

WAVES



Stepping into 2019



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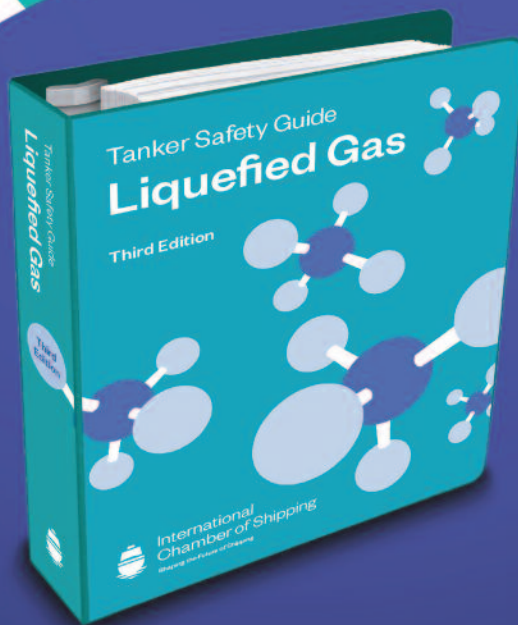
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Foreword

Dear Members,

As we usher in a brand new year in 2019, I would like to take this opportunity to thank you all for your continuing support over the past year.

2018 has been an eventful year for the shipping industry; characterised by major shifts in global trade dynamics, retaliatory protectionist trade policies between nations and the unstoppable growth of e-Commerce. We do, however, have cause for cautious optimism according to the latest Review of Maritime Transport from UNCTAD; we interview one of the authors of the report on page 6.

With digital transformation at the top of the agenda, a Memorandum of Understanding (MoU) has been signed to conduct a proof of concept to apply Robotics Automation Process in the ship agency sector here in Singapore. We are delighted to announce that both Eng

Lee Shipping Pte Ltd and Leo Shipping Agencies Pte Ltd have come on board, and are sharing their transformation journeys with us in this issue of WAVES. Another buzzword that has captured a great deal of attention in recent years is 3D printing. Recently two further MoUs were signed: one to establish the world's first on-site additive manufacturing production facility with industry-leading printer technology to be focused on port applications, and another to use the technology to create marine parts. In this issue, we take a look at what that means for both Singapore, and the shipping industry as a whole.

We also hear from Captain Naveen, Managing Director and Founder of JAG, a Singapore-registered marine and shipping consultancy firm, who examines the environmental and health issues caused by the sheer volume of single-use plastic bottles that are disposed of, and explores what the shipping industry can do to help solve the problem.

Last but not least, the SSA had a busy Q4 filled with events, big and small. SSA members gathered once again at the Year End Cocktail Reception to celebrate the fruits of a year's hard work and to wind down with friends and business partners.

The SSA Young Executive Group also wrapped up the year with a series of events, from the meaningful Pink Ribbon Walk and the fiercely fought Annual Bowling Challenge to the heart-warming movie screening and luncheon outing with children from the Children's Cancer Foundation.

I would like to take this opportunity to wish all our members and readers a Happy New Year in 2019. And to our Chinese members, we wish everyone a prosperous and smooth sailing Lunar New Year. See you at the SSA Lohei Cocktail Reception on January 22, 2019 at the Raffles City Convention Centre.

恭祝各位：新春愉快，风起帆扬，宏图大展，
融通四海，万事如意！

Lisa Teo

SSA Vice President & Honorary Secretary,
General Affairs Committee Chairman



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Stepping
into 2019

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Notice to all SSA members – stay in contact

As you are aware, the SSA Secretariat often sends out email circulars to inform you, our members, of SSA's events and the latest developments in the industry. We have noticed that some of you may not be receiving the email circulars sent out by the SSA Secretariat – as your office email server may have classified our emails as spam.

To resolve such issues, kindly include SSA's domain name ssa.org.sg into your email whitelist/safelist so that you remain in our communication channel. Thank you for your kind attention



**SSA YEG Community
Outreach: Pink
Ribbon Walk 2018**

28

January

sun	mon	tue	wed	thu	fri	sat
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January 2019

- 01/01** **Public Holiday:** New Year
- 08/01** 2020 Global Sulphur Cap Sub-committee Meeting
- 09/01** Young Executives Group (YEG) Committee Meeting
- 11/01** MFM Sub-committee Meeting
- 15/01** Tax Sub-committee Meeting
- 22/01** **Event:** SSA Lunar New Year Lohei Cocktail Reception 2019
- 28/01** Operations, Training & Manning Sub-committee Meeting
- 30/01** Maritime Safety Sub-committee Meeting
- 31/01** SSA Council Meeting

February

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February 2019

- 01/02** Cruise Sub-Committee Meeting
- 05/02** **Public Holiday:** Lunar New Year
- 06/02** **Public Holiday:** Lunar New Year
- 12/02** International Committee Meeting
- 14/02** Marine Fuels Sub-committee Meeting
- 21/02** Technical Committee Meeting
- 22/02** Offshore Committee Meeting

March

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March 2019

- 01/03** SMEF Meeting
- 06/03** Services Committee Meeting
- 13/03** Legal & Insurance Committee Meeting
- 28/03** SSA Council Meeting
- 29/03** FASA Annual General Meeting/SNEC Meeting

April

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April 2019

- 02/04** 2020 Global Sulphur Cap Sub-committee Meeting
- 03/04** Young Executives Group (YEG) Committee Meeting
- 05/04** MFM Sub-committee Meeting
- 06/04** Singapore Maritime Week
- 16/04** Tax Sub-committee Meeting
- 19/04** **Public Holiday:** Good Friday
- 22/04** Operations, Training & Manning Sub-committee Meeting
- 24/04** Maritime Safety Sub-committee Meeting

This event calendar is subject to change

24/7

365 days

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Stepping into 2019

*WAVES interviews **Jan Hoffmann**, Chief, Trade Logistics Branch, DTL, UNCTAD and asks what's in store for the shipping industry in 2019?*

Demand finally grew faster than supply in the container shipping sector in the year 2018. Most shipping lines have returned, or are returning to profitability. The forecast is for seaborne trade to continue growing in 2019.

***The Review of Maritime Transport 2018*, recently published by the United Nations Conference on Trade and Development (UNCTAD), states that seaborne trade expanded by a healthy 4% in 2017, the fastest growth in five years. Global trade volumes gathered momentum and reached 10.7 billion tonnes, and UNCTAD projects an average annual growth rate in total volumes of 3.8% up to the year 2023.**

The Review certainly paints a 'relatively rosy' picture, says Jan Hoffmann, chief of the trade logistics branch at UNCTAD's technology and logistics division, but he warns that all of this is threatened by protectionism and trade wars. This issue has become far more of a concern since UNCTAD's figures were compiled, he says.

