

# SINGAPORE maritimeweek<sup>®</sup> 2024



**Singapore cannot take its success for granted: Transport Minister**

page 2



**Countries must band together to tackle complex problems, say ministers**

page 4



**Singapore ranked top maritime city: DNV-Menon report**

page 5

## Time for maritime to step out of the shadows

page 3



(Photo) Mr Arsenio Dominguez, Secretary-General of the International Maritime Organization, delivering the Singapore Maritime Lecture.

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CAPTURING THE ESSENCE

# Growing Singapore as a global maritime hub

The country will focus on three key thrusts: Innovation, talent and reliable operations.



Singapore's Minister for Transport Mr Chee Hong Tat said that the country will continue to invest in raising its port efficiency and competitiveness.



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Global trade and connectivity have been affected by geopolitical conflicts such as those in the Middle East, but Singapore's maritime industry has stayed resilient, said Singapore's Minister for Transport Mr Chee Hong Tat.

In the first three months of this year, Singapore's vessel arrival tonnage increased by 7.3 per cent compared with the same period in 2023, which was a record-breaking year for the hub port. Container throughput also grew 10.7 per cent year-on-year, to almost 10 million 20-foot equivalent units (TEUs), said Mr Chee.

But he warned that Singapore cannot take its success for granted, and must stay adaptable while investing heavily to ensure port efficiency and productivity.

"A rising tide can lift all boats, but the boat and its crew can only benefit if they are well-prepared when the water level rises," he said at the opening ceremony of the 18th edition of Singapore Maritime Week (SMW) on Monday.

## TALENT: REGIONAL TRAINING HUB

Singapore's leading role in the maritime sector has to be supported by a deep talent pool.

The new Maritime Energy Training Facility (METF) will boost this with a network of training facilities that is expected to support around 10,000 seafarers and other maritime personnel from now until the 2030s. This will equip them for safe handling, bunkering and incident management of alternative fuels and low- or zero-emission vessels.

"With the METF, we are one step closer to achieving our vision for Singapore to be the maritime training hub for the region," said Mr Chee at the event where the METF Letter of Intent was signed between the Maritime and Port Authority of Singapore (MPA) and 22 partners, from international organisations to marine engine manufacturers.

## INNOVATION: PIONEERING SOLUTIONS

MPA is going full steam ahead to create the region's first maritime Artificial Intelligence (AI) and Machine Learning Digital Hub. The collaboration with Amazon Web Services will pilot new and generative AI industry solutions like route and fuel optimisation.

**"A rising tide can lift all boats, but the boat and its crew can only benefit if they are well-prepared when the water level rises."**

**Mr Chee Hong Tat**  
Singapore's Minister for Transport

The partnership enables a "quicker and better" way to build capabilities, said Mr Chee, adding that Singapore's Ministry of Transport and its statutory boards adopt this approach in other domains too.

As the world's largest transshipment hub port and with a vibrant maritime ecosystem, Singapore offers a useful testbed and living laboratory for novel maritime solutions to thrive.

## OPERATIONS: RELIABLE AND RESILIENT

During the COVID-19 pandemic, Singapore became a trusted "catch-up port" amid severe disruptions worldwide.

"This remains one of our value propositions when global supply chains are affected by prolonged conflicts or one-off incidents," said Mr Chee, adding that Singapore aims to build on this by making its maritime operations even more reliable and resilient.

An area of focus is cybersecurity. MPA has worked with the Singapore Shipping Association on the Maritime Cybersecurity Roundtable to help shipowners and operators protect themselves better, while enhancing domain expertise.

To create a safer hub port, MPA is also developing an AI-enabled Next Generation Vessel Traffic Management System, which will use data analytics and machine learning to highlight traffic hotspots and even predict collisions.

## SAILING TOGETHER

Such efforts will bolster Singapore's role as an International Maritime Centre, with about 180 global shipping groups based here and more expanding their presence.

An example is multi-national energy trading firm Vitol, which has consolidated all its shipping activities into a Singaporean company, Vitol International Shipping, since the start of the year.

Yet, even as Singapore evolves as a maritime hub, it is not a solo journey. Unchartered waters lie ahead and collective action is needed to tackle the twin challenges of digitalisation and decarbonisation.

