

Offshore Marine

Keppel

A publication of Keppel Offshore & Marine

April 2009

MICA (P) 153/04/2008

Offshore

**Naming of Ultra deepwater
semi *Ensko 8501***

**27th KFELS B class
delivered**

Marine

**Jumboisation of
dredger delivered**

**Sailaway of
*BW Cidade De São Vicente***

Peak deliveries in 2009



Sea Asia 2009

Keppel O&M will be participating in the second Sea Asia Exhibition with a Booth at J-01 on Level 6 of the Suntec City Convention Centre, Singapore.

Held from 21-23 April 2009, the conference focus will be 'The Asian Voice in World Shipping – Clearer and Stronger.' This event is co-organised by Singapore Maritime Foundation and Seatrade.

Chairman of Keppel O&M, Choo Chiau Beng will be chairing one of the sessions named "The Asian Voice in World Shipping: Offshore Markets" on 21 April at 10am.

Michael Chia, ED, Keppel FELS and President of ASMI will chair the session on "Shipbuilding and Ship conversion" on 22 April at 230pm.

For more information, please go to www.sea-asia.com.

Offshore Technology Conference 2009

Keppel O&M will once again be participating at the annual Offshore Technology Conference (OTC) in Houston from 4-7 May, 2009 with an exhibition at booth 2765.

Other than Keppel O&M, Keppel Verolme and Keppel FELS Brasil are present as well with their booths at 2623 and 4741 respectively.

OTC is the world's foremost event showcasing development of offshore resources in oil and gas drilling exploration, production, and environmental protection.

For more information, please go to <http://www.otcnet.org>

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Company registration no. 199900642R

Most admired employer in South East Asia

Keppel Offshore & Marine (Keppel O&M) has been named the Most Admired Enterprise for Employment among large-scale Southeast Asian companies at the ASEAN Business Awards 2008.

The award ceremony was held in conjunction with the 14th ASEAN Business & Investment Summit in Bangkok from 25-27 February 2009.

Presided by an independent judging panel of ASEAN business leaders, economists and academics, the Business Awards recognise companies of member countries that have contributed to the growth of ASEAN's economy, as well as promising SMEs in the region. The top Awards were presented by His Excellency, Anand Panyarachun, the former Prime Minister of Thailand.

Candidates in the employment category were assessed on the number of new jobs created, staff retention rate, training investments, efforts in creating a positive work environment, the availability of good healthcare and the presence of a proper staff appraisal system.

CH Tong, CEO of Keppel O&M, said, "We are very encouraged that the ASEAN Business Advisory Council has recognised Keppel O&M as the most admired employer in this region.

"At Keppel O&M, we are committed to develop a competent and resilient workforce that can be deployed to their maximum capabilities. We want to build our people to be holistic individuals, innovative employees and responsible citizens. Even amidst the current challenging environment, we remain committed to the training, development, motivation and empowering of our workforce."

Each employee in the Keppel O&M group spends an average of 100 hours in training per year. In addition, the employees are encouraged to be actively involved in community development activities, charity work and environmental protection.

In 2008 alone, Keppel O&M invested a total of \$22.5 million in the training and development of its 27,000 employees across its 20 global yards. Of this sum, \$15.9 million was used to upgrade the skills of Singapore-based employees, comprising 48% of the total workforce.

"The nature of our work requires specialised expertise that takes years of training to hone. We place great emphasis on a sustained and systematic approach of grooming our talents that will allow us to build a formidable workforce with a succession of strong leaders," said CH Tong.

To advocate continuous learning and talent development, the Keppel O&M College was set up in 2007 to groom executive staff with high potential to take on greater responsibility in the Group.

Just last year, the Keppel O&M Group Training Centre was launched to provide technical and specialised skills training for Keppel O&M's workers and subcontractors. The Centre is able to provide training for up to 3,500 persons per annum.

Through its dedicated management and employees, the Keppel O&M group continues to offer total solutions to customers and maintain its position as the global leader in the offshore and marine industry.



Cindy Lim, Senior Manager (Group HR and Talent Development) of Keppel O&M receives the award from His Excellency Anand Panyarachun, a former Prime Minister of Thailand



Great teamwork delivered *Greatdrill Chetna* 20 days ahead of schedule, within budget and without incidents



Igniting brilliant beginnings for *Greatdrill Chetna* are Lady Sponsor Mrs Archana Mitta and Keppel Corporation's CEO & Chairman of Keppel O&M, CB Choo

Greatdrill in

Amidst the global meltdown, Keppel FELS was awarded a bonus of close to \$1 million (US\$625,000) for completing a newbuild rig 20 days ahead of schedule.

The jackup rig, *Greatdrill Chetna*, was also delivered within budget and without incidents to Mercator Offshore, the wholly-owned subsidiary of one of the largest and fastest growing shipping companies in India, Mercator Lines.

Built to Keppel's proprietary KFELS B Class design, *Greatdrill Chetna* has been contracted to India's national oil company, Oil and Natural Gas Corporation (ONGC). She is the 27th KFELS B Class jackup rig to enter the market and will be deployed for three years in the Mumbai High oil field in the west coast of India.

Atul Agarwal, MD of Mercator Group of Companies said, "Keppel FELS has done an excellent job on our first jackup rig. An early delivery of 20 days with a sterling safety record is most commendable for a yard that is so busy during this period. They have truly lived up to their promise to deliver on time, within budget and without incidents.

"*Greatdrill Chetna* is now ready for her first assignment with ONGC and we are confident that this fine KFELS B Class rig, whose reputation precedes her, will surpass the expectations of our customer."

Over the last five years, Indian drilling contractors have ordered a total of nine KFELS B Class jackup rigs from Keppel FELS. The total contract value of these rigs amounts to US\$1.5 billion and firmly demonstrates the confidence placed in Keppel's proprietary design.

safety

CH Tong, CEO of Keppel O&M said, “Keppel FELS’ focus on operational excellence has yielded strong results in the form of strong project management, cost efficiency and high safety standards on the construction of *Greatdrill Chetna*.”

“Receiving the enhanced bonus from our valued customer Mercator Offshore in times like these is a great boost to us. We are grateful to Mercator Offshore for their partnership and confidence in us.

“Looking ahead, we will continue to align ourselves with best-in-class practices and build on them to improve our quality standards to offer unrivalled services to our customers.”

With its proven track record of global operations, the KFELS B Class continues to be the discerning driller’s choice for a highly efficient jackup.

Tailored for the conditions of offshore India, *Greatdrill Chetna* meets ONGC’s unique requirements of harsh environment, bearing pressure and rig geometry.

This efficient jackup rig is capable of operating in water depths of 350 feet and drilling depths of 30,000 feet. Its design also incorporates Keppel’s advanced and fully-automated high capacity rack and pinion elevating system, and Self-Positioning Fixation System.

“Keppel O&M is growing its footprint in the Indian offshore market with the delivery of *Greatdrill Chetna*. We look forward, through our partnerships with leading Indian companies such as Mercator Offshore, to support the country’s growth as a major contender in global oil and gas,” CH Tong added.



Keeping busy with peak deliveries



FPSO *Capixaba* which will be back for a modification first came to Keppel Shipyard for a fast-track conversion which was completed in 2006

Keppel Shipyard has been kept busy in 2009 with 12 major projects expected to be delivered this year. This comes on the back of a buoyant year it enjoyed in 2008, completing about 380 shiprepairs and delivering six Floating, Production, Storage and Offloading vessels (FPSO), one Floating Storage and Re-gasification Unit (FSRU), one Gas FPSO (GFPSO), and one drillship.

Its last delivery of 2008, in December, was to Prosafe Production one of the world's largest GFPSOs. *Cidade De São Mateus* has a gas compression of 10,000,000 m³ per day and processing capacity of 35,000 barrels of fluid per day (BFPD). It achieved a safety record of 5.3 million man-hours without lost-time incidents (LTI).

Projects delivered in 1Q 2009

Keppel Shipyard has already delivered three vessels in the first quarter of 2009. This includes the world's first drilling FPSO (FDPSO), *Azurite*. The vessel is equipped for drilling into deepwater oil fields as well as production capacity of 60,000 barrels of oil per day and 18,000 mscf for gas. It achieved 3.7 million man-hours without LTI before it sailed off in January this year.

in 2009

The other deliveries include the completion of the jumboisation of a dredger, the Queen of Netherlands, and the FPSO conversion of *Cidade De Sao Vicente* for BW Offshore.

Projects in the yard

Keppel Shipyard secured two major projects in the first quarter of 2009 for the construction of a derrick lay barge and the modification of FPSO *Capixaba*.

The yard is presently undertaking eight conversion projects along with two vessel constructions/integrations and a turret fabrication job.

One such project of note is the conversion of *Golar Winter* from an LNG carrier to an FSRU. Expected to be delivered in

October 2009, it will be the second of its kind to be done in the world. Keppel Shipyard completed the world's first FSRU on its sister vessel, *Golar Spirit*, last year.

In the second half of 2009, Keppel Shipyard is looking to receive several projects into its dock such as the second drillship, *Bully II*, and the return of FPSO *Capixaba*. *Bully II*, like *Bully I*, will be a new built vessel that is designed for mooring and operations in ultra-deepwater arctic conditions. FPSO *Capixaba*, previously converted from a tanker in 2006, is returning to Keppel Shipyard for refurbishment and upgrading works.

Keppel Shipyard has completed a total of 81 FPSO/FSO/FSRU conversion, upgrading and repair projects since 1981.

Safety Excellence

Keeping to its commitment of high HSE standards, Keppel Shipyard expanded on its Safety Excellence 2010 initiative launched in May last year. Some 9,000 direct and subcontract workers were trained through programmes such as the Safety Leadership Programme, the Workforce Safety Promoter Scheme and the WSH Officer Conversion Scholarship.

The yard achieved an enviable accident frequency rate of 0.13 reportable incidents per million man-hours worked for the 1st quarter of 2009. This was for the 81 vessels it repaired as well as the three major projects delivered in the same period.

Enhancing capabilities

Building on its operational efficiency, Keppel Shipyard is constructing an automated pipe panel line workshop. It will be one of the largest in Asia when completed in June 2009 and will increase efficiency and productivity markedly.

Measuring 100 metres by 80 metres, the finished pipe panel line workshop will contain a carbon steel line and stainless steel line where operations such as mechanized welding are fully automated.

It will have a fully air-conditioned clean room for super duplex pipe materials and a 4 metres X-ray bunker for conducting non-destructive testing of welded portions. 21 cranes will be installed to facilitate the easy shifting of pipes.

