. The lube oil filter had traces of white metal, which lead to a detailed inspection of the crankcase. It was found that a lube oil pipe in the chain casing had ruptured. In another instance the A-Frame in the chain casing was found cracked.

Another important fabrication detail that is overlooked is the alignment of the top bracing and the associated support framing as can be seen in the illustration below. Any off set will result in an unbalanced couple, which will create a shear stress on the weld joint ultimately resulting in cracks.

The PMS must include routine checks on the Transverse bracing in accordance with the maker's recommendations. In case there are no specific instructions the following routines may be followed:

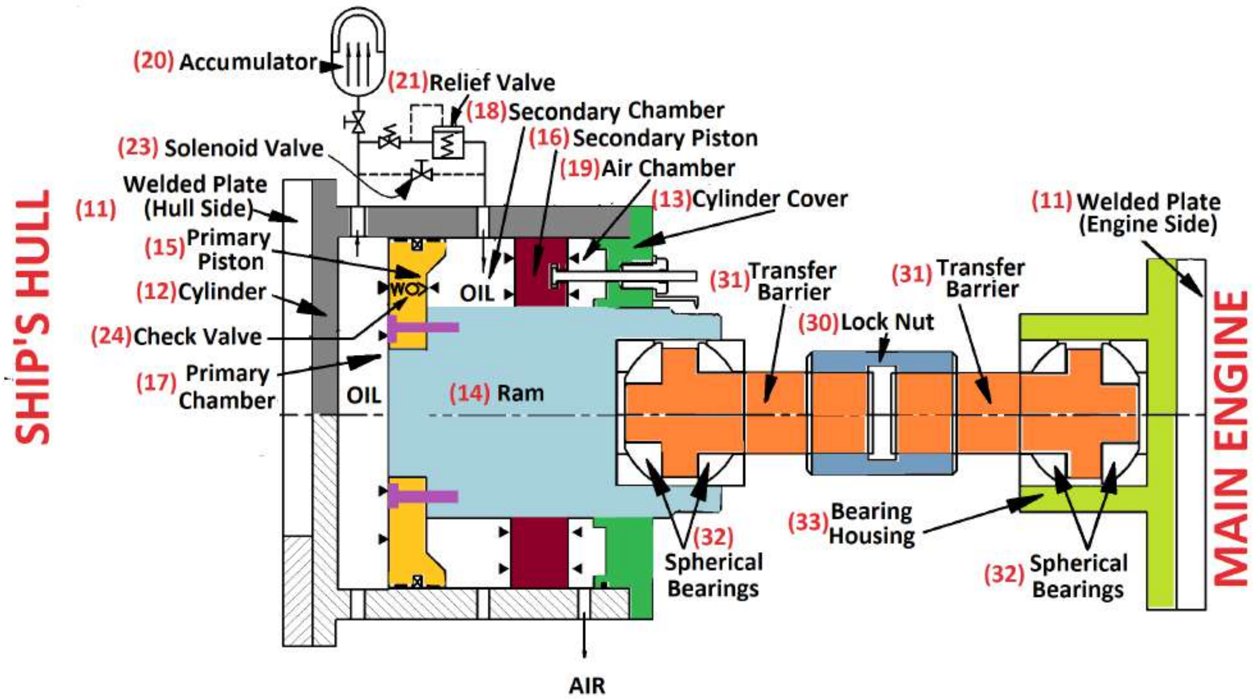
1. Install new friction disc on each top bracing and check tightness of the bolts at intervals of 5 years, as per maker's recommendation.
2. Visual inspection of any cracks and tightness check of top bracing bolts as per recommended torque for the engine side as well as hull side shall be conducted. Relative movements exceeding 0.02 mm between top bracing and fastening plate (casing side or girder) should be checked by dial gauge and bolts tightened at higher torque as recommended by maker.
3. Whilst engine is running, check oil pressure and leakages daily in hydraulic top bracing. Hydraulic cylinders are to be overhauled (including oil seal renewal) on yearly basis.

As an improvement to the one-way hydraulic brace, a two-way hydraulic bracing has been developed. The two-way hydraulic tower bracing for damping vibration of a ship engine is installed between the ship's engine and the ship's hull. Please refer to the illustration below.

The bracing comprises of a cylinder (12) having one end attached to the hull, a ram (14) housed in the cylinder (12). The primary piston (15) bolted to one end of the ram, the secondary piston (16) positioned between the cylinder inner walls, such that the movement of the secondary piston (16) is independent of the movement of the primary piston (15). A primary chamber (17), a secondary chamber (18) and an air chamber (19) partitioned by the ram, and the primary and secondary pistons inside the cylinder. A pressure accumulator (20) connected to the primary chamber, a check valve (24) installed in the primary piston (15), a filling valve (not shown) for supplementing hydraulic oil and air pressure to the respective chambers. There are two spherical bearing housings (33), one installed in the ram (14) and the other at the welded plate (11). Two spherical bearings (32) are installed in these housings.

