



Singapore Maritime Week is here! Here's what to look out for

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THE NUTGRAF 8
CAPTURING THE ESSENCE

(Photo) Ships passing through the Kiel Canal in Germany, which connects the North Sea and the Baltic Sea.



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15 to 19 April 2024
Singapore



A reimagined hydrogen carrier with sails against the skyline of Singapore to demonstrate Maritime and Port Authority of Singapore's innovation efforts to accelerate maritime decarbonisation and digitalisation.

Decarbonisation and digitalisation to take centre stage at SMW 2024



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Mounting pressure to reduce greenhouse gas emissions has intensified the need for the maritime sector to decarbonise, with digitalisation a key enabler of improved sustainability.

The last decade has seen shipping emissions, which make up around 3 per cent of current global greenhouse gas emissions, rise by 20 per cent, according to the Review of Maritime Transport 2023 by the United Nations Conference on Trade and Development.

It's a trajectory that the world can ill afford amid worsening climate change. But at the same time advancements in data analytics, machine learning, and automation technologies have shown potential in making shipping safer, more efficient, and more environmentally friendly.

Over 10,000 local and international industry leaders, government officials, innovators, and researchers will discuss these critical issues at the Singapore Maritime Week (SMW) over the next five days. Driven by the Maritime and Port Authority of Singapore (MPA), SMW is an annual gathering of the global maritime community to advance the industry through thought leadership conferences and dialogues.

Themed *Actions Meet Ambition*, the 18th edition of SMW from 15 April to 19 April will also feature guided tours to

Singapore's ports, multiple networking sessions, and a brand new trade exhibition Expo@SMW that will showcase cutting-edge ideas and innovations in maritime.

Singapore Shipping Association President Ms Caroline Yang said that events like SMW are a unique opportunity for stakeholders to meet, connect, and share best practices.

"Through panel discussions, workshops, exhibitions, and networking sessions, SMW facilitates dialogue and knowledge-sharing among industry players, policymakers, academia, and technology providers," she said.

"By bringing together diverse perspectives and expertise, SMW catalyses collaborative efforts towards developing and implementing sustainable practices and technologies."

Leaders from all over the world, including ministers from Germany, China, and Norway, as well as from several of the most important maritime organisations will also be present, led by the International Maritime Organization's Secretary-General Mr Arsenio Dominguez.

Singapore's own ministers will also be speaking at SMW, such as Minister for Transport and Second Minister for Finance Mr Chee Hong Tat, who will give the opening address. Senior Minister of State for the Ministry of Transport and Ministry of Sustainability and the Environment Dr Amy Khor will be giving the opening address of the Accelerating Digitalisation & Decarbonisation Conference on Day 2. Mr Baey Yam

Keng, Senior Parliamentary Secretary for the Ministry of Transport and Ministry of Sustainability and the Environment will also be speaking at the Maritime Manpower Forum on Day 5.

This year's SMW will explore the intersection of digitalisation and decarbonisation in a two-day conference from tomorrow. It will focus on innovations in the two areas, including data analytics and smart shipping solutions, as well as alternative fuels, electrification, and new propulsion systems.

Participants will get to understand how such technologies can optimise the efficiency of shipping operations, while the panel discussions will delve into how regulatory measures and collaboration between various maritime players can accelerate decarbonisation and digitalisation.

Environmental challenges aside, this week's proceedings will also tackle physical and digital safety threats that have had a direct impact on shipping routes and maritime services.

As such the Maritime Services Leaders forum on 18 April will explore areas such as war risk insurance and cyber security solutions, while also leaning on industry experts for their insights on subjects including effective risk management strategies for emerging asset classes.

But above all, the maritime sector's transformation efforts hinge on talent. The Maritime Manpower Forum on 19 April will home in on recruitment trends and strategies to gain a competitive edge in talent acquisition, ending off with a visit to the PSA Innovation Centre.

Delegates will also get to attend an extensive range of 30 co-located events throughout the week, from the Norway Singapore Maritime Business Forum to the Energy Transition Challenge Symposium.

And to raise awareness of the importance of the maritime sector in the wider community, members of the public will also get to see sustainable vessels up close, and go on guided tours organised by MPA. These include a visit to the Singapore Maritime Gallery and the Maritime Heritage and Maritime Evolution trails that will take them to some of Singapore's iconic maritime landmarks.

"In essence, events like SMW are instrumental in accelerating the transition towards a greener and more sustainable maritime industry. By fostering collaboration, innovation, and knowledge exchange, SMW plays a vital role in driving change and shaping the future of the global maritime community," said Ms Yang. ■



The port of Singapore takes centre stage, highlighting the different elements of our innovation efforts including the 5G network, autonomous vehicles, electric harbour craft, and sustainability measures at Tuas Port.

DRESSING SMART AND SNUG

Join us in your finest jackets and blazers for the opening ceremony, but leave them behind after! We are keeping things cool at 25 degrees Celsius so dress comfortably for the rest of the week in your smart casual outfits and let's set sail!

3 things to look out for at SMW 2024

1. Singapore Maritime Lecture

Hear from Mr Arsenio Dominguez, Secretary-General of the International Maritime Organization, who took up his position in January, in an exclusive conversation session on the opening day. He will tackle a range of issues facing the maritime industry, from seafarer safety and well-being, to the green and digital transition unfolding in the maritime sector, as well as his vision for IMO to flourish as a transparent, inclusive, and diverse institution.

2. Expo@SMW 2024

Get a closer look at Maritime Singapore's capabilities that feature a multitude of research and technology initiatives from close to 50 exhibiting companies. From 16 to 18 April, exhibitors will take turns to showcase their innovations and solutions on the Tech Stage. Promising start-ups will also be pitching their innovative products and ideas to investors and stakeholders in the industry – Shark Tank style!

3. Networking Opportunities

Whether it be watercooler chats with stakeholders, or one-on-one chats with captains of the industry, there will be plenty of co-located events and industry networking to be done at SMW 2024. Also join in the industry networking events in the evenings hosted by various organisations.