"Importantly, we need to find the right partners who share the same vision and are willing to shoulder the risks with us," said Mr Chee. "Together, we can support one another as we embark on this exciting journey and let our dreams set sail." ■





Mr Dominguez, Secretary-General of the International Maritime Organization, added that more can still be done to promote diversity, transparency and inclusion in maritime.

# ‘Let’s be proud of this industry’: IMO chief

*Mr Arsenio Dominguez urged members to be ‘role models’ in defending the sector and highlighting its successes.*



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The maritime industry is responsible for transporting more than 80 per cent of global trade, but it often goes unnoticed by the public – until something goes wrong.

“For many years we were very comfortable being in the shadows, just carrying on with our business and reacting whenever there was some maritime accident or casualty,” said Mr Arsenio Dominguez, the International Maritime Organization’s new Secretary-General.

“But let’s face it, we are more and more in the public eye...particularly since the green agenda became one of the most important topics for the United Nations and the whole world...We cannot be passive,” he added at the opening of the Singapore Maritime Week on Monday.

He urged members of the maritime industry to be “role models” in defending the sector and speaking up about what it is doing right.

Citing COVID-19 supply chain disruptions and the 2021 Suez Canal obstruction as examples, he highlighted the essential role that shipping played in everybody’s lives, even if they might not realise it till something goes amiss.

“Let’s be proud of this industry, because we have a lot to be proud of,” he said at the Suntec Singapore Convention & Exhibition Centre. “We transport more than 80 per cent of goods around

the world...Without shipping, (people) probably would not be enjoying the comfort of their mobile phones, their computers, the furniture that they have at home.”

Or as he quipped: “No shipping, no shopping.”

## THE GREEN TRANSITION

Another thing to celebrate is that the IMO has adopted a strategy to decarbonise, suggested Mr Dominguez, whose session was moderated by Mrs Mary Seet-Cheng, Singapore’s Non-Resident High Commissioner to the Republic of Fiji and Non-Resident Ambassador to the Pacific Islands Forum.

In 2023, IMO released a revised Greenhouse Gas Strategy to achieve net-zero emissions from shipping by or around 2050. The industry is also on track to adopt mid-term measures by late 2025.

While he notes that this is a “very ambitious and challenging timetable”, Mr Dominguez is confident the sector will take actions to meet those goals.

A pricing mechanism for greenhouse gas emissions is also being developed, and will be presented later this year, he added. “Saving the planet has a cost...We have to recognise that inaction could be more expensive in the end.”

As the sector pushes ahead with its decarbonisation goals, it needs help. “The organisation and Member States have agreed we are going to be fuel agnostic and technology agnostic. We need to tap on all the opportunities,

be it ammonia, methanol, hydrogen-derived fuels, biofuels...as well as new technologies (such as) wind propulsion being developed, electric power...”

While autonomous ships are a way to address the challenges of decarbonisation and a shortage of seafarers, this does not mean the workforce will be displaced, he added.

“On the contrary, seafarers will always be required. Their role is paramount in shipping. But at the same time, we need to work with governments to transition those jobs inland. Their experience and expertise will be required to make it effective.”

## CHAMPIONING DIVERSITY

Looking into the mental well-being of seafarers and tackling sexual harassment on ships are other items on Mr Dominguez’s agenda.

“There is a need for Member States to continue to support seafarers, by providing them with the necessary training and assistance,” he said, adding that the IMO is studying how to make the male-dominated sector more diverse.

“Let’s defend the shipping sector. But also, let’s acknowledge that there’s more for us to do. I’m a full campaigner of diversity, transparency and inclusion in this sector. There’s more to be done there,” he added.

“We need a diverse workforce and a diverse approach in order to meet future challenges and attract the younger generation...We have to evolve.” ■

“No shipping, no shopping.”

**Mr Arsenio Dominguez**  
Secretary-General  
International Maritime Organization





# Countries must work together to tackle complex challenges: maritime dialogue

*Collaboration is the cornerstone of the industry's survival and success.*



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Speed and progress are not mutually exclusive, and there is a way for the maritime industry to achieve both when it comes to advancing its ambitions. The answer hinges on a seemingly simple, yet crucial, strategy – enhancing international cooperation.

This was the unanimous conclusion that the panellists of a maritime dialogue came to at the 18th instalment of Singapore Maritime Week. In the high-level engagement session, moderated by Associate Professor Simon Tay, Chairman of the Singapore Institute of International Affairs, the topics of digitalisation, decarbonisation, and supply chain resilience surfaced once again. But while much progress has been made on these fronts in the past few years, more needs to be done, especially given the growing urgency to meet the industry's net-zero emissions targets by 2050.