A difficult backdrop

"I would highlight three things relating to trade wars. First – they have an impact on volumes. If you have taxes and duties on steel, etc., this affects more than just the direct volumes. If China exports less to the US, it will also import less from Taiwan, Vietnam and Africa."

Second, says Hoffmann, is the impact of uncertainty on any long-term investment. The UN's World Investment Report 2018 showed that global flows of foreign direct investment (FDI) fell by 23% in 2017. Cross-border investment in developed and transition economies dropped sharply, with growth almost zero in developing economies.

Introducing the World Investment Report, UN Secretary-General Antonio Guterres warned: "With only a very modest recovery predicted for 2018, this negative trend is a long-term concern for policymakers worldwide, especially for developing countries, where international investment is indispensable for sustainable industrial development."



Jan Hoffmann, Chief, Trade Logistics Branch, DTL, UNCTAD

“Yes, the US economy has boomed this year”, says Jan Hoffmann: “But if you deregulate and make it easier to invest because there is no need to worry about pollution and greenhouse gases, then this is the immediate effect. Reduce regulation and you get a short-term boom. But globally, a trade war creates uncertainty. That means less investment.”

Thirdly, says Hoffmann, is the undermining of the stability and fairness provided by the World Trade Organization (WTO). “Working outside the WTO weakens the multilateral trade and rules-based system. I think the WTO has done a tremendous job overall. We are in favour of a strong rules-based system, especially for big countries – how else can you ensure that big countries obey and abide by the rules? Strong countries have to obey but the system is being weakened. Bilateral trade deals are weakening the WTO’s rules-based system, which has been really fundamental to trade growth over decades.”

A positive outlook

Despite this background, Hoffmann says that overall, UNCTAD is ‘relatively positive’ about the future.

Global seaborne trade gathered momentum and is doing well, supported by the upswing in the world

“Global seaborne trade gathered momentum and is doing well, supported by the upswing in the world economy.”

economy. Total volumes reached 10.7 billion tonnes, reflecting an additional 411 million tonnes, nearly half of which were made up of dry bulk commodities. Global containerised trade increased by 6.4%, following the historical lows of the two previous years.

Dry bulk cargo increased by 4%, up from 1.7% in 2016, but growth in crude oil shipments slowed to 2.4%. Reduced shipments from OPEC exporters were offset by increased trade flows originating from the Atlantic basin and moving eastward towards Asia. This new trend has reshaped crude oil trade patterns, which became less concentrated on usual suppliers from Western Asia. Supported by the growing global refining capacity – especially in Asia – and the appeal of gas as a cleaner energy source, refined petroleum products and gas increased by a combined 3.9% in 2017, says the Review.



Growth in all sectors

Prospects for seaborne trade are positive; UNCTAD says it is forecasting a 3.8% compound annual growth rate between 2018 and 2023 ‘contingent on continued favourable trends in the global economy’. Hoffmann explains: “Volumes across all segments are set to grow,

with containerised and dry bulk commodities expected to record the fastest growth at the expense of tanker volumes. UNCTAD projections for overall seaborne trade are consistent with historical trends, whereby seaborne trade increased at an annual average rate of 3.5% between 2005 and 2017.”

According to the Review, projections of rapid growth in dry cargo are in line with a five-decade-long pattern that saw the share of tanker volumes being displaced by dry cargoes, dropping from over 50% in 1970 to less than 33% in 2017.

World fleet

The world fleet has seen a small improvement after five years of decelerating growth. A total of 42 million gross tons were added to global tonnage, equivalent to a 3.3% growth rate. “This performance reflects both a slight upturn in new deliveries and a decline in demolition activity, except in the tanker market, where demolition activity picked up,” explains Hoffmann.

Importantly, the expansion in ship supply capacity was

surpassed by faster growth in seaborne trade volumes, altering the market balance and supporting improved freight rates and earnings.


“Demand finally grew faster than supply,” says Hoffmann. In the container sector, the new shipping alliances have allowed for better operational efficiency – “and this can be measured”, he says. “I have come across a number of 10% better capacity utilisation of container ships.”

Better capacity utilisation could translate into more overcapacity, he suggests, which could in turn allow shippers to put downward pressure on freight rates. “For shippers, the alliances have brought benefits.”

Key trends

The UNCTAD Review identifies key trends that are currently redefining the maritime transport landscape and shaping the sector’s outlook; the uncertainty arising from wide-ranging geopolitical, economic and trade policy risks, including inward-looking policies and rising protectionist sentiment taking top place on the list.





“Game-changing trends such as digitalisation, e-Commerce and the Belt and Road Initiative have the potential to add wind to the sails of global seaborne trade – if leveraged successfully”.

Other key trends include:

- Digitalisation and e-commerce - the risk that ‘overly optimistic carriers’ competing for market share might order excessive new capacity.
- The possibility that the consolidation achieved through mergers and alliances reduces competition in the liner shipping sector and impacts on smaller players.
- Issues for ports when dealing with these mega container lines and alliances.
- The ability of the sector to leverage relevant technological advances.
- The impact of the IMO’s global limit of 0.5% sulphur content in fuel from January 2020.

All of these challenges and opportunities require continued monitoring and assessment for sound and effective policymaking, says Hoffmann.

Uncertainty

The Review points out: “While the prospects for seaborne trade are bright, downside risks such as increased

inward-looking policies and the rise of trade protectionism are, nevertheless, weighing on the outlook. An immediate concern is the trade tensions between China and the United States of America, the world’s two largest economies, as well as those between Canada, Mexico, the United States and the European Union.”

Escalating trade frictions may lead to a trade war that could derail recovery, reshape global maritime trade patterns and dampen the outlook, warns the Review. Other factors driving uncertainty include the ongoing global energy transition, structural shifts in economies such as China, and shifts in global value chain development patterns.

Gamechangers

Jan Hoffmann ends on a positive note however: “Game-changing trends such as digitalisation, e-Commerce and the Belt and Road Initiative have the potential to add wind to the sails of global seaborne trade – if leveraged successfully”.

