

# SINGAPORE maritimeweek<sup>®</sup> 2022



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# Soaring Energy Prices: An Opportunity In The Crisis?



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The ongoing energy crisis has been hard-hitting for much of the maritime industry. More than that, it has also brought home the urgency of a key challenge players have been trying to solve: the search for clean fuel.

The surge in oil prices, exacerbated by the Russia-Ukraine conflict, means that the industry may well be better off hastening its adoption of alternative fuels.

Global benchmark Brent surged to around US\$128 per barrel in early March this year – hitting highs not seen since 2008 – before dipping slightly to about US\$108 as at last Friday. The historical record for Brent was US\$147.50 in July 2008.

Correspondingly, bunker fuel prices breached the US\$1,000 per metric tonne (mt) level in the first quarter this year, compared to around US\$400 per mt in the same period a year ago.

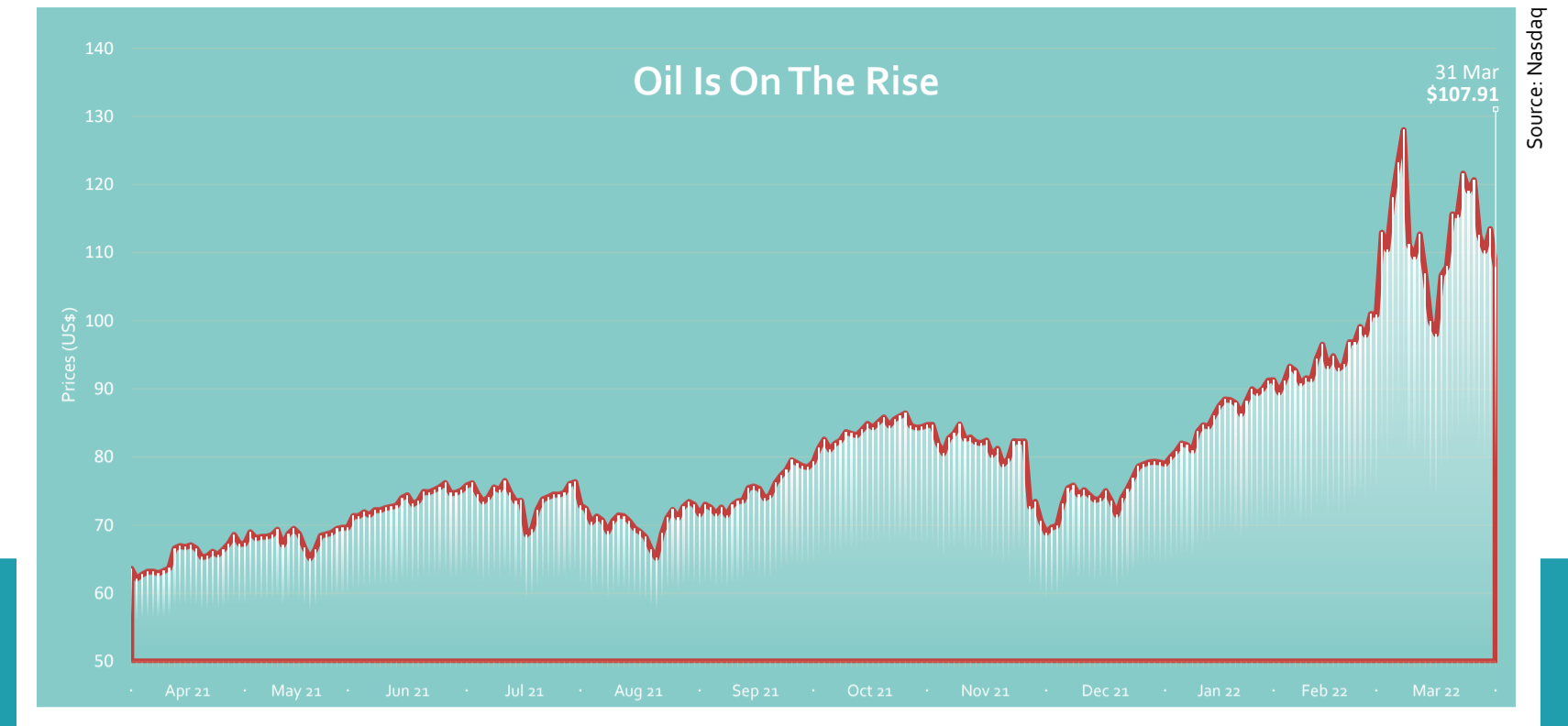
Bunker industry veteran Simon Neo, noted that bunker fuel used to make up about 30 or 40 per cent of a sailing vessel's total operating cost. With this increase, bunker fuel will account for as much as 70 per cent.

