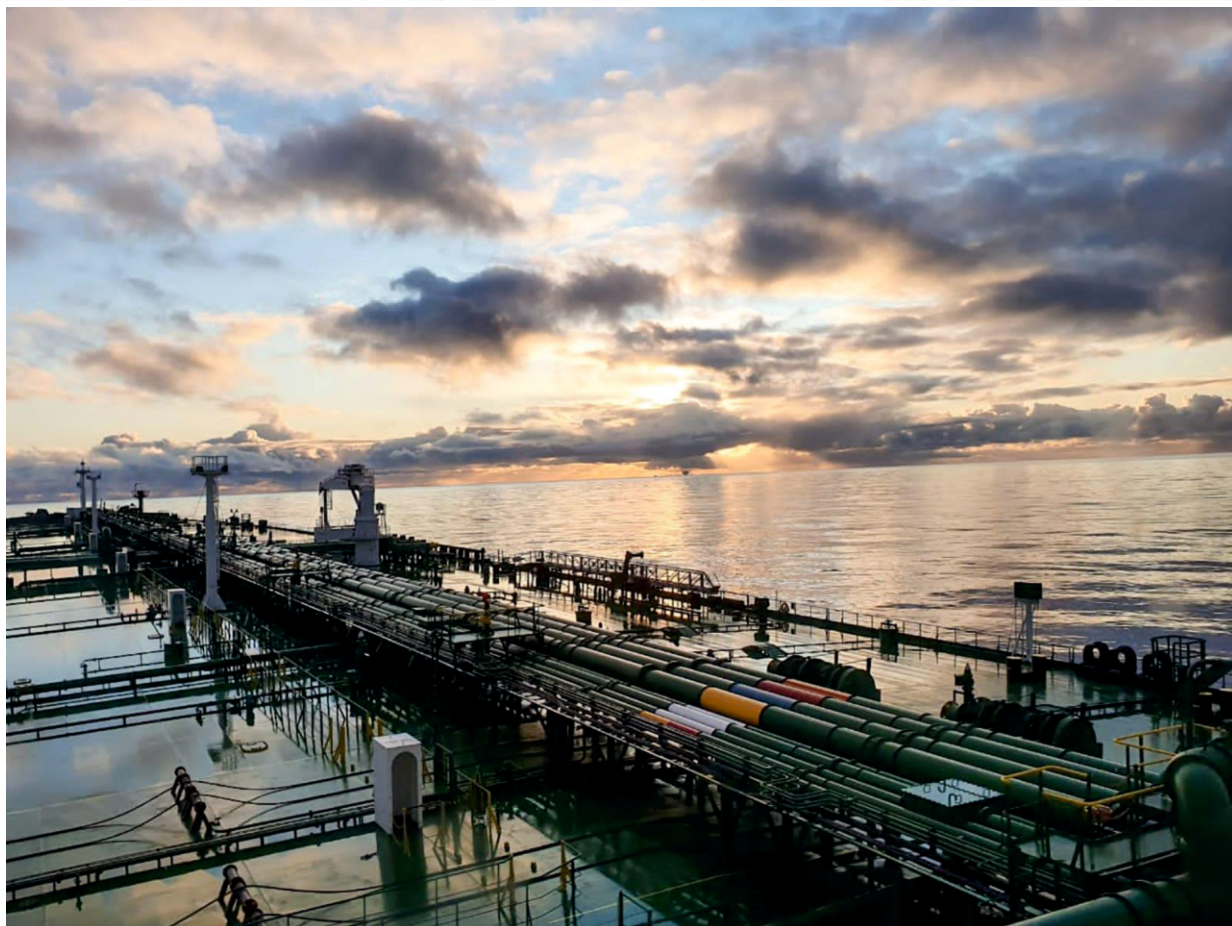




# FORESIGHT



## NEWSLETTER CONTENTS

- EXPANDED EMISSIONS REGULATIONS IN CALIFORNIA PORTS
- ARE WE STILL FIGHTING OR HAVE WE OVERCOME ALREADY?
- CHALLENGES SHIPPING FACES IN A HIGH-RELIABILITY INDUSTRY
- GOODWOOD OFFICERS CONFERENCE 2024
- BIOFUELS - DELVING INTO THE FUTURE OF MARITIME DECARBONIZATION
- THE CRUCIAL ROLE OF SAFETY CULTURE IN MARITIME OPERATIONS

MARCH 2025 EDITION

## EXPANDED EMISSIONS REGULATIONS IN CALIFORNIA PORTS



To reduce emissions from oceangoing vessels while in port, the 2020 CARB\* At-Berth Regulation will require tanker and Ro-Ro vessels to use a CARB Approved Emission Control Strategy (CAECS) while at berth in California ports starting from 1 January 2025.

### Regulatory background:

#### 2007 At-Berth Regulation

The original 2007 At-Berth Regulation applied to container ships, passenger ships and refrigerated cargo ships at certain California ports. Compliance with the 2007 regulation started in 2014.

#### 2020 At-Berth Regulation

The 2020 At-Berth Regulation requires all oceangoing vessel operators and terminal operators to report each visit made to any California marine terminal. However, only container, refrigerated cargo and cruise vessels have emissions control requirements.

Starting from 1 January 2025, compliance with emissions control requirements shall apply to the following:

- Tanker vessels visiting terminals in the Port of Los Angeles and Port of Long Beach
- Ro-Ro vessels visiting any California terminal

Compliance start	Vessel type
1 January 2023	Container and refrigerated cargo vessels
1 January 2023	Cruise (passenger) vessels
1 January 2025	Ro-Ro vessels (including vehicle carriers)
1 January 2025	Tanker vessels visiting Port of Los Angeles or Port of Long Beach terminals
1 January 2027	Tanker vessels visiting any California terminal

Table 1: CARB 2020 At-Berth Regulation compliance start date based on vessel type

Bulk and general cargo vessels do not have emissions control requirements, but they do have visit reporting requirements that began 1 January 2023. The 2020 regulation took effect on 1 January 2021; however, emissions control requirements in the 2020 regulation will phase in according to Table 1.

