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A revolution in marine lubes procurement
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Virtual tanker management is here!

"Digitalisation means greater transparency and lower operating costs"

Vinay Gupta, managing director, UMMS, see page 28





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THE STAGE IS SET FOR TECHNOLOGICAL PROWESS



Hong Liang Lee, Editor

Talk to any shipowner or maritime service provider about the need to continue to be conservative in the way they do business, and you will probably be met with a questionable gaze. Indeed shipping is traditionally a conservative business due to its history of being largely private and family-owned. But shipping, being the backbone of global trade, has to react to the changing dynamics of the global marketplace and adjust to the needs of an increasingly internet-savvy consumer base.

The journey of transformation to smart shipping involves utilising and applying technologies such as data analytics, internet of things (IoT), remote monitoring and control, unmanned operations and cyber security.

Singapore Solutions spoke to many players based in Singapore, both international and local companies, and we found an easy and uncontested conclusion that the country remains business-friendly and efficient for companies to carry out their operations and businesses. Apart from the sound legal and banking framework, transparent and supportive policies and the convenience and availability of services from the entire maritime cluster, a key attraction for international players is the country's ambitious goal and serious intent on progressing towards integrating futuristic technology into shipping and maritime.

In this 2018 edition of *Singapore Solutions*, you will read about several collaborations that are taking place among local authorities, educational institutes and industry associations. These co-operations are aimed at building a smart technological ecosystem for the maritime sector. There will be the use and application of big data, digitalisation, automation and drone technology, continued R&D and innovation, clean technologies and sensors, backed by the establishment of a knowledge-based hub to spearhead education and training of the next generation workforce.

Singapore is embracing new technologies and has launched a Sea Transport Industry Transformation Map, while ensuring LNG bunkering continues to develop smoothly. Port operators are teaming up with educational institutions to nurture young talent, and shipyards are focusing on moving up the value chain.

Shipmanagers and service providers are future-proofing their businesses with digitalisation and maintaining growth and efficiency and international classification societies are promoting smart and autonomous shipping.

Undoubtedly the wave of various technologies flooding the shipping and maritime sectors is itself a challenge for the community to understand and incorporate into their operations. This challenge is magnified as many owners and operators are currently struggling with tight cash flow or burdened with debts due to the protracted fundamental problem of demand-supply imbalances and low freight rates.

The offshore marine sector is currently in a depressed state, with the general consensus being that a sustainable recovery is still at least two years away. Container shipping is expected to see profitability provided that demand growth pans out as forecast and fleet growth is handled with care. The tanker shipping market is also not in a bad shape, and the chemical tanker segment in particular is expected to perform well in view of rising global demand and trade flows.

Singapore continues to register stellar numbers in 2017, as the republic is the world's second busiest container port and the largest bunkering port. The country has also won accolades for being a leading maritime capital and clinching the top spot in digital competitiveness.

There is optimism in the air, but challenges remain on the ground. Those that can maintain a firm footing while keeping an eye on the opportunities above are most certainly going to do well. **ss**

CONCESSIONS TO STAY COMPETITIVE



Port dues concessions are a welcome aid during tough times

Singapore promises to remain a competitive shipping port, particularly in light of various concessions it has put in place for 2018 to help the maritime industry weather the continuing challenging market ahead.

The Maritime and Port Authority of Singapore (MPA) has been proactive in monitoring market conditions, rolling out timely and appropriate initiatives that will help maritime companies ease their operating cost burden in 2018 and beyond.

Firstly, the MPA approved the extension of a concession of a 100% waiver of the Maritime Welfare Fee (MWF) for all vessels exceeding 75 gt with a port stay of not

more than five days. This concession will run until the end of 2019. The MWF is collected to provide welfare activities, training and subsidies for housing seafarers at Maritime House when they are in port.

Secondly, newbuild LNG-fuelled harbour craft qualify for a waiver of craft port dues for five years, with the waivers to be rolled out between October 2017 and December 2019. The MPA has also allowed a 10% port dues concession for LNG-receiving vessels that engage LNG-fuelled harbour craft for bunkering over the same period.

Thirdly, port dues concessions for container ships, bulk carriers and OSVs

have been extended until 30 June 2018. For oceangoing container ships carrying out cargo works with a port stay of not more than five days, an additional 10% port dues concession is added on top of the existing 20% concession.

For bulk carriers carrying out cargo works with a port stay of no more than five days, the existing 10% port dues concession was extended from 31 December 2017 for another six months.

The MPA also extended the incremental concessionary rate of S\$0.50 per day (US\$0.38) for OSVs from the current 90 days to 180 days, with the aid stretching until 30 June 2018. [ss](#)

Singapore launches Sea Transport Industry Transformation Map

Singapore has launched a Sea Transport Industry Transformation Map (Sea Transport ITM).

The aim is to grow the sector's value-add by S\$4.5Bn (US\$4.5Bn) and create over 5,000 jobs by 2025.

Developed by the Maritime and Port Authority of Singapore (MPA) in partnership with the industry, unions and other government agencies, the Sea Transport ITM builds on MPA's long-term plans to develop Singapore's next-generation port and strengthen its international maritime centre.

Singapore Maritime Foundation (SMF) chairman Andreas Sohmen-Pao said that the new strategy looks to strengthen intangible assets and capabilities, and is

not just about building physical assets.

"You may have noticed the key words in the Sea Transport ITM are connectivity, innovation and talent. This new emphasis – which includes non-physical flows like data and technology – will require new forms of collaboration. In other words, working together to develop ideas and to innovate," Mr Sohmen-Pao commented.

He added "This plays to a strength of Maritime Singapore, which is a cluster that is instinctively collaborative, collegiate and cohesive."

Five pillars of partnerships underscore the Sea Transport ITM initiative. They include a maritime technology acceleration programme to help bridge start-ups with

the maritime industry, digitalisation of trade and maritime documentation, human capital development for next-generation multipurpose ports and container ports, and the application of robotic process automation technology in the ship agency sector.

As the maritime industry transforms and grows, more than 5,000 good jobs will be created in the next decade. Those in more traditional job roles will undergo skill upgrading as jobs evolve with increasing automation and digitalisation.

On the global and connectivity front, Singapore will continue to strengthen its international maritime centre by building up the connectivity of maritime clusters overseas to harness the extensive network effects of such linkages. [ss](#)

Launch of the Sea Transport Industry Transformation Map



MPA EMBRACES NEW TECHNOLOGIES

The Maritime and Port Authority of Singapore is staying firmly on the track of technology advancement and intelligent operations as the future for the maritime sector of Singapore

The use of unmanned aerial vehicles can help shipowners save potentially millions in costs during a ship survey, and the busy port of Singapore is heading towards leveraging the drone technology for Singapore-registered ships.

The Maritime and Port Authority of Singapore (MPA) has been developing the acceptance criteria for the use of remote inspection techniques on board Singapore-registered ships, and the plan was rolled out in the first quarter of 2018.

M3 Marine group chief executive Mike Meade said the erection of scaffolding for a special survey of a VLCC, for example, can cost US\$2M. "You eradicate a need for that with the use of drones. But this drone technology is moving quicker than the big class society organisations, so there are instances where they are unable to deliver some of the services that we want from them," Mr Meade told *Singapore Solutions*.

MPA chief executive Andrew Tan said the port authority has been conducting several trials using drones to survey cargo tanks of ships, eliminating the need for traditional methods of survey

such as erecting staging. This also means surveyors do not have to climb to high places to check for defects.

"The use of drones also reduces man-hours and costs for shipowners – it is a win-win situation for all," Mr Tan said.

The onset of new technologies including drones and digitalisation open up new intelligent operations for ships and ports. "IoT, digitalisation and new technologies such as blockchain and smart drones are changing the way we work. To stay ahead, the Singapore Registry of Ships (SRS) needs to embrace these technologies to offer value-added services to its customers," said Mr Tan.

The MPA has embarked on a more digitalised path with the recent issuance of electronic certificates (e-certs) directly to Singapore-registered ships, in addition to e-certs issued by Recognised Organisations. This was rolled out at the end of last year.

Before e-certs, hard copies of over two dozen certificates had to be kept on board ships to provide proof of compliance with the various regulations or conventions applicable to them. Converting the hardcopy certificates to e-certs reduces manpower

and financial commitments in the preparation, printing and delivery of these certificates.

"The use of e-certs will save time and costs, reduce the risk of fraud, and do away with having to mail hard copy certificates to ships wherever they are in the world. We are one of the first flag administrations in Asia to test this out," Mr Tan said.

The SRS boasts more than 4,600 ships flying the Singaporean flag. The SRS is the fifth largest ship registry in the world with one of the youngest fleets.

In the long term, the MPA is looking at reducing customer turnaround time through automation such as using robotics processing to verify certificates, automatic approval of armed guards and issuance of mortgage confirmation.

"As you know, the industry continues to face strong headwinds. The offshore sector is going through a prolonged depression, while imbalances in supply and demand continue to weigh down on freight rates in the container segment. The tanker and bulk markets also remain volatile," Mr Tan said.

"Against this backdrop, the industry faces increasing regulatory pressures both at the IMO and national



ANDREW TAN (MPA): No let up for Singapore in the pursuit of technology and innovation

level as countries seek to make shipping more environmentally friendly.

"The onset of new technologies such as sensors, IoT and data analytics open up new opportunities for ships and ports to be more intelligent, interconnected and more ready for the digitalisation wave of change," Mr Tan commented.

He added that the next phase of development will see MPA focus on productivity, innovation, internationalisation of local companies, and jobs and skills for those in the industry. [ss](http://www.singaporeinnovations.sg)

Use of LNG as fuel continues apace in Singapore

KEY DEVELOPMENTS HAVE TAKEN PLACE IN THE REPUBLIC AND THE FOUNDATION FOR LNG BUNKERING TO BECOME A REALITY IS STRENGTHENING WITH EACH PASSING YEAR

In late December last year, Singapore's Pavilion Gas confirmed a contract to supply LNG bunker fuel to compatriot PSA Marine's LNG-fuelled tugs that are scheduled to be delivered in 2019.

PSA Marine has inked a deal to build one dual-fuel LNG harbour tug and awarded a second newbuild contract for a similar unit in January 2018.

Tugs are the workhorses in any port, and they will have to be one of the first to run on clean gas or low-sulphur fuel oil if the port is to set an example on regulatory compliance come 2020.

PSA Marine is set to benefit from a Maritime and Port Authority of Singapore (MPA) grant of up to S\$2M (US\$1.5M) for each newbuild tug, under the port authority's initiative to promote LNG bunkering via ship construction projects.

In December 2017 the MPA announced the injection of an additional S\$12M (US\$9M) to help companies co-fund LNG shipbuilding projects.

Half the amount will be earmarked to co-fund the construction of new LNG bunker tankers, and the other half will go toward co-funding the building of LNG-fuelled ships.

The first round of funding

under this LNG shipping and bunkering initiative started in September 2015 with S\$12M. All the funds from the first round have been utilised.

The funding aid by MPA on the construction of new LNG bunker tankers, however small the amount, is a much-needed cost offset because these vessels can cost upward of US\$30M.

In the middle of last year, Singapore LNG Corporation (SLNG) successfully performed its first small-scale LNG gas-up/cool-down and reload at its terminal on Jurong Island. The completion of the LNG reload operation demonstrates the SLNG Terminal's ability to break LNG cargoes into smaller parcels and facilitate deliveries of small volumes of LNG to other terminals in the region, or as bunker fuel to ships in Singapore port.

The operation was conducted at SLNG Terminal's secondary jetty, which is designed to accommodate LNG vessels from 60,000 m³ to 265,000 m³.

SLNG chief executive John Ng said SLNG is exploring possible modifications to the secondary jetty for it to accommodate LNG vessels as small as 2,000 m³. The bunker delivery was carried out by the 6,500 m³ *Cardissa*, owned by Shell and co-financed by the

European Union's Connecting Europe Facility.

The increasing focus on promoting the use of LNG as fuel is not surprising given the fact that the IMO Marpol Annex VI regulation on curbing sulphur emissions will kick in from 2020, mandating all ships to burn fuel with a maximum fuel sulphur content of 0.5%.

The use of LNG is one of the few solutions for operators, who can also opt to install scrubbers or simply buy the more expensive compliant fuel or distillates.

The LNG as fuel option faces hurdles such as an absence of a global interconnected LNG bunkering network, an insufficient number of LNG bunker tankers to conduct deliveries, and the inability of the clean gas to cut out emissions of carbon dioxide.

Singapore is conducting an LNG Bunkering pilot programme that will run until 2020. The pilot programme is testing operational protocols to ensure LNG bunkering can be carried out safely and efficiently.

A part of the pilot programme includes international co-operation. Singapore has started working with 11 global ports to establish a global network of LNG bunker-ready ports across the East and West. Some of the port members include Europe's Antwerp Port Authority, the US Port of Jacksonville, Japan's Ministry of Land, Infrastructure, Transport and Tourism, China's Port of Ningbo-Zhoushan and Canada's Port of Vancouver. [ss](#)

Singapore is not holding back in its efforts to become an LNG bunkering port



PSA makes future-

The port of the future needs a competent next-generation workforce, and PSA is not holding back on making sure Singapore will have this pool of young talent

If there is one area that PSA has put a lot of effort into for 2017, it is the nurturing of talent and the next generation of workers.

Over the course of last year, PSA launched joint initiatives with three Singapore-based educational institutes and formed another early this year. The series of partnerships with the educational institutes is in line with a mega 30-year project

to consolidate all port operations to a new Tuas Terminal that will feature state-of-the-art automated container handling technology. The operation of this technologically advanced new port will fall into the hands of the next generation by the time the project is fully completed.

In January 2018, PSA and Republic Polytechnic (RP) launched a joint Experiential Laboratory to provide an authentic simulated environment for classes to be conducted based on real-life port management and operations scenarios. The joint effort is part of a three-year memorandum of understanding between PSA and RP.

The lab is equipped with a port simulation hardware and software system mimicking operations at actual PSA container terminals allowing students to visualise how changes affect plans and their dependency effects.

Around 400 RP students from the Diploma in Industrial and Operations Management, Diploma in Supply Chain Management and Diploma in Aviation Management are expected to benefit from the Experiential Laboratory annually for their respective discipline modules.

PSA International regional chief executive Ong Kim Pong said "As PSA develops our next generation of highly automated and intelligent container terminals, we need to continue to attract young talent who possess the necessary competencies."

In November last year, PSA and the National University of Singapore (NUS) collaborated to develop human capital in advanced port technologies and intelligent systems.

PSA will jointly develop curriculum and programmes with the

PSA Singapore Terminals recorded a 9% increase in box throughput last year



proofing moves

NUS School of Computing and NUS Faculty of Engineering, where students will have opportunities to advance their knowledge in a wide range of areas, including data analytics, cyber security, automation and intelligent systems.

As the new Tuas integrated port will leverage automation technologies and intelligent interconnected systems to enhance terminal productivity and optimise processes, it will be important for the next-generation workforce to understand how new technologies and intelligent systems are applied to modern port operations and equipment.

Mr Ong said “PSA has moved quickly to embrace advanced port technologies and intelligent systems, such as data analytics, automation and robotics at our terminals as we prepare for Singapore’s container port of the future in Tuas.

“We have embarked on a plan to redesign jobs and build competencies, to continue to create exciting new career pathways for our present and future employees,” he said.

PSA will also provide and strengthen its support for NUS’ Global Engineering Programme, Innovation and Design-Centric Programme, and Co-Operative Education Programme.

In April 2017, PSA entered into a collaboration with the Institute of Technical Education (ITE) to launch a new Specialist Nitec course on port equipment drives and spreader controls, aimed at providing a structured course for ITE graduates to sharpen their skills in port equipment.

Conducted by qualified trainers at PSA Singapore, the ITE graduates will be trained to diagnose and rectify faults in port equipment drives and spreader controls.

In March 2017, PSA and Singapore Institute of Technology (SIT) signed a memorandum of understanding to co-operate on building knowledge in advanced port technologies and developing manpower for engineering and infocomm technology disciplines.

The collaboration displays both parties’ commitment in developing talents for the maritime industry through various platforms, as a skilled workforce is vital for PSA’s new generation of ultra-modern and intelligent container terminals.

As part of the memorandum of understanding, students and faculty from SIT will be exposed to PSA’s inner workings, with specialists from PSA delivering guest lectures on port technology and operations. PSA and SIT will also work together on applied research projects to explore solutions to business problems.

Meanwhile a four-party partnership was formed in January this year, bringing together PSA Corporation, Maritime and Port Authority of Singapore (MPA), Singapore Port Workers Union (SPWU) and Port Officers’ Union (POU), to work on a host of human capital development initiatives.

The collaboration under a memorandum of understanding will last for five years, covering training and development of port employees, enhancement of capabilities and outreach efforts to elevate the profile of maritime careers. These initiatives are aimed at equipping port employees with vital new competencies, and to attract youth and mid-careerists into the port sector, helping to ensure continued competitiveness of Singapore port.

On the technological front, PSA, Pacific International Lines (PIL) and IBM Singapore have agreed to collaborate to explore and trial proof of concept blockchain-based supply chain business network innovations. A memorandum of understanding was signed by the three parties in August last year.

PSA, PIL and IBM Singapore will work together to explore proof of concept using technologies such as blockchain to achieve better security, efficiency and transparency in regional supply chain business networks, as well as connect to trade finance solutions that can facilitate faster approval and fraud prevention.

Blockchain, a decentralised ledger technology used by a business network to securely exchange digital or physical assets, is gradually being integrated into the shipping and port businesses as a new mode of operation to prevent breach of sensitive data.

PSA group chief executive Tan Chong Meng commented “Across the global movement of goods and cargo, many activities continue to operate in silos. Blockchain has the potential to reduce inefficiencies and gaps within the supply chain, promote more cost-efficient transactions and facilitate the continued growth in world trade.”

Strong growth in PSA Singapore container volumes

PSA International’s flagship PSA Singapore Terminals handled 33.35M TEU of containers in 2017, representing a 9% year-on-year increase. PSA terminals outside Singapore moved 40.89M TEU of containers, bringing PSA International’s total throughput in 2017 to 74.24M TEU.

“In 2017, the global economy saw some recovery and bright spots of growth although the shipping industry continued to face challenges as the huge wave of consolidation and alliancing in 2016 began to manifest its full effects operationally,” Mr Tan said.

“The word ‘disruption’ has moved from being a buzzword to being the norm for most industries, reflecting the accelerated pace of change and leaving no industry untouched.”

He added that PSA has performed reasonably well against the challenging backdrop and tough competition. There is also a need to adapt and pre-empt the changing needs of shipping lines, amid developments and issues buffeting the industry in the forms of technological forces and IT security threats, he pointed out.

