



Tech Talk

Data. Drones. Decarbonisation



Providing 'Fertile Seas' for MarineTech to Flourish



Roger Holm, President of Wartsila Marine Power, delivering the keynote speech at the opening of the MarineTech Conference 2023.

Support and collaboration were the buzzwords at the opening of the MarineTech Conference 2023.



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Singapore's maritime sector is homing in on the future by trialling the use of drones in anchorages. When the nifty gadgets deliver supplies to vessels, there is reduced fuel consumption by supply boats, benefitting the environment.

Drones were but one example of maritime innovation mentioned by Singapore's Senior Minister of State for Finance and Transport Chee Hong Tat at the opening of the MarineTech Conference on Tuesday.

He highlighted the Maritime Drone Estate at Marina South Pier, launched in 2021, as an example of how Singapore provides a supportive pro-business environment for trailblazers to experiment with new solutions. Or, in his words, "fertile seas" for MarineTech to blossom somewhere beyond these seas.

"If we can deploy these drones safely and effectively in Singapore's bustling air and sea space, it will give other maritime authorities and companies greater confidence that the same arrangement can be replicated in other ports around the world," he said.

Local core, global network

Mr Chee also pointed to PIER71™, a maritime start-up community organised by the Maritime and Port Authority of Singapore and the National

University of Singapore, as an example of innovation-friendly initiatives here. The aim, he said, is for 150 start-ups to be a part of PIER71™ by 2025, up from close to 100 now.

The MarineTech scene here will be anchored by a "skilled local core", he added, even as the country remains an "attractive international hub for manpower development".

"The impact of our MarineTech solutions will be amplified if such solutions and standards are adopted by like-minded ports around the world," he said. "This requires a global network and global collaborative effort to achieve the best outcome."

US\$12 billion in efficiency gains

The next segment in the conference's opening was an illustration of how the global network drives innovation, as Roger Holm from Finnish maritime technology company Wartsila shared his expertise on the sector's digital transformation.

With green fuels still short on availability and high on cost, Mr Holm said in his keynote address that digital systems provide the most effective way to start curbing emissions.

For example, real-time data exchange can be used to improve performance by breaking down silos between ship and shore, reducing waiting times at ports.

With such incremental improvements, the maritime industry could realise annual efficien-

cy gains of up to US\$12 billion through digital technologies, said the President of Wartsila Marine Power.

He shared how companies want to digitalise – albeit in an economically feasible way. "Digital transformation is the perfect tool to both save on emissions and save money. And that is the best combination of all."

However, it takes more. He added that stakeholders in a "highly fragmented ecosystem" have to collaborate on areas such as digital transformation and green fuels to be successful. "I will say something controversial now in a tech conference," he said. "It's not about the technology...but the key to implementing it in the maritime ecosystem is how we collaborate." ■

"It's not about the technology...but the key to implementing it in the maritime ecosystem is how we collaborate."

Roger Holm
President
Wartsila Marine Power



From left: Teo Eng Dih, MPA CE; Kenneth Lim, MPA Assistant CE (Industry and Transformation); Mr Chee Hong Tat, Senior Minister of State for Finance and Transport; Alvin Foo, Head of New Technologies and Sustainability, PSA International; and Ong Kim Pong, Regional CEO of Southeast Asia, PSA International, at the signing of the MPA-PSA MoU on Port Technology Research and Development Programme.

Partnerships to Drive MarineTech

Four MoUs were inked at the opening of the MarineTech Conference to spur innovation in the industry.

From deploying automated vehicles at Tuas Port to developing an electric vessel ecosystem in Singapore’s domestic harbour craft sector, a series of agreements announced on the first day of the MarineTech Conference is set to boost collaboration and innovation in the sector.

Port Technology Research and Development Programme

The Maritime and Port Authority of Singapore (MPA) and PSA Singapore continued their partnership with the renewal of the Port Technology Research and Development Programme, with each committing S\$12 million to support transformative R&D projects.

The co-funding of research for this programme started in 2011, and has helped automate and green Singapore’s container terminals. For example, by deploying Automated Guided Vehicles at Tuas Port, which are battery-powered and emit 50 per cent less greenhouse gases compared with diesel-powered prime movers.

“The renewed partnership MoU will prioritise new technologies for PSA terminals in impactful areas of research, such as automation, robotics, digital and sustainability solutions,” said Mr Chee Hong Tat, Singapore’s Senior Minister of State for Finance and Transport.

This includes robotic solutions for coning and deconing of containers and the test-bedding of smart grid and energy storage systems, he added.

