

# OFFSHORE MARINE

A newsletter of Keppel Offshore & Marine

November – December 2014

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**GUINNESS  
WORLD RECORD**  
For delivering 21 rigs  
in 2013

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For delivering 21 offshore rigs to its customers in 2013, Keppel FELS has been conferred the title of “Largest manufacturer of offshore rigs – current” by Guinness World Records. Keppel FELS’ previous delivery record was 13 rigs in 2009.

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OffshoreMarine is a bi-monthly publication of Keppel Offshore & Marine Ltd  
50 Gul Road, Singapore 629351  
Tel: +65 6863 7200  
Fax: +65 6261 7719 / 6265 1927

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# Keppel Singmarine secures newbuild and technical service contracts



Keppel Singmarine has been contracted to build the fifth Anchor Handling Tug (AHT) vessel for Seaways International. Seaways 22 (above) was the fourth AHT unit that Keppel Singmarine delivered to Seaways in 2013.

Keppel Singmarine has secured contracts for a newbuild vessel and to provide technical services for a liftboat.

The first contract was awarded by Seaways International (Seaways) to build a multi-task Anchor Handling Tug (AHT) vessel suitable for an array of offshore activities.

Designed by Robert Allan and belonging to the Rampage Series, the AHT vessel will have a designed bollard pull of 100 tonnes, and be equipped with Class 1 and 2 fire-fighting capabilities, Class 2 dynamic positioning systems, oil recovery Class I capabilities, as well as a host of other equipment.

When completed in 2Q 2016, this

vessel will be the fifth AHT unit that Keppel Singmarine has built for Seaways.

Separately, Keppel Singmarine was awarded a contract by Nakilat-Keppel Offshore & Marine (N-KOM), a joint venture shipyard in Qatar between Qatar's premier gas shipper Nakilat and Keppel Offshore & Marine (Keppel O&M), to provide technical services for the construction of a liftboat. The technical services include detail and production engineering, technical and commissioning support as well as procurement support.

This is the first time that Keppel Singmarine will be providing technology solutions for a liftboat, adding to the wide spectrum of

specialised vessel projects that Keppel Singmarine can undertake. The liftboat is designed by Bennett Offshore, a naval architecture and marine engineering arm of Keppel O&M, in collaboration with N-KOM.

Mr Abu Bakar Mohd Nor, MD of Keppel Singmarine, said, "We are happy that Seaways has chosen to partner Keppel again in growing their AHT fleet. At Keppel, we strive to build long term relationships with our partners so that we can know and anticipate their needs.

"At the same time, by taking on new projects such as the liftboat, we continuously expand our suite of technology solutions so as to better meet the demands of the specialised shipbuilding market."

# Keppel AmFELS to build one of world's largest land rigs

Keppel AmFELS LLC, a US-based wholly-owned subsidiary of Keppel Offshore & Marine (Keppel O&M), has won a contract to build one of the world's largest land drilling rigs for a major operator.

Scheduled for delivery in mid-2016, Keppel AmFELS will be undertaking the engineering, procurement and construction of the rig. The rig will be capable of operating in harsh conditions.

Backed by comprehensive facilities and a highly-capable workforce, Keppel AmFELS has built up a strong track record in the construction, refurbishment, conversion, life extension and repair of a variety of drilling rigs.



Keppel AmFELS, located in Brownsville, Texas, US, is one of the most established yards to serve the Gulf of Mexico

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## New lease of life

On 4 December 2014, Keppel Shipyard celebrated the naming of the Floating Production Storage and Offloading (FPSO) vessel

Bertam with Lundin Petroleum, Petronas and its exploration & production subsidiary, Petronas Carigali.

Originally named Idkam, the 43-year-old FPSO vessel was given a new lease of life after undergoing refurbishment and upgrading works at Keppel Shipyard, which were completed with a record of more than 2.5 million safe man-hours without lost-time incident.



Celebrating the successful completion of the FPSO Bertam project are (L-R) Mr Chor How Jat, MD of Keppel Shipyard, Mr Michael Chia, MD (Marine & Technology) of Keppel O&M, Mr Adif Zulkifli, VP, Malaysia Petroleum Management, Petronas, Mr Chris Bruijnzeels, Senior VP Development, Lundin, and Mr Nasir Abdullah, Head of Liaison Office, Petronas Carigali

After sailing away from Keppel Shipyard, FPSO Bertam will be deployed in the Bertam Field in offshore Malaysia to support the operations of Lundin and Petronas Carigali. FPSO Bertam is the 14th project that Keppel has completed for Petronas and Petronas Carigali.

# Seventh KFELS B Class rig for Mexico



Senior management of PEMEX and Keppel celebrating the successful partnership between them at the naming ceremony, which included (3rd from left to right) Mr Chow Yew Yuen, CEO of Keppel O&M; Dr Lee Boon Yang, Chairman of Keppel Corporation; Lady Sponsor, Mrs Valerie Pahl-Hernandez; Mr Gustavo Hernandez Garcia, Director General, PEMEX E&P; Mr Loh Chin Hua, CEO of Keppel Corporation and Chairman of Keppel O&M

Keppel FELS, a wholly owned subsidiary of Keppel Offshore & Marine (Keppel O&M), has delivered a KFELS B Class jackup rig to Mexican national oil company, Petróleos Mexicanos (PEMEX), on time, with a perfect safety record and within budget.

The rig was named YUNUEN on 9 January 2015 by Lady Sponsor Mrs Valerie Pahl-Hernandez, wife of Mr Gustavo Hernandez Garcia, PEMEX's Director General of Exploration & Production, at a ceremony at Keppel FELS this evening.

YUNUEN is the first of two jackup rigs Keppel is building directly for PEMEX. It will join another six KFELS B Class rigs that PEMEX has chartered from drilling contractors for deployment in offshore Mexico. Keppel also has another eight KFELS B Class jackup rigs currently under construction for Mexican companies.

Mr Chow Yew Yuen, CEO of Keppel O&M said, "We are pleased to

once again be able to support PEMEX and Mexico with the on time, on budget and safe delivery of another state-of-the-art rig. This is the seventh KFELS B Class jackup that will work in Mexico and is testament to the strength of this design for owners and operators in the region. We have a second KFELS B Class jackup rig being built directly for PEMEX and another seven for Mexican drilling contractors that will be chartered to PEMEX."

The KFELS B Class jackup is designed to operate in water depths of up to 350 feet and drill to depths of 30,000 feet. Developed by Keppel's Offshore Technology Development (OTD), the KFELS B Class jackup is equipped with an advanced and fully-automated high capacity rack and pinion jacking system, and Self-Positioning Fixation System. It has accommodation with full amenities for 120 persons.

Mr Gustavo Hernández García, Director General of Pemex E&P,

said, "As Mexico's exploration and production programme continues to grow, high specification and high performance jackup rigs like the YUNUEN will be vital in our bid to increase oil production. We are committed to our plans for E&P growth while ensuring that we maximise cost-savings and get the best value where we can. The KFELS B Class rigs have proven to be robust, efficient and economical, and the six that are currently under our charter have been performing excellently. Keppel has been a reliable partner for us with their superior execution capabilities as the world leader in the design and construction of offshore rigs."

Keppel's partnership with PEMEX was developed since 2004 when it was awarded a contract to build two accommodation modules for them. Keppel has also repaired and serviced a total of 18 rigs that have been deployed by PEMEX.

# Star delivery



The management of Keppel O&M and Jindal celebrate the successful delivery of the Jindal Explorer, the third jackup rig Keppel O&M has delivered for Jindal

Keppel FELS has delivered a third KFELS B Class jackup drilling rig to Star Drilling Pte. Ltd., an associate company of India's D P Jindal Group (Jindal).

The rig was named Jindal Explorer at a ceremony in the yard on 2 December 2014 and has been delivered on time, on budget and with a perfect safety record.

Mr Wong Kok Seng, MD (Offshore) of Keppel O&M and MD, Keppel FELS, said, "We are pleased to deliver a third KFELS B Class jackup rig to Jindal and support their growth as the leading drilling operator in India. This accomplishment is a result of our proven project management and execution capabilities as well as our excellent teamwork with Jindal.

"This is also our 11th rig for Indian customers, all of which are built to our proprietary KFELS B Class design. We understand the

needs of our customers and have customised this design to meet Jindal's requirements for robust jackups able to work in offshore India."

Jindal Explorer is purpose-built to meet the unique requirements of offshore India's harsh environment, bearing pressure and rig geometry. Capable of operating in water depths of 350 feet and drilling down to 30,000 feet, this design also incorporates Keppel's advanced and fully-automated high capacity rack and pinion elevating system, and self-positioning fixation system.

Mr Raghav Jindal, Director of D P Jindal Group, said, "We are glad to add Jindal Explorer to our fleet of high specification jackup rigs. It is tailored to meet the stringent needs of our customers and I am confident that it will be successful wherever it is deployed. The KFELS B Class is a proven

design for us with our two jackup rigs DISCOVERY I and VIRTUE I operating successfully without any downtime in offshore India for Oil & Natural Gas Corporation (ONGC). Keppel FELS has been a reliable partner for us in ensuring our rigs are cost-efficient and delivered on time to the highest quality and standards."

According to the Oil & Gas Journal, India has nearly 5.7 billion barrels of proven oil reserves at the beginning of 2014, of which 56% are offshore. Production declines in some of the mature oil fields and the Indian government's push to reduce its dependence on oil imports presents tremendous opportunities for exploration and production activities.

D. P. Jindal Group is one of India's most respected, diversified and leading Industrial House with revenues exceeding US\$800 million, employing more than 3000 people.

# Named in Norway

The second in a series of three ultra-harsh environment jackup rigs that are the world's largest left the Keppel FELS yard in Singapore on 22 August 2014 and arrived in Stavanger, Norway, where she was named Maersk Interceptor at a ceremony on 29 October 2014.

Built by Keppel FELS for Maersk Drilling, Maersk Interceptor will be deployed under a five-year contract with Det Norske to drill the Ivar Aasen field in the Norwegian North Sea starting in December 2014.

Celebrating the occasion with Maersk Drilling and Det Norske were Keppel Offshore & Marine's senior management which included CEO Mr Chow Yew Yuen, Senior Advisor to the Board Mr Tong Chong Heong and MD (Offshore) Mr Wong Kok Seng.

Speaking at the ceremony, Mr Chow said, "Maersk Interceptor is one of the largest and the most technically-advanced jackup rigs in the world, and we at Keppel are honoured to have been entrusted by Maersk to build it. Building on the good rapport between

the Keppel and Maersk project teams, we delivered the rig seven days ahead of schedule. We deeply value our three decade-long relationship with Maersk. Together, we have raised the standard of the industry with cutting-edge projects."



Sharing a joyous moment at the naming of Maersk Interceptor in Stavanger, Norway are (from left) Mr Chow Yew Yuen, CEO, Keppel O&M, Mrs Ane Maersk Mc-Kinney Uggle, Vice Chairman, A.P. Moller Maersk Board, her husband Colonel Peder Uggle, Mr Tong Chong Heong, Senior Advisor, Keppel O&M and his wife Mrs Catherine Tong



Keppel Offshore & Marine management celebrating the naming of Maersk Interceptor with Maersk Drilling and Det Norske at a traditional Norwegian ceremony in Stavanger, Norway

# Charting milestones

With strong design, engineering and construction capabilities, Keppel Offshore & Marine (Keppel O&M) is making steady progress on the six DSS™ 38E semisubmersible drilling rigs it is building for Sete Brasil.

