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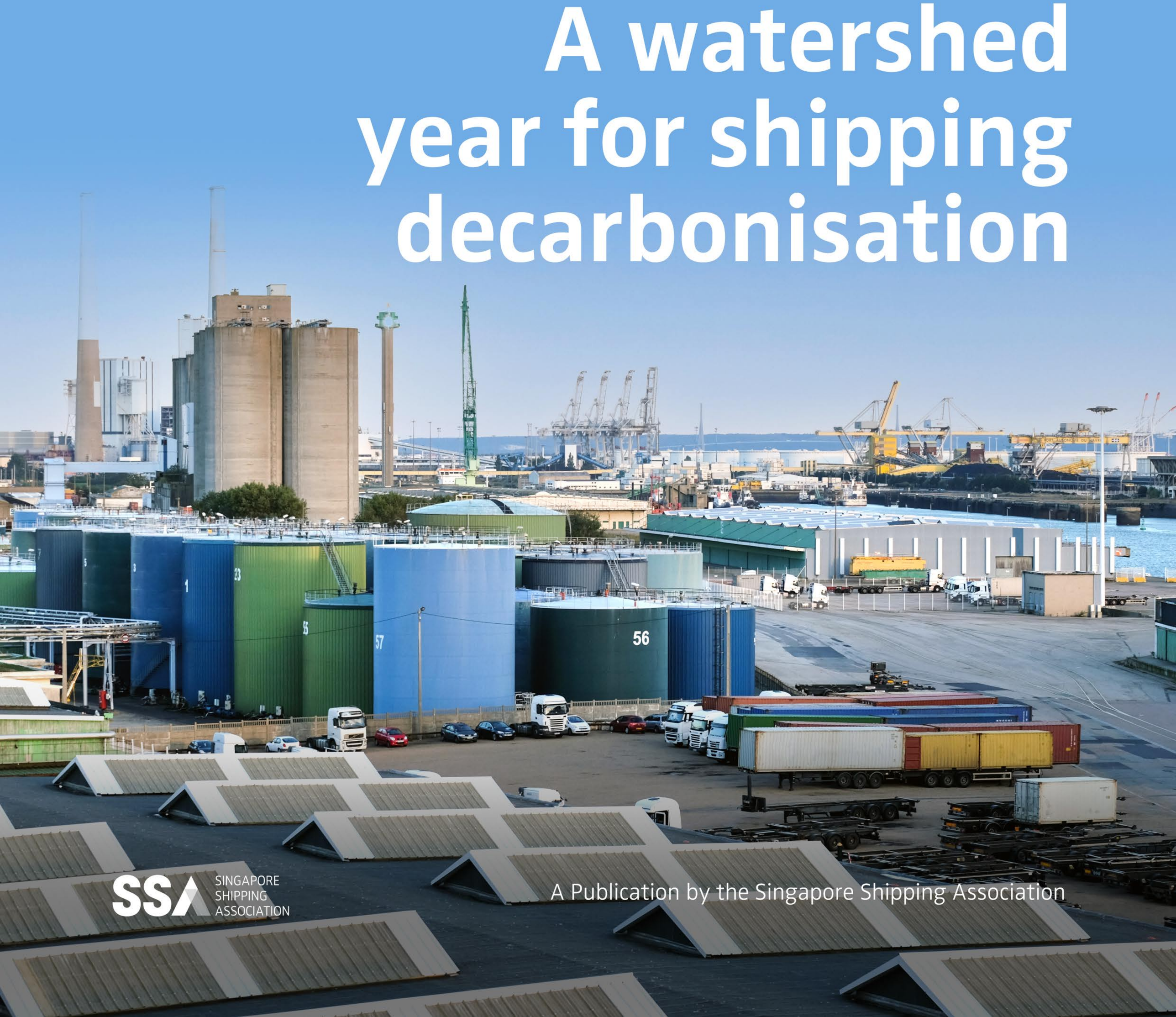
WAVES

2023: A watershed year for shipping decarbonisation



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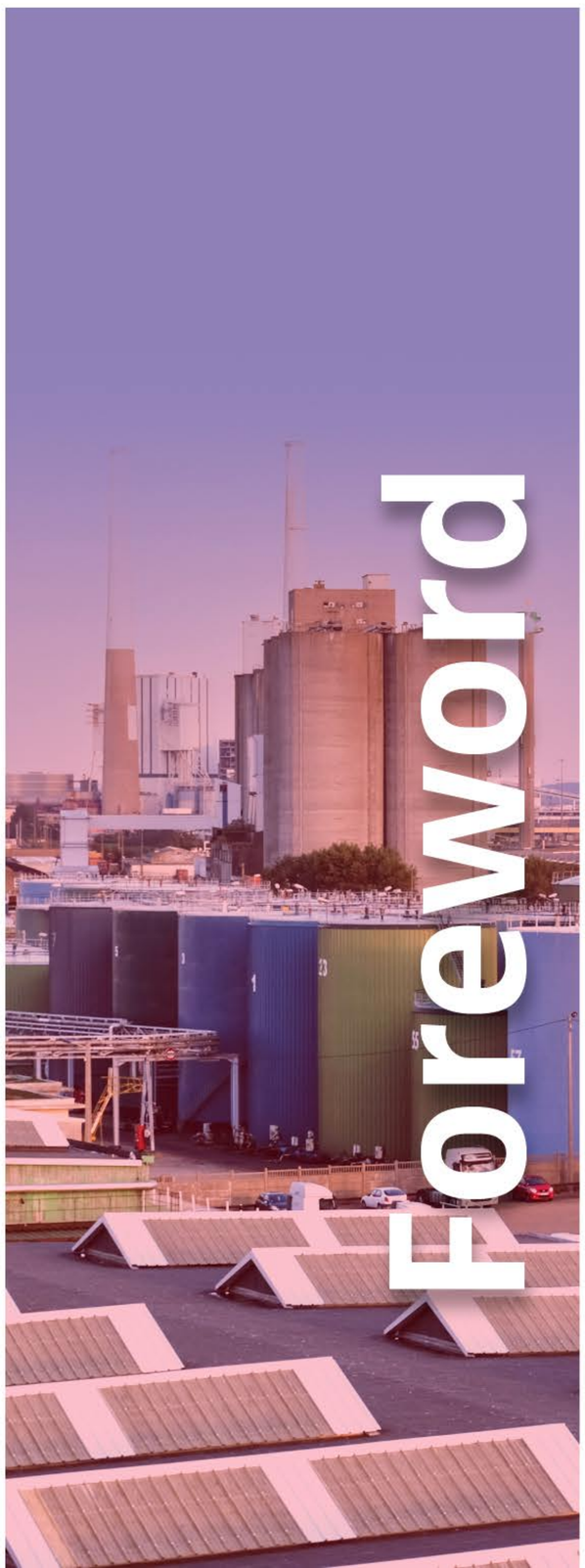

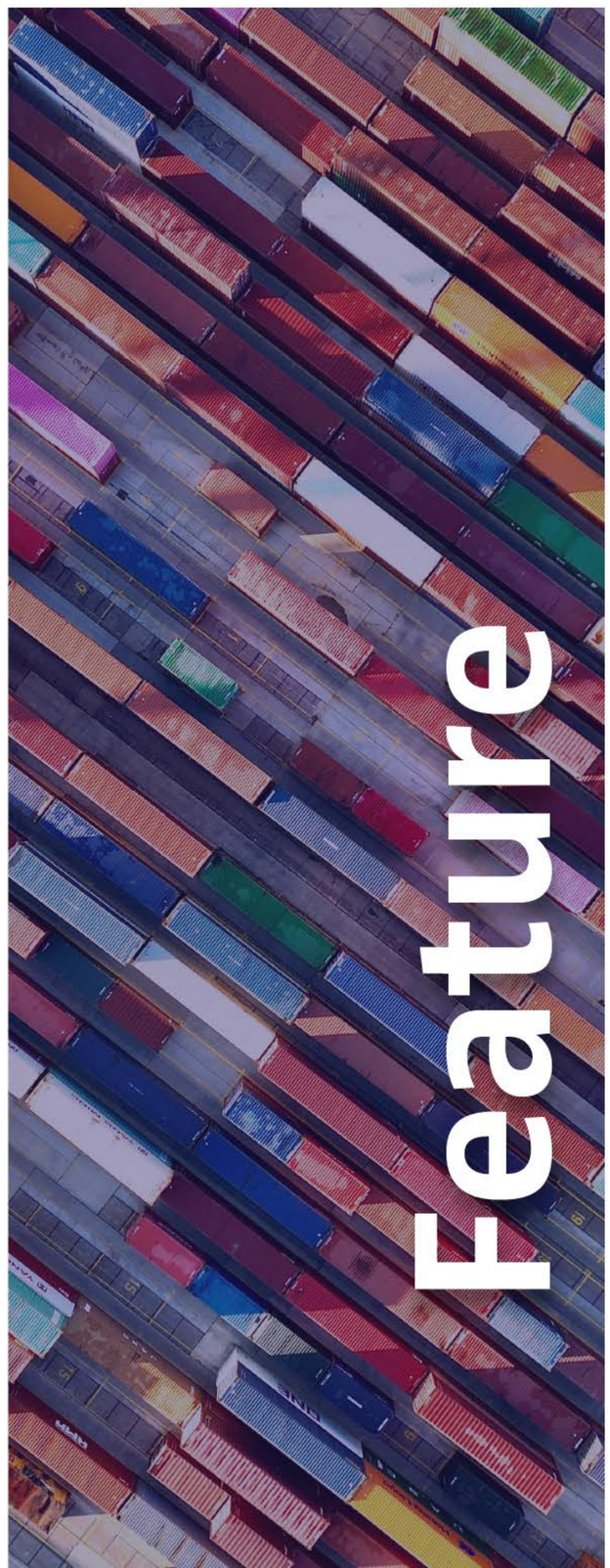

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Foreword

Dear Members,

2023 has proved to be a watershed moment for our global industry. During the International Maritime Organization (IMO) Marine Environment Protection Committee (MEPC 80) session, the committee adopted the revised IMO Strategy on Reduction of GHG Emissions from Ships which solidifies and strengthens the industry's commitment to net zero by close to 2050. To achieve these goals the shipping sector must act now.

In 2024, there are a number of new regulations which will increase the compliance needs for shipowners. Measuring energy efficiency through EEXI and CII is new and additional standards for the shipping industry while carbon taxation adds further to the bottom line. The European Union Emissions Trading System (ETS) becomes effective as of January 2024 and will also impact costs to those vessels entering EU ports.

Amidst these challenges and evolving regulatory landscapes, addressing ongoing uncertainties surrounding new environmentally sustainable fuel supply becomes paramount. It is important that governments are staying involved in finding solutions to these challenges. Furthermore, the establishment of green shipping corridors not only represents a pivotal step toward environmental responsibility but also offers a promising avenue for ensuring certainty in green fuel supplies and bunkering infrastructure. These corridors, by providing a dedicated pathway for vessels reliant on alternative fuels, contribute to the development of a more resilient and sustainable shipping ecosystem.

Maritime Singapore has been actively engaged in preparing for a multi-fuel future and has been involved in the world's first ship to containership green methanol bunkering operation in the Port of Singapore. MPA have played a crucial role making this operation successful and harness valuable experience for the future. We have picked up valuable lessons learnt from this. Earlier, Singapore's homegrown shipowner and shipbuilder Penguin International Limited had successfully commissioned the country's first fully electric seagoing ship, Penguin Refresh - a 21-knot, 200-pax commuter ferry - along with a network of rapid shore chargers at Shell's Energy and Chemicals Park on the island of Pulau Bukom. Penguin Refresh is the first of three electric ferries that will transport more than 3,000 people a day between Pasir Panjang Ferry Terminal and Pulau Bukom, replacing conventional diesel-powered ferries and eliminating 6,000 tons of CO2 emissions a year. Dubbed the Electric Dream Project, all three electric ferries and rapid shore chargers will be fully operational by end 2023. We also welcome a modern sail ship run by a Singapore based company, BergeBulk. The dry bulk carrier is fitted with four mega steel sails known as WindWings which will harness wind power and reduce emissions. The utiliation of these sails can result in fuel savings of up to 20% or approximately six tons per day on a typical global route, while also reducing carbon emissions by around 19.5 tons per day. These are just some of the alternatives for the future and we are proud that some of the earliest implementations are taking place in Singapore.