Major Projects currently being undertaken in Keppel Shipyard	Customers
FPSO Conversion 1 <i>Ningaloo Vision</i> 2 <i>BW Pioneer</i> 3 <i>P-57</i> 4 <i>Peregrino</i> 5 <i>Okha</i> 6 <i>Armada Perdana</i>	Prosafe Production BW Offshore Single Buoy Moorings Maersk FPSOs Single Buoy Moorings Bumi Armada
FSO Conversion 7 <i>M3 Susanne</i>	M3nergy
FSRU Conversion 8 <i>Golar Winter</i>	Golar FSRU Corp
Other Major Projects 9 <i>Bully 1</i> 10 <i>FPSO Skarv's Internal Turret</i> 11 <i>Derrick Lay Barge</i>	Frontier Drilling and Shell JV Single Buoy Moorings Bumi Armada

Upsize the Queen

Keppel Shipyard has successfully completed the lengthening and modification of the *Queen of the Netherlands*, a trailing suction hopper dredger vessel ahead of schedule with zero lost-time incidents (LTI).

Completed on 13 March 2009, the *Queen of the Netherlands* was lengthened by 54 metres with the addition of a mid-ship section weighing 4,750 tonnes.

Further, the hopper capacity has been increased from 23,347 m³ to 35,500 m³. With the increased capacity, the dredger is now one of the largest in the world.

This is the second jumboisation contract from repeat customer, the Royal Boskalis



At Keppel Shipyard, the *Queen* is upsized to dredge deeper

Westminister Group (Boskalis), and is testament to Keppel Shipyard's expertise in undertaking such specialised shipbuilding work.

Keppel Shipyard, in 2000, completed the jumboisation and upgrade of another similar vessel, *Seaway*, for Boskalis.

The vessel is now able to dredge depths of 67 metres for the port side trailing suction pipe and up to 83 metres for the starboard side.

The *Queen of the Netherlands* is a self-propelled, highly manoeuvrable vessel. The advantage of this vessel is its ability to load its own hold or 'hopper' while moving or 'trailing' slowly along a pre-set course.

The giant dredging ship left Singapore for Melbourne, Australia where it will be digging up 23 million cubic metres of silt from Port Phillip Bay under strict environmental controls.

Safety scores in fast-track delivery

B*W Cidade De Saõ Vicente* sailed off to the Brazil on 8 February 2009 after the floating production, storage and offloading vessel (FPSO) completed her fast track conversion in Keppel Shipyard.

Completed in seven months, the project also recorded zero LTI in over 1.2 million

man-hours worked. This was achieved by the close partnership of Keppel Shipyard with the owners, BW offshore, who placed great emphasis on safety.

Keppel Shipyard (Benoi) Project Manager, Kelvin Ho, said, "It was quite a challenge completing this project on time as there were a number of variables that were difficult to anticipate. However, we managed to not only successfully deliver this conversion on time but with zero LTI because of the excellent teamwork with our clients, contractors and the

classification society. This is our third project for BW and our partnership has grown even stronger with the delivery of this project."

Commending Keppel Shipyard's project management skills, BW Offshore contributed to Keppel Shipyard's efforts with safety and delivery incentives.

The vessel which was first converted by Keppel Shipyard in 1996 had its hull, turret mooring, marine systems as well as its telecommunications upgraded. *BW Cidade De Saõ Vicente* is the first FPSO to enter the gigantic TUPU deepwater field outside Rio de Janeiro. It has a processing capacity of 40,000 barrels of oil per day and a storage capacity of 1 million bbls.

***BW Cidade De Saõ Vicente*, the third FPSO converted by Keppel Shipyard for BW Offshore, was delivered on time with zero LTI**



Subic Shipyard expansion on track



Civil works are ahead of schedule for the drydock expansion in Subic Shipyard

Subic Shipyard and Engineering, Inc. (Subic Shipyard), an associate of Keppel Philippines Marine, Inc., made remarkable progress in 2008 due to major conversion and shiprepair projects. The yard repaired 62 foreign flag vessels and one local vessel as compared to 47 foreign flag vessels and two local vessels in 2007.

The yard also completed the initial phases of the conversion work on Floating, Production, Storage and Offloading (FPSO) vessels *Lewek* and *Ninglao Vision*, completed the conversion carried out on the Aframax oil tanker *Iron Monger 3* and constructed the floating crane barge, *Princesse Abby*.

Committed to constantly improve its service and capabilities, Subic Shipyard's upgrading of its facilities is on track and ahead of schedule since it rolled out its expansion program in November 2008 to its existing offshore fabrication, shiprepair and conversion operation.

The lengthening of the 350,000 dwt capacity graving dock from 350 metres to

550 metres is already 43% complete.

Equipped with an intermediate gate that will provide co-drydocking flexibility, the drydock will be ready to accommodate its first vessel by August 2009 while the final end wall and ramp is being completed.

The upgraded drydock will be fully operational by November this year making it one of the longest shiprepair dock in the world.

The 175 m jetty extension project is also 45% complete. The shipyards' two quays

will be 351 metres and 312 metres long allowing for more effective service to Panamax and Capesize vessels sailing into the shipyard for repair.

Subic Shipyard is also ramping up its shipyard capability with the acquisition of two portal cranes with a 35 tonne lifting capacity and a 100 metres jib and the concreting of the Fabrication Area.

Human resource development is also a key component to Subic's expansion program with the construction of its training center already 38% complete. It will be ready for use to impart shipyard skills and increase technical competencies to its trainees by July 2009.

"This investment is expected to create 2,000 new jobs to our existing workforce which already averages at 2,500 workers including regular and project employees and contractor workers," explained Mok Kim Whang, President of Subic Shipyard.

"When the global economy recovers in due time, Subic Shipyard will be in a better position to quickly seize the new opportunities that will emerge and that will be created in the offshore, shiprepair and conversion market," he added.



A more comprehensive training center takes shape

Core strength



Left pic: Mark Aitken (right), Site Manager for SKDP congratulates CH Tong, CEO of Keppel Offshore & Marine for achieving the safety milestone

Right pic: Marcus Chew (left), Business Development Manager of Seadrill and Tan Lye Soon, Senior Project Manager of Keppel FELS at the strike steel ceremony of West Berani III

Executing with excellence in each and every single project is a challenging task, but also one that Keppel delivers with consistency.

As Aristotle said, “We are what we repeatedly do. *Excellence* is not an act but a *habit*.” At Keppel, our relentless focus on delivering on time and within budget has enabled us to achieve several milestones successfully.

Safety first

SKDP1, a jackup rig being built to Keppel’s proprietary KFELS N Class design for Skeie Drilling and Production (SKDP), a member of the Skeie Group, achieved two million man-hours without loss-time incidents.

To commemorate the achievement, Mark Aitken, SKDP’s Site Manager presented Keppel FELS with a \$20,000-bonus on 27 February 2009.

Developed by Keppel O&M’s R&D arm, Offshore Technology Development, the KFELS N Class jackup rig will provide customers the flexibility of having a unit that can undertake drilling and production activities concurrently.

Double strikes

West Berani III and *West Juno*, two projects that Keppel FELS is constructing for Seadrill, achieved their respective strike steel milestones on 24 February and 3 March 2009, marking the commencement of the physical construction phase of the rigs.

Both projects are being built to Keppel’s proprietary designs. *West Berani III*, a semisubmersible drilling tender rig (SSDT), is based on the KFELS SSDT™ 3600E design. When completed, it will join Seadrill’s fleet of six other KFELS SSDT™ rigs. Keppel FELS is presently constructing the sixth drilling tender of this fleet, *West Vencedor*, for delivery expected at end-2009.

West Juno is based on the KFELS B Class jackup drilling rig design. Since the launch of the design in 2000, Keppel FELS has secured 33 orders for such units.

Cost effective and readily upgradable to higher performance capabilities, the KFELS B Class rigs incorporate Keppel’s advanced and fully-automated high capacity rack and pinion elevating system, and self-positioning fixation system.

These rigs will be able to operate in water depths of 400 feet with drilling depths of 30,000 feet and accommodate 112 men.

Laying keel

In a separate event on 27 March 2009, *Alpha Star*, a deepwater drilling unit celebrated its keel laying milestone.

Built to the DSS™ 38 design jointly developed by Keppel's Deepwater Technology Group and Marine Structures Consultants of The Netherlands, *Alpha Star* is the second such rig Keppel FELS is building for Queiroz Galvão Óleo e Gás (QGOG).

Rigs in the DSS™ Series that are able to operate at water depths of 3,000 metres and drilling depths of 10,000 metres below the mudline makes the DSS™ Series well-suited to operate in offshore Brazil, West Africa, Gulf of Mexico and Southeast Asia. The DSS™ Series also features reduced emissions and discharges,

offering an environmentally friendly solution for the global offshore industry.

Keel laying is the next significant milestone of a project after strike steel and is symbolised by the placement of the first block of a rig's hull on keel blocks, marking the start of hull assembly phase.



(From left) Anders Leland, Head of Projects of Seadrill; Ian Shearer, Senior VP Australasia Jack-ups of Seadrill; and Daniel Chang, GM (Projects) of Keppel FELS share thoughts at the strike steel ceremony of *West Juno*



Rodrigo Ribeiro (right), Site Manager of QGOG and BH Woo, Keppel FELS Senior Project Manager congratulate each other for a job well done

Team work delivers

Close collaboration with customer enables an excellent project to be delivered, earning Keppel FELS a bonus.

This sums up the *Trident IX* major repair project undertaken by Keppel FELS for Transocean which was completed on 19 February 2009.

In appreciation of the shipyard's commitment which saw the delivery of *Trident IX* back to its owners on time, within budget

Keppel FELS Shipyard Manager, Roger Leng (second from left), hands *Trident IX*'s key to Rig Manager, Terry Jewitt (first from right). With them are (from left), Ian Chin, Keppel FELS Project Manager, Allan Black, Transocean Project Manager and Ryan Kan, Keppel FELS Project Superintendent



and brandishing a perfect safety record, Transocean has awarded a bonus to Keppel FELS.

Ian Chin, Keppel FELS Project Manager, said, "Through open and daily discussions with the Transocean project team, we were able to produce dynamic solutions to overcome challenges faced during the project. Both teams shared a common goal and that was to get *Trident IX* back on its client's drilling programme."

While operating offshore of Vietnam, it was determined that the jackup had to undergo extensive leg tubular renewal, chord repair and hull steel renewal, amongst others, before operations could continue.

Upon arrival in Singapore on 22 September 2008, the Transocean team, led by Project Manager Allan Black together with the Keppel FELS team, led by Ian, worked closely to put the rig back in operation.

"A lot of time was also saved due to Transocean's foresight to drydock the vessel instead of employing the underwater inspection in-lieu of drydocking option. It allowed us to quickly address the repairs on the spudcans," said Ian.

Within five months, *Trident IX* had a new lease of life. The project culminated with the lifting and installation of its new legs followed by a successful jacking trial.

Allan said, "It has given me great pleasure to work on the *Trident IX* project with the people from Keppel FELS, a first-class team who rose to the challenge and delivered a first-class job."

Trident IX left Singapore on 25 February and has arrived safely in Vietnam to resume her drilling programme.