Digital Transformation in the Shipping Agency Sector

Working in partnership is often the best way to move forward in the world of digitalisation and automation. Early in 2018, a Memorandum of Understanding (MOU) was signed by SSA, MPA and Glee Trees Pte Ltd to conduct a proof of concept to apply Robotic Process Automation in the ship agencies sector.

The proposed tool uses Robotic Automation Process technology to enable ship agencies to automate manual processes such as bookings/orders, the creation of manifests, call handling and port reporting. The aim is to reduce the time-intensive and repetitive nature of existing workflows and improve productivity in the ship agency sector.

Two companies – Leo Shipping Agencies Pte Ltd and Eng Lee Shipping Pte Ltd – came on board to spearhead this digital transformation. Upon the successful conclusion of this POC (proof of concept), the system could be rolled out to other ship agencies.

Leo Shipping Agencies Pte Ltd

Formed in 2012, Leo Shipping Agencies is a relatively

young company – but, as General Manager Kevin Deans says, it has experienced staff who have been handling this area of shipping for more than three decades.

The company provides all aspects of port and liner shipping agency services, including ship husbandry, liner operations, documentation, accounting, marketing and crewing, and works with ancillary companies providing transport, launches, hotels, medical services and ticketing.

“The SSA approached us as they were looking for SMEs (Small Medium Enterprises) to participate in the AI Robotic Automation Process project. After researching the information available and investigating further, we decided to take part,” says Kevin. “Once the project was underway, we began to see how effectively the software could emulate human input for standard day-to-day operations. The potential became apparent and we could see that this was an opportunity not to be missed. It was very interesting to learn that the systems could be ‘trained’ to perform what would otherwise be carried out by human input.”

Documentation

Leo Shipping Agencies has so far introduced automation to all aspects of import documentation (for example, PSA status declaration, arrival notices and storage orders) and to all aspects of export documentation (for example,

“We need to encourage our people by giving plenty of room for individual creativity to experiment, create, apply, learn from mistakes, re-do and thrive. Coincide it with education. It may take time.”

Again, he emphasises the importance of engaging with staff to allay their fears that such a system would make them redundant. Instead, it will help improve their work and save man-hours. “It’s a matter of changing their mindset and convincing them that the software is there to assist them and not replace them. Depending on the size of the companies, staff can be redeployed or retrained to take on other duties and functions.”

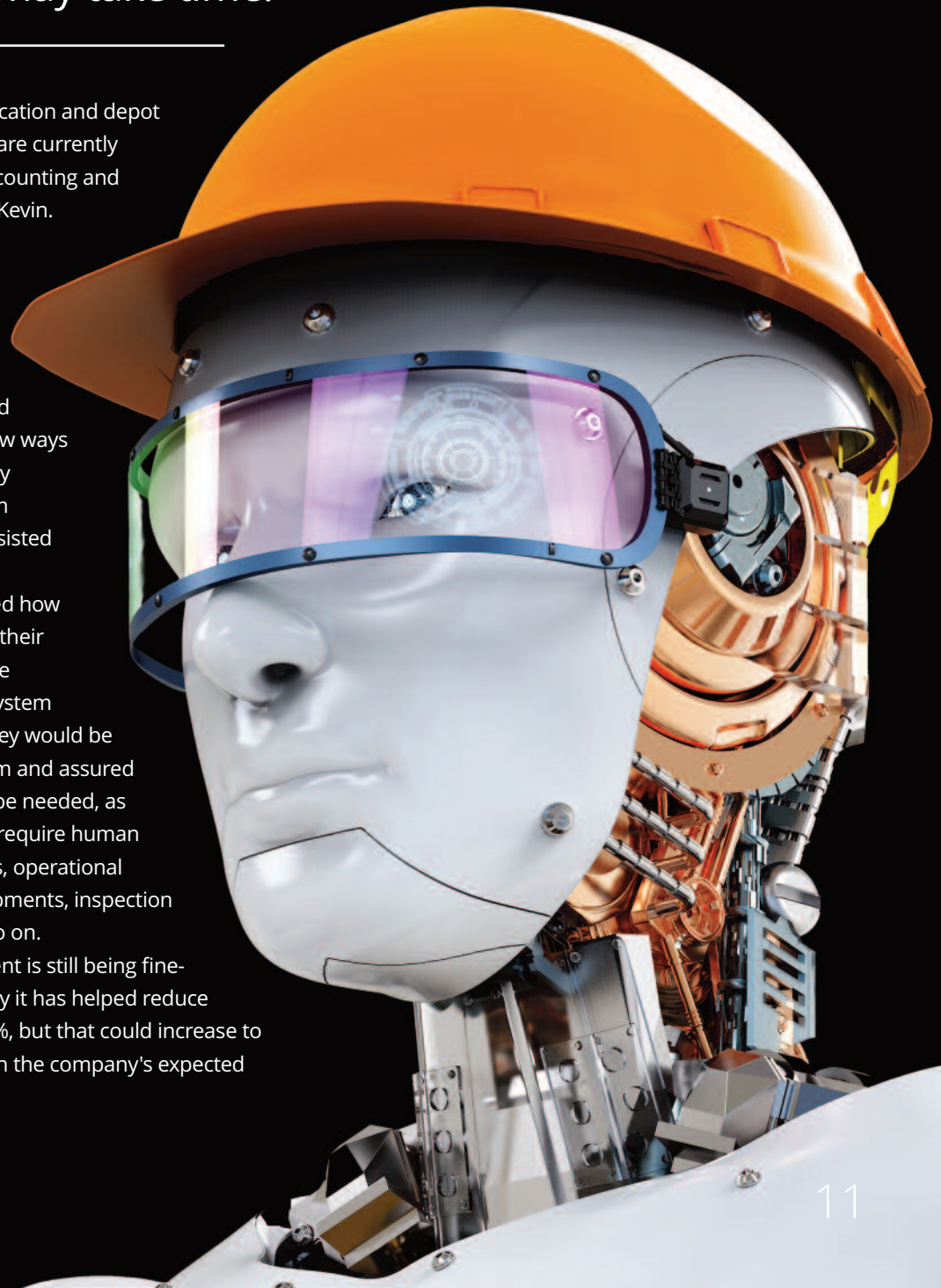
cargo bookings, yard notification and depot release notifications). “We are currently looking into developing accounting and invoice creation,” explains Kevin.

Engagement

What were the challenges? Initially, staff were hesitant to accept the idea and needed convincing to adopt the new ways of working. This was quickly overcome when the system proved its accuracy and assisted them with their work.