"We need to get the same regulatory frameworks and key measurement standards...also so that we can communicate freely between different stakeholders," said Mr Even Tronstad Sagebakken, Norwegian Deputy Minister of the Ministry of Trade, Industry and Fisheries.

Dr Volker Wissing, German Federal Minister of Digital Affairs and Transport, concurred, adding that everybody, not just certain ports nor the International Maritime Organization (IMO), has to feel responsible for achieving these goals.

## **DIGITALISE TO DECARBONISE**

Just as maritime connects the world by sea,

so are its overarching goals of digitalisation and decarbonisation inextricably linked.

For instance, digitalisation has allowed for the advent of route planning and optimisation systems that can minimise voyage distances and durations, as well as support Just-in-Time Arrivals, in turn reducing fuel usage and contributing to the decarbonisation agenda. These solutions also make navigation safer, reducing the environmental impact associated with ship collisions and groundings.

"Digitalisation can save 38 per cent of all carbon emissions in the shipping sector – an amazing amount," said Mr Francis Zachariae, Secretary-General of the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA).

While the pace of digitalisation is expected to soar in coming years due to the rise of Artificial Intelligence (AI), international cooperation is vital to guaranteeing that digital systems are interoperable, compatible, and secure.

And it is inaction, not action, that is costly. "For consumers, it will be cheaper if we achieve our goals than if we miss them. If we decarbonise in an intelligent way, it will not have a negative impact on our economies. If we lose time and miss our goals, we will have to advance in a very short time and the impact on economies is much higher. This is why we should use the time left from now until 2050," Dr Wissing said.

Norway is one of the countries leading the charge, with the introduction of their zero-emission electric ferries as well as the IMO-Norway GreenVoyage2050 Project that supports selected developing countries in reducing greenhouse gas emissions from ships and transitioning towards a low-carbon future.

Shipowners are also starting to see the value of decarbonising fast. "(They) are driven by a good business case," said Mr Zachariae. "Many invest in being seen as first-movers in this area."

But "new technology does not come without risks", said Mr Sagebakken, and collaboration is similarly key to defending against them.

"We have seen many cyber attacks on ships, and if we remove seafarers and rely on AI, we become even more vulnerable," said Mr Zachariae. This is compounded by the fact that global satellite systems operate on the same frequencies and are easily jammed, meaning that ships can get completely lost once they lose a GPS signal. Worse still, very few countries have invested in resilient, alternative systems to GPS, even though the IALA has developed various low-cost solutions.

Boosting global cyber defences to enhance supply chain resilience thus requires greater international cooperation, said Mr Zachariae. "We need to be more open about sharing (about cyber attacks)," he added, noting that transparency is lacking as cybersecurity is often seen as a sensitive and confidential issue.

The world is not short of tension points, if the recent disruptions in global trade are any indication.

**"All these events show us that if we do not act internationally and act fast, then we will take risks for our societies. This is why we can never do enough, and can never cooperate enough together," said Dr Wissing. ■**





## Singapore ranked **top maritime city** for 6th time in a row

*Rotterdam, London, Shanghai, and Oslo make up the top five of DNV-Menon's list.*



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**S**ingapore has ranked top again in the latest edition of the DNV-Menon Leading Maritime Cities of the World, which now includes indicators on digitalisation and decarbonisation.

The 2024 edition of DNV-Menon Leading Maritime Cities of the World report showed Singapore has retained its spot as the leading maritime city globally for the sixth time in a row.

Assessed on five key pillars – Shipping Centres, Maritime Finance and Law, Maritime Technology, Ports and Logistics, and Attractiveness and Competitiveness – the city-state came out on top for three: Shipping Centres, Ports and Logistics, and Attractiveness and Competitiveness.

Rotterdam, London, and Shanghai also retained their second, third, and fourth spots respectively. Fifth place went to Oslo, which overtook Tokyo this year as the Japanese capital slipped to seventh place.

Dr Shahrin Osman, co-author of the report and Regional Head at the Maritime Advisory and Director of Maritime Decarbonisation & Autonomy CoE (Singapore/Asia-Pacific) at classification society, DNV says, “Singapore is undoubtedly the world-leading hub at the forefront of the maritime industry. It appears unaffected by the many changes currently sweeping the sector and is expected to maintain its top spot for the next five years through its implementation of a consistent

strategy for innovation and its investment into green transformation and digital technologies.”