MoU Formalisation on Coastal Sustainability Alliance

The Coastal Sustainability Alliance (CSA), which aims to decarbonise Singapore’s coastal maritime sector, welcomed 11 new members, bringing the total to 18. The alliance members will work on technological solutions to electrify, digitalise, and decarbonise Singapore’s next-generation coastal logistics ecosystem.

The goals of the CSA include designing and deploying e-tug and e-supply vessels, and optimising logistics and fleet solutions to reduce marine traffic by 20 per cent.

Master Agreement Framework for Maritime AI Research Programme

Led by the Institute of High Performance Computing at Singapore’s Agency for Science, Technology and Research (A*STAR), the partnership includes seven industry partners to drive artificial intelligence technology in the maritime sector.

The collaboration also involves institutes of higher learning and research entities, and aims to help maritime companies develop AI capabilities.

ZEBOX Co-Innovation Agreement with Industry Partners

Under this agreement, global accelerator ZEBOX will set up its Asia-Pacific hub in Singapore in partnership with shipping line CMA CGM, PSA International’s venture capital arm PSA unboxed, classification society Bureau Veritas Marine and Offshore, and ship management company Synergy Marine Group.

This network of start-ups and experts here will accelerate decarbonisation and operational efficiency in the supply chain. Singapore government agency Enterprise Singapore will also work with ZEBOX to match promising start-up solutions with companies in areas like supply chain optimisation and transport.

“With innovation and technological breakthroughs, MarineTech has the potential to transform and improve the resilience, efficiency, and sustainability of the international maritime industry.”

Mr Chee Hong Tat
Senior Minister of
State for Finance and Transport
Singapore

Share More Data for Smarter and Greener Shipping



Trust is key for stakeholders to come together and set common standards.



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Trust is the key ingredient for maritime stakeholders to collaborate and share data effectively, said Andre Simha, Global Chief Digital and Innovation Officer of Mediterranean Shipping Company (second from left), at a panel discussing how green and digital shipping corridors can take off. Also on the panel were Martijn Thijsen, Head of Ecosystem and Platform Play, Digital Strategy and Transformation of the Port of Rotterdam (third from left), and Thomas Ting, MPA's Chief Technology Officer (first from left), who moderated the discussion.

For ports to become smarter and greener, stakeholders in the maritime supply chain will need to share quality data more readily. Seamless sharing can help strengthen the resilience of ports, and scale up solutions aimed at reducing waste and driving efficiency.

But the lack of data harmony remains a challenge, said panellists at a discussion on how smart ports can take off, as part of the MarineTech conference on the second day of Singapore Maritime Week.

"APIs have been an ongoing problem," said Leslie Yee, General Manager of IT of shipping firm Pacific International Lines. API refers to application programming interface, or a set of programming code that allows different computer programmes to share data and communicate with one another.

"We want to develop a standardised method to communicate with different ports, but there are always ports that are not able to follow the same standards. Various companies also have legacy systems that we have to manage."

Importance of data availability and quality

Without a standardised set of data, there is a limit to the research that can be done, said Professor Chew Ek Peng, Centre Director for the Centre of Excellence in Modeling and Simulation for Next Generation Ports at the National University of Singapore.

"The key question is about the data. Do we have data? Without data that we can use, we cannot solve a global optimisation problem, because we don't have the information. We can only use the information we have to solve what we know, and

make assumptions. But this will not give you the precise solution that you want."

He was responding to moderator Kenneth Lim, Assistant Chief Executive of Industry and Transformation of the Maritime and Port Authority of Singapore (MPA), who had asked about the research trade-offs when working with limited data.

Alvin Foo, Head of New Technologies and Sustainability of port operator PSA International, urged stakeholders to come onboard initiatives such as the Singapore Trade Data Exchange or SGTraDex, a data-sharing platform for the supply chain sector.

"Smart and green ports go hand-in-hand and form the key capabilities to enable green and efficient end-to-end supply chain. Data availability and quality is of utmost importance, without which we cannot build a capable port community system to influence the whole logistics network," he said.

The same issues of data collaboration were surfaced at a separate panel on digital and green shipping corridors, moderated by Thomas Ting, MPA's Chief Technology Officer.

Trust needed for data collaboration

To share, the foundation is trust, said the panelists. Otherwise, exchanges will not happen, observed Andre Simha, Global Chief Digital and Innovation Officer of the Mediterranean Shipping Company.

"We don't talk about trust enough. But it is about having the ability to create standards that will give you the foundation for the different

solutions that are being built. And port cities like Singapore and Rotterdam will help to make this happen," he said.

In 2022, Singapore and Rotterdam inked a landmark deal to create a green and digital shipping corridor.

