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Foreword

Dear members,

I would like to begin this edition of WAVES by acknowledging the strong leadership of my predecessor Lisa Teo, who has faithfully steered the editorial direction of SSA's flagship publication.

I am honoured to be at the helm of WAVES for the next two years as the Vice President & Honorary Secretary and Chairman of the General Affairs Committee.



If you missed the 23rd Annual General Meeting (AGM) held on 26 June 2019, I hope that the article in this edition of WAVES will give you a feeling of the excitement of the evening, leading up to the election of a new Council for the 2019/2021 term. At this AGM, SSA broke new ground by electing the first female President, Caroline Yang, in the Association's 34-year history.

Aside from the buzz of the AGM, I know that many of our members are preparing for the IMO 2020 global sulphur cap, which comes into effect on 1 January. To help you prepare for compliance with the regulation, SSA has prepared a handy tear-out guide with key information presented in an accessible and reader-friendly manner.

The IMO 2020 sulphur cap is one of the most significant regulations impacting the shipping industry in more than a decade, and you can expect this topic to remain firmly on the WAVES editorial agenda.

I hope you enjoy this edition of WAVES and find the articles useful. I look forward to seeing you at our next—and highly-anticipated—SSA 34th Anniversary Gala Dinner.

René Piil Pedersen

SSA Vice President & Honorary Secretary,
General Affairs Committee Chairman

THOUGHT LEADERSHIP

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Putting Digitalisation into Practice



SPECIAL
IMO Sulphur Limit
Supplement

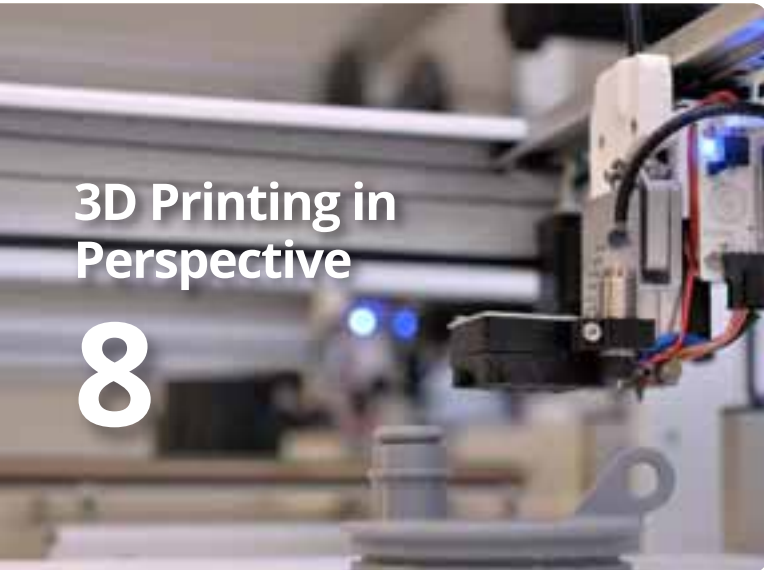
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Notice to all SSA members – stay in contact

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.

Event Calendar

July

sun	mon	tue	wed	thu	fri	sat
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

July 2019

- 26/07** Launch of MPA Maritime Bus (MPA)
- 31/07** SSA Tech & Demo Day

August

sun	mon	tue	wed	thu	fri	sat
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

August 2019

- 06/08** Maritime Knowledge Shipping Session 38: The Future of Tomorrow (SMF)
- 06/08** 9th GIA-SMF Marine Insurance & Maritime Networking Night (SMF)
- 08/08** MaritimeONE Scholarship Awards Ceremony (SMF)
- 09/08** **Public Holiday:** National Day
- 11/08** **Public Holiday:** Hari Raya Haji
- 20/08** Singapore Maritime Dialogue 2019 (MPA)
- 21-23/08** Maritime Sector Strategies to Augment Tsunami Monitoring
- 26-30/08** International Safety@Sea Week

September

sun	mon	tue	wed	thu	fri	sat
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

September 2019

- 14/09** Clean-up on Kayak (MPA)
- 27/09** SSA 34th Anniversary Gala Dinner

October

sun	mon	tue	wed	thu	fri	sat
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

October 2019

- 10/10** Shared Awareness Meeting with Information Fusion Centre (IFC)
- 21/10** 11th Biennial International Chemical and Oil Pollution Conference and Exhibition (ICOPCE) 2019
- 21-25/10** Maritime Experiential Programme (SMF)
- 27/10** **Public Holiday:** Deepavali
- 29-31/10** Global Maritime Forum's 2019 Annual Summit

This event calendar is subject to change



PUTTING DIGITALISATION INTO PRACTICE

All businesses know that digitalisation is contributing to a seismic shift in the way we do business globally. Often however, it can seem that there are more words than action taking place. But ship manager OSM Maritime Group is clearly pushing back on that idea – developing, launching and refining its new OSM Operations Centre (OOC) in Singapore and bringing a number of digital innovations from concept to reality. In short, OSM says that the digital services it is providing and developing have the potential to transform shipping.

“We are certainly more action than words,” says Shubpreet Singh, Managing Director of OSM Ship Management Pte Ltd, based in Singapore. “Digitalisation isn’t just a buzzword – it has arrived and it means enabling us to work smarter while providing scalable services for our customers.”

The first point, he emphasises, is that ‘digitalisation’ isn’t the answer in isolation. “Digitalisation for us is a part of how we want to do things going forward. It isn’t just about

technology on its own. When it comes to changing the way we work, there are a number of dimensions.”

The NEXT initiative

Two-and-a-half years ago, OSM Maritime Group, which provides a full range of service solutions to the global maritime and offshore sector, embarked on its ‘NEXT’ initiative – standing for New perspectives; Employee performance; eXtended competence; and Technology.

OSM Operations Centre

A cornerstone project is the OSM Operations Centre (OOC), which is based in its Singapore office. The concept is a 24/7 centre which monitors the OSM-managed fleet and provides level one support to its vessels around the world.

“Technology is part of the whole thing; but we have the human element alongside. It’s a different way of working,” says Mr Singh.



“Singapore is a maritime city and the competence is here. We chose Singapore because of the infrastructure, support and network you find here.”

Work to create the OOC began in the first quarter of 2018. The concept was presented to the Maritime and Port Authority of Singapore (MPA), which provided support in terms of both ideas and funding. “We worked closely with MPA to make something that is tangible and provides added value,” he says.

The right team

A key factor was finding the right people. A team of 12 OOC operators has been employed – mostly from Singapore, they are led by a Master Mariner and are all from a maritime-related background.

“We were quite specific on the type of people we needed in the OOC. We had a clear profile, i.e. Chief Officers, Second Officers, Second/Third engineers, naval architects and people who had worked in health, safety & environment, & quality (HSEQ) positions in the offshore or maritime industry,” says Mr Singh. “These people have the core competence that is needed. The idea is that when they are in touch with the vessel, they speak the same language and are able to provide a quality level of solution – or, if they identify that things are not going in quite the right direction, they are able to make a certain level of decision.”

The OOC operators monitor data and information

coming from the ships and, as well as responding to specific contact from ships’ officers, they will also intervene proactively, including liaising with the fleet team and directly with the vessel.

A growing resource

“We started with a pilot of eight ships in October,” says Mr Singh. “We steadily added more and now all of the vessels we manage out of Singapore – about 130 – are on the system. We also monitor vessels under technical management from our other offices. In total, OSM provides services to almost 500 vessels worldwide.”

Singapore was chosen as the location for the OOC for several reasons. “There is a lot of support from the MPA to drive digitalisation and new ways of shipping and working. That was one of the key drivers for us. Singapore is a maritime city and the competence is here. We chose Singapore because of the infrastructure, support and network you find here.”

A similar idea is to be developed in Norway – a sort of ‘OOC-lite’, this will be set up for vessels managed out of the Norway office. Operators there will have the same level of information and processes as set up as the Singapore OOC, but there will also be the capability to run the Norway vessels from Singapore.