Four new indicators were added this year to reflect decarbonisation and digitalisation efforts in the sector. This bumped the total number of indicators up to 45, of which 31 were objective – driven by data – and 14 subjective. The latter compiled opinions from 190 international industry experts including shipowners, managers, and business executives.

Of the new indicators, Singapore displayed key competencies in decarbonisation – particularly in the uptake of alternative fuels such as ammonia and hydrogen. The city-state was voted as the top city with the strongest capabilities and infrastructure best-placed to be a leading multi-fuel bunkering port. This helped the nation reclaim the top spot in the Ports and Logistics pillar, for which it was ranked third in the 2022 report.

Singapore also topped indicators measuring digitalisation for its quick adoption of new technologies. For instance, it was voted by industry experts as the top city with the strongest capability and the best position for digital transformation in the maritime industry.

With the addition of these indicators, “Singapore’s position as number one is even clearer this year than previous years,” says Dr Erik Jacobsen, co-author of the report who is also Partner and Chairman at financial consultancy firm Menon Economics. ■

# Maritime workforce will need **new skills** for the future: report

Victoria Lim

**T**he maritime workforce will require new skills that go beyond simply technical knowledge to meet the industry’s future needs, a new report by an alliance of Singapore government agencies, labour movement, and private sector showed.

The Tripartite Advisory Panel (TAP) for Future-Ready Maritime Workforce said that the industry needs to deepen and build new skills in an economy marked by pervasive technological change.

It outlined three key areas to strengthen. The first area is soft skills, or the ability to manage complex problems and improve interpersonal dynamics. The second area is digital skills, especially in the ability to use and apply technology to access, analyse, and manage information. The third area is domain expertise, which requires specialised field knowledge.

“The workforce needs to foster skills beyond the realm of machines and algorithms and be strengthened with skills such as managing complexity, analytical thinking, emotional intelligence, the ability to empathise and communicate cross-culturally,” added the report.

The recommendations come at a time when the industry is fast transitioning into a new age, one marked by decarbonisation and digitalisation. It is also facing a talent crunch, making it difficult for companies to find the talent they need to cope with the changes.

The TAP was formed in 2022 to identify the future skills required by the maritime sector. In doing so, it also mooted three key strategies for companies to adapt.

The first strategy emphasises cultivating a lifelong learning mindset among maritime professionals. The report proposed offering internships and sea stints, investing in research and innovation, and establishing a centralised hub for advancing maritime skills.

The second strategy focuses on providing diverse opportunities in both sea and shore roles to attract and retain talent in the industry. Recommended measures include nurturing transition skills and updating human resource policies, among other suggestions.

The last strategy introduces the idea of adapting outreach efforts to attract new talent. TAP suggested revitalising outreach strategies to engage the younger population, promoting diversity and inclusion, and enhancing collaboration with relevant partners to broaden the talent pool. ■

*For the full report, please visit:*  
<https://www.smf.com.sg/resources-publications/>



# A new port of call for **clean maritime energy** training in regional first

Singapore's new training centre will soon equip seafarers with the skills to handle clean energy.



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A new training centre that will focus on the safe handling, emergency response, and incident management of novel clean marine fuels like methanol and ammonia was announced by the Maritime and Port Authority of Singapore (MPA) on Monday.

MPA noted that the number of ships operating on zero or near-zero emission fuels is growing, raising the need for more maritime personnel and seafarers to be trained and equipped to operate these ships safely and efficiently. Singapore is well-placed to meet this need, with hundreds of crew changes conducted here daily.

The new Maritime Energy Training Facility (METF) will feature a network of decentralised training facilities. These include a new dual-fuel marine engine simulator, Singapore Maritime Academy's (SMA) integrated engine room and bridge simulator, and Singapore Polytechnic's Centre of Excellence in Maritime Safety's augmented reality-enabled scenario-based training facilities.

A Letter of Intent for METF was signed during the opening ceremony of Singapore Maritime Week (SMW) on Monday by MPA and 22 partners comprising global marine engine manufacturers, international organisations, trade associations, and institutes of higher learning.

These partners will help develop the METF curriculum, which will also include SMA's training course on handling methanol as a marine fuel, the first of its kind in the region.