“In addition, we are also preparing for a future where logistics and supply chain needs are transformed by new technology trade, manufacturing and e-commerce dynamics,” Mr Tan commented.

“As we sail into 2018, we are cognisant that the world will continue to grapple with uncertainty geopolitically, economically and socially. The way businesses and consumers engage, transact and collaborate continue to evolve, and will have further impact on the form and flow of the global supply chain.” **ss**



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ENGINEERS FOR THE FUTURE

PSA Corp and the Institution of Engineers, Singapore (IES) have joined up to launch the Chartered Engineer certification programme for the port and marine sector.

The Chartered Engineer certification is an external validation of an engineer's experience, expertise and technical competence across various sectors. This collaboration allows port engineers with the requisite experience and training to gain a globally recognised certification of engineering professionalism. The partnership will also help develop engineering talent for the maritime industry.

A pioneer batch of 13 engineers from the Maritime and Port Authority of Singapore (MPA) were presented with the certificates late last year. These engineers passed a rigorous assessment process that looks at their experience and skills in managing complex engineering systems.

In tandem with the certification, PSA will collaborate with IES to identify relevant skills development programmes for the engineers to enhance their engineering capabilities, to meet the needs of the intelligent port of the future.

Some features of an intelligent port include unmanned drones, data analytics and simulation, augmented reality, robotic arms, exo-skeletons to perform physically demanding motions, and a future command centre to co-ordinate automated port equipment such as automated rail-mounted gantry cranes, automated guided vehicles and automated quay cranes.

PSA International regional chief executive Ong Kim Pong commented "This programme will give engineers from PSA and the industry an opportunity to receive internationally recognised validation of their experience, and a respected mark of professional competency. This collaboration will elevate the prestige of engineering careers in the port industry, attracting and retaining the talent needed for the future."

IES deputy president Dr Yeoh Lean Weng said the port and marine sector is a key contributor to Singapore's economic growth. "The programme's stringent peer review system and international benchmarking will help to build a strong core of competent engineers to support the development of the Tuas mega port, and will strengthen Singapore's position as a leading global maritime hub," Dr Yeoh said. **ss**



Certificates presented to the pioneer batch of engineers under the Chartered Engineer programme



Jurong Port building on landmark 2017

A NEW LIQUID BULK TERMINAL AND THE JOURNEY TOWARD A 'NEXT GENERATION MULTIPURPOSE PORT' FORM THE BACKBONE OF DEVELOPMENTS FOR JURONG PORT

Singapore's multipurpose port operator Jurong Port concluded 2017 with a few key milestones that touched on the expansion of R&D programmes, the launch of a joint-venture terminal and the opening of a skills learning academy.

In November Jurong Port and Nanyang Technological University (NTU) signed a five-year memorandum of understanding to jointly pursue R&D in areas such as smart multi-energy systems, alternative energy source applications and environmental monitoring solutions.

Both Jurong Port and NTU will conduct research projects and testbed solutions as part of Jurong Port's Living Lab programme, conduct mutual exchange of expertise including staff secondment programmes, and organise events to promote environmental sustainability through maritime outreach activities and thought leadership.

Jurong Port chief executive Ooi Boon Hoe said the partnership with NTU "forms the inaugural component of Jurong Port's Living Lab programme to testbed solutions for our journey towards a 'next generation multipurpose port.'"

In September 2017, Jurong Port and Oiltanking celebrated the official launch of their joint venture Jurong Port Tank Terminals, which has a total capacity of 480,000 m³ catering to storage and trading

of clean petroleum products. That capacity represents about half of the past year's additions to Singapore's overall capacity.

The liquid bulk terminal is supported by four jetties with draft of up to 17.6 m, capable of handling vessels up to 180,000 dwt. The terminal, located on 16 hectares of existing land in Jurong Port, will be connected via pipelines to the Jurong Island petroleum and petrochemical network.

Construction of Jurong Port Tank Terminals started in May 2017. It is on track for completion by 2019.

Jurong Port believes that the development of the new liquid bulk terminal will be an important milestone because it will reinforce Singapore's international maritime energy and chemicals hub status.

The Jurong Port Tank Terminals come at a time when the global petrochemical trade is on the rise as upstream activities slow down after the oil prices collapse in 2014.

The energy and chemicals industry accounted for about one-fifth of Singapore's total manufacturing value-added in 2016, and provided jobs for around 25,000 people. Globally, Singapore ranks in the top 10 by chemicals export volume.

Jurong Port is fully behind Singapore's drive to become an LNG bunker-ready port. It conducted the country's first LNG bunkering demonstration: a truck-to-ship transfer of LNG to a receiving vessel

alongside Jurong Port's berth.

Mr Ooi said the port is in a position to not only support LNG bunkering activities but also the development of regional LNG distribution.

January 2017 saw Jurong Port launch its new Jurong Port Academy that leverages new technology and innovation to enhance capabilities, increase productivity and upskill port workers. As workers are at the centre of port operations, a technology-enabled workforce can move away from routine and labour-intensive tasks to focus on productive and higher value-added activities.

Both new and existing port workers will benefit from the structured approach applied to develop a new generation of port professionals for the industry. The Jurong Port Academy will help to create a future-ready workforce.

Apart from the main terminal handling general, bulk and containerised cargo, Jurong Port operates the Offshore Marine Centre, a multi-user waterfront facility providing port services to companies engaged in fabrication of marine and offshore equipment.

On the international front, Jurong Port invested in strategic assets overseas with two joint venture terminals in China (Rizhao in Shandong province, and Yangpu on Hainan island), and two in Indonesia (Marunda Center Terminal in West Java, and Eastport in East Java). **ss**

PIL STAYING ON ITS OWN COURSE?

After a spate of consolidation and mergers in the container shipping industry, only four independent mid-sized carriers remain. They are PIL, Yang Ming, Hyundai Merchant Marine (HMM) and Zim. Among them, only Singapore-headquartered PIL is not government-linked.

PIL is also the last major Singapore-based container line after the partly state-owned Neptune Orient Lines – which owns operating arm APL – was sold to France's CMA CGM.

The family owned PIL, though, is managed by Teo Siang Seng, who has been a politically active figure in Singapore both as a nominated member of parliament between 2009 and 2014 and as the current chairman of the Singapore Business Federation.

Rumours persist that China's COSCO Shipping is looking to buy Singapore's Pacific International Lines (PIL). Industry sources contacted by *Singapore Solutions* have mixed views on the rumoured acquisition. Some have said it will be a strategic and natural move by COSCO Shipping because PIL can help fill gaps in its trading routes. Others say there is no reason for PIL to sell out, given its profitable niche service operations during a tough market (see also boxed item).

A partnership between COSCO and PIL was announced in September 2017 in a charter swap deal, wherein COSCO Shipping will lease one 6,600 TEU box ship and five 4,250 TEU ships from PIL, while PIL will lease six 5,500 TEU ships from COSCO Shipping.

COSCO Shipping explained that chartering the six PIL vessels would allow the group to cover routes to the US, New Zealand, Africa and India, as well as to benefit from securing deployment for its surplus vessels.

COSCO Shipping is a member of the Ocean Alliance. PIL is not a member of any alliances because the Singapore company believes that confers more

freedom to work with different partners across key trades. Indeed this has worked in PIL's favour as in January this year, for example, PIL collaborated with Ocean Alliance to launch two upgraded weekly services on the Far East-Red Sea route, superseding three previous services.

In the meantime, PIL is in the middle of a newbuilding programme that comprises 16 11,800 TEU containerships due for delivery between the end of 2017 and 2019.

As of January 2018, PIL owns and operates a fleet of 155 ships comprising 137 box ships with a combined capacity of 420,000 TEU and 18 dry bulk carriers/multipurpose vessels totaling 1.1M dwt.

The carrier is ranked 11th among the top container ship operators globally, with a dedicated network of feeder services covering a range of ports in southeast Asia, the Bay of Bengal, the east coast of India, East and West Africa, the Federated States of Micronesia, the Mariana Islands and the Pacific Islands. PIL offers a direct link for project and breakbulk shipment through its multipurpose service between the Far East and Africa, the Red Sea and Indian Subcontinent.



PIL ships trade across a range of ports in the Asia-Pacific

Container fleet growth to continue

The global container shipping segment is projected to see net fleet growth of approximately 4% in 2018, compared with 3.3% in 2017, according to BIMCO.

BIMCO chief analyst Peter Sand said the nominal fleet growth level over the next few years will also be around 4%, leaving little room for fundamental market balance improvements. The expected fleet growth is due mainly to the 20 new orders for 22,000 TEU ships that are scheduled to be delivered in 2019-2020.

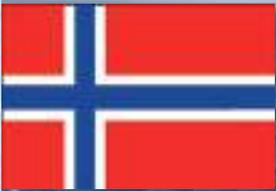
"As a result, increased earnings must come from continued cost-cutting

exercises and permanent slow-steaming to keep fuel costs on a tight leash. On top of that: operational efficiency gains and positive demand growth gain more boxes on the individual ships. The latter means harvesting some of the economies of scale the industry relies heavily on – with the large volumes coming from front-haul trades," Mr Sand explained.

He added that profitability is up for grabs across the container shipping industry, if demand growth remains in the region of 4-5% and actual fleet growth is "handled with care." **ss**

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BSM books growth in Singapore

International shipmanager BSM is keeping one eye on LNG as the group continues to record growth in the Singapore managed fleet

Bernhard Schulte Shipmanagement (BSM) continues to see business growth amid the protracted downturn of the global shipping market, as it enlarges its managed fleet in Singapore and looks to play a bigger role in LNG shipping.

BSM Singapore managing director Bob Maxwell affirmed that expansion is continuing, though the pace of growth can never be the same as in the previous shipping boom. "Business over the last few years has been good for us. It is not booming, but there is growth," Mr Maxwell told *Singapore Solutions*.

The managed fleet for BSM in Singapore has grown to 98, from just over 90 in 2017, and there are plans to

continue growing the fleet over the course of this year. The group's managed fleet is fairly spread across the different ship types, with two-thirds of the ships being gas and chemical tankers and one-third being bulk carriers and container vessels.

Mr Maxwell highlighted that LNG is a sector that BSM will not lose focus on, and the group believes it is already fairly connected to being part of a future where LNG will increasingly be used to propel ships. BSM has partnered with Babcock International Group to build a 7,500 m³ LNG-fuelled bunkering vessel scheduled for delivery in September this year. The bunkering vessel will operate in the Baltic Sea to supply LNG to ferries, containers, cruise vessels and other shore-based gas consumers.

BSM is also working with the Society for Gas as a Marine Fuel (SGMF) and the Society of International Gas Tanker and Terminal Operators (SIGTTO) to support the development and adoption of uniform operating standards for LNG shipping.

The move into LNG shipping fuel also means BSM has committed itself to crew and shore staff training, as well as getting up-to-date on the regulatory and technical aspects of operating an LNG-fuelled ship.

"LNG will be a great solution, especially for cruise vessels and ferries on fixed runs, as well as for large container ships on long-haul voyages," Mr Maxwell said.

He noted that due to the high cost of retrofitting existing ships to run on LNG, the use of LNG as fuel will mostly be for newbuildings. A good example is leading container line CMA CGM, with its plan to order nine 22,000 TEU ships to run on LNG.

"Over the next 10 years we will likely see 15% of the world's merchant fleet run on LNG," Mr Maxwell said.

LNG is also becoming a more common seaborne traded commodity due to the change in its pricing structure, and shipping has come to benefit from this, according to BSM corporate director Angus Campbell.

"We have seen the break in the link with oil on LNG prices, and that is making natural gas a more competitively priced fuel that is encouraging Asian countries to establish LNG import facilities such as FSRUs," Mr Campbell told *Singapore Solutions*.

Mr Campbell noted that the introduction of an FSRU can in turn prompt the existing pipeline producers to reconsider their pricing and make the LNG market more competitive overall.

The increasingly stringent IMO and European Union



A BSM officer on the watch

limits on fuel sulphur content will also restrict fuel choices over the next five years, accelerating the move to cleaner-burning fuels such as LNG, with a concurrent need for new technologies and LNG refuelling infrastructure in the world's major bunkering ports.

"As we look at environmental concerns, the decrease in use of coal for power generation and the increase in supply of natural gas as a comparatively clean fuel are reasons why we are seeing various countries in Asia establishing more LNG receiving terminals," Mr Campbell said.

Mr Maxwell observed that the small-scale LNG markets of Indonesia and the Philippines present vast opportunities for BSM, as there will be growing demand for FSO, FPSO and LNG carriers in the region.

Meanwhile, BSM further entrenched its position in the LNG business after it signed a deal in January 2017 to fully acquire LNG shipmanager PRONAV. Hamburg-based PRONAV specialises in large LNG tonnage. The BSM group currently provides management services for 23 LNG carriers.

Apart from the focus on the LNG sphere, BSM is continuously looking to tap big data and digitalisation to help owners get things done in a more efficient way, according to Mr Maxwell. "We will be happy if we can handle and apply 'medium data,'" he said, as the actual big data could be too voluminous and complex at this stage for shipping.

Big data also tends to refer to the use of predictive analysis, an important tool for

operators to know in advance if maintenance is needed, and to enhance workplace safety. Mr Maxwell said ship performance reports are collected and analysed to reap such information, and there is hardly a substantial cost increase for owners. Not to mention that prices for modern technology are on the decline due to the competitive nature of the technology industry.

Mr Maxwell added that shipmanagers are looking at vessel information in a more analytical way to get an overview of the status of the machineries and the overall vessel performance. "We are not just looking at numbers. Ship performance reports are now being collated and analysed in a more modern way – or you can call it predictive maintenance," he said.

BOB MAXWELL (BSM): Singapore remains an excellent business hub for shipmanagers



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FUTURE OF SHIPPING IS DIGITALISATION

The reality of autonomous shipping is not a question of if but when, according to Wilhelmsen Ship Management (WSM) president Carl Schou.

WSM has embarked on a growth strategy that centres on digitalisation, and a part of that strategy is to move its headquarters to Singapore, a place where the digital innovation drive is in full gear.

“We are already working on a concept for autonomous ships and the regulatory aspects of it,” Mr Schou said. He added that dialogues are ongoing with the relevant parties to bring this concept forward.

“We will be looking at a whole new operating model. For example, machinery on board must not break down during the voyage because there will be no crew to manually do repairs,” Mr Schou told *Singapore Solutions*.

“The future of shipping is digitalisation. In view of that, Singapore is the ideal place to have our headquarters because the country offers the full spectrum of activities within the maritime confines,” Mr Schou said.

WSM is relocating its global headquarters to Singapore from Malaysia’s Kuala Lumpur during the first quarter of this year. “The Singapore authorities have a strong focus on developing the maritime industry, and they have been extremely supportive. Being in Singapore enables us to position ourselves in the centre of an ecosystem that shares our ambitions for growth and digitalisation,” Mr Schou said.

Kuala Lumpur will continue to be an important location where shared services and back office functions will remain

operating to serve the global fleet, he added.

WSM provides full technical management to around 140 ships and crew management for over 200 ships, in various vessel segments including LNG/

LPG carriers, ropax and car carriers, FPSO/FSO, containers, cruise, bulk, seismic and offshore.

WSM’s other key services include drydocking, lay-up, newbuilding supervision, and green ship recycling. **ss**

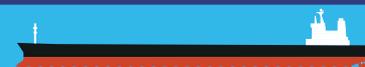


CARL SCHOU (WSM):
“We will be looking at a whole new operating model”

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Global Radiance to more than double livestock fleet



Livestock vessel *Awassi Express* has executed voyages for charterers and livestock exporters including ILE, Landmark and KLTT

Shipmanager Global Radiance is anticipating a busier year for livestock trades

Singapore-based Global Radiance has its sights set on the livestock vessels segment as it looks to expand its managed fleet. This is despite the challenges faced by the livestock industry in 2017.

Last year was difficult for the livestock industry because Australian cattle prices were high and Indonesia reduced its order intake. This compounded an already difficult market situation for managers of livestock vessels.

Global Radiance managing director Abdul Lateef Siddiqui told *Singapore Solutions* that in addition to the specific challenges posed by livestock vessels themselves, their management is made more time consuming by extremely stringent Australian Maritime Safety Authority (AMSA) inspections and regulations. AMSA will introduce new regulations on age limitation and livestock welfare under the new Marine Order Part 43 regulations, which will be enforced from September this year. Younger vessels will be the preferred choice for charterers so as to fetch higher charter rates and eventually give better returns to the investors/shipowners.

“No one can deny the fact that reliability for livestock vessels is more critical compared with any other type of vessel because livestock vessels have live cargo on board,” Mr Siddiqui commented.

Mr Siddiqui further noted that livestock vessels’ operating costs are much higher compared with other commercial ships, so it will not be viable to manage older livestock vessels that earn lower charter rates and have high operating costs.

But Mr Siddiqui firmly believes that 2018 will be a turnaround

year for the industry. An ever increasing global population means that there will be an ever increasing demand for food, he said.

Moreover, last year a groundbreaking deal was signed between Australia and China that will double Australia’s export of live cattle to China. One million cattle valued at more than US\$1Bn will be shipped to China each year. As such, the livestock business is healthy and only expected to grow, according to Mr Siddiqui.

Meanwhile Australia is also looking to restart livestock trading with Saudi Arabia. Trade between these two countries stopped in 2012. International Livestock Export chief executive Graham Daws said although there had been some positive developments, the process of renegotiating trade options and restarting trade between Australia and Saudi Arabia would be a lengthy process.

Global Radiance manages three livestock vessels, and will be adding four more in the first half of this year. Furthermore, the company is looking to take over two more units that are planned for construction. The company also manages three chemical tankers, one of which was added earlier this year.

Apart from specialisation in livestock vessel conversion and management business, Global Radiance is involved in the management of chemical tankers and other industry segments such as project management (including cold stacking, warm layup of OSVs, and manpower supply).

“The layup business is another area of focus for us and we continue to have strategic alliances with certain chemical suppliers and anchorage operators to handle the layup projects with care,” Mr Siddiqui said.

The company’s manpower arm supplies certified and experienced seafarers for long- or short-term requirements. Mr Siddiqui pointed out that the crew retention rate for their managed fleet is around 95%.

Global Radiance serves these diverse clients with a strong regional and global network. It aims to use this to provide customised and economical solutions to its clients, in order keep the operating cost low.