Congratulating the Keppel FELS team for the successful completion of the project, Dick Verhaagen, Director of Projects, Transocean Asia-Pacific Unit, said, "First of all, thanks to the Keppel FELS team for their excellent work on this project. In many ways, what we did together on this project could be a text book example of good coordination, communication and team work."

Echoing his sentiments was Charles Keaton, Director of Projects and Upgrades, Transocean he said, "My thanks and congratulations go to the Keppel FELS team. It was a successful project."

Smooth operations – Rowan's jackups are on track

The construction of the Rowan EXL (formerly Super 116E) class jackup rigs at Keppel AmFELS in Brownsville, Texas is well on track with deliveries lined up from 2010 through 2011.

The EXL class rigs employ the latest technology to enable drilling of high-pressure, high-temperature and extended-reach wells in prominent jackup markets throughout the world. They are also equipped with the hook-load and horsepower required to drill efficiently beyond 30,000 feet. The rigs feature leg lengths of 477 feet and are capable of operating in water depths of up to 350 feet.

In recent years, Keppel AmFELS has successfully delivered seven newbuild jackup rigs to the highest satisfaction of its customers.

Coupled with its rich expertise and experience, the yard's continuous improvement to its systems and processes has also yielded commendable productivity gains in the building of the EXL jackups. Modular construction and early block outfitting methods were employed on these rigs to enhance building efficiency.

As a result of strong project execution, most project milestones were achieved as planned, while some major activities were accomplished ahead of schedule.

Keppel AmFELS is looking forward to the successful delivery of the EXL rigs to Rowan, on time, within budget and without incidents.



The hull of the first jackup taking shape on the shipyard's launchway



Progress of the second unit's centre hull strip is on track



The managements of Rowan and Keppel commemorate the strike steel milestone of the third unit in November 2008

Milestones at Philippine yards

Launch of double hull tanker

Keppel Batangas Shipyard (Keppel Batangas) launched the newly constructed 1,600 dwt double hull fuel oil tanker barge for Batangas Bay Carrier Inc. on 26 March 2009, 14 months after laying its keel.

Christened *M/T Star Sirius*, this new addition to the fleet of the Magsaysay Transport and Logistic Group is designed with the capability of loading and discharging black petroleum products.

Doris Ho, President and CEO of the Magsaysay Group, commended the project teams and said, "This vessel is our commitment to the more stringent requirement from the government, to improve the maritime safety standards of the country."

She added, "We are thankful that this newbuilding project was by Keppel. It is a company that we have worked with for a long time and is close to our heart."

"Keppel Batangas' presence here for more than 30 years is a testimony to the hard work and commitment of its entire workforce. I am very happy to hear that it is very close to the heart of the Magsaysay Group," lauded Guest-of-Honour, A Selverajah, Singapore Ambassador to the Philippines.



Doris Ho (left) and A Selverajah (right) witness Lady Sponsor Mary Selverajah do the honors of launching *M/T Star Sirius*

The 72.70 m long and 14.80 m wide self-propelled tanker barge has been constructed in compliance with the double hull requirement of the local maritime authority for all barges and tankers and the strict safety standards of the oil majors. The barge will be chartered to Chevron Philippines Inc. upon its delivery.

Delivery of ENSCO 8503 pontoons

Keppel Batangas added another notch to its offshore fabrication record with the successful delivery of the port and starboard pontoons for the deepwater semisubmersible (semi) rig, *ENSCO 8503*, on 20 March 2009 on time and with good safety records.

The shipyard has been doing additional jobs for the ENSCO 8500 Series® since it delivered its first fabrication works for Keppel FELS in 2006. On this project, Keppel Batangas fitted the anchor fairlead, the remote operated vehicle (ROV) rack and the thruster hydraulic pipings on the pontoons.

"Back then, we were a bit skeptical when the shipyard was chosen to do the pontoon and lower columns. Keppel Batangas has proven from *ENSCO 8500* till now that any doubts were unfounded. Today, we

witness an outstanding product. We can proudly say that Keppel Batangas has built our foundations for our deepwater series!" exclaimed Geoff Marchment, ENSCO International's Mechanical Superintendent.

All four ENSCO fabrication works have been successfully completed with a record of almost 10 million man-hours without any Lost-time incidents (LTI). The shipyard has also safely finished its four other pontoon fabrication projects for Transocean, QGOG, Maersk Drilling and Floatel International.

"We are indeed honoured by Keppel FELS and ENSCO who have entrusted us to continue fabricating the semis' pontoon structures. The fifth project, the *ENSCO 8504* lower pontoons, is already in progress," said Kok Boon Heng, President of Keppel Batangas.

Both pontoons were towed from the Philippines to Singapore on 26 March 2009 where it will be joined together with other superstructures and where other equipment will be installed to form the complete semi.

In Safe Hands at Keppel Batangas

Keppel Batangas celebrated 12 million



Guest-of-Honour, Ann Rachelle S. Leviste (third from right), at the delivery ceremony of the pontoon structure



Keppel Batangas celebrates achieving 12 million man-hours without LTI in 2008



HSE officers highlight fire safety tips to the workers during a fire and evacuation drill onboard a vessel

man-hours without LTI for all its offshore, shipbuilding, repair and conversion projects for the whole of 2008. The safety milestone celebration was attended by the project teams, clients and subcontractors at the shipyard on 16 January 2009.

During the ceremony, safety awards were presented to its top three subcontractors whose support and cooperation have pushed the bar of safety standard in the workplace for others to emulate.

Drilling in the safety culture

With its 2009 motto of 'Safety starts with me', Keppel Batangas continues to espouse the value of safety with its yard-wide general Health, Safety and Environment (HSE) re-orientation seminar for all employees and subcontractors. Constant reminders such as signages, safety alerts and seminars help to drill in the safety culture.

Running from February to April, all yard personnel are required to attend the three-hour safety seminar conducted by the HSE department which covers basic rules and regulations.

Four sessions are conducted daily and a

total of 500 Keppel Batangas employees and 800 subcontractor workers have already completed the programme as of March.

As an added incentive, participants are issued a colorful safety baller ID as constant reminder to adhere to safety practices and procedures. Romel Mojica, a subcontractor employee, said at the end of the seminar, "I have learnt a lot today about shipyard safety. Indeed, safety starts with me."

Fire safety march

Since 1967, March has been decreed as the Fire Prevention Month in the Philippines with month-long activities rolled out on public safety and fire awareness.

Keppel Batangas supported the Bureau of Fire Protection's (BFP) campaign under this year's theme of "Fire Safety: A Concern, Priority and a Concern for Everybody" with a fire and evacuation drill on 30 March 2009.

Reacting to a simulated fire in one of its cargo hold, workers and crew on board the drydocked *M/V Harpoon* were evacuated in an orderly manner at the mustering station in record time while

their supervisors conducted a headcount. The fire fighting team arrived shortly and quickly put out the simulated fire.

"The risk of fire is always a safety concern in the shipyard. With the HSE safety programmes and initiatives, everybody is aware of the importance of keeping the workplace safe and of how to respond if such incidents occur," said Kok Boon Heng, President of Keppel Batangas.

Bureau of Fire Protection confers award to Keppel Cebu

During the BFP's 43rd Fire Prevention Month, Keppel Cebu Shipyard was one of the selected corporations from across the country awarded a plaque in recognition of its invaluable assistance to the government's fire fighting efforts.

"We thank Keppel Cebu for its remarkable cooperation to the Bureau's cause," said Chief Supt. Rolando M. Bandilla, Jr., BFP Acting Chief at the BFP National Headquarters.

Keppel Cebu's HSE Department assisted the BFP in its school-to-school information campaign by conducting fire and safety lectures to the students inculcating in them the need for prevention and vigilance during fire emergencies.

BW Pioneer celebrates safety excellence

A strong safety culture at Keppel contributes towards operational excellence, reinforced by continuing efforts to spread the safety message across the Group.

Below are the numerous safety milestones achieved and initiatives carried out to nurture the safety culture and mindset.

Charity in Safety

The project team for *BW Pioneer* celebrated the achievement of one million man-hours without lost-time incident (LTI) by donating to the Children's Cancer Foundation (CCF).

Held on 11 February 2009, more than 2000 people working on the Floating, Production, Storage and Offloading (FPSO) vessel conversion project turned up to show their support for the safety milestone and donation drive at Keppel Shipyard, Tuas. Total donations amounted to more than \$4000.

Jamil Abdul Ghani, Senior Project Manager of Keppel Shipyard said, "Safety, health and caring go hand-in-hand. Achieving this safety milestone was a result of close cooperation and camaraderie of the project teams comprising the owners, the yard and its contractors."

He pointed that the main challenge is getting the different nationalities working on the project to identify and eliminate hazards. One such initiative, the 'Housekeeping campaign', where workers are encouraged to identify and submit a report on potential hazards, has helped increased workplace safety significantly.

Ms Yenni Novita of CCF said, "CCF appreciates your understanding towards the plight of children with cancer and their families in Singapore. Your support certainly makes a difference to them as they face difficult times in their battle against childhood cancer. We look forward to more fruitful partnerships with Keppel for many years to come!"

Together we care: (L-R) Juwy Lim (Assistant HSE officer, Keppel Shipyard), Peter Williams (Petrobras America site manager), Jamil Abdul Ghani, Stig Helland (Safety Superintendent) and Vinoth (Safety Officer, BW Offshore) celebrating safety and charity



Excellent start at Keppel Verolme

The first few months of 2009 proved to be a busy period for Keppel Verolme. The yard carried out works for several types of offshore vessels such as drilling and accommodation rigs and semisubmersibles (semi).

Regalia

Multi-service semi *Regalia* is currently undergoing major refurbishment and outfitting works for Prosafe Rigs Pte Limited at Keppel Verolme. The semi accommodation platform had arrived in the yard at the end of 2008.

The vessel will get a major face-lift which includes the renewal of the entertainment, catering, office and exercise facilities. She will also have her main engines renewed, thrusters and dynamic positioning system refurbished, and her hull blasted, painted and provided with a new ICCP system. Also, new accommodation blocks for 200 people are added.

Regalia is scheduled to be completed in the second quarter of 2009 and will be deployed in the Norwegian Continental Shelf.

Seafox 1

Another special project that Keppel Verolme is working on is the self-elevating accommodation, maintenance and workover jackup platform, *Seafox 1*, for Dutch owner Workfox BV Ltd. The platform was drydocked in early January 2009 at the mammoth dock no 7 in order to facilitate the maintenance and repair of the legs as well as the leg guide arrangement. The legs were removed from the unit and placed in a horizontal position on the drydock floor.

Lifting and replacement of the legs were carried out by means of a tandem lifting operation by a mobile crane and one of the yard dockside cranes. Other works that were carried out were the installation of additional power generation, two new fully-enclosed lifeboats, the complete refurbishment of the existing accommodation and the installation of a 300 tons heavy lift pedestal crane.