When completed, the rigs will be chartered to Petrobras for 15 years for drilling activities in the pre-salt areas of Southeast Coast of Brazil, offshore Brazil.

Urca, the first of the six units struck steel at BrasFELS – in Angra dos

Reis, Rio de Janeiro, Brazil – in July 2012. More than 75% complete, Urca is on track for delivery in the fourth quarter of 2015.

BrasFELS is also making sound progress on the second unit. The upper hull blocks will be installed on the lower hull in the first quarter of 2015. As for the third unit, BrasFELS struck steel for the project in September 2014.

Jointly developed and owned by Keppel's Deepwater Technology Group and GustoMSC, the

DSS™ 38E is designed to meet the stringent requirements of the deepwater "Golden Triangle" region, comprising Brazil, Africa and the Gulf of Mexico.

The design is rated to drill to depths of 10,000 metres below the rotary table in 3,000 metres water depth. It is 108 metres in overall length, with a main deck size of 73 metres by 73 metres. Its operational displacement is approximately 45,000 tonnes.

## GRAND ASSEMBLY

Project milestones for Urca, the first of six DSS™ 38E semisubmersible drilling rigs that Keppel O&M is building for Sete Brasil.



1. BrasFELS, in Angra dos Reis, Rio de Janeiro, Brazil, struck steel for Urca on 13 July 2012



2. Integration of pontoons and columns at Keppel FELS, Singapore



3. Lower hull arrived in Brazil from Singapore in January 2014



4. The lifting of the modules for Urca. The heaviest lifting weight undertaken was 1,933 tonnes (block weight plus rigging weight)





5. BrasFELS installed and integrated the lower hull with upper hull structures



6. Installation of topside components at BrasFELS



7. BrasFELS installed the derrick with the 2,000-tonne crane, which is the tallest gantry crane in Latin America



8. Commissioning of marine systems and load testing of engines underway

# Steady progress

Petrobras' Floating Production Storage and Offloading (FPSO) vessel, P-66, arrived at Keppel FELS Brasil's BrasFELS shipyard, in Angra dos Reis, Rio de Janeiro, Brazil, on 15 December 2014.

The FPSO unit is at BrasFELS for the installation and integration of topside modules, some of which have been fabricated at the yard.

Waldir Zanetti, Project Manager at BrasFELS, said, "We have been making safe and steady progress

on the fabrication of topside modules for P-66. We have begun installation and integration works, and will continue to work hard towards a safe, prompt, high quality and within budget delivery."

BrasFELS has been engaged to perform a similar work scope for FPSO P-69. When completed, P-66 and P-69 will be deployed in Brazil's Guara field and Tupi field respectively.



BrasFELS' workscope for P-66 includes the fabrication, installation and integration of topside modules

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# Strong propulsion

SST Paiter, the fifth of six harbour tugboats that Keppel Singmarine Brasil is constructing for REBRAS – Rebocadores do Brasil S.A. (SMIT Rebras), was delivered on 4 December 2014.

Mr Lee Yoong Hoong, GM of Keppel Singmarine Brasil said, "Through our multiple collaborations with SMIT Rebras, we have built up strong mutual trust and understanding with the company. Through the good rapport between the SMIT Rebras and Keppel Singmarine Brasil project teams, and leveraging our experience on our earlier tugboats projects, the SST Paiter project had progressed safely and smoothly from start to finish. Completed with great care and dedication,



SST Paiter is the fifth harbour tugboat that Keppel Singmarine Brasil has delivered to SMIT Rebras

we are certain that SST Paiter will be a meaningful addition to the SMIT Rebras fleet."

Keppel Singmarine Brasil was acquired by Keppel Offshore &

Marine in 2010. Building up the competencies of employees and expanding its infrastructure, Keppel Singmarine Brasil has been growing its capabilities as a shipbuilder.

# On track for completion

Work on a Depletion Compression Platform (DCP), the first complete offshore platform to be constructed in the Philippines, is progressing well at Keppel Subic Shipyard, in the Central Luzon region of the Philippines.

This DCP for Shell Philippines Exploration BV (SPEX) comprises gas compression facilities mounted on a barge deck, supported by four tubular legs on base footings. Keppel Subic Shipyard is responsible for the fabrication of the entire DCP, including the integration of topside modules and fabrication of a link bridge that connects to a shallow water platform.

The project struck steel two years ago, and is presently on

track for delivery in 1Q 2015. When completed, the DCP will be deployed in the Malampaya gas field, off the coast of Palawan Island in the Philippines, next to the existing Shallow Water Platform. The DCP is designed to maintain the current availability and deliverability of natural gas from the Malampaya field by regulating the gas export pressure and flow rates.

Mr Leong Kok Weng, President of Keppel Subic Shipyard, said, "We are grateful to the Philippine government, SPEX and our other partners for their encouragement and support of this milestone project. We will continue to focus on safe and timely execution, and work towards a successful delivery."

Mr Nathan Stephenson, MP3 Company Site Representative, SPEX, said, "Safety is our top priority all throughout the process. With the emphasis on safety, productivity and quality, the project is now on the final leg towards the completion of the DCP structure that will ensure the power needs of the Philippines in the years to come. This is made possible by everyone from SPEX and Keppel Subic who are working as one cohesive team, for one particular goal and for one shared future."



Keppel Subic Shipyard is making good progress on the first complete offshore platform constructed in the Philippines



Mr Nathan Stephenson, MP3 Company Site Representative, SPEX, and Mr Leong Kok Weng, President of Keppel Subic Shipyard, celebrate excellent safety record on the construction of the DCP for the Malampaya gas field, offshore Philippines

# Taking shape in the Caspian



Baku Shipyard launched the port pontoon on 2 December 2014



Earlier, in October 2014, four columns and bracings of the rig arrived in Baku



Celebrating the pontoon launching are the management from CDC, SOCAR, ABS, CSC and Baku Shipyard

In building the most advanced and high specification semisubmersible (semi) drilling rig in the Caspian region, Keppel is leveraging its two yards in Azerbaijan, Caspian Shipyard Company (CSC) and Baku Shipyard, as well as the engineering expertise of Keppel FELS in Singapore.

CSC and Keppel FELS have been contracted by Caspian Drilling Company (CDC), a subsidiary of the

State Oil Company of Azerbaijan Republic (SOCAR) to build this sixth-generation semi.

Work on the semi, which is being built to Keppel FELS' DSS™ 38M design is progressing on track for delivery in December 2016. CSC's scope of work includes fabrication and erection of the structures, equipment installation, systems completion, testing and commissioning. Meanwhile Baku

shipyard was subcontracted by CSC to undertake the construction of the pontoons.

When completed, the rig will have a drilling depth capacity up to 40,000ft and high variable deck load of 5,600 tonnes. It will be equipped with a self-contained mooring system for 800m water depth with capability to be connected to a pre-laid mooring system for 1000m water depth.

# On an even keel

Having delivered four KFELS B Class jackup rigs to Gulf Drilling International (GDI) successfully, Keppel FELS' latest jackup for GDI, Halul (or B377) is following in their well-worn footsteps. The

keel laying ceremony for the rig was held on 28 November 2014 at Keppel FELS, marking the smooth progress of the project. The project teams of Keppel and GDI have developed a strong partnership

over the multiple projects and continually improved efficiencies on the construction process. Halul is scheduled for delivery in 1Q 2016.



The project teams of Keppel and GDI celebrating the keel laying of the Halul, the fifth KFELS B Class jackup rig Keppel is building for GDI

# 8 million safe man-hours

The third mammoth jackup rig in the Maersk XLE series that Keppel FELS is building, B347 (or XLE3) has achieved the safety feat of eight million man-hours without lost time incidents. As the

rig nears completion, with delivery in February 2015, the project teams have maintained their vigilance and demonstrated an unwavering commitment to safety.

To commemorate the achievement, Maersk Drilling presented a plaque together with a cheque of USD\$30,000 as a safety bonus to the Keppel FELS project team on 10 December 2014.



Reinforcing the strong partnership in safety, Mr Lars Ravn Hansen (first row, third from right), Site Manager, Maersk Drilling, presented a cheque of US\$30,000 to Keppel FELS led by (first row, L-R) Mr Yong Chee Min, Director (HSE & Special Projects), Keppel O&M; Mohd Sahlan, ED (Operations), Keppel FELS, Wong Sek Loong, Project Manager, Keppel FELS; Mr Chris Ong, ED (Commercial), Keppel FELS, Mr Wong Fook Seng, ED (Process Excellence & Planning), Keppel FELS, Mr Richard Tay, Yard Manager, Keppel FELS

# Perfect safety record

Seafox 5 has completed over a hundred jacking cycles in a year – equivalent to what a typical drilling rig does over a 20-year span – while maintaining a perfect safety record.

A multi-purpose self-elevating platform (MPSEP) based on Keppel FELS' proprietary design and jacking system, Seafox 5 has achieved zero lost time incidents since commencing operations two years ago, a testament to the safe operations of its rig and crew and its robust build quality.

The rig's first job was as an offshore wind turbine installer, installing 80 monopile foundations for Vattenfall at the 288MW DanTysk project off Germany. The versatility of the rig enabled it to subsequently work for Maersk Oil providing offshore accommodation, well services and lifting support in the Tyra field in offshore Denmark.

As an offshore wind turbine installer, Seafox 5, with its 1200 tonne crane onboard, completed the fastest installation with the biggest monopiles in the world. A single monopile which measures 70 meters long and weighs 760 tonnes was installed within 19 hours, with 4 installations completed a week. In installing 80 monopiles over a year, Seafox 5 completed 106 jacking cycles up and down which is equivalent to 6000 metres of jacking.

Mr Rainier Verhulst, Operations Director of Seafox 5 said, "106 jacking cycles up & down is



Seafox 5 jacked up 106 times in the installation of monopiles for the DanTysk wind farm off Germany

**"106 jacking cycles up & down is equivalent to what a normal drilling rig is doing in a 20 year lifespan. To do this during this project within only a year and with almost zero down time rating of the duration, proves the robustness of the design and equipment built by Keppel."**

*Mr Rainier Verhulst, Operations Director of Seafox 5*

equivalent to what a normal drilling rig is doing in a 20 year lifespan. To do this during this project within only a year and with almost zero down time rating of the duration, proves the robustness of the design and equipment built by Keppel.

"We started operations in winter time and Seafox 5 had to be jacked in with wave heights of 2m with periods of 6-8sec. Despite the challenging conditions, the crew managed to position and jack Seafox 5 to within 75cm accuracy of the location in order to position

the monopole upright using the 1200tonne crane and stabbing it into the seabed.”