Whilst the system showed how it could help staff improve their work processes, many were concerned that once the system became fully functional, they would be replaced. We spoke to them and assured them that they would still be needed, as many aspects of work still require human intervention - vessel delays, operational hiccups, verification of shipments, inspection of dangerous goods and so on.

The software development is still being fine-tuned, says Kevin. Currently it has helped reduce manual input by about 10%, but that could increase to 25% in the future, based on the company's expected future development.



Challenges

"As we are still in the early days, one of the challenges has been that the software cannot, at present, run concurrently on a work station while the user is carrying out other input work," says Kevin. "It needs an independent station to work on. We have to work out a schedule with users to prioritise what needs to be done at which time slots. Managers need to be proactive in the initial stages until all issues have been ironed out."

Eng Lee Shipping Co Pte Ltd

Eng Lee Shipping Co owns and operates a fleet of container ships, feeder vessels, barges and Ro-Ro vessels and also handles project cargo and bulk cargoes. The group operates container jetties, container depots, multipurpose terminals and warehousing, provides stevedoring services,

"We worked very closely with the Glee Trees IT team – making sure that they fully understood our business and were familiar with the different requirements for different stages of our processes."



and owns shipbuilding/repair operations.

“Before SSA approached us, only a small part of the business was digitalised,” says Executive Director Wisni Tan. “A few months ago, we were approached by SSA, and we agreed to trial various electronic processes through the SSA project.”

Commitment

Implementing these processes requires flexibility and a willingness to devote time in the early stages, says Wisni. “We could see, however, that the reward would be saving a lot of time, especially through the simpler solutions that the project offered.” On average, 10 hours were saved weekly after the implementation of the software.

“We worked very closely with the Glee Trees IT team –

making sure that they fully understood our business and were familiar with the different requirements for different stages of our processes. It isn't possible to use one method for the whole team,” she says.

Katherine Ker, Shipping Supervisor at Eng Lee Shipping Co adds: “We trialled the robotic system on our operation and BL team and were able to provide a lot of useful feedback to SSA.”

Moving forward

For Eng Lee Shipping Co, there are still issues to be resolved in the prototype around the alignment of data. However, as Katherine adds: “We are hopeful that this can be improved. With inputs from experts in shipping data, the system can be modified, and will help save a lot of time.”



The Plastic Epidemic

A personal view: **Captain Naveen S Singhal**

Trash is littering the oceans and the land, slowly poisoning us in more ways than one. What we see is only a small fraction of what is really out there. The writing is on the wall. National and international administrations need to act, as must the International Maritime Organization (IMO) to prevent what could become an environmental epidemic.

Consuming bottled water

Research results so far indicate that tap water, by and large, is much safer to drink than bottled water.

A recent report published by Channel NewsAsia in Singapore, a study commissioned by Orb Media (a US-based non-profit organisation) raised concerns over consuming bottled water. Researchers tested 250 bottles of water in the United States, Brazil, China, India, Indonesia, Kenya, Lebanon, Mexico and Thailand and

found that plastic was present in 93% of the samples. These samples included bottled water from major brands.

Experts caution that the extent of risk to human health posed by such contamination remains unclear. However some research findings link this contamination to various outcomes such as increases in certain kinds of cancer, lower sperm count and even autism.

The chemistry

It is known that plastic molecules can break down and shed chemicals such as phthalates and bisphenol-A. The effects of these chemicals on human health are of concern to scientists. In addition, plastic, in the wider environment, also attracts other chemicals in the water which then latch on to it, including toxic industrial compounds such as polychlorinated biphenyls (PCBs).



Captain Singhal is Managing Director and Founder of JAG Consultants Pte Ltd, a Singapore registered Marine & Shipping Consultancy. He is a Marine and QHSE consultant, GRI certified Sustainability consultant, and ISO Standards specialist.

Environmental concerns

The European Commission is proposing a new EU-wide rule which aims to target single-use plastic products found on beaches and in the seas. This is planned for implementation before the EU elections in May 2019. This would also put the EU in the position of a front-runner to drive plastic reduction regulation at an international level through G7 and G20 groups, as well as through the global implementation of the United Nation's 17 Sustainable

The contribution of the industry to the problem of recycling all this plastic waste cannot be underestimated.

Development Goals. Most EU members agree that this is urgently necessary to handle the plastic menace.

Information from the International Bottled Water Association (IBWA) puts the percentage of bottles which are recycled at 23.4%. This leaves more than 70% of bottles remaining to cause an unassessed environmental impact in the open environment.

Christiana Z Peppard, Ph.D. Professor of Theology, Science, and Ethics at Fordham University in New York City says that, despite all recycling efforts, six out of seven plastic bottles consumed in the U.S. are 'downcycled' - that is sent somewhere out of sight and out of mind.

An IMO report published in 2016, the '*Review of the current state of knowledge regarding marine litter in wastes dumped at sea*' clearly states that 'The presence of heavy litter in the deep sea is considered an index of shipping traffic, an important sea-based source'

(Reference: Ramirez-Llodra et al., 2013). According to this report, plastic (mainly plastic bottles) accounts for more than 70% of litter on continental shelves.

A BBC report states that eight million tonnes of plastic enters the oceans each year. If left unchecked, the amount could rise to 17.5 million tonnes by 2025 to account for about 70% of marine garbage.

Consumption of bottled water by the shipping industry

The shipping industry is well regulated with regard to the disposal of waste from ships. Regulations for the prevention of pollution by garbage from ships are contained in Annex V of MARPOL, which ‘seeks to eliminate and reduce the amount of garbage being discharged into the sea from ships’.

However, the contribution of the industry to the problem of recycling plastic waste cannot be underestimated. The weight of an empty bottle, according to IBWA, is about 12.7 grams. If we assume a modest consumption of 24 bottles on a vessel per day, the plastic bottle waste generated by one merchant ship would be 305 grams per day or 110 kg per year per ship. An estimated 50,000 ships would generate 5,500 metric tonnes of plastic bottle waste a year.

When we take into consideration the Cruise sector, the figures are even more alarming. According to Cruise Market Watch, there are approximately 26 million passengers travelling annually on cruise vessels. The cruise fleet of 314 vessels with 537,000 passengers at any given time could generate an estimated 2,400 metric tonnes of plastic bottle waste each year. If we combine these figures from merchant and cruise vessels, an approximate 7,900 metric tonnes of plastic waste are generated from bottled water.