Singapore is also committed to becoming a net-zero port by 2050 and has issued an Expression of Interest (EOI) for interested parties to submit proposals to design and promote the adoption of fully electric harbour craft. In the meantime, Singapore expects all new harbour craft operating in the Port from 2030 onwards to either be fully electric, capable of using B100 biofuel or be compatible with net zero fuels and this shift will significantly impact shipowners

This move towards fully electric harbour craft will necessitate the installation of electric charging points at various locations around the port and Singapore is readying itself with a Call for Proposal (CFP) from companies to develop, commission, maintain and operate charging points for electric harbour craft at a number of locations in the Port of Singapore. Successful companies will work together with the Maritime and Port Authority of Singapore (MPA) to evaluate different technologies and contribute towards a new charging infrastructure which will be rolled out progressively.

The final facet of the plans for the Port of Singapore is the need to engage with financiers and insurers to support the adoption of electric harbour craft and MPA is encouraging financial institutions and insurers to submit proposals that will help to accelerate the adoption of electric harbour craft. Proposals need to be at sufficient scale to make the financing viable and attractive while insurers are asked to consider the implications of operating the craft such as hull & machinery and protection & indemnity. It will be critical that there are sufficient bona-fide companies who will participate in such expressions of interests particularly in financing, as new technology requires significant investments.

While the future for shipping certainly looks challenging in terms of reaching our CO2 emissions goals, Maritime Singapore has placed itself in a strong position to support its stakeholders as they traverse the coming years. While final decisions regarding fuels for the future have yet to be taken, we are making sure that Singapore will be prepared to continue with its position as the vanguard of the industry by providing shipowners with a clear roadmap for adapting to evolving environmental regulations.

Rene Piil Pederson
SSA Vice President

Thought Leadership

International Carbon Taxation And Its Impact On Shipping Decarbonisation

Colin De Souza, Chair of SSA's International Committee and Regional Head South Asia of Ocean Network Express, ***explores the challenges and potential solutions to the issue of international carbon taxation.***

> *International carbon taxation in the shipping industry is a highly complex, not to mention evolving, field. While there has been progress through discussion and also efforts to implement such taxation, there are still some gaps and challenges that must be addressed if we are to achieve our goals.*

Colin De Souza, *Chairman,SSA's International Committee and Regional Head South Asia of Ocean Network Express*

This has been a watershed year for shipping. The International Maritime Organization (IMO) has set updated, and more stringent, targets for emissions control, and implementation of the new European Union regulations will also start to make an impression. The extension of the European Union Emissions Trading System (EU ETS) to include maritime emissions will come into force from the beginning of January and, one year later in January 2025, the FuelEU Maritime (FUEM) will apply. But just how prepared is shipping to meet these new regulations?

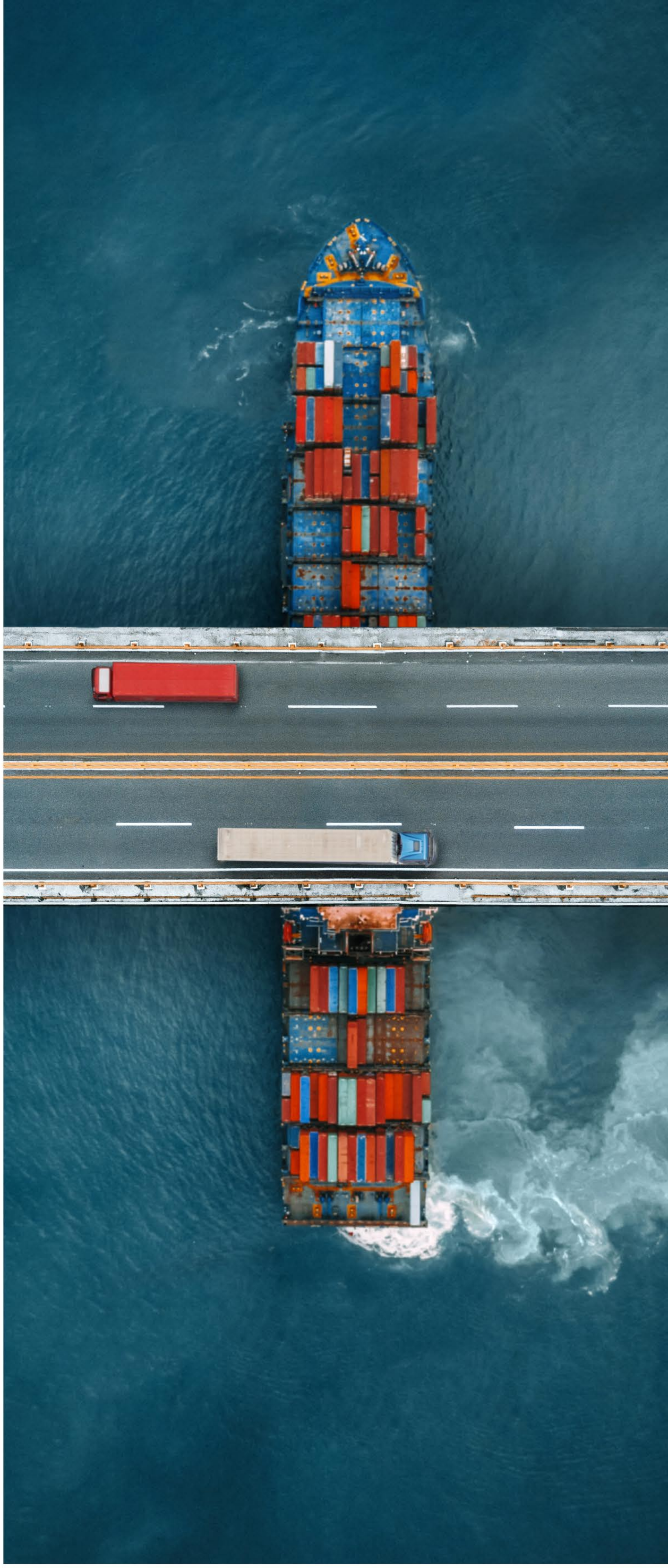
Challenges we face

One of the most significant challenges is the lack of a global consensus on the most desirable approach to carbon taxation that will ensure the results we all need to achieve. Although the IMO has taken steps towards emissions reduction, there is still no worldwide carbon tax regime in place as yet.

Furthermore, we see too great a variability in national regulations with different countries adopting their own carbon pricing mechanisms. This can lead to regulatory fragmentation and additional challenges for international shipping companies who are trying to comply with myriad rules in different locations. Until we can find a unified pathway to regulating our industry these issues will continue.

Besides, accurate measurement and verification of emissions from shipping vessels can be challenging as gaps exist in the standardization of measurement methods, leading to uncertainties in determining the emissions of individual ships.

When it comes to technology and fuel development, the availability and cost-effectiveness of low carbon and zero emission technologies and fuels for our sector are still evolving. The result is that there remain gaps in the technology needed and a lack of infrastructure to support the cleaner fuels of the future. This lack of clarity means that ship owners have been hesitant to make the investment, with its high initial costs, in net zero technologies while there is still uncertainty on cost recovery.



Building a consensus

However, there are a number of actions that SSA and other shipping associations can take to promote and encourage a move towards consensus which is built upon collaboration and cooperation.

By actively engaging with government bodies, the IMO and other international organisations, we can advocate for a coordinated approach to carbon taxation. We can also ensure that the interests and concerns of Maritime Singapore and the members of the Singapore Shipping Association are taken into account when any regulatory decisions are taken.

Innovation will be a key driver of success and we can actively encourage and support research and development projects in low-carbon zero-emission technologies. Our close links to the Global Centre for Maritime Decarbonisation (GCMD) in Singapore provide us with a route to lobby for innovative fuels and technology.

Collaboration and knowledge sharing between organisations offer an invaluable route to driving innovation and finding practical solutions in a cost-effective manner. SSA has facilitated many such collaborative initiatives whether through workshops, seminars or the introduction of potential collaborators from among our membership. We have also been instrumental in facilitating the formation of cooperative ventures between research institutions, startups, and technology providers to drive innovation.

By facilitating multi-directional collaboration, whether between members, between organisations or between members and organisations, SSA is maximising the opportunities for the development of creative thinking and real-world solutions that can benefit the entire maritime sector.

Building awareness

With the introduction of new regulations, the onus on shipping companies grows and SSA is playing a vital role in preparing its members through the implementation of a variety of awareness campaigns to educate shipping companies and stakeholders in Singapore. The Association is not only informing members about the implications of carbon taxation, but is also providing practical advice and making strategies available to support its members in reducing their emissions.

The International Committee also has run a number of initiatives to support our members and has arranged a presentation by certification and ship classification company RINA on the EU ETS and also on FUEM which have helped to guide our members towards readiness for these regulations. In addition we are organising talks with the GCMD which is investigating a number of fuel options for maritime and also with PSA to discuss the infrastructure needs of visitors to the Port of Singapore.

As mentioned before, port infrastructure will play a vital role in the transition to the clean fuels of the future and SSA is in constant contact with port authorities to make them aware of members' concerns. Whether using electric energy or one of the green fuels coming on stream including ammonia and methanol, bunkering in the Port of Singapore will need to fulfil vessels' energy requirements. SSA will continue to advocate for the development of green port infrastructure, such as shore power facilities, which will enable ships to switch to cleaner energy sources while at berth.

By working collaboratively and searching for a unified regulatory outcome, maritime will be able to achieve its demanding decarbonisation goals but they can only be achieved by the entire global industry pulling together.

Retrofitting For Decarbonisation

With the first of the IMO's indicative checkpoints due in just six years, it is essential that shipping companies start taking action – not in a few years' time, but today. One of the companies approaching this deadline head-on is leading independent dry bulker owners, **Berge Bulk.** ***The company has recently launched the world's most powerful sailing cargo ship, the Berge Olympus.***

Speaking to Waves, Sylvain Julien, the company's Head of Innovation and Newbuilding, explained some of the thinking that lies behind the decision to retrofit the vessel with BAR Technologies' WindWings.

> *"Berge Bulk has had a long-standing commitment to decarbonisation, including carbon neutrality by the end of next year. Berge Olympus is one of the more visible projects to have come to fruition to achieve those goals. Our approach to decarbonisation includes a strong focus on both improving our vessel's efficiency and implementing new technologies with the aim to reduce our fuel consumption and GHG emission. Wind assisted technology has a strong part to play in the delivery of those ambitions.*

Making a business case

The cost and availability of alternative fuels is playing an important role in Berge Bulk's future plans. ''Beyond the immediate effect these new technologies bring, in terms of environmental benefits, reducing our fuel consumption is also a key objective to enable a smoother transition to alternative fuel. These new fuels are significantly more expensive than traditional ones and their availability in quantity meaningful for the shipping industry is also not yet assured.