#### Compliance

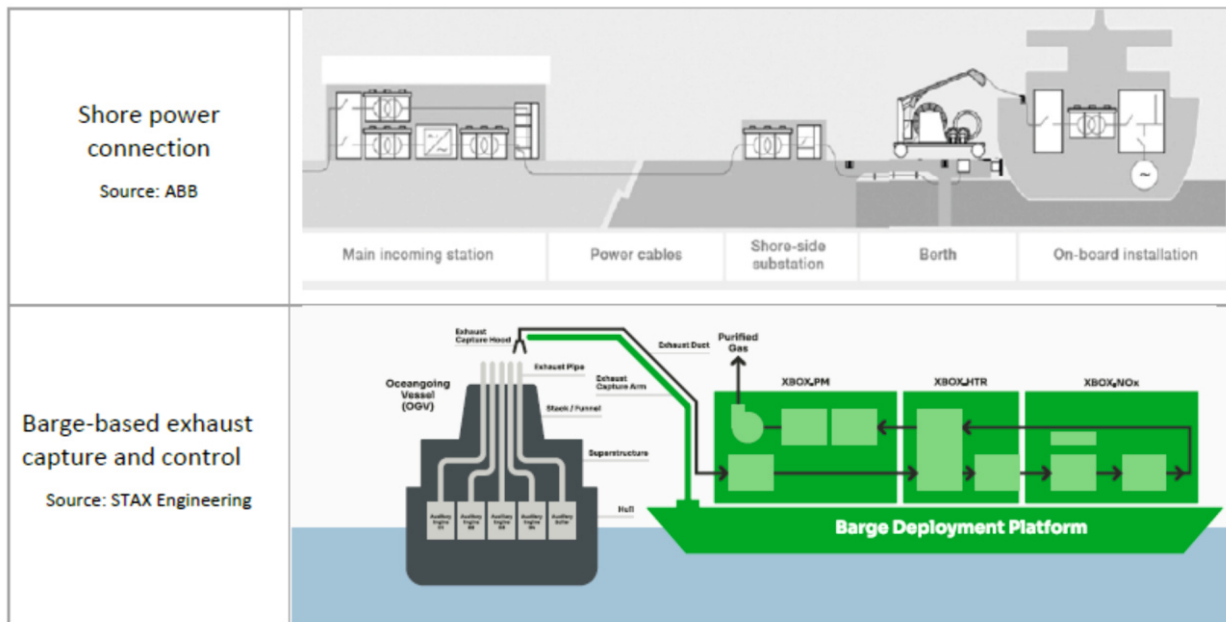
Regulated emissions are nitrogen oxide (NOx), particulate matter 2.5 (PM 2.5) and reactive organic gases (ROG). The primary regulated parties are the vessel operators, terminal operators, California ports and CAECS operators.

Vessels and other regulated parties have the following options for compliance:

- **Connection to onshore power (OPS)** while at berth
- **Use of a CARB-approved exhaust capture and control system.** There are currently two companies (STAX Engineering and Clean Air Engineering Maritime) with plans to have an approved barge-based exhaust capture solution for tankers available by 1<sup>st</sup> January 2025
- **Payment into a Remediation Fund.** The payment into the fund cannot be triggered solely from lack of available alternative CAECS (a vessel needs to show eligibility and get approval)
- **Alternative fuels (e.g. LNG),** with the need to provide testing data that emission rates meet the 2020 At-Berth Regulation performance standard



- **An innovative concept solution** that achieves equivalent emissions reduction from other sources around the port



#### Enforcement:

CARB has an Enforcement Penalty Policy\*\* and will investigate any potential violation. If a company is deemed to be in noncompliance, a Notice of Violation may be issued. A financial penalty could be the result after each violation. The penalty for non-compliance can be imposed on all regulated parties, including the vessel operators.

#### Recommendations

Tankers calling at Port of Long Beach and Port of Los Angeles terminals in 2025 and Ro-Ro vessels at any California terminal will need to prepare for compliance.



Barge Deployment- STAX

\*California Air Resources Board – a part of the California Environmental Protection Agency and in the Executive Branch of California State Government.

\*\* Enforcement Policy | California Air Resources Board

References:

- CARB 2020 At-Berth Regulation
- DNV Technology Assessment of At-Berth Regulation for Tankers (2021)

Contributed by Technical Department

## ARE WE STILL FIGHTING OR HAVE WE OVERCOME ALREADY?

Sit back and give a thought once again. Days, months & now years have passed since Pandemic. You, me and so many like us have lost their dear and near ones. Are we only praying for the departed souls or are we next?

This is just a pinch of reality that we all have behind our mind bothering us; however, we are seafarers trained to stand strong.

So, the question is. Is it only the Pandemic that has caused such serious problems or are there many other factors? The world has drastically changed within the span of time but we as individuals have, we accepted it or are we just satisfied with the jabs & booster doses and have normalized it as part of our life.

What about the smaller picture of mental health and well-being which plays the bigger role and have been affected badly.

It sounds great to read "Mental health & Well Being" but are we really bothered, Ask yourself a question.

Is your colleague working with you is fine or showing the world that he is doing fine. Be courageous to ask because when you ask, they speak and when they speak, they know that they are been taken care off and there's someone out their ready to listen to them.

These small gestures matter and that's all expected from us. Let's start taking care of people around yourself and to remind you gone are the days of Dictatorship, Harassment and bullying because people around you are already fighting their own battles, let's not be Pile on rather be allies.

Together we always grow stronger and its time to shower kindness on people like confetti so that their faith grows stronger than their fears.

So how do we do this? We are already supplemented with campaigns like WELLNESS AT SEA .

So let's make it a common practice from day-to-day life at sea and shore. It's not because I or you need it but there must be someone from the compliments at real life mental crisis. So how do we cope up?

