

# Offshore Marine

Keppel

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Offshore  
**DSS™ 51 semisubmersible  
DDIII delivered**

Marine  
**Cidade De Sao Vicente  
strikes first oil in Tupi**

**Keppel O&M is ready for H1N1!**





Keppel FELS had successfully modified and upgraded *ENSCO 108*

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The new Integrated Safety Training Complex features a six level Mid-Ship Safety Module

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# LNG vessels come calling



Three LNG vessels from different customers arrive in the same month at Keppel Shipyard (Benoi)

April was a busy month for Keppel Shipyard, which saw the arrival of three Liquefied Natural Gas (LNG) carriers at its Benoi Yard – *Al Khor*, *Al Zubarah* and *Bishu Maru*.

Keppel Shipyard's expertise in LNG repair has enabled it to capture a major share of the repair market in Singapore. It is also a leading LNG/LPG shiprepair yard in Asia ex-Japan, and has undertaken the conversion of the world's first two LNG Floating, Storage and Re-gasification (FSRU) units.

Qatar Gas vessels, *Al Khor* and *Al Zubarah* completed their repairs on 8 May 2009. Managed by NYK LNG Shipmanagement Ltd, *Al Khor* was here for the overhauling of its main turbine, boilers and cargo pumps as well as for a fresh coat of paint. *Al Zubarah*, which is managed by MO LNG Transport Company Ltd, overhauled her valves, cargo pumps and turbines while its main boiler underwent cleaning.

The K-Line vessel, *Bishu Maru*, left on 13 May 2009 after completing life extension works including steel works, pipe renewal and overhaul to its turbine cargo pump and boiler.

All vessel deliveries have to be right on time especially for charterers and gas buyers, as the supply of LNG is critical in ensuring an uninterrupted energy supply to various cities. Keppel Shipyard has a strong track record having repaired 100 LNG carriers since 1990, enabling it to secure long-term fleet agreements with reputable owners.

One such agreement will see Tokyo Gas LNG Tanker, Energy Progress, come in to Keppel Shipyard in August 2009.

## *Golar Winter* sails to new home

*Golar Winter*, the second FSRU converted for Golar LNG, departed Keppel Shipyard on 24 May 2009 for deployment in Brazil.

The vessel arrived in September 2008 and was delivered by May 2009 earning Keppel Shipyard a bonus for early delivery.

Leased to Brazilian state-run oil company Petrobras SA, the FSRU will be moored at a pier in the Guanabara Bay, off Rio de Janeiro, Brazil, in water depths of 14-16 metres. *Golar Winter* is capable of re-gasifying 14 million cubic meters of natural gas per day. Meanwhile, the first FSRU, *Golar Spirit*, has been moored at the Port of Pecem, northeast of Brazil.

Project Manager, Ong Gim Foo, said, "Having done the world's first FSRU, *Golar Spirit*, made the conversion of this second FSRU easier. Thanks to the good partnership we have built up with Golar LNG, we were able to deliver this vessel ahead of schedule and with a perfect safety record."

*Golar Winter* achieved zero lost-time incidents in over 1.2 million man-hours worked. The scope of work included the refurbishment of existing hull and marine systems for life extension, the installation of a re-gasification plant system, and the upgrade of control systems, electrical systems and marine systems.

## *Golar Winter* sets sail for Brazil on time and with a perfect safety record



# Striking success

The early delivery of *COSLSTRIKE* marks an important milestone in the partnership between Keppel FELS and COSL



**E**arly delivery, within budget, superior quality and exemplary safety records are the results of excellent project management and execution.

*COSLSTRIKE*, built to the KFELS B Class jackup rig design, is fine example of this. Keppel FELS delivered the rig to its satisfied customer China Oilfield Services Limited (COSL) ahead of schedule and with a clean safety record of 2.5 million manhours without lost-time incident.

The rig was named *COSLSTRIKE* by Lady Sponsor, Ms Li Nan, at a ceremony at Keppel FELS on 23 May 2009.

*COSLSTRIKE* is the third of three KFELS B Class jackup rigs commissioned by Awilco Offshore ASA (Awilco) prior to its acquisition by COSL. The first two rigs were also delivered ahead of schedule in December 2006 and January 2008 respectively.

Mr Li Xun Ke, Senior Vice President of COSL, said, "We are very pleased with the successful completion of *COSLSTRIKE* and the excellent teamwork and support rendered by Keppel FELS throughout.

"We have witnessed the yard's professionalism in executing quality projects on time, within budget and without incidents. This is something that all at Keppel FELS should be proud of, and we look forward to furthering our relationship with them."

CH Tong, CEO of Keppel O&M, said, "The early delivery of *COSLSTRIKE* marks an important milestone in our growing partnership with China's esteemed operator, COSL. We are confident that our globally-accepted KFELS B Class jackup rigs will continue to contribute strongly to the performance of our customer's rig fleet."

*COSLSTRIKE* is the 28<sup>th</sup> KFELS B Class jackup drilling rig to enter the market since the design's launch in 2000. This design has won the recognition of oil companies and drilling contractors as the benchmark for jackup rigs operating worldwide.

*COSLSTRIKE* is capable of operating at a water depth of 400 feet and drilling depth of 30,000 feet. The unit also incorporates Keppel's advanced and fully-automated high capacity rack and pinion elevating system, and Self-Positioning Fixation System.

"At Keppel FELS, we seek to be the partner of choice and provider of solutions in the markets where we operate. Working seamlessly with its cross-border sister companies to deliver timely and cost-effective solutions, Keppel FELS is in a strong position to support China's aspirations in becoming a substantial participant of the global oil and gas sector," added CH Tong.

Bolstered by its 'near market, near customer' strategy, Keppel O&M has a wide network of 20 shipyards and offices across 17 countries to provide unparalleled services for its customers in any part of the world.

In China, Keppel Nantong, located two hours from Shanghai, can draw on the experience and expertise of Keppel FELS to undertake offshore work while it focuses on the construction of sophisticated specialised vessels.

COSL is a leading comprehensive solution provider of integrated oilfield services in offshore China. Its core services are Drilling Services, Well Services, Marine Support and Transportation Services and Geophysical Services, which cover each phase of oil and gas exploration, development and production.

**"We have witnessed the yard's professionalism in executing quality projects on time, within budget and without incidents. This is something that all at Keppel FELS should be proud of."**

*Mr Li Xun Ke  
Senior Vice President of COSL*



Off to a striking start – Lady Sponsor Ms Li Nan named *COSLSTRIKE* at Keppel FELS on 23 May 2009. Accompanying her are the Senior Managements of COSL and Keppel O&M

# New Keppel Chairman visits the yards



Welcoming Dr Lee to Keppel O&M are senior management and union representatives



Dr Lee engaging the Union leaders of Keppel O&M

**K**eppel O&M welcomed Dr Lee Boon Yang on 29 April 2009 when he paid a visit to its yards. Dr Lee who was formerly Singapore's Minister for Information, Communications and the Arts, is the new non-executive Chairman of Keppel Corporation with effect from 1 July 2009.

This visit is part of Dr Lee's introduction of the key businesses of the Keppel Group.

Dr Lee was received by CH Tong, CEO of Keppel O&M as well as senior management from Keppel FELS, Keppel Shipyard and Keppel Singmarine.

During the visit, Dr Lee was given an overview of Keppel O&M's operation and a tour of the yards, observing firsthand the Company's expertise in jackup rigs, semisubmersibles, Floating Production, Storage and Offloading vessels to anchor handling tug supply vessels.

Attesting to the Company's solid labour relations, key Union representatives from the respective yards were present in full force to share insights into employee affairs.

Dr Lee came away from the visit with a good understanding of Keppel O&M's business strategies and operations, and an appreciation of the people at Keppel O&M who have made the Group a world leader that it is today.

# Development Driller delivered



*Development Driller III* is presently making her way to the Gulf of Mexico to begin her maiden assignment with BP

**K**eppel FELS has delivered its ultra-deepwater DSS™ 51 semisubmersible (semi) rig, *Development Driller III*, to Transocean on 28 May 2009.

Mr Robert L. Long, CEO of Transocean, said, “Through our collaborative effort with Keppel FELS, *Development Driller III* will soon be ready for deployment by our customer BP in the U.S. Gulf of Mexico. We are looking forward to provide BP with the safest and most effective offshore drilling possible.”

The *Development Driller III* is designed to construct wells as deep as 11,430 metres (37,500 feet) wells and operate in water depths of up to 2,286 metres (7,500ft), upgradable to 12,192 metres (40,000 feet) and 3,048 metres (10,000 feet), respectively.

The semi is presently enroute to the Gulf of Mexico to begin her seven-year drilling programme with BP.

“All of Keppel’s rig designs have been developed with input from our customers because our technology innovation must ultimately create value for them. I am confident that *Development Driller III* will exceed expectations and support Transocean’s objective of creating a quality offshore fleet for the oil and gas market,” said CH Tong, CEO of Keppel O&M.

With *Development Driller III*’s successful delivery, three of eight DSS™ Series semis ordered have entered the market to date.

# Deepening relationships upstream

As the world leader in offshore structures and vessels, Keppel O&M is committed to engaging and growing industry relations as well as positively contribute towards its progress and development.

In June, Keppel O&M hosted yard tours

for two oil majors, Total S.A. (Total) and China National Petroleum Offshore Engineering Company (CPOE).

## Total engagement

On 2 June 2009, senior management

led by CB Choo, Chairman of Keppel O&M and CH Tong, CEO of Keppel O&M, hosted a visit by some 20 MDs and CEOs hailing from Total's worldwide operations.

