

OFFSHOREMARINE

A newsletter of Keppel Offshore & Marine

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FPSO EXPERTISE FOR BRAZIL

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The Keppel FELS and Noble teams celebrating the successful repair of the leg of the jackup rig, Noble Joe Beall

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Keppel Offshore & Marine is a subsidiary of Keppel Corporation

Steady progress

Keppel Offshore & Marine (Keppel O&M) continued to reduce its overheads while replenishing its orderbook with new business opportunities. Mr Loh Chin Hua, CEO of Keppel Corporation and Chairman of Keppel O&M discussed the company's strategic initiatives and long-term growth plans at the Keppel Group's 3Q & 9M 2018 results webcast.

Despite the challenging operating environment, our O&M Division registered a net profit of \$2 million in 3Q 2018, bucking three consecutive quarters of losses.

However, the Division continued to suffer a net loss of \$38 million for 9M 2018, mainly due to lower work volume and our share of associated companies' losses. At the operating level, the O&M Division achieved a profit of \$20 million for 9M 2018, on the back of our rightsizing efforts and reduced overheads.

In 9M 2018, Keppel O&M recognised revenues amounting to \$1.4 billion. The Division is also working hard to replenish its orderbook, and has secured additional contracts totalling \$1.4 billion in the year to date, more than the \$1.2 billion of new orders secured in the whole of 2017. These include contracts for two new build Liquefied Natural Gas (LNG) carriers and the conversion of a LNG carrier to a Floating Storage and Re-gasification Unit.

As at 30 September 2018, Keppel O&M's net orderbook was \$4.4 billion, compared to \$3.9 billion at end-December 2017,

excluding the projects for Sete Brasil.

Expanding its involvement in the LNG space, Keppel O&M has signed a Technical Assistance and License Agreement with Gaztransport & Technigaz (GTT) to jointly market LNG solutions leveraging GTT's membrane containment systems and Keppel's expertise in specialised shipbuilding and LNG solutions. Keppel O&M has also delivered its second dual-fuel LNG tug, this time to Maju Maritime, with a perfect safety record.

We are seeing more enquiries for scrubber retrofits which we anticipate will increase as the IMO's 2020 deadline for the implementation of the 0.5% sulphur cap on marine fuels approaches. Keppel Shipyard completed Singapore's first Very Large Crude Carrier (VLCC) scrubber retrofit in 3Q 2018 and we have more projects in the pipeline.

Continues on page 4...



Keppel O&M turned a profit in 3Q 2018 on the back of its rightsizing efforts and reduced overheads

Continued from page 3.

IN CONVERSATION

OM newsletter shares highlights of management's responses to key questions from the media and investment community at the Company's 3Q & 9M 2018 results webcast.

Q: The Offshore & Marine (O&M) Division returned to profit in 3Q 2018. Were there any one-offs this quarter? Are profits sustainable moving forward?

CHC: The O&M Division turned a profit in 3Q, mainly because the operating profit has gone up. It was also helped by an increase in interest income from shareholder loans to two customers, some of which was one-off due to the catch-up recognition during the quarter.

LCH: The hard work in reducing Keppel O&M's fixed overheads over the past two years is paying off. The team is working very hard to make sure that the profits are sustainable. As we are starting to see more enquiries, we are cautiously optimistic.

Q: Can you provide an update on the remaining Floating Liquefied Natural Gas (FLNG) vessel conversion projects with Golar?

CO: We are in advanced talks with Golar on the development of the Tortue Field in which the Gimi FLNG is involved. The Front End Engineering Design (FEED) has been completed and we are waiting for the Notice to Proceed by the end of this year.

On the Gandria FLNG, Ophir and Golar are looking for alternate investors following the exit of

Schlumberger from the OneLNG joint venture. The Notice to Proceed has been extended from mid-2018 to end-2018. We will monitor the situation closely with Golar.

Q: In a September 2018 article by Upstream Online, it was stated Golar LNG is evaluating alternative shipyards like those based in China to build future FLNG vessels. Will this result in Keppel O&M facing more intense competition in this space?

CO: There will always be competition from various shipyards for the provision of solutions. We try to differentiate ourselves with our proven solutions like Hilli, which is cost-efficient and quick-to-market, and also leverage Keppel's track record for on-time, on-budget delivery.

Q: Since July 2018, Keppel O&M had won 2 projects of approximately US\$100 million. Is Keppel aiming to bid for any larger projects (e.g US\$500 million) on the horizon?

CO: The strength of Keppel O&M has always been the ability to stay in the competition, being able to provide solutions to the customers. We are always in competition for the projects available in the market and we always compete to our strength. There are more enquiries and we are cautiously

optimistic but we also face greater competition.

LCH: We have always exerted a lot of discipline. It is very important at this point in time when the market is recovering that we continue to be disciplined about what we bid for. As Chris said, competition is still quite intense. Our goal is always to bid in a way that would allow us to make a reasonable margin on the projects that we take on.

**LCH – Mr Loh Chin Hua,
CEO of Keppel Corporation**

**CHC – Mr Chan Hon Chew,
CFO of Keppel Corporation**

**CO – Mr Chris Ong,
CEO of Keppel Offshore & Marine**

Enhancing gas solutions



Keppel O&M and Gaztransport & Technigaz senior management at the contract signing held during the Gastech conference in Barcelona, Spain

Keppel Offshore & Marine (Keppel O&M) boosted its range of gas solutions with the signing of a Technical Assistance and License Agreement (TALA) with Gaztransport & Technigaz (GTT) on 17 September 2018. The agreement will enable the companies to jointly market liquefied natural gas (LNG) solutions leveraging GTT's membrane containment systems and Keppel's shipyard expertise.

Keppel O&M's network of global yards will be able to offer GTT's LNG systems in the design, construction and maintenance of LNG carriers, LNG Bunker vessels, LNG-fuelled vessels, and floating storage and regasification units (FSRU).

