OFFSHOREMARINE

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SYNERGY IN EXECUTION EXCELLENCE

Keppel Offshore & Marine

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Three projects from Keppel O&M were recognised as Singapore's top 50 engineering feats. Dr Foo Kok Seng, (center) ED (Shallow water), KOMtech, receiving the award from Singapore's Prime Minister Mr Lee Hsien Loong (right) witnessed by Er. Edwin Khew Teck Fook (left), President of Institute of Engineers Singapore.

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Harsh environment land rig delivered 41 days early

Keppel AmFELS, a wholly owned subsidiary of Keppel Offshore & Marine (Keppel O&M) in the United States, has successfully delivered one of the world's largest Harsh Environment Enhanced Mobility land rigs. The rig was delivered 41 days ahead of schedule and with a strong safety record.

Mr Simon Lee, President of Keppel AmFELS, said, "The early and safe delivery of this rig is a result of the strong execution capabilities of the yard and close teamwork with our customer. Even though it is the first land rig of its type to be built by Keppel, we are able to leverage the experience and expertise of Keppel O&M to undertake such complex projects and deliver it to the satisfaction of our customer. It extends the track record of Keppel AmFELS as the leading rig building yard in the Gulf of Mexico."

A highlight of the yard's commitment to the quality, safety and execution excellence was the successful load out of all barges related to the project.

Mr Octavio Gomez, Keppel AmFELS' project manager, said, "While this project was a first- ofits-kind for us, we were able to overcome the challenges and achieved this impressive milestone through careful planning, communication and strong vigilance with our customer and



Keppel AmFELS delivered one of the world's largest land rigs 41 days ahead of schedule and with a strong safety record

stakeholders. It is important for us to execute well but more importantly, in doing so, to ensure the safety of everyone."

As part of its safety measures and campaigns, the yard has also been widely promoting and enforcing the Keppel Group's 5 Safety Principles.

Based in Brownsville, Texas, Keppel AmFELS' work scope included the engineering, procurement and construction of the Enhanced Mobility land rig. The building of the land rig is a natural extension of Keppel AmFELS' offshore jackup rig construction business and reflects Keppel's continuing drive to look for new opportunities to service its customers.

Keppel AmFELS' other ongoing projects includes the construction of a KFELS B Class jackup rig for Mexican drilling company, Perforadora Central.

Growing presence in Russia



The management and teams from Keppel FELS, Rosnett and MHWirth are looking forward to a strong partnership between the three companies during the shareholders' agreement signing ceremony on 19 May 2016 (Photo: Rosneft Oil Company)

Keppel Offshore & Marine (Keppel O&M) entered into a shareholders' agreement on 19 May 2016 with Russian national oil company, Rosneft Oil Company (Rosneft), and Norwegian drilling equipment firm, MHWirth, to set up a Singapore incorporated Joint Venture Company (JVCO). The shareholding of Keppel O&M, Rosneft and MHWirth in the JVCO will be 45%, 45% and 10% respectively.

The JVCO will establish a wholly-owned Design and Engineering Centre (DEC) in the Russian Federation, and its principal business activities will be in relation to the design and engineering of mobile offshore drilling units (MODUs) for shallow waters to cater to the region. Both the JVCO and the DEC will, in the conduct of its business and activities, adhere to the prevailing US and European Union sanctions imposed on the Russian offshore oil and gas sector.

The initial projects undertaken by the DEC will be from Rosneft for design and engineering work related to shallow water platforms. It will also look to take on work from other Russian and international customers.

Rosneft is the leader of Russia's petroleum industry and the world's largest public oil and gas Company by liquid hydrocarbon production and reserves. The Company's core operations are in hydrocarbon exploration and appraisal, production of oil, gas and gas condensate, offshore developments, refining, marketing of oil, gas and oil products inside and outside of Russia.

MHWirth is a leading global provider of first-class drilling solutions and services designed to offer its valued clients with a safer, more efficient and reliable alternative.

Keppel's collaboration with Russia dates back to the 1980s when Keppel FELS and Keppel Shipyard serviced various owners in offshore rig construction and repair, as well as ship repair and ship conversion respectively. Since then, Keppel has undertaken numerous other projects including newbuild vessel construction for Russia.

Synergy in delivery of MODEC FPSO

Keppel FELS Brasil SA's BrasFELS shipyard has completed the integration and completion works on Floating Production Storage and Offloading (FPSO) unit, Cidade de Caraguatatuba MV27, safely in June 2016, on time and to the highest quality for MODEC Offshore Production Systems (Singapore) Pte. Ltd., a MODEC, Inc. group company (MODEC). The FPSO vessel will be deployed to support Petrobras' operations in the Lapa (formerly Carioca) oilfield of the Santos Basin, Brazil.

The successful delivery to MODEC was made possible by the strong synergy between Keppel Shipyard and BrasFELS, both subsidiaries of Keppel Offshore & Marine.

The FPSO first arrived at Keppel Shipyard in early 2015 for her installation of modules and integration works. Apart from the installation of 35 modules, the shipyard's job scope also includes the fabrication and installation of a flare tower, helideck and crane column. After Keppel Shipyard's scope of work was completed with no lost-time incidents, the FPSO vessel departed from the shipyard in Singapore and arrived safely at BrasFELS for its next phase of integration and finalisation works in 1Q 2016.

Mr Kwok Kai Choong, CEO of Keppel FELS Brasil, said, "The safe and expedient delivery of FPSO Cidade de Caraguatatuba MV27 reflects the strong teamwork BrasFELS has established with MODEC from past partnerships, and also the synergy among Keppel's global network of yards. We are honoured to have their continued trust and support and we are committed to sustain our position as the shipyard of choice for both MODEC and Brazil."

Mr Sateesh Dev, President & CEO of MODEC Offshore Production Systems (Singapore) said, "We are glad to complete another high quality FPSO project together with Keppel. We continuously bring our projects to the Keppel Group because of their strong reliability in meeting our needs and delivering on time and of the highest safety and quality standards. Leveraging our complementary expertise and experiences, our companies have successfully collaborated on a number of major FPSO projects for Brazil over the years.

"MODEC is committed to support the development and growth of Brazil's significant oil and gas industry, and we are glad to have a good partner in the Keppel Group to help us on this journey."

FPSO Cidade de Caraguatatuba MV27 has the capability to process up to 100,000 barrels of oil per day and 177MM standard cubic feet of gas per day and has a storage capacity of 1,600,000 barrels of oil.

BrasFELS and MODEC are presently collaborating on a fifth FPSO project, FPSO Cidade de Campos dos Goytacazes MV29. BrasFELS' work scope comprises the fabrication and integration of nine topside production modules. The vessel is expected to arrive at the shipyard by the first quarter of 2017 for integration.



Keppel Shipyard and BrasFELS worked together seamlessly to deliver FPSO Cidade de Caraguatatuba MV27 safely, on time and to the highest standards

Caspian showcase

Despite the challenging conditions in the oil and gas market, Keppel Offshore & Marine's Caspian Shipyard Company (CSC) in Azerbaijan has been kept busy with a variety of projects and continues to execute them well. As part of its efforts to ensure every project is well managed, the yard leverages the expertise provided from Keppel FELS in Singapore.

STB-1 BARGE DELIVERY

On 12 May 2016, CSC recently delivered the STB-1, a purpose-

built jacket transportation and launch barge, to BP Exploration (Shah Deniz) on schedule, safely and within budget. Work on the vessel included strengthening the steel structure of the hull and Class Renewal.

In a letter of commendation to the yard, Mr Brian Garside, General Manager for Marine and Subsea of BP Exploration (Shah Deniz) wrote, "...Company would like to place on record its thanks to CSC for delivering against a tight schedule whilst



The STB-1, a purpose-built jacket transportation and launch barge was delivered to BP Exploration (Shah Deniz) on schedule, safely and within budget

accommodating scope increase along the way... (Departments from) Design, planning, scheduling, HSE, quality, execution and project management all working as a team ensured the project was delivered to expectations and more... Yet again CSC has delivered on their commitments and demonstrated its usual proactive 'Can-Do!' approach to all aspects."

CSC was ably supported by Keppel FELS which provided a team of five including a Project Manager, a Project Superintendent and a Safety officer for five months. Their job scope included prefabrication of steel structures and installation, Special Periodic Survey re-certification, blasting and painting of the external hull and inclination trials.

ISTIGLAL RIG UPGRADE

Another project on track to completion at CSC is the upgrade of the semisubmersible (semi)



The Istiglal rig underwent upgrading and refurbishment at CSC with support from commissioning and production supervisors from Keppel FELS



Harnessing the synergies of Keppel O&M's global resources, including support from a team of 80 from Keppel FELS, work on the first modern semi to be completely built in Azerbaijan is in an advanced stage

drilling rig, Istiglal, for Caspian Drilling Company (CDC), a subsidiary of the State Oil Company of Azerbaijan Republic (SOCAR). The rig underwent upgrading and refurbishment at the yard and departed for final commissioning works at the anchorage on 7 June 2016.

CSC was able to call on commissioning and production supervisors from Keppel FELS to ensure that work on the Istiglal progressed smoothly and on schedule. Upon completion of the final testing, commissioning and rig acceptance process by BP, the vessel will be chartered to work for BP in the Shah Deniz field.