Singapore can look forward to more sustainable options at sea, including (from left): a charging point for electric harbour craft currently being piloted, the Yinson GreenTech Hydromover, and the AirX Wing-in-Ground AirFish 8.

The latest in maritime at **Expo@SMW**

A thrilling line-up of maritime solutions awaits at the first-ever Expo@SMW exhibition.



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In a corner of the vast, 827 sq m exhibition space at the Suntec Singapore Convention & Exhibition Hall, a suite of exciting services awaits visitors to the Cambridge CARES booth.

Among other offerings, the Singapore-based research organisation will conduct free assessments of ships' compliance to energy efficiency ratings, such as the Carbon Intensity Indicator and FuelEU maritime regulations.

It is only one in a slate of close to 50 participating companies that will be showcasing innovative maritime solutions during the three-day Expo@SMW exhibition, which kicks off on 16 April 2024. A diverse line-up of exhibitors have gathered for the event, including big data analytics firms, telecommunications providers, and start-ups from seven countries.

Organised by the Maritime and Port Authority of Singapore (MPA), this inaugural showcase will feature three zones – maritime innovation, decarbonisation, and services – as well as the Maritime Singapore Showcase. Visitors can look forward to gaining a holistic perspective of the challenges, solutions, and opportunities in the maritime world.

ONE OCEAN, SIX DOMAINS

The centrepiece of Expo@SMW is the Maritime Singapore Showcase. The Showcase will give visitors a chance to interact with Pier71™ start-ups,

such as MeasureAI, which is developing gas sensing technology to improve ship safety, and NautilusLog, which aims to digitise data collection on ships.

Multi-domain capabilities will also be highlighted. For instance, the recent launch of the satellite DS-SAR in July 2023 by the Defence Science and Technology Agency in partnership with ST Engineering will help to improve navigational safety, coordinate search and rescue operations, ensure that Singapore-flagged vessels comply with environmental regulations, and more.

This is part of MPA's six-domain strategy, which focuses on how non-sea domains can enhance maritime sensemaking capabilities. Like the traditional Indonesian layered cake *kueh lapis*, the strategy illustrates how sea, air, subsea, cyber, space, and sustainability are “stacked” to form MPA's operating environment, the maritime domain.

LEARN AND CONNECT

Across the three exhibition zones, visitors to Expo@SMW can expect an invigorating line-up of novel technologies, insightful ideas, and opportunities to connect with the like-minded.

Many exhibitors also aim to peel back the curtain on hot button issues like maritime decarbonisation. While sustainable fuels such as methanol and hydrogen will help to green shipping in theory, the reality is more complex.

“Our research enables a more accurate understanding of how new fuels might behave in realistic routing scenarios, which will allow better predictions of future ship emissions and fuel consumption behaviour,” shared Dr Li Chin Law, who will be stationed at the Cambridge CARES booth.

Dr Li is co-founder of start-up EMICAST, a spinoff from Cambridge CARES that aims to help industry stakeholders, such as shipowners and operators, better visualise emissions through carbon accounting and forecasting techniques.

EMICAST is situated at the nexus of research and industry – and it is just one node in a broad network of exhibitors. The Association of Singapore Marine & Offshore Energy Industries (ASMI) will also be setting up booths at the Singapore Pavilion, an exhibition space dedicated to local companies.

“For the first time at SMW, we have put together 12 exhibitors, building on our past collaborations with overseas trade associations,” said Mr Simon Kuik, President of ASMI.

BROADEN NETWORKS AND HORIZONS

In line with this year’s theme of *Actions Meet Ambition*, Expo@SMW will feature enhanced networking opportunities – going beyond the usual trade show.

Exhibitors will be able to take to the Tech Stage, where 10-minute presentations will be held at intervals. Should these spark further discussion, they can simply hop over to the Networking Lounge. This space is open only to delegates, and is designed to facilitate more intimate discussions.

That’s not all – meeting pods are scattered around the exhibition hall to allow for spur-of-the-moment conversations.

“Cambridge CARES will bring the latest outcomes from our research in emissions forecasting, alternative fuels, and digital solutions for the maritime industry to Expo@SMW,” said Professor Epaminondas Mastorakos, Principal Investigator for Cambridge CARES’ maritime decarbonisation research group, who will also be at the booth.

“We hope to meet a variety of stakeholders who are looking for solutions to low-carbon shipping,” he added. ■

Stay abreast of exciting developments in the maritime industry at the Expo@SMW exhibition, located at Suntec Singapore Convention & Exhibition Centre Hall 401 and 402, Level 4. The exhibition runs from 16 to 18 April.

Singapore Maritime Week goes green

The Singapore Maritime Week (SMW) is setting sail towards a greener horizon this year with an emphasis on reducing its carbon footprint. This is in line with Singapore’s goal of becoming a sustainable Meetings, Incentives, Conferences, and Exhibitions (MICE) destination by 2030.

To reduce single-use plastic bottles, attendees are encouraged to bring their reusable bottles, a simple yet impactful way to reduce plastic consumption. With each plastic bottle taking approximately 450 years to decompose, this shift promises a substantial reduction in environmental harm.

While large-scale conferences rely heavily on air-conditioning to create a comfortable environment, one oft-cited complaint is that conference halls are sometimes too cold.

To this end, SMW will maintain the air-conditioning at a temperature of 25 degrees Celsius during the event.

After all, air-conditioning generates a whopping 20 per cent of Singapore’s greenhouse gas emissions. The ‘just-right’ temperature also means that attendees, apart from the opening day’s activities, can do without the need for a jacket or a blazer.

Another change afoot is the food. There will not be beef served during the week to promote a more sustainable menu that aligns with the well-being of both people and the planet.

To promote responsible waste management, multiple recycling stations will be set up at the exhibition halls. Participants are encouraged to drop off their paper products into these bins once they are done, to reduce and recycle waste.