Since completing its first LNG carrier repair in 1990, Keppel O&M has developed a wealth of

experience in cryogenics, and developed a suite of solutions across the LNG value chain. It has delivered the world's first converted FLNG, three FSRU conversions, two new build LNG-fuelled vessels, and is building two LNG carriers, five LNG-fuelled vessels, and South East Asia's first LNG bunkering vessel.

Mr Abu Bakar, Managing Director (Gas & Specialised Vessels) of Keppel O&M, said, "This is a win-win partnership with GTT as it will allow us to offer more comprehensive LNG solutions to our respective customers, across our global networks of operations. With GTT's proven LNG containment technology and Keppel's track record in specialised shipbuilding as well as expertise in LNG, we will be able to provide safer, more efficient and

economical solutions in sustainable power generation."

GTT systems have become the technology of choice for new LNG carrier orders and offshore applications. More than 70% of the world's LNG carrier fleet currently in service are equipped with GTT membrane technologies.

Mr Philippe Berterottière, Chairman and CEO of GTT, said, "We are pleased to extend our partnership with Keppel to jointly offer a wider range of LNG solutions. GTT's technologies make it possible to build LNG carriers to meet the demand of supplying LNG along coasts and up rivers to island nations. By adopting our membrane technologies, Keppel O&M will be able to design optimised ships in terms of capacity and size and minimise the draught."

Keppel O&M's expertise and experience in GTT's systems have been built up since 2004 when its subsidiary, Keppel Shipyard, became an approved repair yard for ships equipped with GTT membranes, and when Keppel Singmarine signed with GTT a TALA in 2014 for new builds.

Second dual-fuel tug delivered

On 17 September 2018, Keppel Offshore & Marine (Keppel O&M) through its specialised shipbuilding arm, Keppel Singmarine, delivered its second dual-fuel tug capable of running on LNG. Built for Maju Maritime (which is merged operationally with Keppel Smit Towage) and named Maju Loyalty, the vessel was completed on time, within budget and with a perfect safety record.

Mr Abu Bakar, Managing Director (Gas & Specialised Vessels) of Keppel O&M, said, "Leveraging our new build experience and capabilities in LNG, we were able to ensure the smooth execution and timely delivery of this project. This is the second dual-fuel tug built by Keppel O&M, and furthers our track record in the design and construction of cost and energy efficient LNG-fuelled vessels. The award-winning tug design is part

of a suite of solutions that Keppel O&M can provide as the industry increasingly adopts LNG as a marine fuel."

The delivery of Maju Loyalty follows the completion of South East Asia and Singapore's first LNG-powered tug, KST Liberty, in May 2018 by Keppel O&M. Built to Keppel's award-winning proprietary design, both tugs offer economical operations, efficient fuel consumption, a simplified bunkering process, and smart designs which enhance safety and comfort. The Maritime and Port Authority of Singapore had provided co-funding of up to S\$2 million for each tug as part of its LNG Bunkering Pilot Programme (LBPP) grant.

Mr Romi Kaushal, Managing Director of Maju Maritime and Keppel Smit Towage added, "This

dual-fuel tug is a welcome addition to our fleet of tugboats as we look to do our part in reducing carbon dioxide & sulphur oxide emissions. It is a step in the right direction as the industry adjusts to the International Maritime Organisation's global cap of 0.5% on the sulphur content of marine fuel. This project is a testament to Keppel's innovation and reliability, and we look forward to furthering this partnership."

The dual-fuel tug is equipped with containerised, type-C ISO-certified LNG tanks on the main deck, as well as a patented LNG vaporiser which is compact and cost-effective. Re-fuelling of the LNG tanks can be done by truck to ship operations or replacing the empty tanks with replenished ones.

FueLNG, a joint venture between Keppel O&M and Shell Eastern Petroleum (Pte) Ltd., will be providing the LNG bunkering services for Maju Loyalty, while Shell will be supplying the LNG fuel.

Keppel O&M is able to offer solutions in both the demand and supply of LNG as fuel. On the supply side, FueLNG, a licensed LNG bunker supplier in Singapore providing safe truck and vessel bunkering solutions, is able to offer LNG bunkering. On the demand side, Keppel O&M has developed a suite of vessels that can run on LNG. It is currently building South East Asia's first LNG bunkering vessel, as well as dual-fuel LNG carriers, dredgers and bunker tankers.



The delivery of Maju Loyalty follows the completion of South East Asia and Singapore's first LNG-powered tug, KST Liberty (pictured), in May 2018

Sail away of P-69



Keppel's shipyard in Brazil, BrasFELS, continues to grow its track record with key projects delivered

BrasFELS, Keppel Offshore & Marine's (Keppel O&M) shipyard in Angra, Brazil, celebrated the sail away of the P-69 floating production storage and offloading (FPSO) unit on 31 August 2018. The yard completed its onshore scope of work and will continue to undertake offshore commissioning activities to support the vessel's operations.

The FPSO has commenced production at the Lula Extremo Sul field located in the Santos Basin pre-salt region.

The FPSO is the second of two Replicante projects that BrasFELS

has undertaken for Tupi BV, a consortium represented by Petrobras. The Replicante FPSOs are a series of FPSOs of similar design and specifications ordered by Petrobras.

Mr Marlin Khiew, CEO and President of Keppel FELS Brasil said, "Over the years, BrasFELS has built up extensive capabilities in the construction, integration, commissioning, upgrading and repair for a variety of drilling and production products. We are glad to contribute to the development of Brazil's significant oil and gas reserves. P-69 is our second Replicante FPSO for Brazil. Our first

unit, P-66, left the shipyard last year, and has since been operating successfully in the field."

BrasFELS' workscope for the project comprised fabrication, integration, testing and commissioning of topside modules. It also undertook hull carry over work including the installation of equipment and cables for the hull as well as the commissioning of marine systems.

The P-69 has a production capacity of 150,000 barrels of oil per day (bopd) and 6 million cubic meters of gas per day. It also has a storage capacity of 1.6 million barrels of oil.

Milestones on new build projects

Leveraging its new build expertise, Keppel Offshore & Marine (Keppel O&M) has forged a track record of designing and delivering vessels of various specifications and functions.