NEWBUILD DSS™ 38M SEMI

A third major project at CSC is the newbuild construction of the drilling semi for CDC. The rig is being built to Keppel's proprietary DSS™ 38M design, which has been customised for the Caspian Sea's harsh environment condition.

Work on the project is in the advanced stages, including testing and commissioning work to be completed. It is the first modern semi to be completely built in Azerbaijan, and harnesses the synergies of Keppel O&M's global network of yards in the design and construction. CSC is undertaking the fabrication, integration, testing and commissioning of the rig while its joint-venture yard with SOCAR, Baku Shipyard LLC, fabricated the pontoons and columns. Keppel FELS is providing the engineering, procurement and technical support through a team of 80 including the Project Manager, Construction Manager, Project Superintendents, as well as Commissioning and Production Supervisors.

Safe and steady progress in Baku shipyard

Baku Shipyard celebrated two million man-hours worked without lost time incidents for its Subsea Construction Vessel (SCV) project for BP Exploration (Shah Deniz) together with its client, Keppel Singmarine senior management and classification society, DNV-GL, on 5 May 2016. The vessel, named Khankendi, was successfully launched using state-of-the-art trolley transfer system later on 7 May 2016.

Designed by Marine Technology Development, the ship design arm of Keppel Offshore & Marine, Khankendi is about 82 percent completed to-date, and will be entering the commissioning phase soon.



Management representatives from Keppel and BP Exploration including, Mr Lam Khee Chong (fifth from left), GM, Baku Shipyard, Mr Abu Bakar (fifth from right), MD, Keppel Singmarine, and Mr Frank Wilson (fourth from right), Vice President (AZ Marine & Subsea), BP, celebrated the successful launch of the SCV Khankendi and its two million man-hours marked without lost time incident

Mr Lam Khee Chong, GM of Baku Shipyard, said "The achievement of the safety milestone is the result of the dedication of both Baku Shipyard, Keppel Singmarine and BP project teams. Without underestimating the challenges ahead, we are confident that with our steadfast commitment to quality and safety, the SCV will be delivered safely and to our client's satisfaction in 2Q 2017."

The vessel has been specifically designed and built to support subsea installations, umbilical lay, as well as Remotely Operated Vehicle (ROV) and diving activities of the Shah Deniz stage 2 project.

Leadership succession at Keppel FELS

After 23 years of service with Keppel, Mr Wong Kok Seng, former Managing Director (Offshore) of Keppel Offshore & Marine (Keppel O&M) and Managing Director of Keppel FELS retired on 4 July 2016.

Following his retirement, Mr Wong has been appointed as Advisor to CEO of Keppel O&M.

Under Mr Wong's sterling leadership, Keppel FELS achieved operational excellence and organisational growth to become the world's largest rig builder.

In 2014, the yard was conferred the title of "Largest Manufacturer of Offshore Rigs – Current" by Guinness World Record for delivering 21 offshore rigs in 2013.

Mr Chow Yew Yuen, CEO of Keppel O&M, said, "I wish to express my sincere gratitude to Kok Seng for his dedication and commitment to Keppel.

"Besides the many track records that he has enabled the yard to achieve, Kok Seng has also groomed and mentored many young and capable talents, passing his vast knowledge onto them."

Mr Chris Ong, who previously served as Deputy Managing Director, has succeeded Mr Wong as Managing Director of Keppel FELS from 5 July 2016.



Mr Chris Ong

A Keppel Corporation Scholarship award holder, Mr Ong joined Keppel FELS in 1999 and went on to serve in various leadership roles in engineering, operations, marketing and commercial.

Mr Ong's preceding appointments in Keppel FELS include Executive Director (Commercial), Acting Executive Director (Operations) and General Manager (Engineering) where he oversaw the various aspects of the business from commercial to engineering.

He was heavily involved in contract negotiations, building customer relationships, dealing with vendors and subcontractors as well as overseeing R&D projects.

Mr Ong has a Master's Degree in Electrical Engineering from the National University of Singapore.



Mr Wong Kok Seng

Mr Chow added, "Chris brings strong core values, engineering expertise and deep industry knowledge to Keppel FELS as it positions itself for the next phase of growth and development amidst challenging market conditions.

"I am confident Chris will lead Keppel FELS successfully into the future."

Regular stream of repair jobs for N-KOM



Container vessels, Kota Karim (left) and Kota Kamil, entering the dry docks at N-KOM for repair work

Strategically situated at the crossroads of the Arabian Gulf, Nakilat-Keppel Offshore & Marine (N-KOM) is well positioned to service the vessels plying in the Middle East region as well as gas carriers that call at the nearby Ras Laffan terminal in Qatar.

Leveraging its geographical advantage and operational expertise, N-KOM continues to strengthen its track record and reputation as a choice solution provider in the region in the first half of 2016, securing a number of repair jobs ranging from container vessels to tankers.

CONTAINER VESSELS

In April and March, N-KOM successfully completed the drydocking and repairs for two container vessels, Kota Kamil and Kota Karim, belonging to Pacific International Lines (PIL). Both sister vessels underwent routine repairs such as main and auxiliary engine turbo charger overhauls, renewal of the echo sounder, removal and survey of the tail shafts and steel repairs for a total of 62 hatch covers. Both vessels were repaired within eight days and delivered on time and within budget.

Mr Mohammad Zahirul Islam, Assistant General Manager (Technical Division) of PIL, said, "We are very pleased with the quality and timely delivery of these vessels, and look forward to a long-term partnership with N-KOM for future vessel repairs in the region."

TANKERS

In 2015, N-KOM successfully tripled its tanker repair business by undertaking several projects for new clients such as Bluewake Shipping, Mideast Shipmanagement, Sea World Management and Victoria Shipmanagement among others. Ten of the tankers that N-KOM drydocked and repaired were for Dynacom Tankers Management, making them the shipyard's top customer in 2015.

Continuing this momentum, the

shipyard undertook a number of tanker repair and maintenance projects in the first half of 2016, which were all delivered in a safe and timely manner. Customers include repeat client Eurotankers which sent its two crude oil tankers, Genie and Eurostrength, for routine repairs such as engine overhauls, hull treatment and coating as well as other general refurbishments.

Other projects that N-KOM took on included the installation of Schneekluth ducts for Marine Management Services' Suezmax crude oil tanker, United Emblem, and the installation of a Propeller Boss Cap Fin for Maran Tankers' Very Large Crude Carrier (VLCC), Antonis I. Angelicoussis. Blasting and painting works were also carried out for the VLCC within a tight timeframe of 8 days.

One of the new additions to the shipyard's growing clientele in 1H 2016 is Zen Shipping, which sent their 14,000 dwt chemical tanker Bon Atlantico routine drydocking and hydraulic pipe repairs in April.

BULK CARRIERS

Apart from the thriving tanker repair business, N-KOM also took on repairs for a number of bulk carriers such as Charterwell Maritime's Diane and Milaha's Qatar Spirit. Among the repairs carried out were overhauls of the propellers and sea valves as well as renewal of slewing bearings for three cranes onboard the vessels.

Collaborating to innovate

As part of efforts to drive technology and innovation, Keppel Offshore & Marine (Keppel O&M) actively partners top industry players and academic institutions to develop marketleading solutions. The month of May saw collaborations between Keppel O&M and three different organisations.

CATWALK OF THE FUTURE

Keppel O&M's design arm, Offshore Technology Development (OTD), is collaborating with Forum Energy Technologies, an international oilfield products company, to offer the latest in hydraulic catwalk technology for offshore rigs.

The partnership, announced on 5 May 2016 at the Offshore Technology Conference in Houston, offers operators a premium jackup rig fitted with a catwalk that boasts best-in-class cycle times for moving drill pipes and tubulars from the pipe storage area up to the drill floor.

Hydraulic catwalks are proven to provide a safer and more productive drilling environment by reducing the direct handling of tubulars and large equipment by workers.

Optimised for the KFELS B and Super B class jackup rigs, this special-model, automated system requires no physical connection with the drill floor module and moves independently of the drilling module. The catwalk technology can be easily



The hydraulic catwalk (pictured) installed on a KFELS B Class jackup rig offers best-in-class cycle times for moving drill pipes and tubulars from the pipe storage area up to the drill floor

retrofitted onto existing rigs, and significantly reduces safety risks for the drilling crew while improving drilling efficiency.

Mr Cris Gaut, Chairman and CEO of Forum Energy Technologies, said, "We are pleased to be partnering OTD, a company known for their rig-designing knowledge and state-of-the-art manufacturing yards.

"This allows us to deliver an innovative solution specially designed for Keppel's best-in-class jackup rigs, which helps make these rigs the most efficient in the world. The OTD-Forum catwalk also offers the widest range of pipe handling capabilities, faster cycle times and improved safety by reducing manpower requirements."

Mr Wong Kok Seng, MD of Keppel O&M (Offshore) and Keppel FELS, shared, "This partnership with Forum enables us to enhance pipehandling capabilities on Keppel's rigs and reinforces our reputation for offering the safest and most efficient rigs in the industry.

"It combines OTD's expertise in jackup rigs and in-depth capabilities of Forum's catwalks to provide customers with innovative and user-friendly solutions."

NUMERICAL WAVE BASIN

Keppel Offshore & Marine Technology Centre (KOMtech) has teamed up with Lloyd's Register Global Technology Centre in Singapore to improve the safety and performance of new semisubmersible (semi) designs.