The transfer barrier (31) is inserted into the bearing housing installed at the end of the ram and the welded pad (11) on the engine side. The two transfer barriers (31) are connected with a lock nut (30) and the arrangement acts as a turn-buckle whereby the distance between the engine and the hull can be accurately adjusted.

The advantage of installing spherical bearings in both directions, is that even if the top bracing is installed on



only ONE side of the engine, the tensile and compressive forces acting between the hull and the engine can be absorbed in both directions

A relief valve (21) is installed between the primary chamber (17) and the secondary chamber (18). The relief valve (21) serves to restrict the operating pressure by opening at a pre-set pressure. The check valve (24) installed inside the primary piston (15) permits a uni-directional oil flow from the secondary chamber (18) to the primary chamber (17)

In case of unfavourable conditions, whenever a pre-set vibration level is attained in the hull and/or the engine, the solenoid valve (23) provided between the primary chamber (17) and the secondary chamber (18) opens, and releases the high pressure of the primary chamber (17) to the secondary chamber (18) thus protecting the top bracing from excessive pressure. The accumulator (20) acts as a buffer, to maintain the oil pressure in the system at a constant value, storing oil or releasing oil as the case demanded.

When the Hull and Engine close in, (brace in compression) the pressure in the primary chamber increases. The relief valve (21) lifts and releases excess hydraulic pressure from primary chamber (17) to the secondary chamber (18) causing the secondary piston (16) to move toward the engine side. The pressures in the secondary chamber (18) and the air chamber (19) equalise each other.

When the Hull and Engine move apart (brace in tension), the hydraulic pressure in the primary cylinder is reduced. At the same time the compressed air in the air chamber forces the secondary piston toward the Hull side. The oil flows through the NR Valve (24) from the secondary chamber to the primary chamber and the hydraulic pressure in the primary and secondary chambers are equalised.

Sometimes at certain engine speeds, the hull vibrations are excessive and should not be transferred to the engine. In such cases, air supply to the air chamber is blocked; the solenoid valve drains oil from the primary chamber. The secondary piston moves towards the Engine side until the hydraulic pressure in the primary and secondary chambers equalize. As a result, the vibration of the hull is not transmitted to the engine to protect it.

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 Cl II certificate, serving with Hongkong-Borneo Shipping Company, then MEO Cl 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.

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Why Do Piston Rings Break Very Often and Liners Wear Excessively on Some Engines?

Dew Point, Relative Humidity and Main Engine Air Inlet Temperatures - The Existence of a Symbiotic Relationship if Closely Monitored and Controlled

The below narrative / findings have been one of several pet projects of mine from my Second Engineer days. One could call it an extended 34 year (private) study of the whys, whens and wherefores of a singular phenomenon - ***why do piston rings break very often on some engines and why do liners wear excessively on some engines?*** What can I, as Chief Engineer, do to improve conditions, alleviate the problem? Can I get to the root of the problem? Only practical observations are dealt with here.

During the initial part of my career, I had read several articles about what I am about to discuss, but could not find the necessary graphs to imterpolate. Must have been sometime around 1987 that I found an old set of graphs, which are given well below.

This entire narrative is meant more for the sailing engineer than anybody else.

So started, from 1973, a venture that has taken me into the scavenge spaces countless times of a vast array of Main Engines to inspect pistons, their rings, the deposit behind the rings (to the extent visible), the condition of the rings, the liner lubrication, the percentage of choking of scavenge ports on loop scavenged engines, the checks on fuel injectors to find probable cause etc.

At every decarbonisation, I would find myself observing each detail closely - how much of residue is accumulated on top of the liner (which needs to be cleaned and removed before lifting a piston), what is its composition (roughly, to my limited knowledge), how many rings are stuck or broken, how much of deposit behind the rings in the grooves, how does it compare to what I had seen through a scavenge space inspection, how had the unit performed during operation and a myriad other observations.

Over a period of years, with a lot of practical observations and studying articles written by experts in the field, I was able to list, in my own mind, some of the factors that caused piston rings to deteriorate - break or get stuck - and liners to wear faster than the norm. Reading several scholarly articles, I could piece together the probable causes of ring breakage and liner wear, but there was no clarity nor definitiveness.

Below, I am taking up one of the factors, an ingredient that has a decisive effect on ring failures and liners' excessive wear.

One of the very serious repercussions of uncontrolled quality / temperature of air into the Main Engine, is the steady build up of thick, sludge like compounds behind piston rings, which inhibits the expansion and contraction of the piston rings in the cylinder, causing them to either break or get stuck. Thus, they become ineffective.

One of the keen observations that a Second Engineer should be interested in, is at the time of removal of the piston. As the piston is lifted and the first ring exits the liner proper, the spring action of the ring should be observed closely. If in good condition, the ring will expand fast. If the spring action is sluggish, it will move - spring out - very little. If stuck or broken, there will be no movement. The same observation goes for each succeeding ring.

This will, necessarily, need to turn your focus on to their causes.

Stuck piston rings

Broken or stuck piston rings mean that, as the rings are not performing their jobs, a series of cumulatively deteriorating events take place in the particular cylinder of the Main Engine.