Over the last quarter, Keppel O&M celebrated key milestones of several projects as the group continues to innovate and strengthen its value proposition of delivering projects on time, within budget and with a good safety record.

BUNKER TANKER STRIKE STEEL

On 10 October 2018, Keppel O&M struck first steel for the dual-fuel bunker tanker to be owned and operated by Sinanju Tankers Holdings.

Scheduled for delivery in 2H 2019, the 7,990 DWT dual-fuel bunker tanker will be the first LNG-fuelled bunkering vessel for Singapore and for Sinanju. Built to the requirements of classification society, Bureau Veritas, the bunker tanker will deliver marine fuels to ocean-going vessels within local port limits.

DREDGER MILESTONES

Keppel O&M on 8 August 2018 held the strike steel ceremony for the 6,000m³ Trailing Suction Hopper Dredger (TSHD) to be built for Codralux, a wholly-owned subsidiary of Jan De Nul Group. This is the second of two 6,000m³ TSHDs that Keppel O&M is building for Jan De Nul, and is expected to be completed in 2H 2019.

Around a month later on 15 September 2018, Keppel O&M celebrated the launch of Tristão Da Cunha at Keppel's shipyard in Nantong, China. The vessel is one of three 3,500m³ TSHDs being built for Jan De Nul, with completion expected from 2H 2018 onwards.

Keppel O&M is building a total of seven dredgers of various hopper capacities ranging from 3,500m³ to 10,500m³, including two dual-fuel dredgers capable of running on LNG.



The strike steel ceremony of the dual-fuel bunker tanker was attended by representatives from Keppel O&M, Sinanju, and Bureau Veritas



The recently launched Tristão Da Cunha will be able to dredge to a maximum depth of 27.6m

Made in America

Since its establishment in 1990, Keppel AmFELS, a wholly-owned subsidiary of Keppel Offshore & Marine (Keppel O&M) in the United States, has developed an extensive range of capabilities and continues to build on this solid track record to further provide quality products and services to clients in the Gulf of Mexico.

NEW OPPORTUNITIES

In August 2018, Keppel AmFELS broadened its capabilities in the US steel construction market after successfully meeting the quality certification requirements of the American Institute of Steel Construction (AISC) for the standard for steel building structures.

This strategic move presents new opportunities for Keppel in the US steel industry as well as adjacent industries such as bridge construction, another market segment regulated by the AISC.

This augments the other sectors which Keppel AmFELS participates, such as the construction of ships, jack-up rigs, semi submersibles and land rigs.

FIRST STEEL STRUCK

In September 2018, Keppel AmFELS celebrated the cutting of the first steel plates for the two LNG-fuelled containerships that will join the fleet of Honolulu-based Pasha Hawaii.

When completed, the two 774-foot Jones Act vessels will be able to carry 2,525 TEUs



Mr Simon Lee (left), President of Keppel AmFELS, and Mr George Pasha, IV (right), President and CEO of The Pasha Group, celebrated the cutting of the first steel plates for the LNG-fuelled containerships

(twenty-foot equivalent units) with a sailing speed of 23 knots. The ship's hull has been fully optimised using computational fluid dynamics (CFD) and will be one of the most hydrodynamically efficient hulls in the world.

Mr Simon Lee, President of Keppel AmFELS, said, "We are pleased to be able to support the Pasha Hawaii fleet with the design, engineering and construction of two state-of-the-art containerships that will be highly efficient, sustainable and safe. Our design philosophy includes a construction methodology that is easy to execute and maximises the capabilities of our yard."

Mr George Pasha, IV, President and CEO of The Pasha Group, said,

"We are marking the first production milestone of our new LNG ships, and honour the legacy of the Pasha 'ohana. We also commend the remarkable talents and organization of the highly skilled shipbuilders on the Keppel team who are working hard to transform these steel plates into the most environmentally efficient vessels for the Hawaii trade."

Built to Keppel's proprietary design, the dual-fuel containerships are expected to be delivered in 2020. Keppel AmFELS is well-positioned to capture opportunities in the Jones Act market, which requires vessels carrying goods between US ports to be built in the US.

Showcasing capabilities

With regulations such as the International Maritime Organisation's (IMO) 0.5% sulphur cap to be implemented in 2020, the offshore and marine industry is increasingly looking to adopt cleaner forms of fuel such as Liquefied Natural Gas (LNG).

With over 20 years of cryogenic experience, Keppel Offshore & Marine (Keppel O&M) has developed a suite of solutions along the gas value chain, and has over the past quarter participated in conferences to showcase its range of products and services.

GASTECH

On 17-20 September, Keppel O&M participated in the Gastech exhibition held in Barcelona, Spain. One of the biggest gas exhibitions of the world, Gastech 2018 saw over 35,000 attendees and 700 exhibitors from more than 90 countries come together to discuss LNG-related topics ranging from small-scale projects to other downstream themes like carbon capture and storage.

Keppel's suite of solutions ranges from the repair and conversion of LNG carriers, to the building of

LNG bunkering vessels as well as vessels that can operate on LNG.

SIBCON

The 20th edition of Singapore International Bunkering Conference and Exhibition (SIBCON) held on 2-5 October 2018 was well attended by over 1600 participants from over 70 countries.

FueLNG, a joint venture between Keppel O&M and Shell Eastern Petroleum, participated in a panel discussion on moving forward with LNG fuel. Mr Tahir Faruqui, General Manager, Shell Downstream LNG and Director, FueLNG, was part of a four-man panel that discussed topics such as investment criteria and managing fuel availability.

FueLNG also held a live LNG bunkering operation at Jurong Port to demonstrate to participants the steps involved in truck-to-ship LNG transfer. The demonstration was well-received and garnered a turnout of around 60 participants.



Management from Keppel O&M met with customers such as BW Group at Gastech 2018 to discuss opportunities for further collaboration



FueLNG personnel explained the steps in truck-to-ship LNG bunkering during the live demonstration

New fuel supplier of the year

FueLNG, a joint venture between Keppel Offshore & Marine (Keppel O&M) and Shell Eastern Petroleum (Pte) Ltd, has won the New Fuel Supplier of the Year award at Lloyd's List Asia Pacific Awards held in Singapore on 27 September 2018.