Sylvain Julien, *Head of Innovation and Newbuilding, Berge Bulk*

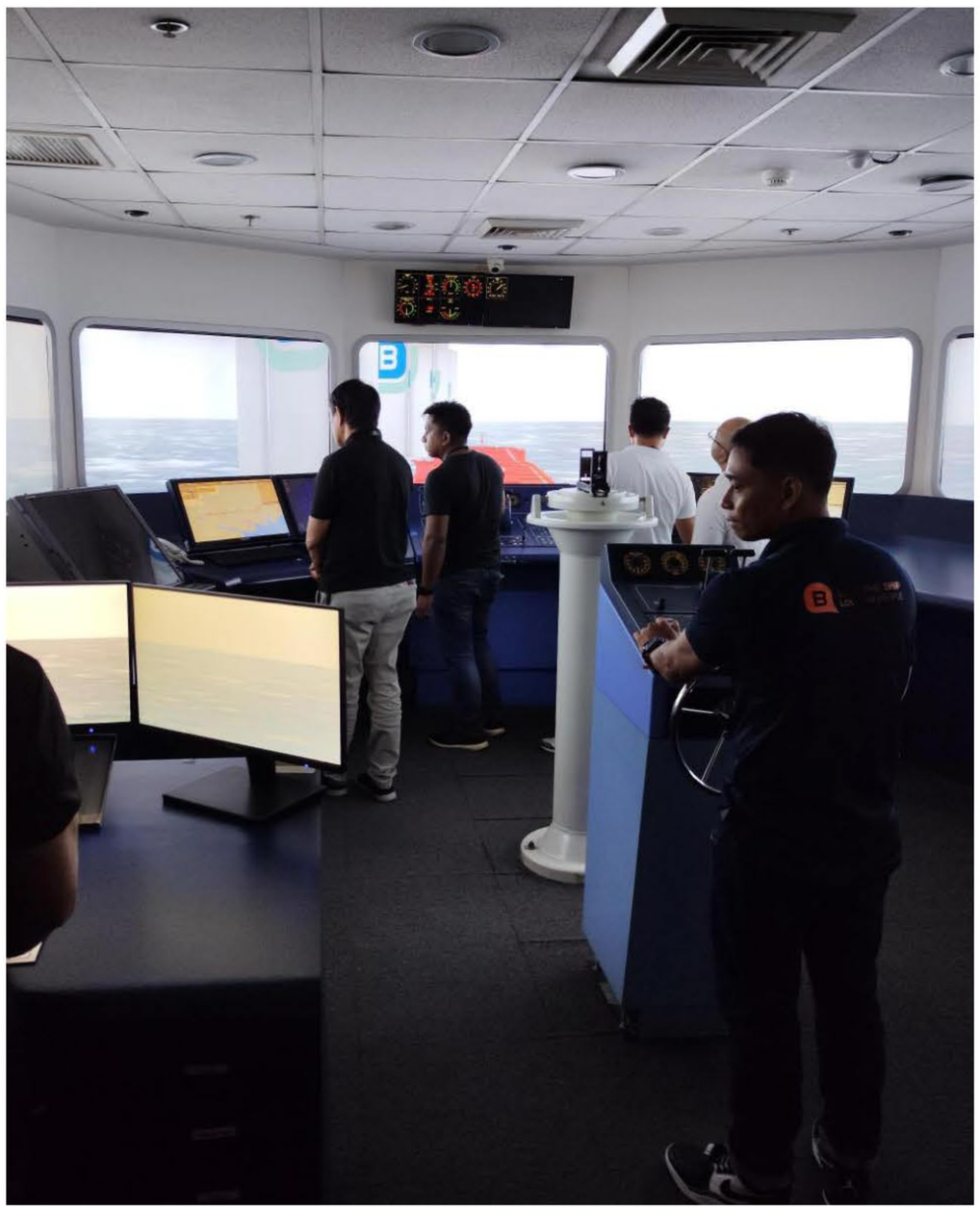
It is essential for us to reduce the amount of fuel we use before we can make that transition.''

Expanding on the financial considerations, Sylvain added, ''Implementing a wind assisted propulsion systems retrofit is a capital-intensive exercise that still needs to make sense from a financial perspective. There is no doubt that this can be challenging as the industry knowledge and understanding of such technologies is still maturing. I am fortunate to work in a company where the environmental strategy is being shaped as an integral part of the business strategy. This allows Berge Bulks to take a long term view to such a decision and give us the tool to ensure we meet our environmental ambition.

Concurrent decarbonisation strategies

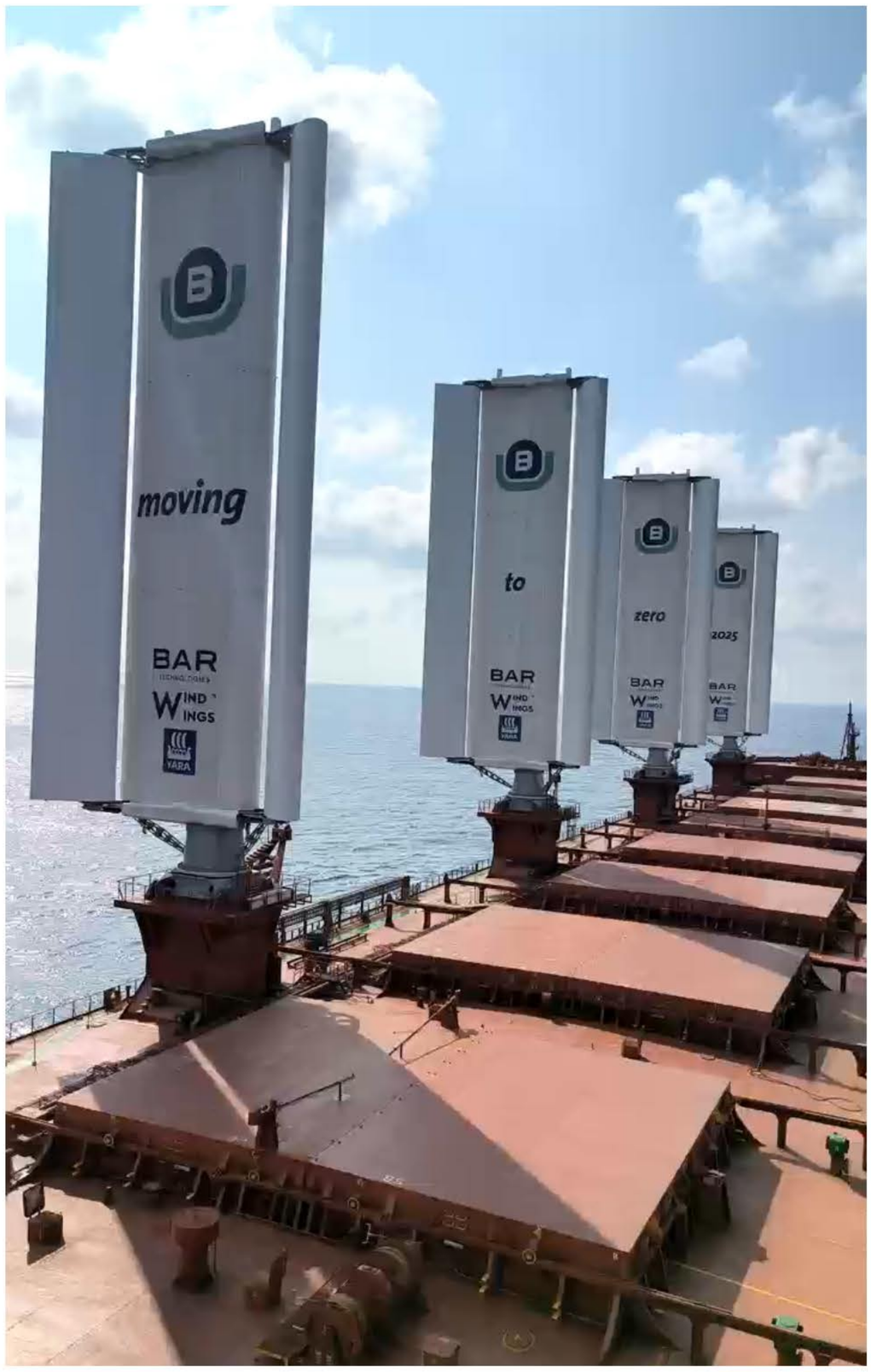
While sails are a highly-visible sign of decarbonisation activity, there are other steps that owners can take which will also reap fuel-savings benefits BergeBulk, Sylvain shares that ‘‘Energy saving devices come in all shapes and forms. Their suitability to a given vessel or trade varies greatly. Some of these technologies are also at a relatively early stage in their development cycle with limited operational experience, this requires some further consideration.

> *“Underpinned by a strong technical review, we develop upgrade plans for our vessels that look at the entirety of the optimisation potential. Before considering wind assisted technologies, it is important to address the low hanging fruit of vessel optimisation.”*



Keeping crew onboard

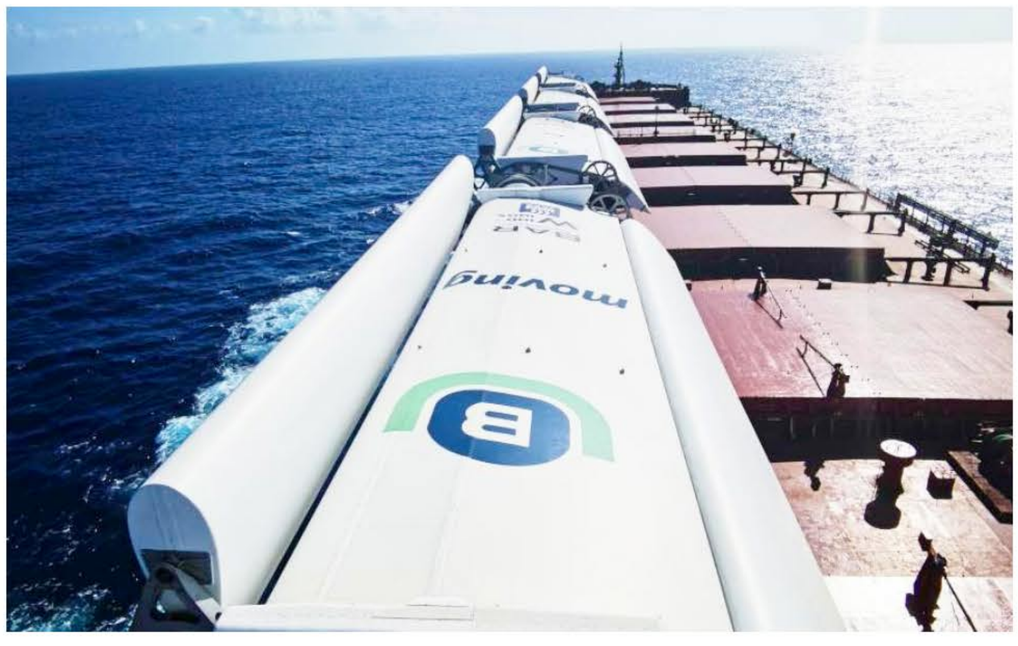
There is a strong human element attached to the implementation of innovative technology. Despite being around for thousands of years, wind power is a new concept to modern seafarers. Engaging and training the crew is an important aspect to ensure safe, reliable and sustainable operations that will secure long-term success. ‘‘Training has been a key focus of this project. Although the WindWings are fully automated, the technology is changing the crew’s day to day operations. As an example, advanced navigation aids, to account for the reduced visibility created by the WindWings, have been introduced. All crew with watch duty have participated in bridge simulation training developed by the Berge Bulk team to familiarise themselves and develop the new operational best practice.’’



A long-term perspective

Coming from a ship design background, Sylvain found that the long term perspective a ship owner must keep, broadens the scope of work considerably beyond engineering, making such projects all the more complex. ''The need to ensure the system continues to perform safely and reliably for the next 20 years means that the engineering and installation phase, however exciting, is only the beginning of the journey. A significant amount of work to continue to support the development of the equipment and develop our knowledge lies ahead.''

Beyond vessel navigation, deploying new technologies bring new challenges from a technical point of view. Sylvain added: ''Our crew, and in particular our engineers, have been trained extensively to operate and maintain the WindWings, they were involved in the installation process from the very beginning of the drydocking. From an initial cautious level of interest, the crew engagement has grown throughout the project to become the main driving force towards technology operational improvement''



This long-term view also underpins Berge Bulk decarbonisation strategy. From pilot projects such as the WindWing installation, or the Flettner rotors currently being installed on another vessel, Berge Bulk keeps potential future deployment programs in mind as part of its evaluation process. ''As we accumulate operational experience and knowledge, we assess suitability for other vessels to deliver on our environmental ambition. Of course, it is not only about verifying the energy saved, it is also about developing a strong operational knowledge to reduce the uncertainty associated with such a project. This includes, for example, a strong understanding of the maintenance requirement or getting the confirmation that our manning levels are suitable. Equipped with this knowledge we can define which technologies best suits each vessels/trade and ultimately draw the most efficient path towards decarbonisation.''