### **Find below the Ways to look after your Mental Health at Sea & shore**

**Practice gratitude.** Acknowledge the bright side by keeping a journal where you can write down something you're grateful for every day.

**Connect with friends and family.** Good relationships are important to your mental health. Make time to text, call or video chat with the people you care about.

**Go outside.** Try to get at least 30 minutes of sunlight (Vitamin D) each day to improve your mood and increase energy.

**Meditate.** Set aside a few minutes each day to centre yourself, focus on your breathing and relax.





**Get a good night's sleep.** Try going to bed earlier and setting a consistent sleep schedule. Adequate sleep can help alleviate symptoms of anxiety and depression.

**Improve your physical wellness.** Focus on your nutrition, and try to exercise at least a few times per week. When your body feels good, it can really boost your mood.

**Try out different ways of coping with stress.** Find something that works for you, such as going for a walk, yoga, deep breathing, listening to music, etc.

**Do something kind.** Making someone else happy will make you feel happy, too. Send an encouraging text, mail a note or smile at a passing teammate.

**Make time for yourself.** Set aside time each day to be alone and reset.

Do something you enjoy. Practice a hobby, watch a TV show you like, read a book, etc. Prioritizing things you enjoy will make you happier.

**Do a digital Detox.** Dedicate some time to be screen-free. If you find yourself feeling overwhelmed after being on social media, consider testing a period where you avoid it.

**Take time to laugh.** Connect with someone who has a good sense of humour, Laughter can take your mind off the things weighing you down.

**Set a routine.** Sticking to a set schedule when it comes to resting, self-care, work, caring for others, etc. will maximize efficiency and increase feelings of stability and security.

**Avoid alcohol and Nicotine.** Don't rely on these substances to help you cope. Alcohol and Tobacco actually increase stress and make it harder to concentrate and control your emotions.

**Get help when you need it.** Reach out to superior when you need support. Reframe negative thoughts and determine appropriate coping strategies.

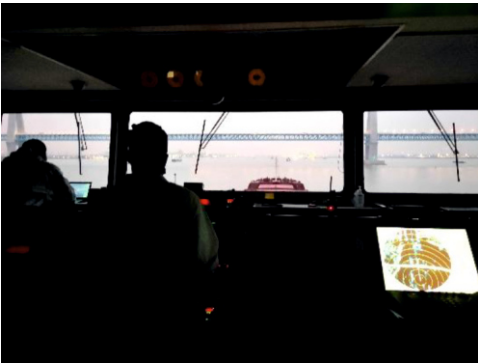
In addition to personal strategies for mental well-being, it's critical to recognize the role that community and shared responsibility play in mental health. The more we normalize conversations about mental health, the easier it becomes for individuals to seek help without fear of judgment. This shift in mindset starts with each one of us—whether as colleagues, friends, or leaders—being proactive in looking out for each other.

A single, genuine conversation can be the lifeline someone needs to realize they are not alone in their struggles. When we create an environment where empathy and support are foundational, we not only help alleviate the immediate pressures of mental health challenges but also contribute to a culture of collective resilience. Ultimately, we must remember that taking care of each other isn't just a professional duty—it's a human one.

References: Image- <https://www.stockessex.co.uk/index.php/parents-local-community/health-and-wellbeing/>

Contributed by Pratik Bartakke – Second Officer- DHT Bauhinia

# CHALLENGES SHIPPING FACES IN A HIGH-RELIABILITY INDUSTRY



Maritime industry is pivotal in global trade, transporting approximately 90% of the world's goods (UNCTAD, 2023). This indispensable sector operates within a High-Reliability Industry (HRI) framework, characterised by stringent operational standards, high-risk environments, and a focus on zero-failure tolerance (Roberts, 1990). Despite technological advancements and robust regulatory frameworks, the industry grapples with multifaceted challenges impacting its efficiency, safety, and environmental compliance. This article explores key challenges faced by shipping operations while highlighting the strategies adopted to maintain high reliability.

## 1. Operational Safety and Risk Management

High-reliability industries demand consistent operational excellence to prevent catastrophic incidents (Reason, 1997). In shipping, ensuring safety across diverse vessel types presents unique challenges:

- Crude Oil Tankers: The transportation of hazardous cargo necessitates stringent adherence to safety protocols, such as inert gas systems, advanced cargo monitoring, and emergency shutdown mechanisms. However, incidents like fire, explosion, and oil spills continue to pose risks (International Maritime Organization [IMO], 2021).
- Bulk Carriers: Structural integrity remains a primary concern due to the potential for cargo liquefaction and structural damage, which can cause vessel instability (Braun et al., 2020).
- Container Ships: The complexity of cargo stowage introduces risks such as container stack collapses and hazardous material incidents (Stopford, 2009).

Mitigating these risks requires a combination of proactive measures, including robust safety management systems (SMS), advanced training for crew members, and routine audits. Adopting digital tools like condition monitoring systems and predictive analytics has also enhanced safety standards (DNV, 2022).

## 2. Regulatory Compliance

Shipping is governed by a labyrinth of international regulations designed to promote safety, security, and environmental sustainability. Key frameworks include the International Convention for the Safety of Life at Sea (SOLAS), the International Safety Management (ISM) Code, and the International Convention for the Prevention of Pollution from Ships (MARPOL) (IMO, 2022). Compliance challenges are multifaceted:

- Environmental Regulations: The 2020 IMO 0.50% sulphur cap has driven a shift towards cleaner fuels like low-sulphur fuel oil (LSFO) and liquefied natural gas (LNG), or the installation of exhaust gas cleaning systems (scrubbers) (UNCTAD, 2023).
- Decarbonization Goals: IMO's targets for reducing greenhouse gas (GHG) emissions have prompted investments in alternative fuels, energy efficiency measures, and carbon offset initiatives (IMO, 2022).
- Port State Control Inspections: Varying enforcement levels across jurisdictions increases the complexity of maintaining global compliance (Paris MoU, 2021).

Balancing regulatory adherence with operational efficiency demands continuous innovation and significant capital expenditure.