Co-funded by the Maritime and Port Authority of Singapore under the Maritime Innovation & Technology Fund, the joint research and development project (JDP) will use Lloyd's Register's NewWave simulation tool and Keppel O&M's in-house semi model test data to develop advanced numerical simulation capabilities.

As semis are typically deployed under harsh-environment conditions with extreme wave heights, the NewWave simulation tool will utilise high-performance computing to predict behaviours of semis operating in extreme wave conditions.

KOMtech's deepwater know-how and extensive in-house data from model tests carried out on semis will be used to benchmark and validate this new technology. The JDP will provide a faster and more efficient way of simulating wave conditions instead of having to use model tests to capture possible waves and heading combinations.

Mr Michael Chia, MD of KOMtech, said, "Our collaboration with Lloyd's Register is part of KOMtech's continuous efforts to work with industry partners to develop more robust solutions that benefit our stakeholders. We will utilise state-of-the-art numerical modelling capabilities to provide more effective analysis to improve semi designs, thereby helping to ensure safer operations in deeper waters and harsher environments."

3D PRINTING REVOLUTION

Recognising that 3D printing has the potential to revolutionise manufacturing processes, KOMtech has partnered the Nanyang Technological University (NTU) to develop 3D printing solutions for the offshore and marine industry.

The research collaboration agreement was signed on 17 May 2016 as part of the launch of NTU's new 3D printing research centre, SC3DP. 3D printing, or additive manufacturing, is part of Singapore's Research Innovation Enterprise 2020 Plan.

Mr Aziz Merchant, ED of KOMtech, said, "As a leader in the offshore and marine industry, Keppel O&M has always been at the forefront of developing and adopting technological innovations to improve our designs, processes and productivity.

"We are excited about the potential of 3D printing as it could be a game changer in construction methodology and the design of offshore and marine products. 3D printing could potentially make it faster and cheaper to build, and enhance the functionality and safety of products."

The research collaboration will look into ways to boost efficiency in the construction of certain complex offshore and marine components. Kicking off the first phase will be a critical review of materials used in the industry to determine which components can be 3D printed.



The research collaboration agreement between the Nanyang Technological University (NTU) and Keppel Offshore & Marine Technology Centre (KOMtech) was signed on 17 May 2016 by Mr Aziz Merchant (extreme right), ED of KOMtech, and Prof Lam Khin Yong (second from left), NTU Chief of Staff and Vice President of Research, and was witnessed by Mr S Iswaran (third from left), Minister for Trade and Industry (Industry), Singapore

Partnership for new solutions



Mr Chow Yew Yuen (right), CEO of Keppel O&M, and Mr Derek Novak (left), President (Pacific Division) of ABS, exchanged a momento to commemorate the workshop

The best minds from Keppel Offshore & Marine (Keppel O&M) and classification society, ABS, came together for a workshop on 1 and 2 June 2016 to explore the feasibility of several major joint development projects (JDPs).

The JDPs explore solutions that will support the offshore industry

in the near and medium term, and cover areas such as special purpose rigs, data analytics and subsea technology.

Senior management, technical personnel and researchers from both companies discussed new developments currently taking shape in the offshore and marine industry in an attempt to zoom in on potential areas of collaboration.

Mr Michael Chia, MD (Marine & Technology) of Keppel O&M and Keppel Offshore & Marine Technology Centre (KOMtech), said, "This collaboration is part of KOMtech's strategy to deepen our collaboration with like-minded industry veterans. As a longtime partner, we greatly appreciate ABS' views on the industry and insights into technology trends."

Mr Derek Novak, President (Pacific Division) of ABS, said, "Our collaboration with Keppel showcases our role as a technology leader and trusted advisor in the industry. Working with Keppel on these JDPs illustrates our ability to develop new technologies, find novel solutions and establish fresh approaches for validating these concepts."

Brainstorming future technologies

What are the trends and technologies potentially able to challenge established business models and companies that are slow to adapt? This was the primary discussion theme during the Disruption and Innovation Sharing Session held at Keppel Leadership Institute on 27 May 2016.

Over 70 members of the Group's senior management came

together to anticipate and discuss significant technology trends that may impact Keppel's businesses. They collectively brainstormed innovative ways to seize opportunities from the trends. Addressing attendees of the workshop, Mr Loh Chin Hua, CEO, Keppel Corporation and Chairman, Keppel Offshore & Marine, spoke about how growing digitalisation trends are transforming how businesses sell, market and communicate, in turn shaking up traditional business models.

During the sharing session, invited speaker, Professor Serguei Netessine, Timken Chaired Professor of Global Technology and Innovation at INSEAD, spoke on the Business Model Innovation approach and drew on case studies to explain how companies improved their profitability and productivity.

Among Singapore's top engineering feats

THREE OF KEPPEL OFFSHORE & MARINE'S (KEPPEL O&M) PROJECTS HAVE BEEN RECOGNISED AS SINGAPORE'S TOP 50 ENGINEERING FEATS

Organised by the Institute of Engineers Singapore (IES), the winning projects from Keppel O&M are the semisubmersible DSS™ Series rigs, KFELS N Class rigs and the Arctic icebreakers.

Launched on 1 March 2016, the Engineering Feats @ IES-SG 50 competition looks at projects deemed to have made great economic, societal or infrastructural impact to Singapore since her independence in 1965. Projects from over 20 different industries were shortlisted by an IES committee and the top 50 winners were chosen by public voting online. Voting concluded on 30 May 2016 and the winning projects were presented by Singapore Prime Minister Mr Lee Hsien Loong on 1 July 2016 at the IES Golden Jubilee Dinner.

The winning projects by Keppel O&M have also been internationally recognised as industry benchmarks and helped strengthen the company's position as the world's leader in the development, design and construction of offshore rigs and specialised vessels.



The three projects from Keppel O&M chosen by the public as Singapore's top 50 engineering feats are: (from clockwise) mega drilling semisubmersible DSS™ Series rigs, KFELS N Class jackup rigs and Artic icebreakers

DSS™ SERIES SEMISUBMERSIBLES

The mega drilling semisubmersible DSS™ Series is among the world's most technologically advanced deepwater drilling rigs. Keppel O&M is the first in the world to have developed these proprietary semisubmersible designs for advanced deepwater drilling.

KFELS N CLASS JACKUP

The KFELS N Class jackup rigs can handle ultra-harsh environments in water depths ranging from 400-500 feet, which is 40 per cent deeper than what traditional units can reach in benign waters. The series was conceptualised to develop an innovative and cost-effective jack-up solution for the Norwegian Sector of the North Sea, one of the world's harshest operating environments for offshore exploration and production

ARCTIC ICEBREAKERS

As for the Arctic icebreakers, Keppel Singmarine is the first shipyard in Asia to have successfully engineered and built icebreakers designed for operations in the Arctic region. The two icebreakers, Varandey and Toboy, are designed to cut through solid ice of over 1.7 metres thick and operate in extreme temperatures as low as -45 degrees Celsius.

Safety stewardship in Nantong

Keppel Nantong continues to strengthen its safety culture through a range of initiatives that fosters close ties with local authorities and increases safety awareness among employees. The shipyard's robust safety culture and practices are regularly cited as industry benchmarks to emulate.

On 18 May 2016, Keppel Nantong hosted a delegation from the State Administration of Work Safety. The delegation, which included members of media, such as China Central Television (CCTV), was brought on a yard tour where they learnt about the different facilities and strategies that Keppel Nantong employs to continually strengthen its safety culture.

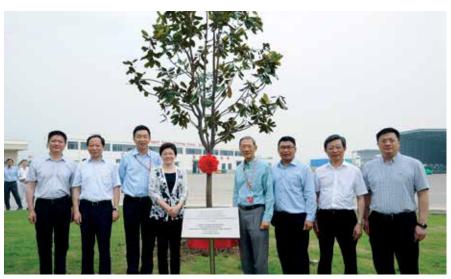
Mr Tian Le Qun, Deputy Inspector of the State Administration of Work Safety, commended Keppel Nantong's strong commitment to safety and encouraged local authorities to use the yard as a benchmark when pushing for other organisations to improve its safety culture.

Separately, Keppel Corporation's Board Safety Committee (BSC) visited Keppel Nantong on 14 and 15 June 2016 to better understand and further strengthen the safety culture of Keppel's overseas business units.

The Board members, including Dr Lee Boon Yang, Chairman of Keppel Corporation, and Mr Loh Chin Hua, CEO, Keppel Corporation and Chairman, Keppel Offshore & Marine, were joined by Ms Han



Mr Wang Zhen Quan (in black jacket), National Supervisory Bureau Safety Director, was given a tour of Keppel Nantong's Safety Centre by Mr Edmund Lek (third from the left), President of Keppel Nantong



Commemorating the visit to Keppel Nantong with a tree-planting ceremony were (L-R): Mr Tai Jiang Miao, Director General of Nantong Bureau of Work Safety; Mr Cao Jin Hai, Deputy Secretary and Chief Executive of Nantong Gangzha District; Mr Loh Chin Hua, Chairman of Keppel Offshore & Marine and CEO of Keppel Corporation; Ms Han Li Ming, Mayor and Secretary of Party Group of Nantong Municipal Government; Dr Lee Boon Yang, Chairman of Keppel Corporation; Mr Edmund Lek, President of Keppel Nantong; Mr Gu Nuo Zhi, Vice Chairman of Nantong Municipal Political Consultative Conference and Secretary General of Nantong Municipal Government; and Mr Wang Xiao Bin, Deputy Secretary General of Nantong Municipal Government

Li Ming, Mayor of Nantong Municipal Government during their visit on 15 June 2016.