The award recognises the role fuel suppliers play in influencing customers to be cleaner and more efficient.

FueLNG has achieved several notable milestones in the past 12 months, including the ordering of South East Asia's first LNG bunkering vessel and the first



Andreas Salim (centre), Operations Manager, FueLNG, received the New Fuel Supplier of the Year award on behalf of the company

commercial LNG bunker transfer in Singapore.

In addition, FueLNG is providing LNG bunkering services for Singapore and South East Asia's

first dual-fuel tugs operated by Keppel Smit Towage and Maju Maritime, and has conducted over 40 truck-to-ship LNG bunkering operations.

Flying to the rescue

Anywhere in the world, if a rig requires repairs, Keppel is able to fly onsite to meet the needs of its customers.

On 29th June 2018, Noble Corporation (Noble) approached Keppel FELS for an urgent leg repair of its jackup rig in Saudi Arabia. The Noble Joe Beall had suffered damage to its leg bracings.

Keppel FELS and Noble swiftly sorted out the relevant documentations, contracts and visas, and within 12 days, a team from Keppel FELS was on site. The team were able to fast track

their assessment of the damages and took over all aspects of the repair which included replacing six damaged leg bracings to the jackup rig's forward leg.

Comprising two superintendents, six structural fitters, eight welders and a technician on non-destructive testing, the team took 18 days to complete the job, ahead of schedule. It enabled Noble to get the rig ready to resume drilling for their client, Saudi Aramco, within their contractual time.

Mr Scott Marks, Senior Vice President, and Mr Hatem Elgamiel, Projects Director, of Noble

Corporation were very impressed with the Keppel FELS team's responsiveness to Noble's urgent needs and in handling the project.

"Thank you for helping us out on such quick notice. Your Flying Squad has taken care of Noble's interest to the best possible way they could. Every member of the team has given their 100% percent effort to finish the work before schedule. We really appreciate your work," Mr Partha S. Sarkar, Structural Engineering Manager of Noble Corporation, added.

Quality safety



Keppel O&M's management, Union and partners launching the QHSE campaign

Health, Safety, Environment and Quality (QHSE) go hand in hand. That was the message at Keppel Offshore & Marine's (Keppel O&M) 22nd QHSE excellence promotion campaign held on 15 October 2018.

The annual event was attended by employees, Union, subcontract partners and clients, with Mr Chris Ong, CEO of Keppel O&M as the Guest-of-Honour.

The theme for this year's campaign is ownership with the slogan, "Our Yard, Our Quality, Our Safety, Our Pride".

Speaking at the launch of the campaign at the Keppel FELS and Keppel Singmarine yard, Mr Ong said, "Quality is an important aspect of our work and contributes to safety as well. When we do our work well, we also ensure that the product and the environment is safe. We must never compromise on quality. It is as paramount to our daily work as HSE.

"I hope the QHSE Campaign will help instill in everyone a sense of ownership in everything we do. Whether in safety or quality, what we do matters. A good quality product done in a safe environment will not only increase the product life span and its safe operation but generate higher customer confidence in our yard. With QHSE, we are implementing a systematic and structural dynamic management system, through best practices, processes, procedures, while leveraging our shared resources."

Following the launch, the campaign got underway in various yards and dormitories with numerous promotional and engagement activities including competitions for the best safety poster, photography and video. These posters, photos and videos by Keppelites will be displayed around the yards and will serve to remind everyone on this year's campaign theme.

Keppel Shipyard held its QHSE rally on 31 August 2018 to provide updates on safety performance and share measures to be taken moving forward. Conducted every six months, management took this opportunity to reiterate Keppel's Zero Fatality Strategy and highlighted opportunities such as adopting technology to reduce work hazards.

As part of the QHSE campaign, Keppel O&M has also taken the Climate Action Singapore pledge for individuals and companies to publicly declare their readiness to take action against climate change. Keppel O&M pledged to protect the environment in the prevention of pollution, conservation of the environment and active recycling as well as promote environmentally sustainable practices among its stakeholders.

20 years of excellence

Established in 1998, Keppel FELS Engineering Shenzhen has been an important engineering arm for Keppel Offshore & Marine, completing more than 60 newbuild projects and over a hundred repair and conversion jobs.

Growing from some 20 employees to over a hundred today, it celebrated its 20th anniversary on 19 September 2018. A highlight of the event, which was attended by local employees and engineers from Singapore,

was the presentation of the long service awards. Three employees had worked for 20 years while another three reached the ten-year milestone.

Over the years, the Keppel FELS Engineering Shenzhen team has built up its capabilities to support a wide variety of offshore projects, including drilling jackup rigs and semisubmersibles, accommodation and heavy-lift vessels as well as barges and self-elevating platforms.



Mr Huang Kuang Wei (center), Assistant GM, Engineering, Keppel FELS, with recipients of the long service award

Industry engagement

Safety is a core value at Keppel Offshore & Marine (Keppel O&M) and business units work hand in hand with different stakeholders so that every effort is made to improve safety on the ground.

In the same week, government representatives from the Co-operative Republic of Guyana together with management from ExxonMobil and SBM Offshore

visited Keppel Shipyard to understand the yard's operations and tour facilities such as the Keppel Safety Training Centre and Keppel Wellness Gallery.

On 28 August, delegates from the International Advisory Panel (IAP) for Workplace Safety and Health (WSH) including senior officials from the Ministry of Manpower and WSH Council visited Keppel Shipyard to understand its initiatives in promoting an injury-free and healthy workplace.

Comprising of a group of international experts, the IAP for WSH was appointed in 2006 as part of initiatives to improve WSH standards and outcomes in Singapore.