Maersk Resolve

The jackup rig *Maersk Resolve* arrived

at Verolme on 15 March 2009. She was built at Keppel FELS and delivered to the owner Maersk Drilling right before her dry-tow to Rotterdam on board a heavy lift vessel. The rig will stay for a few weeks at Rotterdam for final preparations before serving her first two-year contract for Maersk Oil and Gas in the North Sea.

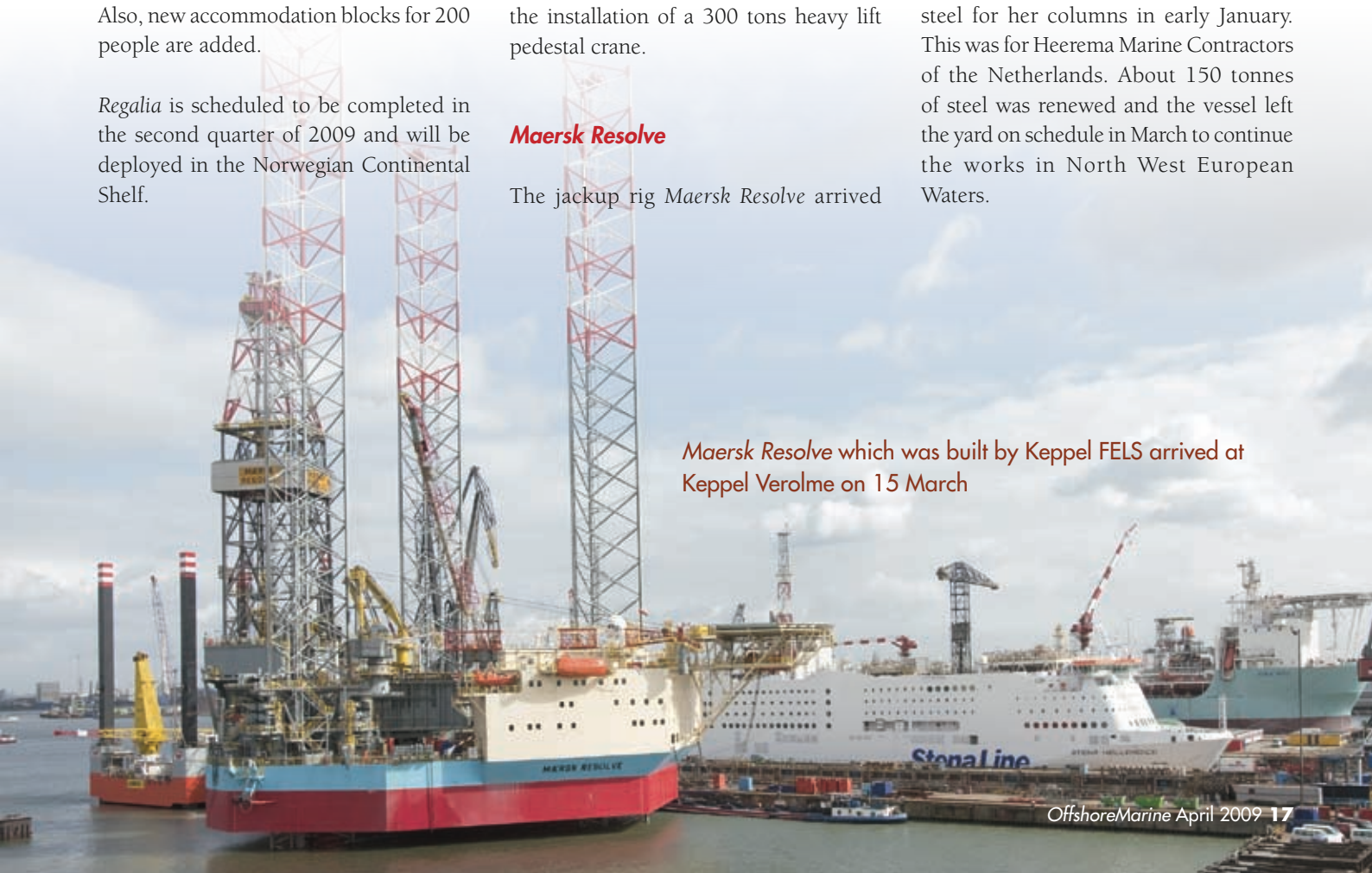
GSF Monarch

GSF Monarch, a jackup drilling rig from Transocean arrived at Keppel Verolme for a 50-day maintenance programme and leg repair. The rig will be drydocked for spudcan inspection and a hull painting programme

Hermod

A crane vessel *Hermod* entered the yard for maintenance work and renewal of steel for her columns in early January. This was for Heerema Marine Contractors of the Netherlands. About 150 tonnes of steel was renewed and the vessel left the yard on schedule in March to continue the works in North West European Waters.

Maersk Resolve which was built by Keppel FELS arrived at Keppel Verolme on 15 March



The difference at Keppel O&M

There is something special about Keppel Offshore & Marine (Keppel O&M).

For a group that has turned six consecutive years of record revenue and profits with the latest to the tune of \$8,569 million and \$705 million respectively in 2008, some may find it curious that they held their annual CEOs' meeting in a classroom in Keppel FELS Pioneer I yard recently.

This jived with the message by the group's new CEO, CH Tong, to adopt a cost-conscious mindset.

Even in the boom years when the market was hot, the group would rather save its hard-earned money unless an investment was necessary and able to pass the high threshold set by Keppel Corporation's New Investments and Divestments Steering committee.

With the latest global turmoil created by failures in the financial market, CH Tong urged CEOs across Keppel O&M's operations to be even more judicious in their capital, manpower and operational expenditures. Many CEOs

and Senior Executives are already flying on economy-class for their business trips.

Amid the pall of gloom, there are bright spots which CB Choo, Chairman of Keppel O&M told the gathering of about 40 CEOs and Corporate Services Heads that they must aggressively seek after.

Oil majors had said that they would continue to invest in field development. There are works still from the national and independent oil companies.

He added that there are opportunities for acquisition of strategic businesses that can create sustained value and reinforce the group's market share.

Highlighting his commitment to talent development and succession, CB Choo also emphasised to the younger CEOs, "We are building a business that will last. CH Tong, Sit Peng Sang and I want to ensure that the business will one day be yours to lead."

On the current market environment, he warned that competition will be very stiff. With the

Managing its wide network like a tight ship, Keppel O&M is determined to use its 'near market, near customer' advantage to better serve its global customers



steep decline of the Won, Korea is much more competitive now. This is why Keppel O&M yards, each with its unique expertise and resources, must collaborate and support one another. One area mentioned was engineering. It was also important for the yards to exchange notes on their strengths and weakness.

At the meeting, each CEO also presented his yard's top 10 strengths and top 10 weakness. Each CEO had to account for the yard's performance and share how the yard was tackling the challenges presented by the turmoil in the business.

For a subject this weighty, there was a surprising air of lightness and candour as the respective CEOs took centre stage. The fascinating chemistry among senior management belied the longevity of their relationships, which is essential to mutual trust and unity.

Clearly, there was much positive energy and an eagerness to work together across regions, which was evident in the smaller group discussions that took place in the between-times during the two-day meeting.

But the greatest excitement was in the half-day session allocated to Keppel O&M Technology Centre. The fledgling technology centre has been a hive of intense activity in the last year, achieving a milestone of submitting eight

projects for patent since inception in end-2007.

Working closely with the frontliners, all its projects are sponsored by at least one of the business units and are addressing issues of immediate field concerns. Their achievements have been encouraging and targets are being discussed to commercialise some of these.

As the meeting wrapped up, all present knew they had much on the plate to do.

Collectively, they could name close co-operation with stakeholders, customer relations, business focus, high standards in HSE (Health, Safety and Environment) and technical knowledge as some of the group's key strengths.

Yet they would have to work on improving several areas including teamwork, operational planning and management, IT infrastructure and supply chain management, beyond the immediate business concerns on hand.

But they also knew that everyone is in the same boat helmed by the head office in Singapore. CH Tong, in his candid, crispy manner emphasised, "You don't have to feel compelled to make decisions without seeking advice from the parent company. Know that whatever outcome of the individual unit's decision will impact the group."



Deepening friendship with Ensco

*In the spirit of our fathers
Make a difference to the land
And with our fellow men
The future's in our hands
Let's keep the spirit strong*

The chorus lyrics from the opening Peranakan musical dance performance aptly summed up the buoyant atmosphere at Keppel FELS, as it celebrated with the owner, the naming of ultra deepwater rig, *ENSCO 8501*.

Dan Rabun, Chairman, President and CEO of Ensco said, "We are very proud to be here with our friends at Keppel FELS, who share our determination and resolve for excellence in everything we do, as well as our unwavering commitment to the safety of our employees.

"The Ensco/Keppel FELS partnership has many years of history and is something we consider very special."



ENSCO 8501 is the second drilling rig in the highly efficient fleet of seven ultra deepwater semis that Keppel FELS is constructing for Ensco

The second in a series of seven similar deepwater semis to be constructed by Keppel FELS for Ensco, *ENSCO 8501*, will be chartered by Noble Energy (Noble) and Nexen Petroleum (Nexen). The first deepwater rig, *ENSCO 8500*, was delivered in June 2008.

The rig was named in the presence of Senior Minister of State (SMS) for National Development, Ms Grace Fu, by Lanita Weisinger, wife of Don Weisinger, Drilling Manager (Southern Region) at Noble.

On her first visit to Keppel FELS, SMS Fu commented that "the packed and busy yard is truly a sight to behold".

In her speech, SMS Fu said, "Despite the global financial turmoil and volatile oil prices, the long-term outlook for the oil and gas industry remains good. There is sustained energy demand coming from both developed and emerging economies.

"For this reason, national and international oil companies are continuing their exploration and production investments

SMS Grace Fu experiences life at the helm of ENSCO 8501



Little Nonya welcomes Mrs Lanita Weisinger



(From left) CB Choo, his wife Eileen Choo, Grace Fu, Don Weisinger of Noble; Lady Sponsor Lanita Weisinger, Dan Rabun, CH Tong, Brian Reinsborough of Nexen, Bill Chadwick of Ensco & Michael Chia

to boost future reserves. However, competition is expected to be very stiff. To thrive, offshore companies like yours will have to stay focused on managing the market changes with flexible and innovative measures.”

The *ENSCO 8501* is capable of drilling in 8,500 feet of water, and can be upgraded to 10,000 feet water-depth capability if required. It has a drilling depth of 35,000 feet and can accommodate up to 150 men.

When delivered in the middle of the year, it will be contracted to Noble and Nexen

for operation in the Gulf of Mexico. The energy rich region covers an area of about 1.5 million square kilometres and is bounded by the United States of America, Mexico and Cuba.

CH Tong said, “The rich collective experience and insights we have gained on *ENSCO 8500* has enabled us to execute *ENSCO 8501* with greater engineering and construction efficiency.

“I am pleased to announce that we have maintained an incident-free record on the construction of *ENSCO 8501*. Safety is a core value that both Keppel and Ensco

hold close to heart. This achievement would not have been possible without the strong partnership, open communication and excellent collaboration between the Keppel and Ensco teams.