Technology solutions

Apart from the OOC, developments by OSM Maritime Group include the use of Fleet Manager software to incorporate all vessel data.

Also, there has been the recent implementation of OSM ON, a system which uses Power BI (a collection of software services, apps, and connectors that work together to integrate separate data sources) to develop dashboards internally as well as with clients – to be able to see and analyse trends in vessel operational practices and KPIs.

“This will make us even more transparent as an organisation, as well as working with owners,” says Mr Singh. “We provide a digital dashboard internally and to our clients so we can see the way we operate each vessel, what their Port State Control records are like, how the vessels are running, whether they are to budget, and so on.”

A holistic approach

All of this is about aligning digitalisation and new technologies with business processes, rather than just pursuing tech for its own sake, he says. “We didn’t go in ‘all guns blazing’ – we ran a pilot, we had a proof of concept and we developed the system and very carefully started to introduce it to customers. Most of them have come back and asked for more. The important thing is that we can tailor this to the customer and how far they want to go.”

Meanwhile, Masters and Chief Engineers at sea have the same visibility as the shore-based team and the same networking ability. Therefore, they can access the same information and see real-time what is being done about any issue they have. “Every Chief Engineer and Master has had a session in our office to learn about our digital approach and how to input data,” says Mr Singh. “That helps to bring them to another level of engagement.”

A partnership approach

OSM Maritime Group has emphasised the importance of trust in all of this. As Mr Singh points out: “Third-party ship management is all based on trust, so anything you can do to enhance the trust factor is always good. For us, it is to roll out OSM ON to our clients, ask them what items they would like to see and provide access at the level they want.”

The bottom line, he says, is having ‘one version of the

truth’. “Everybody when they look at something has their own version and sees things slightly differently. We are aiming to have one version of the truth.”

For OSM, he says, digitalisation is a journey: “These are just a few elements we have already implemented but going forward we are looking at more things – for example, making our ships smarter and having solutions where information collected on ships is transmitted in a smarter way to our offices.”

Will the journey ever end? “Absolutely not. And that is the good thing about it. If it did end, then you would be saying that you would never better yourself. For us, the way we look at it, it digitalisation is another step to making ourselves even more relevant to the industry.”

SHUBPREET SINGH

Shubpreet Singh has held the role of Managing Director of OSM Singapore since February 2018, and is responsible for the technical management



services delivered by OSM from its Singapore office. He has more than 30 years of experience in a multitude of roles ranging from operations, project management, commercial and leadership in some of the most respected and established companies in the Maritime and Offshore industry.

During his career he has been part of a several start-up projects and has successfully conceptualised and implemented new business ideas. He joined OSM Maritime Group in 2015 in a global business development position and in his current role as Managing Director he is also heading the OSM Operations Centre (OOC), a key part of OSM’s drive towards digitalisation, transparency and resource optimization.

Shubpreet is a Master Mariner with DP qualifications, and holds an MBA dual degree in Shipping, logistics & finance from BI, Oslo and Nanyang Business School, Singapore.

3D Printing in Perspective

Shipping is in the midst of a major transformation, one that is arguably greater than it has seen before. Granted, many may cite the move from sail to steam, the dramatic oil crises of the 70s, containerisation, or the advent of the ISM code, as more seismic changes. However, the key difference between all of those examples and the situation we are in today is that the industry is having to respond to threats and developments that are not clear and not driven by regulation. In other words, there is a need to proactively change the way we do business, rather than reacting to changes forced upon us.

Perhaps for the first time in our history, regulations need to respond to what shipping is doing, rather than the other way around. The opportunity this gives us is both tremendous and unprecedented.

Tried and tested technologies

Digital developments that have taken other industries by storm over a decade ago are now ripe for the taking by the maritime industry – but at a greater scale than previously experienced. Many of these technologies have been tried and tested with good results in other applications and markets, offering efficiency gains that we simply cannot ignore. Additive manufacturing, better known as 3D printing, is one such example.

Author

Nakul Malhotra

Vice President Technical Solutions
& Marketing, Marine Products,
Wilhelmsen Ships Service



Perhaps for the first time in our history, regulations need to respond to what shipping is doing, rather than the other way around. The opportunity this gives us is both tremendous and unprecedented.

The non-critical, generic and unobtainable parts catalogue alone stretches into the thousands of parts and each one can represent savings of 10- 50% per part if the value chain is re-examined.

.....

Rethinking the value chain

Vessel and equipment parts being flown urgently from one remote location to the other is a daily reality for the operations and technical teams of all shipping companies. Whilst we have all found ways of dealing with this problem, 3D printing gives us the opportunity to rethink the entire value chain for this time consuming and often stressful task.

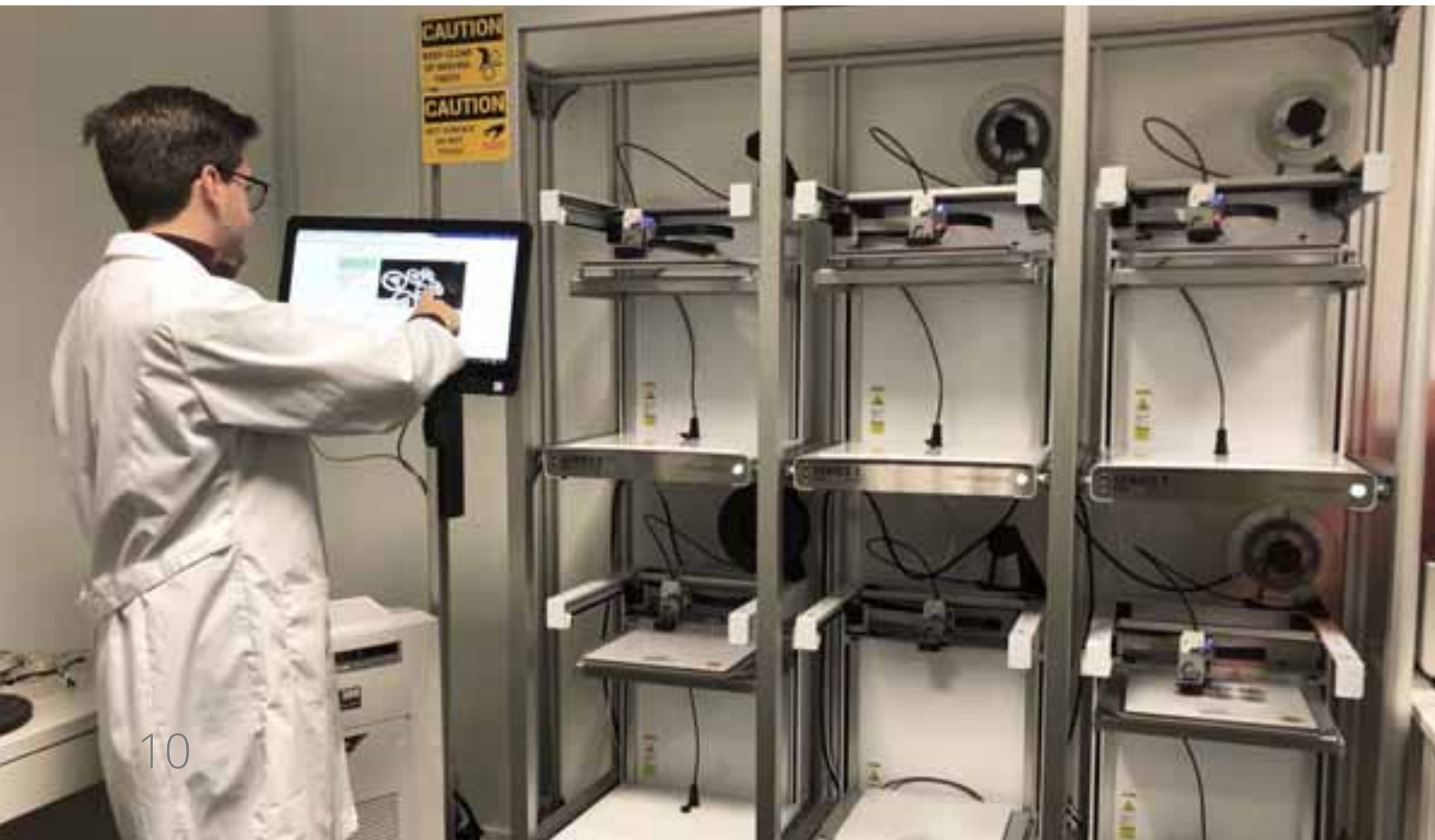
Nakul Malhotra

As Vice President Technical Solutions & Marketing, Marine Products for Wilhelmsen Ships Service (WSS), Nakul is instrumental in the ongoing execution of the company's digitalisation strategy.



