

OFFSHORE MARINE

A newsletter of Keppel Offshore & Marine

January – February 2013

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**ON TRACK
FOR RECORD
DELIVERIES**

**New orders
for 2013**



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Keppel FELS has delivered its first four rigs for 2013. The company christened twin KFELS Super B Class Bigfoot jackup rigs Transocean Andaman and Transocean Siam Driller for Transocean in the presence of Mr Masagos Zulkifli (standing, third from left), Senior Minister of State, Ministry of Home Affairs and Ministry of Foreign Affairs, on 2 February 2013.

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Keppel Offshore & Marine is a subsidiary of Keppel Corporation

Celebrating with Keppel Corporation



Flying to greater heights



Ok Tedi Mining and Keppel Singmarine celebrate the launching and naming of FLY ALLIANCE: (L-R) Mr Michael Chia, MD (Marine & Technology) of Keppel O&M; Mr Nigel Parker, MD and CEO of Ok Tedi Mining; Lady Sponsor Mrs Pakki Parker; Mr Toh Ko Lin, ED of Keppel Singmarine; Mr Ian Middleton, CEO of Ok Tedi Development Foundation; and Mr Tan Cheng Hui, SGM (Engineering) of Keppel Singmarine

The swift and smooth progress of the construction of FLY ALLIANCE, Keppel Singmarine's first newbuild container vessel for Ok Tedi Mining Limited (Ok Tedi Mining), bears testament to the strong cooperation between the two companies over the past 12 months.

The vessel was named at Keppel Singmarine on 17 January 2013 by Lady Sponsor Mrs Pakki Parker, wife of Mr Nigel Parker, MD and CEO of Ok Tedi Mining. FLY ALLIANCE was also launched into the sea on the same day.

Mr Michael Chia, MD (Marine & Technology) of Keppel Offshore & Marine (Keppel O&M), said, "The excellent progress on FLY ALLIANCE is due to the close teamwork between Keppel Singmarine, Ok Tedi Mining and its technical team, SeaTec and the vessel designer, Shiptech."

Mr Parker added, "Together, we ensure that the work is carried out with no compromises on safety and quality. We have achieved a perfect safety record of zero lost-time incidents since the beginning of the construction of the vessel.

"We are very pleased with the effectiveness and efficiency shown by the project teams, and to have fulfilled our vision of completing this container vessel project."

Instead of the traditional launching from a slipway, FLY ALLIANCE was lifted from the wharf and into the sea by the heavy-lift barge crane, Asian Hercules II. This innovative launching method is to cater to the unique requirements of the project and enable effective use of the yard's facilities to maximise efficiency and reduce construction time.

The vessel will undergo the

final stages of outfitting and commissioning of its equipment as well as sea trials before its delivery in June 2013.

When completed, FLY ALLIANCE will be deployed in the Fly River, Western Province of Papua New Guinea.

FLY ALLIANCE is equipped to carry 3,000 tonnes of copper sulphide concentrate at a stowage factor of 0.5. Additionally, it is capable of carrying some 236 twenty-foot equivalent units (TEUs) of containers.

FLY ALLIANCE is the first of four newbuilding contracts awarded to Keppel Singmarine by Ok Tedi Mining; the other three contracts are for the construction of bulk carriers. Work on the remaining projects is progressing smoothly at sister yard, Keppel Batangas Shipyard in the Philippines.

Trio of contracts added to orderbook

Keppel FELS has kick started 2013 with the addition of three contracts to its already bustling orderbook from repeat customers on 27 February 2013.

The contracts are for the construction of a KFELS B Class jackup rig from Star Drilling Pte Ltd, a Singapore-based company promoted by the companies of D.P. Jindal Group; the upgrading of the semisubmersible ENSCO 5006 for Ensco PLC (Ensco); and the upgrading of the

semisubmersible Ocean Patriot for Diamond Offshore.

Mr Wong Kok Seng, MD (Offshore) of Keppel Offshore & Marine (Keppel O&M) and MD of Keppel FELS said, "We are glad to be able to continue from 2012 into 2013 by adding more contracts to our orderbook.

"Even as we add to our new orders, we continue to deliver our projects safely, on time and on budget. Just over the last

two months, we delivered four newbuild rigs by up to a month ahead of schedule.

"We are honoured to have returning customers come to us for newbuilds as well as repairs and upgrades. With Jindal, this will be their third KFELS B Class jackup rig. We have to-date delivered ten such rigs to Indian customers and look forward to supporting Jindal and their growth in India's oil and gas market.



Besides newbuild projects which have deliveries going into 2015, Keppel FELS also has a healthy load of repair, modification and upgrade work



Mr Wong Kok Seng (seated, on left), MD (Offshore), Keppel O&M and MD, Keppel FELS and Mr Raghav Jindal (seated, on right), MD of Jindal sign the contract for the construction of a KFELS B Class jackup rig by Keppel FELS for Star Drilling. Star Drilling is a Singapore-based company promoted by the companies of D.P. Jindal Group

“At the same time, we also have a healthy load of repair and upgrade work and we are grateful that customers like Ensco and Diamond have regularly sent their rigs to us for repairs, upgrades and modifications.”

For the contract with Jindal, the jackup rig will be built to Keppel’s proprietary design and customised to meet the owner’s operational needs in water depths of up to 350 feet for deployment in offshore India.

The rig will have a drilling depth capability of 30,000 feet. Delivery of the rig is scheduled for 4Q 2014.

Mr Raghav Jindal, MD of Jindal, said, “India is enlarging its sphere in the global oil and gas industry and pushing to reduce its dependence on oil imports. These factors present tremendous

opportunities for exploration and production activities and Jindal is well positioned with high specification rigs to meet this demand. In particular, this new rig order signals our intention to enhance our presence in the sector.

“The KFELS B Class is a proven design for us as both DISCOVERY I and VIRTUE I jackup rigs have been operating successfully without any downtime in offshore India.

We are pleased to be able to work with Keppel FELS again as we can be assured of receiving a high quality rig on time and to our highest satisfaction.”

For the contract with Ensco, Keppel FELS’ major workscope on the ENSCO 5006 includes upgrading of the living quarters, and other contract-specific

upgrades for operating in Australia on the INPEX Ichthys Project.

The rig is expected to arrive at the yard in 1Q 2014 with redelivery in 2Q 2014, after which it will be chartered to INPEX for work in Australia.

For the contract with Diamond Offshore on the Ocean Patriot, Keppel FELS will undertake the fabrication and installation of four 24-foot diameter stability columns and new lower hull inboard pontoon sponsons as well as upgrade the living quarters.

Work on Ocean Patriot is expected to commence in June 2013 with redelivery at end 2013. When completed, the semisubmersible will be chartered to Shell for work at the Fram field in the UK North Sea.

Going the distance

As Keppel expands its presence around the world, its growth story from a dockyard department of the Singapore Harbour Board into a world-class conglomerate has drawn increasing interest from the media. In January, Keppel's journey to success and focus for the future were featured in Singapore's *The Straits Times* and Bloomberg Television's *'Asia Business'*.

THE STRAITS TIMES

In an article entitled 'The sun rose for Keppel – in a sunset industry' published on 5 January 2013, *The Straits Times* examined the growth journey for Keppel and Keppelites since the Group embarked on a globalisation drive in the early 1970s.

Mr Choo Chiau Beng, CEO of Keppel Corporation and Chairman of Keppel Offshore & Marine (Keppel O&M), who was interviewed for the article, shared on his own experiences in setting up Keppel's first overseas shipyard in the province of Batangas, the Philippines, in 1975, when he was just 28 years old.

Mr Choo said, "I had to deal with officials at various levels – secretaries for industries, chairmen of boards of investments, provincial governors, and mayors of towns to customs officials. The infrastructure and processes were daily challenges to productivity. For instance, the traffic in Manila was quite bad; it took six months to get our first telephone line and you needed about 20 signatures just to clear your household effects from customs.

"Working overseas is a good experience for all Singaporeans.



Keppel's first overseas yard, Keppel Batangas Shipyard, was set up in 1975

We tend to take for granted the comfort and convenience we have in Singapore. But when you are overseas, you learn to take all these challenges in your stride."

In the 1980s, the global offshore and marine industry faced a severe downturn. Keppel's perseverance and foresight through that challenging period laid strong foundations for many of its yards worldwide today.

Mr Choo remarked, "At that time, the Singapore environment for shipyards was very bad. We were told that the shipyard business is a sunset industry. But I told our guys the sun sets, but the sun also rises. We still have to work to use the sea to transport our goods and for

resources. Two-thirds of the earth's surface is still covered by ocean."

With an eye on the eventual growth of the industry, the Group's Offshore and Marine Division worked hard to take on projects – even onshore projects – to keep its resources engaged and build on its capabilities during the slowdown. "If you are flexible and adaptable, you will survive," added Mr Choo.

Keppel also made a conscious effort to differentiate itself from its competitors. Mr Choo elaborated, "You must choose battles that you can win. That's why we don't build tankers, bulk carriers and container ships. There, the Chinese and Koreans will eat



Through its two yards in Brazil – BrasFELS (in image) in Angra dos Reis and Keppel Singmarine Brasil in Navegantes, Santa Catarina – Keppel helps to meet the offshore oil and gas needs and local content aspirations of the country

our lunch. We chose rigs, Floating Production Storage and Offloading units and specialised vessels.”

Amongst the Division’s major project wins last year are jackup and semisubmersible units for Brazil, Mexico, Kazakhstan and the Philippines. On the driving factors behind Keppel’s overseas expansion, Mr Choo explained that it was to better meet the needs of global customers and create value for shareholders.