Similarly, all paper products, including this year’s Show Dailies, used in SMW will bear the Forest Stewardship Council certification, a guarantee that they are made from responsibly sourced wood fibre.

As the curtain rises on SMW, participants are encouraged to embrace sustainability and support efforts to make the event ahead a fulfilling and an environmentally-friendly one. ■

Maritime industry on track to adopt mid-term decarbonisation measures: IMO chief

Safety, inclusion and transparency will be key areas for Mr Arsenio Dominguez's tenure as Secretary-General of the International Maritime Organization.



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The maritime industry is “on track” to roll out decarbonisation measures by 2025 as set out by the International Maritime Organization, said its new chief Arsenio Dominguez.

“We are on track to adopt mid-term measures by late 2025 to cut greenhouse gas (GHG) emissions, to reach net zero targets,” said Mr Dominguez, who took over as IMO Secretary-General in January.

In 2023, the IMO released a revised GHG strategy to reach net-zero emissions from shipping by or around 2050 – far more ambitious than its 2018 initial GHG strategy, which aimed only to cut emissions by at least 50 per cent compared to 2008.

“The mid-term measures, which are currently being discussed by Member States, include a goal-based marine fuel standard, and a pricing mechanism for maritime GHG emissions,” he said.



“These will help us progress towards achieving net-zero GHG emissions by or around 2050, with indicative checkpoints to reach by 2030 (cut GHG emissions by at least 20 per cent, striving for 30 per cent), and 2040 (cut GHG emissions by at least 70 per cent, striving for 80 per cent).”

Mr Dominguez, who will be speaking on the opening day of the 18th edition of SMW, also emphasised the need to keep seafarers safe against the backdrop of heightened geopolitical tensions. He said the attacks on ships in the Red Sea have far-reaching economic implications.

“Prolonged disruptions in container shipping could lead to delayed deliveries, high costs, and inflation. Energy security and food security could potentially be affected due to increased prices,” he said.

“These attacks pose serious threats to global maritime security, as well as the security and maritime trade for the coastal states in the region,” he said, calling out the Red Sea attacks as “categorically unacceptable”.

But he remains confident that the industry will continue to stay resilient. “I trust that shipping organisations and Member States alike will come

together in the relevant IMO fora to seek collaboration and look for solutions together.”

Mr Dominguez also pledged to create a more inclusive IMO, one that is more gender-balanced in an industry that has long been dominated by men.

“I have appointed a gender-balanced senior management team and initiated a policy of refraining from participating in panels or events unless gender representation is respected. I encourage the maritime community to follow this example,” he said.

He added that the IMO will also strive to fulfil its mandate as the world’s regulator for international shipping; support IMO’s 176 Member States, particularly Small Island Developing States and Least Developed Countries; raise public awareness of IMO’s impact; and adopt a “people-centred approach”.

“My vision is for IMO to flourish as a transparent, inclusive, and diverse institution,” he said. ■

Catch the Singapore Maritime Lecture – In Conversation with Mr Arsenio Dominguez, Secretary-General of the International Maritime Organization at 11.15am on 15 April at Suntec Convention & Exhibition Centre Hall 406.

Singapore can ‘shine a light on the way forward’

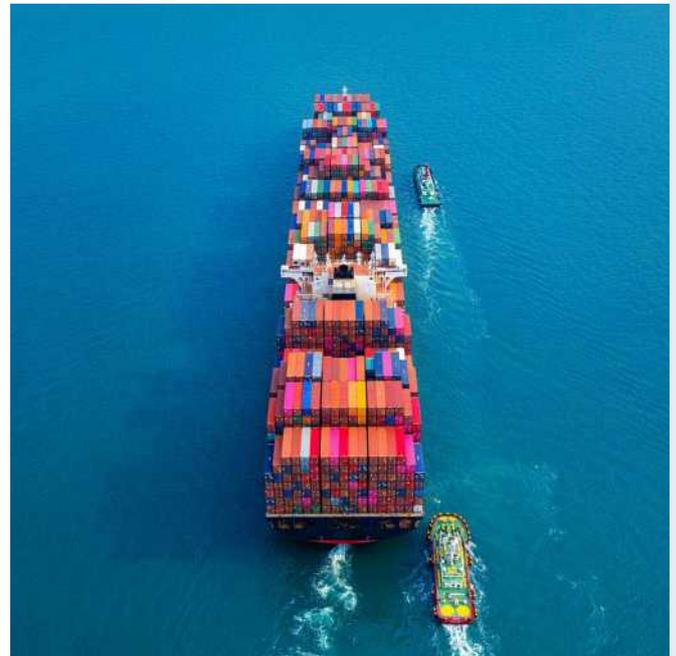
Key maritime hubs like Singapore can play a key role as the industry pushes ahead in its quest to decarbonise, said International Maritime Organization’s (IMO) Secretary-General, Mr Arsenio Dominguez.

“Singapore is (in) a great position to participate in trials and pilots to show what works, including route-based actions – and share results of any trials back to IMO,” he said.

The green transition poses a slew of fresh considerations for the maritime sector. A major bunkering hub such as Singapore will need to look at making changes to infrastructure to deliver new fuels.

Other considerations for the industry include safety, pricing, lifecycle emissions, supply chain constraints, barriers to adoption and more, added Mr Dominguez. Seafarers, too, will need to be trained in how to operate new technology safely.

“We need ‘early movers’ in the industry as well as forward-looking policy makers to take the necessary risks and secure the right investments that will stimulate long-term solutions for the sector,” he said.



Singapore Maritime Week is a chance for key stakeholders to “have the conversations and discussions that can formulate ideas and bring new solutions”, Mr Dominguez said.

Now, more than ever, collaboration will be crucial.