Representatives from the Co-operative Republic of Guyana, ExxonMobil and SBM Offshore were also updated on their conversion project, which upon completion will be deployed to the Liza field located offshore Guyana



(Front row, from L-R) Mr Danny Teoh, Board of Director (BOD) of Keppel Corporation; Mr Alvin Yeo, BOD of Keppel Corporation; Mr Chan Chun Sing, Minister for Trade and Industry; Dr Lee Boon Yang, Chairman of Keppel Corporation; Prime Minister Lee Hsien Loong; Mr Loh Chin Hua, CEO of Keppel Corporation; Mr Ong Ye Kung, Minister for Education; Mr Tan Ek Kia, BOD of Keppel Corporation; Ms Veronica Eng, BOD of Keppel Corporation. (Back row, from L to R) Ms Christina Tan, CEO of Keppel Capital; Dr Ong Tiong Guan, CEO of Keppel Infrastructure; Mr Till Vestring, BOD of Keppel Corporation; Mr Tan Puay Chiang, BOD of Keppel Corporation; Mr Chan Hon Chew, CFO of Keppel Corporation; Mr Chris Ong, CEO of Keppel Offshore & Marine; Mr Thomas Pang, CEO of Keppel Telecommunications & Transportation

Celebrating 50 years

Keppel Corporation, which started out as Keppel Shipyard, celebrated its growth story at the company's 50th anniversary Gala Dinner on 3 August 2018. To commemorate this occasion, Keppel made a \$10 million donation to the Institute of Technical Education to promote education for financially disadvantaged students.

Keppel Corporation has come a long way over the last 50 years. From a small shipyard incorporated in 1968, Keppel has grown and diversified into a multi-business company, providing solutions for sustainable urbanisation. This important milestone was celebrated at the company's 50th anniversary Gala Dinner at Shangri-La Hotel on 3 August 2018.

Singapore's Prime Minister, Mr Lee Hsien Loong, was the Guest-of-Honour at the Gala

Dinner, which was attended by more than 600 guests including Singapore's ministers – Mr Chan Chun Sing, Minister for Trade and Industry, and Mr Ong Ye Kung, Minister for Education, senior government officials, ambassadors, business partners, customers, union representatives as well as Keppel's directors, management and staff.

During his welcome speech, Dr Lee Boon Yang, Chairman of Keppel Corporation, expressed appreciation for the strong support

and confidence of all stakeholders. He said, "As we grow beyond our first 50 years, Keppel is committed to becoming an even stronger, more nimble and more sustainable company, one that will make a positive impact on the community, wherever we operate."

Dr Lee's announcement of a \$200 cash gift for each of Keppel's more than 20,000 staff in Singapore and overseas, in appreciation of their hard work and dedication, was met with

resounding applause from the audience.

In his speech, Prime Minister Lee spoke on how Keppel's journey over the past 50 years mirrors Singapore's own nation-building story. Prime Minister Lee said, "You turned adversity into opportunity. You looked outward and broke new ground in external markets, businesses and technologies. You transformed yourself as the world changed, developing new capabilities and businesses beyond your original focus. Your success is also Singapore's success as you contributed to our economic growth and international branding, and uplifted the livelihoods of many Singaporeans."

Prime Minister Lee also expressed confidence in Keppel's ability to thrive in a rapidly-changing world. He shared, "You have a firm foundation of dedicated and competent Keppelites. You have over time established a solid reputation of reliability, which has given you the ability and the goodwill to recover from setbacks and mistakes."

In his thank you remarks later in the evening, Mr Loh Chin Hua, CEO of Keppel Corporation, said, "Fifty years is a long time. Whilst we are here to celebrate this remarkable milestone, it is also timely for us to reflect on what lies ahead and what Keppel as a company must do to remain relevant and continue on our growth path for the coming decades."

He added, "Our push for collaboration within the Group, as OneKeppel, in the past few years

has yielded results. When you look beneath the hood, there is a lot more in common amongst our different businesses."

CONTINUING THE TRADITION OF GIVING

To commemorate this special occasion, Keppel Corporation made a \$10 million donation to the Institute of Technical Education (ITE) to promote education for financially-disadvantaged students from ITE. At the Gala Dinner, Prime Minister Lee witnessed the cheque presentation by Dr Lee to Mr Bob Tan, Chairman of ITE.

Keppel's donation will be credited to the ITE Education Fund and will be matched 1.5:1 by a Singapore government grant, resulting in a total contribution of \$25 million to the Fund. The donation will be used to set up the Keppel Care Foundation Scholarship and Keppel Merit Awards. The Keppel Care Foundation Scholarship aims to recognise and reward outstanding ITE students from disadvantaged backgrounds, while the Keppel Merit Awards provide monthly financial support for deserving students from low-income families.

Dr Lee said, "Keppel believes in investing in education and developing capabilities to support Singapore's growth into the future."

Keppel has a long-standing and holistic partnership with ITE to enhance the skills of students and help enhance their career paths. Keppel's existing programmes with ITE include offering ITE students technical skills training and apprenticeships with relevant

certifications, as well as internships and career placements.

SHAPING THE FUTURE

Underpinning Keppel's growth trajectory is its commitment to shaping the future for the benefit of all its stakeholders – Sustaining Growth, Empowering Lives, and Nurturing Communities.

These three thrusts came to life in a sharing session by Keppelite Mr Ivan Lim, GM (Operations), Keppel Shipyard.



He said, "What really inspired me was the trust Keppel had in me. In 2007 when I was just 29, there was a big kick off meeting for the Espirito Santo Floating Production Storage and Offloading project and I presented the project execution plan. The clients asked me, "Where's the project manager?" When I said it was me, they didn't believe that it could be someone quite so young."

"Through the years, I benefited from the mentorship of senior Keppelites, and I hope to also be a guiding light for the next generation."

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Keppel's 50th anniversary celebrations saw Keppel O&M's senior management catching up with customers, government officials, union members and partners

Responding to a bomb threat

What should you do if you see a device that looks suspiciously like a bomb? That was the objective of a business continuity exercise conducted by Keppel Offshore & Marine's (Keppel O&M) Security Department at Keppel Shipyard Benoi.

Held on 30th July 2018, an improvised explosive device (IED), commonly used by terrorists, was discovered by a forklift driver in the dock store. He made a quick assessment and promptly alerted the yard's security as well as his colleagues. In accordance with the response plans, personnel within a 100m radius of the dock store were alerted to evacuate the area to designated assembly points.