“Countries with oil and gas would like to retain good quality jobs within their own borders. We are working with them by giving them local content, by being there and creating jobs there. Our Near Market, Near Customer strategy enables us to provide a unique value proposition, different from the Korean and Chinese yards,” said Mr Choo.

The Straits Times also highlighted

that being a multi-faceted, global business gives Keppel resilience, especially in turbulent times.

Mr Choo shared, “It gives us more robustness in the face of uncertainty and volatility. We’ve got several businesses. If one is down, then hopefully another one will be up. Of course the challenge is that it’s more difficult to manage.”

BLOOMBERG TELEVISION

Separately, Bloomberg Television was keen to learn more about Keppel’s efforts in sustaining its market leadership position, particularly during this volatile economic period. Mr Choo commented that Keppel is a market leader in some but not all of its businesses.

“As a conglomerate, we must keep the focus that each of our businesses must perform well. If any business is not doing well,

either because the industry is not the right one, or we are not doing it properly, then we need to improve it or get out of the business. So this discipline in managing a portfolio of businesses we have is very important for Keppel as we move ahead,” Mr Choo elaborated.

When asked by Bloomberg on ways to continue to enhance shareholder value, Mr Choo said that Keppel is focused on investing in the right places at the right time so that the Group would have a reasonable return on equity for its shareholders.

“Our focus is to have sustainable growth and sustainable value-add, and we are doing this through training and developing our people. Importantly, we need to ensure that we fight in the right battlefields and avoid battles that we can never win,” added Mr Choo.

Partners across borders

With customers from around the world, Keppel Offshore & Marine (Keppel O&M) frequently receives visitors keen to gain an insight into the operations and practices that enable the group to produce high quality and value-added customer solutions.

SONANGOL HOLDINGS

Hailing from Angola in Southern Africa, delegates from Sonangol Holdings – a subsidiary of Sonangol, the company responsible for managing Angola's oil and gas reserves – visited Keppel O&M on 15 December 2012.

Mrs Josina Magalhaes, President of Sonangol Holdings led the delegation including Mr Vicente Inacio, Executive Vice President of Sonangol Holdings, members of the Sonangol Holdings Executive Board, department heads and senior engineers.

Keppel Shipyard is currently undertaking the conversion of FPSO Xikomba for SBM Offshore and Sonangol. Mrs Magalhaes highlighted the alignment of interests between Keppel and Sonangol Holdings and the potential for future collaborations.

BRAZILIAN TIES

On 14 January 2013, Ms Marina Fachetti, General Manager of Petrobras, visited Keppel O&M with representatives from Sete Brasil and Queiroz Galvão Óleo e Gás (QGOG) to tour the facilities and discuss the status of their projects at the Keppel yards.



Mr Choo Chiau Beng, CEO of Keppel Corporation and Chairman of Keppel O&M (right) and Mr Tong Chong Heong (centre), CEO of Keppel O&M brought Mrs Josina Magalhaes (left) and her delegation from Sonangol Holdings for a tour of the Keppel FELS and Keppel Shipyard on 15 December 2012

On a separate occasion shortly after, Mr Jose Antonio de Figueiredo, Engineering Director at Petrobras visited with another delegation on 1 February 2013. They discussed the six DSS™ 38E semisubmersibles and Replicantes FPSO projects being undertaken by Keppel FELS Brasil.

On 25 February 2013, Sete Brasil's CEO, Mr Jose Carlos de Medeiros Ferraz, COO, Mr Pedro Barusco and CFO, Mr Eduardo Musa, also visited Keppel's Singapore yards.

PEMEX

Having recently signed a contract in December 2012 to build two jackup rigs for Petroleos Mexicanos (Pemex), Keppel FELS hosted a visit for the Mexican state oil company's top executives, led by its CEO, Mr Emilio Lozoya Austin on 30 January 2013.

Besides touring the yard, Mr Lozoya Austin also discussed potential areas for mutual cooperation and Pemex's plans for

the future. He said Pemex intends to add between eight and 12 offshore platforms to its fleet.

Keppel FELS is currently building two jackup drilling rigs to its proprietary KFELS B Class design for Pemex.



Mr Emilio Lozoya Austin (left), CEO of Pemex, walks alongside Mr Choo Chiau Beng (right), CEO of Keppel Corporation and Chairman of Keppel O&M as they tour the Keppel FELS yard and discuss their companies' future plans

First Ballast Water Treatment System retrofit project for VLCC

MOL Tankship Management (Asia) Pte Ltd (MOL) has awarded Keppel Shipyard with a landmark Ballast Water Treatment System (BWTS) retrofit project. This is the first BWTS retrofit for an existing Very Large Crude Carrier (VLCC) owned by a Japanese ship owner as well as the first such installation to be undertaken in Singapore.

The yard's work scope on the MOL VLCC includes the installation of oxidising and reducing agent tanks, pipes, filters, and a control system.

Mr Chor How Jat, MD of Keppel Shipyard, said, "We have serviced more than 200 vessels for the MOL Group since early 2000, when our

companies signed a long-term fleet agreement. We are glad to be entrusted with this retrofit project, which bears testament of MOL's trust and confidence in our capabilities.

"We believe that ship owners and operators will benefit from having experienced shipyards undertake comprehensive BWTS retrofit services. As such, we aim to be a provider of choice for such services and are working to grow our expertise in such projects as well as build our networks with reputable vendors."

The BWTS to be installed is the JFE Ballast Ace system, which was selected by MOL and supplied by JFE Engineering Corporation.

Keppel Shipyard is in the midst of pursuing and signing agreements with various established vendors to enhance its BWTS installation services for customers worldwide.

The Ballast Water Management Convention requires ships to clean their ballast water before discharging them into the sea. To comply with the convention's standards, new and existing ships will have to be installed with BWTS. As at end-December 2012, the convention has been ratified by 36 countries, representing 29.1% of the world merchant fleet tonnage. The convention will come into effect 12 months after ratification by 30 states, representing 35% of the world's merchant shipping tonnage.

Keppel Shipyard (in image) has serviced more than 200 vessels for the MOL Group since early 2000



Keeping pace

Having already delivered four rigs ahead of schedule, Keppel FELS continues to keep apace on its existing projects. In a year where Keppel FELS targets to deliver a record 20 rigs, the yard is committed to maintain their promise of safe and on time deliveries.

Marking the progress of its projects, Keppel FELS celebrated the keel laying ceremonies for three jackup rigs in the first two weeks of 2013.

ON THE DOUBLE FOR MAERSK

The Keel Laying Ceremony for Maersk's mammoth CJ70 jackup

rig, B332, was held on Saturday, 5 January 2013.

Marking the next phase of the rig construction were the project teams from Maersk and Keppel FELS. Mr Lars Hansen, Site Manager from Maersk, commended the teams on the excellent progress and safety record achieved so far.

Mr Yeong Yew Ming, Project Manager from Keppel FELS added that vigilance and good teamwork were key factors in the projects' success.

B332 is the second of three CJ70 harsh environment jackup rigs that

Keppel FELS is currently building for Maersk Drilling.

Keppel FELS' productivity has also been acknowledged by competitors and operators. In an interview with the Norwegian Business Daily, Mr Erik Haugane, CEO of Norwegian oil exploration and development Company, Det norske Oljeselskap, said, "Keppel is building 12 rigs in parallel. The kind of productivity they have in the assembly of steel is almost impossible to compete with."

ENSCO'S SUPER RIGS

Just two days later on 7 January 2013, the yard was set up for the



Project teams from Maersk and Keppel FELS give the thumbs up for a job well done on the jackup rig rig, B332



Project teams from EnSCO and Keppel FELS come together to celebrate the double keel laying of EnSCO's two Super A Class jackup rigs on 7 January 2013



Senior Management from Keppel FELS joined the project teams from Arab Drilling Company and Keppel FELS to mark the milestone achievement of ARABDRILL 60's keel laying

Keel Laying Ceremony of Ensco's two jackup rigs, ENSCO 121 or B330 and ENSCO 122 or B346.

Mr Wil Van Oorschot, Project Manager of Ensco, and Mr Terence Lum, Project Manger from Keppel FELS were joined by Mr Chow Yew Yuen, COO of Keppel O&M and Mr Wong Fook Seng, ED (Operations) of Keppel FELS in the celebrations.

Besides the ENSCO 121 and ENSCO 122, Keppel FELS is also on track in the construction of Ensco's first Super A Class jackup rig, ENSCO 120.

SCORING A FOR ADC

With a *Can-Do!* spirit, the Keppel FELS yard took on its third Keel Laying Ceremony in a week on 10 January 2013. The milestone on the KFELS B Class jackup rig, ARABDRILL 60 or B339 was celebrated by Arabian Drilling Company (ADC).

Representing ADC were Project Manager Mr Aleksey Chuprov and the team from GL Noble Denton. Celebrating the strong teamwork with them was the Keppel FELS team of Roy Lim, Senior Project Manager and Ng Shi Yun, Assistant Project Manager.

This is the second project by Keppel FELS for ADC and the fruitful partnership has yielded zero lost time incidents since it struck steel on 3 April 2012.

SAFE TENDER

Work on Seadrill's eighth KFELS semisubmersible drilling tender (SSDT) unit, West Esperanza, is also progressing well. On 3 January 2013, project teams behind the SSDT clocked three million safe man-hours on the project. In appreciation of Keppel FELS' efforts, Seadrill awarded the yard a safety bonus of US\$10,000.

Throughout the entire project, safety education programmes were regularly conducted and safety

measures were strictly adhered to. These actions help keep the project safe and on track for delivery in 2Q 2013.