Supporting a renewed focus on customer co-creation and speed of execution for product development, along with customer experience innovations, such as augmented reality, IoT and many other technologies, Nakul is an advocate of the positive role that 3D printing, automation and robotics can play in operations.

Nakul combines a wealth of maritime sales, operations and management experience, with qualifications in marine engineering, and direct seafaring experience.





Rather than sending parts, what if we could send files?

Generally speaking, for most non-critical parts on board, the cost of carriage accounts for the majority of the total cost of the delivered part. 3D printing capability can open substantial savings on parts freight and offer constant availability.

In addition, most parts are designed for traditional manufacturing techniques, whereas 3D printing on demand optimises fabrication to ensure individual parts are manufactured with alternative internal structures and external finishes. This can open up efficiencies not experienced before.

Adapting the technology

What is critical of course is the need to respect Intellectual Property (IP) rights. It is important that we as an industry stand together to ensure that this technology does not become a back door to bypassing these rights. Working together with stakeholders is key. Nevertheless, the non-critical, generic and unobtainable parts catalogue alone stretches into the thousands of parts and each one can represent savings of 10- 50%

per part if the value chain is re-examined.

This is a new development for the maritime industry and every company needs to understand its own position and capability to potentially adopt this technology.

Moving forward

So how to start? There are several ways to access information and expertise. The Singapore Shipping Association has a Joint Industry Programme with MPA, DNV GL and the National Additive Manufacturing Innovation Cluster (NAMIC) investigating the application of 3D printing in the industry. In addition, we at Wilhelmsen, have been looking into 3D printing as a service to the industry and have set up our first micro factory in Singapore.

The ecosystem is being built up and together we can work towards being ever more competitive. By adopting this new technology we can work together with regulators to ensure that stakeholders are responding to these new opportunities in a proactive manner, and take our rightful place in the competition for the talent and expertise of tomorrow.

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Introducing the Maritime Innovation Lab



A milestone in Singapore's journey to be the global maritime hub for connectivity, innovation and talent

Singapore has one of the world's busiest hub ports and waterways, providing a demanding operating environment that spurs innovative ideas and solutions. However, this intensity of operations means that technology developers lack a real operating environment to test and validate solutions and technologies.

Singapore's new Maritime Innovation Lab (MIL) is the latest initiative node to support Singapore's quest to be a leading incubator of maritime innovation. Part of the MPA (Maritime Port Authority of Singapore) Living Lab concept set up in 2016, the new MIL will act as a test bed for port operation projects in areas such as vessel traffic management, autonomous shipping and remote pilotage. It will also feature a data hub to support the industry in digitalisation and data sharing projects and research.

The establishment of the MIL is an important milestone in Singapore's journey to be the global maritime hub for connectivity, innovation and talent, said Dr Lam Pin Min, Senior Minister of State, Ministry of Transport and Ministry of Health. As guest of honour at the launch of the project during Singapore Maritime Week, he said: "The facility will support the Sea Transport Industry Transformation Map by strengthening the maritime industry's partnership with research and technology



"We are glad to have like-minded partners who strongly believe in the importance of experimentation and open innovation. Together with the PSA and the Jurong Port Living Labs, the Maritime Innovation Lab adds to the maritime research and innovation ecosystem, which will help take the maritime sector to a new level of development in areas such as automation, data analytics and intelligent systems. With stronger partnerships and deeper collaborations, Maritime Singapore will be able to stay ahead of the curve as a world class hub port and international maritime centre."

Quah Ley Hoon
Chief Executive of MPA

communities, co-creating solutions to address industry challenges and developing innovative concepts and services for the industry."

In 2016, the Living Lab concept was set up – the aim being to bring together process owners, technology providers and researchers to work together on innovations, testing new systems and delivering technological and engineering solutions closer to market reality, in a real-life environment.

The MPA Living Lab, the PSA Living Lab and the Jurong Port Living Lab offer both digital space and physical testbeds at sea. This includes the recently unveiled maritime drone estate at Singapore's Marina South Pier.

The Maritime Innovation Lab is located at PSA Vista in Pasir Panjang; this new developer space provides a sandbox to inspire new operational ideas and systems, while delivering local technological capabilities in key areas.



SHOWCASE: Next Generation Port Operations

Next Generation Vessel Traffic Management System (NGVTMS) Lab

In crowded shipping lanes, ensuring navigational safety and security while also enabling ships to arrive and depart efficiently and on time can be a delicate balancing act. That's especially true in the busy waters in and around the Port of Singapore.

But wherever the port, the advance of digital technologies and decision-making tools is set to change dramatically the way in which vessel traffic management systems and services develop and are run in the future.

The Maritime Innovation Lab will house a \$9.9m project which is seeking to deliver a step change in vessel traffic services (VTS). The Next Generation Vessel Traffic Management System (NGVTMS) Lab, launched by ST Engineering and Kongsberg NorControl, will develop digital technologies and decision-making tools used by maritime operators – examples include the analysis of vessels' routes, predicting traffic hotspots and identifying potential collision situations. An array of sensors and decision support tools will provide port

authorities with comprehensive real-time traffic analysis and help them to optimise ship movements in order to avoid congestion.

Due for completion in 2021, the NGVTMS Lab will help maritime authorities to boost navigational safety; handle more vessels within crowded shipping lanes with increased safety, security and efficiency; and enable the seamless and autonomous exchange of information across unmanned vessels.

With the digital transformation of Singapore's port services and operations, and the advent of smart shipping and autonomous technology, the next generation VTMS will play a mission-critical role in ensuring the navigational safety and efficiency of Singapore port waters and the Singapore Strait.

Remotely Assisted Pilotage Advisory (RAPA)

Do pilots really have to climb ladders out at sea, with all the associated risks, in order to physically board a vessel and guide it to a berth? The future looks likely to provide a 'virtual' alternative.

ST Engineering, PSA Marine and the MPA are working together to

design and develop a remotely assisted pilotage advisory system. Incorporating Internet of Things sensors and communications systems, this will allow pilots – while on dry land – to guide vessels remotely within the domestic waterways to the port of call.

Port regulations at present require large vessels to use authorised pilots when navigating in the port. This pilotage system will remove the need for pilots to actually board the vessel – remote pilotage operations from a shore-based station, supported by enhanced situational awareness, real-time imagery and data, will deliver both operational and fuel cost savings, as well as allowing pilots to focus on the most critical tasks.

PSA Marine will provide its pilotage experience in validating and trialling the system within the Port of Singapore. ST Engineering will contribute its expertise and capabilities in unmanned surface vessels and autonomous technologies and MPA will study the feasibility of systems to meet future pilotage demand without compromising navigational safety.

SHOWCASE: Intelligent Ship Operations

Singapore as a future-ready port able to receive autonomous vessels – that’s the focus of a cross-agency committee set up by MPA. The Maritime Autonomous Surface Ships (MASS) Steering Committee will formulate a ‘roadmap’ to position Singapore as the preferred location for companies to operate their autonomous vessels.