In addition to its headquarters in Singapore, Global Radiance has a back office in Karachi, Pakistan. The company is looking to open another office in Manila, the Philippines, by 2019. **ss**



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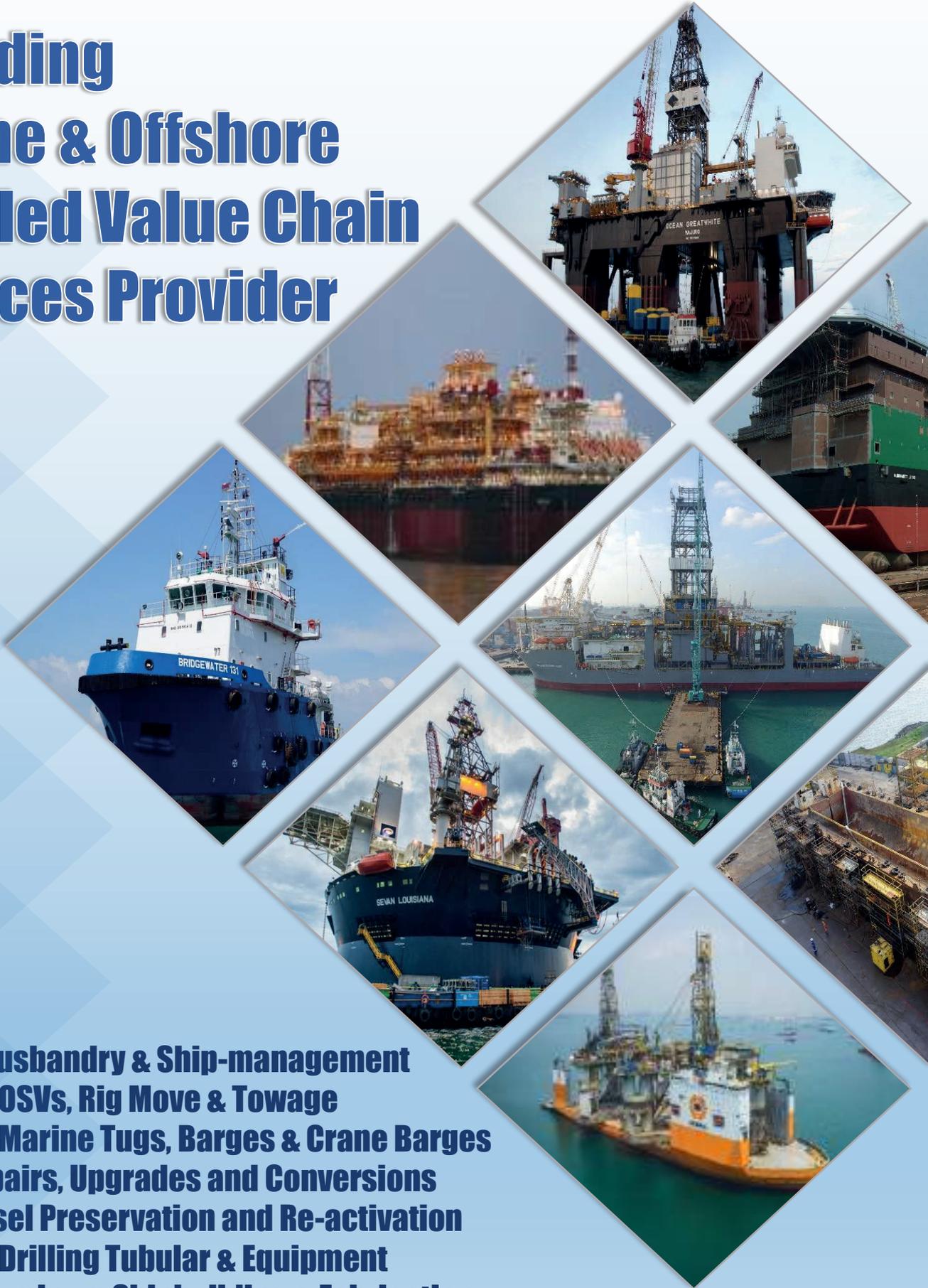
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Centennial Maritime Ventures' diversifying portfolio

Shipmanagement firm Centennial Maritime Ventures Pte Ltd (CMVPL) has expanded and diversified its portfolio to include crude oil tankers and dry bulk carriers. Last year its portfolio was just four product tankers.

The Singapore-headquartered shipmanager today boasts a managed fleet of bulkers and tankers including handysizes and mid-sized kamsarmaxes, as well as Aframax crude tankers, according to CMVPL general manager Amitabh Rastogi.

"We are looking at versatility in our business going forward. It is better to be in at least two shipping segments," Mr Rastogi said.

CMVPL, established in Singapore in 2015, took over the technical management of four 45,000-47,000 dwt product tankers from March 2016. The company also has an operations centre in Delhi, India.

The long-term goal of CMVPL is to manage between 30-35 ships from a mix of tankers and bulk carriers, Mr Rastogi said.

CMVPL senior manager Captain Tanuj Balani pointed out that the company has grown to be recognised by all oil majors, and business activities have picked up. "When we first took over the product tankers, our rating statistics were averaging six observations per inspection. We are now down to 2.9 observations per inspection," Captain Balani said.

Mr Rastogi added that the business-friendly environment of Singapore has allowed the company to achieve the growth that it wants to see. "Singapore has very supportive policies and a healthy tax regime that can encourage growth for the shipping market, especially during the

Singapore's business-friendly environment will propel the CMVPL managed fleet to 35 vessels

current difficult times," Mr Rastogi said.

He hopes that incentives such as the Maritime Cluster Fund (MCF) or similar policies will continue to be available for the long run. Introduced by the Maritime and Port Authority of Singapore, the MCF is aimed at supporting the maritime industry's manpower and business development efforts as well as its drive for productivity improvements.

On the near-term outlook for product tankers, Mr Rastogi said the market is expected to stay flat over the next six

months, largely unchanged from the past year or so. "The market may move up a little bit during the last quarter of this year. At the moment, owners are at least able to keep their heads out of the water," he commented.

The dry bulk market, on the other hand, has improved slightly compared with two years ago. "Going forward we may see the same trend of a soft rising gradient. China will continue to play a major role in supporting the bulk market," he said. **ss**

TANUJ BALANI (LEFT) AND AMITABH RASTOGI want to inject versatility into their business



WOOTZ GLOBAL GOES FOR DECOMMISSIONING

VIVEK KHABYA (WOOTZ GLOBAL):

The offshore market downturn has presented new opportunities



The offshore market's severe downturn has presented opportunities for Wootz Global, a Singapore-headquartered firm that has captured a share of the decommissioning market, and is eyeing the rig maintenance market.

The decommissioning work done by Wootz Global is concentrated in the southeast Asia region, where more than 700 offshore structures are waiting to be removed.

Wootz Global managing director Vivek Khabya said the group has been involved in parts of the dismantling process for over 70 structures in Malaysia alone. "Malaysia still has over 500 structures left to be removed, and Indonesia has about 100. Thailand has just started the decommissioning process, and it has about 120. They are all located in shallow waters and these markets are good entry opportunities for us," Mr Khabya told *Singapore Solutions*.

He said Wootz Global only gets involved at a particular stage during the decommissioning process rather than undertaking the entire work, which is typically completed in approximately three months. The most dangerous stage of the decommissioning process is the early work of plugging and abandonment of the well cap.

"We expect to generate revenue from the decommissioning market for the next three or even five years," Mr Khabya said.

He noted that due to the sluggish offshore market, many operators have

skipped the annual maintenance of their oil rigs. This has created a snowball effect and operators are now starting to look again at maintaining their rigs.

"We are into the fourth year of no maintenance for many rigs out there, and 2018 to 2019 will have to be the maintenance period," Mr Khabya reckoned.

During the last quarter of 2017, Malaysia's Petronas conducted a pre-award meeting for its maintenance, construction and modification (MCM) jobs, which translate into contracts collectively worth RM6Bn (US\$1.5Bn). The MCM jobs would run for five-year periods starting from the commencement of the respective contracts.

"We will go after specific shorter contract jobs where we go in to complete and come out in a quick turnaround time so as to capture revenue fast. We are taking on risks in our books, hence our contracts have to be completed fast," Mr Khabya explained.

Amid the active decommissioning and maintenance oil rig market, he observed that there are "very early signs" of recovery for the offshore oil and gas market. A crude oil price of about US\$50 per barrel is now the new norm that is "accepted and digested" in the finance books of the oil majors.

"I believe we are headed for an industry recovery. We have started seeing Petronas, PTT and Pertamina talk about their need for survey jobs and some new jack-up drilling rigs for 2018 onwards," Mr Khabya said.

Wootz Global has dipped its toe in the South American market in Ecuador, where the offshore market is at a very premature stage. The potential in Ecuador is in gas exploration of its shallow waters. Mr Khabya said the company has a local partner in the country to start geophysical and geotechnical studies.

Meanwhile the vessel chartering arm of Wootz Global is looking to firm up bareboat charter contracts for a pair of 120-tonne bollard pull AHTS vessels, one crew boat and one seismic support vessel or 60-tonne AHTS vessel. These ships will help execute Wootz Global's various projects. The company has the option to buy the vessels upon expiry of the charters ranging from three to five years.

Mr Khabya said the company is not looking at chartering dry bulk carriers due to the sector's severe oversupply. It is "flirting" with the more positive tanker shipping, but there are no commitments as yet. **ss**

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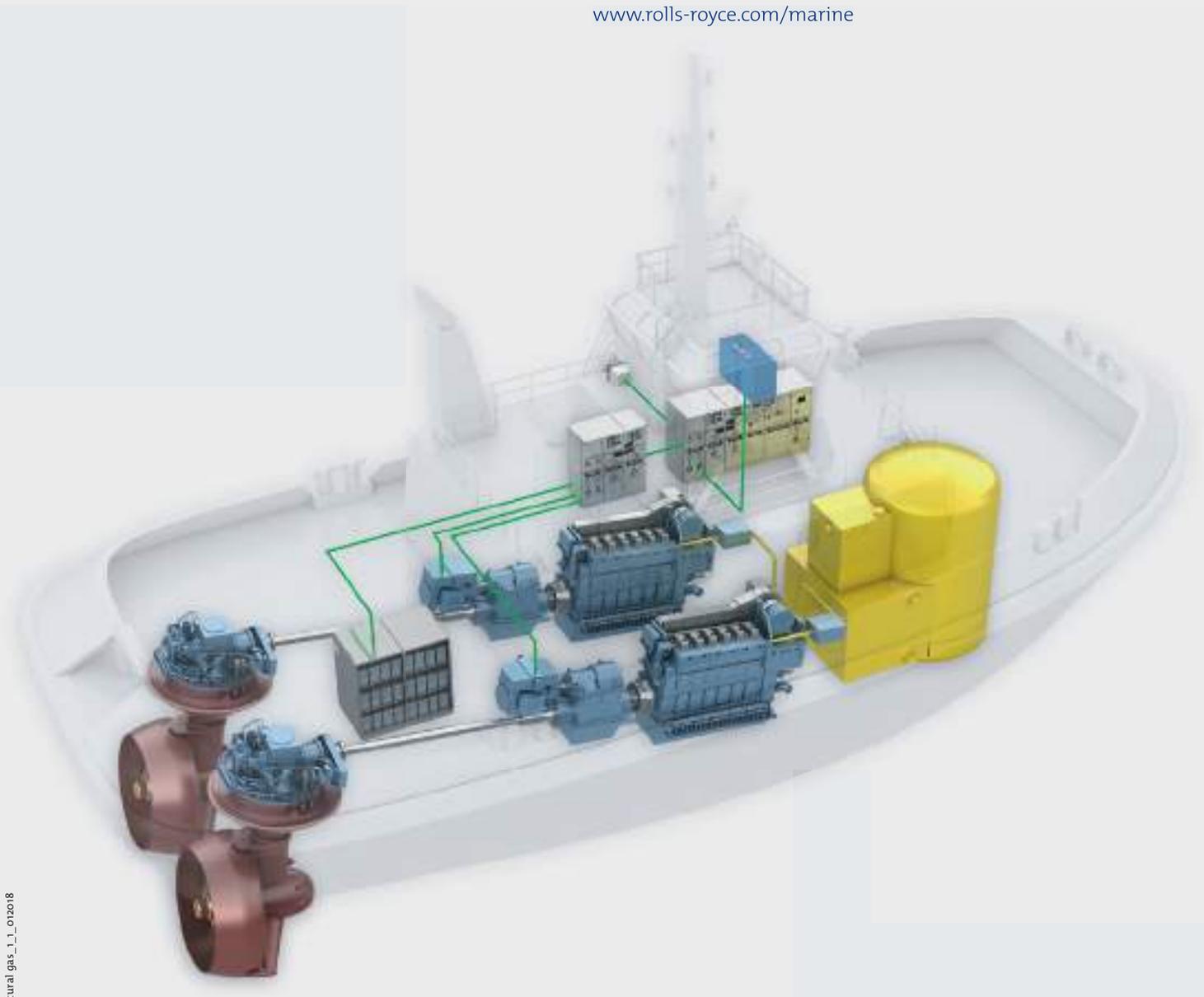


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EXPANDING ORIENT MARITIME AGENCIES IS IN BULLISH MOOD

Orient Maritime Agencies expects to handle up to 2,000 ships in the port of Singapore in 2018, a significant increase from slightly more than 1,000 ships last year.

Orient Maritime Agencies chief executive Lakhbir Singh said “We expect to handle 1,800-2,000 ships in Singapore this year. The market is there for grabs, we just need to strategise and approach the market correctly.”

The company also has a physical presence in Indonesia and Malaysia and its three offices handled around 1,600-1,700 ships in 2017, up from just over 1,000 in 2016.

The company clinched a new container husbandry contract in February 2017, in addition to the existing contract with Hapag-Lloyd. In 2017, the company also secured volumes from naval vessels and activity from this niche segment is forecast to grow this year, according to Mr Singh.

Orient Maritime Agencies launched in Singapore in December 2015. Its staff include many who were formerly with Jardines. The company is a pure agency business, carrying out works for bulk carriers, oil tankers and container vessels.

“We are volume-driven, especially in the Singapore market. Even though the shipping market is sluggish, there are still a lot of ships coming to Singapore simply because it is a port of convenience and operators know they can get things done here. In that sense volume has not dropped so much for us. In fact Singapore is a bullish market because the port is capable of quick turnaround times for arriving vessels. And with the charter market on a gradual rise, the turnaround time is becoming more sensitive for charterers,” Mr Singh told *Singapore Solutions*.

In 2017 Singapore port registered 58,055 vessel arrivals (containers, bulk carriers and tankers), compared with 58,587 in 2016 and

Singapore will continue to be the key market for the company, but plans are already underway to establish a presence in neighbouring Vietnam, Thailand and the Philippines

LAKHBIR SINGH (ORIENT MARITIME): “The market is there for grabs”



56,344 in 2015, according to statistics from the Maritime and Port Authority of Singapore (MPA).

In terms of vessel tonnage, Singapore port recorded 2,520,040 gt from containers, bulkers and tankers, compared with 2,419,746 gt in 2016 and 2,269,547 gt in 2015.

“The MPA has been very supportive when we first started out in Singapore and we were given a S\$30,000 grant, which was very helpful,” Mr Singh recalled.

“The Singapore market is moving very quickly to become a knowledge-base hub. From a ship agency perspective we are seeing that the use of technology will increasingly help us do our jobs more efficiently,” Mr Singh explained. He cited the example of the voluminous paperwork involved in the entire supply chain: the path toward digitalisation will greatly reduce the tedious process. The MPA recently teamed up with the Singapore Shipping Association (SSA) and a local start-up technology firm to look into developing a shipping agency tool utilising robotic process automation technology to automate manual processes and save time.

Looking ahead, Orient Maritime Agencies is planning to open an office in Vietnam, most likely in Ho Chi Minh City, within the year to capture opportunities in the country’s vast oil and gas market.

“In Thailand we already have a tie up with a local partner and have started handling some ships,” Mr Singh said. He added that the company is also looking to venture into the Philippines, Myanmar and eventually China. “If you really want volume you need to go to China,” he said.

Orient Maritime Agencies has contacts in Myanmar, but it does not expect to be able to fully enter that market in the near future.

“We will very much confine ourselves to the agency business. There is no aspiration as yet to get into asset plays,” Mr Singh said. **ss**

UMMS sets foot in Europe

Singapore-headquartered Union Marine Management Services (UMMS) established a presence in Europe with the opening of its office in Oslo, Norway, in March. This move set the stage for the company's planned expansion of its managed fleet.

VINAY GUPTA (UMMS):

Move towards digitalisation means greater transparency and lower operating costs



UMMS managing director Vinay Gupta has noted a "vacuum" in the western market as international shipmanagement companies have all started to look to the Far East for business and growth.

"Norway has a long history in shipping and there are a lot of shipowners there, but there is a lack of shipmanagers in Oslo and the wider Scandinavian region. While some shipmanagers do have a representative office there, there are no technical services to really look after the interests of the owners," Mr Gupta told *Singapore Solutions*.

The new UMMS Norway office, located in downtown Oslo, started with a team of five people comprising technical and operations staff. For a start, UMMS has moved eight vessels from Singapore to be managed from Oslo.

The boutique shipmanagement firm has a portfolio of 39 ships with 36 on full technical management and three on crew management,

servicing seven shipowners located around the world. The fleet has grown consistently since inception. UMMS added 11 ships to its portfolio in 2016, and seven ships in 2017.

The UMMS managed fleet is majority bulk carriers plus a handful of container vessels and car carriers. While there are no tankers in the UMMS fleet yet, Mr Gupta said the company has every intention of entering the tanker market whenever the opportunity arises.

For 2018, UMMS is already committed to five more vessels, while a few older vessels may be sold. By 2020, the company plans to take on three larger container vessels and intends to further increase the container fleet. At present, UMMS has only two feeder containers on its fleet trading between China and Japan.

"Our intention is to grow to a fleet of 50-60 Singapore-managed ships, beyond which we believe the control on operation becomes a bit weak. We hope we are able

to continue sustained growth in the coming year, and come closer to our target figure," Mr Gupta said.

In a digitalisation move, Mr Gupta said the company has gained significant growth mileage since the commercialisation of its inhouse cloud-based shipmanagement Enterprise Resource Planning (ERP) system in mid-2017.

One of the features of the ERP system is 24/7 robotics software that helps to automate some of the processes to increase productivity, improve efficiency and avoid human errors. "We are also in the midst of marketing this inhouse system to third parties and other shipowners," Mr Gupta said.

"Part of our success story has been because our system is able to demonstrate transparency and achieve 100% compliance. The software is also a strong value-add service to strengthen our core shipmanagement business," he said.

MTM focuses on efficiency

MTM Ship Management will focus on efficiency rather than expanding its fleet portfolio amid the prolonged downturn of the shipping industry.