“The experience of critical maritime hubs like Singapore can help shine a light on the way forward for many issues. Here the IMO can play a role in providing opportunities for Singapore and other maritime hubs to share their expertise with all Member States. Shipping is global – no single country can do it alone.” ■

HIGHLIGHTS OF THE WEEK

15th April - Monday

SMW 2024 Opening Ceremony

Time: 9am - 12.15pm

Location: Suntec Convention & Exhibition Centre Hall 406

The week will kick off with Singapore's Minister for Transport Mr Chee Hong Tat delivering the keynote address. Mr Arsenio Dominguez, Secretary-General of the International Maritime Organisation will also deliver the Singapore Maritime Lecture.

Norway Singapore Maritime Business Forum* (By Registration Only)

Time: 2pm - 5.30pm

Location: Suntec Convention & Exhibition Centre, Nicoll 3, Level 3

The forum will explore business opportunities and collaborative efforts between organisations from both countries.

Xinde Marine Forum Singapore 2024* (By Registration Only)

Time: 12.30pm - 6.30pm

Location: Fairmont Singapore Hotel

The forum invites global shipping industry leaders to share their insights across various panels discussing the impact of decarbonisation, and green transformation in the sector.

Launch of Report of the Tripartite Advisory Panel on Future-ready Maritime Workforce and the DNV-Menon Leading Maritime Cities of the World 2024*

Time: 12pm

Location: Pan Pacific Singapore

The event will launch two key reports. The first is the Report of the Tripartite Advisory Panel (TAP) for Future-ready Maritime Workforce, which will identify skills and propose strategies for workforce transformation. The second, the annual DNV-Menon Leading Maritime Cities of the World 2024, will provide insights, rank and benchmark global maritime cities.

16th April - Tuesday

Accelerating Digitalisation & Decarbonisation Conference

Time: 9am - 4pm

Location: Suntec Convention & Exhibition Centre Hall 406

The first day of the two-day conference will feature distinguished speakers across various panels with a focus on digital transformation including the implementation of Maritime AI, the importance of cybersecurity, as well as the potential of investment and venture opportunities within the sector.

Expo@SMW 2024

Time: 9am - 5pm

Location: Suntec Convention & Exhibition Centre Hall 401 and 402

Explore a wide array of 50 exhibitions put up by maritime companies, research institutes, trade associations, classification societies, and start-ups.

Anti-Piracy and Sea Robbery Conference 2024* (By Registration Only)

Time: 8.30am - 12.30pm

Location: Suntec Convention & Exhibition Centre, Nicoll 2, Level 3

Organised by ReCAAP ISC, the conference will feature speakers across two panel discussions with a focus on key developments and trends pertaining to piracy and sea robbery incidents in Asia and beyond the region.

ASA Shipping Dialogue* (By Invitation Only)

Time: 1pm - 5pm

Location: Suntec Convention & Exhibition Centre, Meeting Room 325, Level 3

The dialogue will focus on potential challenges the maritime industry will face, from understanding EU-ET regulations to providing a safe environment for seafarers.

Connecting Global Ecosystems by Motion Ventures and MPA: A Gateway to Fostering Maritime Collaboration* (By Invitation Only)

Time: 7pm - 9pm

Location: National Gallery Singapore

The evening networking reception will serve as a bridge to connect policy makers, start-up founders, executives from multinational corporations, and venture capitalists.

17th April - Wednesday

Accelerating Digitalisation & Decarbonisation Conference

Time: 9am - 4pm

Location: Suntec Convention & Exhibition Centre Hall 406

The second day of the conference will feature distinguished speakers across various panels with a focus on net-zero fuel pathways, green and digital corridors, and technological pathways for harbour craft that will push the sector a step closer to its decarbonisation goals.

Expo@SMW 2024

Time: 9am - 5pm

Location: Suntec Convention & Exhibition Centre Hall 401 and 402

Explore a wide array of 50 exhibitions put up by maritime companies, research institutes, trade associations, classification societies, and start-ups.

8RO Reception (By Invitation Only)

Time: 4pm - 7pm

Location: Suntec Convention & Exhibition Centre, Level 3, Concourse

The networking event will bring eight classification societies together to discuss how to better foster collaboration, conduct knowledge exchange, and implement change on a broader scale.

SCMA's Distinguished Speaker Series (DSS): Alternative Fuels to Achieve Maritime Decarbonisation – Business and Legal Opportunities* (By Registration Only)

Time: 2pm - 7pm
Location: Suntec Convention & Exhibition Centre, Meeting Room 331, Level 3

Mr Sergio Mujica, Secretary-General of International Organization for Standardization will helm this year's discussion. He will look at new business opportunities and legal issues that key strategies as a result of the push towards maritime decarbonisation.

Lloyd's List Outlook Singapore Forum* (By Invitation Only)

Time: 9am - 4pm
Location: Suntec Convention & Exhibition Centre, Summit 2, Level 3

Join industry leaders as they discuss how the changing global economy, digitalisation, and decarbonisation are impacting supply chains.

18th April - Thursday

Maritime Services Leaders Forum

Time: 9am - 12pm
Location: Suntec Convention & Exhibition Centre Hall 406

Discussions at the Maritime Services Leaders Forum will focus on the latest in finance, insurance, legal services, and dispute resolutions.

Expo@SMW 2024

Time: 9am - 5pm
Location: Suntec Convention & Exhibition Centre Hall 401 and 402

Explore a wide array of 50 exhibitions put up by maritime companies, research institutes, trade associations, classification societies, and start-ups.

Navigating Collaboration: The Importance of Governance for Green Shipping Corridors* (By Registration Only)

Time: 3.30pm - 4.30pm
Location: Suntec Convention & Exhibition Centre, Level 3

Sustainability organisations C40 Cities and Arup will present research findings from their year-long project focused on capturing and disseminating valuable insights for best practices regarding Green Corridor governance.

Accelerating Safe Maritime Decarbonisation* (By Registration Only)

Time: 9am - 12pm
Location: Suntec Convention & Exhibition Centre, Meeting Room 327, Level 3

The Maritime Technologies Forum will present two key findings from reports that cover the development and implementation of safety management systems for alternative fuels.