Steen Lund, Chair of the Technical Committee at SSA, says he is pleased to support the initiative. “Autonomous navigation has the potential to increase productivity and enhance navigational safety. This cross-agency steering committee will enable Singapore and the industry to move forward collectively to become a MASS-ready port. As a partner in nation building, SSA is pleased to be a key partner in this endeavour,” he says.

There are five key projects:

Smart Maritime Autonomous Vessel - a collaboration between ST Engineering, PACC Offshore Services Holdings (POSH) and the American Bureau of Shipping (ABS).

Autonomous Flotsam Clearance Vessel - jointly developed by ST Engineering and the Singapore University of Technology and Design.

IntelliTug - a collaboration between Wartsila, PSA Marine and the Technology Centre for Offshore and Marine Singapore (TCOMS) that focuses on the development of an autonomous tugboat to enhance productivity and navigational safety in the port.

Keppel Autonomous Tug - a project by Keppel Offshore and Marine and ABS that too focuses on the development of autonomous tugboat.

ST Engineering, Mitsui & Co. Ltd, MPA and Lloyd’s Register – are developing the world’s largest ocean-going autonomous vessel programme, aimed at jointly developing and validating navigation intelligence for autonomous oceangoing vessel operations. Incorporating test routes across global locations such as the Suez Canal, Panama Canal, Straits of Malacca and Singapore, the project will see the sharing of data and knowledge and the application of test scenarios. This will enable MPA to evolve infrastructure and regulations to support autonomous operations in the port.

SHOWCASE: Singapore Maritime Data Hub

The Singapore Maritime Data Hub (SG-MDH) has been launched by MPA to promote data sharing and innovation, in support of Maritime Singapore’s ongoing digital transformation.

Through this, MPA aims to encourage the co-development and testing of innovative digital applications and data-driven services that will boost navigational safety, operational efficiency and overall port productivity.

An example is the technology start-up company SG Smart Tech Pte

Ltd, which uses SG-MDH’s vessel position data on its SeaCabbie platform, to deliver efficient routing of launch boat operations – reducing transit times and saving fuel.

Another company, Claritecs Pte Ltd, uses the data hub to monitor vessel arrivals and locations for refuelling, so that it can schedule bunker deliveries on a just-in-time basis.

Singapore’s vibrant maritime innovation ecosystem is unrivalled. Singapore fully intends to continue leading the way in our dynamic, fast-moving maritime world – and the

Maritime Innovation Lab is an essential component of that determination.

MPA has been working to strengthen relationships within this innovation ecosystem, to keep pushing the boundaries in terms of future capabilities. This includes strong alignment on innovation and R&D efforts between public and private sectors, and the promotion of digitalisation within the maritime industry, through bright, positive ecosystem partnerships.

THE LIVING LABS

MPA Living Lab

The MPA Living Lab is made up of both physical and digital spaces. The concept supports the Next Generation Port (NGP) 2030 initiative, which aims to enable Singapore's ports to use new technologies to increase efficiency and productivity, intensify land use in the port, improve safety and security, and improve sustainability.

PSA Living Lab

PSA Singapore Corporation is one of the largest terminal operators in the world. In 2016 it opened part of its port to set up the PSA Living Lab, specifically designed to support the port and logistics industry, committing nearly S\$100m over three years to the project.

The PSA Living Lab is made up of two operational berths at PSA's Pasir Panjang Terminal – it is used by start-ups and technology solution providers to collaborate with PSA to develop ideas and test integrated systems in a live port environment.

The result has been an unprecedented testing environment in one of the largest container hubs in the world.

Jurong Port Living Lab

Jurong Port has played a key part in Singapore's economic development since it began operations in 1965. As part of this commitment, it works with government and industry to help

"It's very encouraging to see many innovative solutions and new ideas coming from start-ups as we embrace new technologies and promote data sharing to enable cocreation in the maritime sector. The vibrant start-up ecosystem will play a crucial role in accelerating the digital transformation of Singapore's maritime industry and creating exciting opportunities for growth."

Koh Chin Yong
Chief Information Officer of MPA

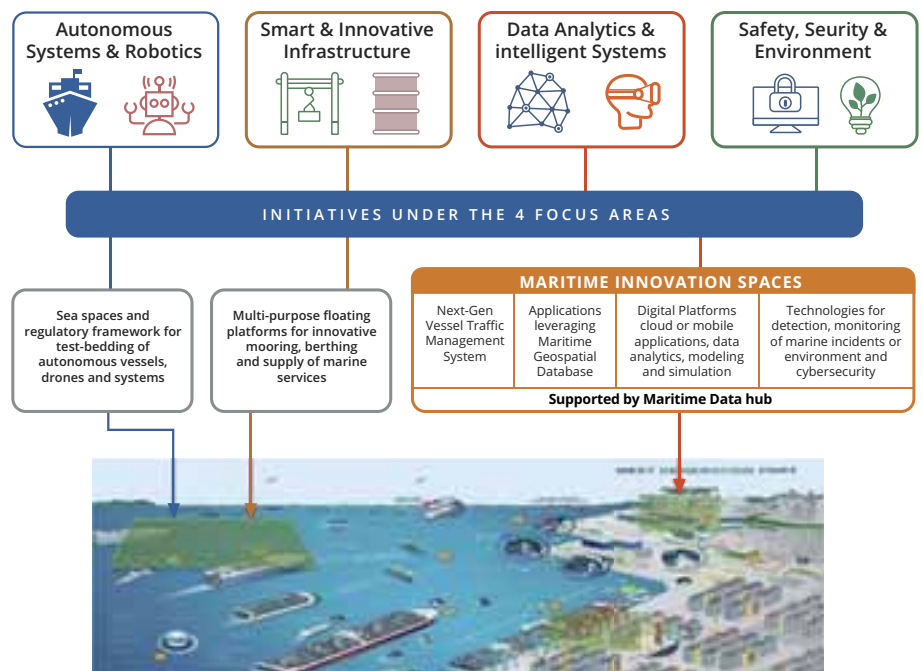
drive the transformation of the maritime sector as part of the Sea Transport Industry Transformation Map, leveraging new technologies to ensure Maritime Singapore stays competitive as a world-class port and international maritime centre.

The Jurong Port Living Lab researches and testbeds ideas as part of the port's ambitions to develop the

'Next Generation Multipurpose Port'.

The initiative, launched in 2017 in a partnership with Nanyang Technological University (NTU), is designed to pursue R&D jointly over a period of five years in areas such as smart multi-energy systems, alternative energy source applications and environmental monitoring solutions.

The Living Lab focuses on the following four areas:



**IMO SULPHUR LIMIT 2020
GUIDANCE**

6 Months (M) Planning

M6

FUEL OIL SYSTEM READINESS

Segregation modifications for fuel oil tanks system completed, system lines tested, and crew familiarization training conducted, action plan agreed with manufacturers completed

SAMPLING READINESS

All sampling points identified and appropriate sampling valve installed, procedure for onboard and in-use samples completed and crew familiarization training conducted

M4

M5

OIL TANKS READINESS

Tank cleaning for designated fuels storage arranged, lube oil spare tank arrangement for dual fuel carriage, additional containment system for the possible overflow of sludge volume due to tank cleaning requirements

M3

PROCUREMENT READINESS

Procurement contracts and quality procedure /certification to purchase compliant fuels from bunker suppliers along vessel routes negotiated and agreed, disposal of non-compliant fuel with buyer(s) arranged and permit obtained

M2

M1

ON-BOARD READINESS

Fuel switch-over requirement arranged and full training on the utilization/ switch-over operation as well as handling unavailability of compliant fuel for crews completed, issuance of reminder that non-compliant fuel needs to be disposed

COMPLIANCE

Ship maintenance regime to include mitigating compatibility issues, carriage ban arrangement, emission monitoring, equipment inoperability,CEM malfunction etc.

?

Compliant Fuel not available at port

- Submit Fuel Oil Non-Availability Report (FONAR) to next port of call & inform Port State/Flag State
- Report to IMO MARPOL Annex VI GISIS module
- Submit evidence to support efforts to obtain compliant fuel
- Arrange to lift compliant fuel at the first available port of call

?