## 3. Technological Integration and Cybersecurity

The shipping industry is transforming digitally, leveraging technologies like the Internet of Things (IoT), Artificial Intelligence (AI), and blockchain to enhance operational efficiency. While these innovations offer significant benefits, they introduce new challenges:

- System Integration: Ensuring compatibility between legacy systems and modern technologies can hinder seamless operations (DNV, 2022).

- Crew Training: Transitioning to digital platforms necessitates upskilling seafarers and shore-based staff to operate and maintain advanced systems (Stopford, 2009).
- Cybersecurity Threats: Increased reliance on digital systems exposes vessels to cyberattacks, with potential consequences including navigation disruptions, data breaches, and financial losses (IMO, 2021).

A comprehensive cybersecurity strategy, encompassing robust firewalls, frequent system updates, and training programs, is critical to safeguarding digital infrastructure.

#### 4. Human Resource Challenges

The maritime sector faces a chronic shortage of skilled seafarers, compounded by high attrition rates and an ageing workforce (BIMCO/ICS, 2021). Key concerns include:

- Crew Fatigue: Extended working hours and reduced manning levels contribute to fatigue, impacting performance and safety (Roberts, 1990).
- Training Standards: Ensuring uniformity in training across diverse nationalities and backgrounds remains challenging (Braun et al., 2020).
- Mental Health: The isolated nature of shipboard life, combined with high-pressure environments, can affect mental well-being (DNV, 2022).

To address these issues, shipping companies are adopting measures such as flexible work schedules, enhanced welfare provisions, and the implementation of mental health support programs. Promoting diversity and inclusion is also pivotal in attracting talent to the industry.

#### 5. Economic Pressures and Market Volatility

Shipping operates in a highly cyclical market influenced by global trade dynamics, geopolitical events, and economic trends. The sector's susceptibility to market fluctuations creates challenges:

- Freight Rate Volatility: Overcapacity and fluctuating demand impact profitability, particularly for bulk carriers and container ships (Stopford, 2009).
- Rising Operational Costs: Escalating fuel prices, insurance premiums, and port charges strain budgets (UNCTAD, 2023).
- Supply Chain Disruptions: Events such as the COVID-19 pandemic exposed vulnerabilities in supply chains, leading to delays, congestion, and financial losses (BIMCO/ICS, 2021).

Strategic fleet management, cost optimisation measures, and revenue stream diversification are essential to navigating these economic pressures.

**Conclusion:** The maritime industry's commitment to high reliability is both a strength and a challenge. While operational safety, regulatory compliance, technological integration, human resource management, and environmental sustainability are cornerstones of the sector, they also present significant hurdles. Addressing these challenges requires a holistic approach that combines technological innovation, robust regulatory frameworks, and a strong focus on human factors. As the industry navigates an era of transformation, collaboration among stakeholders will be instrumental in maintaining high reliability while fostering resilience and sustainability. This also presents a unique opportunity for seafarers to upskill and upgrade to meet the ever-changing shipping landscape and demands. Ship and shore staff who do not upskill and stay abreast of the changing demands may be left as 'non-relevant' to the fast-paced transition in shipping. The high Reliability in shipping, which is the crux of this article, will continue to be the selling point for both Ship operators and Owners to remain attractive for doing business with the most challenging and demanding customers.

#### References:

BIMCO/ICS (2021). *Seafarer Workforce Report*, DNV, IMO, (2021). *Cyber Risk Management in Safety Management Systems*, Paris MoU (2021).  
 Roberts, K.H. (1990). *'Managing High-Reliability Organizations'*, California Management Review; *Maritime Economics*: Routledge. UNCTAD (2023). *Review of Maritime Transport 2023*.

Contributed by Operations Department



## GOODWOOD OFFICERS CONFERENCE 2024

*Theme- Raising the bar: Operational Excellence for a Sustainable tomorrow*

The Goodwood Junior Officers' and Senior Officers' Conference was held from the 26th to the 29th of August 2024 at Mumbai's J W Marriott hotel.

### Goodwood Junior Officers' Conference 2024



The first day was dedicated to Goodwood's team of Junior Officers. The day commenced with an enthusiastic welcome from Goodwood CEO Mr. Md. Kamal Uddin Ahmed of the Singapore office. The presentations that followed were punctuated with sessions where the junior officers could express themselves, ask questions and be heard by the senior management.

DHT is the majority shareholder of Goodwood Ship Management Pte. Ltd. and has been instrumental in the distinguished progress and milestones that Goodwood has achieved over the years. The Managing Director - Technical Management and New Building- DHT Ship Management (Singapore) Pte. Ltd - Mr. Sven Magne Edvardsen took the audience through an unembellished tour of the data analysis, bringing to light the rewarding efforts of teams both onboard and onshore and areas of improvements.

Mr. Sanjeev Bhandari, HSQE Manager and Mr. Aneet Singh Vij, Senior Engineer Superintendent - gave a compelling account of vital safety points on issues narrowed down to the duties of the junior officers in attendance. The speakers walked the officers through port state regulations, the importance of compliance, and how compliance with port state authorities can be a major factor when considering the safety of crew onboard and that of the vessel.

Mr. Rajeev Pratap, General Manager - Technical and Procurement, took the baton leading with Watchkeeping, Break downs, PMS and Soft Skills. He insisted on the importance of a vigilant and situationally aware perspective towards watchkeeping and highlighted the consequences of mishaps that can result from seemingly tiny deviation of attention. He also emphasized the importance of using the Planned Maintenance System (PMS) to its optimum level, to ensure smooth workflow and systematized data sharing with the team onshore that can ameliorate safety and enhance performance.

Captain Muneesh Saxena, Goodwood Operations Manager and Captain Shailesh Shanbhag, Senior Marine Superintendent - gave a very interactive presentation on the human element in inspections. Using quizzes and polls as tools to draw the crowd in, they enraptured the audiences' focus on SIRE 2.0, the intimidating successor of VIQ7 from OCIMF.