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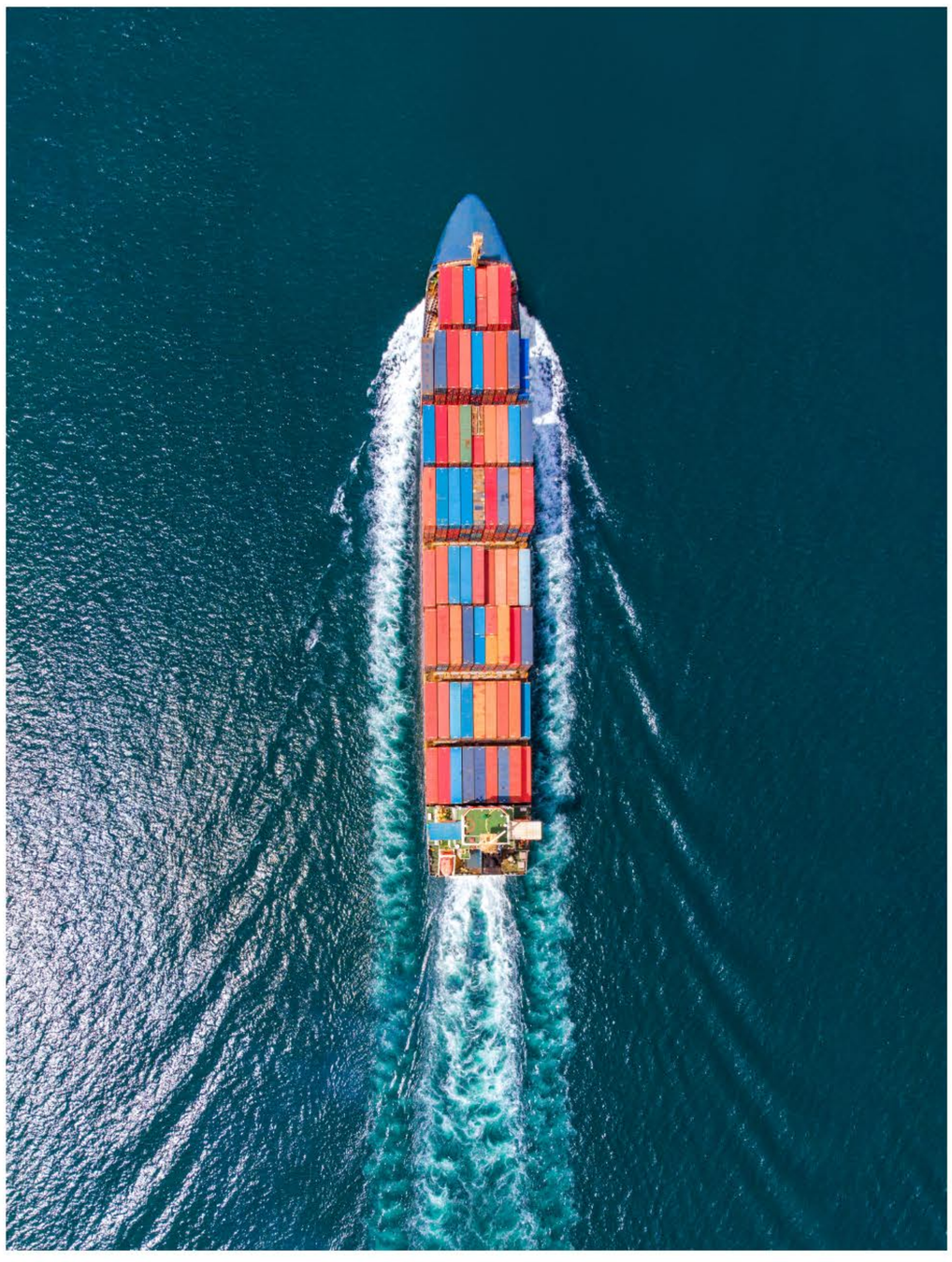
A Commitment To ESG Opens The Door To Green Finance

Beyond tracking your fleet's emissions, reporting and measuring a maritime company's total emissions that encompasses all aspects of the business is crucial for securing financing. **Clement Chang** ***is*** **Chief Operating Officer at Metizoft,** ***a company which supplies environmental, social and governance (ESG) services to the maritime industry as well as ship recycling solutions and lifecycle assessment. Here he takes a look at the role played by a company's ESG in securing finance.***



Clement Chang, *Chief Operating Officer, Metizoft*

Whether viewed through the lens of financial institutions or shareholder investment, ESG is playing a pivotal role in today's decision-making process. Taking an Asian perspective, it is evident that banks are actively embracing sustainable practices and demonstrating a commitment to achieving net-zero in terms of carbon emissions which has an impact on how they conduct business.

Clients must meet green criteria

To achieve net-zero targets, banks are emphasising alignment with green objectives among their clients. Consequently, there is a growing trend where banks are requesting owners to provide them with sustainability reports so they can assess what steps have been taken. Simultaneously, banks expect clients to establish and actively pursue goals related to carbon emissions. However, the evaluation extends beyond environmental considerations; financial institutions are delving into the social responsibility of potential clients. For example, do they have women in leadership roles within their organisation?

In assessing investment potential, financial institutions require companies to adhere to specific guidelines. These include the UN Sustainable Development Goals (SDGs); the Global Reporting Initiative (GRI) which aids businesses in preparing comprehensive reports on sustainable development impacts; and the Sustainability Accounting Standards Board (SASB). The SASB mandates companies to measure, manage and report on various aspects such as the environment, human capital, social capital, business model and innovation, and leadership and Governance. Notably, in Asia, many companies are opting for SASB as they allow for quantifiable standards and achievements, encompassing areas like marine transportation standard, greenhouse gas emissions across Scopes 1, 2 and 3 as well as ecological impacts such as number and volume of spills.

Climate change is key

When seeking funding, the paramount consideration is climate change, significantly impacting investment decisions. Obtaining a green loan now hinges on the submission of a sustainability report, placing a strong emphasis on environmental sustainability and decarbonisation efforts. This aligns with developments at the International Maritime Organization (IMO), where initiatives like EDI, EXIF, and CII form integral components of the IMO Data Collection System (DCS).

> *Investors are demanding that companies walk the talk – have they started the transition to alternative fuels? Are they slowing their ships to conserve fuel resources?*

Social standards also important

While investors are demanding commitment to sustainable practices, looking not only at the financial bottom line but also at the triple bottom line that takes account of impact on society and the environment, there are many benefits to be gained from implementing high ESG standards. For example, preventing legal complications for organisations that care for the environment, and allowing fair employers to attract and retain the best talent. However, companies do require investment to be sustainable so there is a need for a delicate balance in financial markets and financial institutions are actively working towards this equilibrium by setting parameters and monitoring performance.

Green financing in Singapore

In the Singaporean marketplace, notable changes are underway, exemplified by the establishment of the government agency Enterprise Singapore's Enterprise Financing Scheme – Green (EFS-Green). This initiative facilitates access to green financing for companies in Singapore.

Conversely, we are beginning to see green investors divest from companies that fall short of acceptable sustainability standards. What is more, this could spill over to other financial institutions who may start to take a more stringent approach to sustainability issues.

Singaporean companies particularly those listed on the Stock Exchange need to take this seriously. Merely having a glossy sustainability report is no longer sufficient, these reports are publicly available and open to scrutiny so companies must be seen to be practising what they preach. While it may have been possible to 'green wash' in the past, today every stakeholder takes an interest in actual implementation of sustainable actions taken.

Different expectations around Asia

There isn't a universally adopted reporting system that is used around the region but our observations reveal that GRI is most commonly used in Singapore and Taiwan whereas Hong Kong tends to prefer SASB, emphasising their preference for quantifiable reporting. We are also expecting a new standard to be introduced by the EU and this will impact business in Singapore and the broader Asian context as will the Cross Border Adjustment Mechanism that applies to all manufacturers that supply companies within the EU be expected to exert further influence on business dynamics in the region.

Making your business more attractive for green financing

While many companies currently produce an annual sustainability report, a more beneficial approach would involve transitioning to quarterly reporting. This adjustment allows them to closely monitor their achievements, facilitating prompt action and to implement further steps as successes become apparent. This process is not as difficult as you might imagine as there are apps available to streamline and support this process, including those from companies like ours.

> *"But for those who are just setting out on their sustainability journey, my advice would be to start small and focus on addressing the low-lying fruit first, particularly your Scope 1 emissions. Gradually building on these achievements will pave the way towards Scope 2 and, ultimately, Scope 3 emissions. This incremental approach is not only more attainable but also allows for the compilation of necessary data for the inaugural sustainability report.*

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Low-Carbon Fuels and Technology - Shipping Must Start Making Some Hard Choices Soon

The options for achieving the IMO carbon emissions goals are becoming clearer but many in shipping are still holding back from making a commitment to any one solution. Despite increasing clarity regarding opportunities for change, challenges to the adoption of alternative fuels persist in areas such as financing, supply, production, storage, and transportation. Some owners have opted for LNG but that can only be an interim answer as emissions, although lower than with traditional fuels, are still too high to meet net zero targets.

A 3D render of what the completed boat will look like.

Innovative ammonia solution

One innovative idea that is under development is the Amogy system which works by cracking ammonia to extract the electrons stored in the hydrogen. Ammonia is easier to transport and store than hydrogen (requiring a storage temperature of minus 33 degrees rather than the minus 250 degrees required by hydrogen). The company's Head of Business Development & Sales, Singapore, Svein Erik Oeistad, explains,

> *Essentially our system takes ammonia, cracking it to produce hydrogen which we use on a fuel cell to generate electricity. This can be used to drive an electric motor or stored in a battery.*

The Amogy system could potentially be used to fully decarbonize smaller vessels. For now, for larger vessels, the system will be able to provide the entirety of its electric requirements from cargo systems to the coffee machine. The big advantage would be that a large vessel driving its internal combustion engine with ammonia would be able to use that same fuel to fulfil its electricity requirements allowing it to streamline its bunkering.

Svein believes that ammonia offers shipping a truly viable future with zero emissions, ''The Amogy system of itself is net zero but the real issue is the source of the ammonia. We need to move away from grey ammonia

Svein Erik Oeiestad, *Head of Business Development & Sales, Amogy Singapore*

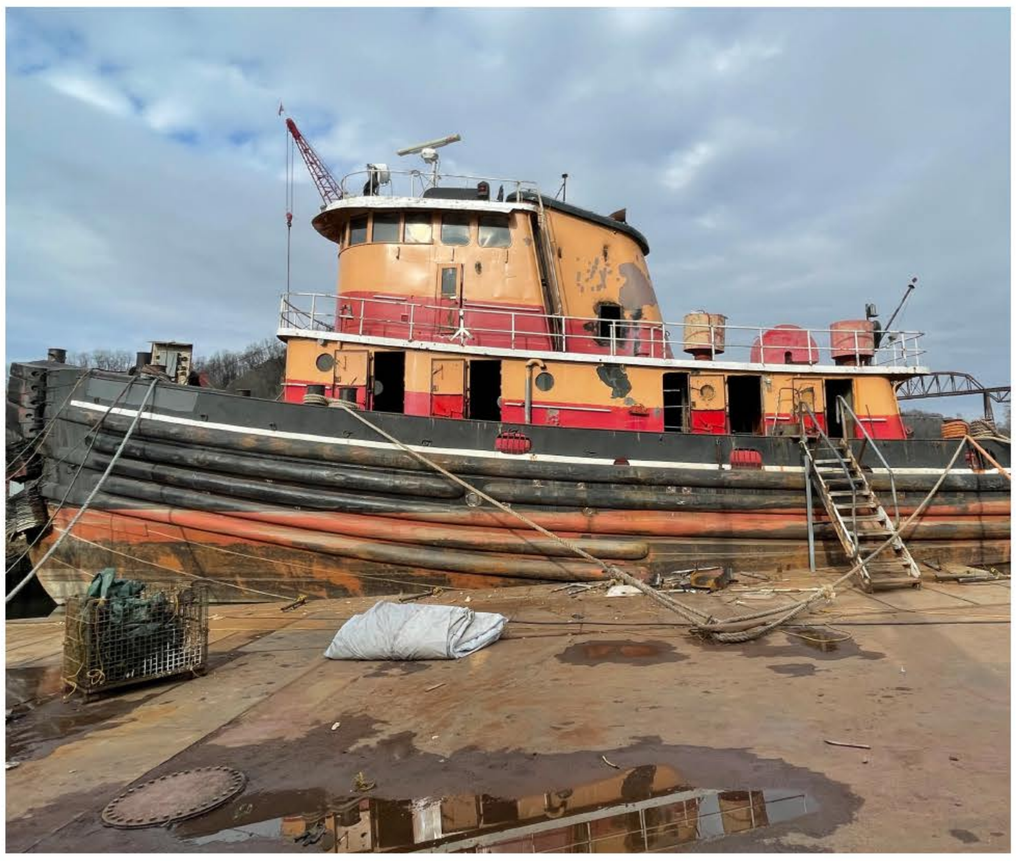
which uses fossil fuels, to blue ammonia (where the carbon emissions have been captured), ideally focusing on green ammonia which is entirely produced using renewable energy such as wind or solar.