UK Summit in Partnership with Singapore on Maritime Autonomous Technologies, Innovations and Standards* (By Invitation Only)

Time: 8.15am - 4pm
Location: Suntec Convention & Exhibition Centre, Meeting Room 331, Level 3

International stakeholders and leading experts across 20 organisations will share insights and developments around the UK-led initiative, Maritime Autonomy Assurance Testbed programme (MAAT).

19th April - Friday

Maritime Manpower Forum

Time: 9am - 12.30pm
Location: Suntec Convention & Exhibition Centre Hall 406

How will talent and manpower trends continue to shape maritime? Join the discussions at this year's Maritime Manpower Forum.

Youth@SMW

Time: 1.30pm - 5.30pm
Location: Suntec Convention & Exhibition Centre, Meeting Room 331, Level 3

Fronted and conceptualised by MaritimeSG Youth ambassadors, the event brings together industry leaders and youths across various institutions to share with them the exciting careers in maritime.

Singapore Norway Industry Matchmaking and Workshop Sessions: Innovations in Sustainable Maritime Solutions* (By Invitation Only)

Time: 9am - 5pm
Location: Suntec Convention & Exhibition Centre, Meeting Room 326, Level 3

Speak with a variety of start-ups, established industrial companies, or investors in the maritime sector across two separate business matchmaking sessions for potential business opportunities.

1st GREEN4SEA Singapore Forum* (By Invitation Only)

Time: 12.30pm - 6.15pm
Location: Marina Bay Sands

The forum will provide fresh and valuable insights on the best strategies to employ for Maritime Environmental Excellence and Sustainable Shipping.

LEGEND

- MAIN PROGRAMME
- *CO-LOCATED EVENT

For full programme, please visit www.smw.sg/agenda

Heads of international organisations, ministers gather at SMW 2024



(From left) International Maritime Organization (IMO) Secretary-General Mr Arsenio Dominguez, International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) Secretary-General Mr Francis Zachariae, International Organization for Standardization (ISO) Secretary-General Mr Sergio Mujica, International Energy Agency (IEA) Chief Energy Economist Mr Tim Gould, Germany's Federal Minister for Digital and Transport Dr Volker Wissing, China's Vice Minister for Transport Mr Fu Xuyin, and Norway's Deputy Minister for Trade, Industry and Fisheries Mr Even Tronstad Sagebakken.

Matthew Gan

The heads of some of the largest international organisations in the world will gather to discuss key challenges facing the global maritime industry at this week's Singapore Maritime Week (SMW).

Leading the list is the newly appointed International Maritime Organization (IMO) Secretary-General, Mr Arsenio Dominguez, who took over the position from Mr Kitack Lim in January. He will be delivering the Singapore Maritime Lecture later today to an audience of close to 1,000 local and international delegates and industry leaders.

Other heads of international organisations will also be here to participate and discuss key maritime issues. The International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) Secretary-General Mr Francis Zachariae and the International Organization for Standardization (ISO) Secretary-General Mr Sergio Mujica will both be present for SMW. They will be joined by International Energy Agency's (IEA) Chief Energy Economist Mr Tim Gould.

Ministers and senior officials from various maritime countries will also be attending SMW. These include Dr Volker Wissing, Germany's Federal Minister for Digital and Transport, Mr Fu Xuyin, China's Vice Minister for Transport, and Mr Even Tronstad Sagebakken, Norway's Deputy Minister for Trade, Industry and Fisheries, among others.

This gathering of key maritime leaders at SMW comes at a time of great climate urgency, with the world facing the significant challenge of meeting global decarbonisation goals. This year's SMW will serve as a crucial platform for discussion and promoting collective effort towards achieving the climate action goals of the maritime industry.

The theme for stronger cooperation between governments as well as between the public and private sectors is likely to take centre stage on issues such as digitalisation and decarbonisation. ■

Green shipping corridors gain momentum across the world



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Optimism is growing that such corridors can play a useful role in accelerating the push to net zero.

Green shipping corridor initiatives are gaining momentum and raising optimism that the concept can ease the path towards decarbonisation.

The 2023 Annual Progress Report on Green Shipping Corridors by the Global Maritime Forum (GMF) found that the number of new green shipping corridors grew to 44 in 2023, doubling from 21 in 2022.

The report also showed that previous green shipping corridor agreements are also making progress towards implementation.

There are clear signs that the fledgling idea is gaining traction, with both the public and private sectors working to realise its potential.

Mr Nakul Malhotra, Vice President for the Emerging Opportunities Portfolio (Maritime Services) at global maritime group Wilhelmsen, said that such corridors “represent a material, tangible initiative framework to take meaningful steps forward.”

But he also warned that significant challenges remain ahead, especially when it comes to operationalising the agreements.

“My optimism is balanced with a recognition of the challenges that are also prevalent. There is a need for stakeholders with varying incentives and priorities to align on the velocity – meaning both speed and direction – of the initiatives within a corridor,” he explained.

“More holistically, maritime ecosystems and players – including asset owners, operators, managers, cargo stakeholders, service providers, and other enablers on both sides of the corridor – need to also be part of this to ensure seamless operational execution and meaningful, sustainable implementation,” he added.

GMF’s report found that Asia was among the regions that saw a surge in representation, with several transpacific initiatives being announced over the past year. These include Los Angeles-Guangzhou, Los Angeles-Nagoya, and the United States-Republic of Korea Green Shipping Corridor Collaboration.

Likewise, Singapore, as a key node in the global shipping industry, has taken further steps to grow the number of green shipping corridors.

In 2023, the country announced new agreements with China and Japan to develop the Singapore-Tianjin and Singapore-Japan green and digital shipping corridors (GDSC) respectively. The partnerships aim to facilitate projects and trials of alternative energy sources and digital solutions, and the development of manpower.