Developed by Keppel's Deepwater Technology Group, the KFELS SSDT™ is an outstanding application of engineering and technological advancement, and contributes significantly to environmental protection, as well as the safety of operators involved in offshore platform development drilling.

Keppel FELS has completed eight KFELS SSDT™ rigs – seven for Seadrill and one for PV Drilling. It is currently building its ninth unit for Seadrill.



Project teams from Seadrill and Keppel FELS achieve three million safe man-hours on West Esperanza, Seadrill's eighth KFELS SSDT unit

Serving the Middle East

CEO of Nakilat-Keppel Offshore & Marine (N-KOM), Mr Abu Bakar Mohd Nor, shared in an interview with *Ship Repair and Conversion Technology* the operations and market outlook for the yard.

HOW DOES THE INDUSTRY PERCEIVE N-KOM?

With our strategic location at the doorstep of liquefied natural gas (LNG) and liquefied petroleum gas (LPG) loading terminals, N-KOM is in an excellent position to service vessels plying the Arabian Gulf.

Since starting operations 2 years ago, N-KOM has received tremendous support from our clients, contractors and vendors.

Last year, we won two prestigious awards – N-KOM was named Shipyard of the Year at Lloyd's List Middle East & Indian Subcontinent event and conferred the Shiprepair/Shipyard Award at the Seatrade Middle East & Indian Subcontinent event.

WHAT ARE SOME KEY PROJECTS UNDERTAKEN BY N-KOM?

To date, N-KOM has completed over 100 projects, with LNG carrier repairs making up about half of this number; including Q-Max and

Q-Flex carriers, which are some of the largest vessels ever built.

In 2012, N-KOM undertook the drydocking and repairs of the Q-Flex unit, Al Thumama, which is operated and managed by NYK LNG Shipmanagement Ltd and for the Q-Max unit, Al Ghuwairiya, which is managed by Shell Trading and Shipping Company. In fact, Al Thumama underwent its first five year special survey while at our yard.

N-KOM also serviced several LPG carriers. To enhance our value-added offering to clients, N-KOM established a landmark agreement with Ras Laffan Terminal and Tasweeq to supply coolant to LPG carriers. This service is reserved specially for LPG carriers repaired at the shipyard.

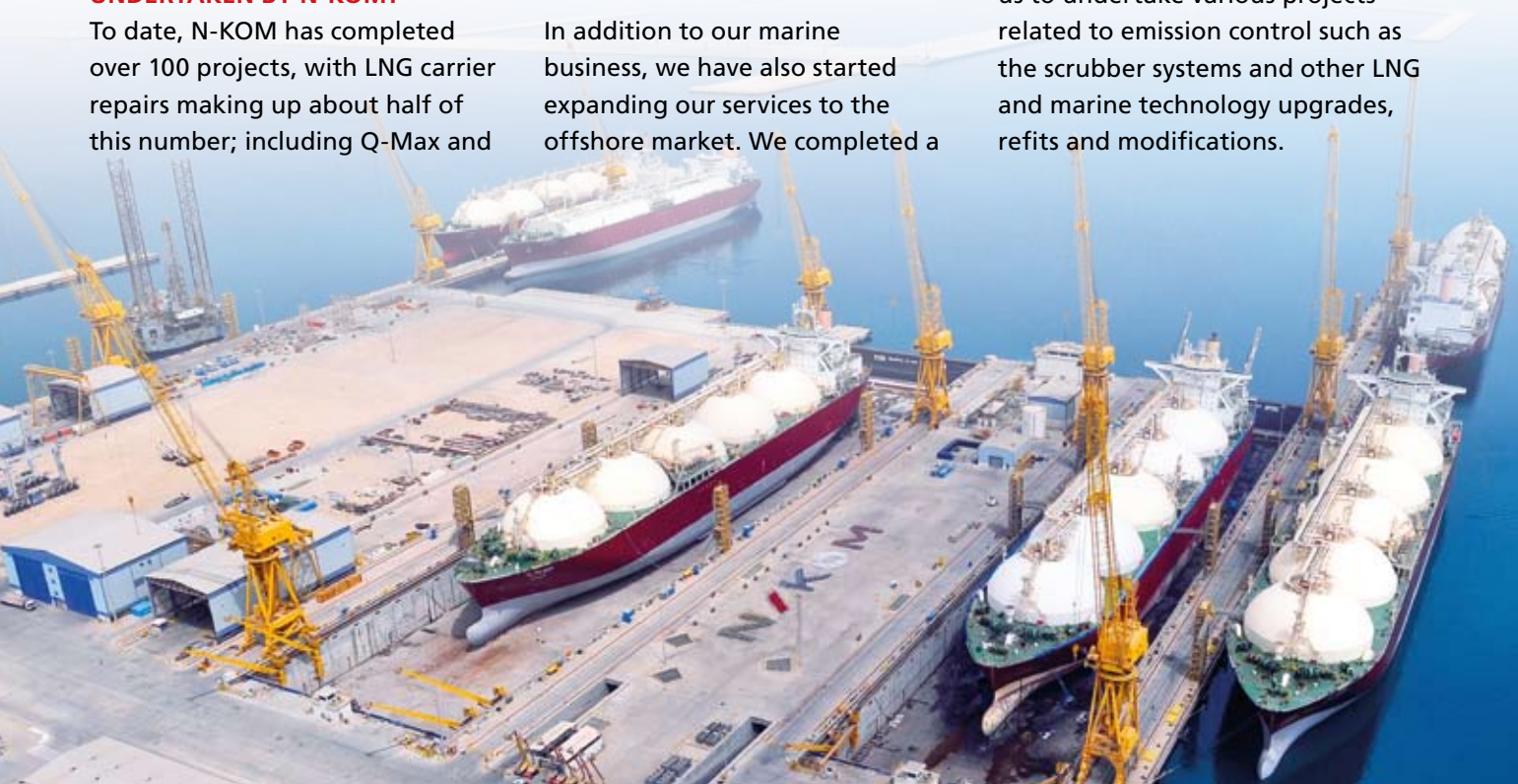
In addition to our marine business, we have also started expanding our services to the offshore market. We completed a

total of seven jackup rig projects for our customers Gulf Drilling International Ltd, Ensco plc and Rowan Companies plc.

WHAT ARE SOME OF N-KOM'S STRATEGIES FOR GROWTH?

We will continue to deliver safe, quality and reliable services for our customers. We expect the gas repair business to hold strong in 2013. Being strategically located in Qatar, the world's leading exporter of LNG, we have good opportunities to grow our business. We have developed strong fabrication capabilities in the oil and gas industry and extended our services to also include onshore and industrial engineering.

Following the green shipping trend, our partnership with Keppel Offshore & Marine has enabled us to undertake various projects related to emission control such as the scrubber systems and other LNG and marine technology upgrades, refits and modifications.



Shaping industry agenda



Mr Aziz Merchant (third from right), ED of Keppel Offshore & Marine Technology Centre (Deepwater Technology) and Deepwater Technology Group as well as ED (Engineering) of Keppel FELS, shared on the outlook for the offshore market and some of the challenges of the sector at a breakfast roundtable with management representatives from various organisations

As a thought leader in the industry, Keppel Offshore & Marine (Keppel O&M) regularly participates in major industry events. It is a sponsor and content contributor of Sea Asia 2013, a leading maritime conference and exhibition, which will take place from 9 to 11 April this year.

The event will comprise panel discussions on a broad range of topics, including ship finance, green technologies, and the prospects of various segments of the maritime industry.

Mr Chow Yew Yuen, COO of Keppel O&M, will be part of a distinguished panel discussing issues relating to the offshore sector. The session is scheduled to take place on the second day of the event.

In shaping the themes to be discussed at Sea Asia 2013, Mr Aziz Merchant, ED of Keppel Offshore & Marine Technology Centre

(Deepwater Technology) and Deepwater Technology Group as well as ED (Engineering) of Keppel FELS, participated in a roundtable discussion in December 2012 involving industry experts.

Sharing on the rig replacement market, Mr Merchant indicated that demand for rig replacement is being driven by the industry's growing preference for newer, high-specification rigs, which boasts strong safety and efficiency features.

Mr Merchant also explained that as the requirements of oil companies are getting more stringent, the costs and schedule differences of meeting these requirements via conversion and upgrading versus newbuilding have narrowed. As such, newbuilding is increasingly more attractive.

On the matter of project finance, Mr Merchant noted that working

with reputable yards and acquiring rigs built to proven designs support customers' efforts in getting favourable financing terms.

His thoughts were shared by Mr Ian Thia, Senior Vice-President & Head of Offshore Asia at DNB Bank ASA. Also a participant of the roundtable sessions, Mr Thia said that his team would hesitate to finance a complex project at an inexperienced facility.

When asked about the new requirements that Keppel has to factor into its rig designs, Mr Merchant listed examples such as having more advanced equipment, higher redundancies and larger capacities as well as ensuring higher energy efficiency.

Keppel O&M will have a strong booth presence at Sea Asia 2013. For more information on Sea Asia 2013 and to register, please visit www.sea-asia.com.