1. The Compression Pressure inside the cylinder drops sharply, as the piston rings are not sealing the combustion spaces well enough, causing pressure built up during combustion to leak past the rings.
2. 'Indicator diagrams', especially out-of-phase "Draw Cards" show the actual compression in each cylinder, the point of injection and the boost that the burning fuel gives to the combustion.

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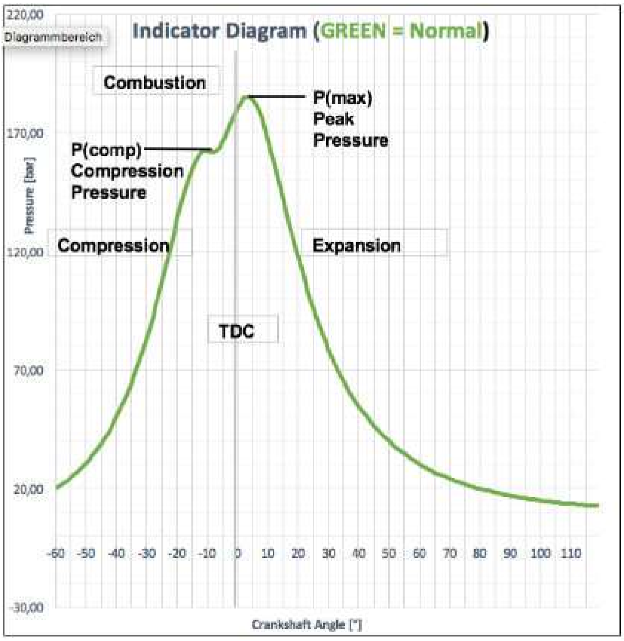
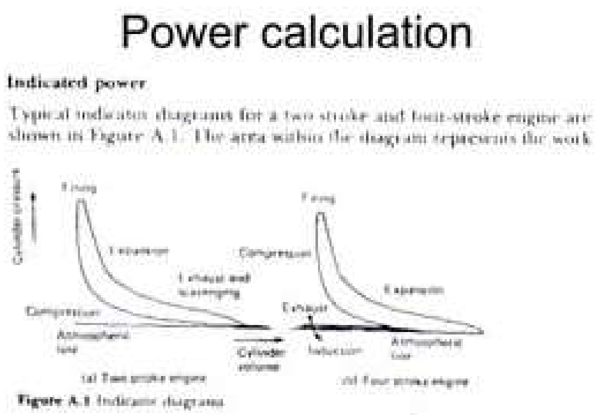



Power calculation

Indicated power

Typical indicator diagrams for a two stroke and four-stroke engine are shown in Figure A.1. The area within the diagram represents the work

Figure A.1 Indicator diagrams

3. As Compression Pressure drops, (due to stuck or broken rings), the ignition temperature of the injected fuel oil may not have been reached. Although the fuel may be nearly atomised and injected, all the micro droplets may not get ignited. Incomplete combustion results. If this condition is allowed to deteriorate, the exhaust gas blackens, combustion pressure fluctuations take place between cylinders, the engine rpm fluctuates and the turbochargers start surging.
4. (This effect is less evident - or takes a longer time to become evident - in Constant Pressure Exhausting - which is closely associated with 'Uniflow Scavenging. The effect is more quickly discernible with 'Pulse System of Exhausting' - which is closely associated with 'Loop Scavenging')
5. Another consequence is the leakage of hot exhaust gases past the rings, causing what is termed a 'blowpast', causing a scavenge fire. The accumulated oil and sludge in the under piston spaces start burning. If this is not immediately brought under control, the 'scavenge fire' can spread to other under piston spaces.

To control this before it spreads, the engine rpm is brought down, the fuel for that particular unit is cut off and the cylinder lubrication is increased (to offset the dryness of the cylinder liner, as the scavenge fire would have burnt the light coating of oil). The dryness of the cylinder at the time of the 'blowpast', unless additionally lubrricated, can start with 'micro seizures' of rings to liners. The worst case scenario is when the piston is unable to move because it has seized.

It is best to rectify this condition before proceeding.

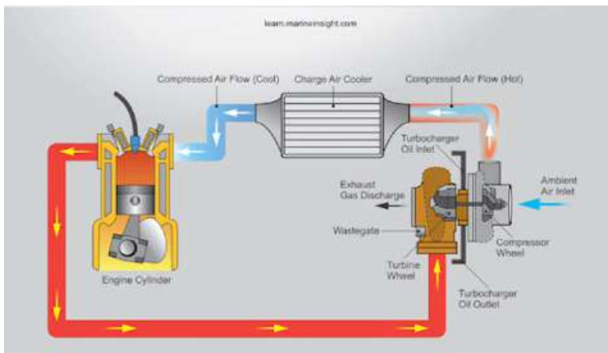
So where does air quality come in to minimise or prevent the above condition of rings from prevailing?