> *The drive must be towards 'well to wake' and we shouldn't be satisfied with 'tank to wake' as that is simply pushing the problem up the energy supply chain.*

''It is already possible to produce blue and green ammonia which is scalable and the industry has experience in handling it. As demand grows, there will be an increase in the manufacture of blue and green ammonia and supply will naturally rise to meet that demand. It is perfectly conceivable that ammonia could be onstream as marine fuel within the next few years, 2026/2027 are realistic dates, providing that regulations are in place for bunkering and its use onboard.''

*A photo of Amogy's CEO , **Seonghoon Woo** in front of the vessel.*

As the world’s largest bunkering hub carrying some 36% of the world’s bunkering, the Port of Singapore will play a major part in developing the infrastructure needed to switch to the new alternative fuels. Amogy has been looking into the possibility of operating off-grid charging solutions, both in Singapore and elsewhere. Ammonia generators could be located wherever convenient and be used with the Amogy system to charge battery cells that could then be delivered to the vessels requiring them, providing energy support while reducing ship emissions at port.



Value Maritime Lift Filtree

Carbon capture

Carbon Capture (CC) is a viable option for shipowners looking to operate their vessels on fossil fuels while abiding with the environmental regulations for shipping set by the EU and IMO, and this process can be applied retrospectively to existing fossil fuels such as High Sulphur Fuel Oil (HSFO), as well as alternative marine fuels such as Liquified Natural Gas (LNG) and methanol. Value Maritime has developed the technology to make this option available to vessels currently powered by existing fossil fuels with a carbon capture component that can supplement its exhaust gas cleaning system known as ‘‘Filtree’’. This scrubber system enables CO2 to be captured using an amine-based concept, in addition to the sulphur oxides and ultra-fine particulate matter emitted from the exhaust gas. The amount of CO2 captured will depend on the type of fuel that is being burned, so the ‘cleaner’ the fuel, for example Liquified Natural Gas (LNG) or methanol (which has no sulphur content) the greater the potential for capturing carbon with an upper limit of approximately 80 to 90%.

Perhaps the most interesting aspect of the work undertaken by Value Maritime is that its Filtree system not only captures the CO2 but its sister company, Value Carbon, set up in 2023, also looks at managing carbon offtake (sea-based and land-based), processing, transportation, reuse and storage. Robin Chang, the company's Regional Manager, Asia Pacific, explains

> *"Our CC system has been tested and proven on over 20 vessels in the water and our offloaded CO2 has been supplying greenhouses in the Rotterdam area and soon also in the UK.*

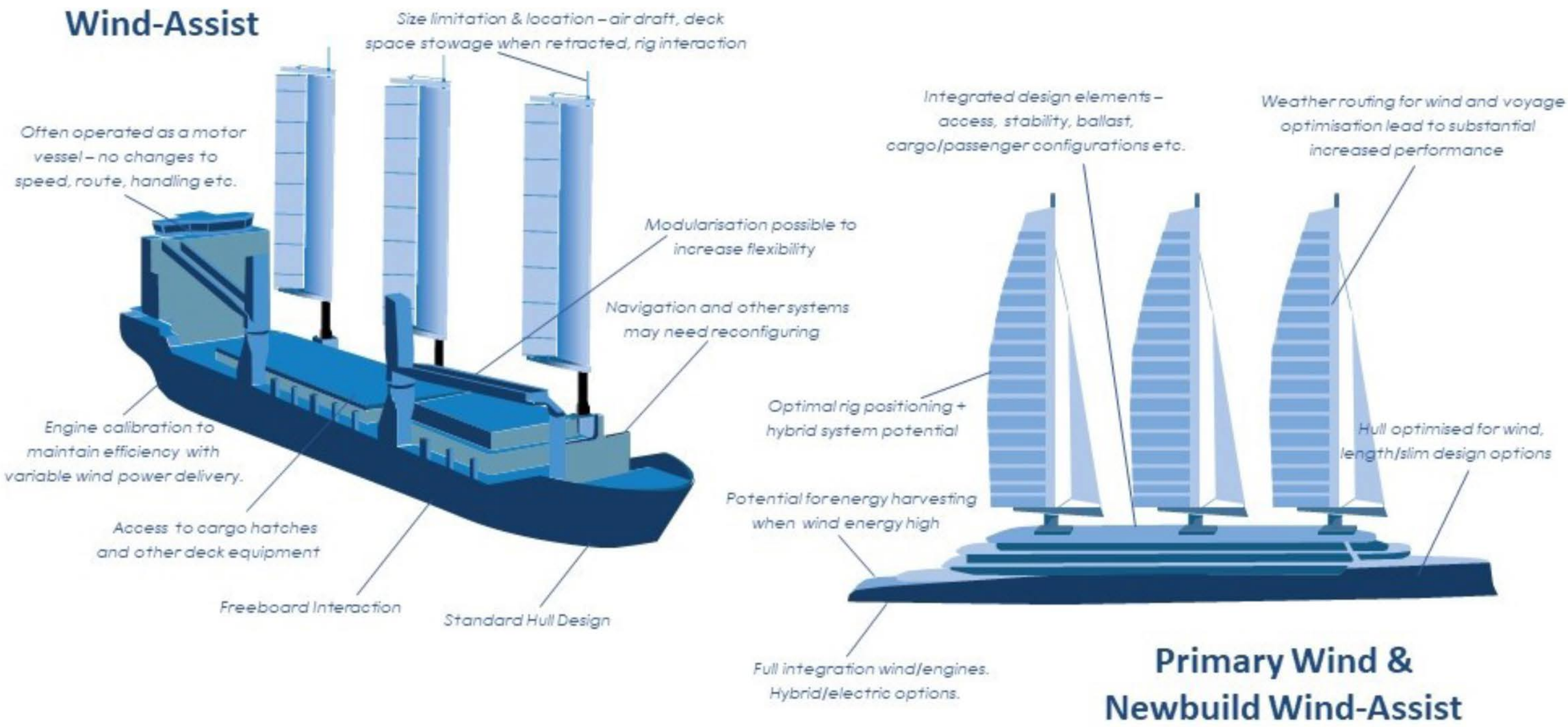
Since Singapore is limited in terms of land space and agriculture is not one of the island city-state's main GDP drivers compared to the Netherlands,

Value Maritime Atlantis A (x-press feeders)

Robin Chang, *Regional Manager, Value Maritime, Asia Pacific*

> *"We are currently in the process of looking at alternative uses for CO2 in Singapore and are having some interesting discussions with CO2 offtakers. It is essential that there is a beneficial outlet for any CO2 that is captured from vessels so that we can create the ideal circular solution.*

Although the CC system is currently installed on small-to-mid-sized range of vessels such as Container Feeders and MR Tankers, the potential is there for the system to be scaled up to cater to much larger vessels such as VLOCs and VLCCs, and even vessels in the Offshore Oil & Gas segment. For owners wanting to adopt this new technology, it is equally suitable for retrofit or for installation on newbuilds, although Principals would need to take into consideration the space on board their vessels to accommodate the storage of the carbon absorption solvent (amines).



Wind power

One source of power that has been with us for more than 5000 years and is certainly free of emissions is wind. Having been stuck in the doldrums for the best part of a century, wind power is once again rising towards the top of the agenda and, possibly the most attractive aspect of it, once the hardware is installed, wind power is a free resource.

Gavin Allwright is Secretary General of the International Windship Association (IWSA) which was set up to promote maritime wind propulsion solutions. For him wind propulsion ticks both the environmental and the financial boxes.

> *"The fact is that if the world's entire fleet adopted wind propulsion alongside voyage optimisation by 2030, the 20% global fuel savings would equate to financial savings of between 1.3 and 1.5 trillion dollars, roughly the estimated cost of decarbonising shipping. What's more, by adding air lubrication, heat transfer devices and energy management, you could add an additional 20% of fuel savings.*

Gavin Allwright, *Secretary General, International Windship Association (IWSA)*

"For those vessels that are wind assisted and have retrofitted sails to their energy mix, they are achieving up to 20% of propulsive energy without changing a single factor of their journey (the ETA, the same route as usual etc). However, if one is prepared to delay the arrival time by approximately 20%, that would allow for a slight change of route that could maximise wind energy and could double the savings generated.

"The balance is even more in favour of adding wind when building a new vessel as the systems can be optimised to the ship. A ship built to be primarily wind powered would be achieving approximately 50% savings although on some routes the achievable figure would be 70% and upwards.

"In fact it is a relatively easy task to add sails to a vessel providing the deck is reinforced to carry the additional weight and the foundation plates have been installed. A sail rig can be installed in a matter of two to three hours, and if using a containerised sail system, the container can be lifted off of one ship and installed on another so that fleets can optimise wind power according to which vessel is travelling on any particular route.

"While fuel costs have been kept artificially cheap there has been little incentive to introduce wind assistance but things are beginning to change. Wind has now been recognised as a fuel so there is a pathway in the IMO life cycle analysis. We are an industry that hurries up to wait and it might be that there is growing realisation that slowing down a little to take advantage of natural resources doesn't actually affect the supply chain."

Time is running out

The revised IMO GHG strategy has introduced stringent deadlines for shipping to transition to alternative fuels. The expertise is starting to come on stream to realise these goals but it's now imperative that maritime acts quickly to adopt these advances if we are to avoid a last-minute scramble to achieve targets.

Upskilling Seafarers To Achieve Decarbonised Shipping

A study initiated by the Maritime Just Transition Task Force revealed that approximately 800,000 seafarers might need extra training by the mid-2030s to proficiently handle ships powered by zero or nearly zero emission fuels. Most recently, the International Maritime Organization (IMO) and Lloyd's Register Foundation announced that they are collaborating on the Baseline Training Framework for Seafarers in Decarbonization. This initiative aims to equip seafarers with the necessary skills for the transition to zero-emission shipping, by building a common understanding within the maritime ecosystem with regards to curriculum development, training standards and educational materials.

Under the supervision of IMO and the Maritime Just Transition Task Force Secretariat, Lloyd's Register will take charge of developing the training framework and an instructor handbook for maritime training institutions. The World Maritime University (WMU) based in Malmö, Sweden, a renowned IMO institute, will lend its academic expertise to the project.

Upon completion, the Baseline Training Framework will be made available to IMO Member States like Singapore. Maritime education and training (MET) institutes can utilize the framework to enhance their programs. One such MET is the Singapore Maritime Academy (SMA) at the Singapore Polytechnic who is in the midst of developing and strengthening their seafarer training programmes as we approach the foreseeable future of our industry adopting newer fuels.

We speak with Capt Chatur Wahyu, Acting Director to understand how SMA is taking proactive steps to help seafarers update their skills as new demands of operating zero emissions ships kick in, and why collaborating with industry partners for up-to-date training on green fuels and practices is a necessity in this decarbonization journey.

Q: Are there already continuing education courses for the industry to be trained on handling new fuels and which ones?

At SMA, we are committed to ensuring that our students and industry participants are well-prepared for the evolving maritime landscape, including the adoption of new, eco-friendly fuels. In addition to equipping our Diploma students and industry participants with knowledge and skills related to traditional fuel systems, SMA has taken proactive steps to provide training for seafarers in handling newer shipboard fuels, including liquefied natural gas (LNG).

We are proud to report that curriculum development focused on emerging fuels like Methanol and Ammonia is also making significant progress. Some of the topics we are likely to cover in the upcoming courses include Physical and Chemical properties, Fuel System, storage and handling, Firefighting / SCBA / PPE - Hazmat Response & Equipment and Maintenance & Inspection of fuel system.

This is being done in close collaboration with the Maritime and Port Authority of Singapore (MPA) and various other stakeholders. We recognise the importance of staying at the forefront of these industry developments and will continue to enhance our training programs to ensure that seafarers are well-prepared for the use of new, eco-friendly fuels like Methanol and Ammonia.

Scope 3 emissions. This incremental approach is not only more attainable but also allows for the compilation of necessary data for the inaugural sustainability report.

Q: How does the Singapore Maritime Academy ensure that seafarers receive up-to-date and relevant training as the maritime industry evolves with new fuel technologies and strives to meet its sustainability goals?

At SMA, we place a strong emphasis on keeping our seafarer training programs aligned with the dynamic landscape of the maritime industry, especially in light of new fuel technologies and sustainability goals. To ensure that seafarers receive up-to-date and relevant training, we follow a multifaceted approach, including the following:

Regulatory Compliance: SMA closely adheres to the prevailing recommendations and regulations set forth by internationally recognized authorities such as the International Maritime Organisation (IMO) and the Maritime and Port Authority of Singapore (MPA). These organisations provide guidance and updates on industry standards, safety protocols, and environmental sustainability practices. Our curriculum is designed to meet or exceed these standards.