Industry initiatives

Captain Surendra Dutt, COO of Anglo Eastern Group, Hong Kong, says that their group is fully committed to reducing the use of single-use plastic water bottles. “We are running campaigns on board our vessels to highlight the health and environmental hazards posed by single-



Merchant and cruise vessels combined, generate an approximate 7,900 metric tonnes of plastic waste from bottled water.

use plastics,” he says. “This is an on-going process, but we are moving closer to plastic-free ships.” With an increased awareness at the seafarer level, Captain Dutt is confident that this drive will support Anglo Eastern to improve their environmental performance and achieve their vision of sustainability.

NYK Shipmanagement Pte Ltd too, aims to reduce the use of plastic bottles on its vessels. Hemant Pathania, Managing Director and COO, Singapore, believes that the initiative has enabled NYK group to successfully provide healthy water to crews on board, which helped reduce plastic waste. This has also resulted in cost savings and minimises the disposal of plastic bottles.

John Dama, Marine Manager at Sapura Energy, Australia too, took up the challenge of finding a solution to overcome the potential issues of dumping plastic water bottles by using a conventional fresh water supply. The risk paid off beyond their expectations, and all have embraced the systems as a significant environmental improvement. Seafarer’s Unions and Australian maritime authorities have supported their initiative.

Cost savings

With a seafarer strength of about 25 on each vessel, a company spends an average of about USD\$10,000 on bottled water for each ship every year, and about USD\$4,000 per ship to dispose of them. This would amount to as high as USD\$140,000 for a fleet of 100 ships. The cost of disposal is only going to increase by the day with more countries implementing a strict anti-plastic regime.

Failure to comply

If we assume a 5% non-compliance of MARPOL Annex V and the possibility of disposal (advertently or inadvertently) of used water bottles in the open oceans, this could mean as much as 395 metric tonnes of plastic finding its way into the oceans. Sadly, we are only now discovering the harm this can do to marine life.

Further regulation

A regulation to curb this menace at the 'generation stage' i.e. the procurement and consumption of bottled water, is becoming increasingly necessary. With guidance and control, measures on potable water, tanks, piping, purification, testing and dispensing would make any future legislation a robust process. This would be in the interest of both the health of seafarers and that of the environment. Ship owners, who are obliged as per ILO-MLC-2006, paragraph A-3.2 to provide clean potable water to crews should accept such a process, when the financial burden of purchase and disposal of plastic bottles is considered.

Whilst under the Ballast Water Management convention, the urgency was to protect marine species, an amendment to MARPOL Annex V seems essential. This becomes all the more important, as the IMO is a significant partner in the UNEP-Managed Global Partnership on Marine Litter, and the international community looks towards the IMO to provide solutions to shipping related environmental and seafarer related health issues.

Possible shipboard solutions to reduce the use of single-use plastics

Technical:

- Fit reverse osmosis water desalination plants on ships.
- Mineralise generated water.
- Offer designated fresh water tanks which are regularly cleaned.
- Provide ships with test kits to test water, and post the test results on a weekly basis on ships' notice boards.
- Ensure that the piping system from the designated fresh water tanks to dispensers is in good condition. If necessary switch to heat resistant polymers.

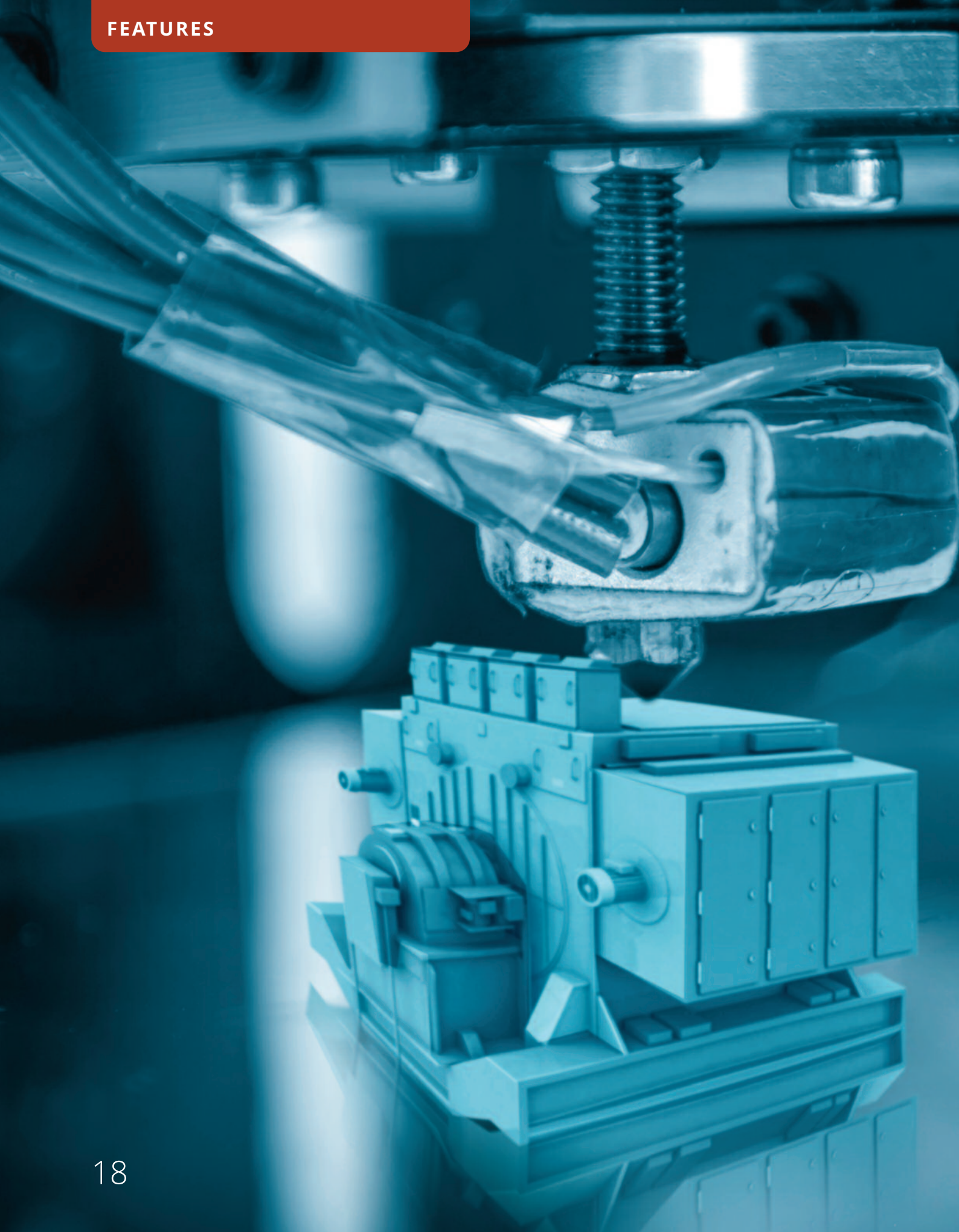
Phycological:

- Educate seafarers on the health issues and environmental damage associated with consuming water from plastic bottles.
- Lead by example and ensure that shore-based staff who are visiting the crew, consume water from the tanks provided on board the ship.