"This is a drastic increase and it will surely affect shipping companies' bottom lines," said Mr Neo, who is the Executive Director of marine fuels consultancy firm SDE International. He added that their credit facilities with bunker suppliers and traders will also be greatly reduced.

"You may have had a credit of US\$10 million last year, which could buy you 25,000 tonnes of bunker fuel in the first quarter. But with this same line, you can only procure 10,000 tonnes of oil today worldwide. So credit has also become another big headache for shipowners."

For an industry where decarbonisation has emerged as a key priority in recent years but found slow progress, could the energy crisis catalyse the collective zero-carbon vision into more concrete action?

Lars Kastrup, Co-President and Executive Director of container shipping line Pacific International Lines (PIL), noted that if the current state of affairs continues over the mid to long term, it would accelerate research and development on alternative fuels.



"Having said this, the sector in general would likely only make a final decision on the ultimate type of alternative fuel to invest in and adopt when firm regulatory measures (such as the implementation of carbon tax) are put in place to check emissions, and provided that such scalable alternative fuel solutions are identified," he said.

In the same vein, Rashpal Bhatti, Vice President of Maritime and Supply Chain Excellence at BHP, the world's largest mining company, said: "In the short term, it is a compelling piece of evidence that demonstrates that fuel flexibility and renewable and sustainable production are net-benefits.

"If the energy crisis does last for the longer-term, the business case for alternative and decarbonised future fuels becomes far more attractive and will likely spur earlier and more aggressive uptake."

## STEERING AHEAD

But for others, such as Managing Director of marine insurer Gard Singapore John Martin, it may still be "too early to tell" how the energy crisis will unfold.

"It could see a boost in cleaner fuels, but it could also trigger a setback," he said. For instance, oil and gas companies may see it as an opportunity to pump more into fossil fuel-related investments instead.

Another worry brought on by the disruption to the energy market relates to Liquefied Natural Gas (LNG) prices, which have risen in line with oil prices. LNG has widely been touted and adopted as a transition fuel for shipping lines – and higher prices could slow down the pace of decarbonisation in the short term, noted Mr Kastrup.

It does not help that many questions around the decarbonisation solution remain unanswered.

"The biggest challenge in this endeavour for both PIL and the broader industry is the need for technology and innovation to advance at a much quicker pace so that we are able to accelerate our decarbonisation objectives in a more realistic and relevant way," he said.

Explaining this, Mr Kastrup said that while the search goes on for the zero-carbon fuel that is feasible and practical for the shipping industry, regulations are already being tightened.

"That means ship operators and owners have to start exploring and investing in the various interim measures that may or may not be the correct solution. While this would result in some resources being invested in the solution which would eventually not work, it is important that we continue to support such early initiatives and efforts," he said.

"This is a classic chicken and egg situation. Without the demand, the supply will not scale up, and without a scalable supply, there will be limited adoption or demand for the low-carbon fuel."

The International Maritime Organization (IMO) has set a target for global shipping to reduce carbon emissions by at least 40 per cent in 2030, compared to 2008 levels, and by 70 per cent in 2050, with the goal to eliminate all emissions entirely within the century. To that end, the industry has been looking at methanol, hydrogen, ammonia, and bioLNG, among others, as zero-carbon fuel contenders for the longer term.

But the timeline could be one factor why many feel "they still have time on their side", pointed out SDE's Mr Neo.

## HOPE ON THE HORIZON

Still, there have been optimistic developments. The IMO's short-term regulatory measures – such as IMO 2020, a mandate on a maximum sulphur content of 0.5 per cent in marine fuels globally, from 3.5 per cent previously – have kicked in.

The European Union is looking to regulate shipping emissions in their Emissions Trading Scheme, while Singapore in March unveiled its Maritime Singapore Decarbonisation Blueprint 2050, where an additional S\$300 million will be set aside to support strategies and goals to be achieved by 2050, building on ongoing initiatives.

Key players are also stepping up not only to lead the charge but also to accelerate the movement. Container shipping giant AP Moller-Maersk, for example, has moved up its plan to achieve net zero emissions in its business by a decade to 2040. Earlier this year, BHP unveiled the world's first LNG-fuelled bulk carrier vessel in Singapore, amid its continued efforts to explore other fuel options as one of the largest dry bulk charterers globally.