Apart from inking new agreements, Singapore also showed its commitment to accelerate decarbonisation, digitalisation, and growth of the maritime industry by continuing to make progress in previous agreements signed.

First established in August 2022, the Rotterdam-Singapore GDSC has since brought together over 20 global value-chain partners across shipping lines, port authorities and operators, fuel suppliers, fuel coalitions and associations, banks, leading institutes of higher learning, and knowledge partners.

Together, they are working towards finding solutions to decrease greenhouse gas emissions from the corridor by 20 per cent, striving for 30 per cent, by 2030, compared to 2022.

Early last month (5 March), Singapore and Australia announced the Singapore-Australia GDSC. With the signing of the agreement, both countries will work with interested partners to explore the development of zero or near-zero greenhouse gas emission fuel supply chains for the maritime industry.

The collaboration between MPA, Australian federal, state and territory governments, along with industry stakeholders will also support the exchange of digital information between Singapore and Australia to enable efficient port clearance, port calls, and flow of vessels. ■

Mr Nakul Malhotra will be a panellist at the discussion “Decarbonising and Optimising the Sea Transport of Crew and Goods in Port Waters” at 3.45pm on 17 April.

Mr Chua Chye Poh
Founder of ShipsFocus

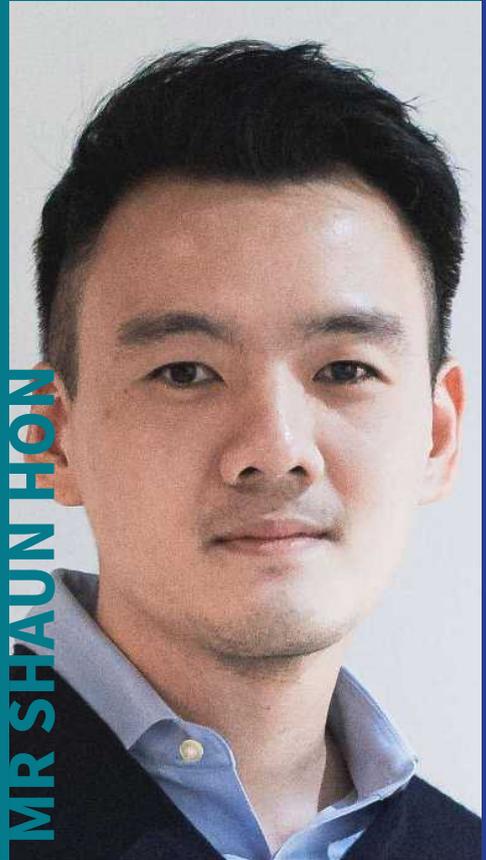
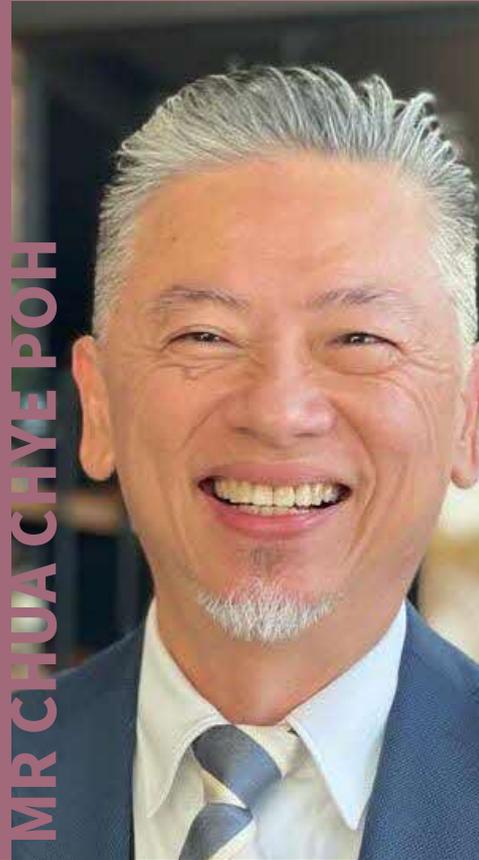
Companies invested in include:
BeeX (autonomous AI-enabled underwater drone solution)
eLSA (chartering and operations super-app platform)
Closelink (marine lubricant procurement platform)

Mr Axel Tan
Venture Partner, IMC Ventures

Companies invested in include:
Everimpact (carbon emissions measurement)
SWAT Mobility (AI vehicle routing)
Fresh Factory (cold chain fulfilment)

Mr Shaun Hon
Founder of Motion Ventures

Companies invested in include:
Pyxis (vessel electrification)
Kaiko Systems (turning technical vessel operations into structured and verified insights)
Innovez One (port management information system)



THE SHARKS OF MARITIME: DOES YOUR START-UP HAVE WHAT IT TAKES?

The maritime industry needs to solve big problems. Decarbonisation, crew safety, and cybersecurity are some of the pressing challenges the sector's brightest minds are tackling.

Key to cracking these issues is an influx of talent and investment. The good news is that investors see the value in the sector. In Singapore, total business spending by key maritime companies overseen by the Maritime and Port Authority (MPA) increased from \$4.3 billion in 2022 to \$4.8 billion last year.

Budding maritime companies require an ecosystem to thrive, and central to this are venture capital players.

Three of them share their thoughts on the maritime scene with **Derek Wong**. In the style of popular American show Shark Tank, where a panel of investors hear pitches by aspiring entrepreneurs, they spill the beans on what they look for in investee companies, and more.

Why invest in maritime?

Mr Chua Chye Poh (CCP): This is a “once-in-a-lifetime” opportunity with huge financial prospects for start-up investors and founders. Before we even count the benefits on the cargo side, sea freight alone is a US\$1 trillion market.

Mr Axel Tan (AT): The maritime industry has been often described as being late to innovation and ripe for change. The value chain in shipbuilding, ship owning, and freight supply and demand provide numerous opportunities for innovation to come in and create value.