Regulatory:

- Calls should be made to IMO to regulate the generation, storage, purification, piping system and dispensers for fresh water. This could also extend to the supply of fresh water to ships by port establishments and agencies.





3D Printing in Shipping

Additive Manufacturing (AM), also known as 3D printing, has come a long way. Originally used to build prototypes, the range of materials that can be used with 3D printers has expanded significantly and its uses range from making toys to manufacturing wind turbines.

Applications across sectors as diverse as aerospace, automotive, healthcare, education, electronics and more, are now being developed.

The technique enables on-demand, highly optimised and customisable solutions with significantly lower material cost and waste. The recent trend of firms gradually moving their production supply chains closer to home is also being aided by additive manufacturing. The potential market opportunity is huge.

Shipping is no exception. At the 6th Global Additive Manufacturing Summit held in October 2018, part of Industrial Transformation Asia Pacific 2018, the Maritime and Port Authority of Singapore (MPA) signed two Memorandum of Understanding (MoU) for Additive Manufacturing (AM).

3D printing for marine parts

The first MoU was signed between the Singapore Shipping Association and the National Additive Manufacturing Innovation Cluster (NAMIC) to collaborate on an AM Joint Industry Programme (JIP) for marine parts.

The programme seeks to establish the commercial viability, technical feasibility and regulatory compliance behind the use

The technique enables on-demand, highly optimised and customisable solutions with significantly lower material cost and waste.

of AM for marine parts by bringing together a comprehensive ecosystem of partners from across the value chain. This will, in turn, strengthen Singapore's status as a hub for ship supplies, as it will be equipped to provide crucial information on the challenges, opportunities and potential test cases for deploying AM for marine parts.

3D printing for port applications

3D printing can be used to produce parts for port equipment, reducing down time and improving efficiencies. The second MoU, signed with PSA Corporation Limited, the National Additive Manufacturing Innovation Cluster (NAMIC) and 3D MetalForge Pte Ltd, seeks to establish the world's first on-site AM production facility for port applications.

The AM rapid production facility will be strategically located at Pasir Panjang Terminal, where PSA is testing port technologies for current and future terminals. It will feature state-of-the-art printers capable of producing AM parts for port equipment. The facility will also use a specialised maritime digital cloud supported by blockchain technology for more secure file transfers.

The facility's location also leverages PSA's parts supplier base and facility operations to support just-in-time inventory. This move towards digitised inventories reduces the need to hold excess inventory, which lowers storage costs, while shortening turnaround time from weeks to days due to improved availability of spare parts. In the long run, PSA will expand the scope of these services to the wider maritime industry, including shipowners.



Mr Ong Kim Pong, Regional CEO Southeast Asia of PSA International said, "Within our maritime sector, we foresee widespread adoption [of AM] within the immediate horizon. Co-creating new innovations including digitising inventories will create opportunities to raise maritime productivity to the next level."



Signing the MoU to collaborate on an AM Joint Industry Programme (JIP) for marine parts are from left, Mr Steen Brodsgaard Lund, SSA Councillor and Chairman of SSA Technical Committee, Dr Ho Chaw Sing from NAMIC and Mr Andrew Tan, Chief Executive of MPA, witnessed by SMS Lam Pin Min and Ms Choy Sauw Kook.

Embracing the future

MPA's Chief Executive, Andrew Tan, said, "As a leading maritime hub, Singapore firmly believes that the maritime industry should embrace new technologies such as additive manufacturing. The digitalisation of the maritime sector in all its aspects is not a matter of how but when."

Dr Ho Chaw Sing, NAMIC Managing Director is clear as to how AM for the maritime sector will benefit Singapore. He said, "From a historical trading stop to a world-class global hub port and maritime centre, Singapore has not rested on its laurels. Digitalisation with on-demand manufacturing will continue to accelerate."

Dr Lam Pin Min, Senior Minister of State, Ministry of Transport and Ministry of Health, and Ms Choy Sauw Kook, Assistant Chief Executive and Director-General, Quality and Excellence, Enterprise Singapore, were witnesses at the signing ceremony.

"As a leading maritime hub, Singapore firmly believes that the maritime industry should embrace new technologies such as additive manufacturing. The digitalisation of the maritime sector in all its aspects is not a matter of how but when."

The National Additive Manufacturing Innovation Cluster

The National Additive Manufacturing Innovation Cluster (NAMIC) is a national programme initiative led by NTUitive, Nanyang Technological University's innovation and enterprise company, set up to focus on translating upstream 3D printing research in universities and institutes of higher learning into downstream commercial applications. The programme also aims to lower barriers for companies to incorporate additive manufacturing technologies into their core businesses.

Launched in October 2015, NAMIC aims to accelerate Singapore's industrial adoption of additive manufacturing. It identifies and nurtures promising AM technologies and start-ups, jumpstarts public-private cross-collaborations, and acts as a connector between industry, research performers and public agencies. NAMIC also assists companies seeking to lower the barriers towards AM adoption through joint project funding and leveraging on its investor networks.

Since its inception, it has engaged and partnered with several hundred organisations globally and in Singapore, raising more than \$25 million in private and public funding to support more than 100 projects covering industry technology development, translation, commercialisation, standards development and training and certification, across many sectors of industry.

SSA Year End Cocktail Reception 2018

More than 500 members of the Singapore Shipping Association (SSA) gathered for our Year End Cocktail Reception at Sofitel City Centre on November 29, 2018 to celebrate a busy yet productive year.

The night kicked off with a speech by SSA Vice President and Treasurer, Ms Katie Men who shared some of the initiatives that the association has carried out during the past year. One of the key initiatives was the signing of a Memorandum of Understanding with MPA and the National Additive Manufacturing Innovation Cluster (NAMIC) to explore how ship owners and operators can





make use of additive manufacturing (or 3D printing, as it is also known) to shorten their logistics chain and print spare parts on board ship.