"Out of all the low and zero-emission fuels that are part of the discussion, we see bioLNG playing a part in the transition, while 'clean' ammonia looks like one of the strongest contenders for the Australia to Asia shipping corridor," said Mr Bhatti.

The work on decarbonisation continues – just one in a myriad of challenges the maritime industry continues to navigate. The need for greater digitalisation, an evolving workforce, changing regulation, and geopolitical risks all remain in play.

"If the last several years has taught us anything, it is that predictions are a high-risk occupation – who would have predicted COVID-19 or war in Europe?" said Mr Martin.

"What we do know is that risk is always with us, and its form alters all the time." ■

“This is a classic chicken and egg situation. Without the demand, the supply will not scale up, and without a scalable supply, there will be limited adoption or demand for the low-carbon fuel.”

Lars Kastrup  
Co-President &  
Executive Director,  
Pacific International Lines



# What Can Shipping Learn From Gandalf?



Punit Oza

but because of how Steve Jobs and his team created a new product from existing technology. All the various components of the iPhone had already been around for many years, but Apple was the first company to put it together with a focus on design and user-experience. The takeaway for maritime is that we must look beyond using existing tools and towards how these tools can be used to create value for our customers.

What can Netflix teach us in shipping? Firstly, its success is a lesson that even giants will fall if they don't continue to update and innovate. Blockbuster was a household name till Netflix came along and changed the rules of the game. Shipping companies must learn that size does not matter if you remain static.

Secondly, Netflix won because it saw the value of content. The maritime industry must learn that any IT product must eventually solve a pain point and enhance user experience.

DBS is a particularly interesting example as shipping and banking are both services. DBS has been the world's best bank for many years, and they have done that by harnessing the power of data. They surveyed their customers and found out that they would rather do grocery shopping than come to the bank. That helped them rethink the role of banks. In fact, they are now driven by the motto "Bank Less, Live More". Shipping is also all about serving customers, which could be a mine, power plant or manufacturing unit. Shipping companies must learn from DBS to "make shipping simple" for their customers.

Amazon is a pioneer in online marketplaces, but what really strikes me is the level of transparency and the "Track and Trace" idea it brings to the customer. Quite a few shipping companies, even today, thrive on opaqueness and like to keep data to themselves. They must learn from Amazon that transparency equals trust.

The "Track and Trace" function must be adapted by the industry so that the consumers

can take suitable actions quickly and efficiently to unlock value. In this regard, Wiz Freight, the group that I will join in the coming weeks, has already achieved success in this arena in container shipping and is now looking to do the same in bulk shipping. I am excited to see what the future brings.

The most obvious lesson to learn from LinkedIn is what constitutes the heart of the industry – networking and relationships. With a slow demise of traditional mentoring, a collaborative shipping industry platform for industry professionals to share their knowledge is crucial. It is also a very important way to attract young talent into the industry.

To me, Facebook has two unique selling points. First, it is a vault of memories. Secondly, it enables social interaction 24/7 without the need of the other. With very short memories in the shipping industry, a Facebook-like product to preserve memories of "dos and don'ts" will be extremely valuable. While a network is hard to develop, one must make a start to ensure that the new entrants get a place to share and interact as well as remember those aspects which tend to be forgotten very quickly in the shipping industry.

Over and above GANDALF learnings, the industry must learn from affiliated industries such as trade finance, logistics, and airlines. I hope to see more such collaborations and be a part of some of them. I look forward to a smarter, more transparent, transformative, and digitalised future of shipping. ■

*A dry bulk shipping veteran with close to 30 years' experience in the business, the author is now Chief Executive of Singapore-based Wiz Bulk and an angel investor and advisor at Motion Ventures.*

## MarineTech Exhibition to Foster New Partnerships, Networks at SMW 2022

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At the sprawling Marina Bay Sands Expo & Convention Centre, participants attending the annual Singapore Maritime Week (SMW) excitedly throng a row of white booths lined up along a foyer. This is where maritime magic happens.

From sleek gadgets to cutting-edge software solutions, these booths feature a bonanza of the latest maritime technology. They are crucial platforms for companies to display their research capabilities and technological prowess. Partnerships and networking opportunities have blossomed here.

Exhibitions have always been an integral part of the SMW since its inception in 2006. They are crucial platforms for companies to display their research capabilities and technological prowess. Partnerships and networking opportunities have blossomed here.

The pandemic meant that physical exhibitions were scaled back due to safe management protocols over the past two years. But the vibrant scenes that have helped build a stronger maritime community are now back in town.