### STILL GOING STRONG

The proprietary jacking system was developed by Keppel FELS’ R&D arm, Offshore Technology Development (OTD) along with a patented leg fixation system in 1996. The advanced jacking capacity system is still one of the largest in the market and the legs rack and chord assembly is purpose-built with high tensile steel by Regency Steel Japan, a joint-venture facility between Keppel, Mitsui and Nippon Steel.

Recounting the initial development stages, Dr Foo Kok Seng, ED of OTD said, “We had carried out a full scale life-cycle load test and satisfied the ABS and DNV requirements. In our trials, we tried our best to damage the jacking system but it withstood the tests. Up till today, the jacking systems continue to hold a clean record.”

The jacking system consists of multiple jacking units working in tandem. It is capable of lifting a load of up to 70,200 kips, making it suitable for elevating decks of the world’s largest jackups. The jacking system is used on all of Keppel’s suite of proprietary designed jackup rigs and is well proven through extensive operational deployments in harsh

environments such as the North Sea sector in Norway, UK, Denmark and Netherlands, Canadian waters, West Africa, Gulf of Mexico, the Middle East, Australia/ New Zealand, India, South America (Argentina) and South East Asia.

In 2013, a record 810 jacking units were installed on 19 jackup rigs.

The customers comprised National Oil Companies like PEMEX, Gulf Drilling International, Saudi Aramco, Petrovietnam and National Drilling Company as well as major drilling contractors like Ensco, Transocean, Rowan Companies, Hercules Offshore, Maersk Drilling and Seadrill among others.

> 4000

Jacking systems ordered for over 100 jackup rigs. Of these, some 2900 are in operation on more than 70 jackup rigs

\*as of January 2015



### Features of the Keppel FELS jacking system

- High capacity jacking which is able to carry 7000 tonne VDL
- Simple to use system which is not overly complicated with electronics
- Planetary gear box
- Suited for wide operating environments



The versatility of Seafox 5 which is based on Keppel FELS’ Multi-Purpose Self-Elevating Platform design enabled it to work for Maersk Oil in the Tyra field off Denmark

# Strong industry presence

Showcasing its projects and capabilities, Keppel Offshore & Marine (Keppel O&M) participated in the 20th Offshore South East Asia (OSEA) with a prominent booth at the exhibition and conference. Held from 2 to 5 December 2014, the biennial OSEA is Asia's largest oil and gas event, gathering over 28,000 industry experts and professionals to discuss strategic, operational and technological developments.

OSEA Guest of Honour  
Mr S Iswaran, Minister, Prime

Minister's Office, Second Minister for Home Affairs and Second Minister for Trade & Industry, visited Keppel O&M's booth to learn about its latest projects and proprietary designs.

In his opening speech, he said, "Despite concerns over the impact on the oil and gas industry of short term global uncertainties and volatile oil prices, the long term outlook for the industry remains positive. Strong economic fundamentals in Asia-Pacific, together with its rapid

population growth and economic development, will continue to drive energy demand and thus expenditure on exploration and production activities."

He also spoke on significant R&D initiatives in Singapore, citing "the corporate lab jointly established by NUS and Keppel last November, which allows Keppel to better access upstream research capabilities at NUS, and commercialise technologies into products and solutions."



(From L-R) Mr Toh Ko Lin, ED of Keppel Singmarine, Mr Abu Bakar Bin Mohd Nor, MD of Keppel Singmarine; Mr Wong Kok Seng, MD (Offshore) of Keppel O&M and MD, Keppel FELS; Mr Chow Yew Yuen, CEO of Keppel O&M; Minister S Iswaran, Minister, Prime Minister's Office, Second Minister for Home Affairs and Second Minister for Trade & Industry; Mr Michael Chia, MD (Marine & Technology) of Keppel O&M; and Mr Chor How Jat, MD of Keppel Shipyard at Keppel O&M's booth at OSEA 2014



# Setting new benchmarks

For Keppel Offshore & Marine (Keppel O&M), 2014 was a year of many firsts – Keppel FELS delivered the world’s largest jackup rig and Keppel Shipyard entered into a contract to perform the world’s first-of-its type conversion of an existing Moss LNG carrier into a Floating Liquefaction Vessel. As Keppel O&M continues to set new benchmarks in 2015 and beyond, we look back at the milestones achieved during the past year.

## FEBRUARY

Mr Chow Yew Yuen was appointed CEO of Keppel O&M on 1 February 2014.

Keppel FELS secured a contract from a wholly-owned subsidiary of UMW Oil & Gas Corporation for a KFELS B Class jackup rig.

Keppel FELS also secured contracts to build three high-specification KFELS B Class jackup rigs from new customer Fecon International Corp. The three rigs are scheduled to be delivered progressively in 2H 2016.

## MARCH

Keppel FELS secured a contract from TS Offshore to construct an ultra-high specification jackup rig.

Scheduled for delivery in 1Q 2017, it will be the first jackup built to Keppel’s new proprietary KFELS N Plus design.

Keppel Shipyard secured a contract from SOFEC Inc. to undertake the fabrication of an external turret mooring system for a Floating Production Storage and Offloading (FPSO) vessel that will operate in the Tweneboa-Enyenra-Ntomme fields in Ghana, in water depths averaging 1,500 metres.

Keppel Singmarine secured three contracts from a subsidiary of Bumi Armada to build two ice-class supply vessels and an ice-class multi-purpose duty-rescue vessel.

Keppel Nantong secured an order from KSP Towage for the construction of two tugs scheduled for delivery in 3Q 2014. The tugs will be chartered for deployment in Malaysia.

## APRIL

Keppel O&M, through its wholly owned subsidiary Keppel FELS, signed a conditional management services agreement with Titan Petrochemicals Group Limited and Titan Quanzhou Shipyard Co. Ltd (TQS) to manage the TQS shipyard. Located in Quanzhou in Fujian Province, TQS is one of the largest shipyards in China, occupying a total area of 110 hectares along 3,600 metres of coastline.

*Continues on page 18...*



Keppel O&M is establishing a win-win partnership that will enable Keppel and Titan to become a major offshore solutions provider for China

Continued from page 17...

Baku Shipyard secured a contract from BP Exploration (Shah Deniz) Ltd, the operator of the Shah Deniz gas field development, to design and build a Subsea Construction Vessel (SCV). When completed, the SCV will be deployed for the Stage 2 development of the Shah Deniz field, some 70 kilometres offshore in the Azerbaijan sector of the Caspian Sea.

Keppel FELS signed an engineering services agreement with Workfox B.V, a subsidiary of the Seafox Group, to embark on an engineering study of a purpose-built accommodation jackup rig with well intervention and Plug & Abandonment (P&A) features. Named Seafox 8, the project is developed to address a gap in the current P&A market.

## JULY

Keppel Shipyard secured a contract for the conversion of a FPSO vessel for Armada Kraken, a wholly owned subsidiary of Bumi Armada.

Keppel Singmarine secured a contract from Baku Shipyard to design and carry out fabrication and outfitting works for a SCV.

Keppel Shipyard's contract with Golar Hilli Corporation, a subsidiary of Golar LNG Ltd, to perform the world's first-of-its-type conversion of an existing Moss LNG carrier, the HILLI, into a Floating Liquefaction Vessel (FLNGV), became effective.

Keppel FELS delivered ENSCO 122,



Keppel Shipyard's contract with Golar Hilli Corporation to perform the world's first-of-its-type conversion of an existing Moss LNG carrier, the HILLI, into a Floating Liquefaction Vessel became effective in July 2014

the third ultra-premium harsh environment ENSCO 120 Series jackup rig, to EnSCO ahead of schedule.

Gulf Drilling International Limited (GDI) awarded two contracts to Nakilat-Keppel Offshore & Marine (N-KOM). The first contract is for the construction of a self-propelled and self-elevating liftboat customised for field transit operations in the Middle East and North Africa (MENA) region in water depths of up to 65 metres. N-KOM was also awarded a six-year repair and maintenance contract for GDI's existing fleet of jackup rigs operating in the Middle East.

At the seventh Singapore-Tianjin Economic & Trade Council Meeting, Keppel O&M signed a memorandum of understanding to set up a technology centre in the Sino-Singapore Tianjin Eco-City.

## AUGUST

Keppel FELS delivered the world's

largest jackup rig, XLE-2, to Maersk Drilling on budget and seven days ahead of schedule. The rig is a XL Enhanced (XLE) harsh environment jackup rig and has been customised for operations in the North Sea.

Keppel FELS delivered its fourth jackup rig, Dukhan, to GDI of Qatar nine days ahead of schedule, on budget and with a perfect safety record. Dukhan is a high specification rig built to Keppel's proprietary KFELS B Class design.

Keppel FELS secured a contract from GDI of Qatar to build a repeat high specification KFELS B Class jackup rig. As part of the contract, GDI has options for two more KFELS B Class rigs for deliveries in 2017.

## OCTOBER

Keppel Shipyard and Keppel Nantong secured contracts from repeat customers. Keppel Shipyard's contract is for the conversion of a FPSO vessel for



Keppel FELS delivered one of the world's largest jackup rig, XLE-2, to Maersk Drilling on budget and seven days ahead of schedule. It is the second of three XLE rigs that Keppel is building for Maersk

Armada Cabaca Limited while Keppel Nantong's contract is to construct a submersible barge, Giant 7, for Smit Shipping.

Keppel FELS secured a contract from BOT Lease Co. Ltd, an

affiliated company of The Bank of Tokyo-Mitsubishi UFJ, for a KFELS Super B Class jackup rig. Scheduled for completion at end-2016, the rig, which is provisionally named Hakuryu 15, will be operated by Japan Drilling Co., Ltd.

## NOVEMBER

Keppel AmFELS LLC delivered the jackup rig, Coatzacoalcos, to Mexico's Central Panuco S.A. De C.V. on time, within budget and with zero lost time incidents. Coatzacoalcos is the fourth jackup rig built by Keppel AmFELS for Perforadora Central and the third based on the LeTourneau Super 116E design. The yard is currently building a fifth jackup to Keppel's proprietary KFELS B Class design for Perforadora Central.

Keppel FELS was conferred the title of "Largest manufacturer of offshore rigs – current" by Guinness World Records for delivering 21 rigs in 2013.

## DECEMBER

Keppel FELS has delivered a third KFELS B Class jackup drilling rig to Star Drilling Pte. Ltd., an associate company of India's D P Jindal Group (Jindal).

Keppel Shipyard celebrated the naming of the Floating Production Storage and Offloading (FPSO) vessel Bertam with Lundin Petroleum, Petronas and its exploration & production subsidiary, Petronas Carigali.

# Top of the league

Keppel FELS has been conferred the title of “Largest Manufacturer of Offshore Rigs – Current” by Guinness World Record for delivering 21 offshore rigs in 2013.



Mr Wong Kok Seng (holding the Guinness World Records certificate), MD (Offshore), Keppel O&M and MD, Keppel FELS, together with 21 project team members representing the 21 rigs completed

As proof that it is “officially amazing”, Keppel FELS has been conferred the title of “Largest manufacturer of offshore rigs – current” by Guinness World Records (Guinness) for delivering 21 offshore rigs to its customers in 2013.

Guinness defined “largest manufacturer” in this case as the company which delivered the most number of offshore rigs in one year.