To commemorate the event, the Nantong Mayor and BSC members participated in a tree-planting ceremony, symbolising the joint effort by Keppel and the Nantong government to strengthen workplace safety. The Jiangsu Provincial Government also presented Keppel Nantong with the 2015 Safety Model Construction Enterprise Award, marking the first time that the shipyard has received recognition for safety excellence at the provincial level.

7 million man-hours without LTI

Keppel Shipyard and Bumi Armada commemorated the achievement of seven million man-hours without any Lost-Time Incidents (LTI) for Floating Production Storage and Offloading (FPSO) vessel Armada Olombendo on 10 June 2016. For achieving the safety milestone, Keppel Shipyard was awarded a bonus of \$30,000 by Bumi Armada.

Mr Leon A Harland, CEO of Bumi Armada, said, "I am pleased with the progress that Armada Olombendo is making while keeping to high safety standards. We look forward to another quality and safe delivery by Keppel for Bumi Armada."

The FPSO is currently undergoing integration, mechanical completion

and commissioning works. Upon delivery in 3Q 2016, it will be producing for the Angola Block 15/06 East Hub Project 350 km northwest of Luanda, Angola.



For achieving seven million manhours without LTI for Floating Production Storage and Offloading (FPSO) vessel Armada Olombendo, Mr Albert Kee (seventh from left), ED (Operations), Keppel Shipyard, received the safety cheque from Mr Leon A Harland (sixth from left), CEO, Bumi Armada

Watch on trends

To help keep the Group abreast of global macroeconomic trends and industry developments, Keppel Corporation's Group Risk & Compliance and Keppel Leadership Institute invited Dr Thierry Apoteker, Chairman of TAC Economics, to share his views on the global economy on 10 June 2016. Speaking on the global economic outlook, Dr Apoteker forecasted a modest growth improvement in 2016 and early 2017, with growth stabilisation in the United States, Eurozone recovery and China benefitting from policy easing. However, he also cautioned that global systemic risks, such as the



Keppelites were kept abreast of macroeconomic trends and industry developments during the sharing session by Dr Thierry Apoteker, Chairman of TAC Economics on 10 June 2016

global financial overhang and China's potential devaluation will remain, and corporations need to understand these implications and take pre-emptive mitigating measures.

Apart from macroeconomic developments, Dr Apoteker also shared his analysis on the political and geopolitical issues in Latin America, Russia and the Arabian Peninsula, as well as the risks and industry implications of various macro scenarios. The seminar concluded with an engaging question and answer session followed by a business networking session.

Seeking opportunities in Mexico



Mr Simon Lee (second row, sixth from left), President, Keppel AmFELS, shared his views on business opportunities in Mexico at a breakfast hosted by President Tony Tan (first row, fourth from left) for the Singapore business delegation on 9 June 2016 (Photo: Ministry of Communications & Information)

President Tony Tan embarked on a four-day State Visit to Mexico City from 7 to 10 June 2016, marking the first state visit to Latin America by a Singapore Head of State. During the visit, Mr Simon Lee, President, Keppel AmFELS, represented the Keppel Group at a breakfast dialogue hosted by President Tony Tan on 9 June 2016. Over breakfast, Mr Lee and other Singapore business leaders exchanged views about business opportunities in Mexico.

Following the dialogue, Keppel joined 17 other Singapore companies and 80 Mexican businesses at the Mexico-Singapore Business Forum organised by the Singapore Business Federation and the Mexican Business Council for Foreign Trade, Investment and Technology (COMCE). During the networking event, Singapore's Minister for Trade and Industry (Trade), Mr Lim Hng Kiang, took the opportunity to encourage more Singapore companies to venture into Mexico to tap on opportunities that the country has to offer.

Mr Lee also represented Keppel AmFELS at a State Lunch hosted by Mexican President Enrique Peña Nieto at the National Palace and attended by President Tony Tan, as well as other Singapore businesses on 10 June 2016.

Strong contributor to Brownsville

On 25 May 2016, a delegation comprising Ms Tracye McDaniel, President and CEO of Texas



Ms Tracye McDaniel (third from left), President and CEO of TexasOne, together with representatives from BEDC were hosted by Mr Simon Lee (fourth from left), President, Keppel AmFELS, on a tour of the yard to learn more about Keppel AmFELS operations, ongoing projects and community initiatives

Economic Development Corporation, Inc. (TexasOne), Mr Jason Hilts, President of Brownsville Economy Development Board (BEDC), and representatives from Governor Greg Abbott's office visited Keppel AmFELS to learn about its operations, as well as its people development and community initiatives.

Ms McDaniel commented on the yard's high standard of excellence during a tour around the premises. She said, "Keppel AmFELS lives up to its reputation of quality execution and I am very impressed with the yard's efficiency and robust safety culture."

Mr Simon Lee, President of Keppel AmFELS, added, "As the largest private employer in Brownsville, we are conscious of the impact we have on the community. Besides providing jobs, we strive to ensure that we do good even as we do well."

To thank Keppel AmFELS for its contributions to the state's economy and local community, TexasOne and Brownsville BEDC hosted a luncheon for the yard's management and employees.

International showcase

Keppel Offshore & Marine (Keppel O&M) is a regular participant of conferences and exhibitions to showcase its industry expertise and experience. It recently took part in Posidonia 2016, a biennial international shipping exhibition held in Athens, Greece from 6 to 10 June 2016, which drew more than 1,800 exhibitors from 90 countries.

Represented by its business units including Keppel Shipyard and Nakilat-Keppel Offshore & Marine



The Keppel Offshore & Marine delegation, led by Mr Michael Chia (fifth from right), MD (Marine and Technology), Keppel O&M and KOMtech, and Mr Chor How Jat (sixth from right), MD, Keppel Shipyard, and Mr David Loh (fifth from left), CEO, N-KOM, mingled with clients and business partners at Keppel O&M's booth at Posidonia 2016

(N-KOM), Keppel O&M showcased its wide array of marine solutions, ranging from ship repair and conversion to emulsified fuel technology.

Mr Michael Chia, MD (Marine and Technology), Keppel O&M, shared, "The high-profile exhibition is a great opportunity for Keppel O&M to widen our network and strengthen ties with the global shipping and marine community."

Posidonia is hailed as the largest gathering in the international shipping calendar and includes networking sessions, technical workshops and seminars to keep attendees up to speed on the latest industry updates.

Award for exemplary employee

An exemplary safety ambassador, Mr Muhammad Ahnaf Bin Abdul Manaf who works at Keppel Shipyard was recognised for his efforts with an award at the annual National Trades Union Congress May Day Model Partnership Awards held on 20 May 2016. The Awards support skills and productivity upgrading in the workplace.

Ahnaf constantly seeks opportunities to upgrade himself so that he remains relevant in a changing business environment. After attaining the Advanced Workplace Safety & Health (WSH) Specialist Diploma, he took on the role of a Health, Safety & Environment (HSE) Technician in 2014.

Recognised as a caring leader and mentor, Ahnaf constantly motivates his colleagues and readily shares his knowledge and skills with them.

Ahnaf is proud to be a champion for safety excellence at Keppel. He shared, "Life is precious. Safety is important and we need to be vigilant and look out for each other."



Muhammad Ahnaf Bin Abdul Manaf (centre) from Keppel Shipyard was a recipient of the 2016 May Day Model Partnership Award (Photo: National Trades Union Congress)

CENTRESPREAD



Spotlight on partnerships

Despite the headwinds facing the sector, industry leaders and experts attending the annual Offshore Technology Conference (OTC) in Houston, Texas, the United States, from 2 to 5 May 2016 remained positive about the longterm market outlook, and were confident that oil prices would eventually recover.

In the current environment, Keppel Offshore and Marine (Keppel O&M) is focused on executing projects well and delivering them safely, on time and within budget, improving operational efficiencies and also pursuing new opportunities.

A key highlight of the OTC was the annual private cocktail reception hosted by Keppel O&M on 3 May 2016, which saw senior management mingling with about 700 customers, partners and associates to exchange insights and explore new business opportunities.

During the reception, Keppel also displayed various exhibition panels, videos and product models showcasing its innovative technologies and global network of yards. This included Keppel's CAN DO Barge II which services deep water vessels in Singapore and Africa, as well as proprietary designs for liftboats and floating liquefaction vessels to demonstrate new growth opportunities in adjacent businesses.

OTC has been the world's foremost event for the development of offshore resources in the oil and gas industry since 1969. This year, more than 68,000 delegates from 120 countries attended the conference.