As 2018 came to a close, members let their hair down, networking with new partners and old friends in the maritime community.

SSA would like to thank its sponsors, Jurong Port Pte Ltd, Nippon Kaiji Kyokai Singapore (ClassNK), Thome Ship Management Pte Ltd, Manchester Business School and Veritas Petroleum Services (Asia) Pte Ltd for their kind and generous sponsorship in making the Cocktail Reception a success.



Panel Discussion on Sulphur Cap 2020

Close to 200 participants attended a panel discussion on the implementation of the global sulphur cap at Marina Mandarin Hotel, Singapore on October 18, 2018. Organised by SSA and Ince & Co, in alliance with Incisive Law, the panellists delivered an interesting experience to the participants with a lively exchange of viewpoints during the interactive session.

We would like to thank all panellists for sharing their valuable industry expertise with us: Managing Director of Standard Club Asia, David Roberts; Marine Engineer at London Offshore Consultants Pte Ltd, Nicolas Treen; Fleet Director of Petredec, Philip Harwood; General Manager of Klaveness Asia Pte Ltd, Punit Oza; Global FOBAS Manager of Lloyd's Register, Douglas Raitt; Head of Ship Financing and Leasing Activities of Standard Chartered Bank, Abhishek Pandey, and Partner of Ince & Co, Harry Hirst.



YEG Educational Tour: DNV GL Laboratory Visit



35 YEG members were invited for an eye opening tour of DNV GL's world-class laboratory in Singapore on October 11, 2018. A global quality assurance and risk management company, DNV GL, has been offering materials and structural testing and advisory services for over three decades in the Asia Pacific region.

The tour began with a presentation by Xu DaQin, Head of Section, Materials & Structural Laboratory Oil & Gas Technology Centre – Singapore & Indonesia. Shedding light on the services that the laboratory offers, Mr Xu used several case studies to demonstrate how DNV GL investigates failures to determine their cause and prevent the reoccurrence of similar incidents. They do this by collecting and systemising experiences from more than 1,000 failure investigations and the results derived from this process are used to update industry standards and guidelines.

Following the presentation, Global Additive Manufacturing Lead Specialist for DNV GL, Dr Sastry Kandukuri, shared with participants how the adoption of digital technologies has revolutionised maritime operations. Using additive manufacturing as an example, he explained how 3D printing has revolutionised the way products are designed, manufactured and distributed to

end users. "3D printing is a potential enabler for the next generation of the maritime industry," said Dr Kandukuri.

The visit ended with a tour of the laboratories themselves, where participants had the opportunity to see lab engineers and material experts hard at work.

We would like to thank DNV GL for hosting us, and for an enriching afternoon.



SSA YEG Annual Bowling Challenge 2018

The SSA Young Executive Group's bowling enthusiasts pinned their hopes on a Championship title at the 6th Annual Bowling Challenge held at Kallang Bowl on November 14, 2018.

15 lanes were filled with eager participants ready to bowl from the word go. Teams of enthusiastic bowlers were put together to represent their companies and die-hard supporters filled the air with excitement as they spurred their teams on.

After three rounds of competition, defending champion Pacific International Lines (Pte) Ltd clinched the Championship title once again in the Team Category, beating the other 14 teams in a fiercely fought competition. First runner-up in the team category went to APL Pte Ltd, with NYK Shipmanagement taking home the second runner-up title.

Topping the charts and clinching the title of the Highest Game Scorer was Capt Vijayachelvan from Pacific International Lines (Pte) Ltd.

This year, the top player in the Women's Division was Vanessa Boon, from NYK Shipmanagement Pte Ltd; while Henry Pak from Pacific International Lines (Pte) Ltd took



*SSA YEG Annual Bowling Challenge 2018
WINNER (Team Category)
Pacific International Lines (Pte) Ltd*

home the top player title in the Men's Division.

For many participants, it was a great respite from a stressful working day.

Congratulations to all winners, and we look forward to seeing you again in 2019!



YEG bowling enthusiasts in action

SSA YEG ANNUAL BOWLING CHALLENGE 2018 TOURNAMENT RESULTS

CATEGORY	COMPANY/NAME	PRIZES
Team Division Champion	Pacific International Lines (Pte) Ltd	<ul style="list-style-type: none"> • \$280 worth of vouchers • Individual trophies • Champion Trophy (to keep for a year)
Team Division 1st Runner-Up	APL Pte Ltd	<ul style="list-style-type: none"> • \$240 vouchers • Individual trophies
Team Division 2nd Runner-Up	NYK Shipmanagement Pte Ltd	<ul style="list-style-type: none"> • \$200 vouchers • Individual trophies
Men's Division Champion	Henry Pak Pacific International Lines (Pte) Ltd	<ul style="list-style-type: none"> • \$70 vouchers • Individual trophy • Challenger's Shield (to keep for a year)
Ladies' Division Champion	Vanessa Boon NYK Shipmanagement Pte Ltd	
Highest Game Scorer	Vijayachelvan Raju Pacific International Lines (Pte) Ltd	<ul style="list-style-type: none"> • \$40 vouchers



Bowlers from Lane 18



Bowlers from Veson Nautical Pte Ltd



Bowlers from Norton Rose Fulbright (Asia) LLP



Bowlers from Lane 17

SSA YEG Community Outreach: Pink Ribbon Walk 2018

20 SSA YEG members joined over 4,000 participants in a 3.5km walk at the Singapore Sports Hub on October 6, 2018 to mark the launch of Breast Cancer Awareness Month this year.

Organised by the Breast Cancer Foundation, the walk aims to raise awareness, and show support for women affected by breast cancer.

Enjoying the cool weather and sights along the tranquil route that overlooked the Kallang Basin, participants were clad in bright pink T-shirts to match the signature colour theme for this event.

At the end of the walk, participants enjoyed the opportunity to bond with fellow members over delicious pizzas and finger food.

SSA YEG would like to thank all our participants for their enthusiasm and giving up their time to walk for a good cause.



YEG Year End Networking Event 2018

Close to 200 YEG members gathered at Zouk Capital for the SSA Young Executive Group's annual Year End Networking Event on December 6, 2018. The event opened up many new opportunities for knowledge sharing and collaboration amongst young maritime professionals.

Mr Celio Wakamatsu, Vice-Chairman of the Young Executives Group, and General Manager of Ardmore Shipping (Asia) Pte Ltd delivered the opening address with a quick review of the past 12 months' YEG activities. A series



of games got everyone charged up at the networking event, with many walking away with Golden Village Gold Class Tickets, Starbucks Gift Cards and CapitaLand shopping vouchers.