The official record was awarded by Guinness after it completed a thorough assessment of supporting documentation provided by Keppel FELS, including a report by Deloitte & Touche LLP verifying that Keppel FELS had indeed achieved the feat of delivering 21 rigs in 2013.

Keppel FELS also provided verification from the market intelligence firm IHS Petrodata that 21 is the most number of offshore rigs delivered by a single company

in a year. In addition, IHS Petrodata compared the information against the deliveries of the top 10 rigbuilders in 2013.

Mr Wong Kok Seng, MD (Offshore), Keppel Offshore & Marine and MD, Keppel FELS, said, “For this achievement to have been possible, all aspects of our business had to be in good order. All our departments – marketing, engineering, procurement, logistics, planning, project management, production,

operations, among others – had to be fighting fit and punching above their weight.”

Through its strong teamwork and executional capabilities, Keppel FELS delivered on its promises to its customers, and in doing so, set the 21-rig delivery world record. Keppel FELS’ previous delivery record was 13 rigs in 2009.

Since 2000, Keppel FELS has built and delivered over 40% of the jackup rigs and about 30% of the semisubmersible rigs that have entered the global market.

“I feel proud to be part of a world-class company, which continues to set records and break new grounds. For me, this Guinness record shows what we can achieve when we combine strong technical and operational capabilities with grit, determination and a Can Do spirit.”

*Winston Cheng  
Project Manager  
Keppel FELS*

“This Guinness World Record is an affirmation of the hard work and good teamwork of all at Keppel FELS. I am glad to have had the opportunity to be part of the Keppel FELS team that took on the 21-rig challenge. Our success in this challenge is inspiring, and further motivates me to stretch myself to meet new challenges.”

*Lim Yak Yang  
Project Manager  
Keppel FELS*



Keppel FELS set a record for the industry when it delivered 21 offshore rigs, which is the most to be delivered by a single company in a year. Keppel FELS previous record was 13 rigs in 2009

# Steel partners after a decade

One of the hallmarks of Keppel FELS' renowned jackup rigs are the strength of its rack and chord system. Since 2004, these racks and chords have been fabricated at Regency Steel Japan (RSJ), a joint venture fabrication facility in Japan between Keppel FELS, Mitsui and Nippon Steel.

RSJ celebrated its 10 years of growth on 27 November 2014, with the senior management of Keppel Offshore & Marine (Keppel O&M), Mitsui and Nippon Steel in attendance.

In his opening address, Mr Wong Chun Yu, President of RSJ said, "RSJ has produced an incredible 75 sets of rack and chord with a total fabricated tonnage of about 148,780 metric tonnes for Keppel FELS' rigs from 2004 to 2014."

"Having control over the supply of high-grade steel removed potential bottlenecks in the construction of jackup rigs and enabled us to stay ahead of our competitors. When Keppel FELS delivered a world record 21 rigs last year, the support from RSJ was vital to our ability to deliver high quality rigs on time," Mr Chow Yew Yuen, CEO of Keppel O&M added.

In 2004, there was a shortage of steel supply due to the strong demand from Japan and Korea. Wanting a reliable supply of raw materials for our leg rack and chord, Keppel FELS made the strategic move to partner Mitsui to acquire Nippon Steel's heavy fabrication unit to form RSJ. When RSJ was first formed, it had orders for 3 units of Rack and Chord and was aiming for sales of

5 billion yen. Today, it has sales of 15 billion yen.

Mr Atsushi Iijima, Executive Officer and Director of Plate Division of Nippon Steel and Sumitomo Metal Corporation attributed this to RSJ's workplace skills. He added, "I am deeply impressed by the efforts and ingenuity of each and every worker in the factory which has resulted in mastering the manufacture of Rack and Chord."

RSJ has since made continual efficiency innovations and improvements, including the introduction of a new CNC plasma cutting machine, a 24 tonne high capacity forklift and a new non-contact laser device for the rack to chord welding machines. While rack and chords are a large part of RSJ's business, it has also made tremendous strides since 2004 to also be the leading fabricator for a variety of steel related products such as steel furnace converters, hot stoves, gas collectors and rotary kiln.

Looking ahead, Mr Noboru Katsu, Managing Director and Chief Operating Officer of Iron & Steel Products of Mitsui said, "Through the strong partnership we share with Keppel and NSSMC, Mitsui will continue to play its part to ensure that RSJ continues to supply products and services based on an unshakable technological advantage."



Together with representatives from Mitsui and Nippon Steel, Mr Loh Chin Hua (third from left), Chairman of Keppel O&M and CEO of Keppel Corporation, and Mr Chow Yew Yuen (second from left), CEO of Keppel O&M, took part in a Kagami Biraki ceremony, hitting the drum with a hammer to represent happiness and peacefulness, expressing Regency Steel Japan's deep appreciation to its guests at its 10th anniversary celebration

# Accolades for an industry veteran



Mr Tong Chong Heong (right), Senior Advisor, Keppel O&M, receiving the ASMI Special Recognition Award from Mr Wong Weng Sun (left), President, ASMI

In recognition of Mr Tong Chong Heong, Senior Advisor, Keppel Offshore & Marine (Keppel O&M)'s, contributions to the offshore and marine industry, the Association of Singapore Marine Industries (ASMI) presented the industry veteran with the ASMI Special Recognition Award 2014 at its 46th Anniversary Dinner on 31 October 2014.

Mr Tong has played an instrumental role in the development of Singapore's offshore marine and industry in his 44-year career in Keppel O&M. On top of contributing to Singapore's position as a global leader in rigbuilding, Mr Tong is also actively involved in a number of maritime-related agencies and institutions such as the Singapore Maritime Institute Governing Council. Mr Tong has also served as the President of ASMI from 1995 to 1996.

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## Wealth of knowledge

With his years of experience in the offshore and marine industry, Mr Aziz Amirali Merchant, ED (Engineering), Keppel FELS, has been invited by Singapore Maritime Institute (SMI) to be a member of the SMI Technology Advisory Panel (TAP).

Consisting of local and international technical leaders from both the industry and academia, the panel will review submissions on SMI research programmes and projects. Mr Merchant has accepted SMI's invitation to be a member of the TAP and will be supporting the institute's efforts in maritime,

marine and offshore research, education and training.

The two year term appointment as a member of the TAP commenced on 1 January 2015 and will end on 31 December 2016.

Each year, SMI rolls out an average of three to four thematic research programmes to support both the maritime, as well as marine and offshore industry. Since April 2011, SMI has committed over \$40 million for thematic research programmes and projects, as well as on research infrastructure initiatives.



Mr Aziz Amirali Merchant, ED (Engineering), Keppel FELS, has accepted SMI's invitation to be a member of the SMI Technology Advisory Panel (TAP) and will review submissions on SMI research programmes and projects

# Port personality



Mr Harold Linssen, MD of Keppel Verolme, is the first recipient from the shipbuilding, ship refit, ship repair and maintenance industry to be awarded the Port Personality of the Year

Mr Harold Linssen, MD of Keppel Verolme, has been unanimously awarded the prestigious Port Personality of the Year 2014 by Rotterdam-based foundation, Port Personality of the Year. Mr Linssen is the first recipient from the shipbuilding, ship refit, ship repair and maintenance industry to receive this title.

Keppel Verolme's strong reputation in maintenance, modification and conversion of deep sea vessels and offshore units was a major contributing factor to Mr Linssen earning the much coveted title.

Earlier in 2014, the world's largest

and most innovative cruise ship, "Oasis of the Seas", was given a new lease of life by Keppel Verolme, which completed the ship's maintenance and refurbishment works in October, casting the limelight on the importance of the maritime industry to Rotterdam.

Mr Linssen is the 34th port entrepreneur to receive the distinction, which was established in 1981 by the Harbour Press Club Kyoto which was then based in Rotterdam. He will officially receive the title on 12 January 2015, as tradition entails that the distinction be handed over on the second Monday in January.

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# Leading in safety

Nakilat-Keppel Offshore & Marine (N-KOM) clinched the Safety & Security Award at the inaugural Maritime Standard (TMS) Middle East & Indian Subcontinent Awards. The award ceremony took place on 6 November 2014 in Dubai.

This is the first time that the shipyard has received an award in the safety category. The award reflects the company's strong commitment and continuous improvements made in safety.

Mr Chandru Rajwani, CEO of N-KOM, said, "Safety is an important core value at N-KOM



N-KOM Director Mr Jassim Al-Shirawi (centre) receiving the Safety & Security Award on behalf of N-KOM at the TMS Middle East & Indian Subcontinent Awards ceremony

and we believe that safety consciousness is at its highest level when everyone takes individual and collective responsibility.

"We are fortunate to have strong support from our clients, employees and partners – all of whom have contributed

significantly in our safety journey and made this award possible."

N-KOM's robust safety programme, Safety Excellence 2020, aims to encourage safety ownership and safe workplace behaviour through empowerment, positive reinforcement and recognition.



# Royal ties



HSH Prince Albert II (fourth from left) at Keppel Shipyard with (from left) Mr Chor How Jat, MD of Keppel Shipyard; Mr Heinz Rothermund, Chairman of SBM Offshore; Mr Loh Chin Hua, CEO of Keppel Corporation and Chairman of Keppel Offshore & Marine (Keppel O&M); Mr Bruno Chabas, CEO of SBM Offshore; Mr Bernard Van Leggelo, Group ED of SBM Offshore; Mr Chow Yew Yuen, CEO of Keppel O&M; and Mr Michael Chia, MD (Marine & Technology) of Keppel O&M

Keppel Shipyard received a royal guest on 8 November 2014 when His Serene Highness Prince Albert II of Monaco visited and toured the facilities of Keppel Shipyard. The Prince was accompanied by Madame Jacky Deromedi, Honorary Consul of Monaco in Singapore, and a business delegation from the principality which was in Singapore on a trade promotion mission.

A highlight of the visit was a walking tour onboard the Floating Production Storage and Offloading (FPSO) vessel that is undergoing conversion in Keppel Shipyard for SBM Offshore, which has a key presence in Monaco.

Keppel and SBM Offshore share deep-seated ties and a long line of successful collaborations, having completed 15 FPSO/FSO

(Floating Storage and Offloading) conversions projects together since 2000.

The vessel currently undergoing conversion for SBM Offshore will be the world's deepest-moored FPSO when completed and installed in the Stones field, US Gulf of Mexico.

In addition to the vessel tour at Keppel Shipyard's Tuas Yard, the Monaco Prince was also brought on a tour of the turret at Benoi Yard that was being fabricated for the FPSO for SBM Offshore.

During his stay in Singapore, HSH Prince Albert II also graced a fundraising gala dinner organised by the Singapore chapter of his charity foundation – Prince Albert II of Monaco Foundation – which was held on the same day.



Ms Wang Look Fung (left), Director of Group Corporate Affairs, Keppel Corporation, with HSH Prince Albert II of Monaco (right) at a fundraising gala dinner which Keppel Land supported

In line with its mission to give back to the community and contribute towards sustainable development, Keppel Land donated \$10,000 to the foundation, whose mission is to support initiatives by public and private organisations in the fields of research and studies, technological innovation and green practices.