Total is the fifth largest publicly-traded integrated international oil and gas



Totally impressed – Visitors from Total and CPOE got up close to Keppel O&M's businesses and operations through robust sharing sessions with top management



company in the world. It has a combined workforce of 96,950 employees and operations in more than 130 countries.

Comprising Total's next generation of leaders, the group was on a study trip to Singapore to better understand the country's offshore and marine clusters as well as port facilities, and its significance in the global energy business.

The Total visitors were given an informative tour and orientation of the yard facilities, operations and competencies at Keppel FELS and Keppel Shipyard. This being their first visit to a shipyard, many of them were impressed and captivated by sights

of the larger-than-life rigs and marine vessels docked at Keppel's wharves.

### Partnership cultivation

Extending a warm reception to its customer's customer was what Keppel O&M did when China National Petroleum Offshore Engineering Company (CPOE) called upon the Company on 9 June 2009.

CPOE is a subsidiary of China National Petroleum Corporation, China's largest oil and gas producer and supplier, as well as one of the world's major oilfield

service providers and a globally reputed contractor in engineering construction.

This private visit was made by CPOE's top executives – president, Mr Huang Ligong and procurement and project management director, Mr Sun Peidong.

The gentlemen were introduced to Keppel O&M Group's operations, collective strengths and core capabilities. They were also given a personal tour of Keppel FELS's rigs by the management, resulting in a deeper appreciation of Keppel's exacting project execution.

## 108 praises

The KFELS B Class jackup rig, *ENSCO 108*, had recently returned to Keppel FELS for modification and upgrading work prior to a new assignment under Total S. A.

With immaculate timing and coordination by Keppel FELS's project team, *ENSCO 108* was able to enter the drydock swiftly upon arrival. Her mud processing equipment was upgraded. She also received additional kill line pipework, and was installed with foam fire fighting systems at her mud pits and shale shakers.

Work was completed ahead of time in 28 days without any incidents. The enhancements will prepare *ENSCO 108* to meet the unique operating requirements and challenges of the new field offshore Brunei.

"*ENSCO 108* was a well executed project, completed safely and on schedule. The team on the ground was a pleasure to work with, very responsive and has the right "can-do" attitude necessary to make these busy projects a success. Keppel FELS has delivered on all commitments and assisted us beyond the



call of duty!" said Mr Gilles Luca, EnSCO International's Operations Manager.

Over the last few months, EnSCO International had also called upon Keppel FELS's mobile rescue team, *Flying Squad*, for quick turnaround repairs on the jackup rigs *ENSCO 106* and *ENSCO 57* in offshore Malaysia.

Another grade up –  
The successful modification  
and upgrading of  
*ENSCO 108* kept both  
spirits and rig afloat

# Docking two bullies

**S**ibling drillships, *Bully I* and *Bully II*, are now both docked at Keppel Shipyard's Gul Yard.

The work scope undertaken for the two drillships are similar, which includes installing and integrating the owner supplied power generation, thrusters and drilling equipment packages on a new hull.

While *Bully II*'s new hull was being built at a Chinese yard, Keppel Shipyard was already working closely with customer, Frontier Drilling to complete all the double bottom pipes and main sea water cooling system there.

*Bully I* first came to Keppel Shipyard in November 2008 and work on the vessel has been progressing well. The main generators, emergency generator, mud pumps and main air conditioning units have been installed. The projects teams celebrated the vessel's one millionth man-hour without lost-time incidents on 15 May 2009 in Keppel Shipyard.

Keppel Shipyard's Project Manager, Low Kok Chiang said, "Both vessels are unique in that they will house the first Multi Purpose Tower from Huisman Equipment B.V. Integrating both vessels back to back will allow us to maximise resources and ensure that we complete them on time and within budget."



*Bully II* joins sister drillship *Bully I* for completion

The 'Bully' drillships are designed to conduct surface BOP (Blow-out Preventer) drilling operations in water depths of up to 12,000 ft and sub-sea BOP operations in water depths of up to 8,250 ft as equipped (up to 10,000 ft capability). The total drilling depth below the drill floor is 40,000 ft. The drillships will also be equipped with ice-class hulls and Dynamic Positioning (DP-2) capabilities.

# Three tugs in tow

**K**eppel Nantong has delivered three out of a series of five AHTS vessels to Whitesea Shipping & Supply LLC (WSS) over the past three months.

The three vessels *Saheb*, *Saleh* and *Sarem* are currently operating in the Middle East. These 65-tonne bollard pull vessels, equipped with azimuth thrusters are used for towing and supplying cargoes to offshore structures.

Based in the United Arab Emirates, WSS is a regular customer of Arab Heavy Industries, an associate of Keppel O&M, which services WSS's fleet of offshore support vessels.



Keppel Nantong has delivered three AHTS vessels over the past few months

# Oil in a day's work

**F**PSO *BW Cidade de Sao Vicente*, which left Keppel Shipyard for Brazil in February 2009, has achieved first oil in the Tupi field. It is the first Floating Production Storage and Offloading vessel (FPSO) to enter the gigantic Tupi deepwater field located outside Rio de Janeiro in Brazil.

The first oil was lifted from Tupi in the presence of Brazil's Minister of Energy and Mines Mr Edison Lobão and Petrobras' President and CEO, Mr Sergio Gabrielli. This marked the beginning of the development of Brazil's biggest oil field discovered by Petrobras. Tupi holds a recoverable volume of around five to eight billion barrels of oil equivalent of oil and gas.

The FPSO installed will be connected to two wells, one at a time, for about six months each. The vessel is dynamically positioned over a high pressure and high temperature Pre-Salt well at a water depth of almost 10,000 ft.

FPSO *BW Cidade De Sao Vicente* was a fast-track conversion by Keppel Shipyard for

BW Offshore. The project recorded zero lost-time incidents for over 1.2 million man-hours worked.

Keppel Shipyard is currently converting another FPSO for BW Offshore. *BW Pioneer* will be the first FPSO to be deployed in the Cascade and Chinook fields in the US Gulf of Mexico by Petrobras.

Senior management from Petrobras America Inc and BW Offshore visited Keppel Shipyard (Tuas) recently and were updated on the progress of *BW Pioneer*, which is expected to be delivered in the third quarter of 2009. They were also pleased to learn that that conversion is on track.

When completed, *BW Pioneer* will be turret moored at a water depth of around 2600 metres – the deepest ever for an FPSO. The *BW Pioneer* is also equipped with a technologically advanced safety feature that allows the FPSO to disconnect and move on her own propulsion to safe waters whenever there is an approaching storm.

*FPSO BW Cidade De Sao Vicente* strikes first oil in February 2009 in the gigantic Tupi deepwater field outside Rio de Janeiro



Touring FPSO *BW Pioneer* are senior management of Keppel Shipyard and BW Offshore

# Sharing perspectives on *Managing Asia*

Recently named ASEAN's most admired employer, Keppel O&M was profiled on CNBC Asia in an in-depth interview with CEO, CH Tong on industry developments and the challenges in leading the Company through this economic crisis to achieve its goals. Extracts of CH Tong's interview with CNBC Asia's Sri Jegarajah in the programme, *Managing Asia*, are reproduced below.



**Sri:** Your docks are packed back-to-back with rigs under construction. These contracts were roped in when oil prices were soaring but orders have slowed as the economic gloom casts a pall over the oil sector. How are things really beneath the surface?

**Tong:** The economic crisis brings back some sanity, but of course, the bad news is that the world is facing a lot of financial problems with banks less willing to lend. Obviously, there is an over-reaction, and for the last two quarters we have not had substantial orders.

I have seen the ups and the downs, except that this downturn is probably worse than the previous downturns that we have faced. The challenge for this year and next is the efficient execution of all the projects that are already in hand.

**Sri:** Does that suggest that the orderbook in the next few years is going to be significantly lower than the boom years?

**Tong:** We will expect a slow down definitely, but we are already working on other areas. It may not be the normal jackup and semisubmersible project. We will be more targeted, working in collaboration with our other overseas units in Brazil and the Caspian.

**Sri:** As far as your customers are concerned, are they looking to renegotiate lower prices given the economic downturn, and (limited) access to credit and capital? How carefully are you watching that situation to ensure that bad debts don't arise and erode your cash position?

**Tong:** Well, they will always try. As a major builder and a renowned one for that, we believe we give fair prices to our customers.

We have also been rather careful in selecting and choosing to work with customers whom we believe are substantial, and can afford to pay for what they have contracted to build.

**Sri:** You are actively pursuing new projects to beef up your orderbook but how exactly are

you trying to get the edge on new deals? Your Korean rivals are doing the same thing and you have rivals here in Singapore. How are you distinguishing yourself?

**Tong:** First and foremost, we do not choose to be in every area. We have got to focus on our greatest strengths and in the areas where we feel we have, and can have, a competitive edge. And it is this focus on what we can do best that allows us to bring value to our customers. This has actually resulted in us having many repeat customers.

**Sri:** When you look around the industry, valuations of a lot of companies who are in the same field as you have hit rock bottom because of the crisis. From that perspective, does it create any acquisition opportunities?

**Tong:** We are always on the lookout, but of course, these have got to meet our required internal rate of return and position us for the upturn. We are very careful, and we look for businesses that can add value to Keppel O&M as a whole.

**Sri:** You spent about S\$23 million on training (last year); is that budget going to be affected, especially when you are trying to tighten costs and beef up productivity?