Mr Shaun Hon (SH): Investing in the maritime industry presents a compelling proposition. The industry is witnessing a notable uptrend in the emergence of commercially viable start-ups, demonstrating robust growth both in terms of quality and quantity year on year.

A distinct advantage of the maritime start-up ecosystem is the realistic valuation of companies, which stands in stark contrast to the often speculative valuations seen in other sectors.

What is the current state of venture capital investments in the maritime sector?

CCP: The venture capital (VC) sector is slowly coming out from a very rough patch – which some call the funding winter globally in the last couple of years. This has inevitably affected VC investments in the maritime sector negatively.

One of the results is a consolidation wave, especially in the last 12 months, in terms of mergers and acquisitions among the maritime conglomerates and start-ups.

AT: The current state of VC investments in the maritime sector is active and expanding, especially in early-stage funding. In the last year alone, we have also seen sector-focused VCs deploying actively in Seed to Series A stages.

SH: We are witnessing an upsurge in capital investment and the establishment of more VC funds dedicated to maritime ventures. This increase in available capital is essential for nurturing early-stage companies and driving innovation.

What do you look out for in a potential investee company?

AT: We look for ideas that have the potential to transform a meaningful problem or opportunity area at the industry level. The traction across a representative number of adopters is crucial, as there are risks of solutions being too adapted to a small segment of customers.

We also place emphasis on the team having experience or drawing from vertical knowledge, as maritime is not a simple business area to innovate in.

CCP: Every investment, like a baby, is unique. Our “babies” should have the pre-conditions to grow up healthily to make positive contributions to society and solve the world’s most pressing and long-term problems.

We pay attention to the founder; the problem he sets out to solve; the initial team and traction; and how they overcome problems.

SH: When evaluating potential investments in maritime businesses, our approach is methodical and focuses on several key aspects that signal a venture’s viability and potential for success:

1. Product-Market Fit: In the maritime industry, where needs can be highly specialised and vary significantly across different segments, understanding and addressing specific pain points with precision is crucial.

2. Scalability of Business Model: The ability to scale operations effectively is critical to long-term success. We assess the start-up’s capacity to expand its operations, enter new markets, and grow its customer base without proportional increases in costs.

3. Ability to Navigate Stakeholder Ecosystem: The entrepreneur’s ability to understand, engage with, and navigate the complex ecosystem is crucial.

What is an exciting idea you have come across recently?

SH: A super-app like FrontM for the maritime industry is poised to address a significant and multifaceted opportunity within the sector.

The maritime industry is characterised by a diverse array of operations, including crew management, ship operations, logistics, and compliance. Each requires specialised solutions. FrontM’s approach to consolidating various maritime solutions into a single platform addresses a critical market need for integration and efficiency.

CCP: Many continue to seek out the next “in thing” and miss out on the simple things in maritime digitalisation. For now, down-to-earth founders and start-ups that are focused on digitalising operations and workflow and can become best in that area will find themselves targets of acquisition sooner or later.

AT: Some exciting ideas we have come across are in harnessing the power of autonomous solutions to tackle problems in manpower, operating in dangerous environments, and improving productivity.

Going forward, we are spending more time on decarbonisation and fuel efficiency. ■

Mr Chua Chye Poh and Mr Shaun Hon will be panellists at the discussion on “Investment and Venture Opportunities” at 12.45pm on 16 April.

Encouraging progress made to decarbonise maritime sector but challenges remain

By Caroline Yang



Strides have been made in developing and implementing new technologies and practices to reduce emissions in the shipping industry.

Many shipping companies have invested in more fuel-efficient vessels, adopted lower carbon intensity fuels alongside conventional fuels like LNG (liquefied natural gas), methanol, ammonia, hydrogen and biofuels, and explored innovative solutions such as wind-assisted propulsion and hydrogen fuel cells.

In 2022, at the Port of Singapore, over 90 biofuel bunkering operations supplied a total of 140,000 tonnes of biofuel blends. We have also been involved in several initiatives such as the world's first ship-to-containership green methanol bunkering operation (Maersk and Hong Lam Marine Pte Ltd) on 27 July 2023.

Additionally, FuelNG Bellina carried out the first LNG bunkering of an LNG-powered pure car and truck carrier (PCTC) at the Port of Singapore in March 2023. The world's first use of ammonia, in combination with diesel in the combustion process, as a marine fuel onboard the Singapore-flagged ammonia-powered vessel, the Fortescue Green Pioneer, was recently conducted in the Port of Singapore.

Other short-term measures to reduce GHG emissions include efforts by Singapore-based company, BergeBulk to adopt wind-assisted propulsion energy. Their dry bulk carrier is fitted with four mega steel sails known as WindWings which will harness wind power and reduce emissions. The utilisation 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.

However, despite these efforts, there remain challenges that impede further progress.

Firstly, infrastructure limitations present a significant barrier. The availability and accessibility of alternative fuels infrastructure remain inadequate. Ports and bunkering facilities need to invest in infrastructure to support the adoption of cleaner fuels, such as LNG bunkering stations and hydrogen refueling facilities. Limited infrastructure can slow down the transition to low-carbon shipping.

Secondly, technological challenges hinder advancement. While there has been progress in developing alternative propulsion technologies, many of these solutions are still in the early stages of development or not yet commercially viable. Issues such as scalability, reliability, and cost-effectiveness need to be addressed to accelerate the adoption of these technologies across the industry.

Thirdly, regulatory complexity, and more importantly, non-uniformity, adds to the impediments.

The regulatory landscape surrounding emissions reduction is complex and fragmented, with different regions and jurisdictions implementing their own rules and standards.

This can create uncertainty for shipping companies and hinder investment in long-term emissions reduction strategies.

For example, International Maritime Organization (IMO) has established a global sulfur cap on fuel oil used by ships. However, certain regions like the Baltic and North Seas have stricter emission regulations than the global cap with their Emission Control Areas (ECAs). This requires ships to switch to cleaner fuels or install scrubbers when entering these areas.