Let us take a quick look at the step by step change in air parameters:

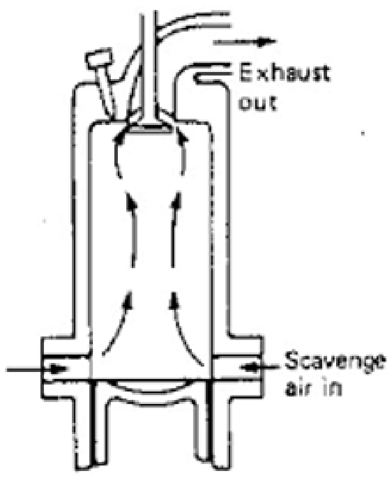
Engine Room air at an average temperature of 45 degrees C. Humidity is dependent on what it is outside the ship on that day, mostly high humidity. Is sucked in by the turbocharger air side compressor.

Engine Room Air – Sucked in by the Turbocharger Air Side Compressor - Average 45 deg C - Mostly High Humidity - Slightly above atmospheric pressure of 1.01325 bar. (Slightly above atmospheric, as the Engine Room Blowers have pressurised the air - to a small extent - that is sucked in by the Turbochargers).

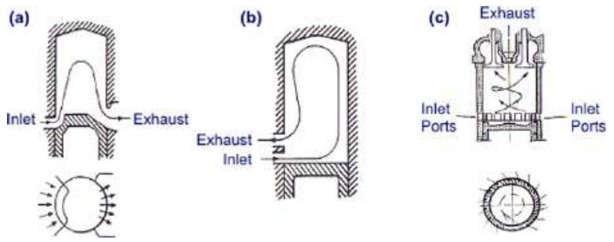
In Turbocharger Air Side Compressor - Pressure increases to around 2.0 to 2.5 bar on average. Modern engines increase it much more, to maybe 3 or 4 bar - Temperature increases to around 140 ~ 150 deg C -



Basics



Uniflow Scavenging



The left and centre images apply for 2 stroke engines. Loop scavenging is shown.

A New Air Cooler - Air Side is Red Coloured (Fins)
Air Flows Top to Bottom
Flanges on the Left are for Cooling Water (Tubes)
Cooling Water Flows from the lower right SW inlet to the upper left SW outlet in this cooler

Image (forefront) shows the tubes through which cooling water flows
A clear division can be seen between the upper and lower bank of tubes, indicating a separation plate in the cooler cover and the evidence of a two-pass cooler.

An Air Cooler After a Few Years of Use -
Note Deterioration of Fins due to uncontrolled Water Vapour. Fins of Aluminium or Copper Finally Turn to Powder at the touch of a finger, if Not Looked After or Badly Maintained

velocity has increased tremendously - flows to the Air Cooler.

In the Air Cooler - Cooling Water flow through tubes - In old ships sea water is the cooling medium - in most ships built after 1985, fresh water is the cooling medium - maybe a single pass cooler but, mostly, double pass coolers. Some ships have four pass coolers.

Assuming a two pass horizontal, finned cooler, the cooling water enters the bottom half of the air cooler, cools the air surrounding those tubes, reaches the other end of the air cooler, reaches the top half section of the tubes, changes direction and flows backwards to the outlet connection.

After changing direction, the cooling water - which has increased in temperature - flows through the top bank of tubes, which are surrounded by the hot air (140 ~ 150 deg C).

The top bank of the air cooler is cooled by the slightly heated up cooling water, flowing at a lesser velocity and pressure (which is lost in its transit through the bottom half of the cooler, filling the back cover of the cooler and reversing direction to flow through the top tube bank). The lesser velocity of the water also allows more heat to be absorbed from the hot air surrounding the tubes. By the time this hot air reaches mid way of the air cooler, it has dropped from 140 deg C to around 60 deg C.

The bottom bank of the air cooler now contains air that has cooled to around 60 deg C, being cooled by the colder water (assume to be around 28 deg C), which has just entered the air cooler. If effective cooling has taken place, the outlet temperature of air, on exiting the air cooler and entering the scavenge space will be around 35 deg C.

This outlet temperature of air (from the cooler) can be controlled to maintain any temperature above 35 deg C, by throttling the Cooling Water outlet valve enough to give the desired temperature.

Water flows through the tubes and absorbs the heat from the air that surrounds the cooling tubes.

The hot and humid air at a (relatively) high pressure passes through the Air Cooler and cools to (anywhere between) about 35 deg C to 55 deg C, depending on the cooling water valve settings that can regulate the temperatures. The pressure drops slightly (because of passing through a rather large sized air cooler. The velocity also drops slightly for the same reason.

Going slightly out of the narrative, but having everything to do with air coolers, is the subject of the manometer fitted on air coolers. It should always be working. In the (engine) stopped condition, the levels should be equal on both sides. The air or gas cock should be full open when running. The difference in levels (h) - at full speed running of the engine - in the manometer will determine the condition or quantity of choking of the air cooler. Good condition Air Coolers - with a Scavenge Pressure of around 2 bar - will have a manometer difference of around 140 mm or as low as 80 mm. The benchmark should be noted when the Air Cooler is fitted after a through chemical cleaning ashore. The higher the turbocharger output, the higher the manometer level difference.