Managing director Vijay Rangroo said he is sticking to his belief in an 'owner-first' strategy, with services revolving around how best to benefit owners.

"We are not interested in looking at the number of ships in our portfolio as a way to gauge our growth," Mr Rangroo told *Singapore Solutions*.

"Efficiency is the key. Even with the hype surrounding all that digitalisation or modernisation of your operations, they seem to be only for 'look good' purposes. Our principle has always been how to benefit the owners," he said.

The shipmanagement company manages a fleet of 64 vessels comprising 14 owned dry bulk carriers, eight third-party managed bulker carriers and container vessels, and 42 tankers. The company

has four newbuild 30,000 dwt chemical tankers under construction, which are scheduled for delivery in phases over 2018.

There are no plans for now to look for more vessels to manage. But MTM Ship Management will pounce on opportunities in any vessel segment because the ship type "makes no difference to its operations" due to the company's experience in handling different ships.

The company was founded in Singapore in 1988. Mr Rangroo said the city-state continues to be the ideal location for MTM Ship Management, which employs about 60 staff in its Singapore office, mainly taking care of shipmanagement and vetting services. It also has around 60 staff in Mumbai, India, as well as crewing and training offices in Manila, the Philippines, and Yangon, Myanmar.

"Singapore has always been preferred due to the country's sound infrastructure, reliable banking system, good education structure and availability of local talent," Mr Rangroo said. But he noted that the cost of doing business in Singapore has been on the rise in recent years, putting pressure on margins in an already difficult market. **ss**

EXCELLENCE IN SHIP DESIGNS



| Chemical / Product Tanker (IMO2) design of 8,000 dwt, 13,000 dwt, 18,000 dwt, 25,000 dwt and 51,000 dwt with dual fuel, tier 3, optimized cargo capacity and hull form, wave cutter bow & asymmetrical stern features.



| PSV design of 64m / 2,000t, 70m / 3,000t, 77m / 3,600t, 78m / 4,000t, 83.6m / 5,000t, 92m / 5,000t (shallow draft) and 90m / 6,000t deadweight.

| AHTS design of 62m / 65t, 65m / 80t, 70m / 100t, 73m / 125t, 76m / 150t and 85m / 210t bollard pull.

| OCV / MWV design of 65m, 78m, 85m, 88m, 95m, 115m, 120m with complement up to 300men.

| DSV / SOV design of 70m, 90m, 105m with various offshore fittings.

| ERRV design of 62m, 65m (with AHTS functions)





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Singapore-listed shipyards face different fates

Nam Cheong's first diesel-electric MPSV, the first ever to be built in Malaysia

China's Yangzijiang Shipbuilding and Malaysia's Nam Cheong, both listed on the Singapore Exchange (SGX), are facing different fates. The former is set to reinforce its position in the republic, while the latter has a gloomy outlook.

Last year, Yangzijiang Shipbuilding celebrated the 10th year anniversary of its listing on the Singapore Exchange (SGX). Group executive chairman Ren Yuanlin said the listing on SGX has given the Chinese shipbuilding company the exposure needed to grow an international business, and that the group will continue to maintain a strong presence in the republic.

Back in 2015, Yangzijiang Shipbuilding had delisted from the Taiwan Stock Exchange (TSE) due mainly to the small trading volume and the cost of maintaining the listing.

A recent development in Singapore for Yangzijiang Shipbuilding, through its subsidiary Yangzijiang Shipping, is the establishment of a new vessel leasing and chartering subsidiary. The Chinese shipbuilder entered into an agreement with several strategic partners (undisclosed) to set up Yangzijiang Taihua Shipping Pte Ltd.

Yangzijiang Shipbuilding will own a 49.45% interest in Taihua Shipping through Yangzijiang Shipping, while the remaining 50.55% equity interest will be held by the strategic partners. Yangzijiang Shipbuilding said this new set up can help the group "better position itself in the shipbuilding industry when opportunities arise amid the current trend of consolidation."

The Chinese shipbuilding industry continues to struggle with excess capacity and a dearth of new orders, leading to the shutdown of many privately owned shipyards. Mr Ren anticipated that it will take another three or even five years for the Chinese shipbuilding market to recover.

Yangzijiang Shipbuilding, which mainly builds container vessels and bulk carriers, has ventured into the construction of crude oil tankers. The group acquired a half-completed 157,000 dwt Suezmax tanker from defunct compatriot Rongsheng Heavy

Industries late last year as a stepping stone to make its mark in crude tanker construction.

Nam Cheong, another Singapore-listed shipbuilder, is facing threats of bankruptcy as it struggles to come to an agreement with its noteholders and creditors on the approval of a restructuring plan under a scheme of arrangement.

The plan would see shares and convertible bonds issued, provide potential equity upside and an opportunity to exit immediately through cash out or immediate share conversion options. Nam Cheong stated that the "timing and amount of recovery under a liquidation scenario is highly uncertain given the depressed OSV sector." The group stressed that the scheme would offer significantly higher recovery than a liquidation scenario.

The financial restructuring of Malaysia-based Nam Cheong involves approximately US\$220M of unsecured debts.

A liquidation scenario and subsequent delisting from the SGX is a real threat for loss-making Nam Cheong, a builder of OSVs caught in the offshore market downturn with 13 unsold vessels under the company's build-to-stock business model. Nam Cheong delivered only two vessels in 2016, compared with 11 vessels in 2015, 24 in 2014 and 20 in 2013.

Meanwhile Nam Cheong has sold an office located in Singapore as part of its restructuring plan, with all proceeds from the disposal going towards settlement of an outstanding amount under a credit facility granted by DBS Bank.

During better times back in late 2012, Nam Cheong launched Malaysia's first diesel-electric multipurpose PSV, equipped with remote-operated vehicle mezzanine deck, and an 800 m³ deck area.

In 2014, Nam Cheong launched a new diesel-electric AHTS vessel with 80-tonne bollard pull based on its proprietary design. The energy-efficient vessel is equipped with selected electric drives for lower fuel consumption and medium-speed controllable pitch thrusters to provide better operational response. **ss**

Keppel puts up strong

Singapore's rigbuilding and repair yards will continue to be challenged by a listless offshore and marine market this year, though a glimmer of optimism and pockets of opportunities have surfaced



The KFELS Super B Class jack-up rig

The global offshore oil and gas industry is not out of the woods yet, leaving major rigbuilding yards still reeling from the impact of a lack of newbuilding orders and a slash in earnings. Singapore's Keppel Corp, known for its leading role in global rigbuilding, saw its full-year results bogged down by its weak offshore and marine business division.

Keppel Corp's offshore and marine division incurred a full year loss of S\$835M (US\$638M) compared with the profit of S\$29M for 2016. The loss was a combination of a one-off financial penalty, lower revenue, an additional S\$81M provision for losses on the Sete Brasil rig contracts, an impairment of S\$54M made to other assets and a lower share of associated companies' profits.

In 2017, the offshore and marine division secured new contracts of approximately S\$1.2Bn mainly for LNG-related vessels, the conversion of FPSO units and newbuild dredgers. The handful of new contracts is already crucial because they contributed to stabilising Keppel's finances. Keppel Offshore & Marine (Keppel O&M) landed a contract worth S\$120M to build two dredgers for Jan De Nul. It also won a S\$103M deal to build two LNG carriers for Stolt-Nielsen Gas.

Keppel AmFELS, a subsidiary of Keppel O&M, secured a contract worth more than US\$400M from Pasha Hawaii to construct two LNG-fueled container ships.

Keppel Shipyard, another subsidiary of Keppel O&M, clinched an FPSO conversion contract from SBM Offshore. The shipyard also won

fight in tough market

a deal worth S\$85M for the conversion, repair and modification of vessels for both new and existing clients.

Keppel Corp chief executive Loh Chin Hua commented “In the past year, amid a challenging environment, Keppel delivered on projects, entered new markets, seized new opportunities, and established vehicles and engines for growth.”

In January this year, Keppel FELS delivered a jack-up rig to Borr Drilling, the first of five under a bumper contract sealed in March 2017. The contract for building the five rigs was originally with Transocean before it was novated to Borr Drilling.

The delivery dates of the five KFELS Super Class B jack-up rigs were originally between 2016 and 2017, but they had been deferred by Transocean to 2020. The first three rigs will now be delivered between 2017 and 2018, while the remaining two rigs will be delivered in 2020. Keppel FELS said this

will enable it to improve cash flow and minimise the risks of the projects.

All the rigs are KFELS Super B Class designed to operate in 122 m water depth and drill to 10,500 m. With a two-million-pound drilling system and a maximum combined cantilever load of 3,700 kips, the KFELS Super B Class is equipped with tremendous horsepower during drilling operations. In addition, each rig will be installed with offline stand building features in its drilling system package, which allows drilling and the preparation of drill pipes to take place at the same time. The rig is capable of drilling at a 23 m outreach, allowing for coverage of a larger well pattern.

The rig acquisition spree by Borr Drilling included its October 2017 purchase of another nine jack-up rigs from Sembmarine’s PPL Shipyard, Keppel’s Singapore rival in rigbuilding. The nine jack-up rigs will be delivered in phases

to Borr Drilling until the first quarter of 2019.

“There is growing optimism in the offshore and marine industry, following the recovery of oil prices on the back of extended supply cuts by OPEC and other oil producers. The increase in offshore rig transactions has also helped to improve the outlook,” Mr Loh said.

“But the rig market continues to be plagued by a supply overhang, and both utilisation

and day rates remain low. While FIDs have doubled in 2017 compared with 2016, and are expected to gather momentum as oil companies restart their oil exploration and exploitation programmes, it may be some time yet before they translate to orders for new drilling units,” he said.

Nonetheless, Keppel continues to see “opportunities in the demand for production assets, LNG solutions and specialised vessels,” Mr Loh added.

Keppel Shipyard clinched an FPSO conversion contract in 2017



RESULTS HIT BY ONE-OFF FINANCIAL PENALTY

Singapore-listed Keppel Corp reported a net loss of S\$495M in the fourth quarter of 2017 as against the net profit of S\$143M in the same period of 2016. The net loss mainly arose from a one-off penalty and related costs as well as the weaker operating results of its offshore and marine division.

For the full year 2017, Keppel Corp registered a profit of S\$217M, down by 72% from the S\$784M profit for 2016.

Last year Keppel O&M reached a global resolution with law-enforcement authorities in the US, Brazil and Singapore, bringing closure to investigations into corrupt payments made by a former agent of Keppel O&M in Brazil. The global resolution relates to improper payments that were made to Brazilian Government officials between 2001 and 2014 in relation to Keppel O&M’s various projects with Petrobras and Sete Brasil.

Keppel O&M has agreed to pay fines totaling US\$422M to the three jurisdictions. The financial penalty is accounted as an extraordinary item and its impact is one-off.

Mr Loh said “The global resolution reached by Keppel O&M over past misdeeds in Brazil brings an end to what has been a painful chapter for Keppel – one that we have recognised and dealt firmly with. This is not Keppel. We are not just about results, but also how they are obtained.

“The past practices uncovered at Keppel O&M do not reflect how the Keppel Group conducts business today. Keppel does not just care about results, we care deeply about how our results are achieved. We have zero tolerance for corruption.”

Mr Loh added that effective compliance controls are now embedded across all the group’s businesses, supported by rigorous anti-corruption training and compliance. **ss**

FOCAL MARINE KEEPS AN EYE ON LNG

Steering away from the sluggish OSV market, Focal Marine is picking up pace in the tanker shipping market and bunker tanker sector

Ship designer Focal Marine & Offshore (Focal) is continuing with efforts to break into the LNG market and maintaining its focus on the tanker shipping segment, while steering away from the lacklustre offshore market.

The 2004-established Focal has offices in Singapore and Shanghai. It had been involved mainly in the tanker shipping segment before it moved into offshore during the market boom of 2009-2014. The crash of the offshore market saw Focal return to the more positive tanker shipping market from 2015.

The company has made new headway in tanker vessel designs, rolling out the WACBAS design for 51,000 dwt chemical/product tankers. A global drive toward cleaner modes of transportation has put LNG shipping under the spotlight, prompting Focal to venture into this clean gas segment.

Focal general manager Shu Jun told *Singapore Solutions*: “We are constantly making efforts to get into the LNG shipping market, and there is huge potential in the small-scale LNG market of Indonesia.” He added that the company is targeting the smaller 10,000 m³ LNG carriers.

Focal’s interest in the tanker segment ranges from small to medium-sized chemical/product tankers to the larger Aframax crude tankers. The WACBAS hull (WAve Cutter Bow & Asymmetrical Stern) design reaps 3-5% better propulsion efficiency and reduces bow slamming. The design can optimise cargo capacity, and allow the option of LNG as fuel and the stainless steel cargo-only tank option.

“We need something unique to win business in a competitive market. The important consideration is to put zero extra cost on owners, but allow them to benefit from hull effectiveness for long-term savings,” Mr Shu said.

Focal is also looking for deals in the bunker tanker segment.

Singapore, the world’s largest bunkering port, is a big market to tap into. The trend of bunker tankers getting bigger to match larger capacity ships, and of them becoming more ocean-going vessels than being confined to port waters, means that incorporating energy-efficient design for bunker tankers is increasingly important.

“There is a need to provide better systems solutions on bunker tankers,” Mr Shu said. These systems can include cargo monitoring, fuel management, custody transfer and tank level gauging.

The gradual heightening of interest in LNG bunker tankers is another area in which ship designers like Focal Marine see potential. Singaporean authorities are making a big push for the port to become an LNG bunker-ready port, and that means there is huge potential to bring in more LNG bunker tankers.

As for the offshore market, which is still in a recessionary state, Mr Shu shared that he has seen a slight increase in enquiries. “We do see enquiries about conversion jobs such as from PSVs to ROV support vessels, fishing boats or windfarm vessels. They are not big contracts, but they still help in terms of revenue contribution,” he said.

The company’s portfolio includes two chemical carriers, three Aframax tankers and two product tankers, all completed since 2008, as well as OSVs including PSVs, AHTS, OCVs, ERVs and accommodation barges.

Some of the company’s designs include the Focal 523 featuring diesel-electric DP3 with Voith propulsion. There is also the Focal 530 featuring diesel-electric DP3 with azimuth propulsion, two offshore cranes, one walk-to-work active heave compensated gangway, and accommodation for 300 persons. Some other designs include the Focal 552 DP2 ERRV, the Focal 528 diesel-electric PSV, and the Focal 539 DP3 that includes ROV operation. **ss**



Focal's portfolio includes two chemical carriers

Shipping needs to react to Minamata Convention



SAGAR TANKSALI (SERAPHIC ENERGY): The Minamata Convention is important at various levels

The global shipping industry will need to start making preparations to replace all onboard products that contain mercury, mainly lighting equipment, ahead of the Minamata Convention that will come into force in 2020.

“The impact on shipping is that all commercial lights need to be replaced, and during that process there will be difficulties in the disposal of the conventional lights,” said Seraphic Energy director Sagar Tanksali.

As of January 2018, 128 countries have signed the treaty and 85 have ratified it. The countries that have ratified include China, the US, Panama, Brazil, Japan, Singapore, all the Scandinavian nations, and almost all western European nations.

The Minamata Convention, a global treaty to protect human health and the environment from the adverse effects of mercury, was adopted in October 2013 in Japan. The convention arose from a prolonged mercury poisoning from 1932 to 1968 in Minamata village in Japan, leading to thousands of deaths and deformities.

Under the provisions of the Minamata Convention, the governments have agreed on a range of mercury-containing products whose production, import and export will be banned by 2020. The products include batteries, switches and relays, compact fluorescent lamps, cold cathode fluorescent lamps (CCFL),

thermometers, hygrometers, and manometers.

Mr Tanksali pointed out that some countries have requested certain exemptions to the convention until 2025, such as Canada exempting CCFL, China and Peru exempting thermometers and BP monitors, and Iran, Lesotho and Swaziland exempting all products.

“My guess is that there will be no more exemption requests,” Mr Tanksali said. He observed that the shipping industry has ignored the Minamata Treaty, but that it is important for the market to react now with fewer than three years until governments enforce the convention.

Mr Tanksali believed that while the outcome of implementing the Minamata Convention will result in a much safer environment for the world in general, the switch would cause substantial inconvenience to people in the short term.

“While land-based businesses and factories can manage the outcome better, marine industry – especially the vessels on high seas – would face a lot of difficulties,” Mr Tanksali told *Singapore Solutions*.

“A few proactive companies that have taken the precaution will tide over without any hitch. Not so the others. What surprises us at Seraphic Energy is that governments of different countries are keeping silent about this convention. This applies also to

a proactive and sensitive government like Singapore. I would like to see governments issuing ‘public interest’ notices in popular media about the treaty. People must be apprised about Minamata well in advance so that mercury-free replacements are procured gradually over a period of three years without causing a price spike,” he explained.

An alternative for shipping companies would be to switch to LED lights. Mr Tanksali foresees that there will likely be a huge spike in demand for clean lighting technologies from 2020.

Seraphic Energy has been working on a search-light product using LED technology. At present, the industry has to depend on xenon arc technology from the World War I era, according to Mr Tanksali.

“While there are a few LED searchlight vendors/makers, their products are either inadequate or extremely expensive. We are trying to launch a search-light product that offers a clear 2 km (or longer) beam and is not too heavy on the pocket. A couple of prototypes have already been deployed on a bulker belonging to one of our customers. We are awaiting their feedback to fine-tune the product. This product will have about 300 W of driven power and will employ advanced optics,” he explained.

Late last year, Seraphic Energy entered into an agreement with Singapore-based National Forwarder to store its lights at their warehouse. Mr Tanksali said that this development allows its Singapore customers to procure its products quickly and without having to pay for long-distance freight. **ss**

SPADE CONSULTING SETS AMBITIOUS TARGETS

Working collaboratively with clients yields dividends

Singapore-headquartered Spade Consulting has set its sights on an ambitious regional expansion in 2018, targeting the establishment of a physical presence in developing countries to help companies grow their businesses via structured and personalised approaches.

Spade Consulting managing director Kiran Sreedharan said his vision for this year is to expand regionally to countries such as Bangladesh, Cambodia, Indonesia, Myanmar and Vietnam.

“Everyone has their own niche. For us, we offer strategic insights and work with our clients to solve the problems together, rather than solving the problems for them,” he told *Singapore Solutions*, adding that the company prides itself as a strategic long-term partner to its clients with a specific focus on the maritime space.

The key services offered by Spade Consulting include virtual CFO, corporate structuring and business advisory, project and structured finance, company incorporation and compliances, accounting, tax and immigration services, business expansion and turnaround.