# Presidential dialogue



Mr Ang Wee Gee (extreme left), CEO of Keppel Land, and Mr Michael Chia (extreme right), MD (Marine and Technology), Keppel O&M, participated in a roundtable meeting with Mr Benigno S. Aquino III (fourth from right) during his state visit to Singapore

During his state visit to Singapore, President of the Philippines Mr Benigno S. Aquino III met over 20 Singapore business leaders at a roundtable session on 19 November 2014 to encourage further investments by Singapore businesses in the Philippines. Keppel Group, with its shipyard and property presence in the Philippines, participated in the roundtable meeting and was represented by Mr Michael Chia, MD (Marine and Technology), Keppel Offshore & Marine, and Mr Ang Wee Gee, CEO, Keppel Land.

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## Breaking the ice

Keppel Offshore & Marine (Keppel O&M) warmly welcomed an Arctic delegation for a study visit on 19 November 2014. Keppel shared insights on the Group's pioneering expertise in offshore and marine technology and its construction of Asia's first icebreaker vessel for operations in the Arctic waters.

The Arctic delegation comprised Permanent Participants of the Arctic Council, an intergovernmental forum that addresses environmental protection and sustainable development issues in the Arctic region, as well as members of the Indigenous Peoples Secretariat.

The study visit enabled Singapore, a Permanent Observer on the

Arctic Council, to engage the leaders of the Arctic indigenous community, who have full consultative status in the Council.

During the yard visit, Keppel O&M showcased Singapore's

contributions to the development of the Arctic States. Keppel O&M and ConocoPhillips have also previously jointly designed a first-of-its-kind ice-worthy jackup rig to operate in the Arctic Seas.



Mr Michael Chia (centre, in white shirt), MD (Marine & Technology) of Keppel O&M and Keppel Offshore & Marine Technology Centre (KOMtech), and Dr Foo Kok Seng (third from left), ED (Shallow Water Technology) of KOMtech and Offshore Technology Development, hosted a delegation comprising Permanent Participants of the Arctic Council and members of the Indigenous Peoples Secretariat

# Fruitful visits



High Commissioner for Bangladesh in Singapore, H.E. Mahbub Uz Zaman (front row, 5th from left) met with Bangladeshi employees and subcontractors during his visit to Keppel O&M

As a global leader in offshore rig design, construction and repair, shiprepair and conversion and specialised shipbuilding, Keppel Offshore & Marine (Keppel O&M) frequently hosts visits to a wide range of guests, from ambassadors to investors, so that stakeholders can better understand the company's businesses and operations.



Mr Wong Ngiam Jih (centre in white shirt), CFO of Keppel O&M, shared with investors insights into the group's prospects

## GUESTS FROM BANGLADESH

On 16 October 2014, Keppel O&M played host to the High Commissioner for Bangladesh in Singapore, H.E. Mr Mahbub Uz Zaman, who wanted to better understand the businesses of Keppel O&M and the welfare of Bangladeshi workers employed by the group.

Keppel management led by Mr Wong Ngiam Jih, CFO of Keppel O&M, and Mr Chor How Jat, MD of Keppel Shipyard, hosted His Excellency and brought him on a tour around Keppel FELS.

Through a corporate presentation and dialogue with Keppel O&M's senior management, H.E. Zaman learnt about Keppel O&M's

businesses and ongoing projects, as well as the facilities and holistic care provided to all yard workers. During the visit, the High Commissioner also interacted with some 30 Bangladeshi employees and subcontractors and learnt about their lives in Singapore.

## TOUR FOR INVESTORS

On 11 November 2014, Keppel O&M also hosted international participants of the Morgan Stanley Annual Asia Pacific Summit to a shipyard visit as part of its continuous efforts to engage the investment community

The investors were given an overview of Keppel O&M's businesses, followed by a robust

discussion with Mr Wong Ngiam Jih, CFO of Keppel O&M. In addition to addressing concerns about the industry's outlook and competition landscape, Mr Wong also provided updates on the company's significant projects and shared insights into its strategic directions.

The guided tour of Keppel FELS and Keppel Shipyard showcased the sheer scale and complexity of the rig building and ship conversion processes. The visitors, having witnessed firsthand the clockwork operations at the yards and Keppel O&M's productivity enhancing initiatives, left the yards convinced of Keppel's capabilities and industry leadership.

# Committed to strengthening safety

Keppel's employees, partners, contractors and subcontractors reaffirmed the importance of upholding and improving workplace health and safety at the annual Keppel Group Safety Convention.



Guest-of-Honour Mr Lee Tzu Yang (centre in dark green tie), Chairman of Singapore's WSH Council, Keppel Management and members of the top three safety innovation project teams reaffirmed their commitment to safety at the eighth Keppel Group Safety Convention

Safety is a Keppel core value and integral to the well-being of all Keppel's stakeholders.

This simple yet powerful message shone through at the eighth Keppel Group Safety Convention held at the Star Vista on 5 November 2014.

Themed "Our Safety, Our Well-Being", the event brought together close to 900 Keppelites, industry partners, contractors and vendors to reaffirm their commitment to safety. In his opening address, Mr Loh Chin Hua, CEO of Keppel Corporation, explained, "This year's theme is part of our holistic approach towards improving workplace safety and health across the Group. 'Our Safety, Our Well-Being' not only focuses on boosting Keppelites' vigilance on safety, it also reminds us to pay

attention to the well-being of all Keppelites."

Mr Loh shared that while Keppel's commitment to safety remains strong, we must keep vigilant and constantly seek to strengthen our efforts. In this spirit, Keppel's various business units have put in place new initiatives to enhance employees' safety and health.

Notably, Keppel Shipyard has set up a Well-Being and Support Centre where workers will benefit from holistic health services at the counselling centre and upgraded medical centre.

Beyond safety initiatives implemented by the management, Guest-of-Honour Mr Lee Tzu Yang, Chairman of Singapore's WSH



Speaking to over 30 senior management across the Group at the CEO roundtable, safety and health motivational speaker, Mr Ken Woodward, shared about upholding safety practices at the workplace

Council, urged the audience to do their part at the ground level to improve safety and health at their workplace.

Calling on everyone to see safety as an integral component of their lives during and after work, Mr Lee said, "The habits you form at work, whether good or bad, will not only affect you at work, but will also affect your lives outside work. Your safety and health are more important than anything. I hope you will spread the WSH message to those around you and look out for one another."

A highlight of the convention was the sharing of personal experience by safety and health motivational speaker, Mr Ken Woodward, who holds an Order of the British Empire (O.B.E) for services to health and safety.

Through a delivery that was at times poignant and often humorous, Mr Woodward recounted how an industrial accident at work stripped him of his sight, sense of smell and taste.

During a CEO roundtable held in the morning of the convention, senior management also had the opportunity to learn how Mr Woodward's previous company improved on safety processes following the incident. By sharing his experience, Mr Woodward

### 2014 SAFETY INNOVATION AWARD WINNERS

A total of 43 Safety Innovation Teams from across the Keppel Group submitted their safety innovation projects. Six gold, six silver and nine bronze awards were awarded to winning teams from Keppel Offshore & Marine for their exemplary innovative solutions.

PROJECT NAME	BUSINESS UNIT	AWARD
Submersible Pump Safe-Handling	Keppel FELS	Gold
High Pressure Hose Installer	Keppel FELS	Gold
Scaffold Coupler Servicing Workbench	Keppel Shipyard	Gold
Winch Brake-Band Connector Tool	Keppel Shipyard	Gold
Confined Space Safety Alarm System	Keppel Shipyard	Gold
Wheely	Keppel Singmarine	Gold
Mechanised Pulley System for Leg Tower Arm	Keppel FELS	Silver
Improved Procedure of Washing of Spud Cans for Repair Projects	Keppel FELS	Silver
Confined Space Monitoring System	Keppel Shipyard	Silver
Stamping Punch Holder	Keppel Shipyard	Silver
Vessel Positioning System	Keppel Shipyard	Silver
Smart High Low Eliminator	Keppel Singmarine	Silver
Gangway One Time Sitting	Keppel FELS	Bronze
Safety Touch	Keppel FELS	Bronze
The Fork Adjuster	Keppel Shipyard	Bronze
Assistant Hand	Keppel Shipyard	Bronze
Jig for Safe handling of Pipes in the Pipeshop	Keppel Shipyard	Bronze
Magnetised Material Handler	Keppel Shipyard	Bronze
Portable Fume Extractor	Keppel Singmarine	Bronze
Safety Pin Jig	Keppel Singmarine	Bronze
Absolute Blasting Communicator	Keppel Singmarine	Bronze
Mobile Offshore Application Barge	Keppel Verolme	Commendation

hopes to serve as living proof that one should never take any shortcuts that would compromise on safety. The session also saw senior management

reviewing safety objectives and discussing strategies to further strengthen safety alignment efforts across the Group.

# Fire preparedness

What happens when a fire breaks out in a dormitory with close to 300 residents, and all electrical power supplies are down?

To prepare for any such similar scenario, Keppel Batangas Shipyard successfully conducted a fire drill at its dormitory, K-Yard Harmony Hall Residence and training centre on 7 November 2014.

The live exercise simulated a fire breaking out in the dormitory in the evening when all electrical power supplies, including the emergency generator, are down.

It tested the responses of the shipyard's security and firefighting capabilities, evacuation procedures as well as the ability to restore essential back-up systems such as water and power supplies.

As the exercise was a joint effort by a number of departments such as Security and HSE (Health Safety & Environment) and external agencies such as the Philippines Navy, it also helped to foster and further strengthen inter-agency and inter-departmental collaboration and support.



A fire drill was conducted at Keppel Batangas Shipyard to strengthen emergency preparedness

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# Safe start to the year

Keppel Shipyard and its Contractor Watch Group (CWG), comprising representatives from the shipyard's contractors, reaffirmed their commitment to safety through the launch of the Safety Pledge 2015

at the annual CWG Engagement event on 12 December 2014. At the event which was also supported by clients, management and Health, Safety & Environment (HSE) champions of Keppel

Shipyard and its contractors pledged to uphold high safety standards and to maintain an accident-free year in 2015.



Led by Mr Michael Chia (third from right), MD (Marine & Technology) of Keppel Offshore & Marine, the management and HSE champions from Keppel Shipyard and its Contractor Watch Group pledged their commitment to safety

# Sharing best practices



Mr Yong Chee Min (third from right), Director (HSE & Special Projects) of Keppel O&M, hosted a sharing session with Singapore's Land Transport Authority to exchange safety best practices

Learning never stops. Keppel Offshore & Marine (Keppel O&M) frequently organises sessions with external organisations, both to share its own best practices and also to learn from others.

Mr Yong Chee Min, Director (HSE & Special Projects) of Keppel O&M, hosted Singapore's Land Transport Authority (LTA) at Keppel FELS on 14 November 2014 and presented the company's safety management

system and initiatives. The Keppel team also had the opportunity to learn from LTA, which shared its safety performance scheme and the various initiatives employed in the construction of the Downtown MRT Line.

"Such sharing platforms are useful as they allow us to share and learn best practices from each other in a constantly changing work environment," said Mr Yong. He also observed that while both Keppel O&M and LTA undertake different work activities, both organisations uphold high safety standards and have similar approaches towards strengthening safety culture at the workplace.