Mr. Rajeev Pratap took to the stage again to stress the importance of Value-Added Training in a seafarers' career. Mr. Pratap mentioned that safety, fastidiousness with work, and skill upgrade are all pieces of the puzzle, where the final big picture being the success of the officers and in turn of Goodwood.

The day ended with a closing speech by Goodwood CEO Mr. Md. Kamal Uddin Ahmed. He insisted on embracing challenges gracefully and following the lead of the various speakers of the day. He also urged the junior officers to feel at ease and ask any questions they might have. His empathy and attention to every query put forth, dispelled hesitation, and created a fertile ground for new ideas.

### **Goodwood Senior Officers' Conference 2024**



The first day of the Goodwood Senior Officers' Conference 2024 began with the opening speech by Goodwood CEO Mr. Md. Kamal Uddin Ahmed. He resolutely projected a vision of Goodwood's success, backing it up with statistics and data. He insisted that self-guided improvement aided by the wisdom of veteran officers at Goodwood will be propitious. He urged the Senior officers to develop an aptitude for empathetic leadership.

Mr. Sanjeev Bhandari, HSQE Manager and Mr. Aneet Singh Vij, Senior Engineer Superintendent - took to the dais focusing on the changing landscape of Port State Inspections and how the Goodwood team is bracing itself for the inexorable developments that await the Maritime industry. This presentation also included statistical insight into incidents, emphasizing that every single incident ever to occur is preceded by 10,000 near-misses. an analogy that doted on vigilance and the need to expunge risk normalization.

Svenn Magne Edvardsen, Managing Director - Technical Management and New Building of DHT Ship Management (Singapore) Pvt Ltd presented an assessment of organizational performance of DHT, the majority shareholder of Goodwood Ship Management. He mentioned that DHT had an open-minded and safety-first approach towards taking up inevitable newer challenges around technology and decarbonization. This was followed by Eirik Ole Rynning, Head of Operations- DHT Management AS who gave a brief power-packed presentation on DHT Operations.

Dr. Parag Pradhan of Sea Bird Medicare gave a brief account of how seafarers can best maintain their physical and mental health at sea and interim their sojourn at land in order to ensure that they qualify PEMEs successfully. He drew attention to having a balanced diet, the importance of exercise and the imperative of getting medical examinations done around a month prior to the joining date.

Mr Rajeev Pratap gave an overview of the Trainings being carried out by Goodwood Onboard and Ashore. He discussed the importance of Value-added training and urged the Senior officers to allocate time during their leave period to enhance their skills. He also gave details of the onboard training which Goodwood carries out onboard vessels through very experienced onboard Trainers. Goodwood Cadet training program was discussed, and Senior officers were urged to engage more actively with the present generation of cadets to motivate and mentor them to further their careers and unlock their full potential.

Mr. Suresh Verlekar, Business Development Key Account Manager- DNV Mumbai, updated the audience about MEPC 81 and Maritime Cybersecurity. The MEPC 81 update mainly covered the progress work on GHG measures. He gave an overview of the Maritime Cybersecurity Requirements, Standards and guidance provided by the Classification society. This was followed by an engaging video on Cybersecurity prepared by Goodwood IT Department which stressed the importance of adhering to cybersecurity guidelines and the need for a new form of 'Digital Vigilance'.

Mr. Dominic Ng Head of APAC- DNV Veracity, and Mr. Rajeev Pratap, discussed in detail regarding EU ETS, Fuel EU Maritime, Alternate Fuels and Emissions Connect (A platform provided by DNV and subscribed by Goodwood to record and report Emissions). The importance of Noon report data quality, close monitoring of fuel consumption and implementation of onboard energy saving measures were stressed upon.

The second day began with a message on Fleet Personnel by Captain Mahesh Prasad Garimella, General Manager -FPD and Captain Rohan Sabnis, Head of Crewing. This was an interactive session and a lot of questions from the officers in attendance were answered.

This piece was followed by a follow-up session on safety culture by Mr. Sanjeev Bhandari and Mr. Aneet Singh Vij.

Marine Wellness Coach Mrs Deepti Mankad took to the rostrum to give an enthralling piece on mindfulness. This included an array of techniques that can be used to enhance one's mindfulness, the importance of meditation and an ingenious and cheerful session on the A-Z of Mindfulness that kept the entire conference bright-eyed and agile.

After lunch, Technical Challenges & PMS took the centre stage with Mr. Alok Misra, Technical Manager and Mr. Jitendra Kumar Senior Engineer Superintendent teaming up to bring up the technical challenges faced, and lessons learned during the last one year.

This was followed up with a very engaging Break Out Session where audience were given topics like Watchkeeping Issues, Post maintenance failures, PMS and Injury prevention and they were asked to carry out a SWOT analysis on the same. The officers came out with very fruitful solutions.

Captain Muneesh Saxena and Captain Shailesh Shanbhag discussed the various Operational Challenges which the company had during the past one year. An appearance was made by Captain Manjinder Singh Khosa, who underwent SIRE 2.0 trial inspection to share his experience of the inspection.

This session was also followed up by another very engaging Breakout session and topics such as Appraisal System, Deck Maintenance, Watchkeeping, and Soft Skill Issues were discussed using the SWOT analysis technique.

The Goodwood Conference came to its grand closure with CEO Mr. Md. Kamal Uddin Ahmed addressing the audience for the last time that day, instilling a sense of duty, vivacity and reassurance in the Senior Officers. The day ended with a euphoric celebration of Goodwood's achievements that included all senior officers and dignitaries along with families of the officers in attendance. The Goodwood Conference came to a triumphant end with an incontestable feeling of hope and ambition in everyone present.