Continuous Curriculum Development: We maintain a rigorous curriculum development process that incorporates feedback from industry experts and professionals. This iterative approach allows us to update our course materials, teaching methodologies, and practical training exercises to reflect the most current industry practices.

Technology Integration: SMA leverages the latest educational technologies and simulations to expose seafarers to real-world scenarios and cutting-edge fuel technologies. This hands-on experience with new technologies and sustainable practices equips them with the skills and knowledge required to adapt to the changing industry landscape.

Research and Development: We invest in research and development to stay at the forefront of maritime technology and sustainability solutions. This includes ongoing studies on alternative fuels, green shipping practices, and emerging technologies. The insights gained from our research activities directly inform our training programs.

SMA is committed to providing seafarers with training that is not only up to date but also forward-looking, preparing them to navigate the maritime industry's evolving landscape with confidence and competence.

Q: Could you describe the role of simulators in your training programs? How do they help seafarers gain hands-on experience with these green fuels?

Simulators play a crucial role in training programs for seafarers, particularly when it comes to gaining hands-on experience with green fuels. The utilisation of simulators in training programmes unfolds in several ways, each contributing to the holistic development of seafarers in handling green fuels.

Simulators excel in their capacity to authentically replicate the working conditions aboard a ship, meticulously mirroring the utilisation of green fuels. They recreate the operational environment, systems, and equipment that seafarers will encounter on board vessels powered by green fuels. This allows trainees to practice in a controlled setting before they are exposed to real-life situations.

A hallmark feature of simulators lies in their provision of hands-on training, offering a dynamic learning experience devoid of the inherent risks associated with actual green fuels. Seafarers can practice tasks such as fuel management, engine operation, and emergency procedures related to green fuels. This practical experience is vital for ensuring safety and efficiency when using these alternative fuels.

The unique properties of green fuels, such as Methanol or ammonia, pose safety challenges that simulators are adept at addressing. Simulators help seafarers understand the potential risks associated with these fuels and how to manage them. This reduces the likelihood of accidents and enhances safety at sea.

Simulators facilitate scenario-based training, allowing the creation of diverse situations, including challenging scenarios and emergencies. Seafarers can train to respond to fuel-related incidents, like leaks or fires, in a safe and controlled environment. This preparation is essential for quick and effective decision-making during real emergencies.

Given that the utilisation of green fuels often necessitates compliance with stringent environmental regulations, simulators serve as educational platforms. Simulators can educate seafarers on the specific requirements, helping them understand how to operate vessels in an eco-friendly manner and adhere to emissions standards.

Beyond their educational merits, simulators offer a cost-effective alternative to training on actual vessels employing green fuels. This approach minimises the need for physical resources, concurrently reducing the environmental impact associated with practical training exercises.

The versatility of simulators extends to skill enhancement, enabling seafarers to refine proficiencies in fuel management, navigation, and engine operation. These skills are critical for optimising the use of green fuels, ensuring fuel efficiency, and minimizing the environmental footprint of maritime transportation.

Q: What safety aspects are integrated into your curriculum to address the unique challenges associated with handling new and eco-friendly fuels in the maritime sector?

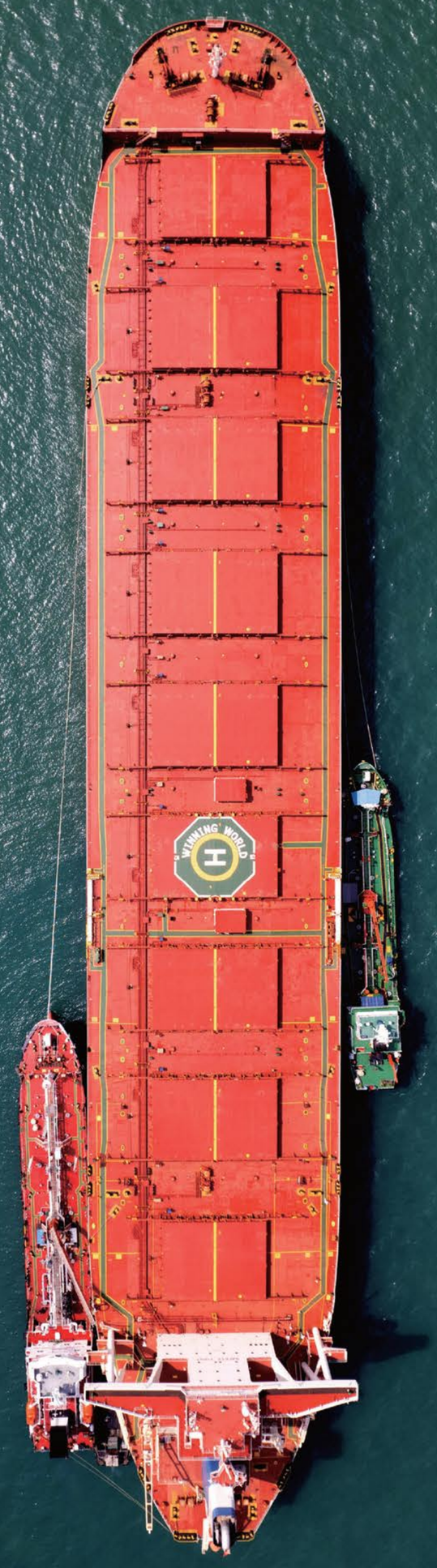
Integrating safety aspects into a curriculum to address the unique challenges associated with handling new and eco-friendly fuels in the maritime sector is crucial to ensure the well-being of both the crew and the environment. Here are some key considerations and elements that we plan to integrate into the curriculum:

- Hazard Awareness and Identification
- Safety Regulations and Compliance
- Emergency Response Training
- Fuel Handling Equipment
- Risk Assessment and Management
- Personal Protective Equipment (PPE)
- Crew Training and Communication
- Environmental Stewardship
- Continuous Learning and Updates
- Case Studies and Practical Experience

Q: Are there any industry partnerships or collaborations that the academy engages in to stay at the forefront of developments in sustainable shipping and fuel handling practices?

To ensure that SMA remains at the forefront of developments in sustainable shipping and fuel handling practices, our academy proactively engages in industry partnerships and collaborations. We recognize the significance of consulting with a wide range of stakeholders to create comprehensive and effective training programs. This collaborative approach involves seeking input from various stakeholders, including but not limited to HR departments, class societies, and engine manufacturers. By doing so, we we gain valuable insights into the evolving needs and challenges faced by seafarers in the field and can ensure that our courses are not only relevant but also aligned with the latest industry standards and best practices, ultimately benefiting our students and the maritime industry.

To find out more about SMA courses, check out this link: https://www.sp.edu.sg/sma



We Are **Winning**

Winning International Group has just celebrated its 20-year Anniversary in 2023

with its rich experience in ship owning and managing, shipping and transshipment operations, mining development, railway and port construction and operations;

running a self-owned fleet of 43 Capesize bulk carriers with a total deadweight tonnage (DWT) of more than 8 million tons;

newly building two WinningMax 325,000-dwt ore carriers with large load capacity, energy saving and emission reduction, and methanol fuel readiness to comply with IMO standards for international shipping safety, security and environmental performance;

proud to be the largest bauxite ore carrier in the world and the leading partner of the largest Bauxite producer in Africa, the SMB-Winning Consortium;

managing the construction and operation of the major new mining infrastructures in West Africa, i.e. the Dapilon-Santou railway, the “Transguineen” railway, the Dapilon port and Marebayah port;

investing in the development of the largest green field mining project, Simandou iron ore project and its infrastructures with world-class industrial partners.

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Winning International Group

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Feature

Net Zero by 2050: The Singapore Harbour Craft Industry's Journey

Singapore's first pure electric seagoing ship, Penguin Refresh, was officially inaugurated in April 2023 and commenced commercial runs two months later. This was Singapore's first big step towards harbourcraft electrification. In January 2024, all three electric ferries - Refresh, Recharge and Renewable - began peak hour runs between Pasir Panjang Ferry Terminal and Shell's Energy and Chemicals Park on Pulau Bukom in southern Singapore, shuttling more than 3,000 passengers a day across the 2.7-mile channel.

At the Pulau Bukom ferry terminal, Penguin International Limited, the homegrown shipbuilder and shipowner, also developed and installed the rapid DC shore chargers and automated overhead jibs that recharge the electric ferries within 6 to 8 minutes each time. Together, this integrated ship-to-shore project is dubbed "Electric Dream" by the company.

Notwithstanding the realisation of Penguin's "Electric Dream", Singapore's journey towards its goal of net zero by 2050 will not be without its challenges, particularly for smaller operators who lack funding and the benefit of operating at economies of scale.

So how can the industry spur the adaptation of new technologies that are both affordable and sustainable for owners of harbour craft, pleasure craft and tug boats in Singapore?

Mohamed Rashed, who founded start-up Razor Blunt Labs Pte Ltd three years ago to advise maritime transport on how best to achieve decarbonisation, believes that Singapore can meet this target for two reasons, "Firstly, the technology is already in place and continuously advancing - we don't agree with the voices expressing the belief that it is insufficiently mature. Secondly, green financing is available for anyone intent on decarbonising their fleet."

Rethinking harbourcraft decarbonisation

However, Rashed highlights that there needs to be a shift in approach for the sector to decarbonise and renew its fleets. He said:

> *I would like to see more emphasis on the needs of the end user and less on the research and development side of things so that industry can request what it needs rather than be told to choose from what's available. Every business is unique and so it is very difficult to come up with a generic solution that will be fit for every individual purpose. Owners and operators shouldn't be required to specify technologies, but rather their business requirements. We can't expect an operator with one vessel to be able to adopt the same solution as the multi-vessel fleet owner.*

Mohamed Rashed, *Founder of Razor Blunt Labs*

Likewise, Rashed feels that the smaller operator is disproportionately disadvantaged by the imposition of penalties as, for example, with carbon pricing mechanisms. "The problem with these sorts of systems is that they penalise the late transitioners, those who have already experienced a more difficult decarbonisation path than others. The carbon offsetting and accounting market also lacks transparency and mainly favours the carbon traders."

Infrastructure to support new technology is also an area of concern for him. ‘‘Energy companies must talk to operators to inform their planning and implementation although that can lead to a large number of options and a reduction in economies of scale.’’ Having said that, he is also keen to point out that ports, by their very nature, tend to form clusters where vessels performing similar functions can be found. It is therefore possible to aggregate specific categories within each zone, planning to support the operational and commercial requirements of the individual cluster with targeted charging or bunkering facilities.

Facilitating the adoption of cutting-edge design

Digitalisation has a vital role to play in the achievement of net zero emissions. Although many companies are digitally twinning their processes to simulate what is happening on the ground, for Rashed advanced digital modelling is the factor most likely to drive success.

> *Digital modelling allows for innovation and encourages a process of evolving design whereby it’s possible to analyse a range of permutations and challenges before a single dollar is spent. The costs are not capital intensive and it allows financiers to see how the vessel will operate and understand the business case at an early stage.*

Syb Ten Cate Hoedemaker *at Europort 2023*

Battery technology will be key to decarbonisation

While it seems unlikely that electric vessels alone will solve the net zero challenge, they are at the forefront of the new technology and their success will rely on the batteries supporting them. Syb Ten Cate Hoedemaker, Managing Director at Maritime Battery Forum, is convinced that the battery technology available today performs well enough to provide energy to most ships, particularly if they are operating hybrid propulsion systems. ‘‘We actually see the battery as an enabler for other technologies. It allows you to increase the efficiency of whatever technologies you are utilising. For example, if you have a shaft generator, a battery will allow you to maximise the benefits.’’

Although batteries represent new technology, efforts have been made to reduce the complications of installing them. Integrating batteries into shipping containers or similar sized structures is one solution to make it easier to install batteries on board ships. This can be as a fixed structure on deck or as a swappable battery pack. Syb continues, ‘‘By placing batteries in containers it will be possible to switch to different types in the coming years as technology moves ahead, perhaps to hydrogen, methanol or ammonia -based systems, or a combination of them.’’ Many owners are concerned about the capex involved on switching to battery powered vessels and Syb would like to see electricity prices reducing – a move that would benefit entire populations, not just vessels. ‘‘Owners, as well as ship designers, need to start thinking about energy in a different way, considering factors such as how much energy they actually need, how long they need the battery to last between charges, and how they can optimise the use of that energy.’’