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## Robust exchange

The challenges faced in deepwater Exploration & Production (E&P) are driving the need for highly complex and sophisticated equipment, systems and offshore support vessels. To identify areas for potential joint development to meet these challenges, key management and employees from Keppel Offshore & Marine (Keppel O&M) and Rolls-Royce Marine came together for an exchange forum on 31 October 2014.

The topics that were covered during the half-day forum at Keppel Offshore & Marine Technology Centre (KOMtech) included liquefied natural gas (LNG)-fuelled vessels and engines,

innovations in E&P, and offshore marine solutions for the Arctic and Caspian regions.

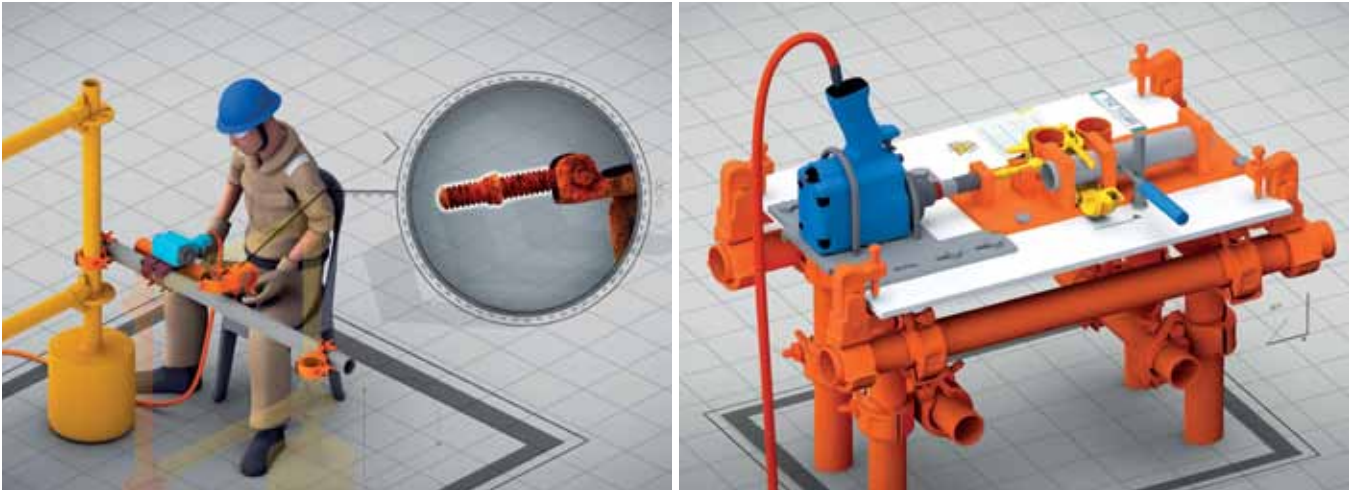
The event was attended by over 40 Keppel O&M employees and senior management including Mr Chow Yew Yuen, CEO of Keppel O&M

and Mr Michael Chia, MD (Marine & Technology) of Keppel O&M, as well as representatives from Rolls-Royce Marine including Mr Richard Bowcutt, Senior Vice President of Commercial Marine (Asia Pacific) and Mr Arne Rodal, Vice President of E&P Deck Machinery (Offshore).



A representative from Rolls-Royce Marine sharing with Keppel O&M management and employees on Rolls-Royce Marine's suite of offshore and marine solutions

# Safe and secure



Previously, servicing couplers was a physically demanding process as the rust and dirt that forms over time on the threaded studs make it challenging for the nuts to be loosened (left diagram) and may also expose workers to bodily injuries. The newly developed jig that helps to lock the coupler in place (right diagram) reduces the physical contact that workers have with the coupler and the impact wrench, thereby minimising risks of injury.

At Keppel Shipyard, thousands of couplers are used every day to hold metal poles together in scaffoldings, which serve to provide temporary platforms during ship maintenance or construction work.

After the scaffoldings are dismantled each day, an average of 6,000 couplers are then sent for servicing. Workers assess the state of the couplers and deformed couplers are scrapped while reusable couplers are de-rusted and lubricated for their next use.

However, not many may be aware that servicing the reusable couplers is a physically demanding process as the rust and dirt that forms over time on the threaded studs make it challenging for the nuts to be loosened.

To aid the process, workers use an impact wrench to loosen the nuts. This comes at the risk of workers getting ergonomic injuries at the

wrist area due to the constant torque and vibration they are exposed to from the impact wrench. Workers also risk getting hit by any flying parts from the couplers that may be fractured during the process.

Motivated to devise a safer solution that will reduce the risk of injuries that workers are exposed to, a team of seven Keppelites from the Scaffolding Section of Alpine Engineering Services, a unit of Keppel Shipyard, put their heads together for a better alternative.

The team developed a jig that reduces the physical contact that the workers have with the coupler and the impact wrench during the servicing process. The jig helps to lock the coupler in place, thereby removing the need for the workers to hold on to the coupler when the wrench is being applied. The wrench is also mounted on a guided slide so that the wrench and nut are perfectly aligned.

On top of this, the contact point between the wrench and the bolt is also half enclosed to prevent stray objects from flying out. This innovative solution, otherwise known as the "Coupler Servicing Workbench" clinched the team one of the top three Safety Innovation Project gold awards at the eighth Keppel Safety Convention.

Team Leader, Aung Lu, Senior Foreman said, "With the new jig, servicing couplers is now not only safer but also more efficient. Even though the design of the work bench is simple, it is very practical and can be easily fabricated just under \$400. The jig can therefore be readily adapted for use in any of our yards."

The other members of the team were Liow Hon Shin, Construction Manager, Andrew Chua and Kyaw Zay Yar Tun, both Engineers, Venkatesan Sakthivel, Senior Foreman, Yan Nyein Lu, Supervisor, and Thu Ya Zaw, Scaffolder.



# Superior semi accommodation

As the search for oil and gas continues to move into deeper waters further offshore, more innovative offshore accommodation solutions are required for robust support.

Floating accommodation platforms provide additional living quarters for drilling and production personnel during hook-up and commissioning in the development phase, for maintenance and upgrading during the production phase, as well as for decommissioning.

Among Keppel O&M's suite of proprietary designs for semisubmersible accommodation units is the DSS™ 20NS, a new generation accommodation semi designed to work in some of the harshest environments. The DSS™ 20NS design meets the most

stringent rules and regulations for the Norwegian Sector of the North Sea, making it one of only two proven designs built for the harsh North Sea environment in the last two decades.

Developed by Keppel O&M's Deepwater Technology Group (DTG), the DSS™ 20NS design incorporates a number of Keppel's tried-and-tested enhancements as well as the unique requirements of its customers and their markets.

The first unit to be built to this design, Floatel Superior, was completed in 2010 and has been successfully operating in the North Sea. The second unit, Floatel Endurance, is on track for completion in 1Q 2015.

The DSS™ 20NS design incorporates the latest technology

such as Dynamic Positioning (DP) 3 capability and enhanced station-keeping, enabling it to operate securely alongside fixed platforms, floating platforms and Floating Production Storage and Offloading Vessels, with a full complement of deck cranes, large open deck area, workshops and firefighting capabilities. Able to accommodate 440 persons in single bed cabins, the DSS™ 20NS design features ample recreation areas as well as office amenities.

In recognition of its innovative, world-class features, the DSS™ 20NS design bagged a Gold award at the Keppel O&M Innovation Awards 2014. In 2013, the design also received external recognition, garnering the Prestigious Engineering Achievement Award from the Institution of Engineers Singapore in 2013.



Completed in 2010, the Floatel Superior is the first DSS™ 20NS accommodation semi built for the North Sea, where it has been operating successfully

# Purposeful leadership



Mr Abu Bakar Mohd Nor (right), MD of Keppel Singmarine, shared his thoughts and insights on leadership and building a meaningful career with Keppel Young Leaders

Mr Abu Bakar Mohd Nor, who was appointed MD of Keppel Singmarine with effect from 1 November 2014, shared his insights with Keppel Young Leaders on what it means to lead a team. The event on 7 October 2014 was the latest instalment of the Keppel Young Leaders' Leadership Series.

Mr Abu Bakar's career at Keppel spans over 24 years. He started as an Assistant Safety Officer at Keppel Shipyard and rose through the ranks. Drawing from his experience, he shared his thoughts with participants on what it takes to build a fruitful career and become a good leader:

## **HAVE A SENSE OF PURPOSE**

"It is not about how you start

your career, but about what you achieve along the way to attain your professional goals. You must have a strong sense of purpose and aspirations to guide you in attaining those goals."

## **BE PASSIONATE**

"When you do not love what you do, it will be difficult for you to excel in your job. Having passion for my work helped to keep me going and surmount challenges faced. Working in the offshore and marine industry is both physically and mentally demanding, so having a passion for the industry is important."

## **BUILD STRONG TEAMS**

"A leader can only be as good as his or her team. Everyone has their own strengths and aspirations.

Know how to empower your team members so that they will maximise their potential and contribute collectively as a team."

## **LEARN FROM ROLE MODELS**

"To become a leader, you should first observe and learn from role models. Benchmark yourselves against them and work towards becoming the leader who has inspired you."

## **ACHIEVING WORK-LIFE BALANCE**

"Seeking a balance between personal life and work can be challenging. Learn that both aspects of your life are important and strive hard not to neglect either. Seek the understanding of your family or your bosses when work and family demand your full attention at the same time."

# Connected by culture

Of the many highlights that Arno Koenraat had in his seven-year career with Keppel Verolme, attending a 20-week-long course in Singapore in April this year and meeting Keppelites from various parts of the world was definitely one of the more memorable ones.

The course that the 32-year-old Project Manager attended was a Diploma (Conversion) in Marine & Offshore Technology (DCMOT) which Keppel Offshore & Marine (Keppel O&M) partners with Ngee Ann Polytechnic to conduct.

Apart from being able to enhance his knowledge in areas such as marine engineering and naval architecture, Arno also got to develop a deeper appreciation of the group's culture and a stronger sense of belonging to the Keppel family.

Arno, who is based in Keppel O&M's shipyard in Rotterdam, the Netherlands, shared, "The first course I attended in Singapore was the Global Young Leaders Programme in 2012. Although this is the second time that I am visiting Singapore to attend a course, it was the first time that I got to meet so many foreign counterparts from the Offshore & Marine division.

"Although we may each represent a different Keppel yard and nationality, knowing that we share the same core values under the Keppel banner gives us this sense of shared identity and connectedness."



Arno Koenraat, Project Manager, Keppel Verolme, developed a strong sense of belonging to the Keppel family after working for seven years at the Rotterdam shipyard

Indeed, creating a home away from home and sharing an identity with a wider community is nothing new for Arno. Coming from a small town in the southern Netherlands with a population of under 30,000, Arno established a new life in Rotterdam, the second-largest city in the Netherlands, when he was 25.

Arno recounted his first few years with Keppel Verolme, "I remembered seeing the shipyard for the first time when I went for my interview, and being impressed by the scale of the facility. I joined Keppel Verolme as a trainee for the first one and a half years before I was posted to the yard facilities department for another year. Soon after that I became a project manager."