The virtual CFO service is suited to medium- and large-size companies, those that are in their growth stage or companies that are in distress. “For an

owner with three to five vessels, as an example, wanting to take the business to the next level and expand the accounts and finance team, we can come in on a retainer basis to advise on scaling up, overseas expansion or restructuring current operations,” Mr Sreedharan said.

There is also the finance efficiency aspect, where Spade Consulting can assist in optimising cash flows and budgeting of funds.

Mr Sreedharan also shared the example of bunker traders looking to become shipowners, where new governance mechanisms need to be established and old systems replaced with new ways of operations, as well as implementing financial checks and balances.

“We will help our clients achieve finance efficiency by streamlining the financial structure and strengthening internal processes and controls,” he explained.

Another service aspect is project financing, such as raising money to fund new ships, negotiating with banks to get financial support and navigating the legal minefield. “We can help companies venture into difficult markets such as Africa and India, with risk assessment alongside on-the-ground presence, strong due diligence when on the lookout for local partners, and management of the flow of funds,” he said. **ss**



KIRAN SREEDHARAN (SPADE CONSULTING): We help clients achieve financial efficiency by streamlining financial structures and strengthening internal processes

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SINGTEL FINDING THE RIGHT NOTES ON MARITIME CONNECTIVITY

SINGAPORE SOLUTIONS SPOKE TO SATCOMMS PROVIDER SINGTEL

What technological developments from Singtel can benefit the wider maritime industry?

Singtel partnered with Alpha Ori as part of an MPA collaboration to provide the maritime industry with a more efficient and cost-effective way of managing their fleets using secured broadband satellite combined with cybersecurity and internet of things (IoT) applications on data collection and analytics which tracks and analyses more than 5,000 data points from the ships' navigation, engine performance and cargo handling systems. This will enable ship operators to make real-time decisions with real-time data which will improve operations efficiency such as re-routing ships to achieve better fuel efficiency or conducting maintenance work only when necessary.

Singtel is partnering with Singapore Maritime Academy to drive initiatives in crew training and development. This will kick-start the development of a crew portal where training and informative materials are

available online through this portal and with ease of access at sea via a data platform.

For maritime cyber security, Inmarsat partners with Singtel to enhance the

vessel-side protection by the software-based unified threat management (UTM) from Trustwave (Singtel's cyber security arm). The Singtel Cyber Security Institute was

SingTel operates antennas at a land earth station in Singapore



also launched to provide security training to different levels of business.

Can you provide an update on Singtel's satellite internet service in terms of any upgrades to the bandwidth, speed and uptake by companies?

The data transmission between ships to shore will be secured using Singtel's Fleet Xpress high-speed satellite broadband service. Singtel's leadership in satellite communications and cyber security helps to further secure data exchange between ship and shore. These innovative communications solutions can also help reduce the cost of data exchange for digitalised ships, preventing cyber incidents occurring and hindering the operations of vessels.

Considering the sluggish environment of the shipping

market, what has been the response of owners/operators in terms of investing in systems and technology upgrades?

The market response in systems and technology upgrades has been lukewarm for the past year with only about 5% upgrading their service. Budget constraints seems to be the key reason for not investing. The outlook for 2018 may not be too promising as ship supply will continue to outstrip demand, ship owners/operators would likely defer their plans to invest in new systems and technology.

What is Singtel's view on digitalisation? How far-fetched is this in view of the conservative mindset of shipowners?

The maritime industry is undergoing a wave of digital transformation.

There is a strong drive towards autonomous ships where operational efficiency is the key focus in ship management. Human errors will be reduced to a minimum and onboard IoT will become a reality. Satellite broadband communications will be a norm where data transfer becomes essential for ship-shore communications. Fleet managers can make real-time decisions from the comfort of the office via a portal. Many companies are already developing both hardware and software for big data collection on board and performing data analytics to help ship captains better manage their vessels. Despite budget constraints, some companies are keen to find out how digitalisation of ships will help improve efficiencies and reduce manpower. There is revelation in how digital transformation in the maritime industry is seen in

the areas of cyber security. With more data transfers between ship and shore, there will be increased vulnerability to cyber attacks. Focusing on solutions to improve operational efficiency and cost effectiveness with a strong cyber defence is imperative for the shipping industry.

When do you think digitalisation will accelerate in the shipping industry?

There is a strong push in the maritime industry to cut down on paperwork on board ships. Onboard electronic platforms such as e-Certification for ships, ECDIS and blockchain are becoming the norm. Digitalisation is the game changer for ship operators to stay competitive, especially when the same job could be done more efficiently and with less manpower. Digitalisation may make a huge impact in the next two to three years, if not now. **ss**



Singtel has long been at the forefront of satellite communications. Pictured: The ILS Proton launch vehicle transports the first Inmarsat-5 satellite into space



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Singapore's shrinking and



Mass flow meter technology installed on board a bunker tanker

Bunker fuel sales volumes continue to grow while the number of licensed bunker suppliers is declining after the use of mass flow meter technology was made compulsory

Singapore's bunker fuel market has seen a shrinking number of marine fuel suppliers over the past few years. In 2017 alone four disappeared. At the start of 2018 another left.

There is, though, no cause for alarm over this falling number of bunker suppliers. In fact, it is good news for Singapore.

First, the level of bunkering services offered from Singapore to ocean-going ships is unlikely to be compromised given that the leading and reputable suppliers are still in business. Second, the top-10 suppliers account for 80% to 90% of bunker fuels sold, meaning that bottom-rung players that exit the market do not have much of an impact.

The Maritime and Port Authority of Singapore (MPA) lists 55 accredited bunker suppliers that are licensed to carry out fuel deliveries within Singapore port

limits. The number has decreased from 58 in 2016, 60 in 2015, 63 in 2014, 68 in 2013 and 71 in 2012.

The MPA's continuing crackdown on the licensed bunker suppliers engaged in malpractices of short deliveries has been the main cause of the dwindling supplier numbers. Three suppliers lost their licences last year.

In addition, the mandatory use of mass flow meters (MFM) for high-sulphur bunker fuel bunkering since the start of 2017 has further tightened the leash on errant suppliers addicted to kickbacks by shortchanging the delivered fuel. The mass flow meter technology is as accurate as it can get, operating within 0.5% overall measurement uncertainty, compared with 0.7% for the traditional sounding tape measurement method.

The MFM device, a digital technology,

expanding bunker market

is also armed with non-resettable totaliser and tamper-proof seals to ensure the integrity of the system. But errant suppliers still want to find a way to beat the technology, and those caught have lost their right to operate in Singapore.

In February 2016 MPA launched a technical reference, referred to as TR48:2015, outlining a set of core requirements for metering system qualification, installation, testing procedures and documentation for bunker custody transfer.

The MPA has repeatedly said it will take firm action against any licensee that acts in contravention of its licence.

In November last year, Transocean Oil's licences were revoked by the MPA as the company was found to have several falsifications of records and discrepancies in the stock movement logbooks on board its bunker tankers.

In August 2017, Panoil Petroleum and Universal Energy lost their licences. Panoil Petroleum made unauthorised alterations to the pipelines of its bunker tankers and accumulated demerit points for non-compliance with bunkering procedures. Universal Energy, on the other hand,

accumulated demerit points for delivery of bunkers that were severely aerated as well as for stoppages during bunkering operations.

The positive change for Singapore's bunker market since the introduction of mass flow meters is not just increased transparency and quicker bunkering turnaround, but also the weeding out of crooked suppliers that tarnish the image of Singapore.

There were also those who opted to voluntarily exit the market. Greek company Aegean Marine Petroleum announced in October 2017 that its Singapore operations would close on 1 January 2018, after nearly 11 years as a prominent player in the city-state. In a company statement, Aegean said "2017 has seen heightened commercial pressures in Singapore," leading to the decision to pack up and leave.

In September 2017, Uni Petroleum did not apply to renew its bunker supplier licence.

While the number of suppliers is gradually decreasing, Singapore bunker sales are continually on the rise, reaching a historic high of 50.6M tonnes in 2017, up 4% compared with 48.6M tonnes in 2016, which was itself a record.

The sale of the commonly used 380 cSt bunker grade accounted for 75% of the

total sold in 2017, with the higher viscosity 500 cSt material being the second most popular, accounting for approximately 20% of the total.

The average bunker stem size for last year went up to 1,244 tonnes from 1,147 tonnes in 2016. But the number of calls for bunkers in 2017 decreased to 40,736 from 42,380 in 2016.

Homegrown Sentek Marine & Trading was Singapore's biggest bunker supplier by volume in 2017. Sentek moved up from second spot in 2016, displacing Chemoil International to third spot. PetroChina International jumped from 12th spot last year to second, with Shell Eastern Trading and Equatorial Marine Fuel Management Services taking up fourth and fifth place respectively. ExxonMobil Asia Pacific and BP Singapore were ranked sixth and seventh respectively.

Two other homegrown suppliers, Ocean Bunkering Services and Global Energy Trading, took the eighth and ninth positions respectively, while the number 10 spot was taken by Total Marine Fuels.

The rankings were revealed by the MPA, but the port authority traditionally does not disclose volumes sold by each supplier.

Plugging the bunkering loophole

The record bunker sales volume came in the year that Singapore mandated the use of mass flow meter (MFM) technology, a move that some suggested may have caused bunker fuel sales to fall.

Making the use of MFM technology mandatory for all bunkering operations in the port of Singapore was a good move. The introduction of MFM has given rise to greater transparency and efficiency during bunkering operations, leading to fewer disputes over the delivered fuel quantity.

The MFM device is considered tamper-proof technology, as there is an unresettable totaliser and tamper-proof seals to ensure the integrity of the system. The system displays and records critical parameters in real-time to allow users to address abnormality on site.

In bunker fuel trading, fuel is sold by mass but delivered by volume, which is in turn affected by changes in pressure and temperature, unlike mass. The use of MFM allows the fuel to be measured by mass directly, raising the accuracy of the quantity during custody transfers.

Traditional measuring methods use manual sounding pipes to calculate the volume of bunkers, followed by manual calculation

for the volume of bunkers transferred with sounding tables and conversion from volume to mass. The use of MFM is a lot more accurate than manual measurements and conversions.

Despite all the operational advantages, there is one issue to iron out if the MFM operation is to avoid a significant loophole.

The loophole in question exists at the point of fuel custody transfer between onshore oil terminals and bunker tankers. The onshore terminals are not bound by regulations set by the MPA on the mandatory use of MFM during the transfer of fuel to the bunker tankers. This creates inconsistency in the fuel supply chain as bunker tankers must accept the delivery volume recorded by the terminals, putting MFM-equipped bunker tankers at a disadvantage.

Both the International Bunker Industry Association (IBIA) and MFM manufacturer Endress+Hauser have raised concerns over this matter, with both calling for the application of MFM systems at the oil terminals.

Endress+Hauser said the MFM-equipped bunker tankers frequently experienced differences in bunker cargo readings when compared with delivery figures provided by the terminals. Such differences in readings arise from the current method of having manual sounding operations conducted before and after unloading product into a terminal, a procedure considered inefficient and

prone to human error.

It is unclear if this loophole can be plugged in the near term, but talks with the terminal operators are already underway. The solution will be for either the terminal operators to accept the readings on the MFM installed on board the bunker tankers or for them to install their own MFM systems.

As of 17 January 2018, a total of 150 out of 213 bunker tankers operating in Singapore port waters are equipped with an MPA-approved MFM. Of the 150 bunker tankers, 93 are installed with Endress+Hauser MFM systems, and 57 with Emerson systems.

Looking ahead, the MPA will officially implement MFM for marine gas oil (MGO) bunkering. Sales for MGO accounted for just 1.5% of the total sold in 2017, but they are expected to increase substantially by 2020 with the enforcement of IMO's global 0.5% fuel sulphur content cap, virtually rendering the use of high-sulphur 380 cSt impossible unless the ships are installed

with scrubbers.

The port authority has been running trials on MFM for MGO and the results are encouraging as seen from test-bedding projects. In fact, there are currently seven MGO bunker tankers using the MFM technology for fuel deliveries, with three using Endress+Hauser systems and four using Emerson devices.

The MPA said the eventual implementation of MFM for MGO will create a level-playing field and harmonise operating procedures.

The use of MFMs for bunker custody transfer not only presents a digital innovation for Singapore but also extends it globally. Countries such as China, Hong Kong, Greece, Gibraltar, Taiwan and the UAE have expressed interest in transiting toward the use of MFM technology. Singapore-based Metcore International has reached out to China, Hong Kong, Taiwan and the UAE to help the local players gain a better understanding of the operational benefits of MFM within the bunker supply chain.

ARE BUNKER PRICES ON A ROBUST PATH?

Bunker fuel prices, a significant portion of a ship's operating cost, climbed over the past year in a shipping market where freight rates continue to stay under pressure due to lingering excessive tonnage.

The price of Singapore 380 cSt bunker fuel, considered a global benchmark, opened at US\$392 per metric tonne (pmt) on 2 January 2018, translating to a 13% increase compared with the price of US\$347 pmt seen on 2 January 2017, according to data from *Ship & Bunker*.

The price of Singapore marine gas oil (MGO), or distillates, also spiked to US\$591 pmt on 2 January this year compared with US\$503 pmt a year ago.

Marine fuel prices have been on the rise since the sharp downward correction in June 2015. Bunker prices doubled over the course of 2016, rising from below US\$200 pmt to more than US\$300 pmt. By the end of 2016, Singapore 380 cSt prices hit around US\$350 pmt.

In 2017, Singapore 380 cSt bunker prices started to soften over the first quarter, touching an annual low of US\$289.50 pmt on 27 March, following a steep plunge from US\$323 pmt on 8 March.

During the second quarter of last year, bunker prices displayed volatile movements as they hiked to US\$327 pmt on 12 April before dipping to US\$299 pmt on 9 May, followed by another jump to US\$322.50 pmt on 25 May before a drop to US\$296.50 pmt on 22 June.

It was not until July that the market picked up again and prices rebounded swiftly to an annual high of US\$391 pmt on

29 December 2017.

The price trend of bunker fuel, a by-product of crude oil, tracked crude oil prices closely last year, as WTI oil prices firmed from July to steadily cross the US\$60 per barrel mark at the start of this year. **ss**

BELOW: A bunker tanker delivering fuel to a receiving ship in Singapore port waters





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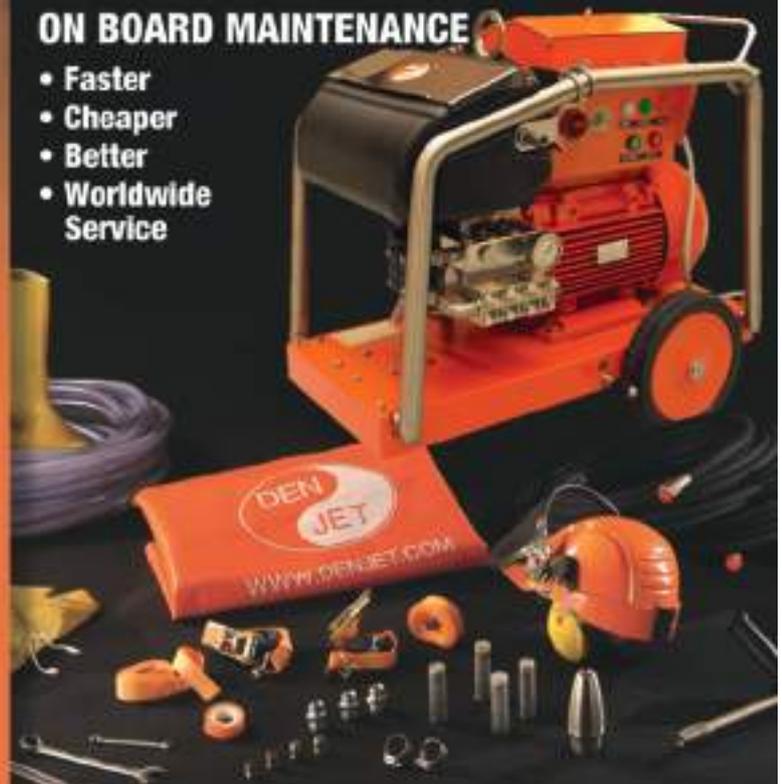


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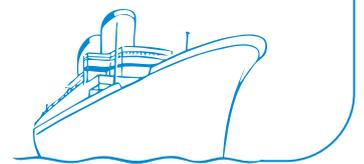


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ALTERNATIVE FUEL SOURCES COME UNDER THE SPOTLIGHT

The IMO sulphur cap aims to reduce harmful shipping emissions

A cloud of uncertainty looms over the shipping industry with no silver-bullet solution to meet the IMO fuel sulphur content cap of 0.5% from 2020

Biofuels and methanol are increasingly coming under the spotlight for consideration as marine fuels in light of stricter environmental regulations by IMO to combat shipping emissions.

Shipping has evolved from the use of dirty coal to the burning of high-sulphur bunker fuel, which emits harmful pollutants such as CO₂, SO_x, NO_x and particulate matter (PM) into the atmosphere.

Starting in 2020, IMO will enforce the global use of bunker fuel with a maximum sulphur content limit of 0.5%, down from the current cap of 3.5%.

“Biofuels can present a cleaner and low-carbon alternative fuel source for the shipping industry,” said Singapore’s Nanyang Technological University senior scientist Dr Prapisala Thepsithar.

But there are drawbacks to the use of biofuels. The energy source still contributes to air pollution with the release of carbon monoxide and NO_x, according to Dr Thepsithar.

The types of biofuels include biodiesel, ethanol, vegetable oil, biofuel gasoline and biogas, among others, with vegetable oil being the dominant feedstock.

“Biofuels are also more expensive compared with traditional marine fuels, so their use may not be realistic to shipowners,” said Dr Thepsithar. “There will be a need to increase demand to consequently reduce the cost of biofuels, especially for the second-generation and third-generation biofuels.”

Biofuels production can be categorised into three generations, with the first-generation biofuels (or conventional biofuels) produced from food crops. Second-generation biofuels are manufactured from different types of biomass, and third-generation biofuels are produced from algae.

Methanol is also seen as a promising long-term alternative to

bunker fuel due to its qualities of being able to remove more than 90% of SO_x and PM, and emit 60% less NO_x compared with high-sulphur bunker fuel, according to Chris Chatterton, the chief operating officer of the Methanol Institute, which has an office in Singapore.

“Methanol is a balanced and practical liquid fuel that offers emissions reduction across carbon dioxide, SO_x, NO_x and PM,” Mr Chatterton noted.

The use of methanol has already found its way into shipping via a 2013 Stena Bulk project, with the 51,837 gt cruise ferry *Stena Germanica* having one of four engines operating on methanol-diesel since 2016. The vessel is classed by Lloyd’s Register.