Capex is also a concern raised by Rashed who is eager for a second life business to be developed for redundant maritime batteries. ‘‘These depleted batteries may no longer have a role to play on board vessels but they will still hold approximately 80% of their charge and could be used as grid storage buffers. What’s more, having a second life use case can form an integral part of the business case when companies are looking to electrify.’’

Maritime Batteries 101, Singapore

Standardisation

There is one particular issue that Syb would like to see resolved. If there was standardisation of how batteries are described in terms of safety, lifetime and energy density for example, it would be much simpler for shipowners to compare their performance and select that which is most appropriate for them. ‘‘However, you don’t want to make standardisation so rigid that it stifles innovation.’’

Equally concerned with the need for standardisation is Class Society ABS which has opened a Global Electrification Center in Singapore and is currently in the process of developing rules and requirements for technologies related to electrification including lithium-ion battery, fuel cell, offshore charging and offshore substation requirements. In addition, ABS is developing the required industry standards and marine Classification requirements for full electric vessels.

ABS is also supporting decision making at different states from high level techno-economic study concepts for new builds or retrofits to detailed analysis including battery sizing and system optimisation. ABS is working closely with MPA and has recently hosted a workshop in Singapore.

Joint projects

ABS is also keen to see collaboration in the industry and is itself involved in many joint projects including Seatrium's Floating Living Lab project and its proposals for a battery-powered fleet of hybrid tugs. In fact ABS is actively involved in a wide range of projects and research addressing Hybrid and All-Electric Power Generation Technologies for both Maritime and Offshore Industry and investigating the requirements for the shore charging infrastructure to support these electric vessels.

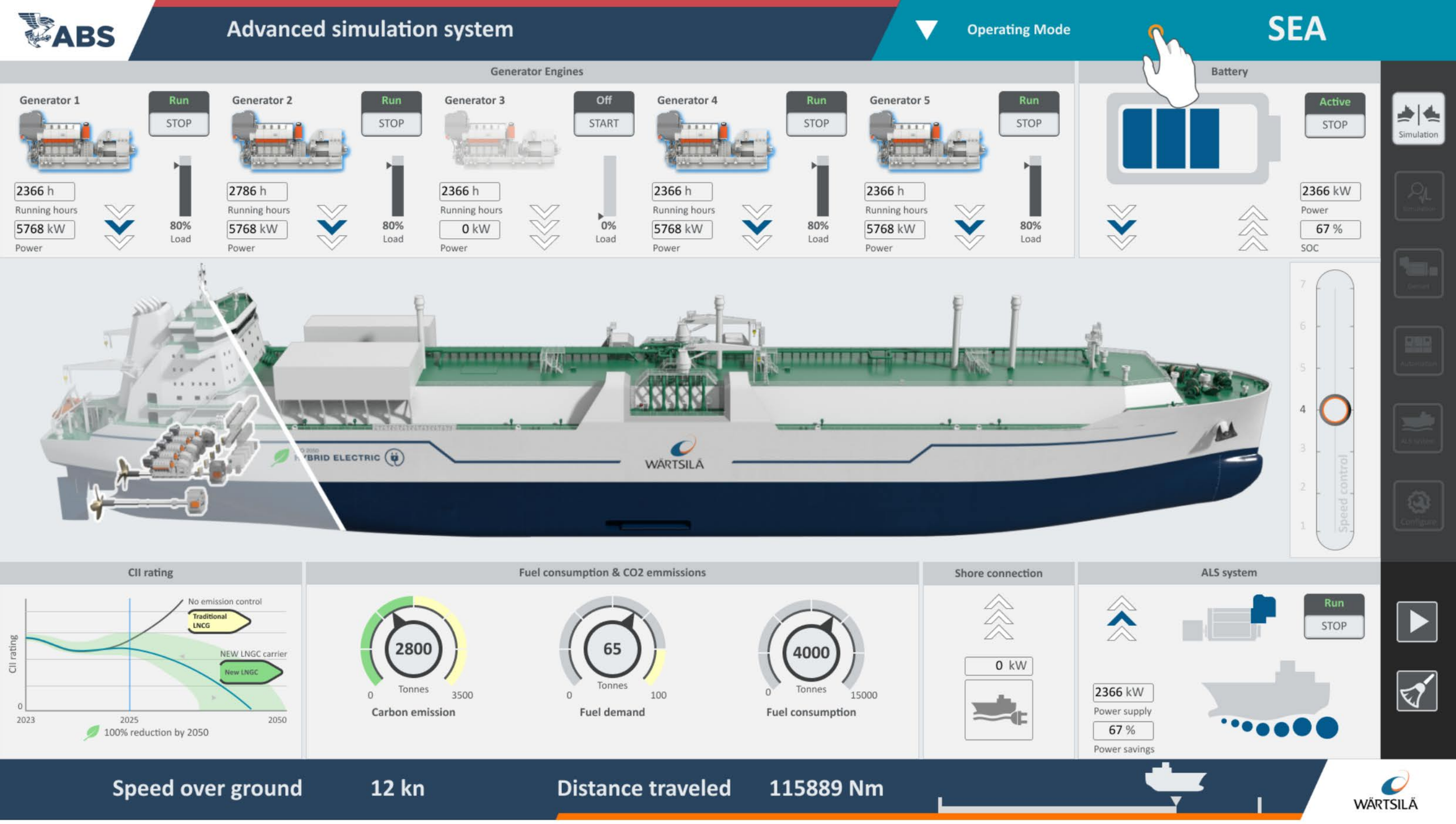
According to Dr. Gu Hai, Vice President, Head of Global Simulation Center for ABS,

> *"Various electrification options such as full-electric, hybrid, or plug-in generally can get emission reduction from a "tank-to-wake" perspective. However, production of batteries would have incurred significant upstream emissions. Therefore, the environmental benefits need to be evaluated from a lifecycle perspective. A properly designed vessel's electrical energy distribution and its associated electrical charging system can achieve net lifecycle emission reduction."*

Dr. Gu Hai, *Vice President, Head of Global Simulation Center for ABS*

HaiSea Wamis harbor tug

Like Razor Blunt Labs, ABS employs modelling and simulation techniques to evaluate performance, most recently in the collaboration with PSA Marine.



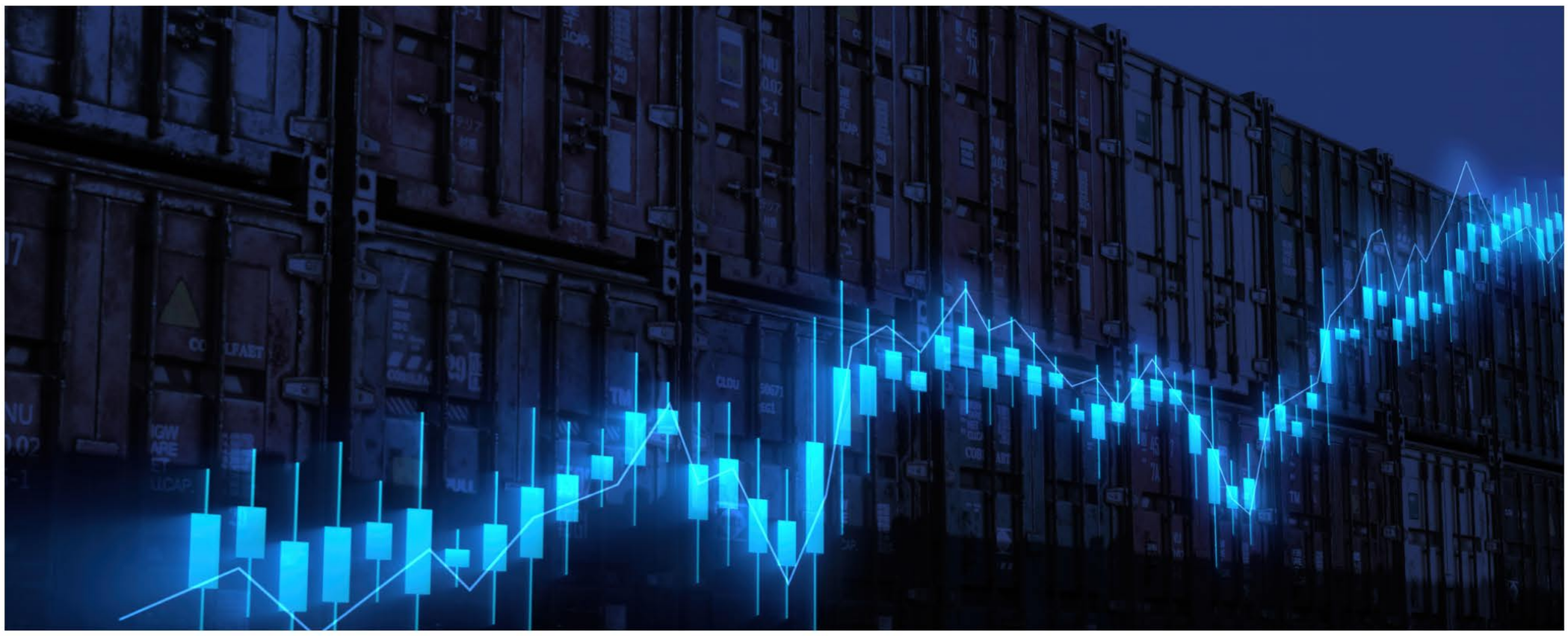
Simulation of Hybrid Electric Power System for LNG Carriers-Courtesy of Wartsila

Cohesive approach

Dr Kenneth Low, Cluster Director and Associate Professor of Engineering Cluster at Singapore Institute of Technology, certainly believes that Singapore is on track to achieve its targets if Policy, Technology and Finance (PTF) are all implemented concurrently by regulators, new technology providers and the financiers. ''We are seeing this taking shape already with the Maritime Port Authority. It has decided on a policy by setting a goal to achieve net zero for new harbourcraft by 2030 and is putting in place activity that will support this. For example, it has made many calls for Expressions of Interest from technology companies, financiers and insurers to come up with innovative solutions to facilitate the changes needed.''

In fact, Kenneth believes that the key to success will be collaboration between regulators, research and industry partners.

Dr. Kenneth Low, *Cluster Director and Associate Professor of Engineering Cluster at Singapore Institute of Technology*



> *I would say some form of multi-disciplinary consortium that could tap into the deep expertise that has already been created in Singapore and work with industry players embedded in the process will be indispensable.*

Kenneth is also in agreement with Syb in seeing a need for standardisation, particularly in the field of battery development. "I would say that we may need to look for input from the Classification Societies, International Maritime Organisation and also the International Organization for Standardization (ISO) to achieve this."

Financial considerations

But above all, he sees the need for owners to change the way they view return on investment in adopting electric harbourcraft.

"Electric vessels are approximately two and a half times more expensive than traditional vessels and that cost rises even further for fuels such as hydrogen which can be between three and five times the cost.

> *Lifecycle Cost Assessment (LCA) will need to be conducted so that owners can understand the Total Cost of Ownership (TCO). Furthermore, Government can be more transparent about its plans for carbon taxation so that the TCO calculation is feasible."*

Challenges aside, all are in agreement that the net zero goals are achievable, not least because, as Kenneth said, Singapore is "pushing hard and rallying everyone together".

In Case You Missed It

SSA Young Executive Group (YEG) Activities Wraps Up 2023

YEG Pink Ribbon Walk

In the second half of 2023, the YEG Committee of the SSA organized two events for young maritime executives working in our member companies to deepen bonds while contributing back to the community. On 29th October 2023, 18 YEG members represented the SSA and took part in the annual Pink Ribbon Walk organized by the Singapore Breast Cancer Foundation. The modest donations raised under the SSA flag goes towards supporting the Foundation's work in raising awareness of the disease. Participants also got to show solidarity with cancer survivors through the walk held at Marina Bay Sands Event Plaza.

To wrap up the year, the YEG Year End Networking Event was held at Ark11 on 17 November 2023. The get together was well-attended, bringing together 145 YEG members from the full spectrum of SSA member companies. Young executives were able to network with other technical, commercial and maritime services professionals; forging what we hope to be strong friendships. Kudos to Ms. Amber Chang from DN Media who heads the Education and Networking Committee of YEG, for organizing the event.

ICYMI Maritime Conversations@SSA

Since July 2023*, SSA *held six* Maritime Conversations@SSA talks, *featuring 10 expert speakers from the industry. The events were well received, with over 180* SSA *members in attendance over the sessions.* Maritime Conversations@SSA i*s a curated series where we invite experts to come brief our members on pertinent maritime issues ranging from digitalisation, decarbonisation to international regulatory updates.