“As we progress on the subsequent semis, we are committed to deliver them on time, within budget and with the highest standards of safety.”

Keppel and Ensco have enjoyed a two decade-long partnership, during which they have worked closely to build up and renew Ensco’s rig fleet. This includes the delivery of nine new jackup rigs.

Learning along the way

Some of the best lessons are learnt when tackling challenging circumstances. The experiences and knowledge gained are invaluable for the benefit of future projects and teams.

With this in view, Keppel FELS set up a Lessons Learnt Taskforce in 2005. This move was part of the company's continuous effort to improve efficiency and enhance operational excellence.

As the name of the Taskforce implies, lessons learnt and experiences gained on ongoing projects are captured and applied effectively to subsequent ones.

Lim Ah Cheng, Keppel FELS' Assistant GM (Operations), shared, "All new projects come with challenges that could affect efficiency, budget, schedule, quality and safety. We want to continuously learn from each experience so that we can do it right the first time, every time."

The offshore projects undertaken by the world's leading rig designer and builder involve a series of complex chain-processes over a long period of time. Each stage of the project affects the next, and ultimately the end result of the project.

The process of learning is on-going. While delicate areas in projects are continuously being observed and corrected at the project level, the Taskforce reviews and systematically records them, including the corrective actions taken.

The task force also ensures that this information is shared at the company level during weekly meetings, chaired by Mr Lim.

These meetings are held with senior representatives from all departments and sections, as well as their junior colleagues as part of mentoring and succession planning. Furthermore, project teams who have contributed the

lessons learnt are invited to participate and share in the meetings.

The considerable attendance is not only to ensure that lessons learnt are communicated to everyone, it is also to collectively find the root cause of any issues raised and to quickly nip it in the bud.

In addition, all lessons learnt recorded by the task force are also uploaded and stored in the Global Engineering Management System (GEMS), a Keppel O&M group-wide knowledge sharing IT platform where employees can constantly access to retrieve project related information.

"When employees encounter difficulties in the course of their work, they should adopt a positive mindset and actively contribute the lessons learnt so as to benefit the organisation," said Ah Cheng.



The lessons learnt taskforce led by Lim Ah Cheng (first from left), Keppel FELS Assistant GM (Operations)

Breaking the ice with a warm welcome



Living up to its commitment towards talent development through continual investment in training and development initiatives, Keppel O&M held its Graduate Engineers' Meet-the-CEO Session on 19 February.

"In the good and bad times, we never stopped training, developing and empowering our workforce," said CH Tong, CEO, Keppel O&M during his address to the 70 fresh graduate Engineers from Keppel FELS, Keppel Shipyard and Keppel Singmarine.

To be held every half a year, the sessions provide a platform for fresh graduate engineers on the Management Trainee Scheme to meet the Organisation's senior

management and network with peers from the different business units.

In addition, the sessions also help participants better understand the performance management system as well as career progression opportunities under the Management Trainee Scheme.

Teambuilding activities to enhance camaraderie, imbue esprit de corps and internalise Keppel O&M's core values amongst the Management Trainees are also included in the curriculum to give these freshmen a sense of belonging and motivation to strive for the organisation.

Through the activities, individuals who portrayed outstanding qualities

were nominated by their peers as Best Comrades. The three proud recipients of the Best Comrade award for this session were Michelle Oh of Keppel Singmarine, Teo Keng Siong of Keppel Shipyard and Benjamin Sum of Keppel FELS.

At the end of the session, participants are required to take the Organisation Climate Survey to assess recently recruited employees' opinion of the organisation.

Jacky Toh Shu Den, Graduate Engineer from Keppel FELS' Production Piping Section, shared, "The session was insightful as it gave us a clearer perspective of our roles and responsibilities. Presence of senior management during the workshop really enhances our morale as it shows their involvement and commitment."

Rig Solutions in the era of difficult oil

By CH Tong, Chief Executive Officer, Keppel O&M

Offshore oil and gas exploration and production (E&P) is barely six decades old yet the industry has already been pushing into the ultra deep water depths of up to 12,000 ft. Its latest frontiers lie in the difficult terrains of the Caspian Sea region and the Arctic Ocean where the winter temperatures can reach below -60° C. In these environments, men and equipment are exposed to extreme climatic conditions and the treacherous elements of the ocean far from the shorelines.

Harvesting energy in these harsh environments is neither easy nor cheap. Operators and oil services companies are looking for companies which can deliver innovative solutions with the right quality, on time, within budget and without incidents. As a leading shipyard and offshore rig designer, the Keppel Offshore and Marine Group have to adapt, innovate and develop solutions to address their needs and challenges.

Therefore, building technology, engineering and construction capabilities are no longer a choice but a necessity for us. In light of this, we set up in 2007 the Keppel Offshore & Marine Technology Centre (KOMtech) to augment our existing capabilities. We also leverage our global network to collaborate with customers, designers, academia and research institutions to develop more market-driven products, services and systems.

With its 52 researchers, KOMtech is designing new rig solutions as well as developing equipment and techniques that are critical to the enhancement of existing solutions. In the last one year since inception, it has patented eight solutions.

Modular Drilling Rig for Harsh Environments

KOMtech, in collaboration of several Keppel O&M engineering units, is conducting for StatoilHydro AS in Norway an optimisation study of a pre-FEED (Front End Engineering Design) for the production platform Troll A which supplies 15% of Europe's gas consumption.

They have developed a concept for a fully modularised drilling unit for intervention, workover and light drilling, based on 26-tonne modules and 350-tonne hoisting capacity. The rig is planned to use from summer 2011 and two years onward, and change out production tubing for 39 offshore wells on Troll A. After that, the rig will be moved amongst other StatoilHydro fixed production rigs in the North Sea.

The rig is built around a mast with a Rotaset Racker inside, so all vertical stands are stored in the mast, and not outside as is the industry standard for similar land rigs. This innovative concept allows easy access to the drill floor on the outside of the mast, so that operations such as coil tubing, wireline work and running of tubing with special control lines, are more efficiently rigged up and run compared to similar standard rigs

Mobile Ice-Resistant Offshore Drilling Unit

Ice-resistant offshore platforms are required to tap the estimated 25% of the world's oil and gas reserves in the Arctic region. Several such platforms have been constructed and installed.



The latest are for mobile ice-resistant offshore drilling units (MIRODU) to operate in the shallow Arctic shelves. The challenges for this type of platforms are the shallow draught during tow and the large ice loads at site. Designers have to balance the need for large caisson supplemented with piles to resist heavy ice loads, heavy winterised topside for year-round operation without re-supply, marine stability during transit and mobility of these mammoth structures.

In anticipation of this need, KOMtech has designed a 150 metre by 150 metre mobile ice-resistant offshore drilling unit (MIRODU) capable of resisting 100,000-ton ice loads for the Russian shallow Arctic shelf for transit and operation in locations of 6 to 25 metres water depths.

Winterising Jackups for Subzero Regions

The slender legs of the jackup rigs have always been considered frail for the

Arctic environments. However, jackup rigs are compact and cheaper solutions especially when exploring in regions with uncertainties.

Therefore, KOMtech is developing an ice-worthy jackup rig design that can address challenges posed by the harsh icy conditions. The project focuses on engineering-related issues, particularly the truss-type leg design. One of the major areas is the understanding of ice interactions with the jackup, particularly the legs.

Design and Construction of Arctic Icebreakers

The Arctic region is ice-bound for more than 6 months in a year, and in order to make year-round export of oil and gas from the region a reality, the Russian government and several oil companies have invested heavily to develop the Varandey Terminal. The investments included two ships, a dedicated icebreaker and an icebreaking Anchor Handling Tug/Supply (AHTS) vessel which was built by Keppel Singmarine for Lukoil in 2008. Both vessels are built to "Clean Design" and "Zero Discharge" standards to better protect the Arctic environment.

The icebreaker performs ice channeling for tankers within the terminal area and assists in tanker maneuvering, mooring and loading. Capable of operating independently in ice conditions, it makes 3 knots continuous speed in 1.7m level ice.

The icebreaking AHTS cum standby vessel is built for year-round operation around Varandey in the Barents and Arctic Seas. Apart from ice channeling at the terminal area, it also performs ice escort services. With operating ambient air temperatures in the range of +30⁰ C and -40⁰ C, this vessel makes 2 knots continuous speed in 1.5m level ice.

With its experience during the design and construction phases of the vessels, Keppel Singmarine is poised to meet the owners' requirements for robust icebreaking solutions in opening up the bowels of the Arctic in search of oil, gas and other resources.

New Concrete for Offshore Structures

Recent developments in concrete technology have ushered in new cementitious composites which are high strength, light weight and impermeable to corrosive agents. These new concretes

can be engineered to be self-compacting resulting in consistent quality during construction.

KOMtech is reviewing these developments and their improvements in properties that make the new concretes suitable for applications in offshore structures. Proof of concept was carried out using a 3500dwt dry cargo barge as case study. Cost comparison against equivalent steel barge showed that this new concrete can be a viable construction material for certain offshore structures.

Approval-in-principle has already been obtained from American Bureau of Shipping for the design.

Critical Equipment and New Techniques

Beyond rig solutions, KOMtech's R&D effort is extended to include the development of critical equipment for rigs to perform their functions better, faster and safer. These include the disconnectable mooring system for Ice-Class floaters, the Rotaset Racker for vertical pipehandling and Integrated In-Situ Soil Testing Device for jackup rigs.

Continued on page 26 ►



KOMtech is developing new techniques and equipment for the difficult frontiers such as the North Sea and Arctic regions

◀ *Continued from page 25*

New techniques and systems are also being developed including devices for spudcan extraction during relocation of jackup rigs, liquefaction of associated gas during oil production, Side-by-Side Mooring Method for Offloading Operation and the post combustion control of SO_x and NO_x emissions in shipping.

Disconnectable Mooring System for Ice Class Floaters

The ability to move a floating structure quickly before and after an extreme weather condition hits is necessary for floaters operating in treacherous environments.

To be meet this need, KOMtech is designing a disconnectable mooring system that comprises external fairleads, submerged chain locker boxes and diverter units along with quick release mechanism and a single handling winch for each group of lines. The system works in tandem with the rig's ROV and an anchor handling tugboat when connecting the

system, while disconnection is automatic without any external assistance other than an emergency release signal.

Rotaset Racker for Vertical Pipehandling

Existing vertical pipe racking systems can be further improved to enhance safety and speed. KOMtech has developed a new Rotaset Racker pipehandling system.

The system has a fully automated rotating setback, and stands are automatically brought from its inner areas to the same delivery point near the well centre. Two separate, small arms are used to bring stands to the well centre. This machine principle doubles the speed of racking stands from the well centre to the setback, at the same time as the setback is more densely filled with stands. This racking machine is probably more in line with expectations from the drilling machine with regard to operational speed, at the same time as it is safer due to less reach on the pipehandling arms.