Scrubber System not in operation

- Inform Flag & Port State for non-functional scrubber
- Make arrangement to repair scrubber at nearest port of call
- Update SSEP Log Book
- Inform port state for non-availability and make arrangement for bunkering of compliant fuel
- If repair duration is uncertain, consult the administration

?

Analysed VLSFO results have uncertainties

- Raise Bunker Dispute Form
- Run additional purification/filtration with low throughput for fuel with high cat-fines
- Adjust heater or use chiller to improve fuel viscosity and to maintain viscosity within the Engine Makers' Recommendation limit
- Commingle with compatible fuel/or use appropriate additives to improve stability
- For high sulphur content exceeding limit, make preparation to debunker non-compliant fuel

?

Carriage of Non-Compliant Fuel on-board

- Make arrangement to dispose non-compliant fuel (HSHFO) by 1st March 2020 due to "Carriage Ban"
- Clean system & tanks to bunker compliant fuel
- Obtain a Carriage of Non-Compliant Fuel exemption letter from Flag State to be produced to Port State Control from 1 Jan 2020 onwards

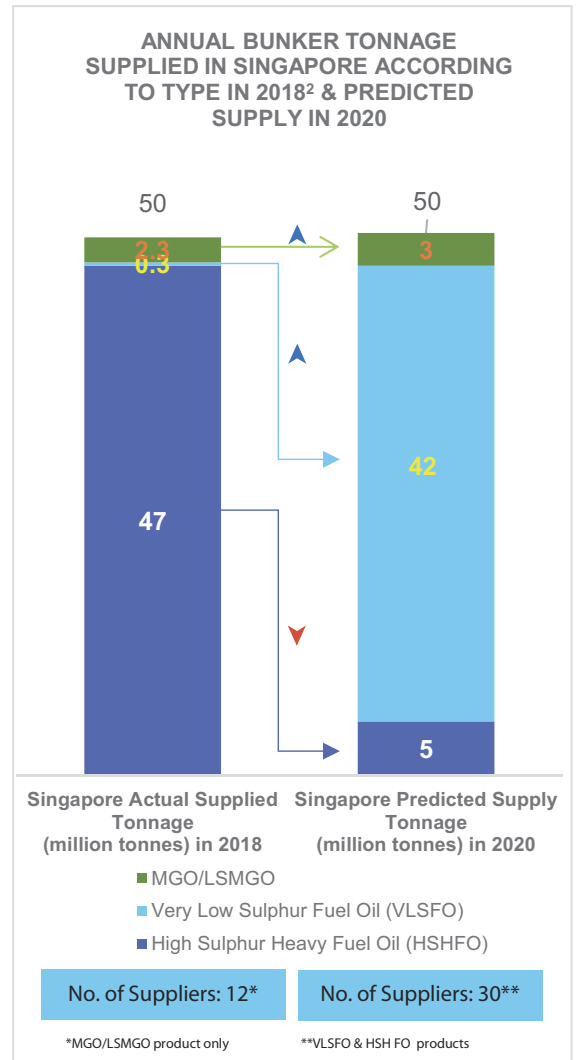
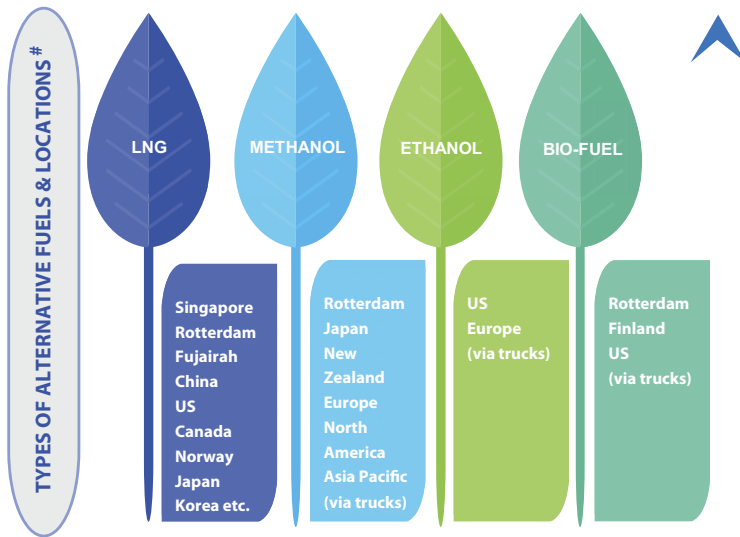
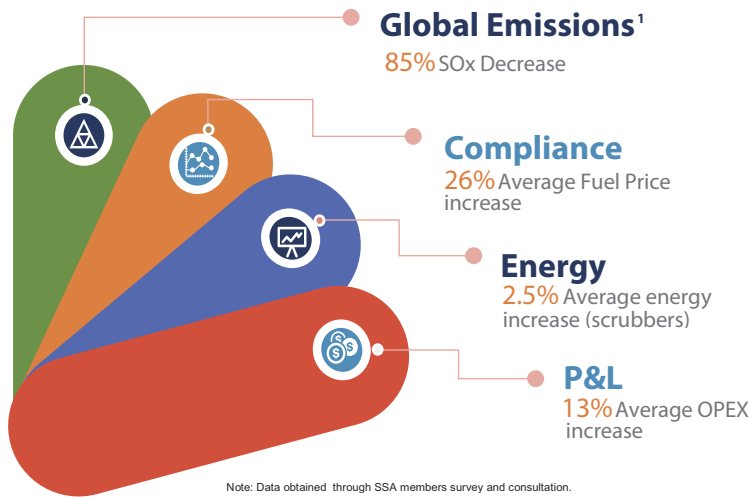
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Ports & sea areas prohibit scrubber discharges

- Perform change-over to compliant fuel using the fuel change-over calculator prior to entering prohibited areas
- Switch to closed loop system, if available
- Make arrangement with reception facilities to collect scrubber effluent discharges for closed/hybrid scrubber

5 What-if Scenarios

IMO SULPHUR LIMIT



COMPANY DOCS	CLASS DOCS	SHIP DOCS	RECORDS & FORMS	SUPPLY CHAIN DOCS
<ul style="list-style-type: none"> > Ship Management System updated > Ship Implementation Plan reviewed > Fuel Oil Changeover Plan prepared & reviewed > Crew Preparedness Training Plan executed > RA & Mitigation Plan for use of DM/RM onboard reviewed > Carriage Ban instructions prepared > Commingling instructions prepared 	<ul style="list-style-type: none"> > EIAPP New Certificate Received > Amended NOx Technical File (obtained only in case of changing component) > CEM documentation maintained both onboard and in cloud > IMO GSIS System familiarisation conducted > Fuel system plan approval received (needed in case of line modifications) > Onboard Monitoring Manual approved > SOX Emission Compliance Plan approved 	<ul style="list-style-type: none"> > SEEMP document updated > Tank & Sounding Sensors booklet configured with correct viscosities/temp > Maintenance Log incorporated with new equipment > Section H of Oil Record Book Part 1 new recording requirements incorporated > Procedures to verify machinery performance completed > Procedures for segregation of various grades of fuel oil carried out > ECGS Technical Manual for Scheme A/B received 	<ul style="list-style-type: none"> > 3-years Bunker Delivery Notes (BDN) Records indicating % of Sulphur content available on board > FONAR Form Instructions disseminated & contact list of FONAR recipients developed > Fuel change over instructions updated > EGC Record Book updating instructions incorporated 	<ul style="list-style-type: none"> > BDN to indicate less than 0.5% of Sulphur Content and does not exceed the maximum allowable limit if no scrubber is installed onboard vessel after Jan 2020 > Certificate of Quality (COQ) from suppliers received

1 <https://safety4sea.com/imo-sets-2020-as-implementation-date-for-0-5-sulphur-cap/>