Fuel for thought

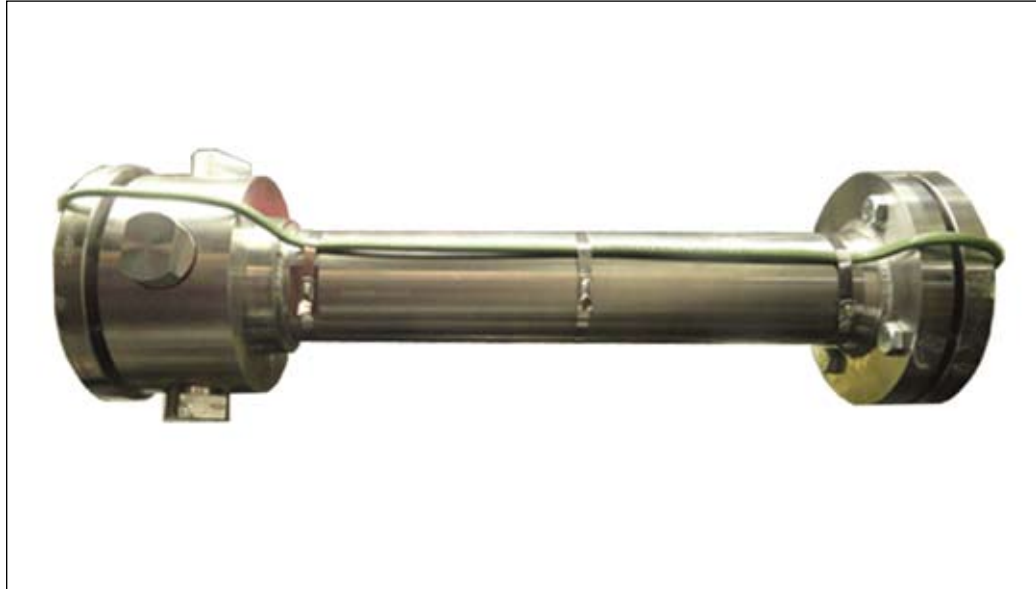
With increasing global demand for sustainable development solutions, Keppel Offshore & Marine's subsidiary, Blue Ocean Solutions, has been developing innovative products that provide environmentally-friendly, fuel-efficient solutions to vessel owners.

CEO of Blue Ocean Solutions, Dr Jerry Ng Kok Loon, shared in an interview with Maritime Reporter & Engineering News the technology behind a key product, the emulsified fuel system. *OffshoreMarine* has extracted highlights of the interview below.

What is the emulsified fuel technology?

Blue Ocean Solutions was established as a response to the need for fuel savings solutions due to escalating fuel prices. When we did our research on this technology in the 1980s, the price of oil was so low that it would not have been feasible for ship owners to invest in the system. Today, our system is capable of achieving a fuel efficiency gain of 3% – a significant contribution by industry standards. With our system, a ship owner burning 30-40 metric tonnes a day, for example, would save \$150,000 to \$200,000 per year at today's price.

The key innovation in our system is in the reliability and ability of the emulsifier to produce water-in-fuel emulsions with consistent water-in-fuel particle sizes of 2-6 microns. The water particles in the



The emulsifier is a fuel-efficient, cost-saving innovative solution developed by Blue Ocean Solutions for vessel owners

fuel explode and create a finer fuel mist, resulting in a more complete combustion, which translates to greater fuel savings. This process is known as secondary atomisation, which is essential for complete combustion to take place.

How has the technology gained ground in the marketplace in recent years?

Extensive research on water in fuel emulsion have been carried out in research laboratories and universities all over the world for decades, with the focus mainly on NOx reduction. We have chosen to focus instead on fuel savings, to understand what kind of emulsion produces a more complete combustion, and hence greater fuel efficiency gains.

It is challenging to generate this emulsion consistently and reliably.

We have done comprehensive research to better understand the theory and practice behind this technology.

The key innovation in emulsified fuel technology is the development of our emulsifier that produces the correct emulsion for best fuel savings. The result is the optimum emulsion for the best fuel savings – our target is a minimum of 3% savings on average.

What are the installation considerations?

The installation is rather fast and simple. When the ship is at port, we would prefabricate our emulsifier module and install three change over valves. The rest we can do while the ship sails. It would take about 3-4 weeks if the installation is done while the ship is sailing and less than a week on



The emulsified fuel technology test facility

a drydock. The cost of installation depends on the ship's fuel oil supply system, the price of the used manpower, and whether the installation is during drydocking or sailing. Roughly, the installation would be a couple of tens of thousands.

The ease of installation of the system also means that our technology can cater to all vessel specifications, whether on a new or old engine, small or large, or medium or slow speed. This versatility has made our technology a reliable choice among the ship owners.

How is the emulsified fuel system maintained?

Our emulsifier system is relatively maintenance-free, considering it has no moving mechanical parts, and hence, lesser wears and

tears. The system is also easy to operate as it is fully automated and installed with built-in safety interlocks.

It is a total system; we have not only considered the performance of the system and ease of installation but also the ease of operation.

As such, the maintenance requirement of our emulsifier system is minimal – the only moving part of the system is the high pressure water pump that requires scheduled maintenance every six months.

What are some of the challenges faced in this field of research and how have you overcome them?

The urgent need for fuel saving solutions has also increased the number of companies and people

coming to market with claims of fuel savings. Some are credible but too many are not.

It is often difficult to accurately verify the actual fuel savings at sea since these are very delicate tasks that require deep experience and there is a lack of expertise in that area. The common experience so far has been to measure specific fuel consumption to ISO standards of +/- 3% deviation. This has resulted in inaccurate measurements of the % fuel efficiency.

At Blue Ocean Solutions, we have the experience and methodology that can prove to ship owners the % savings achieved is reliable and accurate.

Ship owners are also concerned if there is any damage to the engine condition. For our emulsifier, we have surveyed the engine condition on each of our reference after six thousand hours and found no adverse effects on the engine condition. In fact, we have found that the engine parts are cleaner. A cruise liner has run our system after over a year with no issues and continues to save fuel.

We are now at the point of delivering results which can prove accurate % savings that are reliable, dependable and verifiable by an independent third party, without any adverse effects to the diesel engine.

New Keppel Chair Professor



The newly appointed Keppel Chair Professor – Professor Chan Eng Soon

Keppel Offshore & Marine (Keppel O&M) and the National University of Singapore (NUS) have appointed Professor Chan Eng Soon, Dean, Faculty of Engineering of NUS, as Keppel Chair Professor.

Professor Chan takes over from Professor Andrew Palmer, who

served as Keppel Chair Professor from 2006 to 2012. The inaugural Keppel Chair Professor was Professor Torgeir Moan who served from 2002 to 2006.

Professor Chan's research interests and activities are focused on offshore engineering and marine processes, including extreme waves, hydrodynamics, wave-structure interactions, sediment transport and coastal protection, tidal hydrodynamics and circulation in tropical waters.

He has a Doctor of Science degree in Hydrodynamics from the Massachusetts Institute of Technology.

Professor Chan has also held several key appointments in NUS. He set up the Physical Oceanography Research Laboratory in 1995 to pursue research on coastal and offshore processes relating to tropical marine waters.

He also served as Director of Tropical Marine Science Institute, Head of Department of Civil Engineering and ED of Centre for Offshore Research and Engineering before his appointment as Dean of Engineering in 2008.

In addition, Professor Chan has been instrumental in the setting up of $f(K)^N$ – a consortium comprising FloaTEC, Keppel O&M, Keppel O&M Technology Centre and NUS – in 2012.

$f(K)^N$ aims to develop commercially viable solutions to meet the challenges of deepwater field developments in Brazil. It facilitates technology exchange between Brazil's ocean basin, tow tank and numerical laboratories and Singapore's research institutes, through collaborations with universities and research institutes in Brazil as well as industry partners.

It also promotes exchange programmes between NUS and the Brazilian universities as well as visiting professorships and research fellowships to these institutes.

The Keppel Chair Professorship was established in 2002 with NUS to enhance Singapore's competitiveness in the Ocean, Marine and Offshore industry by attracting world-class researchers and practitioners in to Singapore. It aims to facilitate the transfer of technology and the creation of new knowledge and processes in the industry.



Professor Ho Teck Hwa (right), Vice President (Research Strategy), NUS, presenting a plaque to Mr Choo Chiau Beng (left), CEO of Keppel Corporation and Chairman of Keppel O&M, to commemorate ten years of partnership between NUS and Keppel O&M

Innovation in mind



BrasFELS employees, Ms Renata Tsujioka (extreme left), Mr Mauricio Kumpel (second from left) and Ms Lizandra Martinelli (extreme right), receive the Innovation Recognition Award, from Mr Tong Chong Heong (second from right), CEO of Keppel O&M

Coming out tops at Keppel FELS' Innovation Challenge 2012 was the MINDS Team which comprised members of the Engineering department. They were rewarded with the winning prize of \$10,000, presented by Mr Tong Chong Heong, CEO of Keppel Offshore & Marine (Keppel O&M), at an awards presentation ceremony, held on 7 January 2013.

All the projects submitted for the Innovation Challenge were judged on the following criteria: level of innovativeness, alignment to company direction and positive impact to company operations.

The MINDS Team's submission was an application that automatically generates piping isometric drawings. It saves time and reduces costs needed to render and touch-up pipe drawings.

A team from Keppel's Brazil yard, BrasFELS, made a guest appearance

at the ceremony. In their presentation titled 'Alternative Flare Lifting', the team illustrated how BrasFELS safely and efficiently raised and installed a flare tower, a component of a Floating Production Storage and Offloading (FPSO) unit, which is taller than the yard's lifting equipment. The presentation was well-received by the audience and the judges recognised BrasFELS' ingenuity and efforts with an Innovation Recognition award.



Mr Tong (fourth from left) presenting the top prize of the Innovation Challenge to the MINDS Team, which comprises members of Keppel FELS' Engineering department

The other teams that participated in the Keppel FELS' Innovation and Quality Circles (iQC) Convention held in October last year also received awards for their efforts.

iQC seeks to encourage employees and subcontractors to identify challenges and potential areas of improvement as well as use their creativity and critical thinking abilities to come up with viable solutions.