The exercise was conducted with the support of Jurong West Neighbourhood Police Centre (JW NPC). Police officers tested the time taken to react and arrive at the scene when dispatched. They had to coordinate with the yard's security personnel and assess the situation, while keeping vigilant for any terrorist approaches, including along the waterfront.

Another element of the exercise was introduced when a reporter arrived at the yard. A body camera was worn by the reporter to capture the response of the frontline personnel in handling the reporter. Keppel's Group Corporate Communications was also alerted to handle the press.

Inside the yard, the police tactically approached the IED using a handheld trace detector for explosives. The object was determined not to be an IED and after a quick sweep of the area found no other suspicious items, the exercise was called to an end.

Commenting on the exercise, Mr Burt Loh, General Manager (Operations) of Keppel Shipyard Benoi, said, "I am proud of the response by our team which showed that they are prepared for such incidents. It also gave us a chance to test new security tools such as an SMS Broadcast System, Body Worn Cameras, Forward Command Post and Drone Cameras. Safety and our familiarity with the response plan are key considerations. I would like to thank

the JW NPC for their support in the close planning and coordination with our departments."

"It makes a difference when a company believes in contingency planning. It is very assuring that Keppel O&M has their internal response plans to be able to evacuate and put things in order during a major incident. This will certainly assist the Police in handling the situation when they arrive and also to work jointly with the staff to ensure the incident is managed well. I am pleased to note that Keppel is also tapping on technology to better manage major incidents. These will go a long way to improve ground operations," added Superintendent Tan Yong Hong, the Commanding Officer at JW NPC.



Keppel O&M's Security Response team briefing the Police at the Forward Command Post using the body worn camera and yard layout

Convening for safety



The Keppel Group Safety Convention is held annually to reiterate Keppel's commitment to inculcate a strong safety culture

Safety is deeply ingrained in the minds of Keppelites. In a recent survey conducted by an external consultant, when Keppelites were asked to say which 3 words come to mind when they thought of the Keppel Group, "Safety" came up first, followed by "Can Do", and "Integrity".

This was part of a sharing by Mr Loh Chin Hua, CEO of Keppel Corporation and Chairman of Keppel Offshore & Marine (Keppel O&M), during his opening address at the 12th Keppel Group Safety Convention. Held on 23 October, the convention is a means to continually improving safety standards and reiterate Keppel's commitment to inculcate a strong safety culture.

In his address, Mr Loh also elaborated on the importance of harnessing technology to improve workplace safety and referred to examples such as Keppel FELS' Remotely Operated Underwater Vehicle (ROV) which conducts inspections underwater,

eliminating the need for workers to perform such hazardous tasks involving diving and confined space entry. "Such innovations not only make operations safer, but more efficient, and help Keppel to stay competitive across our different businesses", he said.

Themed "Shaping a Safer Future", the convention was attended by around 500 participants including the board members, management and employees of Keppel business units, union members, contractors and subcontractors, partners, and business associates.

The event featured interesting segments such as the live performance of the new Keppel O&M safety song. Titled "It's up to me", the song is a reminder that safety is a collective responsibility, and everyone has the power to stop unsafe practices.

Mr R K Jaggi, GM (Group Health, Safety and Environment), Keppel Corporation, elaborated on the Zero Fatality Strategy, which

guides the Keppel Group in its approach to safety. This strategy is built on five key pillars, namely, building a high-performance safety culture, adopting a proactive approach to safety management, leveraging technology to mitigate safety risks, harmonising global safety practices and competencies, and streamlining learning from incidents.

Guest speaker Mr Michael Bigler, Venture SSHE Manager of Guyana Projects at ExxonMobil Development, also shared with participants the programme ExxonMobil has in place that empowers employees in safety decision making.

Another unique segment of the programme was the Keppelites on the ground video, which featured Keppelites from different countries sharing their thoughts of the safety culture in Keppel today, and how it can be further improved to create a safer future for all.

To recognise Keppelites for their

outstanding contributions to safety and innovation, the individual Keppel Group Safety Awards and Safety Innovation Team (SIT) Awards were also presented during the event.

Among the list of award recipients for the Keppel Group Safety Awards was Mr Adrian Choy, Senior Project Manager at Keppel Shipyard, who won the Outstanding Executive Award. His tireless efforts to promote safety helped his project Hilli Episeyo, the world's first FLNG conversion,

achieve a total of 19.5 million safe man-hours.

The most eagerly anticipated part of the afternoon was the revealing of the winner for the Keppel Chairman Safety Challenge. Business units across the Keppel Group were assessed based on three categories, namely safety initiatives assessment, safety innovation projects, and safety performance statistics. This year, Keppel FELS emerged as winners of the challenge. The trophy was presented by Dr Lee

Boon Yang, Chairman of Keppel Corporation.

In his closing speech, Mr Tan Ek Kia, Chairman of the Keppel Corporation Board Safety Committee, urged Keppelites to remain steadfast in this safety journey. "As the company grows and operations evolve, so must our safety knowledge, practices and technology. Safety is a collective responsibility and is a never ending journey. We all have to play our part to shape a safer future for Keppel."



Team iDiver was one of two teams presented with the SIT Platinum Award, the most prestigious innovation award, by Mr Chris Ong (third from right), CEO of Keppel O&M, for their custom-built ROV which eliminated the need for human divers



The new Keppel O&M safety song was performed by the talented Ms Cindy Chew (centre), Mr Muhd Hafiz Bin Senin (left) and Mr Christopher Ramos (right)



Keppel FELS, the winner of the 2018 Keppel Chairman Safety Challenge

Building talent

Keppel Offshore & Marine (Keppel O&M) is committed to nurturing its workforce to their fullest potential through holistic development programmes.

OPERATIONAL LEADERSHIP TRAINING

As part of its continuous recruitment and training of the community's young engineers, Keppel AmFELS in Brownsville, Texas, took in 12 engineering graduates in September 2018 for its two-year Operational Leadership Training Programme (OLTP).