2 <http://www.mpa.gov.sg/web/portal/home/port-of-singapore/services/bunkering/bunkering-statistics>

Recommendations & Best Practices compiled by SSA Members

Safety Risk: Vessel Collision

Recommended Mitigating Actions:

- Configure alert/alarm system when switching fuel
- Additional watch-keeping when performing fuel change over
- Perform fuel change over well in advance in order to ensure smooth transition to avoid any blackout situations
- Familiarisation of fuel change over sequence within 3 months prior to regulations kick in
- Avoid performing fuel switch over in Port and Areas of restricted navigation, such as TSS, Rivers, Channels etc

Compliance Risk: Vessel Detention

Recommended Mitigating Actions:

- Use portable sulphur meter to test onboard and in-use fuel samples sulphur content
- Ensure all logs are properly maintained and recorded
- Delivered MARPOL LSFO has 0.47% Sulphur or less documented (+5% confidence level)
- Obtain Flag State approval for carriage of non-compliant fuel till March 2020
- Safety briefings to include LSFO non-availability or non-operational scrubber

Operational Risk : Damage to Critical Assets

Recommended Mitigating Actions:

- Perform CLO Scrape Down Analysis every 3 months to maintain desired TBN/FE ratio
- Additional lab tests to ensure LSFO will not cause piston ring failure or fuel p/p seizure
- Use purifiers at low throughput and test purifier efficiency of removing catfines by testing before/after
- Install acceptable micron backwash filter to reduce catfines & check/clean filters regularly
- Develop correct Purification Procedures, based on fuel bunkered i.e. correct use of gravity disc/purification temperatures

Commercial Risk: Onboard Fuel Contamination

Recommended Mitigating Actions:

- Frequently use portable sulphur meter to test onboard and in-use fuel samples sulphur content
- Test for compatibility prior to any commingling
- Monitor for sludge in tank & clean bunker tank residues frequently
- Avoid mixing & do not use fuel without knowing its specifications
- Drain water from fuel tanks to avoid settling of catfines

Operational Risk : Incorrect combustion affecting emission values

Recommended Mitigating Actions:

- Install new fuel pump plunger/barrel and injection nozzles for low viscosity LSFO
- Use new type of nozzles and adjust Air/Fuel ratio for boiler
- Ensure appropriate Low TBN CLO/LO to avoid fouling of M/E, A/E rings/grooves
- Increase purifier desludge frequency to reduce sludge accumulation
- Maintain fuel oil viscosity/heating for recommended injection viscosity

Commercial Risk: Supplied Fuel Quantity & Quality Disputes

Recommended Mitigating Actions:

- Install mass flow meters with correct viscosities range
- Fuel tests report to be delivered by accredited testing labs within 4 hours
- Procurement clauses for quantity & quality related issues with bunker suppliers
- Avoid taking bunker from un reputable suppliers that do not comply with MARPOL Annex VI
- Transition Clause between Charterer & Operator on tank/system fitness

6 Types of Risks Assessed

SSA Welcomes a New Council and Makes History

History was made at this year's SSA AGM when the Council elected Caroline Yang, Chief Executive of Hong Lam Marine, as the Association's first female President since its founding in 1985. Ms Yang started her career with Hong Lam Marine as its in-house counsel in 1991 and has nearly 30 years' experience in the shipping industry.

Caroline will be supported by newly elected Vice Presidents Katie Men, Managing Director of Iseaco Investment and Rene Piil Pedersen, Managing Director of

AP Moller Singapore. She will also work closely with the SSA Secretariat headed by Michael Phoon.

The 23rd AGM of the Association was held on 26 June 2019 at the Marina Mandarin hotel. During the meeting the council also named Mr S S Teo, Executive Chairman and Managing Director of Pacific International Lines, as an Honorary Member in recognition of his immense contributions to Singapore's shipping industry. Mr Teo served as a Councillor and subsequently President of SSA from 2003-2011.





Caroline Yang

SSA President

"I am honoured by the trust the Council has placed in me by electing me as SSA President for the 2019/2021 term. The shipping community in Singapore has much to be proud of. This year, Singapore was awarded 'Best Seaport in Asia' for the 31st time and also the 'Best Green Seaport' at the 2019 Asia Freight, Logistics and Supply Chain Awards. We were also recognised as the 'Top Leading Maritime Capital of the World' for the fourth consecutive time in a report issued by Menon Economics and DNV GL. And in July 2019, the Xinhua-Baltic International Shipping Centre Development Index Report 2019 again reaffirmed Singapore as the world's top maritime centre for the sixth year.

"The industry continues to face challenging conditions and digital disruptions. As we navigate into the future together, the task of the Council is to work with all stakeholders to champion Maritime Singapore, to keep SSA relevant and responsive to its members, and to encourage participation by members in our shared goal.

"I would also like to place on record the Council's deep appreciation to Immediate-past President Esben Poulsson, who has been a tireless champion of the Singapore shipping industry. His term is marked by the move of SSA Secretariat into digitalisation, and expansion of membership, and by preparing the industry for sweeping changes such as the sulphur cap that comes into effect in January 2020."





The seven Ordinary Members elected to the 2019/2021 Council are:

Rene Piil Pedersen (Vice President)
A P Moller Singapore Pte Ltd

Gu Jing Song
COSCO (Singapore) Pte Ltd

Steen Brodsgaard Lund
Executive Ship Management Pte Ltd

Caroline Yang (President)
Hong Lam Marine Pte Ltd

Katie Men (Vice President)
Iseaco Investment Pte Ltd

Teo Teng Seng
Pacific International Lines (Pte) Ltd

Nitin Mathur
Wallem Shipping (Singapore) Pte Ltd

First Among Equals

Specialist Accreditation for Maritime and Shipping Law

The Singapore Academy of Law's (SAL) Specialist Accreditation Scheme (SAS) for Maritime and Shipping Law is a mark of excellence for lawyers demonstrating a substantial commitment to the maritime sector.

Launched in 2017, the scheme first targeted lawyers involved in Building and Construction Law. In 2018 the Specialist Accreditation Scheme was extended to Maritime and Shipping Law in recognition of the fact that as Singapore's maritime sector evolves to adopt new technologies and service new markets, its relationship with the legal sector remains crucial to this development

A uniquely Singaporean scheme

While specialist accreditation isn't new, SAL has adapted the global model to better suit Singapore's needs. Given the wide range of experience among lawyers in the country, the SAS offers a two tier accreditation, instead of the single tier commonly adopted in other jurisdictions.

The two tiers offered by SAS cater to lawyers with different experience levels:

- Accredited Specialists have at least five years' post-qualification experience
- Senior Accredited Specialists have at least 10 years' post-qualification experience

The SAS is administered by the Specialist Accreditation Board (SAB), which is chaired by a High Court judge. Comprising two Senior Counsel, President of the Law Society and a representative from the Ministry of Law, the Board selects lawyers to be accredited and also chooses practice areas to be included in the SAS.

How it works

As Mr S Mohan, President of The Maritime Law Association of Singapore and a Senior Accredited Specialist in Maritime and Shipping Law, explains, the accreditation process can be onerous at times. "Accredited Specialist applicants are required to sit a 6-hour examination consisting of essay-type questions and case scenarios. To prepare them for the examination, the SAS conducts an examination preparatory course led by top lawyers in the field."

Those who pass the examination then appear before a selection panel made up of members of the judiciary and industry practitioners.

Senior Accredited Specialist applicants are also required to meet the panel. Here, the panel and the applicant have an in-depth discussion on substantive law and practice. Applicants who successfully complete the above assessment process, on recommendation of the selection panel, will then be accredited by the SAB.

AT A GLANCE

The Singapore Academy of Law's (SAL) Specialist Accreditation Scheme (SAS) aims to:

- Recognise the expertise and knowledge of Singapore lawyers in a specialised practice area.
- Encourage younger lawyers to hone their skills in their chosen area of practice.
- Provide users of legal services with a reliable directory of specialists.
- Promote continued development and improvement of standards, quality and delivery of legal services Maritime and Shipping professionals needing legal services now have a trusted directory of specialists they can turn to if they require advice or representation, especially in complex matters.