Commendable iQC ideas from Keppel FELS have been shared on the national level. Last year, 11 Keppel FELS teams presented at the National iQC Convention (NiQC), assessed by the Singapore Productivity Association. Three of them took home top accolades – the Star Award.

The Innovation Challenge as well as iQC are part of Innovation Month, Keppel FELS' annual innovation campaign, which comprises talks, workshops, exhibits and competitions.

On track for record deliveries



1. Touring the rig Dynamic Vision were (front, left to right) Mr Choo Chiau Beng, CEO of Keppel Corporation and Chairman of Keppel O&M, Mr Lam Yi Young, Chief Executive of MPA, Lady Sponsor Mrs Manju Agarwal (back, left to right) Mr Naresh Kumar, Chairman of Dynamic Offshore Drilling, Mr Chow Yew Yuen, COO of Keppel O&M and Mr V K Nagpaul, Project Manager at Vision Drilling
 2. Aboard jackup rig Dynamic Vision, the managements of Keppel O&M, Dynamic Offshore Drilling and Vision Drilling participated in the smashing of coconuts, in a symbolic Indian tradition of blessing a vessel

Keppel FELS is expected to deliver 20 offshore rigs this year, a record number for any yard worldwide.

The yard began its record-setting journey with panache, christening its first five rigs of 2013. Four of the rigs have already been delivered, all ahead of schedule and with perfect safety records. The fifth rig is due for delivery at the end of March this year. For the early completion of these rigs, Keppel FELS will receive a combined bonus of about US\$1.5 million.

Mr Chow Yew Yuen, COO of Keppel Offshore & Marine (Keppel O&M) said, "In a year where Keppel FELS targets to deliver a record 20 rigs, we remain committed to every delivery to go beyond our customer's expectations and provide value-added services. We are continually innovating and improving our

processes to increase productivity and safety."

VISION DRILLING

Making the first delivery of 2013 is Dynamic Vision, a KFELS B Class jackup rig for Vision Drilling, a subsidiary of the Dynamic Offshore Drilling Group. The rig will be Vision Drilling's first such rig and has been delivered almost two months ahead of schedule with a perfect safety record.

At the naming ceremony held on 26 January 2013, Guest of Honour, Mr Lam Yi Young, Chief Executive of the Maritime and Port Authority of Singapore, said, "The offshore and marine industry is a key part of Singapore's economy and we are proud that Keppel, a home-grown company, has established itself as a global leader in the design, construction and repair of mobile offshore rigs. The

successful delivery of Dynamic Vision is testament to Keppel's proven capabilities and the strong industry partnerships it has built up."

Mr Wong Kok Seng, MD (Offshore), Keppel O&M and MD, Keppel FELS added, "We are pleased to be able to deliver our first rig of 2013 two months ahead of schedule. It augurs well for the rest of the rigs that we expect to deliver this year. We have a very good partnership with Vision Drilling and look forward to enhancing our relationship with them and continuing to service India's oil and gas market."

Deepwater Drilling & Services Pvt. Ltd, an India-based company in the Dynamic Offshore Drilling Group, has a five year charter with Fortune 500 India's National Oil Company, Oil & Natural Gas Corporation (ONGC) for work in the Western part of Offshore India.



Lady Sponsors Mrs Duantem Voradejviseskrai (front row, third from right) and Mrs Lamiam Charoensaeng (front row, second from left) christen Transocean Siam Driller and Transocean Andaman on 2 February 2013, in the presence of Mr Masagos Zulkifli (front row, centre), Senior Minister of State, Ministry of Home Affairs and Ministry of Foreign Affairs and senior management of Transocean, Chevron and Keppel O&M

Mr Naresh Kumar, Chairman of Dynamic Offshore Drilling said, "India's growing energy demand is driving the country to actively increase its offshore oil and gas production. The proven KFELS B Class jackup design, coupled with our established experience in offshore drilling, places Vision Drilling in a good position to meet this demand. In growing our fleet of high specification jackup rigs, we look to continue to work with reliable shipyards, and Keppel FELS has again lived up to its reputation as the world leader in rig building with this early delivery."

TRANSOCEAN

A week later, on 2 February 2013, Keppel FELS christened twin KFELS Super B Class Bigfoot jackup rigs built for Transocean.

Transocean Siam Driller and Transocean Andaman were

named in the presence of Guest-of-Honour, Mr Masagos Zulkifli, Senior Minister of State, Ministry of Home Affairs and Ministry of Foreign Affairs.

Mr Masagos said, "While Singapore has no oil and gas resources, thanks to companies like Keppel FELS, Singapore has made its mark in the industry. We are today the world leader in designing and building jackup rigs with a 70% market share. Keppel FELS has established a reputation for developing winning rig designs well-suited to its customers' needs.

"As the world economy grows, so will the need for energy. This means that more rigs will be needed to explore and produce fossil fuel. Singapore offshore and marine companies, with their strong capabilities built up over the years, backed by the

country's good infrastructure as an international maritime centre, are well placed to remain competitive and meet the needs of the market."

Customised to meet Transocean's requirements, the two rigs are contracted to Chevron for work in offshore Thailand. Transocean Siam Driller was handed to Transocean 22 days ahead of schedule at the end of January 2013, while Transocean Andaman's construction is expected to be completed at the end of March 2013.

Mr Wong added, "We are pleased with the industry's acceptance of our rig designs which enables us to replicate our building process while still providing value-added and customised solutions. Of the rigs to be delivered this year,

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With four KFELS B Class/Super B Class rigs delivered this year and another 16 on order, the design is today the industry standard for modern jackup rigs



Christening the twin KFELS B Class jackup rigs, Transocean Andaman and Transocean Siam Driller on 2 February 2013 are Lady Sponsors Mrs Duantem Voradejviseskrai (seated, left) and Mrs Lamiad Charoensaeng (seated, right), Mr Masagos Zulkifli (standing, third from left), Senior Minister of State, Ministry of Home Affairs and Ministry of Foreign Affairs, Mr Choo Chiau Beng (standing, second from left), CEO of Keppel Corporation and Chairman of Keppel O&M, Mr Tong Chong Heong (standing, third from right), CEO of Keppel O&M and Mr Chow Yew Yuen (standing, second from right), COO of Keppel O&M

15 are built to our KFELS B Class family of designs, four to our KFELS Super A Class design and one to our proprietary semisubmersible drilling tender design. We are glad to be able to support our long-term customers as they grow their fleet of high specification rigs."

The KFELS Super B Class Bigfoot is designed with larger spud cans, expanding its operational coverage in more places, especially areas where soft soil is predominant.

At the naming ceremony, Mr John Stobart, Executive Vice President and Chief Operating Officer, Transocean said, "This represents another series of mutually beneficial endeavours undertaken between Keppel FELS and Transocean over the years. On behalf of Transocean I would like to thank the Keppel leadership and the many fine managers at Keppel FELS who designed and built these rigs and whose efforts have ensured the success of this project."

ASIA OFFSHORE DRILLING

On 3 February 2013, another customer, Asia Offshore Drilling (AOD), which is majority owned and managed by Seadrill Limited, named its KFELS B Class jackup rig AOD I.

The first of three KFELS B Class jackup rigs that AOD is currently building at Keppel FELS, AOD I, has been delivered 29 days ahead of schedule and with a perfect safety record. The rig has been contracted



Lady Sponsor Mrs Unni Marie Osthus (third from left), Mr Jon Olav Østhus, Vice President, Legal & Commercial, Seadrill Management AS and CEO of AOD (second from left) tour their jackup rig AOD I with Mr Tong Chong Heong, CEO of Keppel O&M (front row, extreme right)

by Saudi Aramco, Saudi Arabia's national oil and gas company, for work in offshore Saudi Arabia.

Mr Jon Olav Østhus, CEO of AOD, and VP of Seadrill Management AS said, "Seadrill already has three KFELS B Class rigs in our fleet of jackup rigs, so we know the strength of this design and are pleased to shortly add another three to our fleet. The early delivery of the first of these three new rigs will enable us to put it to work earlier than expected and generate immediate returns on our investment.

"We have a strong relationship

with Keppel FELS having built some 14 rigs with them since 1993 and they have always delivered rigs to our highest satisfaction. This reliability is also something that our customers can count on when they require high quality rigs on time."

When completed, the AOD series of KFELS B Class rigs will be able to operate in a water depth of 400 feet, drilling depth of 30,000 feet, and accommodate 150 people.

UMW

The fourth jackup rig delivered by Keppel FELS in 2013 was UMW Naga 4 to UMW Oil & Gas

Corporation Sdn. Bhd, a wholly-owned subsidiary of the Malaysian company, UMW Group. Naga is the term for dragon in Malay.

Completed five days ahead of schedule, on budget and with a perfect safety record, the rig had its handover ceremony on 16 February 2013.

Mr Chow said, "With a strong focus on technology, we work closely with customers to develop innovative and cost-effective solutions for today's market. We are glad to have new customer

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UMW NAGA 4 was completed five days ahead of schedule, on budget and with a perfect safety record for UMW Oil & Gas Corporation Sdn. Bhd

UMW choose the KFELS B Class as their preferred rig design. It is ideally suited to meet the current shortage of high specification rigs needed for shallow water fields and can be deployed in many parts of the world."

UMW Naga 4 is built to Keppel's proprietary KFELS B Class design which is the industry standard for modern jackup rigs today. With another 16 KFELS B Class/Super B Class rigs on order, it reflects the strong market demand for the design.