**Tong:** Training has always been part and parcel of what we do to stay ahead of our competitors. I don't think we will substantially reduce the budget for training as much as what we might have to do in other areas.

**Sri:** When do you think the global economy is going to make a sustained recovery? When do you think we are going to get out of this recession?

**Tong:** We hope that with all the efforts put in especially by governments worldwide, this will be a lot sooner than later because world trade is so essential and energy is still very much sought after. The alternative to oil looks so far away that we will still be in the oil and gas business for a long while to come.

# Milestones in the making



Keel of the fifth KFELS B Class jackup rig for SeaDrill was laid recently

**Y**ards across Keppel O&M achieved significant construction and safety milestones as they remained on track in their respective projects.

From Singapore to Brazil, the same excellence in project management ensures that the Group remains on track in delivering on its promises.

## Laying strong in foundations

On 4 June 2009, a keel-laying ceremony was held at the dry dock of Keppel FELS's Pioneer Yard I for the 5<sup>th</sup> KFELS B Class jackup rig, B311 (West Callisto) being constructed for SeaDrill Limited (SeaDrill). This rig can accommodate 112 men, operate in water depths of 400 feet and drilling depths of 30,000 feet.

Keppel FELS also celebrated another keel-laying milestone for SKDP2, a jackup rig being built to the Group's proprietary KFELS N Class design on 18 April 2009. This rig is being constructed for Skeie Drilling and Production (SKDP), a member of the Skeie Group.

Keppel FELS is building three such rigs for SKDP. The first rig celebrated its keel-laying on 25 November 2008.

On separate occasion, Keppel Singmarine laid the keel of H350, a derrick pipelay vessel for Global Offshore International Ltd on 30 April 2009.

The 163-metre derrick pipelay vessel is a multi-purpose construction vessel to be equipped with two units of 4500 KW electric propulsion thrusters, six units of positioning thrusters, a 1200-tonne crane and pipelay equipment capable of operating in water depths of 3,000m and handling pipes of 60 inches in diameter.

## Launching into success

On 24 April, Keppel Singmarine successfully launched H342, a platform supply vessel (PSV). Measuring 94 metres in length, the vessel is equipped with diesel electric propulsion and dynamic positioning systems (DP-2). It is expected to be delivered to Greatship Global Offshore Services Pte Ltd later this year.

## Lifting to greater heights

The Derrick lay barge which is currently under construction at Keppel Shipyard in two longitudinal strips was lifted and launched into the sea last month.

Construction of the barge started some two months ago for Bumi Armada Berhad. It is designed for pipe laying operations in waters of up to 100 metres in depth.

The barge will be built in two separate longitudinal hull strips at Keppel Shipyard before being transported through the narrow Volga-Don River Canal System to a Shipyard in the Caspian Sea for joining.

The port strip which weighs about 2240 tonnes was lifted by Asian Hercules I & II on 30 April 2009 while the starboard strip was lifted on 1 May 2009. More recently, the accommodation blocks were lifted onto the strips with the project well on track to meet its delivery in late August 2009 for transit to the Caspian Sea.

With 1.5 million manhours worked, the project celebrated a significant safety milestone of zero lost-time incidents on 23 May 2009.



Keppel Singmarine successfully launched a platform supply vessel on 24 April 2009

Project Manager Lim Chye Hee said of this significant achievement, “While keeping the project on track in order to pass through the canal before it freezes over, we have also managed to ensure that safety remains our first priority. Everybody is conscious of this and we will continue to ensure that nobody gets hurt on this project.”

### Soaring on safety

For the successful achievement of a total of 10 million manhours worked without lost-time incidents on three projects currently being constructed for Maersk Drilling, Keppel FELS was awarded bonuses totalling \$80,000. These projects include one high efficiency jackup rig and two deepwater development semisubmersibles.

Senior management and project teams from both Keppel FELS and Maersk Drilling commemorated these achievements with special ceremony on 27 May 2009.

Mr Gregers Kudsk, VP & Chief Technology Officer of Maersk Drilling congratulated Partnership in safety the teams and underscored the importance of personal responsibility towards ensuring safety at work.

Echoing Mr Kudsk’s safety reminders, Michael Chia, ED of Keppel FELS, said, “Safety is a cornerstone of our operations, and a core value shared by both Keppel FELS and Maersk Drilling. We must carry the safety message with us every day, everywhere we go, and strive towards our zero incident goal.”

In addition, Keppel FELS Brasil has achieved a safety record of three million man-hours without lost-time incidents (LTI) on the construction of the P-56 semisubmersible platform.

The safety milestone celebration was attended by the project teams, clients and subcontractors at the shipyard on



Lifting the strips of the derrick lay barge requires careful coordination



Edmundo Santos (left), Keppel FELS Brasil Project Manager and Cristina Pinto, Petrobras Project Manager celebrated a job well done at the P-56 safety award presentation ceremony

16 April 2009. During the award ceremony, President & CEO of Keppel FELS Brasil, Mr Kwok Kai Choong emphasised the importance of completing the project P-56 safely; on time, within budget and without incidents.

He said, “With the HSE safety programmes and initiatives being put in place, everybody is aware of the importance of keeping the workplace safe and the need to stay vigilant. Through this relentless

pursuit of a safe workplace, Keppel FELS Brasil strives not only to be a world-class leader in project execution but also in safety.”

Keppel FELS Brasil’s “HSE Motivation Programme” has heightened the awareness of safety across all its operations. Constant reminders such as signages, safety alerts and seminars also help to drill in the safety message.

# Anchoring presence at global conventions

## Nor-shipping network

**A**midst more than 1,000 exhibitors from 52 countries, Keppel Shipyard and Keppel Verolme made their presence felt at the leading maritime event in Oslo, Nor-Shipping 2009.

Under the Singapore Pavillion, Keppel O&M business units seized the opportunity to meet up with valued customers and partners at the exhibition which ran from 9 to 12 June 2009.

Keppel has supported the bi-annual event since 2001. Officiating the opening of the Singapore Pavilion was Mr Raymond Lim, Minister for Transport and Second Minister for Foreign Affairs.

Speaking to key Norwegian maritime leaders and participating companies' representatives, he said, "Singapore strives to be one of the leading international maritime centres in the world. The exhibits at the Singapore Pavilion provide

a glimpse of the vibrancy of the Singapore maritime industry and the diversity and range of our maritime services."

Keppel Shipyard services customers in the region with repairs and conversions while Keppel Verolme, with its deep draft graven dock, which is the widest in Europe, has made its mark in the North Sea region for on-time, within budget services in the new construction and repair market.

Nor-Shipping is the biennial premier international maritime trade-show for the global shipping industry. The 2009 edition was the largest in the event's history, dating back to 1967.

Nor-Shipping 2009 achieved new records with a total of 15,599 visitors and attendance of 17,780 exhibitor representatives.

Attended by Norway's King, HE Harald V, the Conference featured leaders of global stature leading discussions and lively debates about the industry's and regulators' efforts to contain greenhouse gas emissions.

## OTC connection

Despite the global economic recession and concerns about the H1N1 flu virus, some 67,000 energy professionals and delegates from 120 countries gathered in Houston, Texas for 2009's annual Offshore Technology Conference (OTC).

The 2009 exhibition starting from 4-7 May was the second largest in OTC's 40-year history, with the exhibition area filled to capacity by 2,500 companies from 38 countries.

Traditionally dominated by American and



## Industry magnates renew ties and forge new partnerships at the 2009 OTC

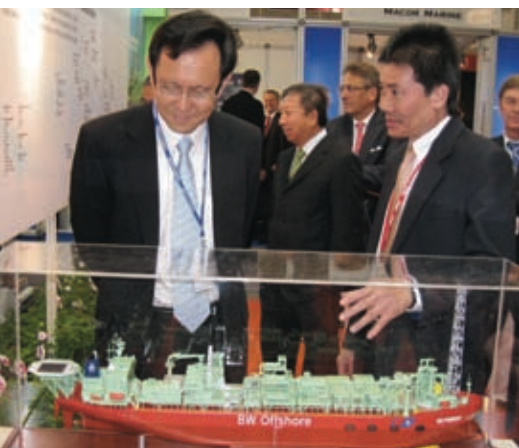
European industry players, OTC has seen a growing presence of Asian companies in recent years, including those from China, India, Vietnam, and Singapore.

Led by industry veteran Keppel O&M, homegrown enterprises exhibited their products and services with flair at OTC Singapore Pavilion for the fifth consecutive year.

Prior to the Singapore Pavilion's debut in 2005, Keppel O&M already had its fingers on the OTC pulse for close to 20 years through the annual Keppel cocktail reception. However, as a result of the H1N1 flu virus outbreak, this year's Keppel cocktail reception was cancelled.

Meanwhile, Keppel O&M's overseas business units such as Keppel Verolme and Keppel FELS Brasil staked their claims as long-time OTC exhibitors in their respective country pavilions.

Founded in 1969, OTC is the world's foremost event showcasing development of offshore resources in oil and gas drilling, exploration, production, and environmental protection. The topics discussed continue to shed light on technological innovations and forums on economic, social, and political aspects of resource development.