METF's training facilities and curriculum are set to be completed by 2026, with around 10,000 seafarers from around the world expected to be trained by 2030.

2030 is also the target year set by the International Maritime Organization's 2023 Greenhouse Gas (GHG) Strategy, which aims to cut the carbon intensity of international shipping by at least 40 per cent and generate 5 to 10 per cent of international shipping energy from zero or near-zero GHG emission sources.

Another effort towards meeting these IMO goals is Green and Digital Shipping Corridors (GDSCs). MPA said on Monday that two new global value-chain partners have joined the Singapore-Rotterdam GDSC.

They are Hapag-Lloyd, the world's fifth-largest liner shipping company, which has committed to deploying vessels that run on zero or near-zero emission fuels along the Asia-Europe trade lane, and the A\*STAR Centre for Maritime Digitalisation, which aims to develop digital solutions to complement the industry's green shift.

The Singapore-Rotterdam GDSC's 26 partners will progressively roll out several first-mover pilot projects and commercial structures in the next year, all of which aim to accelerate the uptake of zero and near-zero emission fuels. They will also convene at SMW's inaugural GDSC Forum on Thursday.

Both METF and the Singapore-Rotterdam GDSC are part of MPA's larger push for decarbonisation in the industry, which includes the world's first use of ammonia as a marine fuel onboard the Singapore-flagged Fortescue Green Pioneer in March this year and the launch of Singapore's first pilot trial of an electric harbour craft charging point developed by Pyxis Energy and SP Mobility earlier this month. ■



## PARTICIPANT OF THE DAY

"Singapore is a hub for innovation, so holding SMW here can bring different stakeholders together, making this undoubtedly a very important event for the maritime industry. I hope SMW can strengthen cooperation with possibilities of pooling resources together and promoting initiatives to further innovation."

Mr Roberto P Cazzulo,  
Chairman of the International Association of Classification Societies, when asked what he hopes SMW will achieve

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# International partnerships a catalytic force

As leading maritime nations, Singapore and Norway share a close partnership that shows the power of collaboration in achieving decarbonisation goals.



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Strong international partnerships and a collaborative mindset will pave the way to net-zero for the maritime industry, even as it aims to transform amid new and mounting challenges.

While global trade disruptions and climate change pose major obstacles to the sector, they also create opportunities for cooperation in emerging areas such as decarbonisation, digitalisation, and developing future-ready talent, said Singapore's Minister for Transport Mr Chee Hong Tat on Monday (15 April).

"International partnerships are a catalytic and synergistic force. They enable us to better seize opportunities by tapping the strengths of countries...Working together, the final product is more than the sum of its individual parts," said Mr Chee in his opening address at the Norway Singapore Maritime Business Forum, held during the launch of Singapore Maritime Week on 15 April 2024.

The forum included a Memorandum of Understanding (MoU) between the Maritime and Port Authority of Singapore (MPA) and the Research Council of Norway, renewed for the ninth time since it was first signed in 2000. Such close collaboration is a positive example of international partnership, noted Mr Chee.

His sentiment was echoed by Mr Even Tronstad Sagebakken, Norway's Deputy Minister for Trade, Industry and Fisheries. "(The renewal) speaks volumes about the benefits we have seen over more than 20 years. Singapore has been identified as one of (Norway's) most important markets, and there is huge potential here to do even more," he said in his address.

## STRONG FOUNDATION OF TRUST

Despite differences in geography, demography, and climate, Singapore and Norway share similar values which contribute to their thriving partnership and individual success as maritime nations, said Ms Caroline Yang, President of the Singapore Shipping Association.

**"International partnerships are a catalytic and synergistic force. They enable us to better seize opportunities by tapping the strengths of countries."**

Mr Chee Hong Tat  
Singapore's Minister for Transport



Strong maritime ties between Singapore and Norway are set to continue with the ninth renewal of a Memorandum of Understanding first signed in 2000.

**"(The renewal) speaks volumes about the benefits we have seen over more than 20 years. Singapore has been identified as one of (Norway's) most important markets, and there is huge potential here to do even more."**

Mr Even Tronstad Sagebakken  
Norway's Deputy Minister of Trade,  
Industry and Fisheries

Speaking at a panel discussion during the forum, she noted that Norwegians, like Singaporeans, "roll up (their) sleeves and get to work."