Contributed by Sea and Job Magazine, Mumbai (November 2024 Edition)

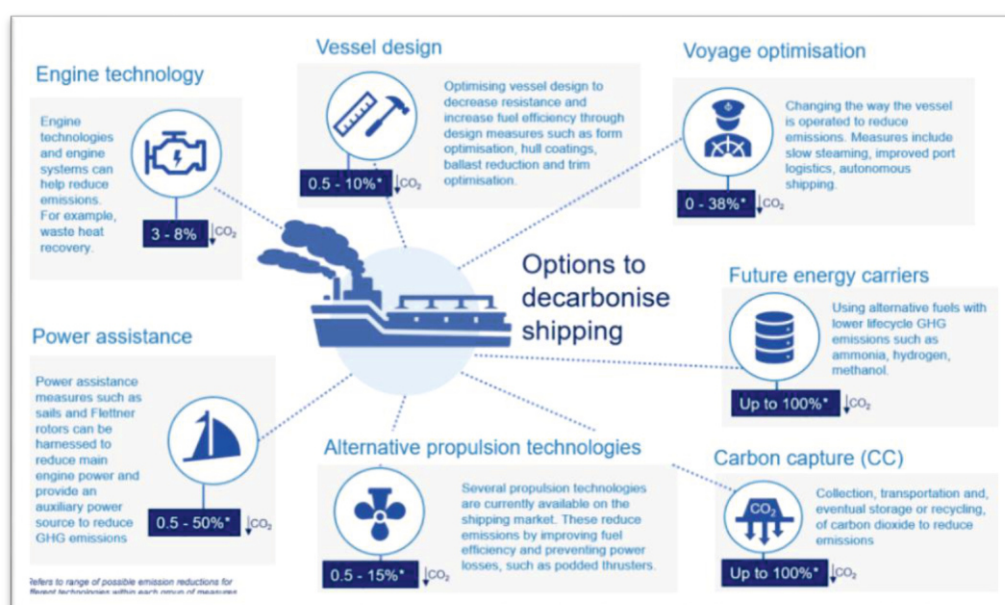


# BIOFUELS - DELVING INTO THE FUTURE OF MARITIME DECARBONIZATION

**Introduction:** IMO aims to reduce annual GHG emissions from international shipping by at least 20% (targeting 30%) by 2030, and at least 70% (targeting 80%) by 2040, compared to 2008 levels. The revised GHG strategy includes a commitment to reach net-zero emissions by around 2050, promote the adoption of alternative zero and near-zero fuels by 2030, and set checkpoints for 2030 and 2040.

Starting in 2025, ships operating in the EU or EEA must use fuels with a GHG intensity below a specified threshold (FuelEU Maritime Regulation). The GHG intensity will be measured on a Well-to-Wake (WtW) basis, where Well-to-Tank (WtT) covers emissions from fuel production and transportation, and Tank-to-Wake (TtW) covers emissions from onboard fuel combustion.

Several pathways and options have emerged for the decarbonization of shipping.



This article will explore **biofuels as an alternative fuel**, with a **focus on FAME**, which is likely to become the standard in the near future.

**Biofuels** are derived from Biomass and hence includes, but is not limited to, processed used cooking oils, Fatty-Acid-Methyl-Esters (FAME) or Fatty-Acid-Ethyl-Esters (FAEE), Straight Vegetable Oils (SVO), Hydrotreated Vegetable Oils (HVO), Glycerol or other Biomass To Liquid (BTL) type products.

Any biofuel can only be accepted, if the WtW **GHG emissions reduction is at least 65% as compared** to the WtW emissions of **fossil MGO** of **94 gCO<sub>2</sub>e/MJ** (i.e., **achieving an emissions intensity not exceeding 33 gCO<sub>2</sub>e/MJ**). Biofuels produced sustainably from sustainable feedstocks should be preferred to support decarbonisation.

**FAME**, commonly known as biodiesel, is derived from natural oils such as vegetable oil, animal fats, or waste cooking oil through a process called *transesterification*. When blended with distillate fuels, it is referred to as **Distillate Marine Grade**, and when mixed with HFO or VLSFO, it is termed as **Residual Marine Fuel**.

**HVO**, often referred to as renewable diesel or Hydro-Processed Esters and Fatty Acids (HEFA), consists of paraffinic hydrocarbons that are free from oxygen, nitrogen, and aromatics. HVO is produced via *hydrotreated* process.

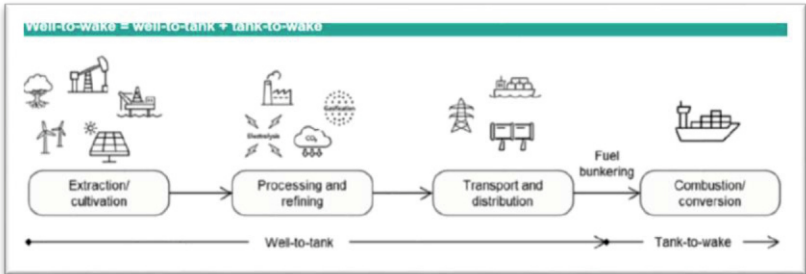
The two biofuels mentioned above have been classified as **drop-in fuels**. These are alternative fuels that can seamlessly replace conventional petroleum-based fuels without the need for modifications to existing engines, fuel systems, or infrastructure. Their chemical similarity to fossil fuels ensures compatibility with current technologies.

CHEMICAL COMPOSITION	FAME	HVO	DIESEL
Density at 20° C (kg/m³)	885	780	825
Lower Heating Value (LHV) (MJ/kg)	37.1	44.1	43.1
Viscosity at 20° C (mm²/s)	7.5	3.0 (at 40° C)	5.0
Surface Tension (N/m)	0.026	-	0.028
Cetane Number (CN)	56	80-99	40-50
Stoichiometric Air/Fuel Ratio	12.5	-	15
Oxygen Content (% vol.)	-11	0	0
Aromatics Content (% vol.)	-	0	-30
Sulfur Content (ppm)	-	0	< 3.5

At present, FAME is utilized in various blends, ranging from 7% to 30%, and in some instances, even at 100% (B100). For example, a B30 Residual Marine Grade biofuel will contain a blend of 70% VLSFO & 30% biofuel. This would typically have a WtW GHG intensity of 24.6 gCO2eq/MJ

and a Lower Caloric Value (LCV) of 37.5 MJ/kg.