We would like to thank our sponsor, Jurong Port, for being a valued and ardent supporter for all YEG events. We would also like to thank all YEG members who came to join us at this event, as we bring a close to a fruitful and productive 2018.



YEG movie screening & luncheon

The YEG Community sub group hosted a movie screening and luncheon for 32 kids from the Children's Cancer Foundation at Golden Village in Vivo City on December 11, 2018.

The children enjoyed watching the 3D computer-animated movie, Ralph Breaks the Internet: Wreck-It-Ralph-2, which featured the voice of two renowned American comedians, John C. Reilly and Sarah Silverman. Produced by Walt Disney Animation Studios, the film is a heart-warming sequel to the 2012 movie, Wreck-It-Ralph. Our young guests, aged 4 to 16 were thrilled to live through the online gaming world and the colourful universe along with the characters in the film.

Volunteers from the YEG and SSA's Corporate Communications team wrapped up the day's outing with a delightful treat for the children at the Queen & Mangosteen Restaurant.



SSA and the YEG Committee would like to thank Ms Celeste, Mr Desmond Chong, Ms Gabriela Oxby, Ms Gan Sue Ann, Ms Jae Leow, and Assuranceforeningen Skuld (Gjensidig) Singapore Branch for the generous contribution toward this meaningful event.



ORDINARY MEMBERS



Established in 1977 in Singapore, ABB's staff strength has grown to over 1,200, across four offices islandwide. Through the years, the company has established itself as a reliable and competent technology partner to the government, private and domestic sectors. ABB Singapore hosts global competency centres for pulp and paper, marine, logistics and control systems, and plays an important role as an engineering, products and spares distribution centre in the Asia Pacific Region.



Bostomar's team comes with a combined industry experience of over 100 years in shipping, trading, finance, banking, risk management and business advisory. The Company leverages its exceptional relationships and network to deploy ships worldwide, primarily to ship dry bulk commodities. It engages ships from Supramax to Post Panamax sizes and offers tailored solutions for clients for smaller parcel logs shipment. Clientele include exporters, Importers, traders, end-users and miners.



Coldharbour Marine Limited, based in the UK, has more than 35 years' experience in the industry. Its products and designs have been used extensively in both the marine and offshore sectors. The Company provides practical, innovative solutions to technical problems faced by its customers. Its focus is on engineering excellence combined with the intelligent application of robust, advanced technologies in extreme environments.



Glee Trees Pte Ltd is a technology-enabled consultancy, focusing on robotic process automation (RPA). The Company builds software robots that can mimic human actions, to control computers and complete jobs traditionally done by white-collar workers. Its core product, Gleematic, is a robotic software to help companies automate manual business processes – especially the repetitive ones - so that workers can focus more on value-added work.



Mansel is the commercial tanker shipping arm of the Vitol Group. With 24hr global coverage and a presence in six key shipping locations: Singapore, Bahrain, Geneva, London, Bermuda and Houston, the Company's highly experienced professionals manage one of the world's largest commercial shipping fleets, moving a wide portfolio of cargoes - from crude oil and its products to vegetable oil.



Poly NDT Pte Ltd was established in 1975 in Singapore to provide third party and independent testing and inspection services, such as NDT (Non-Destructive Testing) services and hazardous materials inspection services. The company is a member of CTI (Centre Testing International Co. Ltd. an international testing, inspection and certification group company.



Wade Maritime Consultants Pvt Ltd is a leading international firm, comprising maritime business consultants with extensive experience in the maritime transportation industry. Wade Maritime has a broad client base in the shipping, Oil & Gas industry across the globe. The company's consultants have wide ranging experience in the oil, gas, dry bulk and the maritime transportation industries with an average individual experience of 20 years each.

Find out more about our other courses available at <http://www.ssa.org.sg/training/course-list.html> or contact Kuna at 6305 2267 or email kuna@ssa.org.sg

Training Calendar | JANUARY – APRIL 2019

COURSES OPEN FOR REGISTRATION				FEES* (SGD)	
Course Title	Start Date	End Date	Duration	SSA Members	Non-SSA Members
Basic Bunkering Practices (SS600 & TR48)	27/02/19	28/02/19	2 Days (9.00am – 6.00pm)	\$856.00	\$1,284.00
Enhanced Bunkering Practices (SS600 & TR48)	13/03/19	15/03/19	2.5 Days 13-14: (9.00am – 6.00pm) 15: (9.00am – 1.00pm)	\$1,070.00	\$1,605.00
Introduction to Mass Flow Metering (TR48)	20/03/19	20/03/19	1 Day (9.00am – 6.00pm)	\$428.00	\$642.00
Maritime HR Management	26/03/19	27/03/19	2 Days (9.00am – 6.00pm)	\$642.00	\$963.00
Introduction to LNG Bunkering	27/03/19	27/03/19	1 Day (9.00am – 6.00pm)	\$428.00	\$642.00
Principles of Shipbroking and Chartering	27/03/19	29/03/19	2.5 Days 27: (2.00pm – 6.00pm) 28-29: (9.00am – 6.00pm)	\$642.00	\$963.00
Introduction to Shipping (Masterclass)	03/04/19	04/04/19	2 Days (9.00am – 6.00pm)	\$642.00	\$963.00
Maritime Labour Convention 2006 - The Concise Perspective	17/04/19	17/04/19	1 Day (9.00am – 6.00pm)	\$385.20	\$577.80
Basic Bunkering Practices (SS600 & TR48)	17/04/19	18/04/19	2 Days (9.00am – 6.00pm)	\$856.00	\$1284.00
1.5-D Refresher Course for Bunker Surveyors and Bunker Cargo Officers - including MFM	17/04/19	18/04/19	1.5 Days 17: (9.00am – 6.00pm) 18: (9.00am – 1.00pm)	\$856.00	\$1284.00

*Fees subject to prevailing GST. MCF Training Grant is available for eligible participants. MCF Training Grant is not available for the courses - "Understanding Import/Export Techniques and Documentation" and "Effective Written Communication in the Shipping Industry". Please refer to www.mpa.gov.sg/mcf for more information. Dates may be subject to change. Download the course registration form at:

<http://www.ssa.org.sg/images/ssa/pdf/Course%20Application%20Form-20Sept2016.pdf> and for further enquiries, please contact Kuna at 6305 2267 or email kuna@ssa.org.sg



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