**Nelson Yeo, Keppel Shipyard's ED (right), updating Mr Raymond Lim, Minister for Transport, on the yard's latest projects and activities**



# Benchmarked for quality excellence

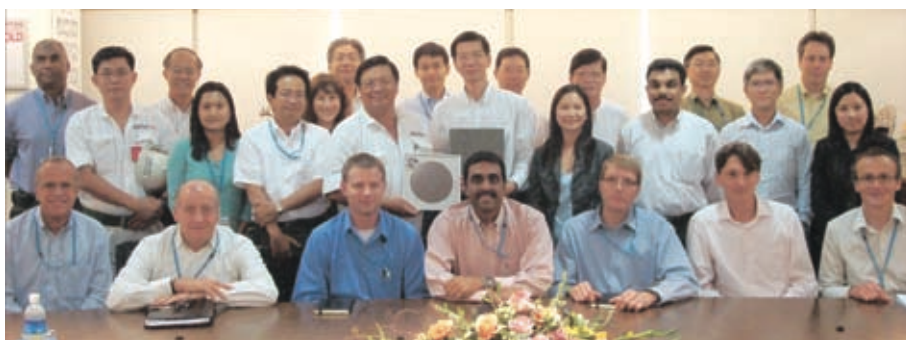
Over the years, Keppel FELS regularly opens its doors to visitors where ideas and knowledge are exchanged.

On 12 June 2009, Keppel FELS welcomed 25 visitors from International Exposition on Team Excellence (IETEX) 2009. IETEX 2009 is an event organised by the Singapore Productivity Association (SPA) to facilitate the exchange of ideas and expertise on enhancing innovation and quality in enterprises.

Regarded as an outstanding organisation in innovation and quality improvement, Keppel FELS was invited to share its innovation and quality circles (iQC) practices. These delegates were first given an introduction to Keppel FELS's businesses. Thereafter, they had a yard tour where they were given a close-up view of Keppel FELS's iQC projects, including the pipe dispenser that was conferred the National iQC Gold Award in 2003.

The objective of the visit is to enable the delegates to learn about the good practices of iQC organisations in Singapore and for both parties to network, share and exchange learning. Impressed by the project ideas, the visitors had a fruitful and robust discussion Keppel FELS.

Another visit by Siltronic, to Keppel FELS took place on 12 May 2009. Being the first Singaporean enterprise to win the MAXA 2008 Award, Keppel FELS's recognition of manufacturing excellence and a sharing of strong leadership and best practices have led to be the role model to encourage more companies to drive towards the aim of business excellence.



Wong Kok Seng, ED (Operations) of Keppel FELS (Middle row, fourth from the left) and Mr Niew Bock Cheng, President of Siltronic Singapore (Middle row, fifth from the right) exchanged tokens of appreciation during their visit to Keppel FELS



Delegates were brought to the piping workshop to view the projects that were implemented through iQC

This has attracted Siltronic, a global manufacturer and supplier of hyper pure wafers to initiate a friendly visit to Keppel FELS. Mr Niew Bock Cheng, President of Siltronic Singapore, along with senior management executives from Siltronic offices worldwide, visited Keppel FELS to better their understanding of what goes into making us a world leader in the global offshore industry.

Led by Wong Kok Seng, ED (Operations) of Keppel FELS, the management engaged the visitors in a dialogue on the importance of strong leadership, a committed workforce and operational best practices in an organisation's success.

# Keeping cool in crisis



Expecting the unexpected such as the H1N1 pandemic helps Keppel O&M to ensure business continuity

**A**s the H1N1 situation evolves, the world continues on its search for ways to control and contain this public health risk and menace to the business world.

Across the Keppel O&M, business units and employees have stepped up preparedness to adapt to the flux of the current flu situation. Immediately upon newsbreak of the virus, alert and response activities were activated in collaboration with customers, business partners and employees.

To ensure the robustness, adequacy and relevance of the Group's business continuity plans (BCP) and contingency programmes, Keppel O&M has held regular simulation exercises and reviews to assess, refine and improve existing procedures and protocols.

Beyond ensuring the sustainability of business operations and enhancing operational readiness, the focus remains also on protecting the lives and well-being of employees and their families.

### Boosting resilience

With thousands of workers moving in and out of its shipyards' premises each day, the threat of a contagion is taken very seriously at Keppel O&M. The sheer number of people in proximity at the workplace calls for strong coordination and communications plans to be in place.

To review, update and test the shortcomings and vulnerabilities of its BCP, a pandemic simulation exercise was conducted on 8 May 2009 across the yards of Keppel FELS, Keppel Shipyard, Keppel Singmarine and Keppel O&M Technology Centre, as well as its workers' dormitory, Acacia Lodge. The exercise involved some 6,000 employees and workers including subcontractors.

Starting from 5:30am onwards, key personnel were stationed at Acacia Lodge and the various yard entrances, to activate temperature monitoring for all workers entering the yards.

To inject potential disruptions and a sense of unpredictability into the situations, the

simulation exercises included workers being detected with high temperatures to test response protocols. The 'infected' workers were immediately masked and escorted to the isolation room where they were attended to by the Yard Nurse.

After the exercise, procedures for surveillance, security, notification and reporting by each department were refined while lessons learnt were quickly shared and disseminated to improve the effectiveness of the BCP.

Meanwhile, over in the Philippines, Keppel Batangas Shipyard also rolled out simulation exercises and an information campaign.

Visual aids in the local vernacular prepared by the HSE Departments has been posted all over the yard to remind people to wash their hands properly and regularly. Temperature monitoring is also being conducted daily for employees including subcontractors to check for any fever.

Simulating the realistic threat of a flu outbreak at Keppel's yards, a worker with fever was placed in quarantine following detection



# Hands up for safety!

Keppel FELS and Keppel Batangas Shipyard activate timely reminders on importance of safety and good health.



Keppel FELS's HSE efforts have clearly paid off and raised the level of learning among participants from the workforce



All in-tune – Keppel FELS's workforce reinforce safety learning through games and song led by management



Keppel Batangas workers learned more about the dangers of heat stress during the HSE Department's five-day briefing on heat stress prevention

Shedding the rote learning of safety rules for more interactive methods, Keppel FELS has reduced its overall number of incidents from 75 cases a year ago to 54 in June 2009. Hand and finger injuries, which make up a substantial portion of the incidents, also dropped from 33 cases to 26 during the same period.

These results were revealed at the culmination of the recent Health Safety Environment (HSE) campaign on hand and finger injuries in June.

This year's campaign sported an element of fun with educational games and quizzes and a catchy safety jingle on the 5 Steps to working safely. These efforts have clearly paid off and raised the level of learning among participants from the workforce.

"When we talk about safety, zero incidents will always be our target, and one incident is too many. As a team, we still have a lot to do to achieve our goal," said Max Goh, Mechanical System Manager (Piping Section) at Keppel FELS and Chairman of this year's campaign committee.

"We must continue to communicate and supervise so as to maintain a high level of safety awareness. This closing of the safety campaign marks the beginning of our continuous effort to achieve zero incidents," he added.

2009's campaign also drew strong participation from Keppel FELS's sizeable group of subcontractors and their workers.

“This year’s campaign is very different from previous years because the workers had hands-on learning on how to identify and control hazards. The games make the workers think and plan carefully before they make any move. This is the same as when we are on site where planning is very important. I wished that there was more time for everybody to play every game,” shared Hari Krushna, Engineer, Siong Leng Engineering Pte Ltd.

Echoing Krushna’s views, C. Karuppaiah, Painting Supervisor, New & Novel Engineering Pte Ltd, said, “I feel that this year’s campaign is very good because there is more engagement with the workers. My workers have learnt that planning before executing the job is very important as this can help identify potential safety problems beforehand. I hope that the campaign can

be done once every 6 months. This will help in constantly reminding the workers about safety.”

Urging the workforce to be even more vigilant and rigorous its safety efforts, CH Tong, CEO of Keppel Offshore & Marine, said, “In striving towards an incident-free workplace, we need the commitment, cooperation and active involvement of all parties, employees and subcontractors alike.”

“Do not let it be a one-off event,” CH Tong stressed. “Our collective efforts must continue to produce tangible results. With the active involvement of all stakeholders, we will be able to turn our vision of ‘zero incidents, zero loss’ into reality.”

Over at Keppel Batangas Shipyard,

workers learned more about the dangers of heat stress and other useful life saving information during the HSE Department’s five-day briefing on heat stress prevention in April.

Heat stress is a common occurrence in tropical countries. It is usually caused by high temperature and humidity, direct exposure to the sun or extreme heat, limited air movement or ventilation and physical exertion. There are different types of heat stress, including heat rash, heat cramps, heat exhaustion, and the most fatal of all, heat stroke.

With prevention being the key to avoid heat stress, employees and workers are encouraged to drink lots of water, take rest breaks under a shade and ensure adequate ventilation in the work area.

## A golden performance

**K**eppel FELS garnered the Intergraph 3D Design Award 2009 at the annual Intergraph Golden Valve Awards Competition for showcasing its proprietary semi-submersible drilling tender created with SmartMarine 3D design software.

The awards are sponsored by Intergraph, a leading global provider of engineering and geospatial software. Competition results were announced at Intergraph 2009, the engineering and geospatial software leader’s annual international users’ conference held in Washington, D.C. on 15 June 2009. Keppel FELS’s submission beat over 80 entries in this year’s competition to the golden prize.

Aziz Merchant, General Manager (Engineering) of Keppel FELS said, “We feel honoured to win the “Intergraph 3D Design Award 2009”. SmartMarine 3D, which we used to design the winning entry, is one of our key 3D solutions and reinforces our position as the provider of choice and partner for solutions in the offshore and marine industry.”