**Life cycle assessment (LCL)WELL-TO-WAKE:** The relevant GHGs included are carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O). The GHG emissions are calculated as CO<sub>2</sub>-equivalent (CO<sub>2</sub>eq), using the Global Warming Potential over a 100-year time-horizon (GWP100) to convert emissions of other gases than CO<sub>2</sub>.



**The Challenges:** There are some possible consequences from the use of biofuels (FAME) which must be kept in view when preparing to use or when being used.

**Storage Stability:** FAME is hygroscopic, meaning it absorbs water, which can lead to microbial growth and fuel degradation. It is highly susceptible to oxidation, potentially reducing shelf life. It is essential to clean the bunkered tanks thoroughly prior the first biofuel intake. Purifiers will need to be reprogrammed to handle biofuels.

**Cold Weather Performance:** FAME has a higher freezing point compared to traditional fuels, which can cause gelling or blockages in colder climates (cold flow properties). As a precaution when carrying out a change over from a HFO to a MGO containing biodiesel, particular attention should be given to the filter and possible rise in filter blocking frequency as well as fuel pump functionality.

**Energy Density:** FAME fuels typically have a heating value of 36–37 MJ/kg, slightly lower than fossil-based marine fuels. Engines unable to adjust injection quantity for the lower calorific value may experience reduced range and increased SFOC, with calculated values differing by up to 10%. Adjustment of limiters in the governor may be needed. The lower LCV is compensated for by the governor which increases the fuel index to maintain the requested RPM. Liner temperatures could potentially increase slightly because of the longer injection duration. Careful drain oil monitoring is recommended to avoid potential issues. Where **Engine Power Limitation (EPL)** is installed, the maximum power may be reduced when a fuel with a low calorific value is used.

**Compatibility Issues:** Although considered as a Drop-in fuel, it may react with certain materials like older seals, gaskets, and hoses in the fuel system, leading to leaks or damage. Risk of contamination persist in fuel systems and tanks that are not properly cleaned before switching to FAME blends.

materials	recommended	not recommended
Metals	Carbon Steel Stainless Steel Aluminium	Brass Bronze Copper Lead Tin Zinc
Elastomers	Fluorocarbon Nylon Teflon Viton	Nitrile rubber Neoprene Chloroprene Natural rubber Hypalon Styrene-Butadiene rubber Butadiene rubber
Polymers	Carbon filled acetal	Polyethylene Polypropylene Polyurethane Polyvinylchloride

**NOx Compliance:** For blends between 7-30% (inclusive) biofuel - Assessment of NOx impacts is not required under the provisions of MEPC.1/Circ.795/Rev.6. Blends of more than 30% of biofuel can be burnt as long as no changes to the NOx critical components or settings are required, in which case, assessment of NOx impacts is also not required.

**Acid Number:** Acids in FAME fuels typically arise from two sources: (i) residual acids from the biodiesel production process and (ii) acids formed during FAME degradation. Free fatty acids can lead to fuel pump corrosion, a risk exacerbated by excessive water, which accelerates acid formation and corrosion.

**How will this change the bunkering process?** When bunkering for biofuels, MARPOL Annex VI, Regulation 18.3 and fuel specifications ISO 8217: 2024 shall be strictly applicable.

- The fuel oil shall be blends of hydrocarbons derived from petroleum refining- No additives should be added to improve some aspects of performance.
- The fuel oil shall be free from inorganic acid.
- The fuel oil shall not include any added substances or chemical waste that jeopardizes the safety of ships or adversely affects the performance of the machinery, harmful to personnel and contributes overall to additional air pollution.
- The fuel oil shall not exceed the prescribed Sulphur content

The BDN should be accompanied by an accredited Sustainability Certificate, verifying that the fuel was produced responsibly. This ensures the fuel's environmental impact on water, soil, air, and biodiversity is assessed throughout its life cycle. A carbon factor (CF) equal to the value of the well-to-wake GHG emissions shall be mentioned along with the LCV.

Fuel tanks should be cleaned/stripped or at least emptied as much as possible before bunkering biofuel to avoid any compatibility issues. It is recommended that side hanging tanks be used rather than DB tanks to bunker and store biofuel blends. Tanks must be kept topped up to the maximum to reduce rates of oxidation and condensation. As a matter of good practice periodic checks (4 times annually) should be carried out on the fuel condition in these fuel tanks to ensure there is no general degradation of the fuel and on a more regular basis (every 1 to 2 weeks) that there is no water collection, which might accelerate degradation. It is recommended that biofuel blends are not used in lifeboats and emergency generators as these tanks are in a more exposed aggressive environment.

It is to be ensured that the bunker barge is certified to carry the particular blend of Biofuel, in case it is more than 7% and it is not allowed to blend onboard. Reference shall be made to MSC-MEPC.2/Circ.17 (4 Jul 2019) - GUIDELINES FOR THE CARRIAGE OF BLENDS OF BIOFUELS AND MARPOL ANNEX I CARGOES which revokes MEPC.1/Circ.761/Rev.1.

In the quest for a greener and more sustainable future, the maritime industry has found itself at the forefront of efforts to reduce greenhouse gas (GHG) emissions. The future of biofuels is one option to act this decade to meet the short-term CO<sub>2</sub> reduction targets on the pathway of shipping decarbonization. As biofuels scale, they create a negative impact risk due to potential shortages in sustainable biomass availability from long-term competition. For this risk to be managed, global common standards and sustainability criteria are necessary to prevent shifting negative impacts up the supply chain. While there is no silver bullet for scalable zero emission shipping fuel, currently available biofuels can offer the flexibility of an interim drop-in solution or as a zero-emission pilot fuel for other zero emission fuels under development.

References: Various white papers available on internet from DNV, ABS, BV, MAN B&W, Wartsila, MPA Singapore, Viswa Labs, IMO, IPCC.