En. Rohaizad Darus, President of UMW Oil & Gas Corporation, added, "UMW NAGA 4 is a testimony of UMW's commitment towards establishing a long term and active involvement in the oil and gas sector in this region. Naga 4 would not be here today without the good work of our new friend, Keppel FELS, and the close cooperation between both our teams. I would like to express my appreciation and thanks to Keppel FELS for completing the rig on time."



Playing important roles in the construction of the rigs in Keppel FELS are the growing number of females working in the yard



Celebrating a strong partnership between Keppel and UMW are (first row, left to right) Mr Choo Chiau Beng, CEO of Keppel Corporation and Chairman of Keppel Offshore & Marine; Mr Tong Chong Heong, CEO of Keppel Offshore & Marine; Lady Sponsor Puan Sri Habibah Mohd Salleh; YBhg Tan Sri Asmat Kamaludin, Group Chairman of UMW Holdings Berhad; Datuk Syed Hisham Syed Wazir, President and Group CEO, UMW Corporation; Datin Engku Naimah Engku Embong, wife of Group CEO, UMW Corporation; Mr Chow Yew Yuen, COO of Keppel O&M and (third row, extreme right) En. Rohaizad Darus, President of UMW Oil & Gas Corporation

UMW Chairman visits

On 16 January 2013, Dr Ken Leong, Chairman of UMW Oil & Gas Corporation visited Keppel FELS for a preview of UMW Naga 4 as he would be unable to attend the handover ceremony held two weeks later.

Accompanied by a delegation from UMW, he commended Keppel FELS on the safe and early delivery of the rig.



(From left to right) Dr Ken Leong, Chairman of UMW Oil & Gas Corporation, Mr Tong Chong Heong, CEO of Keppel O&M, En Wan Kamaruzaman Wan Ahmad, Board Director of UMW Holdings, En Noor Azlan Adnan, Head of UMW Oil & Gas Corporation's Drilling Division and Mr Wong Kok Seng, MD (Offshore), Keppel O&M and MD, Keppel FELS

High-tech heavy metal



Mr Chow Yew Yuen, COO of Keppel O&M speaking to a conference of leading academics on Keppel O&M's technology journey

As exploration of oil and gas moves into deeper waters with harsher environments, offshore oil rigs will have to be more sophisticated and robust. Mr Chow Yew Yuen, COO of Keppel Offshore & Marine (Keppel O&M) said this at a conference of distinguished

academics and business leaders at the 10th annual conference of The Academy of Medicine, Engineering and Science of Texas (TAMEST).

Held on 17 and 18 January, 2013, in Dallas, Texas, the conference programme focused on the latest

research developments in deepwater exploration as well as neuroscience.

Mr Chow elaborated on how Keppel has continually developed its technology expertise to engineer award-winning offshore platforms and build "high-tech heavy metal" for oil and gas exploration and production. Through R&D and engineering centers, Keppel is now developing the next generation of rigs for all offshore frontiers.

TAMEST brings the state's top scientific, academic, and corporate minds together.

Powering offshore wind

Seafox 5, the world's first-of-its-kind offshore wind turbine installer, has arrived at Dan Tysk wind farm in the German sector of the North Sea to begin installation of 80 offshore wind foundations, starting with the first monopiles.

Built to Keppel FELS' multi-purpose self-elevating platform (MPSEP) design, Seafox 5 is set to redefine the way in which offshore wind farms are installed and maintained across the world. The new-generation wind turbine installation vessel offers significant advantages in terms of safety, operations, time and cost to operators working in harsh environments.



Loading a 700 tonne monopile onto Seafox 5



The first monopile being driven into the seabed. The whole operation took 12 hours

Exploring new technologies

For Singapore to continue to grow its role as a strategic innovation partner for multinational companies, it will need to explore strategies such as pioneering innovations in engineering systems as well as spearheading innovations for emerging markets to capture first-mover advantage.

This was the message shared by Professor Hang Chang Chieh, ED, Institute of Engineering Leadership, and Head, Division of Engineering & Technology Management, National University of Singapore, during the 27th installment of the Chua Chor Teck Memorial Lecture on 31 January 2013 at the Singapore Polytechnic Convention Centre.

Speaking to a packed auditorium, Professor Hang presented on the topic “Technological Innovation: Strategies for Singapore’s Economic Development” and touched on strategies and opportunities for innovation in the offshore and marine industry.

The lecture was moderated by Mr Choo Chiau Beng, CEO of Keppel Corporation and Chairman of Keppel Offshore & Marine (Keppel O&M). Both Professor Hang and Mr Choo fielded questions from the audience who were largely from the marine and offshore industry.

The Chua Chor Teck Memorial Lectures, held annually in memory of the late Mr Chua Chor Teck, former Group MD of Keppel

Corporation, former MD of Keppel Shipyard and a pioneer in Singapore’s maritime sector, seek to promote marine-related industries by spurring discussion on topics spanning the fields of marine engineering, naval architecture, shipbuilding, ship repairing, offshore technology and shipping.

Since its inauguration in 1986, the lecture series have benefited more than 5,000 people.



Keppel Corporation CEO and Chairman of Keppel O&M, Mr Choo Chiau Beng (right) moderated the lecture session by Professor Hang Chang Chieh (left) on technological innovation



The Chua Chor Teck Memorial Lecture Series has benefited more than 5,000 people to date

Mark of excellence



Mr Edmund Mah (right), GM (Finance) of Keppel O&M receiving the "Singapore 1000 - Sales/Turnover Excellence Award" on behalf of Keppel O&M from Mr Teo Ser Luck, Minister of State for Trade and Industry

Keppel Offshore & Marine (Keppel O&M) was conferred the "Singapore 1000 – Sales/Turnover Excellence Award" at the 26th Annual Singapore 1000 (S1000) & Singapore SME 1000 Awards, setting the company apart from its peers in the Transport/Storage industry.

An awards presentation ceremony was held at Shangri-La Hotel on 1 February 2013 to recognise exemplary companies across eight industries.

Receiving the award on behalf of Keppel O&M was Mr Edmund Mah, GM (Finance) of Keppel O&M.

For the full year 2012, the company's revenue was \$8 billion with \$10 billion worth of new contracts.

Keppel O&M's impressive performance is due to its focus on strengthening its core competencies, maintaining a reputation for on-time deliveries, leveraging its global network of yards, and having a suite of proprietary technology.

The S1000, Singapore SME 1000 and Singapore International 100 awards represent the most extensive audit of Singapore's corporate sector performance.

Raising the safety bar

To raise the bar on safety standards and practices, Keppel FELS, Keppel Shipyard and Keppel Singmarine undertook a cross-business unit auditing exercise focusing on major equipment maintenance.

Held in November 2012, the aim of the exercise was to facilitate cross sharing and learning of good HSE practices amongst Keppel Offshore & Marine's (Keppel O&M) yards.

Two months later in January 2013, the exercise continued to include Keppel O&M's overseas yards starting with BrasFELS and Keppel Singmarine Brasil.

The audits across business units both locally and overseas have been successful at appraising the level of safety culture at our yards and aligning management, employees and subcontractors to our safety management system.

Mr Yong Chee Min, GM (Health, Safety and Environment) of Keppel O&M, said, "The Keppel O&M inter-BU auditing exercise is an excellent avenue to enhance our overall safety standards. The audited yard picks up pointers on areas of improvement while the team performing the audit learns of good practices, which they can bring to their own organisations."



Levis Peh (centre), HSE Officer, Keppel FELS, together with the safety team at BrasFELS, was part of a cross-audit exercise that took place at the Brazil yard in January 2013

Holistic development



Keppel O&M Human Resources teams celebrate the Group's win at the 10th Annual HRM Awards on 1 March 2013

Focused on building a formidable global team with strong leaders to propel the company forward, Keppel Offshore & Marine (Keppel O&M) is committed to the well-rounded development of its employees. The company was recognised for its efforts at the 10th Annual Human Resources Management (HRM) Awards held on 1 March 2013.

One of the two awards won by Keppel O&M was the 'Best Graduate Development' Award. The award aims to recognise companies for putting in place innovative programmes to retain and develop graduates joining the company.

In Keppel O&M, fresh graduates undergo a 2-year Management Traineeship programme which is accredited by the Institute of Marine Engineering, Science and Technology (IMarEST). They are

systematically exposed to a range of development opportunities that includes on-the-job training, job rotation, mentorship, engagement sessions with senior management and development courses.

The other award conferred to Keppel O&M was the 'Best Health & Wellbeing' award sponsored by Healthway Medical Group.

The award affirms the company's commitment to promote health and wellness at the yards through initiatives such as the annual All Companies/Communities Together In Various Exercises (ACTIVE) Day and health screenings, monthly Fruity Day, healthy food bazaars and exercise classes. Targeted interventions such as Stay Healthy Exercise Diligently (SHED) Programme are also introduced to encourage healthy weight management.

This year's ceremony saw its largest turnout of over 800 HR and business professionals. 84 finalist organisations gathered at the Ritz Carlton and competed across 22 award categories. The judging panel comprised representatives from Tripartite Alliance for Fair Employment, Ministry of Manpower and various consulting groups.

At last year's HRM Awards 2012, Mr Tong Chong Heong, CEO of Keppel O&M was awarded 'Champion of HR'. This year's two awards bear testament to the continued efforts by Keppel O&M's management towards developing its employees and inculcating them with the *Can-Do!* spirit.

Recognising leadership



Mr Hoe Eng Hock



Mr Toh Ko Lin

Key appointments were made at Keppel Singmarine recently, recognising the leadership that helps to sustain the continued growth of the company.