Martijn Thijsen, Head of Ecosystem and Platform Play, Digital Strategy and Transformation of the Port of Rotterdam, echoed the sentiments. "Once we have the standards going and the data flowing, we can then scale the innovation ecosystem. If you are in a collaboration, be open about what drives your business model. It is fine if it is about making money.

"For a port, it is about creating an efficient port. Discuss what is the value you want out of the collaboration, and find a common denominator. Put your cards on the table and take that as the starting point." ■

"Data availability and quality is of utmost importance, without which we cannot build a capable port community system to influence the whole logistics network."

Alvin Foo
Head of New Technologies
and Sustainability
PSA International



Why Innovation is a Joint Venture

Achieving industry-wide impact is not a job for one.



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When Mark Huang, Co-Founder & Managing Director of venture capital (VC) firm SeaAhead, bumped into a young man with an Oculus headset in the pantry of his co-working space, he was not expecting to find a potential investment opportunity.

The person in question worked for Vinci, a virtual reality (VR) company that specialised in workforce development training for the US Army then. After some talking, Mr Huang convinced him to apply to SeaAhead's BlueSwell incubator, a programme that supports start-ups with scalable solutions to create a sustainable ocean industry.

Together with renewable energy company Siemens Gamesa, Vinci developed a specialised VR training suite for offshore wind service technicians, who previously had an 80 per cent drop-out rate during their training due to issues like seasickness and a fear of heights.

"He can code for anybody, but because of the bridge we're trying to have between the tech community and the ocean economy, he is now coding for us," said Mr Huang. He was speaking in a panel discussion, moderated by Nir Gartzman, Managing Partner, theDOCK, on innovation case studies in the maritime industry, which featured representatives from four other leading VC firms.

But his example also raised a more important theme that formed the basis for the innovation

section of yesterday's MarineTech Conference: a partnership and collaboration model is essential to ensuring that innovation can have industry-wide impact.

The power of partnerships

It was a point that Shanker Pillai, Head of Innovation and Change, Hafnia, also made sure to stress in his keynote speech, "Innovation Gets Real".

He observed that solutions like SeaCode, an anonymous platform for seafarers to share their struggles at work, and SeaBuddy, which connects mentors with mentees in the maritime industry, were made possible only through the joint efforts of many.

His conviction in the advantages – and necessity – of collaboration is what led to him heading

"This is a controversial opinion but the technology itself is not important. We need to think about the purpose and what we are trying to achieve. We care about the outcomes...and technology comes in to facilitate that."

Shaun Hon
General Partner
Motion Ventures

the efforts on Hafnia's newly-launched digital venture studio: Studio 30 50.

While most organisations traditionally build solutions and products in silos, Studio 30 50 espouses a consortium-based approach that connects early-stage start-ups who are seeking to make waves in the value chain, as well as provides funding for their innovative proposals. "We can't do it alone," he said simply.

Forging ahead

When it comes to investing in start-ups, there are rewards to be found in taking risks, the panellists shared.

Gwen Salley, CEO, ZEBOX, noticed that start-ups are usually founded and driven by people who know a niche industry extremely well.

"But sometimes they miss out use cases. They don't realise that (their innovations) can be applied beyond their own industry," he explained, emphasising the importance of being open-minded and proactive when it comes to looking for investment opportunities.

Nikolas Pyrgiotis, Vice President of Technology Ventures, The Signal Group, agreed, adding that corporates who are looking to do corporate VC should "be willing to invest in things that are not 100 per cent what (they) do" as they can potentially provide a competitive edge.

Overall, the current ecosystem for innovation looks promising. Mr Pyrgiotis is optimistic about the "innovative wave" in Greece, while Tim Reinsch, Managing Partner, TecPier, similarly sees the lively start-up ecosystem in Hamburg as a promising sign.

"We recently did our third investment in a Hamburg-based start-up, at the intersection of the maritime logistics industry, that is working on automating container import processes," he said.

"This start-up is selling to a very small, challenging group of potential customers who are very bureaucratic and cumbersome. But once they win them, huge network effects will kick in, particularly on the container side." ■



The discussion was moderated by Ben Rose (far left), Partner and Head of Shipping and Offshore, Asia, Norton Rose Fulbright; and featured (from second-left) Martin Brown, Senior Legal Counsel, BW Offshore; Desmond Leow, Director, Clifford Capital; Pierre Carassus, Co-head of Maritime Industries, Asia Pacific, Societe Generale; and Christian Nolting, Head of Treasury and Banking, Purus Marine.