Contributed by Technical department



# THE CRUCIAL ROLE OF SAFETY CULTURE IN MARITIME OPERATIONS

A safety report from DNV and Lloyd's List Intelligence highlights rising maritime incidents and the critical need for a strong safety culture amid industry transformations. With various new requirements accelerating, maritime safety must adopt a **Human, Organizational, and Technological (HOT) approach** to proactively manage risks.



## Building a Safety-First Culture:

Safety culture is shaped by shared values and behaviours, requiring **strong leadership, trust, competence development, and proactive learning**. Setting clear safety goals can help counterbalance commercial pressures.

**Seafarers & Leadership in Safety:** "Safety only works if people are involved in building the culture. This calls for **leadership at all levels**—from CEOs to seafarers—fostering a **just culture** that encourages learning from mistakes rather than concealing them. Strong leadership principles include **effective communication, leading by example, and making safety a corporate priority**. At Goodwood, we strongly believe and encourage this culture.



**Competence & Risk Management:** Maritime safety relies on **competence at all levels**, encompassing risk awareness, proactive safety management, and training beyond traditional disciplines. A ship is only as safe as its weakest link, requiring **collaboration across crews, organizations, and even competitors**.

Bridging the Safety Gap: Understanding the gap between current and future safety requirements is essential. Key questions include:

1. Is the right competence in place to identify safety risks?
2. Are training and recruitment aligned with future needs?

Managing change effectively requires **identifying risks, implementing safety measures, and ensuring proper training before adopting new technologies**.

**Safety as the Key to Maritime Transformation:** As new statutory requirements emerge for compliance, especially in digitalization and alternative fuels advance decarbonization, human expertise remains indispensable for **safe and efficient operations**. While technology enhances efficiency, resilience, adaptability, and empowered decision-making at all levels will be vital in ensuring maritime safety during this transition.

References: DNV and Lloyd's List Intelligence  
Cartoon Credit from The American Club (Shipboard Safety)

Contributed by HSQE Department

## TRIVIA



*Vijoy Dick, Assistant Fleet Manager* with Goodwood Singapore office won the Runners-up Trophy in the Senior Men's Single Table tennis tournament organised at New Century Table Tennis Accademy on 22-June-24. The Tournament was organised by Mariners Cricket Club.



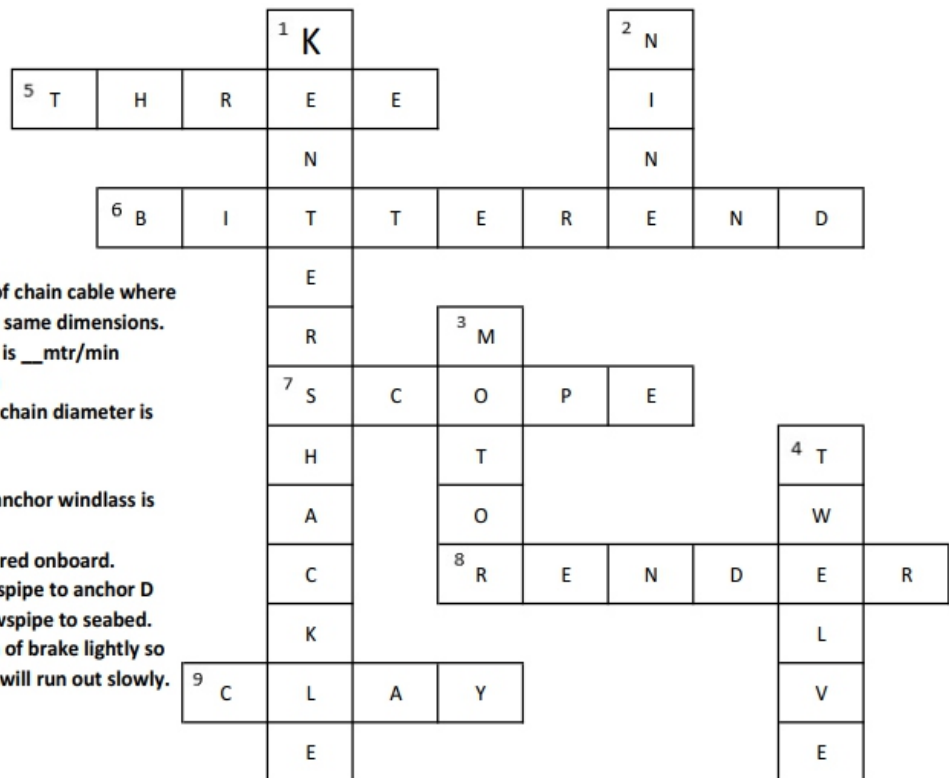
Social Sunday on DHT Opal

## CROSSWORD

### DOWN

1. Link used to connect two lengths of chain cable where the terminations of two length have same dimensions.
2. Heaving speed by windlass motor is \_\_mtr/min
3. Weakest link of Anchoring system
4. Maximum allowable reduction of chain diameter is \_\_percentage
5. Minimum lifting capacity for the anchor windlass is \_\_ lengths of chain
6. The inboard end of the chain secured onboard.
7. Ratio of length of cable from hawspipe to anchor D shackle , to depth of water from hawspipe to seabed.
8. Term used to describe application of brake lightly so that when weight comes on cable it will run out slowly.
9. Sea bed with best holding power.

### ACROSS





**Goodwood Ship Management Pte Ltd**

20 Science Park Road      Ph +65 6500 4040  
#02-34/36 Teletech Park      Fax +65 6500 4050  
Singapore 117674



**Goodwood Marine Services Pvt Ltd**

(Manning office in India)

Unit 905, 9th Floor      Ph +91 22 6720 0400  
and Unit 1222, 12th Floor      Fax +91 22 6720 0404  
Hubtown Solaris  
N. S. Phadke Marg,  
Andheri (East),  
Mumbai - 400069  
Maharashtra, India

[application@goodwoodship.com](mailto:application@goodwoodship.com)

[www.goodwoodship.com](http://www.goodwoodship.com)