CENTRESPREAD



Customers, business partners and friends catching up at Keppel's reception (from left to right in each photo): 1. Mr Loh Chin Hua, CEO of Keppel Corporation and Chairman of Keppel Offshore & Marine (Keppel O&M); Mr Carl Trowell, President and CEO of ENSCO; Mr Chow Yew Yuen, CEO of Keppel O&M; 2. Mr Simen Lieungh, CEO of Odfjell Drilling; Mr Wong Kok Seng, MD, Keppel O&M (Offshore) and Keppel FELS; 3. Mr Patricio Garza, Director, Grupo R; Mr Chow Yew Yuen, CEO of Keppel O&M; Mr Ramiro Garza, CEO of Grupo R; Mr Simon Lee, President of Keppel AmFELS; 4. Mr Tan Leong Peng, GM (Engineering) of Keppel FELS; Mr Chris Ong, Deputy MD of Keppel FELS; Mrs Susan Knowlton; Mr John Knowlton, Senior Vice President-Technical, ENSCO; 5. Prof Chan Eng Soon, Vice Provost (Special Duties) and Keppel Chair Professor, National University of Singapore; Mr Chor How Jat, MD of Keppel Shipyard; Mr Katsuyuki Imaizumi, Senior Vice President, MODEC Management Services; 6. Mr Raphael Siri, Senior Vice President, SapuraKencana Drilling; Mr Wong Kok Seng,MD, Keppel O&M (Offshore) and Keppel FELS; 7. Mr Louis Chow. ED (Commercial) of Keppel Shipyard: Mr Tony Ouinn, Director, FPSO Business Acquisition. SBM Offshore: Mr Stein Rasmussen, President of SBM Chow, ED (Commercial) of Keppel Shipyard; Mr Tony Quinn, Director, FPSO Business Acquisition, SBM Offshore; Mr Stein Rasmussen, President of SBM Offshore USA; Mr Werner Bornstein, Vice President, Floating Production Units, SBM Offshore; 8. Mr Peter Jacobsson, CEO of Floatel International; Mr Chow Yew Yuen, CEO of Keppel O&M; Mr Glen Ole Rødland, Senior Partner, HitecVision; 9. Mr Keith Teo, GM (Marketing) of Keppel FELS; Mr Hans Deul, Chief Engineer and Vice President, Research and Development Engineering, Noble Corporation; 10. Mr Chris Ong, Deputy MD of Keppel FELS; Mr Manav Kumar, President & Director of Dynamic Drilling

Synergy spurs innovation and efficiency

In a strong push to improve productivity and efficiency, Keppel FELS has, in two years generated more than 200 ideas and achieved close to 250,000 manhours saved through the Synergy programme.

It was first introduced in 2014 by Mr Wong Kok Seng, then MD, Keppel FELS and now advisor to the CEO of Keppel Offshore & Marine (since 4 July 2016), as part of the yard's continuous efforts to streamline operations. The Synergy programme is an interdepartmental initiative that encourages all employees to identify areas of their work process that can be improved and develop solutions.

Mr Wong said, "Synergy creates solutions that enhance the whole system. The results over the last two years have been very impressive and I want to congratulate the teams and all those involved in developing and pushing for ideas to become reality. It has not just improved processes but fostered a stronger culture of cooperation."

Synergy is supervised by Programme Director, Mr Wong Fook Seng and Programme Manager, Ms Adeline Seah, with individuals from within Keppel FELS appointed as internal consultants to facilitate the execution of the projects. Overseeing the implementation of the 2015-2016 initiatives were Adam Zhang Chaoyi, Lead



Backed by management of Keppel FELS, the Synergy team of internal consultants and workshop participants have contributed significantly to the productivity and efficiency of the yard

Superintendent, Facility, Kwek Xiao Xuan, Subcontracts Executive, Ethan Goei Chun Huan, Process Excellence Engineer, Poh Tee Yuan, Senior Commercial Executive, and Wu Lin, Planning Engineer, Engineering.

To generate ideas, workshops are conducted for participants representing a variety of designations and departments to share their day-to-day work challenges and formulate ideas to improve processes.

"At these workshops, participants are taught analytical tools to better understand the problem. By applying the tools to their line of work, they are then able to improve upon their ideas," Wu Lin elaborated. "Internal consultants are also able to advise on the potential impact of the idea on processes down the line." As Adam Zhang explains, "We want to empower our participants to drive the changes they proposed at their own workplaces. To date, 111 Keppel employees have participated in the Synergy workshops; and many of them are yard and section managers who have effected change in their line of work."

Kwek Xiao Xuan added, "As internal consultants, we formulate the ideas with the participants, oversee the execution of the solutions and the analysis and synthesis of the results. We also help participants to better understand the different perspectives."

Implementing the solutions requires change and often, the team faced resistance from the ground when they tried to change established habits and processes. "Getting people to change their old practices is a tremendous challenge," remarked Ethan Goei. "Being from the same company eased the process as we understood the culture and were better able to convince the stakeholders to work with our ideas. I find it gratifying when people reflect that our solutions



At interdepartmental workshops, employees get a chance to air their opinions and formulate solutions to their problems

have finally eliminated their problems."

The success of Synergy at Keppel FELS has caught the attention of other business units. BrasFELS has since started their own Synergy programme in April 2016.

Poh Tee Yuan summed up the programme's achievement, "It has brought new waves of productivity and enhancements for Keppel FELS. Looking ahead, I am confident that Synergy will be a quintessential blueprint of Keppel's lean transformation."

Step change brings success

MODULAR ASSEMBLY OF MANIFOLDS

Manifolds, which are pipes that can branch out into many openings, can be very complex to assemble and install. In the previous process, manifolds were fabricated in workshops and individually installed at the shipyard regardless of the complexity of the manifold.

This was labour-intensive due to the difficulties of handling the manifolds onsite. To streamline the process, a Synergy team proposed that manifolds could be fabricated at the production workshop and assembled in modules before installation at the shipyard. When this was tested and proved significantly more productive, the production workshop readily took on the extra work.

PRE-CUT PENETRATIONS

Penetrations are the openings in a plate, wall, or floor that mechanical, electrical or structural items pass through. At the yard, these openings used to be manually cut and welded at the shipyard together with the assembly of the penetrants which could be pipes, cables, cable trays or structural beams. This process required extensive preparations and workers had difficulty bringing the needed tools and materials on site.

When a Synergy team first proposed for the penetrations to be cut and welded at the Panel line instead of at the assembly site, it meant additional manhours for Engineers to draw up the Cutting Plan drawings. However, this proved worthwhile as the implemented solution reduced the time spent during the production phase and saved the total number of manhours spent overall.

Grooming future leaders



Participants of this year's Emerging Leaders Programme (pictured with senior management) were engaged in a case-study workshop and courses that honed their self-awareness, development, and leadership skills

After a successful inaugural run in 2015, Keppel's Emerging Leaders Programme (ELP) returned for a second installment in 2016 and was attended by over 30 high-potential emerging talents who were handpicked from across the Group.

Developed in collaboration with established executive education provider, Centre for Creative Leadership, and business communications coaching agency, Intangible Communications, the ELP is aimed at accelerating the growth and development of aspiring Keppel leaders by equipping them with the key skills and mindset required to be a better team leader.

Held over the course of five months, the blended-learning programme included a series of online learning courses and also exposed Keppelites from around the world to six days of core classroom sessions from 13 May to 20 May 2016 at the Keppel Leadership Institute.

Keppelites actively participated in a case study workshop, as well as courses on 'Building trust', 'Adopting a growth mindset' and 'Executing strategy for growth', among others.

One of the main components of the programme was a project guided by senior management across the Group who served as executive sponsors providing mentorship to their group. During the course, participants discussed and shared their findings on various topics, including the implications of United Nations' **Climate Change Conference** (COP21) on Keppel Offshore & Marine's business, how Keppel Land can innovate to create 'homes of the future', as well as the transformation of the Keppel Group into a global conglomerate.

To allow participants to gain a deeper understanding of Keppel's businesses as well as the unique challenges faced by each business unit, most project topics were specially tailored to address pressing issues encountered by senior management across the Group. This allowed participants to develop the finesse needed to develop innovative solutions that address a wide array of challenges.

Reflecting on his experience as a course participant, Ankit Choudhary, Senior Research Engineer at Keppel Offshore & Marine Technology Centre shared, "I enjoyed meeting Keppelites from our business units all around the world and got the opportunity to learn more about the work they do. Through discussions with senior management and my peers, I am now more aware of opportunities for collaboration between the different business verticals."

Nurturing talent

BrasFELS, Keppel Offshore & Marine's shipyard in Brazil, has comprehensive programmes to train and nurture their employees. The month of June 2016 saw the fruition of a couple of such initiatives.

TRAINEE ENGINEERS GRADUATE

35 young talents recently graduated from the two-year BrasFELS' Trainee Engineer Programme on 1 June 2016.

Mr Marlin Khiew, President of BrasFELS, congratulated the graduates, "Our graduates of the Trainee Engineer programme are diamonds in the rough that have been cut and polished over two years. I am proud of how far you all have come, and I commend your supervisors, seniors and colleagues who have contributed to your growth."

Mr Luiz Caetano, BrasFELS' Operations Director, added, "With training and growth, we are certain that you all will be wellprepared to support our clients in a variety of services and products for the offshore and marine industry. You are all here to build your future with BrasFELS and the industry. This may be a challenging period, but it will be worthwhile when you see your knowledge and experiences transformed into 'giants' for the industry."

SHARING OF IDEAS

An initiative for BrasFELS' staff to share their ideas, experiences, initiatives, with management and colleagues is through the Trainee Engineers Alumni Programme where meetings are held bi-annually.