Alternative Finance for Offshore is Not Alternative Anymore



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Speakers weighed in on ESG's impact on funding of the offshore sector.

The extent to which sustainable financing could be used to fund the offshore oil and gas sector was thrown into question at a panel event on Tuesday.

"If sustainability-linked loans are linked to emissions, then contractors are in a paradox, where the less oil we produce the cheaper it is for us to service our debt," noted Martin Brown, Senior Legal Counsel, BW Offshore.

Desmond Leow, Director, Clifford Capital, added: "There's no way, under the green loan principles, that we can apply green loans for the FPSO sector." He was referring to the floating production storage and offloading (FPSO) vessel units used in the offshore oil and gas industry.

Agreeing that it is not possible to define an FPSO project as green, Pierre Carassus, Co-head of Maritime Industries, Asia Pacific, Societe Generale, noted: "It can improve, and there are two ways that the banks are looking at it. First, at the asset level... you want to have less carbon emitted by the operations, by the vessel.

"Number two, even more importantly, is supporting the FPSO owners who are using those bread-and-butter projects, as I would call them, to transition into new things."

These comments from panellists come amid a global decarbonisation push, and pressure on banks to reduce their financing of fossil fuels. They were part of a conference by ship finance network Marine Money at St Regis Singapore.

"The increased awareness of ESG (environmental, social, and governance), and climate activism, has turned investors away from fossil fuel investments, and made it harder to finance energy production," said moderator Ben Rose, Partner and

Head of Shipping and Offshore, Asia, Norton Rose Fulbright.

"Unfortunately, I don't think we look at (alternative financing) as 'alternative' anymore," added Mr Brown. "The appetite from conventional banks has reduced to such an extent, year by year. At the same time, the cost of building FPSO (units) has gone up so significantly that there is a huge issue that we face in trying to fund them."

Diversification of funding, then, is crucial. "It is essential for every company to diversify the source of funding," said Christian Nolting, Head of Treasury and Banking, Purus Marine.

"In particular for the offshore industries... government support is important. ECAs (export credit agencies) are important." ■

Seven Regions, One Programme: Navigating the High Seas of Maritime Leadership

Knowledge sharing critical to overcoming challenges in multifaceted industry.

In a sector as diverse as maritime, the most precious commodity might just be perspective. Building a common understanding is crucial to making progress and there is no better way to do that than to get everyone in one place.

Since 2015, the Advanced Maritime Leaders Programme (AMLPL) has given top leaders the opportunity to gather and share unique perspectives and challenges. This year, over 20 C-suite leaders from seven regions gathered in Singapore for the flagship programme, hosted by the Maritime and Port Authority of Singapore (MPA) Academy.

"The maritime industry is very international. You require the whole world to move together (on issues)," observed MPA Academy Dean Tan Suan Jow. Programmes like the AMLPL provide leaders with a platform to chart a course in uncertain seas – especially with a view to decarbonising the sector.

Why Singapore?

In times of crises, playbooks go out the window. Theoretical knowledge of the maritime world must go hand in hand with practical knowledge – something Singapore is well-suited to supply.

As a global shipping hub, Singapore has a comprehensive "in-house" maritime ecosystem, noted Mr Tan. Shipping companies, along with service providers like insurance shipbrokers and crew management companies, have offices here. "We invite CEOs of shipping companies in for fireside chats, so that participants

can hear from their (business) counterparts," he said.

Leaders will also experience a full-day training session with local media company Medi-acorp, centred on how to respond to the media in times of crisis. "It has been one of the top-rated segments of the programme," revealed Mr Tan.

A sea-change on the horizon

From January 2023, all ships are required by the International Maritime Organization to calculate their Energy Efficiency Existing Ship Index. It signals that efforts to green the fossil fuel-dependent sector are picking up speed.

Still, decarbonisation is set to be a major challenge. "Ships last for 20, 30 years," said Mr Tan, noting that the prevailing attitude was usually "if it's not broken, there's no need to fix it".

A key focus of the AMLPL is on transformational leadership – promoting the need for change. But countries have different priorities, and not all of them are about increasing efficiency.

"In Singapore, we talk about digitalising everything," said Mr Tan. "But in other countries, officials want to create jobs. Or they are concerned about ensuring 24/7 access to electricity."

While there is no one-size-fits-all approach, programmes like the AMLPL help to foster knowledge sharing. This, in turn, facilitates a shorter path towards cleaner seas, greener ships, and a sustainable way forward for the industry. ■

Puah Rui Xian



SMW Opening Reception
As cocktails and canapés flow, so do conversations and laughter at the SMW Opening Reception where maritime professionals and experts from across the world connect in Singapore.