Mr Mohan is confident that the process is worth it. Industry leadership recognition is key. If younger lawyers “wish to increase their profile and enhance their personal branding, I would strongly encourage them to seek accreditation,” he said.

The SAS comes with a two-year validity, which ensures that specialists don’t rest on their laurels but remain relevant and in touch with emerging trends in maritime law.

For the future

As the industry charts a new course forward under the Maritime and Port Authority of Singapore’s Sea Transport Industry Transformation Map, the SAS ensures that the industry will continue to have access to a pool of reliable legal partners.

“The SAS helps senior lawyers establish themselves as these partners,” explains Mr Mohan. With new shipping and commodities companies entering the market in

Singapore, “if they’re looking for market expertise, they know where to go.”

To find out more, visit the Specialist Accreditation Scheme website at <https://www.sal.org.sg/Services/Appointments/Specialist-Accreditation/Overview>

The Singapore Academy of Law

As the development and promotional agency for Singapore’s legal industry, the Singapore Academy of Law has the vision of making Singapore the legal epicentre of Asia. It is governed by a Senate, which has as its head the Chief Justice of Singapore and which comprises members of the legal fraternity including members of the Supreme Court judiciary, the Attorney-General, the President of the Law Society, Deans of the law schools and leading members of the Bar.



Singapore Shipping Association’s 34th Anniversary Gala Dinner

SAVE THE DATE

Date: Friday, 27 September 2019

Time: 6.00pm - 10.30pm

Dress Code: Jacket with Tie (Men) | Evening Wear (Ladies)

Sands Grand Ballroom, Level 5
Sands Expo and Convention Centre
Marina Bay Sands

International Trade Associations Commit to Deeper Collaboration

A new Memorandum of Understanding (MoU) now provides a framework for closer cooperation between the three important international trade associations representing international shipping. The Asian Shipowners' Association (ASA), the European Community Shipowners' Associations (ECSA) and the International Chamber of Shipping (ICS) signed the MoU in Singapore on April 8, 2019, during Singapore Maritime Week. The

three international trade associations are the principal global and regional associations representing shipowners and operators, institutions, regulators and other bodies which impact and affect the interests of international shipping.

The three associations together make up membership of the national shipowners' associations in around 50 countries and territories, and encompass collectively



The three associations together make up membership of the national shipowners' associations in around 50 countries and territories, and encompass collectively more than 90% of the world's merchant tonnage.

more than 90% of the world's merchant tonnage. They represent all shipping sectors and trades, and through their members - national shipowners' associations - can uniquely and legitimately claim to speak for the significant majority of the international shipping community.

Recognising the special relationship which their member national shipowners' associations enjoy with governments and maritime administrations, the three associations reaffirmed their commitment to serve as advocates for the international shipping industry and agreed to enhance and build upon their existing close relationships, with a view to maintaining and further developing a reputation as providing a strong and coherent voice for the global shipping industry.



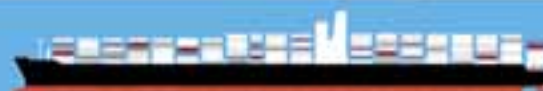
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The MoU

Through this MoU, the three associations hereby **COMMIT to COOPERATE** where appropriate and practicable on all issues of maritime affairs that may affect the interests of shipowners and operators, including:

- Shipping and trade policy matters;
- Maritime law, legal affairs and insurance issues;
- Technical and operational matters, including safety of life at sea and maritime security, environmental protection, ship construction, navigational safety and ship management;
- Labour affairs and seafarer training; and in the
- Promotion of best practice throughout the industry.

SUPPORTING this end, ICS, ASA and ECSA hereby **AGREE** to:

ENCOURAGE high standards of operation and the provision of high quality and efficient shipping services;

STRIVE for a regulatory environment which embraces safe shipping operations, protection of the environment, maintenance of open markets and fair competition based on free trade principles, as well as adherence to internationally adopted standards and procedures;

SUPPORT such regulation of shipping at a global level, in particular at the United Nations International Maritime Organization (IMO) and the International Labour Organization (ILO);

OPPOSE, where appropriate, unilateral and regional action by governments;

PRESS for recognition of the commercial requirements of shipping and of the need for operators who meet the required standards to secure a proper commercial return;

REMAIN COMMITTED to the promotion and updating of industry guidance on best operating practices;

COOPERATE with other organisations, including intergovernmental, regional, governmental and non-governmental bodies, in the pursuit of these objectives;

PROMOTE the industry's profile as a safe, clean, energy efficient, well regulated and responsible facilitator of global trade;

ANTICIPATE whenever possible, and respond whenever appropriate, to policies and actions which may conflict with the above.

PURSUING these objectives, ICS, ASA and ECSA further undertake to cooperate where appropriate and practicable in the following areas:

SHARE information about international, regional and national developments that may potentially affect or impact upon the interests of international shipowners and operators;

PARTICIPATE, as appropriate, in the work of their respective associations' Annual General Meetings and policy making committees, with reciprocal rights of attendance at meetings;

CONTRIBUTE to the development of, and **ENDORSE AND PROMOTE**, as may be appropriate, joint policy positions and papers with governments and regional bodies;

INVITE comment on draft policy positions and initiatives on which the other associations may have legitimate interest in expressing their views; and

DISSEMINATE AND EXCHANGE any other information that may be relevant to the activities and interests of their respective associations, member national shipowners' associations, and the industry which they collectively exist to serve;

whilst:

RESPECTING AND PROTECTING intellectual property rights and confidentiality requests of the respective lead associations. The three associations undertake not to distribute each other's materials, including circulars, to their members that are not members of the lead association without first obtaining permission and to acknowledge the source.

RECOGNISING that closer cooperation on relevant issues of maritime affairs will be in the interest of all shipowners and operators, ICS, ASA and ECSA commit to closer cooperation as outlined herein.

SSA Maritime Learning Journey 2019

Singapore Maritime Week ended on a high note as more than 80 SSA members gathered for the SSA Maritime Learning Journey on Thursday 11 April 2019. The activity-filled day included exclusive visits to Raffles Lighthouse and the Singapore Maritime Gallery at Marina South Pier.

Those visiting the newly renovated Singapore Maritime Gallery found friendly and engaging guides ready to share interesting facts and valuable insights about Maritime Singapore. During the visit participants were

introduced to the history of Singapore's maritime industry, and when asked, many said they were surprised by the attractions and how the industry relates to their daily lives. They also enjoyed the opportunity for hands on experience with the ship bridge simulator.

The Learning Journey ended with a visit to Raffles Lighthouse. Many of the participants were very excited as they were first-time visitors to the lighthouse, which is a public-restricted area. The relaxing ferry ride to Pulau Satumu was followed by a guided tour of the lighthouse





– accompanied by an 88 step climb to the very top to see the beacon.

We would like to give a special thank you to Singapore Maritime Academy, Singapore Polytechnic and the Maritime Port Authority for hosting our members for the SSA Maritime Learning Journey. If you missed out this time round, avoid disappointment and do be sure to register early for next year's journey, which will take place next April.



Maritime Experiential Programme 2019

As part of MaritimeONE, SSA is responsible for carrying out the Maritime Experiential Programme (MEP). This initiative reaches out to students from secondary schools and Institutes of Technical Education (ITE), promoting awareness of maritime education and career options available in the sector through visits to key maritime establishments.

This year the MEP took place on 21 May 2019 with more than 80 students from Orchid Park Secondary

School joining us to visit the Wavelink Maritime Institute @ Devin Nair Institute. During the visit the students were impressed by the full mission ship simulator and the mini bridge simulator which allowed them to experience first-hand life as a captain on board a vessel.