The first meeting of 2016 took place on 8 June, and saw sharing and discussions on a broad array of topics.

Elcker Nakamura, Supervisor of the Synergy Programme adopted from Keppel FELS in Singapore, elaborated on the programme which seeks to stimulate ideas and initiatives that would lead to the optimisation of resources and reductions in cost across departments.

Mr Marlin Khiew, challenged all the attendees to support Synergy with their ideas: "Let us bring our ideas and contribute to the organisation to sustain growth, nurture communities and empower lives."

Leon Ribeiro, an Executive Committee member of the Alumni Programme, talked about the social responsibility actions taken by the group such as donating food to an elderly home and other charity organisations in the city of Angra dos Reis.



Mr Marlin Khiew, President of BrasFELS, speaks about the importance of innovation in overcoming challenges



Trainee Engineers from batch 2014 received their certificates during the Graduation Ceremony

Achieving aspirations

As part of its people development strategy, Keppel Offshore & Marine (Keppel O&M) endorses lifelong learning and provides opportunities for employees to upgrade their skills through scholarships and structured training programmes.

Dorothy Han, Senior Manager, Engineering (Piping), Keppel FELS is one such Keppelite who took up the company's scholarship for a part-time diploma in Engineering (Marine, Offshore Technology) at Ngee Ann Polytechnic. Despite having to juggle between work and studies, the mother of two managed to attain a perfect Grade Point Average (GPA) of 4.0.

Reflecting on her journey, Dorothy shared, "I was initially apprehensive and was not confident of assimilating back into school. However, my classmates were inclusive and we helped each other along the way. My supervisors and colleagues have been very supportive as well, allowing me to focus on my assignments and exams."

Fuelled by her passion for the offshore and marine industry, Dorothy plans to continue taking up courses to remain relevant in a changing business environment.

Another Keppelite who embraces lifelong learning is Liu Yao, Assistant Engineer (Hull Section), Keppel Singmarine, who took on a full-time diploma in Marine & Offshore Technology at Ngee Ann Polytechnic.

Wanting to chart a better future through skills upgrading, Liu Yao decided to further her studies through the support of the Association of Singapore Marine Industries' (ASMI) scholarship in 2015. She shared, "With our society's fast pace of development, I am aware that I need to continue learning to excel at the workplace, so I took the plunge to take on this huge commitment."

As a result of her hard work, Liu Yao's leap of faith paid off when she was conferred the silver medal for being the second most outstanding graduate in overall academic performance and co-curricular activity involvement at a graduation ceremony held at Ngee Ann Polytechnic on 6 May 2016.

Attributing her success to her colleagues and management at Keppel O&M, Liu Yao said, "My supervisors provided valuable guidance at work and my colleagues were very supportive of my aspirations. I plan to take the next few years to gain a deeper understanding of the various trades involved in shipbuilding. Thereafter, I hope to pursue a degree in naval architecture."



Mr Chow Yew Yuen (middle in suit), CEO, Keppel O&M attended the graduation ceremony of Dorothy Han (sixth from right), Senior Manager, Engineering (Piping), Keppel FELS, who completed her part-time diploma course at Ngee Ann Polytechnic with a perfect GPA score

Platform for ideas

The excitement from the Keppel Young Leaders' (KYL) symposium earlier this year carried on its momentum with more than 70 young leaders participating in the first of a series of innovation workshops on 8 June 2016 at the Keppel Leadership Institute.

The workshops are guided by lean startup principles popularised by Silicon Valley startup companies and are increasingly being adopted by large companies such as General Electric and Qualcomm. The approach emphasises on-the-go experimentation and continual prototype testing over rigorous planning to constantly innovate. Guided by senior management across the Group, young leaders from varied disciplines and backgrounds spent an afternoon refining problem statements and possible customer segments for Keppel's business units before framing them strategically against the backdrop of the Paris Agreement on climate change.

One of the participants, Lim Jian Ting, Management Associate, Keppel Corporation shared, "The senior management were a great help as our mentors, providing important real world insights and perspectives on the issues and possible customers we can target. Together with the guidance of the



Senior management from the Group provided valuable guidance in helping the Keppel Young Leaders on their innovation journey

experienced trainers, I came out of the workshop reassured that we are indeed working towards practicable solutions."

The workshops will culminate in a hackathon-style event on 23 August 2016, dubbed the 'Keppelthon'.

Making research fruitful

An increasing amount of research for work takes place on the World Wide Web. However, navigating through the huge repository of information online can be confusing. A Learn & Lunch seminar titled, "Beyond Search Engines: Introduction to credible information sources" was organised by Keppel O&M's Group Training on 27 May 2016, for Keppelites from business units across Keppel Offshore & Marine (Keppel O&M). The session equipped Keppelites with useful tips and skills to sharpen their research techniques.

Librarians from the National

Library Board (NLB) covered a range of different topics, including identifying credible sources of information, understanding research materials, checking and comparing against multiple sources, as well as evaluating information to exercise a fair judgment. The session included a hands-on training component where Keppelites used their mobile devices to try new methods of conducting online research.

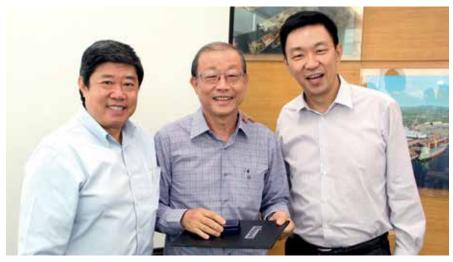
"In this digital age, we are usually exposed to an overload of information. Learning how to scale down search results and picking up tips on how I can discern the reliability of information have been exceptionally useful for me as my research outcome relies heavily on the accuracy of my literature review", shared Wu Wenjin, Research Engineer, Keppel Offshore & Marine Technology Centre.



Keppelites from business units across the Keppel O&M group gained valuable insights on conducting research effectively during a Learn & Lunch seminar conducted by NLB

41 years of dedicated service

Keppel Singmarine and Keppel Offshore & Marine (Keppel O&M) held lunches in honour of Mr Hoe Eng Hock, former MD (Special Projects, Marine), Keppel O&M on 25 April and 26 May 2016 respectively for his 41 years of dedicated service. Mr Hoe's dedicated career with Keppel began in 1975 as a Shiprepair Management Trainee, where he rose through the ranks to take on his first overseas posting as VP of Keppel Philippines Shipyard in 1979. Mr Hoe was key to the company's global expansion as he played a



Mr Hoe Eng Hock (centre) flanked by Mr Loh Chin Hua (right), CEO of Keppel Corporation and Chairman of Keppel O&M and Mr Chow Yew Yuen (left), CEO of Keppel O&M, at an appreciation lunch organised in his honour

key role in the development of its operations in Azerbaijan, Brazil, China and the Philippines.

Mr Hoe subsequently took on increasingly senior management positions in Keppel Shipyard and Keppel Singmarine before concluding his successful run in Keppel as MD (Special Projects, Marine) of Keppel O&M in April this year.

Mr Chow Yew Yuen, CEO, Keppel O&M, said, "I would like to thank Eng Hock for his dedication and many contributions to the ompany over the years. His *Can Do!* spirit was not only evident in his work, but extended beyond the office as well. As a President of the Keppelite Recreation Club (KRC) from 2010-2015, his efforts has strengthened bonds within the Keppel family."

Co-operative support

Keppel Credit Union (KCU), a cooperative within the Group which facilitates sharing of resources and serves as an alternative financing source for Keppelites, held its 37th Annual General Meeting (AGM) on 27 May 2016 at Resorts World Sentosa.

In his address to over 1,500 members who attended the AGM, Professor Bernard Tan, Chairman of KCU, reported that despite the weak and sluggish world economy, the Credit Committee and Management of KCU performed well to record a net surplus of \$330,867. Members also approved the recommended 10% dividend on share capital during the meeting.

KCU strives to continue helping its 11,000 members through challenging times and to allow those with deposits with the union to benefit from attractive interest rates.



Professor Bernard Tan (left), Chairman of Keppel Credit Union, presented the top lucky draw prize to Mr Zhang Chun Ming, Foreman, Keppel FELS at the KCU AGM

Nantong connections

Fresh out of university in 2006, Mavin Lim had joined Keppel FELS as a hull superintendent based in Singapore. However, he was soon asked to relocate in 2008 to Nantong, a prefecture-level city in Jiangsu Province, China to work at Keppel Nantong Shipyard, due to the burgeoning business opportunities in the China market.

Captivated by China's rich history and heritage from a young age, securing the opportunity to work there was a dream come true for Mavin. Having constantly been reminded since young that learning Mandarin would prove beneficial for his career, he finally got the chance in China to put his language skills to good use.

In Nantong, Mavin set about making his maiden overseas work experience count. He immersed himself in the Chinese culture by interacting with not only Singaporean colleagues but also with the locals, making plenty of new friends along the way. He also familiarised himself with the nuances of Chinese business etiquette, and travelled extensively around the country to widen his horizons.

As business slowed in Nantong, however, Mavin was transferred back to Singapore in 2009. Even though he was sad to leave the city he had grown so fond of and regarded as his second home, he was grateful for the enriching experience and was keen to return in the future. Jokingly, Mavin announced to his close friends and colleagues, "I will be back!"