Aziz Merchant (right), General Manager (Engineering) of Keppel FELS received “Intergraph 3D Design Award 2009” award on behalf of Keppel FELS from President of Intergraph Process, Power & Marine



Mr Hawazi Daipi stamps his seal of approval for Keppel Group's "Safety starts with Me – Together We Care" campaign

# Rolling out Singapore's first safety training complex

**K**eppel Shipyard will build a safety training complex dedicated to further equip its entire 14,000 workforce with safety knowledge and competencies.

The plan was unveiled at the launch of Keppel Group's "Safety Starts with Me – Together We Care" campaign on 2 June 2009.

To be sited next to the Keppel Offshore & Marine Group Training Centre in the premises of Keppel Shipyard's Tuas Yard, the safety training complex will be the leading integrated safety training centre for its

multi-national workforce, including all its subcontractors.

When completed by the end of the year, the Safety Training Complex will be the first such training centre in Singapore.

CH Tong, CEO of Keppel O&M said, "Beyond equipping our direct workers, we will also be providing all our resident subcontractors with essential safety training at the complex for free.

"All our resident subcontract workers will get to enjoy the same set of safety awareness and competency training as our own direct workers so that we can

achieve a consistent safety standard and a common safety mindset across Keppel Shipyard."

The training complex covers all aspects of safety training with special focus on height safety, confined space safety, electrical safety and material handling safety.

It will comprise three levels of classroom training, a fire fighting training simulator, a marine metal scaffolding training area, a riggers and signalmen training area and a six level mid-ship safety module built to simulate the work environment.

# Integrated Safety Training Complex

The Integrated Safety Training Complex comprises of a concrete building with 3 levels, a Mid-ship Safety Module with 6 levels, a Fire Fighting Training Simulator, an allocated area for the Marine Metal Scaffolding Training and the Riggers and Signalmen Training. It will be built to simulate the working environment of the shipyard.



The Integrated Safety Training Complex is a hands-on learning environment for workers to enhance competency-based safety training. “Hazardous conditions” associated with the shipyard environment are enacted without the risk of injury.

The course trainer will simulate various scenarios of unsafe working conditions for workers to experience in each trade-specific environment. At the end of each training module, all workers will undergo theory and practical assessment to identify risk and exposure and how to control these hazards in a realistic setting.

A unique feature of the concrete building is a showcase of the Safety Plus journey hall depicting the past safety programmes as well as mock-up safety displays and computer-aided training to enhance the experiential safety learning about at-risk behaviour and hazardous conditions in the workplace.

The Steel Structure Complex simulating a mid-ship section of a tanker will house the following trainings on six different levels:

- Confined Space Safety Module
- Height Safety Module
- Electrical Safety Module
- Material Handling Safety Module
- Tower and Hanging Scaffold Module
- Machinery and Pump Room Module
- Gas Hoses & Gas Manifold Module
- Personal Protective Equipment (PPE) Module



Part of the Safety Training Complex is a six level Mid-Ship Safety Module which includes height safety, confined space safety, electrical safety and material handling safety



All hands on deck – showing their hands-on approach to safety are senior Keppel Management who left their hand prints on a specially commissioned painting to commemorate the occasion.

### Driving collective responsibility for a safe workplace

Keppel Group's "Safety Starts with Me – Together We Care" campaign aims to further enhance safety ownership among all stakeholders, including the subcontractors. As part of the "Together We Care" initiative, Keppel hopes to instil in everyone the importance of looking out for one another and build up a work-safe environment.

The campaign was officially launched at Keppel Shipyard by Mr Hawazi Daipi, Senior Parliamentary Secretary, Ministry of Manpower. He said, "It is encouraging to witness the Keppel Group's consistent and good efforts to strengthen safety ownership and raise safety awareness across all your business units.

"Keppel's campaign theme this year 'Safety starts with me – Together we care' aptly puts across each individual's responsibility for his own workplace safety as well as the need to care for the safety and health of his co-workers."

"Together We Care" is a continuation to Keppel Shipyard's "Safety Starts with Me" initiative launched in 2007 which promoted a sense of personal and collective responsibility to ensure that everyone returns home safely at the end of each work day.

At the ceremony, CB Choo, CEO of Keppel Corporation, the parent company of Keppel O&M, emphasised the importance of safety as a top priority, saying, "Through the 'Together We Care' initiative, we drive home the importance of looking out for one another. I cannot emphasise enough that by looking out for each other and sharing safety knowledge, we will help to enhance overall safety welfare."

Through the "Safety Starts with Me – Together We Care" initiative, Keppel Shipyard seeks to empower its 14,000 strong multi-national workforce to take care of each other's safety through observation and intervention skills as well as the "Safety-Buddies" scheme. The goal is to significantly enhance safety ownership, especially among all its

workers and subcontractors. Since 2008, over 12,000 direct and indirect workers have been trained in observation and intervention skills by Keppel Shipyard with the support of its customers.

CB Choo added, "Beyond mindset change and training, creating a safe workplace also involves enhancing and mechanising yard facilities. I am pleased to highlight that Keppel Shipyard is about to complete an automated pipe workshop which when operational will drastically reduce the manual handling of pipes. This will further minimise our workers being exposed to possible hazardous situations when handling pipes. The workshop will also further improve working conditions and allow for the deployment of older workers."

Keppel Shipyard will continue to enhance their "Safety Excellence 2010" initiative as part of their "Safety Plus Program". These include strengthening the Safety Leadership and also the building of the new dedicated safety training complex to centralise all its safety training programmes.



# Developing mentors

In June, Keppel O&M Group Human Resources organised two mentoring workshops to provide a comprehensive and systematic approach for Keppel O&M mentors to guide their mentees.

Held on 5 June 2009, the Executive Mentoring Workshop was attended by senior management. Though the workshop's emphasis was on introducing the latest mentorship concepts, it also covered some aged-old, tried and tested theories.

Reflecting on his participation in the workshop, Michael Chia, ED of Keppel FELS, said, "Keppel believes that good mentorship is crucial in ensuring a steady stream of capable and inspiring leaders. This will allow us to effectively pass on our skills and knowledge to the younger generation and perpetuate the *Can-do!* spirit. Overall, this workshop has introduced a number of mentoring methods which are useful in nurturing young leaders."

Additionally, on 10 June 2009, a group of young middle-management representatives participated in the Mentoring Workshop for Talents. These individuals were chosen for being role models at the workplace, and

their keen demonstration of Keppel O&M's core values.

Both the Executive Mentoring Workshop and Mentoring Workshop for Talents were well-organised with illustration of concepts via audio-visuals, games, activities, experiential sharing and role-playing. The facilitator Robin Robbins, the principal consultant of Hemisphere Consulting also shared real-life stories and tips on how to be effective mentors.

Lau Kah Loon, electrical engineer of Keppel Singmarine shared, "Mentorship is a long life process between mentor and mentee and valuable information is not limited to how the work can be done and what can be done. It is how we approach obstacles and resolve problems together whereby our relationship will grow stronger."

These two workshops are extensions of the Mentorship Scheme. Since the scheme was implemented as part of the Keppel O&M Corporate Orientation in March 2006, 415 mentors have shared their experience and knowledge, and helped 1,091 fresh hires assimilate into their new environment and culture. A mentor's certification programme was incepted in June 2008 to recognise exemplary mentors.



The mentoring workshops were well-organised with illustration of concepts via audio-visuals, games, activities, experiential sharing and role-playing

# Grooming leaders

**M**arrying leadership development with succession planning is integral to ensuring a healthy pipeline of leaders to perpetuate the strong Keppel O&M culture and drive the Group towards greater growth.

From 17 June to 27 June 2009, 26 Keppelites underwent leadership development training in the second run of the Global General Management Programme (GGMP). The programme was customised by Keppel O&M, in collaboration with Nanyang Business School.

Since its successful run last year, the programme has been further enhanced to better hone the strategic thinking and management skills of Keppelites. It aims to instil in them the essential know-how of developing new paradigms and tools for achieving growth and leadership necessary to help the Group to emerge as a force to be reckoned with in the local and global corporate scene.

This year's select group of participants was chosen for their high potential, extensive work experience and excellent performance track record.

At the heart of GGMP was an intensive 10-day workshop where participants had to tackle issues and concepts that are critical to general management. Addressing the participants on the first day of the programme, CH Tong, CEO of Keppel O&M emphasised that Keppel recognises their strong leadership potential and wants to help them realise it fully.

He said, "We take the grooming of our talents very seriously. Through this programme, we aim to develop the competencies of an effective leader whilst encouraging teamwork and interaction across the different business units."

During the orientation, the participants had a go at team-building games. Challenging yet entertaining, many of the games



CH Tong reiterates that Keppel is committed to realising leadership potential



The teambuilding games promotes key principles of teamwork, effective communication and coordination

highlighted key principles of teamwork, especially effective communication and coordination.

Three participants, Ng Seng Chong, Construction Manager (Projects) of Keppel FELS, Marlin Kiew, Project Manager, Keppel FELS and Kelvin Goh, Assistant Yard Manager of Keppel Shipyard facilitated the teambuilding. Ng Seng Chong was voted as Best Comrade by his fellow participants.

Following the one-day orientation, the participants divided into groups and undertook projects spanning from knowledge management to corporate finance. These programmes presented to Keppel O&M's senior management on the last day of GGMP.

On the last day of the programme, CB Choo, Chairman of Keppel O&M shared, "In talent development, we aim to help nurture the topmost tier of high potential and high performing individuals. We want to give them opportunities to be in leadership positions and drive results.