"We find the problems, find the solutions, come to a consensus, and get going," she said. At a national level, both countries are also rules-based and transparent, resulting in a "very strong foundation of trust between both countries" – and more capacity for collaboration.

Notably, such cooperation benefits not only Singapore and Norway, but also the wider international community.

In March last year, the International Maritime Organization (IMO) signed an MoU with MPA and the Ministry of Climate and Environment of Norway to strengthen cooperation on reducing

greenhouse gas (GHG) emissions from ships – with an eye towards supporting developing countries.

"Countries like Singapore and Norway have been helpful and proactive – actually taking the time to design projects with us, to look into the needs of countries in the region," said Mr Arsenio Dominguez, IMO Secretary-General, in his keynote speech at the forum. "From there, (the IMO) can replicate the success of these projects in other regions."

## COLLABORATE TO DECARBONISE

With the revised GHG strategy laid out by the IMO in 2023, decarbonisation targets for the maritime sector are clear. Collaboration will be key to optimising resources so that businesses and nations do not duplicate efforts.

"We do not want to reinvent the wheel, because it is too expensive for us to do so," said Ms Yang. Sharing information and cutting-edge technology will help to accelerate innovation.

This does not mean that companies or nations lose out. "In collaboration, you can have competition, and in competition, you can have collaboration. We need to find the balance," said Ms Yang.

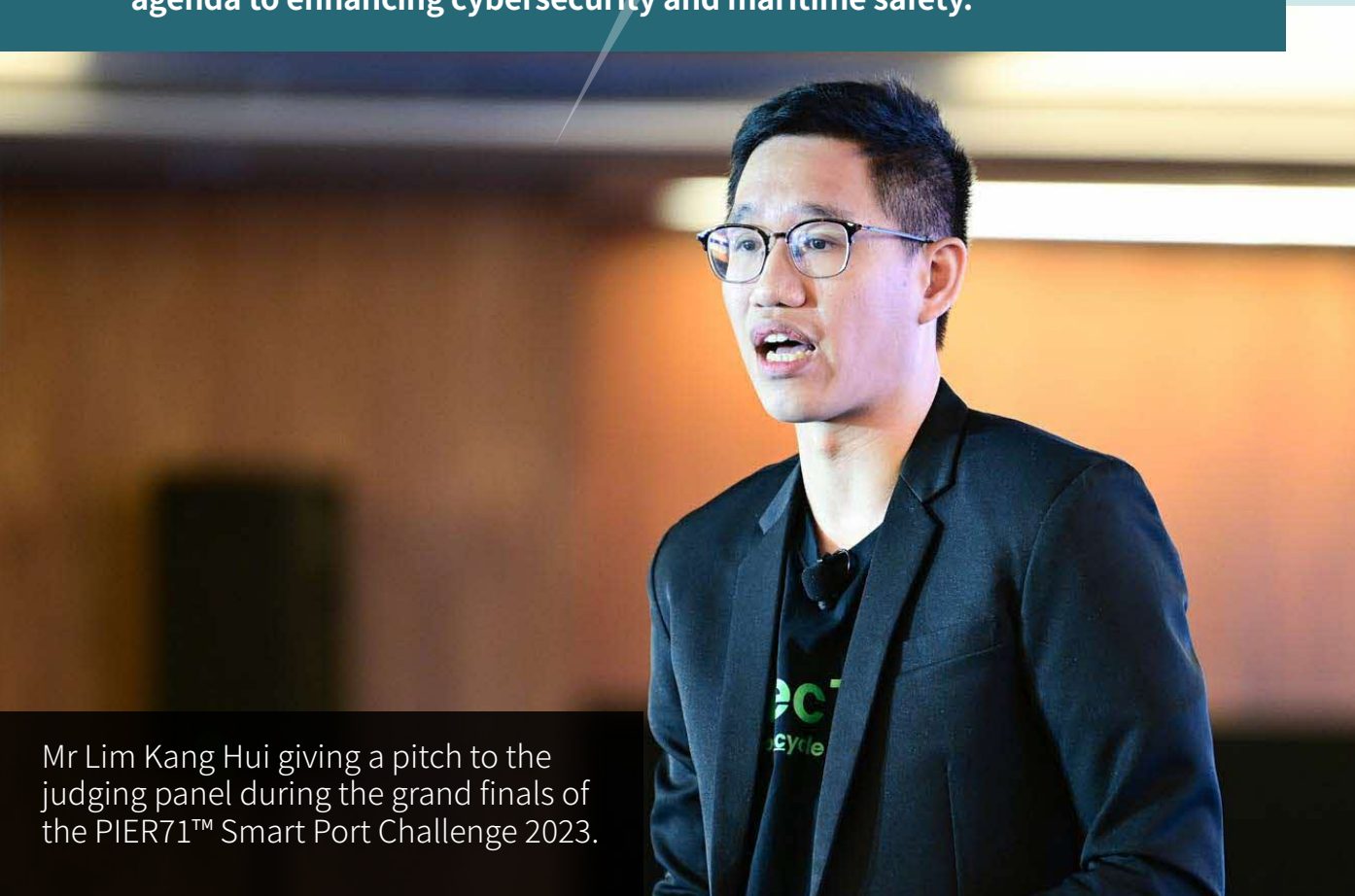
"I've spent about 35 years in the maritime industry. I will share that we are very resilient, adaptable, and optimistic."