The Rotaset Racker and its rotary setbacks can be put inside a mast, and serve two well centres, one on each side of the mast. This new racking machine is especially well suited for deep water drilling units, as it can work with dual well centres, and bring casing and tubing stands from one side of the mast to the other side.

New devices for more reliable jackup operation

Reliability of geotechnical investigations and assessment of jackup leg penetration prediction are two critical factors in ensuring the safety of jackup rig installations apart from rig operations.

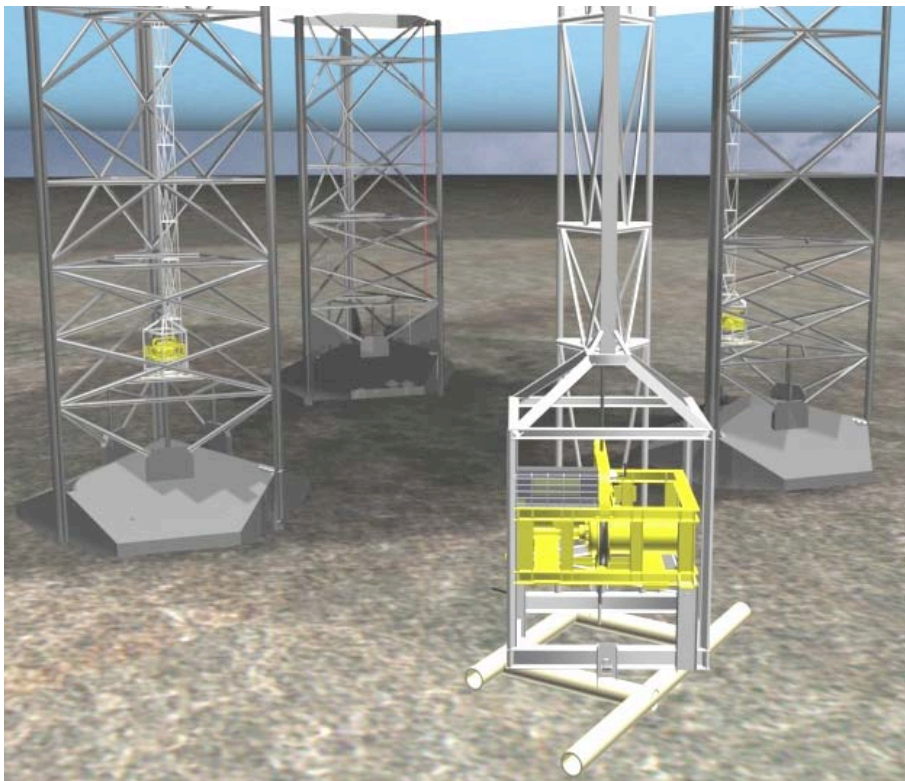
Using proven PCPT equipment and special handling system, an in-situ soil testing device is customised and integrated within jackup legs to enable soil penetration testing up to 25 metres below the spudcan. It also analyses and predicts spudcan penetrations and identifies punch-through hazards on location.

The device is jointly developed by KOMtech, AP van den Berg – one of the biggest manufacturers of soil testing device -- and Centre for Offshore Foundation System (COFS) at the University of Western Australia – a leading research institution in offshore geotechnics.

Another project has also been developed to address spudcan extraction problems, particularly where deep leg penetrations following an extended operation in clay seabed.

The new technique and system work on the principle of creating and sustaining uniform pore pressure build-up at the spudcan base during leg pullout.

A joint project of KOMtech and National University of Singapore (NUS), the new technique can hasten leg extraction while protecting the structural integrity of jackup rigs associated with prolonged leg extraction.



Using proven PCPT equipment, KOMtech has come up with an in-situ soil testing device to ensure the safety of jackup rig installations

Conclusion

The new solutions are part of Keppel O&M overall effort to maintain our leading position as the choice service provider. We are committed to further enhance our technology engineering capabilities. And with our excellent project execution, I believe Keppel O&M can offer customers designs and creative solutions that are second to none.

As we move with market trends, we are also developing products, equipment and systems to address tomorrow's challenges today.

Experience, expertise, flexibility, a *Can Do!* attitude and commitment to safety are qualities that we embrace as we seek to meet customer needs.



KOMtech's highly-qualified researchers come from various parts of the world such Europe and China

Breaking ice in the Arctic

Built by Keppel Singmarine, the icebreaker vessel, *Varandey*, has started operations for LUKOIL at the Varandey Oil Export Terminal in the Barents Sea.

Since February 2009, it will be on constant duty near the fixed offshore ice resistant oil terminal (FOIROT), 22 km from the shore and will ensure the tankers' safety during loading.

Keppel Singmarine completed Asia's first two icebreakers, built for the arctic sea in 2008. The first icebreaker, *Toboy*, was delivered to LUKOIL in August 2008.

Both *Varandey* and *Toboy* are designed to work in the harshest environments, cutting through solid ice over 1.7m thick, equivalent to the height of a grown man, and operating in extreme temperatures as low as -45°C .



Varandey has started operations in the Barents Sea, joining her sister icebreaker, *Toboy*

On track in Qatar

In Qatar, development of the joint venture shipyard, Nakilat-Keppel Offshore & Marine (N-KOM), is progressing steadily with operations expected to start in the first quarter of 2010.

The 43-hectare shipyard, equipped with two large docks and other amenities, will be able to repair and service very large LNG carriers as well as a wide range of other vessels. It will also have the ability to undertake the conversion of tankers to

Floating Production Storage & Offloading systems (FPSO) and Floating Storage & Offloading (FSO) systems, as well as rig repair, conversion and fabrication.

Situated at the Port of Ras Laffan, Qatar, N-KOM will be the largest shiprepair yard in the country.

Keppel O&M will assist in the planning, design and construction of the yard as well as the fabrication of the dock gate. They will set in place the systems and procedures necessary to operate the yard and will recruit and train personnel to work there.

Based on its experience, Keppel O&M will replicate its proven management system and leverage the resources of its global network of yards and commercial agents to ensure success for the yard.



Construction of the yard in Qatar progressing well as workers prepare the floor slab panels in dock 2

Golar Spirit receives the President

President Luiz Inácio Lula da Silva of Brazil visited *Golar Spirit*, a Floating, Storage and Re-Gasification (FSRU) vessel at the Guanabara Bay Liquefied Natural Gas (LNG) re-gasification terminal in Rio de Janeiro, Brazil, on 18 March 2009.

Golar Spirit, the world's first methane vessel to be successfully converted to perform LNG re-gasification onboard, was successfully delivered by Keppel Shipyard in October 2008.

The terminal which started the main phase of its commissioning process in February 2009 is responsible for the transference of LNG from the supply vessel to the regasifier, *Golar Spirit*. The LNG will then be regasified in *Golar Spirit* and transferred to an existing network of gas pipelines.



President Luiz Inácio Lula da Silva of Brazil congratulating the crew onboard *Golar Spirit*

Taking the lead



Chee Jin Kiong

Chee Jin Kiong, current ED of HR at Keppel O&M, will be appointed the Director of Keppel Group HR with effect from 24 April 2009. He will continue to oversee the HR function of Keppel O&M.

With close to 40 years of service to the Group having first joined the Keppel family in 1970, Jin Kiong has taken on senior roles and responsibilities across the Group from Keppel FELS to Keppel Finance.

Growing alongside the Group, Jin Kiong was in 2002 seconded from Keppel Corporation to Keppel O&M as ED of HR.

Kwok Kai Choong, Senior Project Manager at Keppel FELS, has been seconded to Keppel FELS Brasil as CEO & President with effect from 10 February 2009.

Kai Choong has 28 years of experience in the industry. He first joined Keppel in 1981 and has undertaken several roles including a secondment in the Philippines, from 1993 to 1998, to head the construction of Power Barges.



Kwok Kai Choong

His last secondment prior to Brazil was VP (Operations) in Keppel's Caspian Shipyard Company in Azerbaijan.

New President of Keppel Norway

Keppel Norway has appointed Steinar Haugen as its new President with effect from 1st April 2009.



Steinar Haugen

Steinar, 54, previously the Vice President for large projects, will spearhead Keppel Norway. Former President Inge Oliverson will remain as the Director of the company.

Steinar has more than 25 years of experience in all aspects of managing major offshore projects ranging from engineering to fabrication, installation and commissioning.

Duty to country and company

It is in his blood to respond to the call of duty.



LTC (NS) Abu Bakar (left) readily responds to the call of duty

On 4 March 2009, LTC (NS) Abu Bakar was presented with his letter of appointment as Commander of the 27th Singapore Infantry Brigade (SIB) at a solemn Change of Command ceremony in Clementi Camp.

His tour of duty requires him to ensure that all those under his command are operationally ready to protect the nation in any eventuality.

Abu Bakar is not new in handling heavy responsibilities. As Senior GM (Operations) at Keppel Shipyard, he supports ED

Nelson Yeo in leading and managing Keppel Shipyard's more than 10,000-strong multinational workforce.

With such a large workforce, safety is always given the first priority in Keppel Shipyard's daily operations.

Together with other safety partners and stakeholders, Abu Bakar actively champions various safety initiatives as part of Keppel Shipyard's Safety Excellence 2010 campaign, which aims to inculcate in everyone a sense of personal and collective responsibility for workplace safety.

Acacia shines



Working and playing hand-in-hand are Keppel's employees at Acacia Lodge, seen here participating in a road show activity



Acacia lodge supported Earth Hour by switching off the lights from 8.30pm till 9.30pm

Even as Acacia lodge promoted social harmony through road shows, awareness of the environment was also spread through participation in Earth Hour. These were just two of the various activities that Acacia lodge participates in to help educate and promote the welfare of its residents.

Showtime for Acacia Lodge residents

Residents at Acacia Lodge, Keppel O&M's dormitory for foreign employees, had the opportunity to learn more about workplace safety, health and employment issues through a series of fun activities at their very doorstep on 3 March 2009.

Group games were staged to foster camaraderie among workers and by teaming up with colleagues of different nationalities, to spread the important message of racial harmony.

Teams had to harness teamwork and good communication skills to win in

the various games. A comedy skit and attractive games encouraged participation from the residents.

Acacia Lodge resident, Alakasan A/L Perumal, said, "I am happy to be working in Singapore. I have many friends here who work with me at Keppel and my bosses there are very good. After work, we come back to Acacia lodge to rest and play. It is very nice that they have fun fairs and road shows here. We enjoy ourselves and learn many things as well."

Lights out!

Keppel O&M's shipyard facilities were plunged into darkness as lights were switched off for an hour on 28th March 2009, from 8.30pm to 9.30pm.

As a green company, Keppel O&M was participating in Earth Hour 2009, doing its part to save energy as well as to raise awareness of global warming among its employees.

Earth Hour is a global initiative by the World Wide Fund for Nature (WWF) to raise awareness of climate change. It is the second year that Earth Hour is being observed in Singapore.