"As key players of the organisation, you are expected to lead strategically and drive sound business decision-making. Bringing out and integrating the talents of people, understanding the intrinsic and subtlety of managing relationships and inspiring others are at the heart of leadership."

**"We take the grooming of our talents very seriously. Through this programme, we aim to develop the competencies of an effective leader whilst encouraging teamwork and interaction across the different business units."**

*CH Tong, CEO of Keppel O&M*



"I am happy and proud to be part of this programme. Exchanging ideas with international members of the Keppel family has been enriching."

**Luiz Caetano**  
*Assistant Shipyard Manager  
Keppel FELS Brasil*

"GGMP addressed issues that affect my work but which I do not have much time in my daily routine to delve deeply into - for instance, building a technology portfolio, harnessing strategic alliances, and managing R&D strategies. At the same time, here, I am given the opportunity to reflect on the macro directions and goals of our organisation."



**Edgar Lim**  
*Principal Research Engineer  
Keppel Offshore & Marine Technology Centre*



"The programme is a fantastic way to encourage sharing between Keppelites. Through it, I have a better understanding of how other Keppelites think and work. Also, the programme has given us insights into the best practices of international brand names such as Google and Toyota; and so, broadened our perspectives and provided us with new and useful tools for our jobs."

**Dick Yeo**  
*Project Manager  
Keppel Singmarine*

"The amount of knowledge imparted to us in 10-days is simply amazing. The programme pushed us to review and improve our thinking processes, helping us be better decision-makers. I very much enjoyed getting to know this diverse group of Keppelites. They have furthered my understanding of the synergies and support between the different business units."

**Anthony Ong**  
*Shipyard Manager  
Caspian Shipyard Company*



# Maritime Week rallies industry for the upturn

Despite the choppy economic waters, the local maritime cluster is not letting up. The business community here made a resounding presence at this year's Singapore Maritime Week (SMW) organised by the Maritime & Port Authority (MPA).

The fourth SMW (18-24 April) was well-attended by top political and industry leaders, who discussed the current economic challenges and topical issues on the environment and maritime security. It also featured a wide spectrum of international conferences, forums and business networking events, touching on timely strategies to weather the downturn and position for growth.

An active member of Singapore's maritime cluster, Keppel O&M lent its support to SMW through Sea Asia 2009, a convention which seeks to project Asian perspectives in world shipping. For its strong and resilient contributions to the industry's development, Keppel was also conferred double honours at the biennial Singapore International Maritime Awards (IMA).

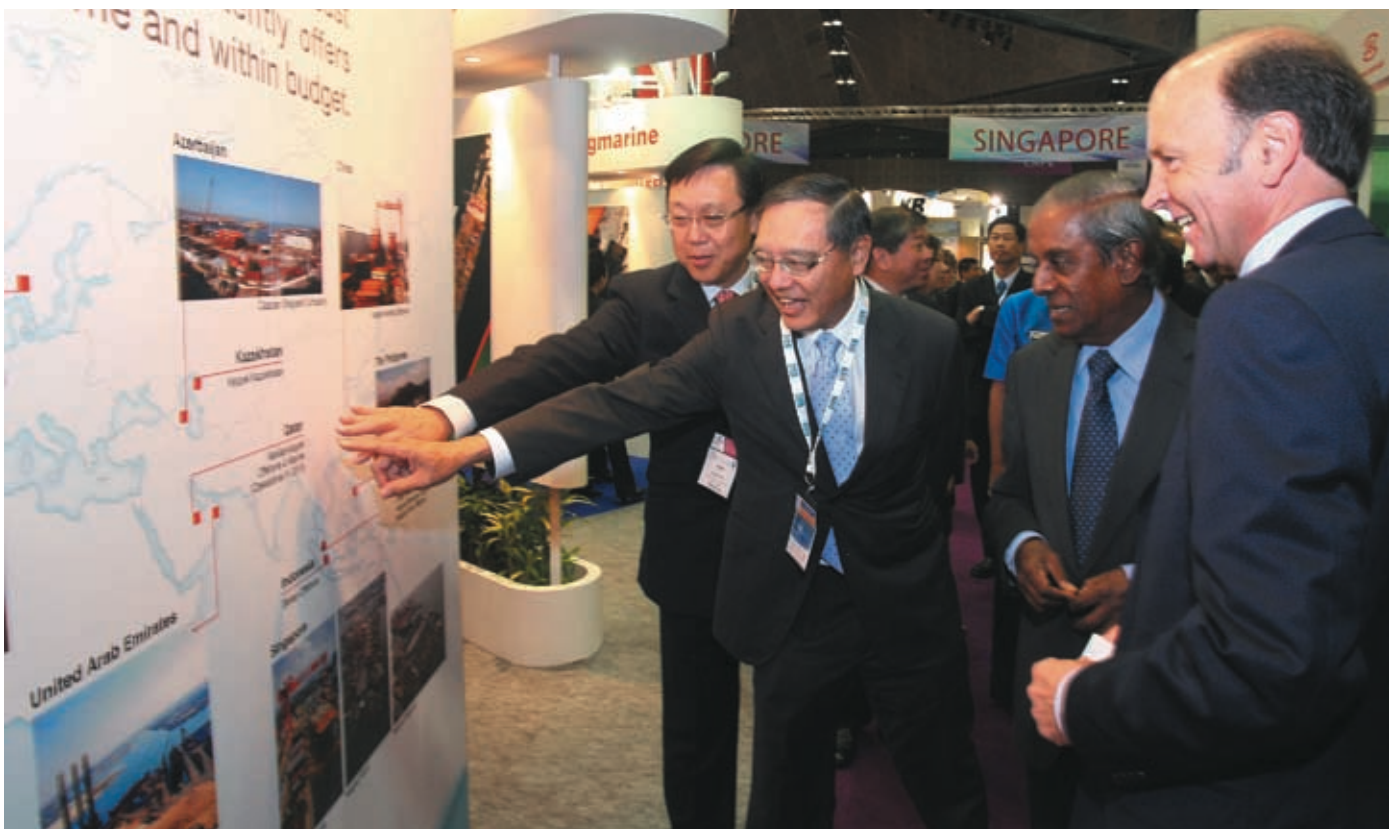
"The maritime community in Singapore has a long history. It has weathered many storms, and proven to be resourceful and resilient. What we are faced with today is no ordinary downturn, but even so, shipping is an essential service, and we can be confident that when

growth returns, shipping will be riding the growth wave," said Mr Raymond Lim, Minister for Transport and Second Minister for Foreign Affairs.

"The maritime cluster in Singapore, with its established international networks and proximity to Asian markets, will be well placed to ride on the crest of that wave," he added.

## Boosting Asia's share in world shipping

Unfazed by the crisis facing the global maritime industry, Sea Asia 2009 kicked off on 21 April to great optimism with



(From left) Michael Chia and CB Choo showing then Deputy Prime Minister Prof S. Jayakumar Keppel's yards around the world

Keppel O&M lending its voice to the major shipping conference and exhibition.

Jointly organised by Singapore Maritime Foundation (SMF) and Seatrade, Sea Asia 2009 was opened officially by Singapore's then Deputy Prime Minister and Co-ordinating Minister for National Security, Prof S. Jayakumar.

The three day conference themed 'Asian Voice in World Shipping', aims to unite industry players from around the world to influence the path of Asian maritime economies. It also provided platforms to discuss ways of pulling the global shipping industry out of the doldrums.

A founding supporter of Sea Asia since its inaugural launch in 2007, Keppel O&M continued to participate as an anchor conference exhibitor this year. The Company also hosted the Sea Asia networking reception and presided over a roundtable session at the conference.

CB Choo, CEO of Keppel Corporation and Chairman of Keppel O&M who chaired the session on 'The Asian Voice in World Shipping: Offshore Markets', said, "Keppel is an integral part of the global offshore and marine community. As we strive to become the choice service provider, we also remain committed to lend support to community in enhancing Singapore as a Maritime hub."

Elaborating further on Keppel's outlook, he added, "In spite of the weak global economy, Keppel is in its strongest position ever to face this crisis. We are prepared that the current recession will last longer than previous ones. Currently, we are strengthening our businesses, maintaining leaner and meaner operations and enhancing our value proposition to customers."

Keppel also contributed actively on the Sea Asia Steering Committee. The Group was represented by Michael Chia, ED of Keppel FELS and Wang Look Fung, GM of Keppel Group Corporate Communications, who provided guidance on the conference programme, among other things.



**CB Choo (right) receives the International Maritime Centre (Individual) Award from Guest-of-Honour Minister Raymond Lim**

### Showcasing Singapore's best

At this year's IMA, Keppel was lauded two times over with Keppel O&M garnering the Offshore & Marine Engineering Award, and CB Choo, the International Maritime Centre (Individual) Award.

The Offshore & Marine Engineering Award celebrates companies whose activities and achievements contribute significantly to Singapore's attractiveness as a one-stop maritime hub. The International Maritime Centre (Individual) Award recognises industry leaders who played pivotal roles in the transformation of the local offshore and marine industry.

Guest-of-Honour, Mr Raymond Lim, Minister for Transport and Second Minister for Foreign Affairs presented the respective awards to CB Choo and Keppel O&M, represented by its CEO, CH Tong.

"It is a great honour for Keppel and I to receive the engineering and individual awards at the IMA 2009. More importantly, we are heartened by the MPA's commitment to strengthen the local industry and to raise Singapore's profile at the international level," CB Choo said.