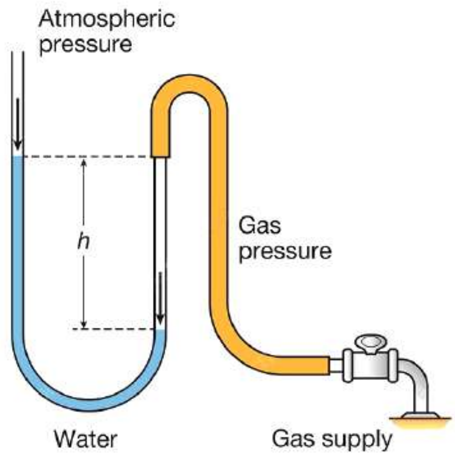
The lower the manometer difference (h), the cleaner the air cooler.

The higher the manometer level difference (h), the more the chances of the Air Cooler being choked. May require *in situ* cleaning or change.

Choked air coolers reduces the quantity of air that is sent into the engine. At one stage, turbochargers will start to surge, because of the back pressure on the compressor.

To get back to the main narrative.

The cooled air enters the scavenge space, which is constantly at around 2 bar pressure. Scavenge spaces



of Newer types of engines are known to have between 3 and 4 bar.

But the humidity in the air fluctuates wildly throughout if unregulated, being totally dependent on the air temperature achieved by the cooling water valves' settings.

Something known as ***"Dew Point"*** becomes very important from this point on.

Two definitions of "Dew Point":

"The temperature at which air can hold no more water vapour. Below this temperature the water comes out of the air in the form of drops."

"The dew point is **the temperature the air needs to be cooled to (at constant pressure) in order to achieve a relative humidity (RH) of 100%**. At this point the air cannot hold more water in the gas form."

What does 'Dew Point' have to do with scavenge air being sent into the engine?

Importance of Dew Point at Different Scavenge Pressures & The +4 Deg C Method

This outlet temperature can be controlled to maintain any temperature above 35 deg C, by throttling the outlet valve enough to give the desired temperature.

(In colder climates, far lesser temperatures are achieved.)

Water flows through the tubes and absorbs the heat from the air that surrounds the cooling tubes.

If the temperature of air is below the 'dew point', there is a high possibility of a heavy concentration of water droplets, in the form of anything between micro droplets to larger sized droplets, being carried over into the Main Engine.

This air - whatever be its temperature - enters each cylinder of the engine (depending on its timing cycle) through the scavenge ports and performs two functions. It drives away the exhaust gases of the previous stroke (jet's call it 'the exhaust period') and - as per the timing - fills the cylinder with clean, fresh, pressurised air (let's call it 'the scavenging period').

With the piston moving up, the scavenge ports close and the air inside gets compressed fast. Temperatures rise quickly to 350 to 400 deg C.

Fuel is injected, combustion takes place.

Meanwhile, the engine's cylinder liner's outer surface - which is in contact with the fresh water being circulated - enters the jacket spaces at around 65 deeg C and exits the liner at temperatures between 80 deg C to 90 deg C, because of the heat being carried away by the flowing cooling water. This CW temperature should not be allowed to go beyond 90 deg C, as it is possible for this water to turn to steam and 'air' lock the flow of CW.

The engine's cylinder liner inner surface can be anywhere between 300> deg at the top and around 100> deg C near the scavenge ports.

Cylinder lubrication is in full flow, the entire liner is coated again and again with cylinder oil, the motion of the piston and the piston rings spreading the oil across the surface of the liner and scraping it downwards. Cylinder lubrication is supposed to be kept at the levels suggested by the manufacturer - normally between 0.8 to 0.9 grams / bhp hr. But most Chief Engineers keep it slightly higher.

Over lubrication, in combination with moisture in the air, increases the chances of piston ring failures.

Under lubrication first causes micro seizures, definitely leading to a cracked liner, cracked piston or both or a piston seizure - maybe even a 'twisted' crank shaft.

Thankfully, nowadays, modern day cylinder lubrication systems - like 'Alpha Lubricators' - precalculate the quantity of cylinder oil to be delivered at each stroke using mocroprocessors, taking the responsibility out of the hands of the Chief Engineer. But, they can be tampered with. Cylinder oil leaks on the line may also deteriorate the lubrication process.

With each stroke, combustion takes place.

Depending on many important factors - type of scavenging, fuel injectors' condition, atomisation of the fuel oil issuing forth from the fuel injector, penetration of the atomised fuel into all segments of the combustion chamber, the mixing of each microdrop of fuel with the hot air, efficiency of combustion is established.

The less efficient the combustion, the more the physical debris of the remnants of combustion. The less efficient the scavenging - example 'loop' scavenging - the more the debris left behind.

This debris is in the form of unburnt fuel, hydrocarbons, carbon residue, other chemicals like sodium, potassium, vanadium and the like. They are in very small quantities, to be sure, but each stroke brings that little bit more.

Initially, this debris gets soaked up by the cylinder oil and gets scraped down to the underpiston spaces. In the case of loop scavenged engines, they also accumulate in the

Over lubrication

scavenge ports and choke the ports, as well as get scraped down to the under piston spaces.