The targets have been set. Now, it is time for action. ■



# 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.



Mr Lim Kang Hui giving a pitch to the judging panel during the grand finals of the PIER71™ Smart Port Challenge 2023.

Tech start-up CRecTech wants to accelerate decarbonisation for the maritime sector with its innovative technologies.

**Chen Jei Min** speaks to its Chief Executive Officer, Mr Lim Kang Hui, about what's next for the organisation since it was named first runner-up at the PIER71™ Smart Port Challenge in 2023.

**Q: Tell us a bit about CRecTech and its innovation. What is it looking to do?**

The maritime sector contributes between 2 and 3 per cent of global carbon emissions worldwide, of which most come from the combustion of non-renewable fuels. Decarbonisation is a key goal that we must work towards.

In recent years, many organisations have been transitioning to greener fuels to ensure sustainable development. With the adoption of sustainable fuels such as hydrogen and bio-methanol, up to 95 per cent of carbon footprint can be abated.

However, producing sustainable fuels from biogas is cost-extensive and involves multiple steps. While traditional catalysts can break down biogas to produce hydrogen, they are unable to stabilise and break down its biggest impurity: carbon dioxide. A separate process is required to break carbon dioxide down into bio-methanol. This adds to costs and is also time-consuming.

Therefore, CRecTech stepped up to develop a solution. Our Steam Methane Reforming (SMR) catalyst technology applies an additional coating to catalysts to help stabilise and break down carbon dioxide.

That way, the process of converting carbon dioxide into bio-methanol and biogas into hydrogen happens concurrently. Now simplified into a one-step process, the cost of production will be lowered, and in turn, make commercialisation simpler. This brings the sector one step closer to achieving its decarbonisation targets.

We are thankful for the monetary support from NUS Enterprise in 2021 that significantly propelled the advancement of our catalytic technology. We were also lucky to have a dedicated and experienced team with more than 20 years of technical experience in catalyst materials and engineering design process working on the project. All our hard work paid off when we obtained intellectual property rights for our catalytic technology in 2022 when we participated in the NUS Graduate Research Innovation Programme.

**Q: What are some challenges CRecTech faced and how did participating in PIER71™'s Smart Port Challenge help?**

Although we had strong technical expertise, we had zero to little knowledge of business development. Building a viable and optimal business model was our biggest challenge and a significant hurdle we needed to overcome. While we had developed a solution, we were clueless about how to adopt it at a proper scale for commercialisation, which greatly limited our prospects as an organisation.

Participating in PIER71™'s Smart Port Challenge allowed us to partake in various workshops and seminars that helped us build a clearer vision of where we wanted to take our business. At the same time, it introduced us to many experts in the sector who provided us with invaluable advice and insights.

**Q: What's next for CRecTech?**

Our technology remains largely unchanged, but we have greatly enhanced our business roadmap. We now have a clearer vision and more robust plan in place to demonstrate our technology's competency and advantage at a higher level.

We are determined to become a silent force of support in accelerating and supporting the maritime sector's transition towards the net-zero carbon targets set by the Paris Agreement.

At the same time, we are also looking to expand on our core competencies – our catalytic technologies that break down carbon dioxide molecules – beyond the production of sustainable fuel for the maritime sector. In fact, we are looking to apply our technologies to produce other fuels such as Sustainable Aviation Fuel. ■

*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.*