Mr Hoe Eng Hock, previously ED of Keppel Singmarine, has been appointed MD of Keppel Singmarine with effect from 1 January 2013. He will continue to oversee the overall business operations and strategic development of Keppel Singmarine, as well as the overseas yards of Keppel Nantong Shipyard and Keppel Singmarine Brasil. He will report directly to Mr Michael Chia, MD (Marine) and MD (Technology), Keppel O&M, and Mr Chow Yew Yuen, COO of Keppel O&M and Chairman of Keppel Singmarine.

Mr Toh Ko Lin, previously SGM (Commercial), has been appointed as ED of Keppel Singmarine with effect from 1 January 2013. He will continue to oversee marketing, commercial, purchasing and subcontracting at Keppel Singmarine, as well as the development and management of Baku Shipyard. He reports to Mr Hoe. Mr Toh concurrently serves as Chairman and President of Keppel Philippines Marine and Chairman of Keppel Subic Shipyard.

United in union support

Keppel Offshore & Marine (Keppel O&M) hosted Madam Halimah Yacob, the first woman Speaker of Parliament, to a luncheon at Keppel O&M on 31 January 2013, in appreciation of her tireless efforts in the labour movement over the years. She previously served at the National Trades Union Congress (NTUC) as the Deputy Secretary General.

Madam Halimah received a warm reception from the 30-strong senior management team which included Mr Choo Chiau Beng, Chairman of Keppel O&M and Mr Tong Chong Heong, CEO of Keppel O&M, as well as union heads from the Keppel FELS Employees Union, Keppel Employees Union and the

Shipbuilding & Marine Engineering Employees' Union.

Thanking her hosts, Madam Halimah said, "I am indeed most honoured and deeply humbled by your warm reception. I will always value your friendship, and this will make my job as the first woman speaker all the more pleasant knowing that I have your support."



Speaker of Parliament Madam Halimah Yacob (front row, third from left) was hosted to a luncheon by the Keppel O&M senior management team

Investing in education

Keppel has actively contributed to educational causes through donations and investment in the tertiary education sector.

Keppel Care Foundation has teamed up with the Singapore Institute of Technology (SIT) to jointly establish the "Keppel Study Grant" in December 2012.

A total of six grants, valued at \$5,000 each, will be awarded to economically disadvantaged undergraduate students.

In addition, Keppel Corporation has committed to sponsor the "SIT-Keppel Gold Medals" for 10 years, starting in December 2012.

The Gold Medals, comprising five cash awards of \$5,250 each are for top students pursuing degree programmes at SIT such as the Marine Engineering degree offered by Newcastle University.

To promote interest in offshore and marine studies, Keppel FELS donated a model of its proprietary KFELS B Class jackup rig to the National University of Singapore (NUS) Faculty of Engineering's Heritage & Life Gallery.

The gallery is designed to help to provide insights into the history and growth of the Engineering faculty through the years as well as the achievements of its staff,



NUS students gathered around the KFELS B Class jackup rig model donated by Keppel FELS to the university's Heritage & Life Gallery

students and alumni. It is open to the public and located in the foyer of Block EA, School of Engineering, NUS.

Sharing HR best practices

To provide a sharing platform on human resource (HR) best practices, Keppel Offshore & Marine (Keppel O&M) held the Group's HR Symposium in Singapore from 28 January to 1 February 2013. 30 HR professionals from across Keppel O&M's local and overseas business units participated in the symposium.

The programme included discussions between union representatives and HR managers of the various yards, sharing sessions by HR practitioners from other industries, and visits to the Keppel O&M Training Centre and Keppel's worker dormitories.

commitment to people development, the event highlighted people as Keppel's key asset, and the importance of valuing each employee's contribution through fair reward and opportunities for development.

Reaffirming Keppel O&M's



The Keppel O&M HR symposium saw professionals from across Keppel O&M's local and overseas business units share on best practices

Makings of a leader

Are leaders born or made?

That was the question Mr Tan Geok Seng, President and CEO of Keppel AmFELS, posed to his audience at the Keppel Young Leaders' Leadership Series talk held on 13 December 2012.

In his trademark candid style, peppered with light doses of humour, Mr Tan offered valuable insights to the oft-asked question. Leadership, he shared, is a trait that can be cultivated in every individual with the right mindset and attitude.

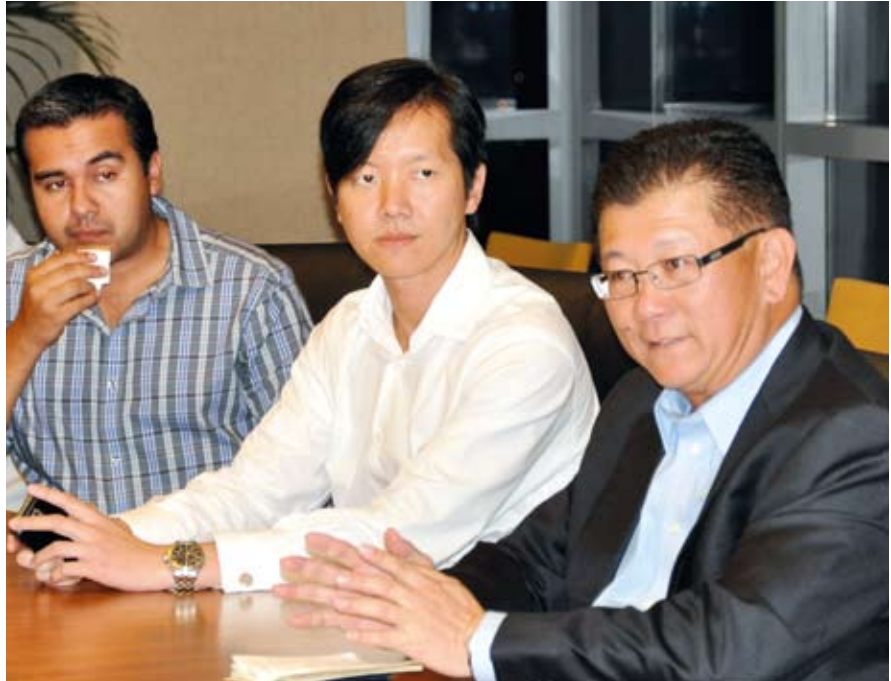
Mr Tan joined Keppel FELS in 1981. He was seconded to Keppel AmFELS as the Executive VP in 1997, after serving in several departments such as Engineering, Commercial, Project Management and Operations. He returned to Keppel FELS in 2001, and was seconded back to Keppel AmFELS in 2002.

He was appointed CEO of Keppel AmFELS in 2007. In 2012, Mr Tan was appointed President of Keppel Offshore & Marine USA and continues to serve as President and CEO of Keppel AmFELS.

OffshoreMarine highlights some leadership principles shared by Mr Tan:

LEARN FROM FAILURES

Do not be afraid of failing. Learn from your mistakes, and recover fast. Scolding from your boss is part and parcel of the learning process we all go through in life. Do not let them destroy your



Mr Tan Geok Seng (first from right), President and CEO of Keppel AmFELS, sharing leadership principles with Keppelites at the Keppel Young Leaders' Leadership Series Talk

confidence; instead use failure as an opportunity to build up your character.

FOLLOW TO LEAD

Learning how to lead and follow are important skills relevant to people of all ranks. Know how to communicate with your boss and carry out instructions in an effective and respectful way. The mark of a true leader is an ability to first submit to authority and follow instructions.

KNOW WHAT TRUE CONFIDENCE MEANS

Being truly confident does not mean that one has to hog the limelight all the time. Real confidence comes from knowing when to let your subordinates or others take the credit where it is due. Constantly trying to impress

other people or raise unnecessary attention does not make a truly confident person.

RESIST TEMPTATION

As one progresses in rank and position, he will be invested with more authority and privileges. Learn not to abuse these privileges, or let them distract you from your responsibilities and duties. They are meant to serve you and other people well.

ENJOY THE PROCESS

The old adage that fun can only come after work no longer applies in this age. Learn to find ways to incorporate fun into your workplace. With time, you will find a growing sense of enjoyment and fulfilment from doing your job well.

Camaraderie in the Philippines

“At the end of the day, it’s the relationship with our colleagues that determines how productive the team is, and how much we enjoy our job. I am grateful for this opportunity to work in the Philippines, where everyone is willing to lend a helping hand and share the fruits of their labour,” shared Jarod Lee Jian Run, project engineer with Keppel Subic Shipyard.

One of the biggest takeaways from his experience abroad is the importance of communication, which goes a long way towards understanding the new culture.

Jarod took on the challenge of working in the Philippines to add a new dimension to his professional development and broaden his

horizons. The journey, Jarod shared, has been nothing short of rewarding and fruitful.

Having been based at Subic Shipyard since September 2012, Jarod notes that an important part of Filipino culture is camaraderie, or the need to maintain smooth interpersonal relations. This is one of the reasons why the Philippines is viewed as a friendly country where people tend to smile and engage in casual conversation. Jarod attributes his positive experience in the country to Filipino hospitality and genuine warmth.

Jarod believes in fostering a collaborative work environment by treating all people, regardless of rank, with dignity and sincerity.

“Adapting to a new working environment, especially one that is totally foreign, is not daunting if we engage others earnestly and with respect. The strong bonds forged with my colleagues have greatly boosted overall team morale and produced efficient work outcomes in our engineering projects,” shared Jarod.

It is not just all work and no play for Jarod, as the Philippines is blessed with fine beaches such as the one at Boracay, located south of Manila.

“My wife and I had the opportunity to visit the beautiful beaches here, which are lauded as among the best in the world,” shared Jarod.