In January 2015, LR announced plans to design a new generation of cruise ships and ropax ferries powered by methanol, in partnership with German shipyards and a methanol distributor.

Mr Chatterton believes that methanol is also readily available, with China accounting for 50% of the world’s production and significant new capacity set to come on stream in the US.

Another advantage of using methanol is that the fuel is easier to handle compared with LNG because methanol is a liquid and does not need to be held frozen nor be under a specific set of pressures. “Methanol can be cost-effectively stored at any port in the world,” said Mr Chatterton.

With a handful of options to choose from to comply with the sulphur cap and a slight possibility of IMO pushing back the implementation of the regulation, many vessel owners and operators are waiting until the last minute before choosing their compliance option.

Gulf Oil Marine director of global client group Jackson Davis said “A vast majority of vessels will probably go for low-sulphur fuel oil as the simplest option, but this will mean higher fuel costs.

“On the use of LNG, a lot still has to be done on storage handling and distribution, and the establishment of a global infrastructural network,” Mr Davis said.

Another feasible option is to install exhaust gas treatment systems, or scrubbers, which would allow ships to continue to burn high-sulphur bunker fuel. But scrubbers are not cheap, with one unit potentially costing US\$1M, and the vessel downtime needed for retrofitting is not welcomed by operators. **ss**



The highly automated Shell plant can produce up to 430M litres of lubricants and greases every year

Shell Marine revolutionising marine lubricant procurement

A newly opened lubricant plant in Singapore will support Shell's business ambitions in the Asia-Pacific region and strengthen its marine lubricant business presence in Singapore port

Two major roro operators are piloting a new scheme in partnership with Shell Marine that will give them greater control over their marine lubricant costs, including the ability to pay these costs in 12 equal monthly instalments. The secret sauce is a sophisticated algorithm Shell Marine has jointly developed with an undisclosed London-based data specialist.

The programme has been running since September 2017, according to Shell Marine executive director Jan Toschka. Mr Toschka declined to name the operators, but confirmed they were sizeable companies, with significant fleets trading internationally.

The key benefit of the scheme is “exposure mitigation,” said Mr Toschka, referring to the operators’ new fixed monthly marine lubricants bill. He explained that the two roros are expected to trade 200-250 days a year, but added that if that trading period changes significantly, or if there is a significant variation in feedstock prices or foreign exchange, the contract allows the terms of the agreement to be revised.

This new initiative, which Mr Toschka referred to as a first for the industry, is an iteration of Shell Marine’s marine integrated lubrication and expert solutions (MILES) announced in April 2017. The MILES scheme includes purchasing options, lubes monitoring and technical support services.

So far 85 vessels have signed up to MILES and the “aim is to have 500 ships on the programme in the second half of 2018,” said Mr Toschka. Shell Marine regional sales manager Hew Shaw Siang identified Asia’s (in particular Indonesia’s) huge feeder vessel market as being especially prospective.

Vessels engaged in tramp trades have been drawn to MILES, especially tankers, bulk carriers and roro vessels. Mr Toschka noted that some container vessel operators initially resisted MILES believing they did not need help optimising operations. But they warmed to the scheme when shown operational data highlighting

inefficiencies in their current approach, which were often linked with the number of port calls being made.

He added that Shell is committed to going “beyond the molecule” in its dealing with the market. By this he meant forging client relationships that were more along the lines of partnerships with information sharing. Such relationships, he predicted, would lead to fewer, larger orders from operators as well as better voyage planning. “In Latin America, if a vessel was calling at 25 ports to take on marine lubricants and, as a result of our collaboration, it now calls at five, that’s a win-win.”

Shell Marine officially opened its new integrated lubricants and grease production facility in Tuas, Singapore, on 1 November 2017. The lubricant plant is the oil major’s third-largest lubricant plant in the world and the second largest in Asia-Pacific.

The facility is capable of producing up to 430M litres of lubricants and greases every year. Approximately 50% of the total lubricants produced at the plant are sold to the marine business.

The Tuas plant replaces the 55-year-old facility located in Woodlands North. Shell Marine says the new facility has 50% more capacity and will deliver a six-fold improvement in productivity. Mr Toschka said output at the Tuas plant has the potential to eclipse its two larger plants in Houston and Shanghai.

Shell Global Commercial executive vice president Huibert Vigeveno said “This state-of-the-art, highly automated facility in Singapore was built to support our business ambitions here in the APAC region. It serves as a strategic production hub, and will be the centrepiece of our lubricants supply-chain network. Asia represents over 40% of the world’s lubricants demand, and is home to half of the world’s largest lubricants markets. This facility will also further strengthen our marine lubricant business’s presence here in Singapore, the world’s second busiest [container] port.” **ss**



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The grief of Singapore's offshore

Confidence is severely shaken in Singapore's offshore equity market after the demise of many listed companies, but there is a silver lining in the form of a new debt restructuring framework

Singapore's capital market may miss the next offshore market upturn after the recent recession that brought many listed offshore companies to their knees, and local banks are unlikely to regain their confidence for the sector.

M3 Marine group chief

executive Mike Meade said "What I worry about is that when the market recovers, those three to four banks in Singapore are not going to have the appetite to come back."

Mr Meade believes that European and American banks, hedge funds and PE funds will all be able to take advantage of eroded equities and cheap assets in a market rebounding from a trough.

One problem with Singapore-listed, family-owned offshore companies is that a huge proportion of their equities are owned by the families themselves and their belief is that their equities are of higher value than debts, according to Mr Meade.

"But in the world of business, debt takes precedence over equity and bonds take precedence over bank debts – normally," he said.

"If you look at the bond market in the west, the bonds are bought by institutional investors who

understand economics. What has happened here is that the bonds were sold to the common investors and these investors are putting their pension in and even leveraging off with bank loans. And all those bonds have failed."

Several notable Singapore-listed offshore companies that have failed include Swiber, Ezra, EMAS Offshore, and Swissco, while those struggling include ASL Marine, Ezion, Marco Polo Marine, and Pacific Radiance.

The offshore sector is troubled with a severe oversupply of OSVs amid a lacklustre market marked by soft oil prices.

A part of the problem with today's oversupply situation is the massive number of PSVs flooding the market, a scenario which did not exist during the last oversupply of 1985. "What we didn't have in 1985 was PSVs, which was like a boutique new thing. This time round we've got PSVs and

they are easy to build, leading to massive overbuilding and then we've got China," he said. Chinese shipyards, hungry for orders, had jumped onto the bandwagon of building OSVs and now found themselves sitting on at least 500 newbuild vessels that the market is unable to absorb.

"The solutions are consolidation and scrapping. Consolidation has happened but scrapping OSVs is very difficult. Nobody wants to scrap because there is no scrap value due to the insufficient steel content of OSVs," Mr Meade said.

"There are less than 1,000 tonnes of steel in OSVs and not to forget the owners need to pay for the fuel cost to get the vessel to the scrapyard. Whoever can get their heads around the business of scrapping OSVs based on the residue value of the equipment will make a lot of money," he quipped.

He explained that for a

SAUDI GROUP TAKES



LING YONG WAH (VALLIANZ): Good prospects ahead to expand in the Middle East

Vallianz Holdings is one of the last few financially stable offshore services companies listed in Singapore following the industry recession that brought several big names to their knees.

OSV provider Vallianz won the backing of Saudi Arabia's Rawabi Holding Company, its strategic partner and investor that

now owns a 41.2% stake in Vallianz after a rights cum warrants issue. Rawabi had previously owned a 14.8% stake in Vallianz.

As Rawabi will be exercising most of its warrants, its shareholding in Vallianz will increase further to 57.2%, assuming Swiber Holdings, which is currently under judicial management, also exercises its warrants and other shareholders do

capital market: M3 Marine

company having a OSV on its balance sheet for US\$2M to US\$4M, scrapping the asset for US\$400,000 means taking a \$3.5M writedown hit on the profit and loss. "The moment you scrap it, you take the hit," he said.

With so many idled vessels especially on Indonesian waters, these assets may find it hard to re-enter the market even when activities pick up. "Nobody has ever reactivated a complex DP2/DP3 ship yet. It is just too costly," he said.

There were an estimated 1,700 OSVs in cold stack and Chinese shipyards have 400-600 completed newbuilds waiting for owners to take delivery of them. These are in addition to a global fleet of around 5,500 in operation today.

"It is going to take 10 years before we see the next (OSVs) building boom. There are still too many boats even if you factor in 80 rigs that were scrapped," he said.

"Businesses will go on,

utilisation and charter rates will struggle to get above opex before comfort starts to reside. The biggest question for the industry is how to deal with the lack of scrapping of OSVs – nobody has the answer."

MIKE MEADE (M3 MARINE):

Going deeper with its relatively new business set up M3 Marine Remote Inspection



US CHAPTER 11 HITS HOME FOR SINGAPORE

A debtor-in-possession modelling after the US Chapter 11 in Singapore will be particularly helpful to offshore companies struggling to stay afloat under mounting debts. Over the past year, the proposed US Chapter 11-like bankruptcy code has been gradually adopted in the city-state, a change that will see Singapore's debt restructuring scene become more nimble and substantive.

The switch to adopting the US bankruptcy code will allow distressed companies to obtain fresh financing while undergoing restructuring – a much-needed step for many of the Singapore-listed offshore marine companies.

The changes to the restructuring framework is a long-term game plan for Singapore that is set to benefit not just the offshore marine segment but also the wider market.

Over the course of 2017, Singapore courts saw six cases filed that adopted the US Chapter 11-like scheme in local company laws. Singapore's senior minister of state for law and finance, Indranee Rajah, said in November 2017 that the six legal cases are an indication that the market is willing to try out this new restructuring regime.

The long-term aim of Singapore is to bolster its position as a centre for debt revamps through an amended Companies Act, paving the way for a worldwide debt moratorium, enabling debtor-in-possession financing, and granting rescue-capital providers priority claims on assets over existing creditors.

Consultant AlixPartners said that more restructurings may happen in the Asian offshore market in 2018, with the new insolvency law in Singapore making the restructuring process "more fluid".

CHARGE AT VALLIANZ

not exercise.

Rawabi's group chairman Sheikh Abdulaziz AlTurki said the group is prepared to support Vallianz and ensure that it will remain in a strong position, both financially and operationally, to execute long-term growth plans in the Middle East market.

Ling Yong Wah, chief executive of Vallianz, said "The rights cum warrants issue clears the path for the group

to resolve the outstanding issue with Swiber and also strengthen our balance sheet. We see exciting opportunities for Vallianz to further expand our business by leveraging our leading market position as one of the largest OSV players in the Middle East."

To date, Vallianz owns and operates a fleet of 55 OSVs covering markets in the Middle East, Asia Pacific and Latin America. The company

is constantly keeping an eye on opportunities and strategic alliances to increase its penetration in the major and emerging offshore oil and gas markets.

Mr Ling noted that the OSV market will continue to be challenging due to the situation of excess vessel supply. "This inevitably exerts pressure on vessel utilisation rates and charter rates," he said.

Apart from the downfall of Swiber, Ezra Holdings also filed for bankruptcy in March 2017, followed by the court approving Swissco's bankruptcy filing in April. Companies such as ASL Marine, EMAS Offshore, Ezion, KS Energy, Marco Polo Marine, Pacific Radiance and Triyards are burdened by debt restructurings and are heavily reliant on support from banks and noteholders. **ss**

HBA Offshore picks up a bargain

The offshore market downturn is in a deleveraging phase and green shoots of recovery are now in abundance, says Bumi Armada's ex-chief executive

Singapore-based HBA Offshore will focus on integrating the acquisition of OSV operator and owner Swissco Holdings in 2018, and will position itself for new opportunities in 2019 even as

the offshore market is expected to stay downbeat.

HBA Offshore's little known Asian Strategic Turnaround Ventures has been revealed as the white knight for financially troubled Swissco, which is currently under

judicial management. HBA Offshore chairman Hassan Basma, though, is no stranger to the offshore world, having been the former chief executive of Bumi Armada.

"We took on a little challenge and now we want to make sure that it will work. Swissco is Singapore-based and is a reasonably sized company," Mr Hassan told *Singapore Solutions*.

The investors behind Asian Strategic Turnaround Ventures are said to be a group of like-minded people who have gone through market cycles and share similar experience in turning

around companies, according to Mr Hassan.

Swissco's OSV fleet comprises mainly lower-specification vessels that are likely out of favour with oil companies. The acquisition of Swissco's entire OSV business at an attractively low price valued each vessel at an average of just over US\$1M. The buyout price is considered to be at an "absolute minimum" by Mr Hassan.

In its heyday, Swissco was a considerable OSV player with a fleet of close to 40 vessels including utility tugs, anchor-handling tugs, accommodation workboats, crewboats and deck cargo barges. It operates two shipyards in Singapore to undertake repair, maintenance and fabrication.

In April 2017, a Singaporean court approved Swissco's application to be placed under judicial management after the debt-ridden company failed to receive support from its major creditors.

Swissco is just one of many victims of the protracted downturn in the offshore market. The recession is into its fourth year since the crash of oil prices in late 2014. During the previous market boom, banks flooded the market with easy credit and attracted many speculative investors that left their marks in the sector in the form of surplus assets, leading to the crash in charter rates and non-profitable utilisation levels.

Mr Hassan said the industry recession will continue



The Singapore shipyard of Swissco, which is under judicial management

for another “few years” and that he expects to see more consolidation and companies unwinding their positions. This is the so-called deleveraging phase of the offshore market, according to Mr Hassan.

On a positive note, he said international oil companies have balanced their books, and oil prices are forecast to stay at the US\$60 per barrel level. The green shoots of recovery are in abundance as companies continue to rationalise assets and go up the value chain by specialisation.

“There could be more pain for the industry in 2018-19. More companies are looking at focusing on services rather than taking on more assets,” Mr Hassan said.

A major headache is what to do with the thousands of

laid up OSVs, regardless of whether they are cold-stacked or in warm layup. Many of the vessels have been laid up for two to three years, and their technology is starting to become obsolete. They have hardly any scrap value. Given the high cost of reactivation or no demand to reactivate at all, more OSV companies are going to suffer heavy losses.

Mr Hassan noted that oil firms such as Petronas, Saudi Aramco and Shell have declined to use laid up OSVs. If the OSVs have been idled for less than a year, their chances of reactivation are higher – otherwise they are unlikely to ever see the light of day again.

The jack-up drilling rig market is different from OSVs. Due to the high cost of drilling,

in particular exploration drilling, oil companies are still willing to charter a rig reactivated from warm-stack at lower rates versus paying higher charter rates for a new rig.

The success rate for exploration drilling is typically three out of 10, and out of the three maybe only one will see commercial returns, making it somewhat impractical for oil majors to use new rigs and incur hefty charter bills.

With recovery for the offshore and marine market still some time away, HBA Offshore is not resting on its laurels after the latest Swissco investment. The company is eyeing leasing and operating contracts for floating production projects. It has a plan for private equity to take up at least 70% ownership,

with HBA Offshore taking the remaining 30% and executing the operations.

HBA Offshore, which started in 2015 with just two people, has grown to a team of 25 staff comprising commercial and technical people, as well as IT personnel and naval architects. The company expanded its office space in March 2017.

Mr Hassan said that although 2015 was a year of recession for the offshore market, it was in fact a good time to set up the company. “You need a solid business case and to be able to read trends properly or anticipate what is around the corner,” he said. “Recession is a good time to start a business because you can focus inwards and clients will be looking out for someone different.”

POSITIONING FOR THE RISING TIDE

Singapore’s Kim Heng Offshore & Marine Holdings has put in place long-term strategic plans and invested significantly in distressed assets to position itself for a market upturn, as it ventures into the areas of both chartered and owned vessels.

Kim Heng executive chairman and chief executive Thomas Tan admitted that the business environment is extremely challenging and the jobs available out there are mostly short term. Although the market is showing signs of improvement in 2018 (notably increased tendering activities), the company is looking at different areas of the supply chain for revenue and work.

“Hopefully the oil majors will continue to increase their expenditures in order to see sustainable market recovery from now on,” Mr Tan told *Singapore Solutions*.

Late last year, Kim Heng ventured into the ownership of vessels by acquiring three AHTS vessels at a steal of just US\$9.6M from bankrupt Swiber Holdings. The purchase of the three 10,800 bhp vessels was backed by a 60-day short-term charter to perform rig towage and other marine operations in Malaysian waters.

“In the past, we only chartered in

vessels. Now we see an opportunity to own our own OSVs as the entry level is very low. We are looking to expand our fleet because this will give us economy of scale,” Mr Tan said. The company is looking to enlarge its fleet to 10-15 AHTS/ MPSV vessels.

“We will be constantly looking for new growth, and to set new goals and strategy, while at the same time remaining prudent to have sufficient cash on hand to sustain and guard against overleveraging ourselves,” he said.

Mr Tan added that the group’s two shipyards in Singapore are valuable assets that will enable them to swiftly provide vessel activation and maintenance work opportunities in an upturn. Kim Heng also has businesses in offshore rig maintenance, rig supply chain management, shiprepair, marine salvage and oil spill response, and heavy equipment sale and rental. The company is meanwhile diversifying into defence and other marine activities to complement its business.

“The industry recession is also good in the way that it can reset the market, consolidate the players and weed out the highly speculative companies and those

with overly optimistic assumptions. We are getting ready for the rising tide to refloat from a ground position,” Mr Tan said. **ss**

THOMAS TAN (KIM HENG): “Constantly looking for new growth”



FIT-FOR-PURPOSE VESSELS ARE THE FUTURE: EVOLUTION CONCEPTS

Evolution Concepts is the go-to shop for serious investors looking for peace of mind during the process of building complex and sophisticated offshore vessels

An alliance of five companies is seeing heightened interest from investors for its services in the design and construction of fit-for-purpose offshore vessels. Singapore-based Evolution Concepts is an alliance of Sindex, Marine Commerce, Blue Connect, InStudio and Synergy Partners.

The five companies, each with their respective specialised services, have come together to achieve economies of scale while simplifying the often-complicated build process for owners.

Evolution Concepts group managing director Tan Wee How said “Our solutions are suited for serious investors who want their vessels to stand out, be fit-for-purpose and be cost effective in the long run.”

Mr Tan explained that during the construction process, owners have to deal with a myriad of suppliers including the classification and state flag, onsite supervisor, interior designer, naval architect, IT vendor, HVAC and refrigeration, fresh water maker, sewage treatment plant, electronics and communication, deck equipment, engines and propulsion and the shipyard itself.

This is where Evolution Concepts can come into play as the company will help the owner integrate all the suppliers by working with its alliance partners, assist owners in navigating the complex logistics process, conduct risk assessments, ensure timely completion of each project milestone and undertake document control and post project support as required.