Being a project manager in less than four years on the job was overwhelming for Arno in the

beginning because of the increase in work load and responsibilities. Luckily for Arno, he was introduced to the roles of a project manager as early as his traineeship days, which led him to continue on the project management track.

Arno shared, "What I appreciate about Keppel is that they give young engineers opportunities that you may not get in other occupations. I was put on job rotations at an early stage of my career that allowed me to discover my passion and strengths. In my project management role, I am able to get my hands dirty with coordination work when I am in the field, and I can put on my commercial cap when I help with budgeting and tenders in the office. That is what I love about my career with Keppel – having a diverse job scope and being able to connect with others in different parts of the world."

# Celebrating partnerships



Led by Mr Chow Yew Yuen, CEO of Keppel O&M (centre in blue) and Mr Tong Chong Heong, Senior Advisor, Keppel O&M (centre in grey), Keppel FELS celebrated its win-win partnership with its subcontractors during the company's Subcontractors Night

Keppel FELS celebrated its strong working relationships with subcontractors at the company's annual Subcontractors Night on 4 November 2014.

Addressing some 170 guests at the dinner, Mr Chow Yew Yuen, CEO of

Keppel Offshore & Marine (Keppel O&M), expressed his appreciation for the support shown by Keppel O&M's subcontractors.

Mr Chow highlighted that the strong trust and partnership between Keppel FELS and its

subcontractors has allowed the company to achieve new heights. He shared, "Keppel FELS completed 21 newbuild and 17 repair projects in 2013. This delivery feat would not have been possible without the collaborative efforts by our subcontractors."

Mr Chow also shared on Keppel FELS' new production centres at its yards in Bintan, Indonesia, and Nantong, China, and encouraged its subcontractors to partner Keppel O&M in these new overseas opportunities.

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# A leg up to good health

To promote fitness at work and encourage Keppelites to exercise regularly, management and over 4,000 employees from Keppel FELS worked up a sweat during the annual KFELS Active Day, held at Pioneer Yard on 6 December 2014.

Heeding the event organisers' call to "KICK the blues away, start BOXING today", the participants spent an enjoyable morning doing a vigorous kickboxing workout.

Among the participants was Mr Loh Chin Hua, Chairman of Keppel O&M and CEO of Keppel Corporation. "We are all constantly

busy with our work but it is very important to take the time to exercise and keep healthy. An active lifestyle not only improves

our health but it also increases our concentration at work, enabling us to work safer and more productively," he said.



Keppelites worked up a good sweat with a vigorous kickboxing workout at the annual KFELS Active Day held at Pioneer Yard

# Warm companionship

It may have been a chilly winter morning on 29 November 2014, but there was plenty of warmth and joy at a local nursing home as 16 Keppel Nantong volunteers visited elderly residents there.

During the visit, the volunteers distributed gifts such as food and winter clothing to the elderly, and chatted with them about their health and families.

To cap off a productive morning, the volunteers split into groups to help with gardening and light chores around the nursing home.



Volunteers from Keppel Nantong brought warmth and cheer to the elderly at a local nursing home

The visit was part of Keppel Nantong's year-long community service programme focused on

helping underprivileged groups in society.

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# Sight to behold

As part of the Keppel Group's ongoing efforts to make a positive difference in local communities,

BrasFELS sponsored an educational day trip for the students of Cornélis Verolme, a school in Angra dos

Reis, in the state of Rio de Janeiro, Brazil on 26 November 2014.

66 students accompanied by their teachers and BrasFELS volunteers, visited the world-famous Christ the Redeemer statue atop Corcovado mountain, which overlooks the city of Rio de Janeiro. For many of the students, this was their first trip to the city and its iconic statue. One of them was nine year-old Luciana Fontes, who was ecstatic at being the first in her family to visit Christ the Redeemer and eager to share her experience with them.

Most students on the trip were part of the Brazilian Ministry of Education's Mais Educação (More Education) programme, which promotes holistic education.



BrasFELS sponsored an educational day trip for the students of Cornélis Verolme, a school in Angra dos Reis, in the state of Rio de Janeiro, Brazil on 26 November 2014

# Discovering Latin America

Keppel Offshore & Marine (Keppel O&M) is the third time sponsor of the annual Keppel Latin American Film Festival, which is jointly organised by the Latin American embassies and consulates in Singapore.

Held from 27 to 30 November 2014, the film festival offers ten award winning films from Latin American countries – namely Argentina, Brazil, Chile, Columbia, Costa Rica, Mexico, Panama, Peru, Uruguay and Venezuela – taking the public on a meaningful immersion into the vibrant Latin American culture.



Mr Chow Yew Yuen, CEO of Keppel O&M, said "Keppel's partnership with Latin America goes back to the 1970s. Our numerous offshore and marine projects for the region as well as two shipyards in Brazil and an upcoming facility in Mexico bear testament to Latin America's significance to us.

"Our business with Latin America has given us many opportunities to learn about its rich history and diverse cultures. And we would like to share these with the public through various platforms, including film festivals like this."

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# Christmas with a heart



Joined by Mr Simon Lee, President, Keppel AmFELS (sixth from left), Ms Sylvia Anzaldúa, Senior HR Assistant, Keppel AmFELS (centre in purple), receives a plaque of appreciation from representatives of Texas Department of Family Protective Services for the generosity of Keppelites

Wanting to share the festive cheer with the underprivileged, Keppelites from Keppel AmFELS held toy drives in the weeks leading up to Christmas.

Their efforts saw over 450 gifts

being collected and presented to children who are under state care or belong to low-income and broken families.

Simon Lee, President, Keppel AmFELS shared, "Beyond building

our business, it is heartening to know that Keppelites have a heart for the community. Their small gestures of kindness have brought smiles to hundreds of less fortunate children this Christmas."

# GLOBAL NETWORK

## SINGAPORE

### KEPPEL OFFSHORE & MARINE LTD

(Head Office)  
50 Gul Road, Singapore 629351  
Tel: +65 6863 7200 Fax: +65 6261 7719  
www.keppelom.com

### KEPPEL FELS LTD

(Pioneer Yard 1 – Head Office)  
50 Gul Road, Singapore 629351

(Pioneer Yard 2)  
55 Gul Road, Singapore 629353

(Shipyard Road)  
31 Shipyard Road, Singapore 628130

(Crescent Yard)  
60 Shipyard Crescent, Singapore 627735

Tel: +65 6863 7200 Fax: +65 6261 7719

www.keppelfels.com

Email: marketing@keppelfels.com

Contact Persons: Wong Kok Seng, Managing Director  
Aziz Amirali Merchant, Executive Director (Engineering)  
Keith Teo, General Manager (Marketing)

### KEPPEL SHIPYARD LTD

(Tuas Yard – Head Office)  
51 Pioneer Sector 1, Singapore 628437  
Tel: +65 6861 4141 Fax: +65 6861 7767

(Benoi Yard)  
15 Benoi Road, Singapore 629888  
Tel: +65 6861 6622 Fax: +65 6861 4393

(Gul Yard)  
55 Gul Road, Singapore 629353  
Tel: +65 6861 3007 Fax: +65 6862 3645/7

www.keppelshipyard.com

Email: ks@keppelshipyard.com

Contact Persons: Chor How Jat, Managing Director  
Louis Chow, Executive Director (Commercial)  
Chin Sze Kiun, General Manager (Commercial – Shiprepair)

### KEPPEL SINGMARINE PTE LTD

15 Benoi Road, Singapore 629888  
Tel: +65 6861 6622 Fax: +65 6862 1792  
www.keppelsingmarine.com  
Email: singmarine@keppelsingmarine.com  
Contact Persons: Abu Bakar Mohd Nor, Managing Director  
Toh Ko Lin, Executive Director  
Poon Tai Lum, General Manager (Commercial/Marketing)

### KEPPEL OFFSHORE & MARINE TECHNOLOGY CENTRE (KOMTECH) PTE LTD

31 Shipyard Road, Singapore 628130  
Tel: +65 6591 5450 Fax: +65 6265 9513  
Email: KOMtech@keppelom.com  
Contact Persons: Michael Chia, Managing Director  
Dr Foo Kok Seng, Executive Director  
(Shallow Water Technology)  
Aziz Amirali Merchant, Executive Director  
(Deepwater Technology)

### OFFSHORE TECHNOLOGY DEVELOPMENT PTE LTD

55 Gul Road, Singapore 629353  
Tel: +65 6863 7409 Fax: +65 6862 3465  
Email: enquiry@keppelotd.com  
Contact Person: Dr Foo Kok Seng, Executive Director

### DEEPWATER TECHNOLOGY GROUP PTE LTD

31 Shipyard Road, Singapore 628130  
Tel: +65 6863 7163 Fax: +65 6863 1739  
Email: aziz.merchant@keppelfels.com  
Contact Person: Aziz Amirali Merchant, Executive Director  
Email: anis.hussain@keppelfels.com  
Contact Person: Anis Altaf Hussain, General Manager

### MARINE TECHNOLOGY DEVELOPMENT PTE LTD

31 Shipyard Road, Singapore 628130  
Tel: +65 6863 8344 Fax: +65 6261 7718  
Email: kinho.auyeong@keppelsingmarine.com  
Contact Person: Au Yeong Kin Ho, General Manager

### ASIAN LIFT PTE LTD

23 Gul Road, Singapore 629356  
Tel: +65 6668 4222 Fax: +65 6668 4333  
Email: asianlift@asianlift.com.sg  
Contact Person: John Chua, General Manager

### KEPPEL SMIT TOWAGE PTE LTD

23 Gul Road, Singapore 629356  
Tel: +65 6668 4222 Fax: +65 6897 8056  
Email: kst@keppelsmit.com.sg  
Contact Persons: Pieter Van Stein, Managing Director  
Jerry Wong, General Manager

## AZERBAIJAN

### CASPIAN SHIPYARD COMPANY LLC

South Bay, KMNF Basin  
Baku AZ1023, Azerbaijan  
Tel: +994 12 449 9930 Fax: +994 12 449 9931  
Email: csc@csc.az  
Contact Person: Lau Kwat Pin, CEO

## BAKU SHIPYARD LLC

Garadagh District, Salyan Highway  
Baku AZ 1083, Azerbaijan  
Tel: +994 12 446 4944, +994 12 446 4945,  
+994 12 446 4946 Fax: +994 12 446 4947  
Email: marketing@bakushipyard.com  
Contact Person: Lam Khee Chong, President &  
General Manager

## BRAZIL

### KEPPEL FELS BRASIL SA

Rua da Quitanda nº 86, Sala 301, 3º Andar,  
CEP - 20091 - 005, Rio de Janeiro, RJ, Brasil  
Tel: +55 21 2102 9400 Fax: +55 21 2102 9425

### ESTALEIRO BRASFELS LTDA

Av. Conde Mauricio de Nassau, S/n - Jacuacanga  
CEP - 23914 - 460 Angra dos Reis, RJ, Brasil  
Tel: +55 24 3361 6000 Fax: +55 24 3361 6258  
www.kfelsbrasil.com.br  
Email: kaichoong.kwok@keppelfels.com  
Contact Person: Kwok Kai Choong, President & CEO