The consequence of scavenge ports getting choked, mean less quantities of air enters the cylinder, which in turn, affects combustion and shows itself as higher exhaust temperatures (due to after burning) and reduced compression pressures, if cards are taken.

The presence of water droplets or microdroplets in this scavenge air and the byproducts of combustion complicates things. The cylinder oil, the water particles and the byproducts of combustion now form a paste, which the piston rings find a little more difficult to scrape down.

This paste then starts getting accumulated and migrates towards the space behind the piston ring gradually and finds a resting place inside the groove of the piston, behind the piston ring.

Air mixed with Water + Cylinder Oil + Byproducts = Paste

The basic function of the piston ring is to seal the cylinder - seal it when compression is taking place, seal it when combustion takes place.

The piston ring also expands outwards and contracts inwards in its groove during each stroke, due to its spring action and the gas pressure behind the piston ring when the groove is clean.

If one were to calibrate an 800 mm diameter cylinder liner after 5 years or so, the top three readings will - or should be - be close to 803 mm. The bottom two will be close to 800.30, 800.50mm. The piston rings expand and contract due to the diameter differences.

One can exaggerate and think of it as an inverted cone.

When the piston is at the bottom most part of the cylinder liner, the piston ring is compressed into its groove in the piston because of the lesser diameter of the cylinder liner at the bottom. If deposits have filled the ring groove behind the piston ring, the ring has no space to contract and either breaks or sticks. Maximum breakages of rings takes place at the bottom third of the cylinder liner. (Which is why butt clearances of new rings are checked in the bottom third of the lner, as far below as possible).

As the piston moves up in the cylinder liner, the diameter becomes larger and the piston ring expands to fit into this diameter.

Thus, the piston ring expands and contracts, keeping itself partially within the groove or returns back more into the piston groove.

Air Mixed with Water + Cylinder Oil + Byproducts = Paste

This paste gradually accumulates behind the piston ring, in the 'Back Clearance', within the piston groove.

With the heat of repeated combustion and the heat of the piston, it forms a hard crust which, in turn, prevents or reduces the in and out movement of the piston ring.

In the event of over lubrication (cylinder oil), thee paste formed is likely to remain in the form of thick paste and accumulate behind the piston ring.

If the scavenge air had been laden with too much moisture, the paste formed in the groove behind the piston ring will harden fast and accumulate.

Eventually, the piston ring either gets stuck or breaks, thereby losing its function of why it was assembled there in the first place.

The more the number of stuck or broken piston rings on a piston, compression pressure reduces, combustion is compromised, hot combustion gases leak past the piston rings in what is termed a 'blow past', leading to scavenge fires, turbochargers surging. Worst case scenarios - piston sticks in the cylinder liner causing a 'twisted' crankshaft - scavenge fires become uncontrollable leading to crankcase explosions.

It takes a while of continuous up and down strokes of the engine for this paste to either get scraped down or move behind the rings into the groove.

While this paste (along with the debris) is on the liner, with the rings moving up and down over it, the effect is similar to grinding paste being used. Liner wear increases.

Many engines are prone to excessive liner wear, mostly because of the above factor. I have noted this on two different types of engines - Mitsubishi B&W and Sulzer RTA Flex engines.

Unfortunately, I did not stay long enough on the Sulzer RT Flex engine, long enough to investigate thoroughly.

But I did have a measure of success on the B&W engines, using methods I have discussed below. Despite the grumbling of the Second Engineer, we pulled out two units twice within an eight month period (they were only due after another three years or so, with the present running hours) to check liner wear and see if it had reduced. They had.

Air Mixed with Water + Cylinder Oil + Byproducts = Paste

(A very simplified equation)

Take out the 'Water' component.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"You Get to Make Your Own Choices, but You Do Not Get to Choose Your Consequences"

"It was the best of times, it was the worst of times, it was the age of wisdom, it was the age of foolishness, it was the epoch of belief, it was the epoch of incredulity, it was the season of Light, it was the season of Darkness, it was the spring of hope, it was the winter of despair, we had everything before us, we had nothing before us, ..."

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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On behalf of the Organising Committee, WMTC 2024

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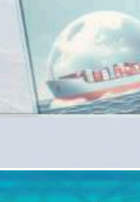

PAPERS

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.

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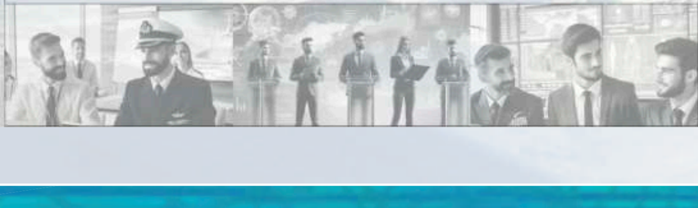


Send in 'dry air', devoid of water particles.

This is where the correct settings of the air cooler cooling water valves come in. If controlled, 95% of the water present in the air can be eliminated from entering the engine spaces. The air cooler drains should be kept clear, so that the water drains out.

The outlet temperature of the air leaving the air cooler and entering the engine should be kept at a temperature slightly above the pressure dew point (about +4 deg C above), to ensure dry air is sent into the engine.