At this year's SMW, the return of the physical exhibitors will be a big part of the three-day MarineTech Conference and Exhibition, which starts today. And although it will still be subject to safe management measures, there is palpable excitement in the air.

**RECONNECTIONS AND EXPANSION**  
In line with this year's theme of "Transformation for Growth", 23 exhibitors will showcase their latest maritime innovations. For many of the companies and or-

ganisations in this year's exhibition, there is an eager anticipation to finally show what they can offer in person.

"It will be a great opportunity to catch up with the other marine professionals after doing it virtually for a few years," said Mario Moretti, Asia Marine Senior Director at marine firm RINA Hong Kong. The company will be looking to share the latest updates on its sustainability and digital solutions.

"Even though virtual exhibitions offer many benefits such as flexibility and cost effectiveness, face-to-face interactions like handshakes and eye contact add a distinctive element to professional relationships," he added.

While companies like RINA are looking to reconnect, others are viewing the MarineTech Exhibition as a chance to expand their network.

Having recently opened its new Asia office in Singapore last September, data and community platform Shipfix Technologies is looking to establish a strong presence in the region. The exhibition is a golden opportunity to do so.

"Our target is to be as well known in Asia as we are in the Atlantic markets," shared Paul Meredith, Shipfix's Head of Asia. Its booth is looking to showcase its flagship product: an all-in-one smart software that provides valuable shipping data insights to facilitate better and faster trade.

Shipping firm Wilhelmsen will be co-launching a booth with German conglomerate Thyssenkrupp to share what additive manufacturing, or 3D printing, can bring to the maritime sector.

"It's a new and exciting time for additive manufacturing in the maritime industry and we're looking forward to engaging our visitors on both a technical and curious level," said Hakon Ellekjaer, Wilhelmsen's Head of Additive Manufacturing.

**START-UP SUPPORT**  
The MarineTech Exhibition will also feature a dedicated startup pavilion organised by PIER71™, an industry-wide acceleration programme for the maritime industry jointly launched by the Maritime and Port Authority of Singapore and NUS Enterprise. Ten start-ups will be participating.

Among them are Dravam, whose technology helps ensure the quality of bunker fuel, and eyeGauge, with a digital solution that enables efficient fleet monitoring.

"Visitors can learn more about how we support the maritime innovation ecosystem, particularly through the acceleration of start-ups," said PIER71™'s Programme Manager Png Ning. "We want to be able to showcase some of the impact that collaboration between start-ups and corporates can bring."

As more physical events return to the SMW this year, exhibitors noted that they play an often overlooked role when it comes to fostering ties in the maritime sector.

"It's exciting to be finally back to live and in-person meetings and conferences," said Mr Meredith.

"Shipping is and always has been a face-to-face business anchoring trusted relationships that allow information sharing and world trade to progress." ■

Catch up with the latest in maritime technology at the MarineTech Exhibition from now until April 6, at Level 4 of the Marina Bay Sands Expo & Convention Centre.

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# The Week Ahead

## Monday, Apr 4

### Opening Ceremony 9.15am - 11.30am Hybrid (Marina Bay Sands)

Transport Minister S. Iswaran will give the welcome address at the opening ceremony of the Singapore Maritime Week 2022 while Deputy Prime Minister Heng Swee Keat will be delivering the Singapore Maritime Lecture. The morning will round off with a panel discussion looking at the key areas for transformation in maritime.

### MarineTech Exhibition 9am - 5.00pm MBS Level 4 Melati

### Maritime Software Developers Live TV 1.45pm - 5pm Virtual

This free-to-attend virtual conference aims to gather software developers to share knowledge and grow interest among developer communities to create solutions for maritime.

### Capital Link's 4th Annual Singapore Maritime Forum 9pm - 12am Virtual

The forum will feature industry leaders from Singapore on the various panels sharing their insight on issues specific to the Singapore Maritime Community/Cluster and also on critical global industry topics.

### Nordic Maritime 2022: Green Transition to a Sustainable Ocean Economy 4pm-6pm Hybrid

Nordic Maritime will focus on promoting the Nordic sustainable shipping and port operations, OceanTech, green maritime innovations, and show how we support businesses, research and academic cooperation with Singapore and the Southeast Asian region.

## Tuesday, Apr 5

### MarineTech Conference 9am - 4.30pm Marina Bay Sands

The MarineTech Conference features global leaders of industry and influencers who will speak on trending and important technology topics concerning the global maritime port and adjacent industries.