As an active member of the local maritime cluster, Keppel has dedicated significant resources to the development and training of talent for the industry, as well as the promotion of the R&D of technology.

CB Choo said, "Teamwork is key to Keppel's success. CH Tong and I are privileged to be supported by capable and like-minded colleagues. As we continue to groom more talents and develop technologies for Keppel's long term growth, we remain steadfast in supporting MPA's initiatives to build up the R&D expertise and talent base in Singapore."

# Technological challenges in the Arctic

By Charles Foo, Director of Keppel Offshore and Marine Technology Centre, (KOMtech)

The Arctic holds significant undiscovered oil and gas reserves, 13% and 30% respectively according to the US Geological Survey; Circum-Arctic Resource Appraisal, 2008. Some of the studies related to the Russian Arctic undertaken by researchers at Keppel Offshore & Marine Technology Centre (KOMtech) are described in this article.

Due to climate change and the warming of the Arctic, it is predicted that the region could be temporarily (for two weeks) ice free during the summer of 2040. That is, thirty years down the road a new era in polar transportation could emerge. Meantime, the focus is on the exploitation of oil and gas under the Arctic ice.

In the Russian Arctic, specially strengthened drillships have been deployed in deeper waters. However, the challenge is for water depth between 6m and 25m which is not sufficiently deep for drillships. No ice resistant jackups have been deployed in the Russian Arctic. KOMtech conceptualised and designed a mobile ice-resistant offshore drilling unit (MIRODU). Like most bottom founded offshore structures, MIRODU is massive in order to withstand the 100,000 tonnes design ice load. The structure could be greatly reduced in size if the ice load

can be realistically estimated as, say, 35,000 tonnes. The other challenges for the design of MIRODU include shallow waters during tow and the weak soil foundation at site. Designers have to consider the requirements of a large caisson supplemented with piles to resist lateral ice loads, heavily winterised topsides for year-round operation, stability during transit and installation, and disengagement from site after use. Provision for construction of sufficiently deep subsea wellhead caisson to avoid ice scouring after the platform's departure is also essential. For the Arctic, structures like MIRODU provides a safe and effective drilling option.

KOMtech has also investigated the use of truss-type jackup during the Arctic summer months when exposure to ice loads could test the robustness of jackup legs. The effect of ice jamming in the legs and ice-induced vibrations can bring about damage. Understanding the ice and legs interaction is therefore important in deciding the operability of the jackup in such ice conditions. Calculations based on ice impact theory were performed. The analysis was carried out using a deterministic method and the results show the potential usage of jackups in mild ice conditions with the support of ice management.

The Arctic lifeboat has been satisfactorily tested using a 1/7 scale model





### Structures like MIRODU provide a safe and effective drilling option for Arctic operations

Another challenge posed by Arctic ice is the requirements on evacuation vessels or lifeboats. This Arctic lifeboat has to be capable of being launched in water or on ice, operate in water or on ice and generally being able to transit from ice to water and vice versa. It must also be stable under all operating conditions.

KOMtech is working with Norwegian researchers in developing such a lifeboat. It is propelled by a pair of propulsion screws. A crawler mechanism is fitted at the bow to enable the lifeboat to climb from water to ice or land. The propulsion screw comprises a shaft with helical blades. There is also a transport mechanism under the lifeboat to provide extra traction over loose snow or ice. Two Uprighters are connected to the roof of the lifeboat for self-righting in water in case it is overturned.

The Arctic Lifeboat has been satisfactorily tested using a 1/7 scale model. There are no specific SOLAS (Safety of Life at Sea) requirements for Arctic lifeboats and researchers have to contend with general requirements for conventional

lifeboats. The next phase will involve industry to find acceptance of the concept and advance its development to prototype.

The demanding environment in offshore Arctic limits the grades and thicknesses of steel that could be used. This offers opportunity for alternative materials which the advancement in concrete technology made possible.

New cementitious composites which could provide high strength, light weight, consistent quality and impermeability to corrosive agents fit the bill. Production is by conventional methods, thus allowing construction at site, eliminating unnecessary movement from site to delivery point.

Proof of concept was carried out with the design of a 3500 tonnes deadweight barge which adopts an innovative framing system, providing a very high strength to weight ratio. This results in a very low draft to payload ratio. This cementitious composite can be applied to MIRODU in the area of the ice zone.

Application of concrete for offshore structures is not new. There are currently about 50 concrete offshore structures in the world. For various reasons concrete has been selected mainly for bottom founded structures and only in a few cases for floating structures. This is because a common issue for concrete floating structures of the past is their heavy weight.

Advancement in concrete technology over the past few years has significantly improved the microstructure of the cement matrix making it more compact and, together with specially selected aggregates, enables the concrete to be made lighter than 1300 kg/m<sup>3</sup>.

Having discovered and produced the oil and gas the next challenge is to ensure safe export of the products. The Russian Government and oil companies invested heavily to ensure year-round export of oil and gas from the Barents and Pechora Seas.

The Varandey Terminal developed by LUKOIL is a good example. A dedicated icebreaker is required to perform ice channeling for tankers to access the terminal. She is expected to break ice as thick as 1.7m whilst moving at 3 knots, capable of turning 180° in 3 minutes in 1.0m of level ice and also to assist in maneuvering and mooring of the tankers.

An icebreaking standby/supply vessel is also required to perform ice channeling and escort service within the terminal area all year round. Vessel equipment and systems need to be designed for water temperatures of -2°C to +20°C and air temperatures in the range -45°C and +30°C.

Keppel Singmarine undertook the challenge to build both ships, out of the tropics in Singapore. *Varandey* and *Toboy*, Asia's first pair of icebreakers are now serving LUKOIL, breaching their way through the icy terrains of the Barents Sea.

# Greening in unison

**S**ubic Shipyard and Engineering, Inc. (Subic Shipyard) recently embarked on a reforestation project, which saw its “green army” of Subic Shipyard troop to the hills fronting the drydock on 4 May 2009. Armed with shovels

and spades, about a hundred shipyard workers, including members of the two unions, trekked the five hectare hillside to plant one hundred fruit-bearing mango and kalamansi trees.

“This green initiative is our way of returning to Mother Nature what was affected in the course of the construction of the drydock expansion,” said Mok Kim Whang, President and General Manager of Subic Shipyard, after planting the first mango seedling in the area.

Subic Shipyard is currently lengthening its 350,000 dwt capacity graving dock from 350 metres to 550 metres to provide more co-drydocking flexibility to its customers. A portion of the hillside had to be reclaimed to make way for the expansion.

Once fully grown, these trees will help improve the surrounding air quality and prevent soil erosion, as well as provide ample supply of the sweet mangoes that the town is known for.

With the planting of the first mango tree, Subic Shipyard President and General Manager Mok Kim Whang marks the start of the tree planting activity



# Topping the Dean's list

**W**ith sheer determination and intelligence, Teh Swee Kheng, principal draftsman of Keppel FELS, 24, has topped the dean's list of engineering faculty of National University of Singapore for four consecutive semesters.

This is definitely not an easy feat for Swee Kheng, who has been offered the scholarship by Keppel O&M to study part-time for her bachelor degree in technology (mechanical engineering) two years ago.

Being a true Keppelite with Can-do Spirit!, Swee Kheng has demonstrated her perseverance in juggling both work and studies. There are many days where she

has to miss her dinner to attend lessons as well as sacrifice her sleep to catch up with her assignments.

She said, “I felt the need to upgrade myself after working two years in Keppel FELS. It takes a lot of self-discipline to study and work at the same time, and that also means I have lesser time for myself, friends and family.

“I'm grateful for the support and help given by my bosses and colleagues. If not, I will not be able to attend my classes punctually after work.”

With just two more years of the programme ahead, Swee Kheng is set to give her all!



Swee Kheng (centre) has topped the dean's list of engineering faculty of National University of Singapore for four consecutive semesters



# Starting them young

**K**eppel Offshore & Marine's reputation as an employer of choice has drawn many aspirants to its ranks, not least interns eager to experience life at the world's largest offshore rig builder. Of 14 students from Nanyang Technological University of Singapore (NTU) who did their internship between January and June 2009, Tai Guo Qing, a Mechanical Engineering undergraduate gives a first-hand account of his six-month stint at Keppel Shipyard.

It may sound cliché, but the attachment at Keppel O&M is really an eye-opener for me. My first impression of Keppel O&M is that everything is gigantic, this includes the spacious yard, huge vessels and equipment etc.

On my first day, I was briefed by the human resource and safety personnel and department heads about the life at the yards, and the importance of workplace safety, which had also much to do with cementing Keppel O&M's reputation as an industry leader.

The orientation programme then took us from the comfortable and serene office setting to where the real action takes

place; out in the field. This has changed my impression of a shipyard as I used to hear that shipyards are dangerous places to work in. Now, I feel that these claims are exaggerated, as Keppel yards are very well-organised. Even though the yard is always buzzing with activities, safety is not compromised. I actually feel safe wearing the personal protective equipment consisting of safety goggles, boots and overalls.

For the first two months at Keppel Shipyard, we were attached to five departments: Hull/Steel Work, Electrical, Machinery, Piping and Shipwright. We were subsequently rotated to other departments to better understand how a yard operates. Organised and disciplined, the workforce always seemed energetic and passionate. The yard is strewn with various workshops, where machining, fabrication and other activities are carried out in an assembly line manner.

One of the highlights of this attachment was the excess cable management project. Our objective is to find ways to cut down the wastage of the marine electrical cables that are being used in the conversion

projects and store the excess marine electrical cables.