Besides the shipyards, Keppel Housing's Acacia lodge also supported the event. For the entire hour, activities proceeded as normal and some of the stallholders at the canteen added to the ambience by providing candle lit dinners.

Keppel O&M's CEO, CH Tong, said, "Energy efficiency is not only good for the bottom line. Our company has long believed that we have a responsibility to operate our business in a responsible manner and in ways that do not deplete our world's limited natural resources.

"We should take an even closer look at actions we can take throughout the organisation to operate more efficiently, waste less and reduce our environmental footprint- not only in our own businesses but throughout our supply chain."

Rocking the dormitory

“**E**verything I do, I do it for you”, sang Shad Md Rezaul Alama, to the applause and cheers of some 2,000 spectators.

With his outstanding performance, the safety officer from Keppel Shipyard was thus crowned one of the deserving winners of Dormitory Idol, a singing competition for foreign workers in Singapore.

A resident of Acacia Lodge, one of Keppel's dormitory for foreign workers, Shad belted out the hit song from Bryan Adams at the finals held at an open field at the junction of Upper Jurong Road and Pioneer Road North on 15 March 2009.

The judges unanimously agreed on his superb showmanship. They voted, and out of the 18 finalists, he was second runner-up. Shad was elated with the win and thanked his friends and colleagues at Keppel Shipyard for their support.

While the other two winners, both Bangladeshis, sang in their mother tongue, Shad stood out as he decided to sing the English hit. Behind his decision is a sad love story as he shared, “I met a girl in Bangladesh but things did not work out between us. When I heard this song then, I felt like it was telling my life story,” said the 23-year-old.

The singing and dancing contest started three months ago with auditions at various dormitories around the island. Shad, who is the singer in a band back home, joined the competition on the persuasion of



Shad Md Rezaul Alama, a safety officer at Keppel Shipyard, moves the crowd at Dormitory Idol with his stunning vocals

friends. The judges were so impressed that he progressed easily to the finals.

Shad said, “Music is my life and I am very grateful that my bosses here in Keppel supported and encouraged me. They allowed me to arrange my working schedule so that I could practise for the competition.”

Back in Bangladesh, Shad and his band had written a few songs. His songs can be heard on <http://www.myspace.com/marinerrubel>.

As Shad continues to practise his vocals, he and some like-minded musicians are forming a band and are on a lookout for a keyboardist to complete their dream of a dormitory band idol.

A day in the yard



Terry Wong, Project Manager of the FPSO, P-57, shows Wong Lilin around the hull workshop where steel is being cut for the renewal of the hull's bottom plate

Treading inside a 20-metre deep water ballast tank and delving into the heart of a vessel, its engine room, local celebrity Wong Lilin took viewers on an unexpected journey into Keppel Shipyard's deepest nooks and crannies.

The host-cum-artiste was filming inside mammoth vessels undergoing repairs and conversions at the yard for a local TV documentary for Channel 5, *Unexpected Access*. The show has proved to be a hit, demystifying unusual and unfamiliar places to the public.

At Keppel Shipyard, Lilin followed safety officer, Su Cai Zheng, as he brought her all over the 43-ha shipyard and up

vessels over 20 metres in height and 300 metres in length.

Amidst the bustle of the yard, Lilin witnessed first-hand the detailed safety measures in place and the passion of the yard workers as they went about their daily routines. "I think she was impressed by the clock-work efficiency of the yard and the camaraderie of workers from the many different nationalities," commented Su.

Interviewing the project managers and engineers in the yard, Lilin gave viewers a glimpse into life at the yard and what it takes to be in charge of a ship repair project or the conversion of a tanker

into a Floating Production Storage and Offloading (FPSO) vessel.

From the time a vessel enters the yard when it is slowly manoeuvred into the drydock, to the time it leaves after having its hull hydro-blasted and splashed with a fresh coat of paint, the documentary showcased different aspects of repair, refurbishment and conversion.

Having gained *Unexpected Access*, viewers following Wong Lilin on her journey also gained a fresh perspective on life in the shipyard.

A reel challenge

“Many relatives and friends shared with me about the interesting challenges and exciting developments in the offshore and marine industry. It was foreign to me at first but I enjoyed listening to the projects they worked on,” said 27-year-old Shaun Foo, recalling how he first embarked on a long-term career in the offshore and marine industry.

Shaun was recently featured in a television variety programme, *Find Me a New Boss*, which traced his progress during his Super V training stint.

The programme was hosted by Mediacorp artiste Bryan Wong who takes on the role of a highly resourceful job specialist, dispensing advice to new job seekers.

The Super V programme, an initiative by the Singapore Workforce Development Agency (WDA), is a two-year structured, nationally recognised training course aimed at identifying and grooming a pool of local workers for supervisory positions at the shipyards.

After thorough consideration, Shaun applied to enter the programme and subsequently joined Keppel Offshore & Marine (Keppel O&M) as a trainee, beginning his training stint at the Keppel O&M Group Training Centre.

Recounting his initial experience, he said, “Every new job comes with its own challenges. Besides adjusting to the new work environment, I also had to cope with my lack of technical fundamentals and industry terminology. I remember taking down new jargons whenever I hear them and doing research on the internet when I got home.

His *Can-do!* spirit paid off when he was one of the top graduates in his Super V programme cohort.



Shaun gets used to pressure on screen and off screen as he is filmed while training at the Keppel O&M training centre

“I put a lot of pressure on myself to excel because I did not want to disappoint my trainers and the people who gave me the opportunity to be here,” Shaun shared earnestly.

Having successfully completed the 18-month training and assessed to have the essential leadership qualities, Shaun graduated as a Trainee Supervisor. He is currently attached to a mentor to continue with his on-the-job training.

Shaun shares that one of his greatest job satisfaction is being able to constantly learn new things, “No two projects are the same. Each is a learning opportunity because there are diverse people to manage and different problems to resolve. I get a huge sense of accomplishment whenever I deliver a project to the customer’s satisfaction.”

West meets East

Keppel O&M represents more than just a place of business. Its training programmes, efficient processes and technology innovations has also made it a center of learning. Just recently, university students from Norway and the Netherlands came to learn more about Keppel's yards in Singapore.

Southern exposure for Northern visitors

The tropic of Singapore is perhaps an unusual place for arctic technology to be brewing. However, 71 students from the Norwegian University of Science and Technology (NTNU) travelled all the way south to learn more about Keppel's yards and its technology innovation.

On 31 March 2009, marine technology and mechanical engineering students and professors learnt about the FPSO conversions, righbuilding as well as the background, products, research and development efforts of Keppel O&M. They also toured Keppel's yards, gaining valuable insights to their operations.

The Norwegian university organises such trips for its third- or fourth-year students, who are on a five-year programme, to help them gain exposure to industries related to their field of study. This visit was initiated by Keppel Norway, Keppel O&M's wholly-owned subsidiary which specialises in technology and engineering services with a focus on drilling systems and modular drilling units.

Keppel O&M has a close relationship with Norway. It appointed Norwegian marine structures expert Professor Torgeir Moan to the first Keppel Chair as a visiting



71 students from NTNU dropped by Keppel O&M's yards to learn more about the group's expertise. They are seen here onboard FPSO in Keppel Shipyard

professor and formed a strategic alliance with NUS and Centre of Excellence in Ships & Ocean Structures (CESOS) in NTNU for joint R&D into offshore structure technologies in 2002.

Playing host to Dutch students

32 students from the Netherlands Technical University Delft got a peek into Keppel O&M's company culture, rig production, specialised shipbuilding and FPSO conversion processes on 3 February.

The students were treated to a view of the company's inner workings. The many topics discussed throughout the

tour included Keppel O&M's business operations, operational best practices as well as putting safety first when it comes to yard operations.

Chee Jin Kiong, Executive Director Human Resources also shared with the students about the company's management, job opportunities at Keppel O&M such as internships as well as scholarship applications.

One of the students, Anton Groefsema said: "It was really an eye-opener to see so many semisubmersibles and jackup rigs at one go and I appreciate these vessels even better after understanding how they work at the deep waters."



Keppel O&M treated 32 Dutch students to an interactive tour of Keppel O&M's rigbuilding and FPSO conversion operations in February

Sharing expertise



Agajanov Guvanch (left) and CB Choo, exchanged thoughts on the oil and gas industry in Turkmenistan

In addition to students, business units across Keppel O&M also welcomed officials and guests from far and wide for a mutual exchange on insights and experience.

Expanding horizons

From 12 to 15 March 2009, Keppel O&M hosted two delegates from the Turkmenistan State Agency for Management and Use of Hydrocarbon Resources.

The guests were from the Production Sharing Agreement (PSA) Management Committee on the "Block-I" contracted area, namely Agajanov Guvanch, Chairman and Babayev Mekan, Chief Specialist.

In addition to touring Keppel O&M's yards in Singapore, they also took in the sights at Keppel Bay, a premier waterfront luxury precinct in Singapore's southern district.

Their last stop was Keppel Energy and Keppel Integrated Engineering's Ulu Pandan Newater Treatment Plant. Besides Keppel's business divisions, the delegates also visited the Economic Development Board of Singapore and Singapore Petroleum Company.

Located in Central Asia, bordering the Caspian Sea, between Iran and Kazakhstan, Turkmenistan is largely a desert country with over 80% of the country covered by the Karakum Desert. Turkmenistan possesses the world's fifth-largest reserves of natural gas and substantial oil resources.

Sharing experiences

On a separate occasion, Keppel O&M played host to 20 Occupational Safety and Health (OSH) officials from ASEAN countries on 19 February 2009 as part of the ASEAN Occupational Safety and Health Network's (OSHNET) two-day workshop.

Following a presentation on Keppel O&M

was a dialogue session where topics such as the certification and training initiatives for workers as well as the incentives needed to implement safety measures in shipyards were discussed.

The discussion offered insights into Keppel FELS's safety management system as well as training initiatives at the Keppel O&M Group Training Centre. The sharing session also provided them with an understanding of the OSH practices of Singapore's offshore and marine industry.

Brenda Villafuerte, Director of Philippines Department of Labour and Employment said, "I am impressed by the kind of training and safety practices that have been put in place in Keppel yards. The discussion was very fruitful and hopefully we can apply some of the ideas that we have discussed in our own countries."

The delegates also toured Keppel FELS' yard and visited Keppel O&M Group Training Centre's training facilities.



20 officials from ASEAN countries had a fruitful discussion on yard safety and training issues

Around our yards

OffshoreMarine tracks works at various Keppel yards

Singapore

Keppel Shipyard Tuas

Name : **KIHO**
 Owner : Nippon Oil Tanker Corp
 Country : Japan
 Type : ULCC
 DWT : 300,866
 GRT : 159,923
 Date : 19 March – 4 April
 Scope : Fabrication & installation of new drum can store. Fabrication & renewal of pipe drain line in engine room. Fabrication & installation of broadcast satellite receiving system. Overhaul of main engine coolers and heat exchanger.