Mr Tan observed that during the offshore boom, there was an influx of speculative players who built a surplus of “cookie

cutter vessels that simply do not work.” Back then, these cookie cutter vessels were still able to find jobs due to market buoyancy. However, it is a very different story now.

He told *Singapore Solutions* “Today, there is an ongoing consolidation and merger in the market and vessels that were not built with a fit-for-purpose role will eventually be scrapped.”

Projects undertaken by Evolution Concepts include dive support vessels, PSVs, AHTSs, jack-up rigs, heavy lift vessels, FPSOs, semi-submersible accommodation platforms, self-elevating mobile drilling units and offshore drilling units, compact semi-submersibles, multi-gas vessels and river cruise boats.

The company is currently working on a project for two liftboats and a potential contract for an additional two liftboats. The liftboats are being built at China’s Jiangsu Dajin Heavy Industry.

MacGregor director Francis Tang shared that Dajin Heavy Industry has never built liftboats before. But with the help of Evolution Concepts, the Chinese yard has managed to complete the construction in a relatively short time.

“Investors may not have sufficient or relevant experience as they only look at building ships and do not understand the importance of what is within the ships,” Mr Tang said. “We are not just looking at supplying the standard industry products but rather customised solutions wherever possible to suit the vessel’s operations.”

One of the features of Evolution Concepts’ design is the installation of air-conditioning in engine rooms. “This creates a more comfortable working environment for the crew and in turn enhances safety and awareness, while optimising fuel consumption,” Evolution Concepts’ Mr Tan said.

“The design of the vessel stretches all the way from the interior to the mess room and cabin layout, and even the placement of aircon ventilation openings,” he added.

Looking ahead, Evolution Concepts is looking to expand further into the cruise markets of Europe and China. “We are slowly gaining traction in this segment,” Mr Tan said. **ss**

The team behind Evolution Concepts



MACGREGOR IN EXPANSIVE MODE

In Singapore, MacGregor has opened a small head office in the Cargotec building, where the parent company has had a presence for more than 10 years. MacGregor had been operating from many different offices and from the Cargotec HQ in Finland. MacGregor president Michel van Roozendaal said the company will continue to add people to its team in Singapore and increasingly have global management meetings in the city-state. MacGregor chooses to be in Singapore so that it is closer to its customers as well as its supplier base in Asia.

As a global market leader in cargo- and load-handling, a head office in Singapore is a natural fit for MacGregor given that the majority of shipbuilding takes place in Asia. Furthermore, close to 70% of MacGregor's sourcing volume is purchased from Asian vendors. That said, MacGregor continues to have a strong leadership presence in Europe, where the majority of the company's competence centres are located. The overall business climate in Singapore is attractive to MacGregor. Mr Van Roozendaal explained that "it is easy to conduct business in Singapore, which continues to promote technology and the development of people. We hope we can attract top talent to come and work for MacGregor in this leading global maritime hub."

"MacGregor has a strong track record in developing and delivering systems and solutions that maximise the safety, efficiency and eco-efficiency of our customers' operations at sea. We are committed to preserving our innovative roots," he added.

MacGregor is leveraging emerging technologies to shape the future of shipping. "Currently, these innovations include our progress and participation in the development of autonomous shipping. Furthermore, we are using virtual reality to train ship operators to be more efficient and safer, and are optimising onboard cargo systems to ensure that container ships can carry maximum payload," Mr Van Roozendaal explained.

One exciting new technology that MacGregor is working on is autonomous cranes, a building

A NEW OFFICE AND NEW TECHNOLOGIES IS HELPING MACGREGOR WIN NEW MARKET SHARE

MICHEL VAN ROOZENDAAL (MACGREGOR):

these innovations include our progress and participation in the development of autonomous shipping

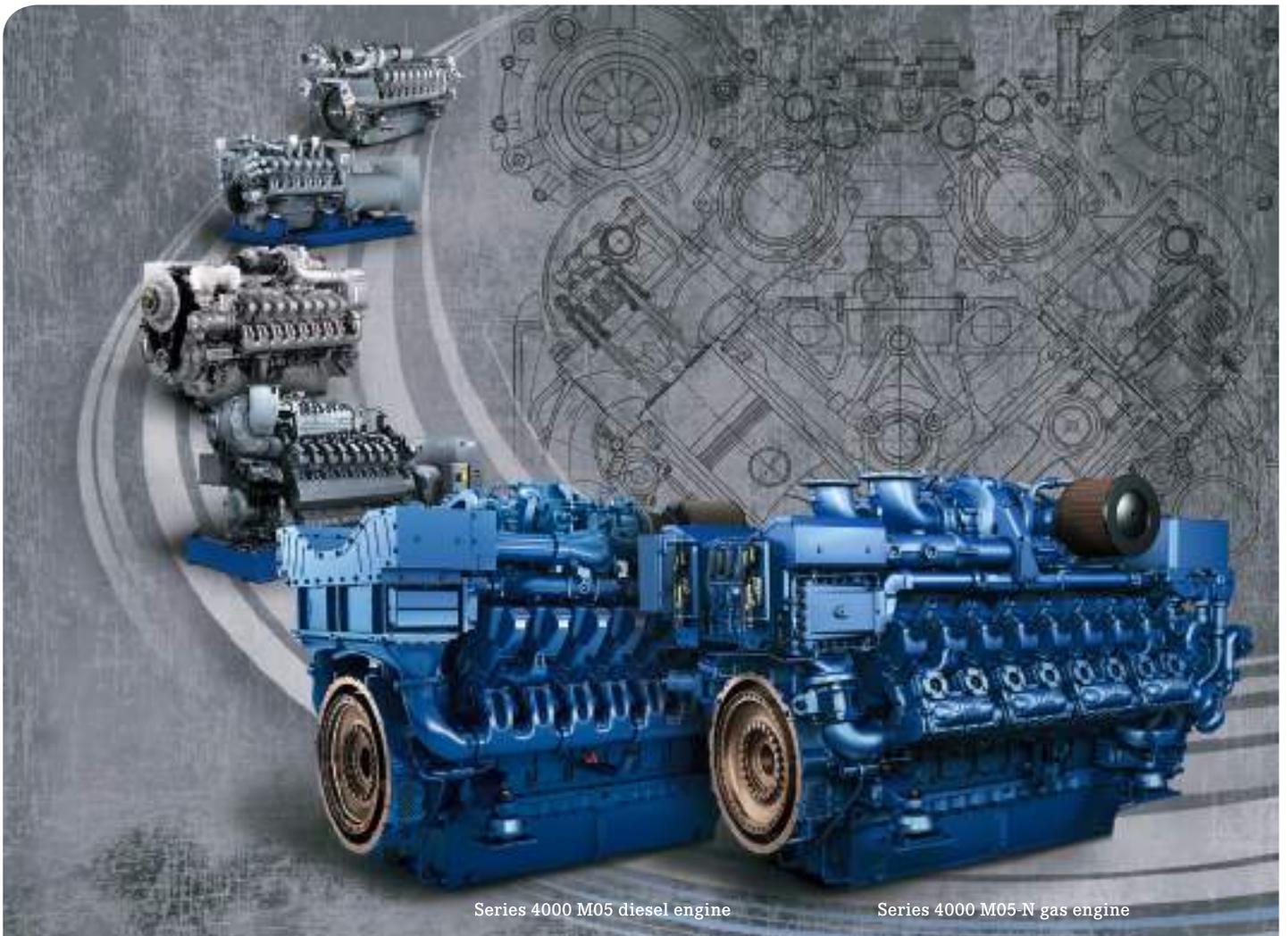


block of the autonomous vessels of the future. It makes no sense to have unmanned vessels that would still require people to operate the cargo-handling systems.

Another important element for MacGregor is sustainability. Mr Van Roozendaal explained that the company is "striving for increased energy efficiency, and to use biodegradable lubricants. Also, we are contributing to key developments for offshore windfarms. Our mooring systems have enabled floating windmills, applying the technology we developed for mooring oil rigs to the wind industry. With this we deliver our promise: 'designed to perform with the sea.'"

In December, MacGregor announced the acquisition of Rapp Marine, which will expand the company's presence in the fishery research segment. Apart from developing software-supported and remotely controlled operations, MacGregor is also developing and offering technology that enables operators to switch from traditional, heavy steel rope to fibre-rope systems that maximise a ship crane's capabilities. "We develop and innovate in close co-operation with our customers and other key industry stakeholders. We are constantly looking at applying current and future technologies for the benefit of our customers' operations," noted Mr Van Roozendaal. "We are also strengthening our position in new segments like the renewable energy sector," he added.

Mr Van Roozendaal is "very much aware of the cyclical nature of this business. Predecessor companies of MacGregor can be traced back as far back as the 18th century. The current downcycle is hard, as it simultaneously affects the offshore and the merchant marine business. But in 2017 we were able to win key projects, for example a roro-linkspan order in Calais (France) and two projects in Bangladesh. We have managed our cost base, and have been able to remain profitable in this market, which has allowed us to continue to invest in new technologies. The years to come will not be easy for our industry, but we will come out stronger when the downcycle ends in 2018/2019." ss



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New technology offers opportunities to better respond to the challenges of today and tomorrow

The journey to autonomy and the interim benefits to shipping

The transition toward digital shipping is an opportunity to drive iterative improvements, says ABS executive vice president for global marine Kirsi Tikka

With advances in technology seemingly being made daily, the maritime industry is on a journey to autonomous shipping. New technology offers opportunities to better respond to the challenges of today and tomorrow, whether these are environmental impacts, reliability of equipment, more efficient operations or crew training, according to ABS executive vice president for global marine Kirsi Tikka.

But for the industry at sea and ashore this journey will be a gradual process of evolution. It must be so, in order to ensure

that shipping has even better safety and environmental performance in the future than it does today.

In Singapore, where ABS has been active for more than 50 years, one of its key assets is the Singapore Innovation and Research Center (SIRC). The centre was formerly called the Singapore Offshore Technology Center, and the change in name was made to reflect the classification society's role beyond the offshore oil and gas industry.

Researchers at SIRC focus on six primary areas, namely the performance and strength of floating structures;

structural-soil interaction; computational fluid dynamics; ice loads on offshore structures; the application of fracture mechanics; and the structural behaviour of jack-ups.

The R&D personnel have been widening their scope to develop global solutions. One area of focus is the transition to the next generation of ships, which will be enhanced by automation, data and connectivity. Increased automation on board and connectivity to shore will allow greater use of predictive and preventative maintenance and more shore based support to the ships, remote decision making and control.

"But to make safety decisions based on data, we need to be confident of its quality and reliability. And to minimise the need for crew intervention, the systems must become less mechanical, eliminating the continuous maintenance that is currently carried out by the crew on board," Ms Tikka said. **ss**

An iterative process

Reliability of systems, cyber security, data integrity, regulatory hurdles and gaps in the required skills are some of the challenges that will need to be addressed on this journey, Ms Tikka believes. “To achieve full autonomy we will also need to see further advances in artificial intelligence and machine learning,” she said.

“There are many projects and consortiums carrying out research and developing plans for autonomous ships, but the ultimate goal of autonomy is challenging and difficult to get right without a process of iteration,” she observed.

“That process will require the design, construction and testing of interim outcomes. If implemented correctly,

evolutionary development will introduce significant benefits to shipping at each phase, before we reach autonomy on a larger scale.”

These outcomes can result in increased reliability of navigation, propulsion, auxiliaries, and communication, all of which will contribute to increasing safety and efficiency. Mechanical systems will be replaced by systems requiring less maintenance during voyages, relying on predictive and preventative maintenance routines.

Cyber-enabled systems and greater connectivity will require safety and security measures to be implemented from end to end. Regulatory reform, new standards, and systems of approval will also be required. The interim outcomes should enable introduction and certification of new technology, Ms Tikka noted.

KIRSI TIKKA (ABS): Safety cannot be compromised as shipping pursues technological progression



Cyber security and regulatory evolution

“As we move closer to an era of autonomy and ships become more reliant on cyber-enabled systems, data and software integrity, along with cyber safety and security, are foundational elements for safe operation. The system design and operational processes must incorporate cyber security from the ground up and from the top down, encompassing infrastructure, procedures and training,” Ms Tikka said.

She explained that more connected systems are more prone to disruption or systematic failure when a break in one part of the system creates cascading problems. “The ships must be designed for security, and the organisations operating the ships must understand the technology and have the right processes in place to protect the equipment function and communications with other systems on board and onshore,” explained Ms Tikka.

“These technology advances are not only changing how we view operational performance, but are impacting how governments and regulatory bodies are adjusting their approach to developing requirements that will not hinder the advancements in technology,” she pointed out. More focus will be placed on performance-based standards that will rely on data, connectivity and integrated networks that stream critical data back to shore.

“The industry must look beyond the safety of traditional systems, such as hull and structure, mechanical and electrical. Just as important are the new cyber-enabled systems and the integration of operational technology and information technology,” Ms Tikka said.

“Safety-related standards must recognise this and address the fact that software is the safety system that nobody sees. We must also be aware that regulation needs to be developed and implemented on a global basis before anything like global trading will be possible for autonomous ships,” she added.

ABS hosted an educational session on regulatory updates in Singapore last August, which also served as a platform to discuss operational and environmental challenges.

SMARTER SHIPPING, SMARTER PEOPLE

Despite the evolution towards autonomy, Ms Tikka said there is no doubt that the skills of master mariners, engineers and superintendents will still be required in the future. The challenge is how to ensure a pipeline of these skills if the crews on board are reduced.

“While we transition towards autonomy, the introduction of increased automation on ships will change how the crews interact with the systems, and the training required for competence,” she said.

In design and construction as well classification, traditional engineering disciplines will remain important, but organisations will need to blend that knowledge with systems and cyber and risk engineers and data scientists.

“This deeper systems integration and greater technical sophistication suggests a more inter-disciplinary approach to education. These developments are very positive for the future of the industry as long as education and training keep up with the pace of technology,” Ms Tikka said.

She added: “It will take some time before we can rely on data and algorithms to provide the same level of intuition and judgment that we expect from the crew or class surveyors. There will be intermediate steps using new technology to make progress, and at the same time provide the level of confidence that safety is not being compromised.

“Shipping will become smarter when we are able to manage the impact and consequences of new technology. This will require a great deal of research and development, digital and scale tests, as well as pilot programmes.”

Ms Tikka said that this investment can result in interim safety and reliability advances that will benefit shipping during the evolutionary phase. Carried out in a diligent manner it need not be a threat to the industry, but a proactive response to the demands of tomorrow. **ss**

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Creating effective solutions for real-world challenges

No let-up at DNV GL in quest for partnerships to expedite the incorporation of new technologies and innovations into the maritime sector

In a changing and fast paced business environment, the need to create effective solutions for real-world challenges is itself a challenge. In order to position oneself to tackle the changing paradigms of tomorrow, the drive towards technological advancement is something that classification society DNV GL is constantly on the look-out for to accelerate the delivery of innovations.

Late last year, DNV GL together with three other partners agreed to develop disruptive applications for the offshore and marine sector.

A memorandum of understanding was signed between DNV GL, Sembmarine, A*STAR's Singapore Institute of Manufacturing Technology (SIMTech), and National Additive Manufacturing Innovation Cluster (NAMIC). The collaboration aims to develop disruptive applications in additive manufacturing, drone and digital twin technologies that could revolutionise solutions for Singapore's offshore and marine sector and boost its global competitiveness.

The quadripartite collaboration will focus on three developmental areas. Firstly, there is the laser aided additive manufacturing, or 3D printing, for fabricating large-scale ship structures for newbuild offshore and marine constructions. Traditional manufacturing involves subtractive manufacturing where materials are removed from a large material template to form a shape or an item. In additive manufacturing, items are built upwards, layer by layer, into a three-dimensional shape.

Through this collaboration, DNV GL said it will be able to enhance the qualification process of additive manufacturing and support NAMIC in developing an additive manufacturing ecosystem within Singapore's offshore and marine sector.

Secondly, drones for close-up ship inspection at height or in dangerous and relatively inaccessible areas is another potential disruptor in the offshore and marine industry. Traditional methods of visual inspections in shipyards involve erecting scaffoldings, a labour-intensive task. With the use of drones, shipowners will not have to worry about scaffoldings dirtying or damaging their ships during the inspection.

Among other outcomes, the project aims to build Sembmarine's capabilities in drone-based inspection of ships and rigs while facilitating DNV GL's refinement of class rules for drone surveys.

The third area is the digital twin for simulation-based optimisation of ship design and operations. It refers to the

digital replica of an actual physical asset. Another use of the technology is in preventive maintenance, where sensors attached to structures detect possible structural failure and feed data into the digital twin model.

DNV GL chief executive of oil and gas Elisabeth Tørstad said "These projects are great examples of collaboration with our partners resulting in impressive and important innovative efforts which will realise cost savings and efficiency gains for the industry.

"Innovation is at the core of DNV GL's strategy and no more so than here in Asia where our Oil & Gas Technology Centre (OGTC) has been established as a sustainable centre to support the industry with high-end advisory and technical assurance services," she added.

Sembmarine president and chief executive Wong Weng Sun said "Our business and operating environment are constantly evolving. Technology is rapidly developing. All too often, companies that are slow to respond to change find themselves struggling to keep up. Some, unfortunately, have fallen too far behind to survive."

Mr Wong added "Disruptive technologies alter the way conventional businesses work. When applied correctly, they can bring about game-changing solutions that revolutionise our processes and efficiencies."

In Singapore, DNV GL has expanded a memorandum of understanding (MOU) with the Maritime and Port Authority of Singapore (MPA) to promote maritime R&D. The renewed MOU has expanded its scope to include the R&D of intelligent shipping systems.

The collaboration between DNV GL and MPA includes autonomous vessels and drones for maritime purposes, use of data analytics, energy saving and emission reduction technology in ports and use of LNG as fuel. **ss**

The project aims to refine DNV GL's class rules for drone surveys



SWIRE PACIFIC UPGRADES SINGAPORE TRAINING CENTRE

New simulators are being built at the Swire Marine Training Centre to ensure crews are trained on the latest technology

Swire Pacific Offshore (SPO) is investing in its training centre in Singapore to ensure its vessel crews can use the latest technology, including augmented reality (AR) and full-mission simulators.

It is upgrading facilities at its Swire Marine Training Centre (SMTC) as it seeks to keep abreast of new technologies and to ensure courses remain relevant to new vessel types entering the market.