Another example is the European Union's Emissions Trading System (EU-ETS) schemes that covers emissions from various sectors, including maritime transport within the European Economic Area (EEA). However, it only applies to voyages above a certain size and distance



threshold. This creates a situation where some shipping activities within the same region are subject to the EU-ETS, while others are not.

The EU-ETS applies to ships above 5,000 GT calling at EU ports, with a gradual increase in the percentage of emissions covered from 2024 to 2027. China's ETS currently excludes shipping altogether, but future expansion could bring them into the fold. This inconsistency creates uncertainty for shipping companies operating in both regions, making it difficult to plan long-term strategies.

Fourth, financial barriers pose significant challenges. The upfront costs of investing in cleaner technologies and fuels can be prohibitive for many shipping companies, especially smaller operators. Without sufficient financial incentives or support mechanisms, some companies may struggle to make the necessary investments to decarbonise their operations.

In order to overcome these hurdles, initiatives such as the proposed Zero Emission Shipping Fund (ZESF) by the International Chamber of Shipping (ICS) bridge the price gap between expensive green fuels and conventional options, making green alternatives more commercially attractive. ZESF establishes a fund specifically for accelerating the use of zero-emission fuels.

Mandatory contributions are derived from ships based on their greenhouse gas (GHG) emissions and this creates a pool of money from the industry itself. Financial support is then provided to ships that switch to cleaner fuels, like ammonia, hydrogen, or sustainable biofuels through direct grants or a fund and reward, "feebate" system, where polluters pay and clean operators receive rebates.

Next, the World Shipping Council (WSC)'s Green Balance Mechanism (GBM) introduces a market-based measure to create a level playing field for fuel choices. A levy (tax) is imposed on conventional fossil fuels. The collected fees are then used to financially incentivise the use of cleaner fuels. Not only does GBM encourage a shift towards cleaner fuels by making them economically competitive with traditional options, it also aims to stimulate investment in green fuel production infrastructure.

Lastly, lack of global coordination further complicates progress. Climate change is a global challenge that requires coordinated action from all stakeholders. Lack of alignment and coordination among governments, industry players, and other stakeholders can slow down progress and hinder the effectiveness of emissions reduction efforts.

In conclusion, while the shipping industry has made some progress in reducing its carbon footprint, there are still significant challenges and chokepoints that need to be addressed to accelerate the transition to a more sustainable and low-carbon future. Collaboration, innovation, and concerted efforts from all stakeholders will be crucial in overcoming these challenges and achieving meaningful emissions reductions in the shipping sector. ■

The author is President of the Singapore Shipping Association. She will be speaking at the Maritime Manpower Forum Panel Discussion: Elevating Maritime Expertise: Upskilling Professionals and Seafarers on Friday.



Tide

Turners

In this four-part series, we speak to tech start-ups that are tech-ing maritime to the next level, from advancing the decarbonisation agenda to enhancing cybersecurity and maritime safety.

Photo: PIER71™

MeasureAI, a spin-off company from the National University of Singapore, is priming the pump for a greener – and safer – maritime future with its gas sensing tech that can detect fuel leaks on vessels. Jaime Niam speaks to its founder and CEO, Dr Gokula Krishnan Ramachandran, who shares what's ahead for the winner of the PIER71™ Smart Port Challenge 2023.

Q: Tell us about your winning technology. What issue does it seek to address in the maritime industry?

It started off as a weekend hobby project, but ended up being a patented gas-sensing technology which can detect and quantify hundreds of gases with a single sensor chip in real time, a function that very few safety systems in the market have.

There are plenty of use cases for our technology, but we decided to focus on solving the safety concerns regarding the usage of alternative fuels in maritime, in line with the 2023 International Maritime Organization's Greenhouse Gas Strategy to reduce carbon emissions by at least 40 per cent by 2030. Almost all alternative fuels are highly flammable, and fuels like methanol burn with an invisible flame and no smoke. Ammonia, in particular, is a toxic chemical that can be fatal when inhaled in high concentrations.

This is why a robust and reliable fuel leak monitoring system is important in accelerating the adoption of alternative fuels. Our aim is to detect fuel leaks on vessels early to protect human lives and assets, especially since the concentration of harmful gases can increase rapidly.

Q: What's unique about your tech, besides its real-time monitoring function?

Our sensor chips are easily configured and tuned via software updates, providing tons of flexibility. This is especially valuable because safety regulations and threshold limits are still changing with these new fuels. For instance, if a bunkering company builds a safety system with MeasureAI for ammonia monitoring with a threshold limit of 30 parts per million (ppm) and this limit gets decreased to 10ppm three years later, they simply have to update their software without having to overhaul their hardware infrastructure.

Q: What are some of the challenges that MeasureAI faced in developing this technology and how did it overcome them?

In the first place, the reason we applied to the PIER71™ Smart Port Challenge was for us to assess our product-market fit. Indeed, the masterclasses, networking sessions and advice we received from our mentors during the challenge helped us realise that although we have a fully functional proof-of-concept device, it is uncertain whether it will be compatible with the harsh maritime environment.

Besides optimising our sensor fabrication methods, we are also looking into technical and design innovations that will allow our device to withstand sea showers, turbulence, humidity, and varying air pressures. We will be test-bedding our device with potential customers and going through multiple rounds of product iteration until we can achieve this.

Q: What's next on the horizon for MeasureAI?

The entire development process has taken us about three years, and we will continue to refine our technology. On top of the aforementioned technical improvements, we foresee many areas in which we can scale our tech within the maritime space, including marine fuel quality assessment, spill detection and monitoring, and chemical leak monitoring in chemical tankers. ■

The PIER71™ Smart Port Challenge is an annual innovation competition organised by PIER71™ to find the best breakthrough solutions from tech start-ups that will drive digital transformation and address key challenges faced by the maritime industry.

Issues 2 to 6 of our Show Dailies will cover daily highlights and can be found online at www.smw.sg.