First introduced in 2014, the OLTP has been successful in the professional development of new talents who undergo job rotations over two years in operational training involving safety and production. OLTP engineers also participate in new build and repair projects using the latest technologies and methodologies.

Dr Lee Chay Hoon, Director of Organisational Development and Human Resources for Keppel O&M, spoke to the 2018 group about the long-term career path and opportunities at Keppel AmFELS and shared a presentation of Keppel's activities and global presence in the offshore and marine industry.

Previous OLTP graduates have contributed to some of Keppel AmFELS' major projects such as the construction of a Keppel B Class jackup rig and the world's largest Harsh Environment Enhanced Mobility land rig. The current projects at Keppel AmFELS include



Mr Simon Lee, President of Keppel AmFELS (fifth from left in middle row) and Dr Lee Chay Hoon, Director of Organisation Development and HR of Keppel O&M (fourth from left in middle row) welcoming the class of 2018 to Keppel AmFELS' Operational Leadership Training Programme

the construction of two LNG-fuelled containerships. These are learning opportunities for young engineers to put their knowledge and skills to work in exciting projects.

Mr Enrique Maldonado, graduate of OLTP Class in 2016, has benefitted from the programme. After the two year training programme, he was further exposed to the Commercial Department to negotiate and purchase equipment for two new build container vessels. An Electrical Engineer by training, Mr Maldonado has extended his skill sets by undertaking piping fabrication and installation and mechanical and electrical technical equipment purchases.

KTED PROGRAMME

On 26 October 2018, Keppel O&M successfully concluded the third

edition of the Keppel O&M Technology and Engineering Development (KTED) Programme.

Organised in collaboration with the Singapore University of Technology and Design (SUTD), the programme saw 35 Keppelites delve into novel ideas such as marine landscaping and repurposing scrapped rigs.

First held in 2016, the KTED programme has trained 117 Keppelites over the past three years.

LEADERSHIP DIALOGUE

The latest instalment of the Leader's Dialogue organised by Keppel Young Leaders (KYL) took place on 20 July 2018 and featured Mr Chris Ong, CEO of Keppel O&M. Speaking to some 100 Keppelites, Mr Ong shared his take on leadership, opportunities and preparing for the future.

Have risen through the ranks, Mr Ong takes a personal interest in the development of talent in Keppel O&M and personally engages management trainees to understand their career goals.

Recognising the changing business landscape, he highlighted the need to build on the company's strong foundation of engineering, production and operations while staying ahead of the curve through

innovative initiatives to offer new products and services. These include developing solutions along the gas value chain and adopting new technologies in yard operations.



Mr Ong added, "Looking ahead, Keppel O&M will harness its combined strengths to hunt as a pack in seizing opportunities while optimising resources. As we grow, there will be exciting opportunities for employees to improve themselves, take on new challenges and transform the company".

KYL is a platform that aims to develop young Keppelites into dynamic, resilient, enterprising and transformational leaders who can contribute and grow with the business.

As part of the Leader's Dialogue organised by KYL, Mr Chris Ong, CEO of Keppel O&M, shared his take on leadership, opportunities and preparing for the future



The graduation ceremony for the KTED programme was attended by management from Keppel O&M and SUTD, including Mr Chris Ong (seated, seventh from right), CEO of Keppel O&M, and Dr Kristine L. Wood (seated, sixth from right), Associate Provost of Graduate Studies, and Co-Director, SUTD-MIT International Design Centre

Majulah Singapura

Keppelites joined Singapore in celebrating the nation's 53rd birthday.



Keppel's senior management, led by Mr Loh Chin Hua (seated, sixth from right), CEO of Keppel Corporation and Chairman of Keppel O&M, and Mr Chris Ong (seated, fourth from right), CEO of Keppel O&M, joined the Keppel marching contingent in an NDP rehearsal session

As a homegrown multi-business company, Keppel joined Singapore in commemorating its independence as a major sponsor of the National Day Parade (NDP) 2018. The event on 9 August 2018 at the Marina Bay floating platform was a heartwarming celebration of national pride and the Singapore spirit.

Keppelites participating in the NDP marching contingent flew the Keppel flag high. The Keppel contingent this year was led by Ng Shi Yun, Project Manager, Keppel FELS.

Mr Loh Chin Hua, CEO of Keppel Corporation and Chairman of Keppel Offshore & Marine (Keppel O&M), together with Mr Chris Ong, CEO of Keppel O&M, Mr Tan Leong



The Keppel contingent marched smartly at the NDP 2018 parade and ceremony segment

Peng, ED (Offshore), Keppel O&M, and Dr Lee Chay Hoon, Director (Organisation Development), Keppel O&M, demonstrated their support for the contingent and attended a rehearsal session on 28 July 2018 at the F1 Pit Building.

SHOWING APPRECIATION

Keppel O&M celebrated the nation's birthday with its first combined National Day Observance Ceremony held on 10 August 2018 at its head office. The event was graced by Minister for

Education Mr Ong Ye Kung and well attended by over 2,000 staff.

During the ceremony, 552 employees who have been with Keppel O&M for at least a decade were recognised for their hard work and contributions.

On the same day, Keppel O&M held its inaugural Keppelites Appreciation Day to give thanks to employees who have contributed to the year's hard work.

Attended by approximately 7,400 Keppelites from across the different yards, the event engaged participants in activities such as lucky draws and photo booths.



Management from Keppel O&M participated in the activities prepared for the inaugural appreciation day alongside other Keppelites



Mr Ong Ye Kung (sixth from right), Minister for Education, graced Keppel O&M's first combined National Day Observance Ceremony as Guest-of-Honour

Exemplary management

Keppel values the contributions of foreign workers and works closely with industry stakeholders to ensure that their physical and psychological needs are taken

care of in the dormitories. In recognition of its efforts, Keppel Housing dormitories Acacia Lodge and Cassia@Penjuru clinched awards at the second annual

Dormitory Awards held on 12 September 2018.

Organised by the Ministry of Manpower, the awards lauded 17 dormitory operators for being exemplary in managing and improving the living conditions of foreign worker dormitories.