MaritimeONE would like to take this opportunity to thank Wavelink Maritime Institute for their kind assistance in organising this successful visit for the students.



About MaritimeONE

Launched in April 2007 by the Maritime and Port Authority of Singapore (MPA), Singapore Maritime Foundation (SMF), Association of Singapore Marine Industries (ASMI) and Singapore Shipping Association (SSA), MaritimeONE (Outreach Network) is a key platform for all maritime stakeholders to synergise efforts to raise awareness of the maritime industry among students and their influence groups, and to interest them in maritime education and careers via various outreach initiatives. The Secretariat of MaritimeONE, SMF, works in tandem with strategic partners to organise a variety of initiatives, including promotional campaigns, events and MaritimeONE scholarships. Other MaritimeONE activities include industry awareness talks, scholarship offers, student outreach events and regular networking events for employers and tertiary students. For details, visit: www.maritimecareers.com.sg.



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Congratulations to International Maritime Awards Winners

Champions of Maritime Singapore were honoured during a sparkling ceremony at the 2019 Singapore International Maritime Awards (IMA), which took place during Singapore Maritime Week. Held at the Shangri-La Hotel the awards recognised individuals and companies for their outstanding contributions to Singapore's development as a premier global hub port and a leading international maritime centre.

The organisers welcomed Dr Lam Pin Min, Senior Minister of State, Ministry of Transport and Ministry of Health as Guest of Honour for the evening.

Top honours were given to Gina Lee-Wan, Partner and Co-Head of Maritime and Aviation Practice at Allen & Gledhill and leading global container shipping company, CMA CGM Group.

Gina Lee-Wan was awarded the International Maritime Centre (Individual) Award. An active member of the Singapore Maritime Community for over 30 years, she has elevated Singapore's reputation as a leading maritime hub in the legal and marine insurance sphere. A great supporter of SSA, she currently serves as Chairman of its Legal and Insurance Committee. She was instrumental in developing the Singapore War Risk Mutual (SWRM) and the new Singapore War Risks Insurance Conditions (SRWIC), and in 2018, was recognised by as one of the top 10 maritime lawyers globally by Lloyd's List.

On the corporate side the CMA CGM Group, a worldwide leading shipping group, was awarded the International Maritime Centre (Corporate) Award which





recognises the company which has contributed the most significantly to Singapore's economy and to its development as an international maritime centre. Mathieu Girardin, Vice President CMA CGM Asia Regional Office, accepted the award on behalf of the Group, saying: "We are very pleased to receive this award which highlights our commitment to Singapore, where we have established our regional hub for Asia-Pacific and where we have launched a series of initiatives and

collaborations with homegrown maritime companies. We are proud to thereby actively contribute to Singapore's status and development as an international maritime centre."

This year's awards received more than 200 nominations and 12 industry partners were recognised for their outstanding contributions to Singapore's maritime industry.



International Maritime Awards Winners

INTERNATIONAL MARITIME CENTRE (IMC) AWARD (CORPORATE / INDIVIDUAL)	Corporate: CMA-CGM Group Individual: Gina Lee-Wan, Partner, Allen & Gledhill LLP
EXCELLENCE IN MANPOWER TRAINING AND DEVELOPMENT AWARD	Winner: Jurong Port Pte Ltd Special mention: Institute of Technical Education
OUTSTANDING MARITIME R&D AND TECHNOLOGY AWARD	ST Engineering and Institute for Infocomm Research (I2R), A*STAR, for VHF Data Exchange System (VDES)
SRS SHIP OWNER OF THE YEAR AWARD	Pacific Carriers Limited
BUNKER AWARD	Hong Lam Marine Pte. Ltd.
MARITIME SERVICE PROVIDER AWARD	Winner: Wilhelmsen Ships Service (S) Pte. Ltd. Special Mention: Eastport Maritime Pte Ltd
OFFSHORE & MARINE ENGINEERING AWARD	Winner: Sembcorp Marine Ltd Special Mention: DNV GL
GREEN SHIP OF THE YEAR AWARD	BW Tulip, BW Group Limited

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 | AUGUST – NOVEMBER 2019

COURSES OPEN FOR REGISTRATION				FEES* (SGD)	
Course Title	Start Date	End Date	Duration	SSA Members	Non-SSA Members
Special Course on LSFO Bunker Fuel	6/8/2019	6/8/2019	1 Day (9:00am - 6:00pm)	\$428.00	\$642.00
Principles of Shipping Documentation and Practices	6/8/2019	15/8/2019	6 Days 6 & 15: (9:00am - 6:00pm) 7, 8, 13 & 14: (2:00pm - 6:00pm)	\$834.60	\$1,251.90
Enhanced Bunkering Practices (SS600 & TR48)	14/8/2019	16/8/2019	2.5 Days 14 & 15: (9:00am - 6:00pm) 16: (9:00am - 1:00pm)	\$1,070.00	\$1,605.00
Principles of Shipping Operations and Practices	20/8/2019	29/8/2019	6 Days 20 & 29: (9:00am - 6:00pm) 21, 22, 27 & 28: (2:00pm - 6:00pm)	\$834.60	\$1,251.90
Marine Insurance	22/8/2019	6/8/2019	2 Days (9am - 6pm)	\$481.50	\$722.25
Maritime HR Management	27/8/2019	28/8/2019	2 Days (9am - 6pm)	\$642.00	\$963.00
Principles of Shipbroking and Chartering	4/9/2019	6/9/2019	2.5 Days 4: (2:00pm - 6:00pm) 5 & 6: (9:00am - 6:00pm)	\$642.00	\$963.00
Compliance of the IMDG Code for Transport of Dangerous Goods	4/9/2019	6/9/2019	3 Days (9am - 6pm)	\$963.00	\$1,444.50
Basic Bunkering Practices (SS600 & TR48)	11/9/2019	12/9/2019	2 Days (9am - 6pm)	\$856.00	\$1,284.00
Intermediate Course on Shipping Documentation - Bills of Lading	19/9/2019	20/9/2019	2 Days (9am - 6pm)	\$601.34	\$902.01
Maritime Labour Convention 2006 - The Concise Perspective	25/9/2019	25/9/2019	1 Day (9:00am - 6:00pm)	\$385.20	\$577.80
Introduction to Shipping (Masterclass)	29/10/2019	30/10/2019	2 Days (9am - 6pm)	\$642.00	\$963.00
Introduction to LNG Bunkering	30/10/2019	30/10/2019	1 Day (9:00am - 6:00pm)	\$428.00	\$642.00
Shipping Law and Disputes	31/10/2019	1/11/2019	2 Days (9am - 6pm)	\$481.50	\$722.25
Understanding Import/Export Techniques & Documentation	6/11/2019	7/11/2019	2 Days (9am - 6pm)	\$481.50	\$722.25
Container Management and Practices	7/11/2019	8/11/2019	2 Days (9am - 6pm)	\$481.50	\$722.25
Basic Bunkering Practices (SS600 & TR48)	20/11/2019	21/11/2019	2 Days (9am - 6pm)	\$856.00	\$1,284.00
Effective Written Communication in the Shipping Industry	27/11/2019	29/11/2019	3 Days (9am - 6pm)	\$722.25	\$1,082.84

*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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Jurong Port
TANK TERMINALS

Jurong Port's new tank terminal is a liquid bulk terminal owned and operated by a joint venture between Jurong Port and Oiltanking (a subsidiary of Marquard & Bahls).

Designed to store and handle clean petroleum products and chemicals, new state-of-the-art terminal will have an initial capacity of 232,000cbm, with a potential to add approximately 310,000cbm in the future. Located at Jurong Port, the new tank terminal is well positioned for synergy building and operational efficiencies that would be seamlessly connected by pipelines and integrated into the petroleum and petrochemical network on Jurong Island. The terminal will cater to the needs of its customers and allow them to connect to their partners in other terminals.

For business enquiries, email us at jpttcs@jp.com.sg or contact our Commercial Manager Thomas Chee at +65 6413 9529.





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