### KEPPEL SINGMARINE BRASIL LTDA

Rua Prefeito Manoel Evaldo Müller  
3388 Volta Grande, Navegantes, Santa Catarina,  
Brasil, CEP 88371-860  
Tel: +55 47 3342 6460 Fax: +55 47 3405 0170  
Email: yoonghoong.lee@keppelsingmarinebr.com  
Contact Person: Lee Yoong Hoong, General Manager

## BULGARIA

### KEPPEL FELS BALTECH LTD

54 Debar Street, Varna 9000, Bulgaria  
Tel: +359 52 684 250 Fax: +359 52 684 252  
Email: office@fels.bg  
Contact Person: Lyudmil Stoev, General Manager

## CHINA

### KEPPEL NANTONG SHIPYARD CO. LTD

**KEPPEL NANTONG HEAVY INDUSTRY CO. LTD**  
No. 9 Yan Jiang Road, Nantong City, Jiangsu Province  
P.R. China 226005  
Tel: +86 513 8530 0000 Fax: +86 513 8530 0007  
Email: edmund.lek@keppelnantong.cn  
Contact Person: Edmund Lek, President

### KEPPEL FELS ENGINEERING SHENZHEN CO. LTD

3rd Floor, Chiwan Petroleum Building  
Chiwan Road No. 5, P.R. China 518068  
Tel: +86 755 26851902/+86 755 26851959  
+65 6863 7215 (Singapore Contact)  
Fax: +86 755 26851670  
Email: jongheng.ho@kfelsshenzhen.com (China)  
jongheng.ho@keppelfels.com (Singapore)  
Contact Person: Ho Jong Heng, General Manager

### KEPPEL FELS ENGINEERING WU HAN CO. LTD

Blk 6 #05, Financial Harbor, No. 77 Optical Valley Ave  
Wuhan City Hubei Province PR China 430070  
Tel: 86 027 59838598, 65 6863 7215  
E-mail: jongheng.ho@keppelfels.com  
Contact Person: Ho Jong Heng, General Manager

## INDIA

### KEPPEL OFFSHORE AND MARINE ENGINEERING SERVICES

**MUMBAI PTE LTD**  
Unit 3&4, 8th Floor, Prism Tower-A, Mindspace, Link Road  
Goregaon (West), Mumbai 400 062, India  
Tel: +91 22 40018888 Fax: +91 22 40018898  
E-mail: kabeer.syedahamed@kfelsmumbai.com  
Contact Person: Syed Ahamed Kabeer, General Manager

## INDONESIA

### PT BINTAN OFFSHORE

Jalan Nusantara KM 23, Kecamatan Bintan Timur  
Kabupaten Bintan, Propinsi Kepulauan Riau, Indonesia  
Tel: +62 771 462 699 Fax: +62 771 462 575  
Email: t.halim@keppelfels.com  
Contact Person: Thomson Halim, General Manager

## JAPAN

### REGENCY STEEL JAPAN LTD

46-59 Nakabaru, Tobata-ku,  
Kitakyushu, Fukuoka 804-8505, Japan  
Tel: +81 93 861 3103 Fax: +81 93 861 3114  
Email: chunyu.wong@r-sj.com  
Contact Person: Wong Chun Yu, President

## THE NETHERLANDS

### KEPPEL VEROLME BV

Prof. Gerbrandyweg 25, 3197 KK Rotterdam-Boylek  
Harbour no. 4550, P O Box 1001, 3180 AA Rozenburg,  
The Netherlands  
Tel: +31 181 234300 Fax: +31 181 234346  
www.keppelverolme.nl  
Email: mail@keppelverolme.nl  
Contact Person: Harold Linssen, Managing Director

## THE PHILIPPINES

### KEPPEL PHILIPPINES MARINE, INC

Unit 3-B Country Space 1 Building, Sen. Gil Puyat Avenue,  
Salcedo Village, 1200 Makati City, Philippines  
Tel: +63 2 892 1816 Fax: +63 2 815 2581  
www.keppelphilippinesmarineinc.com  
Email: mhq@keppelprm.com or commercial@keppelprm.com  
Contact Persons: Toh Ko Lin, President  
Stefan Tong, Executive Vice President

## KEPPEL BATANGAS SHIPYARD

Keppel Philippines Marine – Special Economic Zone  
Barangay San Miguel, 4201 Bauan, Batangas, Philippines  
Tel: +63 43 727 1532 to 36 Fax: +63 43 727 4885  
www.keppelphilippinesmarineinc.com  
Email: kbs@keppelprm.com  
Contact Person: Tan Geok Seng, General Manager

## KEPPEL SUBIC SHIPYARD, INC

Subic Shipyard – Special Economic Zone  
Cabangaan Point, Cawag, 2209 Subic, Zambales, Philippines  
Tel: +63 47 232 2380 Fax: +63 47 232 3883 to 84 or  
+63 47 232 3350  
Email: all@subicship.com or commercial@subicship.com  
Contact Person: Leong Kok Weng, President  
Leong Chee Wah, Spencer, General Manager

## QATAR

### NAKILAT-KEPPEL OFFSHORE & MARINE LTD

Erhama Bin Jaber Al Jalalaha Shipyard  
Southern Break Water, Ras Laffan Industrial City (RLIC)  
PO. Box 28388, Qatar  
Tel: +974 4419 7300 Fax: +974 4419 7301  
www.nkom.com.qa  
Email: commercial@nkom.com.qa  
Contact Persons: Chandru Sirumal Rajwani, CEO  
Konstantinos Antonopoulos, Senior Commercial Manager

## RUSSIA

### MARINE & SHELF DEVELOPMENT LTD

22 Mytnaya Street, Building 1  
Moscow 119049, Russian Federation  
Tel: +7 499 236 7962 Fax: +7 499 236 7962  
Email: sergei\_vasnin@msn.com  
Contact Person: Sergei Vasnin, General Director

## UNITED ARAB EMIRATES

### ARAB HEAVY INDUSTRIES PJSC

P O Box 529, Ajman, UAE  
Tel: +971 6 526 3232 Fax: +971 6 526 3233  
www.ahi-uae.com  
Email: ahiaeme@emirates.net.ae  
Contact Person: Leong Siew Loon, Managing Director

## USA

### KEPPEL OFFSHORE & MARINE USA, INC

5177 Richmond Ave, Suite 1065, Houston, TX 77056, USA  
Tel: +1 713 600 8370 Fax: +1 713 600 8384  
Email: tommy.sam@keppelfels.com  
Contact Person: Tommy Sam, Vice President  
Email: takon.cheung@keppelom-usa.com  
Contact Person: Cheung Tak On, Vice President (Technology)

### KEPPEL AMFELS, LLC

20000 State Highway 48, Brownsville, Texas 78523, USA  
Tel: +1 956 831 8220 Fax: +1 956 831 6220  
Email: simon.lee@keppelamfels.com  
Contact Person: Simon Lee, President

## FLOATEC, LLC

14701 St. Mary's Lane, Suite 250, Houston, TX 77079, USA  
Tel: +1 281 870 5200 Fax: +1 281 870 5210  
www.FloatEC.com  
Email: tkdas@floatec.com  
Contact Person: T.K. Das, President

## BENNETT OFFSHORE

(Houston Office, HQ)  
5177 Richmond Ave, Suite 1188, Houston, TX 77056, USA  
Tel: +1 713 961 7737 Fax: +1 713 961 0861  
www.bennettoffshore.com

## (New Orleans Office)

1140 St. Charles Avenue, New Orleans, LA 70130 USA  
Tel: +1 504 561 8912 Fax: +1 504 581 3803

Email: tommy.sam@keppelfels.com

Contact Person: Tommy Sam, President & CEO

## KEPPEL MARINE AGENCIES INTERNATIONAL, LLC

5177 Richmond Ave, Suite 1065, Houston, TX 77056, USA  
Tel: +1 713 600 8371 Fax: +1 713 600 8374  
Email: mike.holcomb@kmaihouston.com  
Contact Person: Michael Holcomb, President/Director  
Mobile: +1 713 816 0438  
Email: john.bajor@kmaihouston.com  
Contact Person: John C. Bajor, Marketing Manager  
Mobile: +1 713 922 3226

## (New Jersey Office)

15 Huddy Avenue, PO Box 417,  
Highlands, New Jersey, 07732 USA  
Tel: +1 732 872 8800 Fax: +1 732 872 8801  
Email: keppeljnj@comcast.net  
Contact Person: John J. Bajor, Director  
Mobile: +908 414 0771

## VIETNAM

### KEPPEL FELS LTD

PetroVietnam Towers, Suite 410  
8 Hoang Dieu Street, Ward 1, Vung Tau City, S.R. Vietnam  
Tel: +84 643 850098 Fax: +84 643 850089  
Email: damien.ng@keppelfels.com  
Contact Person: Damien Ng, Country Manager

# Second FLNG vessel conversion for Golar



Keppel Shipyard is currently performing the conversion of LNG carrier, the HILLI, into an FLNGV, which is expected to be completed in early 2017. The LNG carrier, the HILLI, sailed into Keppel Shipyard for the commencement of conversion works in September 2014

Six months after it secured the world's first-of-its-type floating liquefaction vessel (FLNGV) conversion contract from Golar LNG Limited (Golar LNG), Keppel Shipyard has secured a second firm contract from a subsidiary of Golar LNG to perform the conversion of a second Moss Liquefied Natural Gas (LNG) carrier, the GIMI, into an FLNGV.

The contract became effective on 31 December 2014, enabling Keppel Offshore & Marine (Keppel O&M) to end 2014 on a positive note with new orders for the year totalling more than \$5 billion.

Mr Michael Chia, Managing Director (Marine & Technology), Keppel O&M, said, "We are happy that Golar LNG is proceeding with their second FLNGV conversion, and would like to thank them for once again entrusting Keppel

Shipyard as their lead contractor of choice. This second contract comes just six months after the first contract, and we are encouraged by this positive development. We, together with Golar LNG and our partner Black & Veatch, are confident that FLNGV conversion solutions are indeed the answer to a need to bring small and mid-scale LNG supplies to market in a more timely and cost-efficient manner."

The conversion award of the GIMI marks the exercise of the first of two options, which were part of an earlier firm contract awarded by Golar to Keppel Shipyard for the conversion of another Moss LNG carrier, the HILLI, into an FLNGV.

The work scope for Keppel Shipyard in converting the GIMI is similar to that for the HILLI. Keppel Shipyard will provide the design, detailed engineering and

procurement of the marine systems and all of the conversion-related construction services. Keppel Shipyard will once again engage Black & Veatch, its trusted partner for the conversion of the HILLI, to provide design, procurement and commissioning support services for the topsides, as well as the liquefaction process utilising its established PRICO® technology.

Full construction activities of the GIMI will only commence when Keppel Shipyard receives a notice to proceed, expected to be issued no later than November 2015. In the meantime, orders for long-lead primary equipment such as gas turbines and cold boxes will be placed. The Golar Gimi FLNGV is expected to be delivered around 33 months after receipt of the notice to proceed.