Keppel Housing has implemented several initiatives to improve dormitory facilities and build rapport amongst residents. These include feedback channels, recreation activities and encouraging workers to take up active roles in the dormitories.



Mr Zaqy Mohamad (right), Minister of State for Manpower, presented the award to Mr Shahul Hameed (left), Head of Department, Facilities, at Keppel Housing

Broadening horizons

The inaugural Singapore-Indonesia Youth Leaders Exchange Programme (SIYLEP) came to a close with the conclusion of the Indonesian leg in August 2018. The programme marks 50 years of diplomatic ties between both countries, and started with the Singapore leg earlier in November 2017.

Part of the Singapore delegation consisting of 20 representatives from various sectors, Mr Wong Zi Hao, Executive, Marketing (Special Projects), Keppel Singmarine, shares his experience with *OM Newsletter*.

“Representing Singapore for the

inaugural SIYLEP was an honour and memorable experience for me. The programme has broadened my horizon on issues like national policies, current systems, and bilateral relations of both countries.

My personal message to youths

is – Be courageous and never stop learning. As youths, we should continuously embark on adventures to enrich our lives. Through new experiences, we gain the ability to connect with people from all walks of life.”



During the programme, Wong Zi Hao (centre) and the delegation exchanged views on a range of topics such as socio-economic challenges

Doing well, doing good

Keppel is committed to making a difference in the communities wherever it operates through its social and environmental programmes and volunteerism efforts both in Singapore and abroad.

KEEPING TRASH AT BAY

On 15 September 2018, 42 volunteers from Keppel Batangas Shipyard rallied to clean up a 1km stretch of beach at a coastal village near the yard as part of International Coastal Cleanup Day.

Braving a downpour, volunteers armed with trash bags, gloves and raincoats collected 78 kg of marine trash that day.

EMPOWERING YOUTH

As part of the Teach-it-Forward programme, BrasFELS hosted 30 ninth grade students from Dom Pedro I Municipal School located in the Serra D'Água neighbourhood.

The students were warmly received

by Keppelites who shared the history of BrasFELS, its projects, as well as their personal experiences of working in the yard. This was the third visit organised by BrasFELS in 2018, and is part of the programme which aims to impart career advice to students.

Over in the Philippines, volunteers from Keppel Batangas Shipyard

and other members of local civic organisations took to the streets of Bauan on 13 October 2018 to show their support during the annual Alay Lakad, a walk-for-a-cause initiative to raise awareness and funds for the education of out-of-school youth.

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Volunteers from Keppel Batangas braved the heavy rain and collected 78kg of marine trash as part of International Coastal Cleanup Day



As part of the Teach-It-Forward programme, students also visited the recently launched Health, Safety and Environment (HSE) Training Centre to learn about the different activities conducted in the shipyard

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The Keppel Batangas team covered 3km during the annual Alay Lakad to raise awareness and funds for the education of out-of-school youth



Members of the Angra dos Reis community participated in the Brazil Independence Day celebrations at BrasFELS

Keppel Batangas is a partner of the Alay Lakad Association of Buau (ALAB) and provides technical training for its scholars. First started in 1972, chapters of the Alay Lakad are now held nationwide, and proceeds go to providing livelihood trainings and scholarships for out-of-school youth.

HABIT OF READING

On 24 August 2018, volunteers from Keppel Batangas spent the day with pre-school pupils at the SIBOL Learning Centre at Keppel-GK Eco Village. In celebration of the Philippine National Language month, the volunteers engaged students in an immersive story telling of Filipino

folklore and classics which teach lessons of kindness, humility and love.

228 books were also donated by Keppelites to encourage the students, aged 3-5 years old, to inculcate the habit of reading.

CELEBRATING WITH THE COMMUNITY

Since its establishment in 2000, Keppel FELS Brasil and BrasFELS shipyard have integrated into the communities they operate it. On 6 September 2018, the BrasFELS shipyard celebrated the country's Independence Day with its employees, clients, as well as members of the Angra dos Reis community including the Cornelis Verolme Scouts Group and the Nazira Salomão School Band.

The day's festivities began with the Brazilian national anthem, and transitted to traditional Brazilian songs performed by the Nazira Salomão School Band.

During the celebration, safety awards were also presented to four employees for their exemplary performance and efforts throughout the year.

Keppel to build two more LNG carriers



The LNG carriers that Keppel is building for Stolt-Nielsen Gas will enable access to end users located in remote regions unserved by pipelines

Keppel Offshore & Marine (Keppel O&M) through its wholly-owned subsidiary Keppel Singmarine, on 7 October 2018 signed two additional contracts with Stolt-Nielsen Gas B.V. (Stolt-Nielsen Gas), a subsidiary of Stolt-Nielsen Limited, following the exercise by Stolt-Nielsen Gas of its options to build two additional small-scale LNG carriers.

Three options were granted to Stolt-Nielsen Gas as part of the original contract signed in May 2017 between Keppel Singmarine and Stolt-Nielsen Gas to build two LNG carriers. The first option lapsed in November 2017, while the second and third options have now been exercised by Stolt-Nielsen Gas.

Mr Abu Bakar, Managing Director (Gas & Specialised Vessels), Keppel O&M, said, "We are pleased that Stolt-Nielsen Gas has exercised their options to build two additional LNG carriers. It reflects the partnership that we have built over the past year, and Keppel O&M's ability to leverage our new build and LNG expertise to provide customised solutions."

"These LNG carriers will be the 4th and 5th vessels capable of LNG bunkering as well as the 11th and 12th LNG powered vessels that Keppel will be building. We look forward to furthering this track record as the industry increasingly adopts LNG as a marine fuel."

Similar to its preceding two units, the two LNG carriers will each have a capacity of 7,500m³, and come equipped with engines that can run on both diesel and LNG. To be completed in 4Q 2020 and 1Q 2021 respectively, the carriers will have a class notation for bunkering which enables the provision of LNG bunkering services if required.

With the tightening of global emissions standards, the marine industry is increasingly adopting LNG as a marine fuel. Economical and quick to market, small-scale LNG projects are a means to reaching end users located in remote areas not served by pipelines.