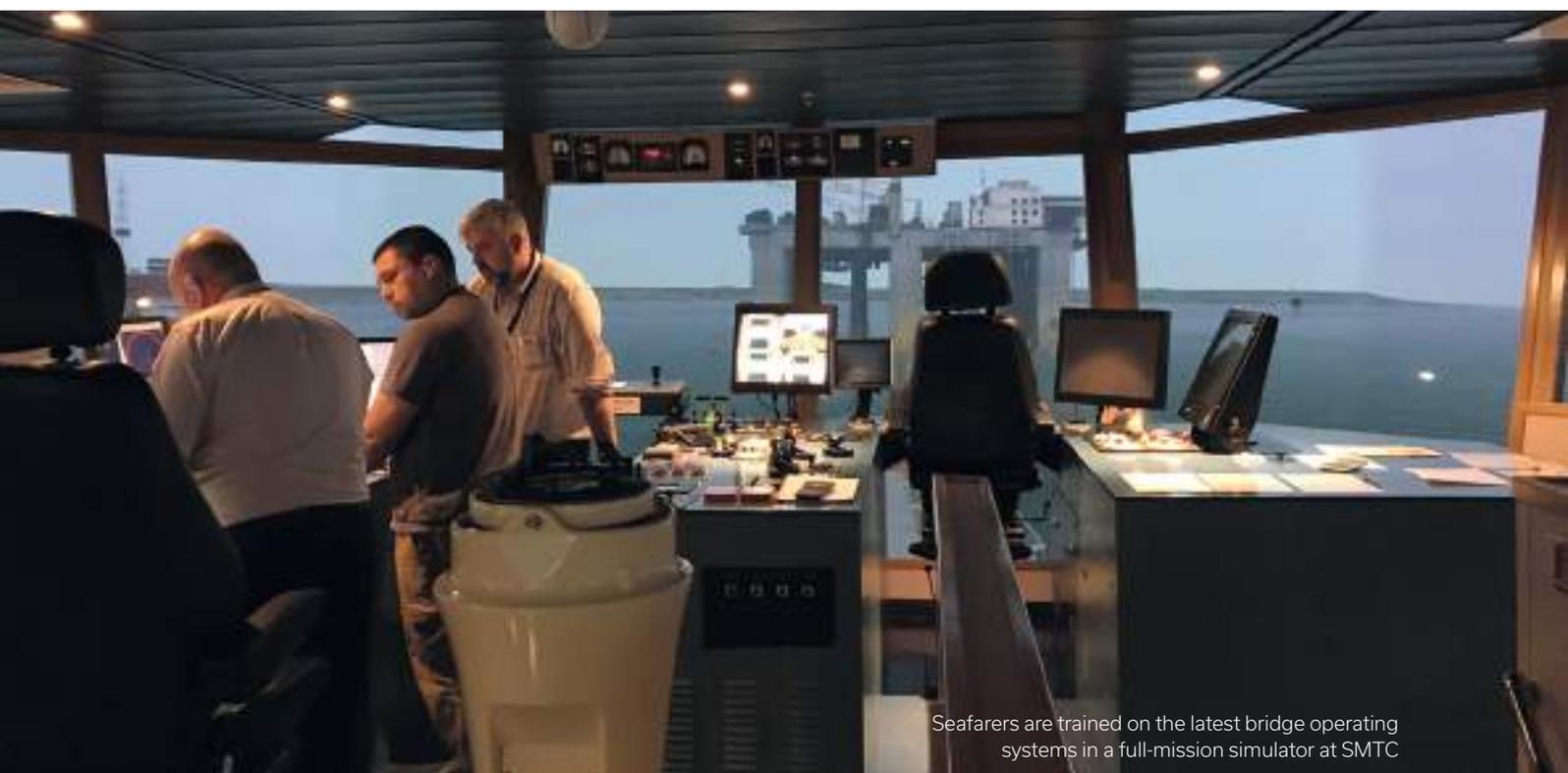
SPO operates a fleet of 77 offshore support vessels (OSVs), including anchor handlers, platform supply vessels (PSVs), seismic survey ships, windfarm installation vessels, accommodation vessels and multi-purpose offshore vessels. This means SMTC bridge and engineroom simulators need to accurately represent the operating systems and scenarios

seafarers will encounter on these vessels.

SMTC houses two hardware-specific full-mission bridge simulators fitted with actual-size consoles and equipment common throughout the SPO fleet. There is a full-sized engine control room, a virtual engineroom that simulates noise from actual vessels and 10 desktop engineroom simulators fitted with real propulsion controls.

Facility training manager Captain Noel Leith said the core areas of teaching at SMTC are dynamic positioning (DP), safety management, electrical and control systems engineering, engineroom operations, anchor handling and manual ship handling for OSVs.

He explained that a near-term development would be to incorporate AR and virtual reality into the simulator training programme. "We will be able to improve the training experience, as AR can tie in with our desktop simulators for the trainees to be



Seafarers are trained on the latest bridge operating systems in a full-mission simulator at SMTC

immersed in a 3D environment,” he said.

SMTC might build a diesel-electric engineroom simulator in the future. Captain Leith observed that many new vessels entering the market run on diesel-electric and a lot of them have variable frequency drives. “Most of our training here is hardware-specific and our fleet has a lot of standardisation, so that makes it easy for us to build our simulators to emulate what we have out in our fleet,” he said.

“We strive to keep up with new technology, so we will need to introduce new simulation facilities,” he added. At present 23 vessels out of SPO’s 77, or approximately 30%, run on diesel-electric power, particularly its PSVs and windfarm installation vessels. “Another step change would be to introduce LED projection systems, which consume less energy and produce more brilliance,” Captain Leith said.

SMTC has been upgrading its operating system over the past 18 months. The new operating system will bring a higher degree of realism, especially on anchor handling and towage training, said Captain Leith.

One recent development was the introduction of jet cone propulsion simulation. It produces a 3D force-field and is reactive, “so if you thrust up against something, it impacts back on the vessel. That level of detail is actually quite difficult to simulate properly,” he explained.

On the subject of fleet digitalisation, Captain Leith said that this technology trend was more suited to deepsea operations and for ships on liner trades, rather than contract-based, job-specific OSVs. “But that is not to say that we would not look to fleet digitalisation, especially on larger assets,” he explained. “Otherwise I do not see ourselves proceeding down that road in the near future.”

During 2017, the SMTC conducted training courses for around 1,000 officers, a figure that is expected to remain largely unchanged for 2018. The centre has six full-time staff offering 19 different courses. It is open for training 45 weeks a year with an average of 20 to 30 trainees on site each week. Even during the present severe market downturn, SPO has continued to support its crew training. “Hopefully this will pay dividends on an upswing,” Captain Leith said.

He drew a distinction between SMTC’s role and traditional marine colleges, saying that the centre does not provide Standards of Training, Certification and Watchkeeping (STCW) training for seafarers. He believes it has a distinct role for the wider industry, beyond SPO’s requirements, saying that the centre is looking to attract more trainees from third parties, who currently constitute only 5% of total students.

SMTC first opened for training in June 2007, and the simulator facilities were commissioned in January 2008. “We have spent a considerable amount of money on research and development every year,” Captain Leith said. This is to expand and extend this simulator facility and open new



Classroom-based simulator training

ones in the future.

Beyond Singapore, SPO has longstanding collaboration with two training centres in the Philippines. Also, SPO will be opening a new DP training

centre in Accra, Ghana, in January 2018 because it operates vessels in west Africa. That centre will start by offering DP awareness training and other internal courses.

What are augmented and virtual realities?

Augmented reality (AR) is an emerging technology for the maritime and offshore sector as it incorporates additional information on screens that augments what operators can already visualise.

Virtual reality is considered for training as it enables trainees to learn skills in a computer-based environment. Users put on a set of goggles to enter a virtual world to simulate scenarios such as conducting repairs and maintenance on equipment via an interactive interface.

Blue Ocean Solutions, a subsidiary of Singapore’s Keppel Offshore & Marine (Keppel O&M), is helping to refine the use of AR at Keppel shipyards that are involved in the servicing and maintenance of oil rigs.

“AR is not being fully exploited at the moment in maritime, but it is an emerging technology,” said Blue Ocean Solutions chief executive Dr Jerry Ng. “You put on the goggles and you can have immediate access to experts, augmented over the reality.”

Caterpillar Marine Asset Intelligence fleet advisor Michael Tan told Singapore Solutions that the Caterpillar group is furthering its developments of AR across its different business verticals including maritime.

“Our AR technology is now available in the marketing and solutions aspects,” Mr Tan said. He explained that the technology allows users to have live support in conducting repairs and maintenance on equipment via an interactive interface. Caterpillar marketing brochures can come to life by wearing the goggles to enhance understanding of its products.

One recent development of AR in maritime is a European Union-funded US\$7.6M project that started in June this year to develop and test AR bridge systems to improve navigation safety and efficiency in Arctic ship operations.

Dr Ng said that another emerging technology for maritime is expert system and predictive intelligence. The expert system and predictive intelligence seek to raise alerts on likely problems and offer diagnosis and preventive measures that can be carried out. This technology is not widely applied in maritime, but it is a “very powerful tool” and especially helpful for engineers, according to Dr Ng.

“My personal belief is that intelligent ships will come before autonomous ships. These technologies are not new to the market, it is a matter of application and adapting these technologies into the maritime industry,” he said. **ss**



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TRU-MARINE KEEPS UP PACE OF INNOVATION

Singapore's homegrown technology firm Tru-Marine has kept up its innovative pace over the years as it has consistently rolled out new ways to take marine technology forward. Most recently, Tru-Marine embarked on a learning scheme to further enhance and complement its services.

Late last year Tru-Marine kick-started a Mentorship Programme that offers a structured learning journey including regular contact time between mentor and mentee.

Tru-Marine clinched the 18-month Mentorship Programme with Singapore Aero Engine Services Pte Ltd (SAESL), a joint venture by Rolls-Royce and Singapore Airlines Engineering Company known for aero engine and component repair services for the Rolls-Royce Trent engine facility.

With Tru-Marine's reclamation technologies mirroring those of SAESL's engine overhaul and component repair for the aerospace industry, the Mentorship allows the mentee to cross-reference more stringent quality benchmarks so as to elevate service delivery and exceed current industry expectations.

The Advanced Remanufacturing and Technology Centre (ARTC) is supporting the Tru-Marine Mentorship Programme as a technology resource partner. An initiative by the Agency for Science, Technology and Research (A*STAR), in partnership

Tru-Marine has introduced at least one new repair technique every two years, including 3D printing of a marine turbocharger nozzle ring and super-coating against component erosion

with the Nanyang Technological University (NTU) and industry partners, ARTC collaborates with cross-sectorial companies in R&D to fast-track the development of advanced remanufacturing and manufacturing solutions.

Tru-Marine Group founding and group managing director David Loke said "To remain relevant in today's fast-evolving business environment, we need to transform by looking beyond the sectors we serve and challenge our current mindset and best practices constantly. This Mentorship gives us the rare opportunity where we would be exposed to the world's pre-eminent engineering service expert, allowing us to discover new disruptive approaches and service innovations. For our clients, this translates into reducing downtime and maintenance costs."

Committing 3% of its sales yearly toward

R&D, Tru-Marine has introduced at least one new repair technique every two years.

During Q3 2017, Tru-Marine launched a super-coating against component erosion using high velocity oxygen fuel (HVOF) coating technology. The HVOF coating is a thermal spray coating process used to improve or restore a component's surface properties or dimensions. This helps to extend equipment life by significantly increasing erosion and wear resistance and corrosion protection.

In 2015, it introduced the 3D printing of a marine turbocharger nozzle ring using exotic super metal alloy, which produces simpler designs that do not incorporate fasteners or welded seams. The 3D-printed nozzle rings have yielded positive results in tensile strength and in laboratory microstructure examinations. They have been tested as suitable for turbocharger applications.

In 2012, Tru-Marine partnered with the Singapore Institute of Manufacturing Technology to develop robotic additive manufacturing. Looking ahead, Mr Loke said: "We are working with the Advanced Remanufacturing and Technology Centre to transform Tru-Marine into a 'Factory of the Future.' With technology evolving at an exponential rate, we are focused on building a higher-skilled team to serve emerging needs." **ss**



The launch reception hosted to celebrate the start of the Mentorship Programme

Inmarsat introduces new Fleet Xpress plans for OSVs

The expanded Singapore office will continue to be an important facility for Inmarsat, especially in the Asia-Pacific region

Inmarsat, a global mobile satellite communications provider, has launched a new set of plans for its Fleet Xpress designed specifically to meet the technical and commercial requirements of OSVs.

The new plan exploits the technical capabilities of Fleet Xpress, such as high-speed connections and guaranteed performance, according to Inmarsat. These features offer vessel operators levels of flexibility that are typically required by the high-end sector such as offshore support.

The new plan also recognises that connectivity needs on board OSVs change frequently and that swings in data usage are likely to be more pronounced than for conventional cargo ships by accommodating free upgrades and downgrades in service levels during, for example, a 36-month contract period.

When on-hire, the appetite for bandwidth from OSVs can be immense. Projects often generate considerable volumes of data that need sending back to shore for analysis, with third-party contractors on board and an intense working environment. OSV operators are also traditionally generous with crew welfare.

Supported by a 1 m antenna, Fleet Xpress for OSVs delivers information rates of up to 3 Mbps for uploads and 6 Mbps for downloads with a standard antenna, climbing to 5 Mbps and 10 Mbps respectively with an enhanced antenna. When off-hire, a more economic 128 kbps/128 Kbps link may be sufficient to keep core operational data exchange ticking over.

This elasticity means that OSV operators can utilise the full potential of Fleet Xpress for the duration of a project and then switch to a narrower 'standby' link between projects, also avoiding early termination costs.

There is also a network service device (NSD) that manages bandwidth and regulates the flow of data traffic between the vessel and shore. The offer includes provision for owners to suspend services for up to 180 days, subject to equivalent contract term extension.

Inmarsat vice president maritime Eric Griffin said "The global footprint of Fleet Xpress means OSVs can count on reliable connectivity wherever in the world they are deployed.

"Unlike conventional VSAT installations, Fleet Xpress is designed for seamless global mobility and automated satellite and beam switching, supported by the added resilience of unlimited FleetBroadband backup. Inmarsat satellites are supported by redundant land-based infrastructure to ensure network availability, as defined in the service level agreements that form part of a



OSVs are set to benefit from Inmarsat's enhanced Fleet Xpress

subscription," Mr Griffin said.

In addition, the new set of OSV plans can be used in conjunction with new hardware from existing terminal manufacturers that will provide a dual antenna solution to minimise outages caused by line of sight blockages, a common occurrence for OSV vessels due to their proximity to rigs and operating in high seas. This can be managed by a single antenna control unit that will handle the service and seamless switching between antennas.

"The connectivity requirements of OSVs place unique demands on satellite operators. Successful and timely completion of a contract is increasingly dependent on a highly resilient, high-capacity data link. The technology behind Fleet Xpress has the capacity to meet these demands and our new plan sets a precedent in joining the dots between the technical requirements and commercial realities of OSV operation and highlights how Fleet Xpress can be used in the energy sector," Mr Griffin said.

In January 2016, Inmarsat opened a new expanded office in Singapore, making it the company's largest facility in the Asia-Pacific region. Inmarsat said it sees the Singapore office as the regional hub providing a new solutions lab, demonstration capabilities, training rooms, a knowledge and support centre, in addition to enhanced production and storage facilities.

Singapore has been Inmarsat's Asia-Pacific headquarters since 2008. **ss**

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Womar's staying focused on chemical tankers

BW's 50% owned Womar Logistics has firm plans to expand its pool of chemical tankers in view of rising global demand and more active trade flows

Womar Logistics is expanding its fleet of commercially managed chemical tankers in view of expected growth in cargo demand and rise in global trade flows.

The company currently manages a fleet of 37 chemical tankers consisting of 10 coated (phenolic epoxy/marineline) chemical tankers of 12,800-13,100 dwt under Marida Tankers Inc, and another 27 stainless steel chemical tankers of around 20,000 dwt under Stainless Tankers Inc, including five newbuilds added so far this year.

Womar Logistics chief executive Hans Van der Zijde expects the stainless steel chemical tanker fleet to grow to at least 30 this year, bringing the entire chemical tanker fleet to 40.

"The chemical tanker shipping market has been improving as there are more and more cargo flows around the world," Mr Van der Zijde told *Singapore Solutions*.

He added that while the outlook leans more toward the positive, the sector still needs to "fight against excess tonnage," which is the "usual game" for the shipping market in general.

"But on the demand side

there is a growing need for chemicals to fuel the global economy, and next to chemicals we have food product such as vegetable oil, demand for which is also rising," Mr Van der Zijde said. Analyst reports mentioned that the IMO III cargo type accounted for the largest volume share in 2017 due to high shipment of vegetable oils and fats, and other non-volatile chemicals.

Organic chemicals such as acetic acid, alcohols, propene, benzene, salt, benzyl acetate, methanol, formic acid, and phenol are some of the vital substances shipped in chemical tankers across the world.

A recent report by Grand View Research valued the chemical tanker shipping market at US\$2.5Tm by 2025, compared with a value of US\$2.07Tm in 2016. The boom is set against the backdrop of a growing chemical trade from increasing manufacturing activities across the globe. The US, China, Germany and Russia are some of the major exporters of chemicals, and are expected to foster the global

chemical long-haul trades over the coming years.

The US will probably grow at a high rate on account of an increasing number of fleet owners, shipbuilders and charterers, availability of raw material, and capital inflow from multinational companies. The expanding market of Asia Pacific is one of the most significant areas for growth due to the presence of a large number of small manufacturers in the region.

Womar Logistics director Captain Manish Jain said the Womar Tanker Pools vessels constantly achieved a utilisation rate of around 95%, and that they are never short of cargoes. "We pride ourselves as having specialised, newer and quality tonnage, and we position ourselves to be involved in the different layers of the market based on our performance and track record," Captain Jain said.

Captain Jain added that the Womar Tanker Pools partnership has never seen a partner leave to join another pool, highlighting the trust and close collaboration among the partners established

over the years.

Womar Logistics was founded in 2009 in Singapore when investors formed a joint venture with Heidmar to operate Marida Tankers. In 2014 Singapore-based shipowner BW Group took over the shares of Heidmar and added two existing and 11 newbuilding 20,000 dwt stainless steel chemical tankers to the Stainless Tankers pool. Womar Logistics is now 50% owned by BW Group.

Womar Logistics carries out commercial management of the pools. It does not carry out technical management, which is the responsibility of the individual vessel owners. Some do this inhouse, while others contract third-party technical managers such as Thome Ship Management, Fleet Ship Management, Anglo-Eastern and others.

The company also has a partnership with Singapore Management University in the Maritime Economics Track programme to nurture a pipeline of young talent for the maritime sector. **ss**

Hans Van der Zijde (left) and Manish Jain of Womar are focused on chemical tankers





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