Some of these sessions include:

Managing your CII Ratings with speaker Brijesh Tewari of Lloyd's Register, and Joy Basu of Smart Ship Hub.

The session focused on empowering ship owners and operators with insights into utilizing CII correction factors and voyage adjustments effectively. With the implementation of CII requirements, this session proved instrumental in shedding light on navigating the complexities of these regulations.

In Case You Missed It

EU-ETS & FuelEU Maritime Transactions for Shipping with speakers German Tyeles and Eng Hue Kan from Macquarie, and Dr. Khorshed Alam from Maritec (CTI Group).

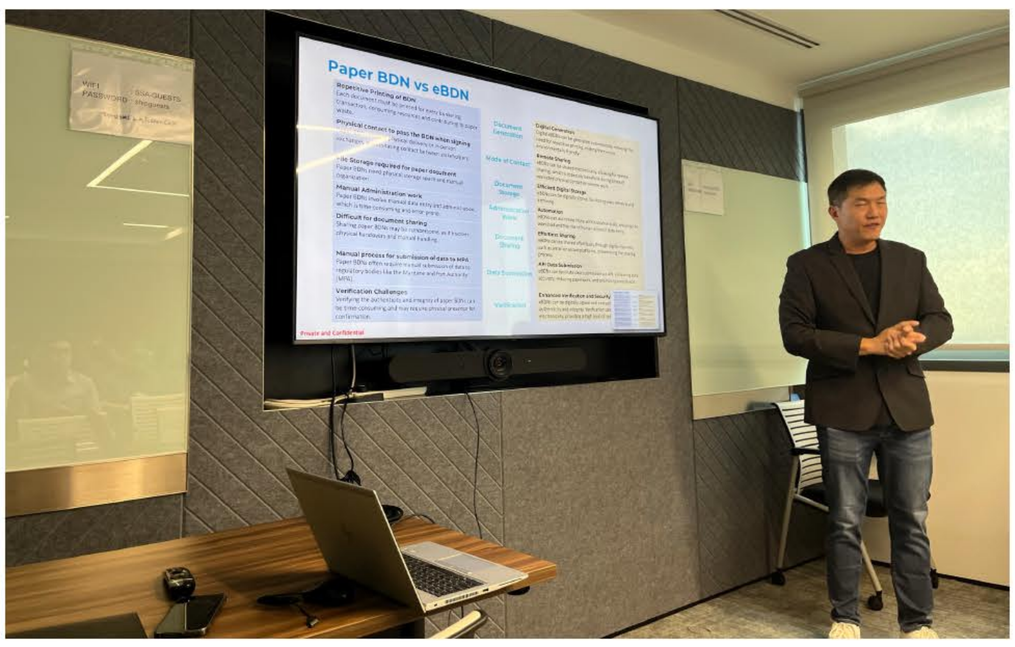
Participants gained insights into the mechanics of the EU ETS and its implications for the maritime industry. The discussion highlighted the industry's commitment to sustainability and the challenges and opportunities associated with transitioning towards greener practices in maritime transportation.

Data-Driven Decarbonization – Working with Reality with speakers James Fortnum from Tidewater and Cpt Rahul Choudhuri and Linda Stuberg from VPS.

Our members were able to delve into the importance of operating within an ecosystem where alternative fuels, advanced technology, and data converge to combat emissions, enhance efficiency, and attain net-zero targets. Participants were able to gain valuable insights into the multifaceted challenges encountered by shipowners striving to achieve their decarbonization objectives, which included technological barriers, financial considerations, and the complexities of transitioning to alternative fuels while maintaining operational efficiency. The panellists also explored the role of software solutions in facilitating collaboration across the industry, by enabling stakeholders to analyze complex data sets, enhance operational efficiency, and make informed choices to address environmental challenges.

Global Regulatory Update: MEPC – 80 Outcomes, EU – ETS, FuelEU Maritime with speaker Eirik Nyhus from DNV.

This session covered the key challenges and opportunities arising from these regulatory changes within the context of global maritime trade. This included adaptation of cleaner technologies, operational adjustments, and the emergence of new business prospects amid regulatory shifts.



Overview of Digital Bunkering and e-BDN Implementation in the Port of Singapore with speaker Leon Ling from Bunkerchain.

The session centred on the future landscape of bunkering operations within the Port of Singapore, spotlighting the implementation of electronic Bunker Delivery Note (e-BDN) technology by BunkerChain, a whitelisted vendor by the Maritime and Port Authority of Singapore (MPA).

In The News

COMPASS Framework And The Maritime Sector

By Shanice Poh

To help Singapore businesses improve their capacity to select high-quality foreign professionals and ensure workforce diversity, the Singapore Government has introduced a new points system for new Employment Pass (EP) applicants effective September 1, 2023, and for renewal applicants from September 1, 2024. From 1 September 2023, new Employment Pass (EP) candidates need to pass the points-based Complementarity Assessment Framework (COMPASS) in addition to meeting the EP qualifying salary.

In a recent Maritime Conversations @SSA session, titled "Navigating the New Normal in Shipping: Digitalization and COMPASS Framework" held on 8th November 2023, speakers from RSM Singapore shared more details of this new development and the impact on the shipping industry. Mr Philander Santhanaraj from RSM Singapore's HR & Payroll Services division, highlighted that at its core, COMPASS is a transparent system designed to facilitate access to global talent around the world.

In The News

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EP applicants will need a minimum of 40 points to be considered eligible under the 6Cs, which include C1 – Salary, C2 – Qualifications, C3- Diversity, C4 – Support for loyal employment, C5 – Skills Bonus (Shortage Occupation List) (SOL) and C6 – Strategic Economic Priorities bonus. Two positions on the SOL relevant to the shipping industry are: Marine Superintendent and Marine Technical Superintendent. These jobs face shortages and require highly specialized skills currently in demand in the local workforce.

As an open and straightforward points-based framework, COMPASS provides businesses with a more predictable way to plan their workforce needs and address skill shortages in specific industries, including the maritime sector, by providing a targeted approach to bringing in complementary foreign talent. The goal of this framework is to empower employers to select highly skilled international professionals, all the while promoting diversity within the workforce and reinforcing the local talent pool. This helps with the manpower crunch and the search for talent in the maritime industry when top foreign talent can be attracted to strengthen the local workforce. For example, employers and employment agents can use the enhanced Self-Assessment Tool (SAT) to check a candidate's eligibility before they apply.

For more information on the COMPASS Framework, please visit https://www.mom.gov.sg/passes-and-permits/employment-pass/eligibility

Executive Development Programme (2024)

Feb

22-23

SS600 & Basic SS648 for the Bunker Industry
SSA Members Fee: $926.50 (with 9% gst) / $331.50 (after grant)
SSA Non-Members Fee: $1362.50 (with 9% gst) / $487.50 (after grant)

27-28

Navigating EEXI, CII and ETS Regulations: Commercial and Operations Consideration for the Shipping Industry
SSA Members Fee: $926.50 (with 9% gst)/ $501.50 after grant
SSA Non-Members Fee: $1144.50 (with 9% gst)/ $619.50 after grant

Mar

13

Introduction to LNG as Fuel in Shipping
$490.50 (with 9% gst) / $383.50 (after grant)
SSA Non-Members Fee: $708.50 (with 9% gst) / $383.50 (after grant)

14-15

Practical Implications of Decarbonisation and Sustainability Requirements for the Shipping Industry
SSA Members Fee: $2462.50 (with 9gst) / $1327.50 after grant
SSA Non-Members Fee: $2779.50 (with 9% gst)/$1504.50 after grant

19-21

Principles of Shipbroking & Chartering
SSA Members Fee: $708.50 (with 9% gst) / $383.50 (after grant)
SSA Non-Members Fee: $1035.50 (with 9% gst) / $560.50 (after grant)

26-27

Introduction to Shipping (Masterclass)
SSA Members Fee: $708.50 (with 9% gst) / $383.50 (after grant)
SSA Non-Members Fee: $1035.50 (with 9% gst) / $560.50 (after grant)

Apr

1-4

Principles of Shipping Documentation & Practices
SSA Members Fee: $904.70 (with 9% gst) / $489.70 (after grant)
SSA Non-Members Fee: $1329.80 (with 9% gst) / $719.80 (after grant)

15-18

Principles of Shipping Operations & Practices
SSA Members Fee: $904.70 (with 9% gst) / $489.70 (after grant)
SSA Non-Members Fee: $1329.80 (with 9% gst) / $719.80 (after grant)

25-26

Managing Seafarers Resilience for Sustainability
SSA Members Fee: $708.50 (with 9% gst) / $383.50 after grant
SSA Non-Members Fee: $1035.50 (with 9% gst)/ $560.50 after grant

SINGAPORE SHIPPING ASSOCIATION

Grow and Reskill your Maritime Workforce

Career Conversion Programme for Sea Transport Sector

SSA is the appointed Programme Partner for Workforce Singapore's Career Conversion Programme in the Sea Transport Sector. With the salary support from the programme, member companies can bring in fresh talent from outside the maritime industry or reskill existing employees with redesigned or expanded roles.

Eligible member companies can apply for salary support for Singapore Citizens (SC) or Permanent Residents (PR), and receive reimbursement once successful, through SSA.

Get up to 90% salary support for up to 6 months

Standard Rate (Singapore Citizens & PR aged below 40)	**Enhanced Rate** (Singapore Citizens & PR aged 40 & above)
Up to 70% of monthly salary Capped at $4,000/month	Up to 90% of monthly salary Capped at $6,000/month

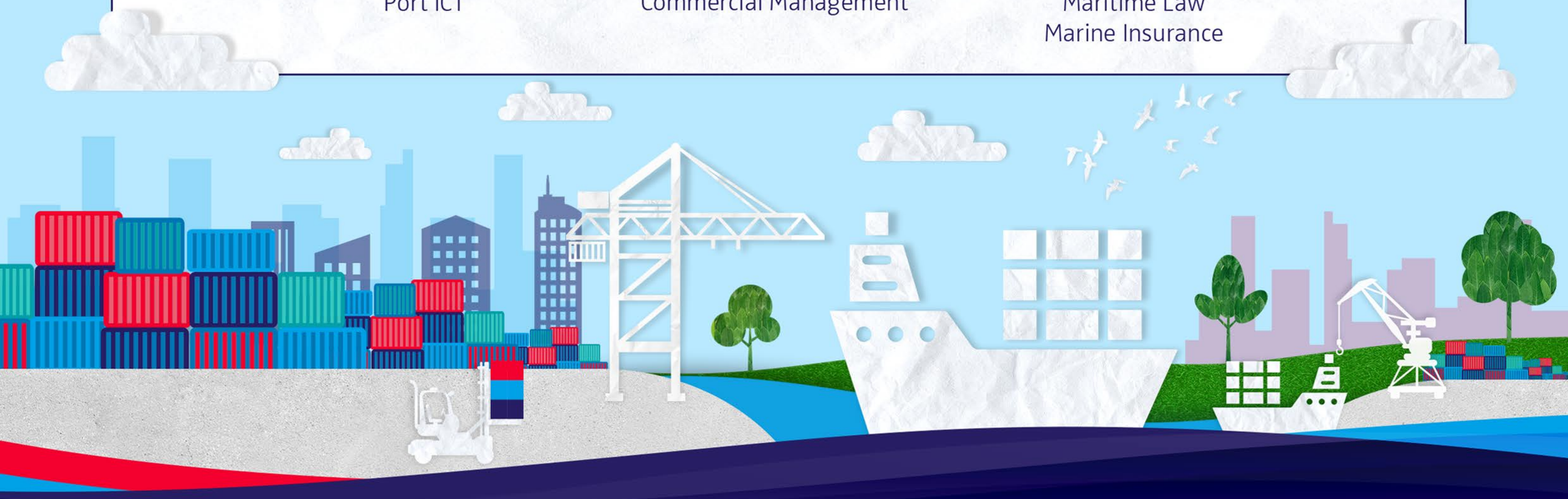
Which Job Functions are covered?

(non-exhaustive)

Port Operations
Port Management
Port Engineering
Port ICT

Shipping
Ship Management
Shipping Operations
Commercial Management

Maritime Services
Ship Finance
Brokerage
Maritime Law
Marine Insurance



Contact us at member-services@ssa.org.sg to kick-start your application or for more information.

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