The pressure dew point means the temperature to which the compressed air can be cooled without condensate precipitating. The pressure dew point depends on the final compression pressure. If the pressure drops, the pressure dew point drops with it.

Example 1: Intake air

- ***relative atmospheric humidity j = 70 %***
- ***inlet temperature T=35°C***

Example 2

Intake air

- ***relative atmospheric humidity j = 80 %***
- ***inlet temperature T=35°C***

Compressed air

- ***Final compression pressure pop=8 bar***

Þ The pressure dew point is approx. 73° C

Example 2 Intake air

- ***relative atmospheric humidity j = 80 %***
- ***inlet temperature T=35°C***

Compressed air

- ***Final compression pressure pop=8 bar***

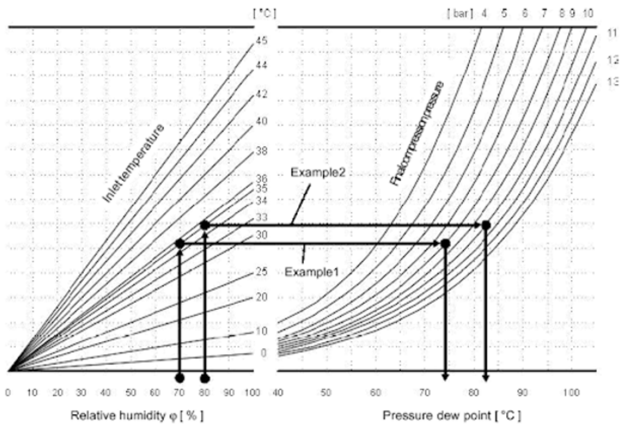
Þ The pressure dew point is approx. 73° C

- ***Final compression pressure pop=10 bar***

Þ The pressure dew point is approx. 82° C

(Above calculations are only as an example, as the pressures and temperatuures do not match the engines we are talking about. But relevant in the method of using the graph.)

The instruments needed to find the pressure dew point are a wet and dry bulb thermometer (hygrometer), and a pressure gauge fitted on the scavenge trunking and the



relevant graphs. (The other various thermometers and pressure gauges help in the settings needed).

Graph 1 is on top.

Graph 2 is below.

Suppose 'Dry Bulb' Temperature (on the 'Y' axis) shows 44 deg C

(Graph 2)

Assume 'Wet Bulb' Temperature (as on the curved lines reaching the X axis) shows 30 deg C

Where the two lines meet, the 'Relative Humidity' is (approximately) 40%.

Actual Scavenge Air Pressure reads 2 Bar.

Draw a vertical (from the meeting point of 40% Relative Humidity in Graph 2) to meet the Scavenge Pressure lines in Graph 1.

A Horizontal extension to the Y axis shows 45 degrees C. This is the "Dew Point'.

Add 4 degrees more and maintain air inlet temperature at 49 ~ 50 degrees C and you are assured of dry air entering the engine.

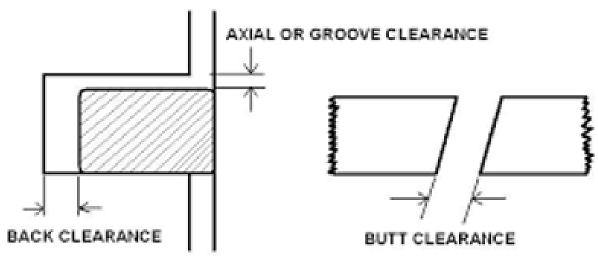
It is often wrongly assumed that the cooler the air that is sent into the engine, all the better for the engine.

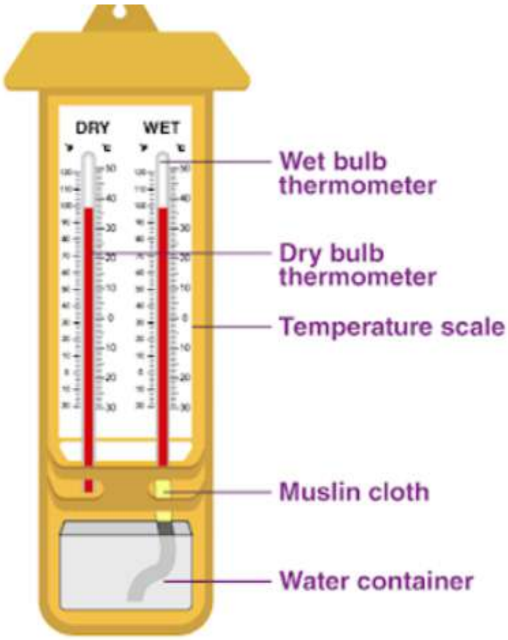
Even with cool air, the humidity is important and must be controlled.

Starting from around 1990 or so, I have used this graph and maintained air cooler temperatures as per the graphs. On ships where I have served for longer periods, I was physically able to confirm the efficacy of maintaining the air cooler temperatures.

One of the consequences of correctly maintaining the engine inlet air slightly above dew point will be directly seen with the 'Air Coolers' Drain Tank' filling up fast.