### MarineTech Exhibition 9am - 5.00pm MBS Level 4 Melati

### Marine Money Singapore Ship Finance Forum 12pm - 5pm Hybrid (John Jacob Ballroom, St. Regis)

### ReCAAP ISC Piracy and Sea Robbery Conference 2022 2pm - 4pm Virtual

The conference will feature distinguished speakers from international organisations, regional coordination and information sharing centres and shipping companies who will be discussing the situation of maritime piracy and sea robbery in Asia and in Africa. The event will be a platform for sharing best practices and challenges of anti-piracy efforts including capacity building.

### Baltic Freight and Commodity Forum – Dry Bulk 4pm - 5.30pm Virtual

Get the latest updates on the Baltic services, and hear from leading market experts on the dynamics and market outlook of the dry bulk freight and commodities markets.

## Wednesday, Apr 6

### Accelerating Decarbonisation Conference 9am - 2.45pm Marina Bay Sands

Industry leaders will share strategies on how pathways to net zero are being forged in decarbonisation technologies, future fuels, finance, and collaboration models. The conference will underscore practical steps for the transitional phase and what progress needs to be made beyond 2022.

### IMO-Singapore Future of Shipping Conference 4pm - 6.30pm Hybrid (Marina Bay Sands)

The joint IMO-Singapore Future of Shipping Conference Decarbonisation returns to Singapore Maritime Week to tackle the critical issue of maritime decarbonisation. FOSC 2022 brings stakeholders together to identify solutions along the two pillars of opportunities and gaps in the maritime and energy value chains.

### MTEC/ICMASS Conference 9am - 5.00pm Marina Bay Sands

The conference provides an avenue to create partnerships and collaborations amongst researchers, academics, engineers, and professionals in the maritime, port, and adjacent industries. Nearly 80 global researchers, expert engineers, and scientists from 17 countries will present groundbreaking research findings that will lead to future-proof products, services, and applications for the maritime industry.

### SCMA Key Legal Challenges from Digitalization and Decarbonization 3pm - 5pm Virtual

This panel discussion covers some of the changes in law, legislation needed, new challenges and claims, in particular accommodating EEXI, CII and EU ETS regulations in supply chain contracts & charterparties.

### MarineTech Conference 9am - 4.30pm Virtual

### MarineTech Exhibition 9am - 5.00pm MBS Level 4 Melati

### Baltic Freight and Commodity Forum – Tanker and Gas 4pm - 5.30pm Virtual

Get the latest updates on Baltic services, and to hear from leading market experts on the dynamics and market outlook of the tanker and gas freight and commodities markets.

## Thursday, Apr 7

### Maritime Services Leaders Forum 9am - 12.40pm Marina Bay Sands

Engage in high-level conversations on key issues such as finance, dispute resolution and risk management to address the challenges and opportunities faced by the maritime services ecosystem.

### SMOU: Charting The Direction For Singapore Maritime Manpower Transformation 2pm - 5.30pm Marina Bay Sands

This seminar will allow the industry to understand how the Company Training Committee (CTC) can help the tripartite partners in the transformation of our Singapore Maritime Workforce.

### Moore Stephens Singapore Shipping Forum 2022: The Sustainable Industry 2pm - 6pm Virtual

### SMU Leadership Conference: Entrepreneurship – from the Schumpeterian Hero to the Critical Process 3.30pm - 5.30pm Singapore Management University

Is there a distinct contradiction between extensive public welfare and competitive private entrepreneurship? This fundamental question is the point of departure for the leadership conference by Martin Jes Iversen, MPA Professor in maritime Business.

### MTEC/ICMASS Conference 9am - 5.00pm Marina Bay Sands

### Gard Singapore Charterers & Traders Webinar 2022: Taking Stock – The Ukraine Crisis 4pm Virtual

After Russia's invasion of Ukraine, shipping and trade have been disrupted, ships and crews have been trapped, additional war risks premiums have soared and global sanctions on Russia have started to bite. 40 days in, Gard's Risk and Charterers & Traders teams take stock.

## Friday, Apr 8

### Maritime Manpower Forum 9.30am - 12.45pm Marina Bay Sands

Maritime Manpower Forum brings together leaders to discuss, promote, and join forces to streamline manpower strategy for the maritime industry. As the top Leading Maritime City of the World, Singapore will also share perspectives on driving national and corporate level talent development initiatives.