Within a couple of years, Mavin was offered a role in Keppel

Nantong Shipyard in 2012. Now armed with three and a half years' working experience accumulated in the Singapore yard, Mavin was sure he would add value in Nantong and embarked on his second stint there filled with an overwhelming sense of positivity.

Four years on, Mavin is now Construction Manager, Production, at Keppel Nantong Shipyard. Looking back on his time in China, Mavin is glad that he fulfilled his ambition of working overseas relatively early in his career. A significant part of Mavin's connection to Nantong also stems from his wife, whom he met there, and their two children. He has built a home in Nantong and believes that taking the leap of faith to move to China was the right decision.

Mavin shared, "Looking at what Keppel Nantong Shipyard has achieved since my first posting, I feel immense satisfaction at how the yard has progressed. I am very proud to be part of the construction team, which is spearheading several groundbreaking projects with our repeat customers like Floatel."

When asked what advice he has for fellow Keppelites aspiring to take on overseas postings, Mavin said, "The beginning will always be difficult, but the experience gained will last you a lifetime. Work smart, play hard and ride the challenges as they come!"



Mavin Lim (middle, seated), Construction Manager at Keppel Nantong Shipyard, celebrating his daughter's first birthday party with family, friends and colleagues in Nantong, China

Bonding over fishing

Seventy eight Keppelites, along with their family members and friends, had a whale of a time at Pasir Ris Pro Fishing Pond on 15 May 2016. The annual Fun Fishing event, which is organised by Keppelite Recreation Club (KRC), provides an informal setting for Keppelites across the Group to build stronger bonds with each other.

Gringo Low, Assistant Quality Assurance Manager, Keppel Shipyard, reeled in the first catch of the day at a timing of 2 minutes and 32 seconds for the catch.

The fishing enthusiast said, "I picked up fishing as it is a relaxing yet fulfilling activity. This Fun Fishing event by KRC allows me to forge new friendships with colleagues who share the same interest."

The event culminated with awards

handed out to the top three heaviest catches of the day, as well as participants who answered quiz questions on fishing tips and tricks correctly.



It was an enjoyable day out in the sun for 78 Keppelites, their family members and friends who fished together at Pasir Ris Pro Fishing Pond

Bringing the arts to Angra

Committed to the Angra community, BrasFELS, Keppel's shipyard in Rio De Janeiro, Brazil, was one of the corporate



BrasFELS helps sponsor FITA which brings arts and cultural performances to the community of Angra dos Reis

supporters of this year's International Festival of Theatre of Angra dos Reis (FITA) in Brazil.

The 2016 FITA comprised 52 shows of various genres across 17 days. Free tickets were given to all public schools in Angra dos Reis, and most of the tickets were sold to the public at nominal prices, making the performances accessible to all in the community.

As a corporate sponsor, BrasFELS also received tickets which it distributed to selected employees as tokens of appreciation for their strong work and safety performances.

"I was very happy to attend the show with my husband. It was very interesting and we had so much fun. The show reminds us to take life with good humour; we always have a reason to smile and rejoice", said Joana Teixeira, Secretary at BrasFELS.

FITA is currently one of the largest theatre festivals in Brazil. This year marks the 12th edition of the event, benefiting about 82,000 people.

Sowing the seeds of volunteerism

In line with Keppel's vision to contribute to the communities where it operates, Keppel Subic Shipyard (Keppel Subic) and Keppel Batangas Shipyard (Keppel Batangas) launched Keppel Volunteers Philippines on 16 June and 18 June 2016 respectively.

At the launch, senior management, led by Mr Chow Yew Yuen, CEO of Keppel Offshore & Marine, were regaled with culturally rich dance performances by young beneficiaries from the Keppel-GK Eco Village and Aeta Children's Home.

Mr Chow, who distributed educational materials to the children during the launch at Keppel Batangas, commented, "As we grow our business, we want to ensure that this growth is inclusive and extends to the communities where we operate. With Keppel Volunteers Philippines, we will have a more coordinated platform to extend help to the needy and less privileged."

KEPPEL-GK ECO VILLAGE

The Keppel-GK Eco Village, a housing project in partnership with the local government of Bauan, Batangas and the Gawad Kalinga Foundation, recently celebrated its fifth anniversary on 12 June 2016, coinciding with the Philippines' Independence Day celebration.

"Five years on, the Keppel-GK Eco Village has not only provided a vibrant and sustainable environment for its beneficiaries, it has also fostered a strong spirit of volunteerism amongst our Keppelites," shared Leong Kok Weng, President, Keppel Philippines Marine during the festivities.

BRIGADA ESKWELA

As a regular participant in the Philippines Department of Education National Schools Maintenance program, Brigada Eskwela, Keppel O&M's yards in the Philippines extended a helping hand to local schools again this year. Seventy five volunteers from Keppel Batangas clocked 303 man-hours painting the classrooms and walls of four public schools in the locale. Separately, 65 volunteers from Keppel Subic spent 420 man-hours painting, cleaning and making minor repairs to four schools and made donations to six other schools in Subic, Zambales.

Ms Pamela Reyes-Gatdula, Principal of Subic Central School and District

Supervisor of the Department of Education of Subic, Zambales, said, "We are extremely appreciative of the hard work put in by Keppel's volunteers. Our local community has greatly benefitted from the help extended by them over the past years."



Mr Chor How Jat (in green checked shirt), MD of Keppel Shipyard and Chairman of Keppel Philippines Marine, distributed sports and educational materials to the students of the Aeta Children's Home during the launch of Keppel Volunteers Philippines at Keppel Subic Shipyard



Senior management, including Mr Chow Yew Yuen (back row, second from left), CEO of Keppel O&M, and Mr Chor How Jat (back row, extreme left), MD, Keppel Shipyard, mingled with students from Keppel-GK Eco Village during the launch of Keppel Volunteers Philippines at Keppel Batangas

A rousing start to Keppel Games

The 13th edition of the annual Keppel Games kicked-off with the highly anticipated Opening Ceremony and Golf Challenge held at Raffles Country Club on 16 May 2016.

Over 70 Keppelites from across the Group, including Keppel senior management and the team managers of Atlantic, Caspian and Pacific, took to heart this year's theme of 'Rising to the Challenge as One Keppel' to bond through friendly competition.

Addressing Keppelites at the Opening Ceremony of Keppel Games, Mr Chow Yew Yuen, CEO of Keppel Offshore & Marine, said, "No matter how competitive our teams are when pitting their sporting skills against each other, we will always stand as One Keppel at the end of the day." As part

ТЕАМ	GOLD	SILVER	BRONZE
ATLANTIC	3	1	1
CASPIAN	2	2	2
PACIFIC	1	3	3

Score Board: Total medal tally as at 5 June 2016

of the proceedings, Mr Chow introduced the One Keppel logo, unveiled for the first time at the Games.

SWINGING INTO ACTION

Keppelites took to the green in an attempt to out-drive, out-chip and out-putt each other. Team Caspian emerged as the overall winner with the most number of medals, bagging the Golf Challenge Trophy.

In the 'handicap of 18 and below' category, Team Caspian representative Kamaruddin bin Md Shariff, Chief Security Officer at Bintan Offshore, emerged as champion. On his win, Kamaruddin said, "You must have passion for the game, much like how you must have passion to succeed in your job. I try to come down every year as it is a great opportunity to reconnect with fellow Keppelites."

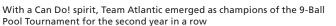
FLYING WITH PRIDE

The highlight of the opening day was the presentation of the team flags. The audience was treated to a lively presentation where Keppelites used costumes and



Over 70 Keppelites from across the Group came together for the opening of the 13th Keppel Games







Teams Atlantic, Caspian and Pacific battled it out in the Cyber Games Tournament, with Team Atlantic earning the well-deserved champion title after a grueling seven-hour battle

props to bring their team flags to life. Team managers spoke with passion about the creativity and hard work that went into each design, to the cheers and applause of audience members.

After much deliberation, Atlantic was announced as the team with the best flag design, with judges praising the use of vibrant colours and vector lines to signify unity. Taken holistically, the judges opined that Team Atlantic had perfectly encapsulated the One Keppel spirit in their design.

"Our vision was to direct Keppelites towards motivation and optimism, especially during these challenging times," shared Team Atlantic's manager, Kenneth Cheng, Graduate Engineer at Keppel Shipyard.

IN THE POCKET

Held on 29 May 2016 at West Coast Recreation Centre, the 9-Ball Pool tournament saw Keppelites put their skills of precision, concentration and coordination to test as teams gave their best during each round.

After a series of exhilarating qualifying rounds, Team Caspian 1 came in at a valiant third. The tense final was an exciting showdown between teams Atlantic 2 and Pacific 1. It was an extremely close fight that eventually concluded with Team Atlantic winning the 9-Ball Pool Tournament champion title for the second consecutive year.

Henry Joseph, Captain of Team Caspian, shared, "Besides honing our skills at the sport, the 9-Ball Pool challenge presented opportunities for us to forge friendships with Keppelites from other business units. We are aware that at the end of the day, we're one big Keppel family regardless of the results."

CYBER WARFARE

The following week saw teams' weapons of choice trading from

pool cues to keyboards to engage in cyber warfare. The Cyber Games Challenge 2016 was held at The Colosseum@Bugis+ on 5 June 2016. Over seven hours of intense round-robin competition in DOTA2, a multiplayer online battle arena video game, participants furrowed their brows and raced fingers over the keys as they sought to outwit and outplay their opponents.