Making Waves

In this series, we speak to individuals who are making a splash in the industry, from venture capital to championing the rights of seafarers.

As the third-generation leader of Hong Kong-based shipping company Wah Kwong Maritime Transport Holdings, Hing Chao has a bird's eye view of the maritime industry. He talks to Pearl Lee about the importance of adaptation and collaboration to support decarbonisation.

Q: The world has just emerged from a history-defining moment. But even with COVID-19 over, we still see many challenges ahead. How should the industry be thinking and adapting to this new landscape?

The world is at a crossroads and we are probably witnessing the start of a new global political and economic order. There are three main disruptive factors at play: geopolitics, decarbonisation, and digitalisation. The changes that are happening, and which will continue to accelerate, are disruptive at a fundamental level and will reshape global seaborne transportation as we know it.

We need to be cautious, but as an optimist, I believe there are also plenty of opportunities as new supply chains and future industries develop. I'd say the best way to equip ourselves against this shifting landscape is to keep abreast of developments, embrace change, build diversity into our development strategy and operations, and always maintain flexibility.

Q: This year's Singapore Maritime Week is themed "Ambition Meets Action." It speaks of the need to get things done, especially in thinking about decarbonisation. Is the industry doing enough?

It is important to be ambitious, but equally, we need to be realistic and acknowledge that decarbonisation requires coordinated efforts across the supply chain to be meaningful and impactful. Shipping does not stand alone but is part of an integrated global supply chain.

We are not in control of the cargoes we move, the industrial processes by which the cargoes are produced, nor how they are put to use. We do not control the production of the fuel we consume. Indeed, the idea that shipping can dictate our fuel choice is misleading.

On the positive side, the industry has taken significant strides in its search for decarbonisation solutions. On existing ships, it has been shown that a combination of operational and technical measures will significantly bring down carbon emissions. At the same time, regulatory and engineering breakthroughs are being made on ships that will be powered by methanol, ammonia, hydrogen, fuel-cell, as well as electricity.

But the problem does not lie with technology, nor even the industry's wish to decarbonise. Where the industry needs to do is to communicate and cooperate more with other sectors, both upstream and downstream.

While the finance sector has shown considerable zeal, I hope the maritime industry will work more closely with the energy sector. After all, the energy sector will have to produce clean marine fuel. Without a global network and infrastructure supporting green energy, renewable fuels such as methanol and ammonia cannot be produced on a meaningful scale to supply the needs of the global maritime industry.

Q: When it comes to thinking about the challenges for your company, what keeps you awake at night?

It is a challenge to stay up-to-date with all the developments across the tangents of geopolitics, decarbonisation, and the green transition, as well as digitalisation. However, it is a challenge that we embrace wholeheartedly and one which has, in fact, given us a lot of energy.

Q: You have previously spoken about the need for innovation in the shipping industry. Can you share more about your company's thinking behind innovation?

Innovation takes many forms. Over the last few years, we have adjusted our business strategy. In addition to ship-owning, which has been, and remains, a cornerstone in our activities, Wah Kwong has spawned asset-lite business units, including expansion in ship-management and dry bulk operations.

During the pandemic, as we scaled up and diversified our operations, we found it necessary to open offices in Shenzhen and London. This was done to keep up with our operational needs, mitigate against the risks of lockdowns and travel restrictions, and better fulfil our function as a bridge between business partners in China and Europe. I am proud to say that within about four years, we have evolved from a shipowner into a more multi-faceted shipping group.

Since rolling out our sustainability policy in 2019, ESG has also been a key driver of innovation. To reflect our core philosophy that



decarbonisation is a collaborative effort, and that hard-to-abate sectors should work closely with easy-to-abate sectors to accelerate the green transition, we have been voluntarily offsetting carbon footprints for three years.

We have also been working with partners to develop pathways to monitor and reduce carbon footprints. We recently developed an approval in principle for a carbon capture and utilisation system together with Bureau Veritas and China State Shipbuilding Corporation Group's Shanghai Marine Diesel Engine Research Institute.

Q: Talent is a key pillar of any industry, especially maritime. What has the company been doing to ensure a healthy pipeline of talent?

Nurturing maritime talent is a priority for us. Wah Kwong has long-term school-enterprise partnerships with several maritime universities and academies in Mainland China, including in Shandong province (Weihai and Qingdao), the Greater Bay Area (Shenzhen and Guangzhou), and in Shanghai.

Our programmes focus mainly on seafarers, but we also support programmes to develop maritime talents more broadly, including the scholarship programme we created with Shenzhen Ocean University. ■