Dew Point + 4 degrees is sufficient to drastically reduce the quantity of water entering the engine. If this air is maintained at a higher temperature than this, engine exhaust temperatures shoot up, to the detriment of the engine.





Wet and Dry Bulb Thermometer
or

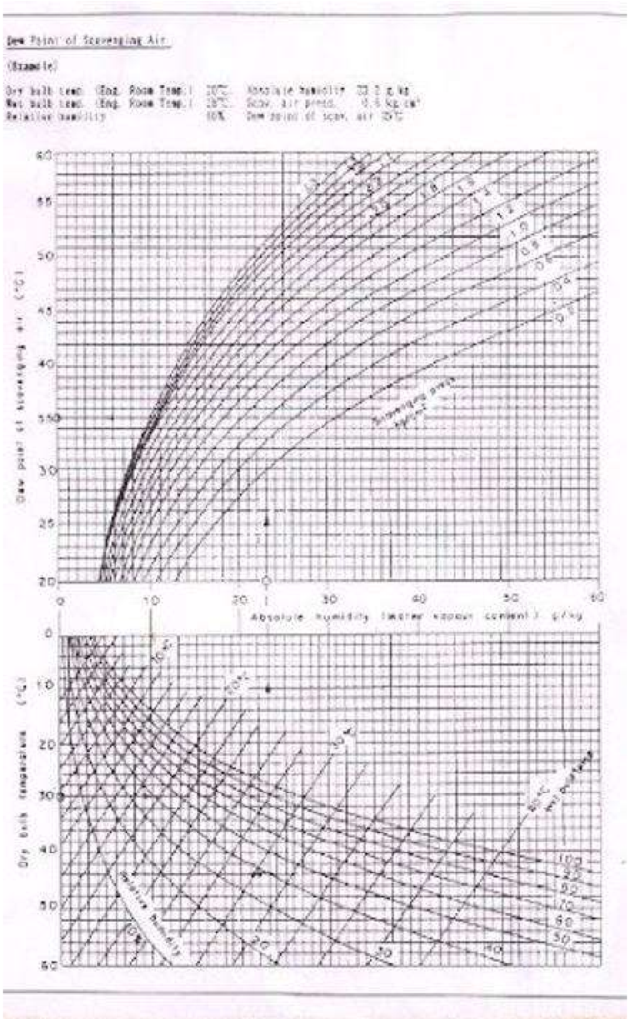
Sling type psychrometer (obsolete?)

Any Number of Digital Hygrometers are Available Today

On my ships, this adjustment to the air cooler cooling water outlet valve was done at 10 am and 10 pm daily, based on the observed 'dew point'.

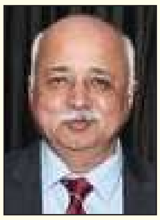
In the shipping world of 2023, I am certain that the graphs shown above are anachronistic and nobody will even think of using it. More sophisticated calculators are available, where you input two parameters and get a dew point at a particular pressure.

Is this line of thought in use or even prevalent? I am not sure.



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

Obituary

B.N.DAS (F 3464)

Shri Bhut Nath Das, was born on 18.05.1947, and did his matriculation in Jharia, and Pre-University and B.Sc (Part 1) from St. Xavier's College, Ranchi.

He then trained at DMET, passing out in 1969.

On passing out, he joined Scindia Steam Navigation Company, and sailed for many years, attaining MOT First Class (Motor) Certificate of Competency.

He was appointed on the staff of DMET as Engineer Officer, through UPSC, in 1985. He served in both Kolkata and Mumbai campuses. A holder of Extra First Class Certificate of Competency, he rose to be Deputy Director of MERI in 2002. He was retired on superannuation in 2007.

Thereafter, he served for a few years as Director, Seacom Marine Academy.

He had, in the past, been in the IMEI Kolkata Branch Executive Committee, and had actively engaged in and promoted all its events.

He had been suffering for some time from various health complications, and passed away on 16 July 2024 at Apollo Hospital, Kolkata. He leaves behind his wife, a son and a daughter.

May his soul rest in eternal peace.

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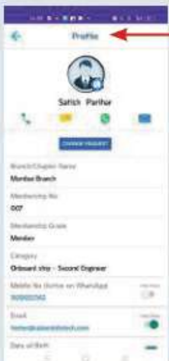

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भारत का अभिमान: वीरों की आवाज़

उठो जवानों, कुछ कर दिखाओ,
देश की शान बढ़ाओ।
तिरंगा ऊंचा लहराए,
हर दिल में जोश जगाओ।

वीरों की राह पे चलना है,
देश के लिए कुछ करना है।
संघर्ष से पीछे मत हटना,
भारत को और चमकाना है।

नयी सुबह का तुम हो उजाला,
देश का नाम तुमसे है।
एकता, साहस, और मेहनत से,
भारत को बुलंदियों तक पहुंचाना है।

हमारी आजादी की पहचान,
तुम हो भारत का अभिमान।
मिट्टी से रिश्ता निभाओ,
देशभक्ति को जीवन में सजाओ।

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