After putting up a fierce fight, Team Atlantic 1 emerged as champion, with Team Pacific 2 and Team Atlantic 2 claiming first and second runner-up spots respectively.

"Even when they were off to a rocky start, the teams were not deterred and continued playing their best," Cornelius Chang, Captain of Team Caspian, shared. "The Games are truly a testament to the strong teamwork and tenacious spirit that all Keppelites embrace."

Inspiration for the future

A strong supporter of the local community, BrasFELS, Keppel's yard in Angra Dos Reis, Brazil, and its employees support a broad range of social projects making a positive difference to various beneficiaries and causes.

STUDENTS VISIT

On 20 May 2016, BrasFELS welcomed students and teachers from the Municipal School, Tereza Pinheiro de Almeida, in Japuíba who were there to learn about the shipyard's history, projects, and contributions to the community. They were taken on a tour of the yard to understand the operations.

The students also benefitted from a sharing by Mr Matheus Medeiros, a Project Manager, Ms Danilo Barbosa, a Production Supervisor; and Johnathan dos Santos, a young apprentice.

14-year-old student Gabriel Ribeiro said, "I liked a lot the visit to BrasFELS. I enjoyed getting to know about the platforms and ships. It was very nice to learn more about this industry that I can perhaps work for some day".

Ms Anita Peixoto, a Portuguese Teacher, added, "The visit was excellent. I met the Young Apprentice Johnathan who used to be my student, and I was very happy to see him doing well. Now he is a model for the school's current students.

"It gives us joy to share our knowledge and experiences with the students. We are glad to contribute



Students from the 9th grade of the Municipal School Tereza Pinheiro de Almeida, in Japuíba, participated in the Teach-It-Forward Programme and visited BrasFELS shipyard



The volunteers, Andressa Pacheco, Claudia Pierangeli and Gabriela Soares and the students from the 3rd grade of Cornelis Verolme School after one of the tuition class in Portuguese and Mathematics

to their learning about various professions and the requirements of the job market," remarked Ms Ana Carolina Dallarosa, BrasFELS' Trainee Engineer and President of the Teach-It-Forward Executive Committee.

Since August 2015, when the programme commenced as part of BrasFELS' Teach-It-Forward Programme, BrasFELS' volunteers have been sharing their knowledge and professional experiences with students from public schools.

TEACH-IT-FORWARD

Another aspect of the Teach-It-

Forward Programme are Portuguese and Mathematics tuition classes for students in the 3rd grade of the Municipal School Cornelis Verolme.

"We started the second set of classes at Cornelis Verolme for the year on 8 June 2016 and we have seen many improvements in the students since the first round in March," said Ms Andressa Pacheco, Quality Control Supervisor and volunteer of Teach-It-Forward Programme.

Touching lives

With volunteerism as a key thrust of the Group's community engagement programme, Keppelites participated in a variety of activities to engage and empower beneficiaries.



Keppel Volunteers encouraging their young charges to use their creative and mathematical skills to come up with innovative LEGO designs



Creating new memory lanes, Keppel Volunteers enjoyed bowling with senior friends

HANDS-ON ENGAGEMENT

A LEGO workshop for children of Kandang Kerbau Hospital (KKH) was held on 16 April 2016 involving 30 volunteers. Geared up for friendly competition and a game of fastest fingers first, the volunteers and children began their interaction time together by participating in a LEGO speed building competition. Apart from trying their hand at innovative designs, the children were also challenged by volunteers with a few rounds of mathematical games.

On 23 April 2016, Keppel Volunteers enjoyed swinging good times with senior friends from the Thye Hua Kwan Bedok Radiance Seniors Activity Centre (THK SAC). Held at the SAFRA Toa Payoh SuperBowl Centre, volunteers guided the seniors, some who were trying the game for the first time, in handling the bowling balls.

In another rolling good time on 30 April 2016, Keppel Volunteers organised a sushi-making workshop for the elderly of Renci Nursing Home. Many were enthusiastic about picking up the unique craft of sushi-making. An upbeat karaoke session which followed saw the seniors belting out their favourite tunes alongside the volunteers.

"Seeing their smiles and contentment really brought happiness to my heart even if we only played a small part in a simple caring act," shared Chay Sin Ying, Human Resources Officer of Keppel Housing, who had taken time off to be with the elderly.

Through extending patient care and warm friendship, Keppel Volunteers creates new memory lanes for beneficiaries both young and old with events that take into account their well-being, not only physically but also emotionally.

EQUIPPED TO EMPOWER OTHERS

A key focus for Keppel Volunteers in 2016 is ensuring that Keppelites receive not only exposure but also relevant training. Whether it is cultivating an appreciation for art or nurturing a passion for preserving biodiversity, Keppel Volunteers aims to equip Keppelites with the essential skills and knowledge needed to make a difference in the community.

On 13 and 17 May 2016, over 50 volunteers gathered at the Keppel Centre for Art Education for training sessions preparing them to be more effective art ambassadors to young visitors.

The volunteers were introduced to the learning objectives of the Centre's art spaces and the significance of the various art pieces within. These snippets of information would in turn allow volunteers to spark off thoughtprovoking conversations with visitors to the Centre.

The Keppel Centre for Art Education is an immersive art education facility situated in the

Continues on page 34 ...

Continued from page 33...



Volunteers underwent training to learn more about the various artwork and installations to be better art ambassadors to young visitors at the Keppel Centre for Art Education



Combining theoretical knowledge with a practical field exercise, the training session by NParks equipped Keppel Volunteers with the skills to identify marine organisms and record data for surveys in marine biodiversity

National Gallery Singapore that is sponsored by Keppel Corporation.

"With some knowledge on the background and history of the art pieces, I feel more confident interacting with visitors at the Centre and the Gallery," shared Celina Chan, Senior Engineer (Process Excellence), Keppel FELS. Volunteers would be applying their new found skills at the 'Nurture Young Minds through the Arts' programme which are held on weekends at the Centre from 28 May to 18 Dec 2016.

In a separate training session, Keppelites attended a workshop organised by Keppel Volunteers and NParks for their volunteer roles as surveyors of marine biodiversity.

Held on 21 May 2016 at the Singapore Botanic Gardens, the workshop was conducted in preparation for the Intertidal Watch, a survey on Singapore's coastal sites. Besides learning to identify marine organisms, volunteers were also introduced to scientific methods of data collection. The highlight of the training was a hands-on segment outside the classroom, where volunteers practised using the survey equipment to collect data.

"Rather than plunge in with little knowledge of marine biodiversity, I am glad that we went through the field exercise as it equipped us to contribute meaningfully to the survey," shared Soon Ning, Engineer (Operations), Keppel FELS.

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Keppel Shipyard secures four new contracts

As the preferred global partner in marine solutions, Keppel Shipyard continues to receive enquiries for its solutions and has recently secured four contracts from repeat customers.

Mr Michael Chia, Managing Director (Marine & Technology) of Keppel Offshore & Marine, said, "We are pleased to secure new orders from long-time customers who continue to entrust their projects with us, whether it is for turret fabrication or vessel upgrades. Leveraging our comprehensive range of marine services, proven execution excellence and experience, we continue to be the trusted and preferred partner in the industry, providing cost-effective and robust solutions."

Shipyard secured is from BW Catcher, a wholly owned subsidiary of BW Offshore, for the installation and integration of topside modules for a newbuild Floating Production Storage and Offloading (FPSO) vessel. Upon its completion, the FPSO will be deployed to the Catcher Field located in Central North Sea, UK, which is operated by Premier Oil.

The second contract is from SOFEC to fabricate an Internal Turret Mooring System for a Floating Storage and Offloading vessel that will operate in Maersk Oil's Culzean Field in UK's section of the North Sea. Fabrication of the turret is expected to be completed in 3Q 2017.

For the third contract, Keppel Shipyard will carry out upgrading work to the pipelay vessel,

Castorone, for Saipem Offshore Norway AS (Saipem). Keppel Shipyard previously undertook the completion and integration works for the newbuild Castorone in 2011. Already berthed at Keppel Shipyard, upgrading work for Castorone is scheduled to be completed in 3Q 2016. Keppel Shipyard's job scope includes the replacement of switchboards to improve the vessel's power distribution systems, renewal works on 45 kilometres of electrical cables, various pipelay system upgrades as well as the construction of new water ballast tanks and conversion of old ones into fuel oil tanks to optimise the vessel's capabilities.

The fourth contract is from Woodside Energy for the modification and upgrading of the FPSO vessel Ngujima-Yin to support the Greater Enfield Project. The shipyard's job scope includes marine and hull life extension and refurbishment works; installation of new customised water flood module, turret risers and power and control module; as well as modification of swivel system, marine and topside related piping. Detailed engineering phase is expected to commence in July 2016 while the shipyard construction work is targeted to start in 2Q 2018. Upon its completion, the Woodside-operated Ngujima-Yin FPSO will be deployed back to the Greater Enfield area located in Western Australia.

The first contract that Keppel



Keppel Shipyard continues to secure new orders from long-time customers who entrust their projects with the shipyard. Seen in the second picture is Saipem's pipelay vessel, Castorone, which is currently in Benoi Yard for upgrading work