Name : **LOWLANDS MIMOSA**
 Owner : Euroship Services Ltd & Trade Fortune Inc
 Country : United Kingdom (Euroship) & Greece (Trade Fortune)
 Type : Bulk carrier
 DWT : 52,479

GRT : 29,885
 Date : 31 March – 16 April
 Scope : Collision damage side steel renewal, total 27,347 kg of steel used. Welding seam repair. Tail shaft renewal. Hull blasting & painting.

Keppel Shipyard Benoi

Name : **MUSASHI GLORIA**
 Owner : MOL Tankship Management (Asia) Pte Ltd
 Country : Singapore
 Type : LPG
 DWT : 49,255
 GRT : 42,341
 Date : 12 March – 6 April
 Scope : Tank blasting, scattered renewals of 7,819kg steel. Renewal of owner's supply 348 anodes in 8 topside tanks and 8 double bottom tanks. Main engine overhaul. Freshwater generator heat exchanger renewal.

The Philippines

Keppel Batangas Shipyard

Name : **LAKE BUHI**
 Owner : DMC Construction Equipment Resources, Inc.
 Country : The Philippines
 Type : General cargo
 DWT : 5,000
 GRT : 2,335
 Date : 2-26 March
 Scope : Drydocking works. Steel renewal, tank cleaning, deck blasting and painting, hull blasting and painting.

Name : **MARIA VERONICA**
 Owner : Terban Marine Corporation
 Country : The Philippines
 Type : Tanker
 DWT : 4,710
 GRT : 2,990
 Date : 2 – 28 March
 Scope : Drydocking works, tailshaft thordon bearing renewal underwater hull area painting.



KIHO



MARIA VERONICA

Name : **AZALEA GALAXY**
 Owner : Unix Line Pte. Ltd.
 Country : Singapore
 Type : Chemical tanker
 DWT : –
 GRT : 12,105
 Date : 28 March – 1 April
 Scope : Afloat repair works.
 Auxiliary boiler and main engine turbocharger overhauling. Economizer mounting valves overhauling. Main engine inspection. ODME calibration and ODME overboard line pipe modification.

Subic Shipyard & Engineering

Name : **NSS BONANZA**
 Owner : Bernhard Schulte Shipmanagement (India) Private Limited
 Country : India
 Type : Bulk carrier
 DWT : 170,907



NSS BONANZA



DANUBIA

GRT : 85,902
 Date : 28 February - 13 March
 Scope : Drydocking; Major steel works; Hull preservation; Chain locker cleaning port/starboard; Bridge wing painting; Fwd & aft bulkhead blasting/painting; Hull anodes renewal; Bilge manhole ring of cargo hold renewal; Side shell replating; Surf bulb installation; Double bottom tank renewal; Main engine smoke funnel partial renewal; Propeller polishing; Main crosshead, crank pin bearings surveys; Main engine fuel injection pump overhauling; Hydraulic motor shaft seal renewal; Mooring winches load testing; Sea suction & overboard valves overhauling; Auxiliary boiler mounting valves overhauling; Engine room pipes partial renewal; Installation of valve drain cock in way of cargo hold bilge; Auxiliary boiler cleaning.

Name : **DANUBIA**
 Owner : Ahrenkiel Shipmanagement GmbH & Co., KG
 Country : Germany
 Type : Oil tanker
 DWT : 68,524
 GRT : 38,975
 Date : 9-17 March
 Scope : Drydocking; Hull preservation including anodes renewal; Chain locker cleaning / painting; Load test for cranes, rails & lifeboat/davit; Incinerator furnace repair; Deck steam heater repair; Renewal of ballast pipe, aux. engine sea water pipe & stripping pipes; Overhaul piston, cylinder head & stuffing box; Windlass brake

lining renewal & brake test; Ultrasonic cleaning for scavenging air cooler; Overhaul for side/overboard valves, air receiver safety vales, pressure / vacuum valves, boiler safety & steam isolating valves; Water ballast tank bent frame and web frame renewal and stiffener partial renewal; Bilge keel partial renewal; Dynamic balancing of boiler blower impeller & pump room fan impeller; Overhauling of ballast pump motor & engine room fan motors.

Name : **TAIJU**
 Owner : Bernhard Schulte Shipmanagement (India) Private Limited

Country : India
 Type : Bulk carrier
 DWT : 173,020
 GRT : 87,422
 Date : 1 April (WIP)
 Scope : Drydocking; Hull blasting & painting; Tailshaft withdrawal; Valves overhauling; Stern tube wear down to measure; Renewal of seals; Steel renewal – 200 tons

Name : **TAIHO MARU**
 Owner : Universal Marine Corporation
 Country : Japan
 Type : Bulk carrier
 DWT : 48,817
 GRT : 40,322
 Date : 3 April (WIP)
 Scope : Drydocking; Hull blasting/painting; CO2 fire extinguishing system modification; Overhauling of hatch cover hydraulic cylinder & grab bucket; Crankpin bearing and crosshead bearing survey; Main bearing survey; Auxiliary boiler overhauling; Air cooler cleaning.

Keppel Group Newsbytes



Partners for one of the largest waste and renewable energy projects in the UK (from left): Michael Hellings, Managing Director of Viridor Limited and Chua Chee Wui, CEO of KIE

Keppel Seghers have secured an Engineering, Procurement and Construction (EPC) contract worth S\$518 million to build an Energy-from-Waste Combined Heat and Power Plant (EFW CHP plant) to serve the Greater Manchester region in the UK. This will be one of the largest waste and renewable energy projects in the UK.

Featuring the Keppel Seghers Water-Cooled Grate, the horizontal boiler design integrated with Keppel Seghers Prism technology (for enhanced heat recovery) and the Keppel Seghers' double dry flue gas cleaning system, the EFW CHP plant will be one of the larger EFW facilities in the UK when completed in 2012.

Keppel Seghers also secured a S\$30 million contract to provide technology and services to a waste-to-energy plant (WTE) in Jinan, Shandong Province, China. The contract was awarded by Riseland Holdings, a subsidiary of Everbright International.

When completed in 2011, the plant will

be able to treat 2,000 tonnes of municipal waste per day, making it one of the largest WTE plants in China.

Keppel Seghers will provide its equipment design and technical services for the furnace, boiler and flue gas cleaning components of plant. Its technology will enable the plant to have longer continuous operation, high waste throughput, and high steam production for power generation.

Keppel Land's world-class *Spring City Golf & Lake Resort (Spring City)* in Kunming, China has been certified under the Audubon Cooperative Sanctuary Programme (ACSP) for Golf Courses. This was conferred by international green champion, Audubon International.

The certification recognises golf courses that take effective steps to protect the environment while enhancing their bottom line. It is also testament to *Spring City's* leadership, commitment,

and high standards of environmental management.

Keppel Corporation hosted the President of the Republic of Singapore, His Excellency SR Nathan and his delegation in Qatar recently. Choo Chiau Beng, CEO of Keppel Corporation; Chua Chee Wui, CEO of Keppel Integrated Engineering (KIE); and Yong Chee Min, CEO of Nakilat-Keppel Offshore & Marine, were at hand to brief the President on our three major Qatari projects which includes KIE's Domestic Solid Waste Management Centre, the Doha North Sewage Treatment Works and Keppel O&M's N-KOM shipyard.

Keppel Logistics Foshan is enhancing its warehousing capabilities with the construction of a new distribution centre strategically located in the Nan Hai District. This move comes on the back of strong market demand for quality warehouse space within the vicinity of Foshan's main industrial parks.

Expected to be operational by early 2010, the new Nan Hai Distribution Centre will provide 35,000m² of warehousing space, equipped with Very-Narrow Aisle racking system, silo storage and repackaging facilities.

Keppel Bay Sailing Academy (KBSA) has successfully conducted the pilot run of Part A training for the required pre-race three-part Clipper round-the-world yacht race training. Three Singaporean Keppelites were the first to begin training for the Clipper Race at KBSA. Part A training for the Clipper Race at KBSA. Part A training involved an eight-day course, covering areas of safety, seamanship and helmsmanship. They learnt all aspects of sailing onboard the Academy's 40.7-footer Beneteau yachts, *Venture and Endeavour*.

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Keppel O&M secures new projects

Keppel O&M through Keppel Shipyard and Keppel FELS Brasil, has secured three contracts.

The first two projects, secured by Keppel Shipyard from repeat customers, are for the construction of a derrick lay barge and the modification of a Floating Production Storage and Offloading (FPSO) vessel. The third project is awarded by a new customer, Noble Drilling (Nederland) B.V., to Keppel FELS Brasil, through BrasFELS, for the completion of a deep drilling semisubmersible (semi).

Executive Director of Keppel Shipyard, Nelson Yeo said, "During these uncertain times, we are encouraged by the confidence shown to us by our repeat customers who appreciate our good quality and service. We look forward to the continued partnership and completing projects to their satisfaction."

Bumi Armada Berhad (Bumi Armada) has contracted Keppel Shipyard for the construction of a derrick lay barge for pipe laying operations in waters of up to 100m in depth. It will be built in two separate hull strips and mechanically completed in Keppel Shipyard before being transported through the narrow Volga-Don River Canal System to a shipyard in the Caspian Sea for the joining of the vessel. The hull strips are expected to cross the canal by November 2009.

Bumi Armada, a long-standing customer of Keppel Shipyard is also currently

Keppel Shipyard previously completed the upgrade and modification of FPSO Armada Perkasa for repeat customer Bumi Armada in 2007

converting their FPSO *Armada Perdana* at the yard.

The second project is from Single Buoy Moorings Inc (SBM) for the modification of FPSO *Capixaba*, which was a fast-track conversion carried out by Keppel Shipyard in 2006. The new work scope includes the installation of four new modules and the associated integration plus modification of the existing topsides and turret.

The FPSO is currently deployed in the Golfinho field, Brazil, and is expected to arrive at Keppel Shipyard in August, 2009. FPSO *Capixaba* will be modified and upgraded for operation in the Cachalote field in offshore Brazil. The vessel is expected to be back in operation in Brazil in early 2010.

Keppel Shipyard's projects with SBM currently also include the major conversion of FPSO *P-57* and FPSO *Okha* and the construction of FPSO *Skarv's* internal turret for SBM.

At present, Keppel Shipyard is carrying out ten other major conversions and upgrading projects at its yards.

Over in Brazil, BrasFELS has secured a contract from Noble Drilling (Nederland) B.V. for the completion of an ultra-deepwater semi drilling rig named the *Noble Dave Beard* (the *Beard*), which is scheduled to arrive in Brazil at the end of the month.

The *Beard* is a dynamically-positioned (DP2) semi unit designed to operate in water depths up to 10,000 feet, with a drilling depth of up to 35,000 feet. The scope of work to be performed by Keppel FELS Brasil includes the mechanical completion of the *Beard*, as well as assisting in the commissioning and installation of customer specified equipment. Upon its expected completion in the fourth quarter of 2009, the *Beard* will be chartered to Petrobras for work in offshore Brazil.