### MSC Maritime Case Summit Challenge 7pm Virtual

The MSC Maritime Case Summit 2022 plugs tertiary students into real-life challenges at the intersection of business and sustainability. The students are mentored by senior executives at leading multinationals BHP, CMA CGM, Standard Chartered and Toll Group.





# Meet Alice, The Robot That Cleans Ships

## THE SPARK - A DRONE WITH A JET SPRAY

Codi Loh

A drone hums and buzzes as it zips around in the cavernous confines of a gigantic bulk carrier. Then it pauses, spotting a large patch of hardened sand. It flies through the cargo hold, targeting the patch and spraying high-pressure jets of water to scrub off the grit.

The automated launder and inspection corded end-effector, also known affectionately as ALICE, may be tiny compared to the ship, but it could be a solution to fixing a big problem in the shipping industry: cleaning these workhorses of the sea.

### A PROBLEM-BASED APPROACH

ALICE started out as a problem, or a problem that needed fixing.

Singapore's Land Transport Authority (LTA) needed a product that could clean tall sheltered walkways, one that did not put human cleaners at risk. In 2018, they approached Spinoff Robotics, a drone start-up founded by a team of four at the Singapore University of Technology and Design's (SUTD) Area Innovation Research (AIR) Lab.

The team consists of Foong Shaohui, an Associate Professor in SUTD's Engineering Product Development Pillar, Tan Chee How, a Research Fellow at SUTD, Shawndy Lee, and Emmanuel Tang, who are both pursuing a PhD in Engineering Product Development at SUTD.

"We have expertise in unmanned aerial vehicles (UAVs)," said Dr Tan, 30. "Commercial interest in UAVs was increasing. We knew how to create specialised drones, so we decided to "sell" our research and formed Spinoff Robotics."

"They (LTA) wanted a drone that could do high altitude and high-pressure washing to clean sheltered linkways."

Creating such a drone is challenging. For one thing, while drone technology is well-established, Spinoff needed to create a drone that had to be small enough to zip around but sturdy enough to carry around a water jet.

"We focused on the applications of the drone and the problems that will arise," said Dr Tan. "Then, we think of solutions. In ALICE's case, a high-pressure jet was needed, so we designed the entire drone around the problems that will come from the jet."

The team spent an entire year studying the effect of water pressure on drones. They discovered the solution was as elegant as it was simple: placing the jet in ALICE's centre of gravity.

"Drones also have a flight limit of about 15 minutes," said Dr Tan. "So, we developed ALICE to tether power and water onboard, resulting in a one to three-hour flight time."

### FROM LAND TO SEA

While ALICE was created for the purposes of cleaning tall buildings or structures, Dr Tan realised that it could also be applied to shipping.

When Spinoff first took off, the team attended PIER71, a maritime industry acceleration programme. There, they uncovered an interesting problem – one perfect for ALICE to tackle.

"Bulk carriers ship unpackaged cargo like sand and grains that are loose and placed in cargo holds," said Dr Tan.

"After the cargo is discharged, the holds need to be cleaned to prevent cross-contamination before they are loaded again."

Traditional cleaning takes around three days to complete, with half the time usually spent on mobilising the workers. With drones, this process is entirely eliminated, cutting cleaning times by at least 50 per cent.

"When ships are docked for days for cleaning, they usually face a huge loss in revenue from not being out at sea. The average price for a cleaning session is around US\$70,000. There are 20,000 bulk carriers internationally and they need to be cleaned once a month. When we add up these costs, it becomes a billion-dollar problem."



### ROUGH SEAS

ALICE's development is almost complete and it will be ready for client test-bedding by mid-2022. But the company is facing issues testing the solution in a real-life setting.

"It is very difficult to test ALICE in vessels as they are always at sea," said Dr Tan. "Additionally, few ships come to Singapore for maintenance as the cost of labour here is quite high. So far, we only found one ship, but we could only visit the site."

Testing ALICE in real vessels is important as it shows how magnetic shielding can affect ALICE, given that cargo holds are mostly made out of metal.

For now, Spinoff is not letting the obstacle stall its progress. The team is pushing ahead with developments into new areas, such as by making the control functions of ALICE more intuitive with a user interface called the Tesseract.

Apart from cleaning ships, Spinoff is also looking to deploy ALICE in vessel inspections, another huge source of demand.

"With ALICE, vessel inspections are already being done pre- and post-cleaning, in order to identify areas that need cleaning," said Dr Tan. "So, we can brand ALICE as an integrated inspection and cleaning drone."

Spinoff Robotics has already taken flight. Soon, it will also set sail. ■