It is not all work and no play for Jarod, who takes time to explore Boracay's beaches

Supporting causes in Brownsville

Located in Brownsville, Texas, Keppel AmFELS is committed to the growth and development of Brownsville city and its people, championing causes in community-building, education and welfare.

For their five-year sponsorship of the official Charro Days poster, Keppel AmFELS was presented with a special recognition plaque on 6 February 2013.

Mr Gilberto Elizondo, Senior Vice President, HR of Keppel AmFELS and Mr Alberto Garcia, Vice President, Finance, and CFO of Keppel AmFELS, received the plaque on behalf of the company.

Charro Days, also known as Charro Days Fiesta or Charro Days Festival, is a four-day, two-nation fiesta held in Brownsville, Texas, United States. The annual festival celebrates the shared heritage between Brownsville, where Keppel AmFELS is located, and Matamoros, Tamaulipas in Mexico.

Besides sponsoring such heritage events, Keppel AmFELS also seeks to contribute to the development of Brownsville's education sector.

Participating in the 21st Annual 'Principal for a Day' event organised by the Brownsville Independent School District (BISD) Board, Ms Linda K. Mercado, Training & Communications Officer at Keppel AmFELS, was selected to be 'Principal for a Day' at James Pace High School on 15 February 2013.

As 'Principal for a Day', Ms Mercado spoke on the offshore and marine industry's employment needs and answered student's questions about her career at Keppel AmFELS. She also attended a faculty meeting, visited classrooms and shadowed the principal through the day.

58 acting principals participated in the annual event and were treated to an honorary luncheon sponsored by the BISD Board.

The acting principals comprised a diverse group of business professionals, community leaders, physicians and law enforcement officers, amongst others.

The 21st Annual 'Principal for a Day' event aims to broaden the local community's understanding of the students, teachers and principal's challenges, while simultaneously helping the school district gain knowledge of the community's expectations.



Keppel AmFELS has sponsored the official poster of the Charro Days festival celebrated in Brownsville, Texas, United States. Mr Gilberto Elizondo (second from left), Senior Vice President, HR of Keppel AmFELS, Mr Alberto Garcia (extreme left), Vice President, Finance, and CFO of Keppel AmFELS and Ms Amalia Trevino (extreme right) of Keppel AmFELS join Mr Don Breedon (second from right), local artist of the poster, for the unveiling of the painted poster on 6 February 2013



Ms Linda K. Mercado, selected as 'Principal for a Day' sits in for faculty meeting at James Pace High School in Brownsville, Texas, United States

Giving back in Brazil

Having established a presence in Angra dos Reis since 2000, Keppel's BrasFELS yard has contributed actively to the community over the years.

This is in line with Keppel's commitment to contribute to the communities where it operates.

LIFTING SPIRITS

As part of BrasFELS' corporate social responsibility programme for 2012, the yard adopted Casa Abrigo da Crianca e do Adolescente (Home for the Children and Adolescents) to support underprivileged and needy children in Brazil.

To spread festive cheer during the December holidays, a group of BrasFELS volunteers organised a Christmas celebration at Casa Abrigo da Crianca e do Adolescente on 21 December 2012.

Spirits were high as the children enjoyed a sumptuous Christmas lunch. The volunteers also played Santa, giving out Christmas presents to the children.

Casa Abrigo da Crianca e do Adolescente houses children and adolescents who face legal issues in the Angra dos Reis family court. Pending the settlement of their family issues, the Judiciary offers these children a shelter at the Home.

SEEDING GROWTH

To promote environmental protection, BrasFELS organised the "BrasFELS for a Sustainable World"



Mr Kwok Kai Choong (shoveling, on left), President & CEO of BrasFELS, plants the first of 30 saplings outside its BrasFELS Yard with Mayor Conceicao Rabha (shoveling, on right) on 25 February 2013

event that was held on 25 February 2013.

The event's main feature was a tree planting activity, where 30 saplings were planted in front of the BrasFELS yard. Mr Kwok Kai Choong, President & CEO of BrasFELS, together with his management and staff joined hands with the Mayor of Angra dos Reis, Mrs Conceicao Rabha and other government representatives to plant the saplings.

Mayor Conceicao Rabha remarked, "It is with great pride and joy that I am here with a company that cares about the economic, social and environmental development of the state and nation. Thank you Keppel for loving and contributing to the sustainability of our town."

BrasFELS, in partnership with Prefeitura Municipal de Angra dos Reis (City Hall of Angra dos Reis),



BrasFELS volunteers spread the Christmas cheer at Casa Abrigo da Crianca e do Adolescente, a home for children, on 21 December 2012

also distributed saplings to Angra dos Reis' City Hall, promoting environmental preservation in the central business district.

Helping to inculcate this sense of responsibility for the environment among younger generation, several schools in Jacuecanga and Angra dos Reis will also be receiving saplings from BrasFELS.

Building blocks for educational excellence



A team of Rice University students sponsored by Keppel O&M have been awarded first prize in the Odebrecht Award for Sustainable Development

As part of its corporate social responsibility, Keppel Offshore & Marine (Keppel O&M) believes in

supporting educational platforms in the communities it operates in.

In December 2012, Keppel O&M sponsored three architecture students from Rice University in Houston, Texas, United States to take part in the '2012 Challenge for the Odebrecht Award for Sustainable Development' in Brazil.

For their design of a 600-kilometer chain of man-made islands that can sustain 50,000 people, the students took home a well-deserved first prize. The islands utilise Brazilian offshore water currents to sustain itself, saving energy.

The team, Team Petropolis, was inspired by an article on Petrobras that highlighted the company's need for 'Floating Cities' to support their growing offshore efforts. Due to the growing distance of exploration projects from the coast, helicopter trips were rendered unfeasible.

Team Petropolis' project, 'Floating Cities' has been designed to address this need.

Emerging victorious against 173 other universities from the United States, Team Petropolis was awarded US\$40,000.

Running for a cause

Mr Lim Nghee Huat's strong finish at the Brazil 135 Ultramarathon – a gruelling 217km race in the mountains held from 18 to 20 January 2013 – is an achievement which inspires passion, endurance and care for the community.

The 59-year-old Singaporean was one of 90 runners worldwide, and one of four Asians invited to participate in the race. Clocking an impressive timing of 44 hours and 57 minutes, Mr Lim completed the event in the 22nd place.

Giving Mr Lim an added boost for this challenge was his pledge to use his participation in this event

to raise funds for a rehabilitation centre for the elderly. Won over by Mr Lim's *Can-Do!* spirit and his meaningful cause, Keppel Corporation contributed \$5,000 to the fundraising initiative.

The new centre, which will be located at the Kampong Arang Road, will cater to the elderly with problems in mobility or function. Run by St Hilda's Community Services, the premise will also enable the provision of integrated day care and home nursing services.

Brazil 135 Ultramarathon is one of the world's toughest marathons.



Keppel contributed \$5,000 to Mr Lim Nghee Huat's participation in Brazil 135 Ultramarathon, where he pledged to raise funds for a rehabilitation centre for the elderly

Some compare running the steep hills of the route to climbing Mount Everest.

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Keppel secures FPSO contracts from repeat customers

Keppel Offshore & Marine (Keppel O&M) has through its subsidiaries – Keppel FELS Brasil and Keppel Shipyard – secured two contracts from repeat customers.

Keppel FELS Brasil's contract is with MODEC and Toyo Offshore Production Systems Pte Ltd (MTOPS), a joint-venture company between MODEC, Inc. and Toyo Engineering Corporation (TOYO), to integrate the topside modules of a Floating Production Storage and Offloading (FPSO) unit. This project will be carried out at BrasFELS, Keppel FELS Brasil's yard in Angra dos Reis, Rio de Janeiro, Brazil.

Over in Singapore, Keppel Shipyard has been engaged by SBM Offshore N.V. (SBM Offshore) to fabricate an internal turret for a newbuild FPSO, which will be installed in the Ichthys Field, in the Browse Basin, offshore of Western Australia.

Mr Tong Chong Heong, CEO of Keppel O&M, shared, "We are pleased to be selected by our customers for repeat projects as these are strong affirmations of the quality of our services. BrasFELS and MTOPS' first FPSO project was delivered safely and 19 days ahead of schedule while the second project is underway and on track for delivery in 2Q 2014. Over the years, Keppel Shipyard has partnered SBM Offshore on some 17 major conversion and fabrication projects.

"With good rapport and understanding between our yards and their customers, we are confident that both the MODEC FPSO and Ichthys FPSO internal turret projects will be completed to high satisfaction."

The FPSO for MTOPS, a project by MODEC and its partner, Schahin Group, has been chartered for operations in offshore Brazil for 20 years. Integration works for the FPSO will take place from 3Q 2014 to 3Q 2015. The completed unit will have a production capacity of 150,000 barrels of oil per day and storage capacity of 1,600,000 barrels of oil.

Meanwhile, Keppel Shipyard's

work on the 6,800-tonne Ichthys FPSO turret is scheduled to complete by Q3 2014.

The Ichthys FPSO turret forms a part of the Ichthys LNG Project, which is a joint venture between the field operator INPEX group of companies, TOTAL group of companies and other participants.

Keppel Shipyard's ongoing projects for SBM Offshore are the conversion of FPSO OSX-2 for Brazil as well as modification and upgrading of FPSO N'Goma for Angola. SBM Offshore is also working with Keppel Singmarine on the newbuilding of a multi-purpose dive support construction vessel.



FPSO Cidade de Sao Paulo, the first FPSO project between BrasFELS and MTOPS, was delivered safely and 19 days ahead of schedule