We had approached the engineering, costing, purchasing departments and dock store to gather the information and come up with a work process flow chart. This has helped us understand the system and operations of the yard and how different departments cooperate with each other. After that, we made suggestions to help improve the current system in terms of cost-savings and more efficient space allocation.

I was later assigned to Nakilat-Keppel Offshore and Marine's office to help out on procurement work. This was a very challenging job to me and we were actively approaching suppliers in Qatar and Singapore required for the new yard. The process was rigorous but it gave me valuable hands-on experience.

Other than work, we had many opportunities to share our attachment experience at the Keppel scholarship and internship talks at tertiary institutes. For me, I shared with my NTU juniors on why they should join Keppel O&M for internship. I told them that it is an excellent learning environment. We had good mentors who boosted our confidence and provided opportunities for us to lead and learn. Beyond work, we were touched by the sincerity that went into ensuring we interns gained the most from this experience. The team spirit is also very strong and everyone has the *Can Do!* spirit.

It was indeed an enriching experience. I must say that we have the chance put the theories learnt in school into practice at Keppel O&M. This attachment has certainly complemented the university curriculum and exposed us all to the realities, as well as the scale of rigbuilding at Keppel O&M.



An eye-opening experience in Keppel yards for intern Tai Guo Qing (1st row, extreme right)

# Cultivating budding talents

Committed to people development, Keppel O&M has put in place initiatives to cultivate and grow budding talents for the industry

In August 2008, eight final year undergraduates from the Industrial and Systems Engineering Department of the National University of Singapore (NUS) were mentored for nine months by Jason Goh, a senior engineer at Keppel FELS's Quality System Department.

The undergraduates were divided into two teams and assigned with a project each. The results were impressive. By the end of the nine months, the undergraduates had successfully designed an energy management system and improved on an existing warehouse management system for Keppel FELS.

Named KEMIS, the energy management system helps Keppel FELS pursue energy conservation, while reducing carbon footprints. It enables the company to track and monitor its monthly energy consumption so that it can seek ways to enhance energy efficiency.

The second team which worked on the warehouse management system also achieved good results. The improvements made to the system included lead time reductions, space savings and more efficient use of the material handling equipment.

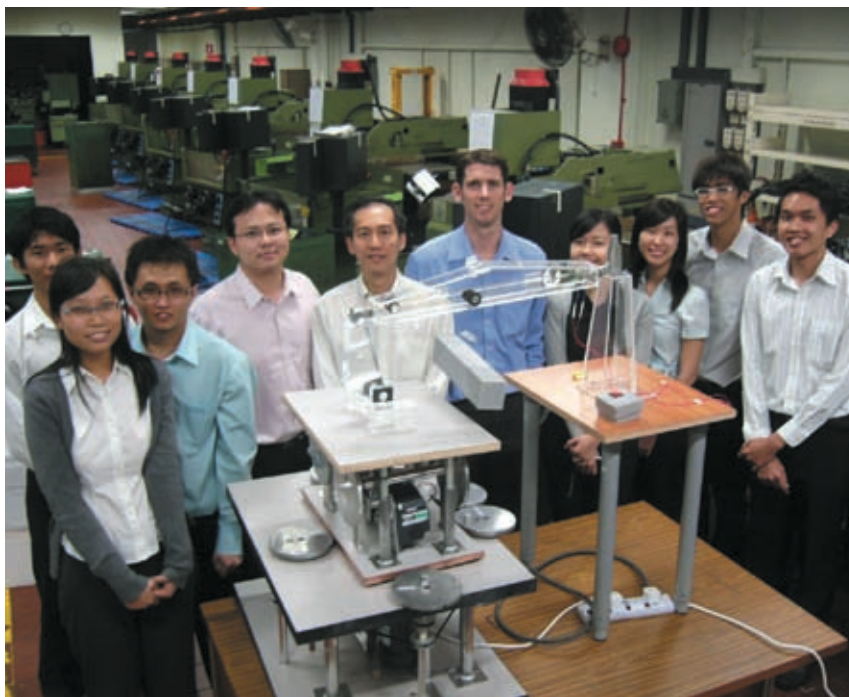
Li Zongyin, leader of one of the teams, said, "We have certainly benefited immensely from this experience. From translating open-ended objectives into specific requirements, to developing soft skills that are required of a successful engineer, this mentorship has taught us lessons that one can never learn in the classroom."

At the end of the mentorship, Professor Tang Loon Ching, Head of Industrial and Systems Engineering of NUS presented a token of

appreciation to Keppel FELS for the time spent with the undergraduates.

Separately, Keppel O&M received an award from NUS's Mechanical Engineering Department for its active participation in their industrial project for the past three years. The programme gives third year students at the Department the opportunity to experience the full product design cycle in the offshore and marine related industries. The students worked on three projects: a ship-to-ship container transfer bridge on motion simulator, a hydro-solid transportation test rig and a side-by-side mooring model testing.

The projects were co-supervised by Keppel Offshore & Marine Technology Centre's research engineers Michael Perry, Yao Zong, Rajab Khalilpour and Thomas Khor.



NUS mechanical engineering students presented their prototype of the motion simulator

# Going national with safety



Abu Bakar, Senior GM (Operations) of Keppel Shipyard with Edwin Tan and Toh Soon Heng's (right) creative photography entry

**K**eppel O&M's commitment to safety extends beyond its own workplace. Aligning itself to the national agenda, it contributed S\$100,000 to the National Workplace Safety & Health (NWSH) campaign 2009.

At the launch of the campaign, some 11 workers and supervisors from Keppel O&M received their certificates for successfully completing the Professionals Conversion Programme for WSH Officers.

The NWSH Campaign 2009 stretch over three months this year with a bigger and better spread of programmes than before.

The motto "Safety Starts With Me", which was adopted by Keppel Shipyard in 2007, continues to be the theme for this national campaign reinforcing the message that each and every person plays a part in creating safer and healthier workplaces.

Part of the campaign includes the promotion of safety awareness through various competitions. In the open category for creative photography, Toh Soon Heng from Keppel Shipyard (Benoi)'s Shipwright Department won the bronze prize while Kenny Teng, from Keppel Singmarine's Shipwright Department, received a consolation award in the open category of the 3D modeling competition.

# Partners in knowledge-building

**A**bout 80 Newcastle University alumni members exchanged stories and laughter while reminiscing about their good old school days during a gathering at Raffles Hotel on 16 May 2009.

The alumni networking event is part of Newcastle University's flagship conference in Singapore, entitled, *Newcastle University and Singapore: Partners in Regional Capacity Building*.

Keppel O&M supported the event, which was hosted by the University's Pro-Vice-Chancellor for Engagement, Professor Paul Younger, by contributing the post-conference cocktail reception.

The conference provided a forum for both policy-makers and industrialists to discuss the challenges of regional capacity building with senior representatives from academia, and to work towards solutions which Newcastle University and Singapore can achieve in partnership.

Newcastle University and Singapore have shared an enduring partnership since the 1960s, producing some of the best and brightest in the Singapore offshore, marine and maritime sectors.

About 70 employees from Keppel O&M are current and previous students of the University, including Keppel O&M's Chairman CB Choo.



Keppel O&M supports platforms that encourage the vibrant exchange of ideas and knowledge that benefit Singapore's offshore, marine and maritime industries

# The *ride* choice

In support of the Rotterdam government's efforts to ease traffic jams and to protect the environment, some 30 Keppel Verolme employees have been riding electric bicycles (e-bikes) to work daily since April 2009.

Known as *De Verkeersonderneming*, this is a programme launched by the Rotterdam government to try to improve the accessibility of Rotterdam, which is plagued by daily traffic jams on the main highways due to the increasing number of large construction projects in recent years.

The government is encouraging residents to commute by e-bikes if they travel within short distances of between 10 to 20 kilometres.

E-bikes come with electric pedal assistance and the power-assisted top speed is 25km/h, and hence suitable for short travel distance of up to 20 kilometres. Jan Boender, yard facility



Keppel Verolme's employees give the thumbs-up to riding electric bicycles to work to reduce traffic jams

coordinator, who made the 'ride' choice of cycling to work, shared, "It is not only easy to ride the e-bike; this is also another form of exercise! Electric bicycles are an environment-friendly mode of transportation and are a cost-effective alternative to a car."

# Home is now just a stop away

Going to and from work has never been easier. The employees and community of Angra dos Reis now have a faster and more convenient way to travel to the BrasFELS yard.

BrasFELS, in partnership with the City Hall of Angra dos Reis helped to construct a Bus Terminal next to its yard for its thousands of employees.

KC Kwok, President & CEO of Keppel FELS Brasil said, "Besides providing employment to Angra dos Reis residents, we are also committed to improving community life by supporting the above government-led projects."



With buses plying more than 10 different cities and districts, the bus terminal outside BrasFELS yard greatly improves travel for its thousands of employees

Named after the founder of the yard, Cornelius Verolme, the terminal occupies 2,800 m<sup>2</sup> with more than 10 buses in its stable. The buses travel to more than 10 different cities, including Rio de Janeiro and Niterói and more than 10 different districts inside the Angra dos Reis city.

Construction on the bus terminal started in September 2008 and was delivered to the employees of BrasFELS and the Community of Angra dos Reis on 30 May 2009.



Keppel celebrates the 337 long-serving Keppelites who form the bedrock of the company's strength

# Honouring evergreen employees

**S**taff from Keppel Shipyard and Keppel Singmarine were honoured for their long service of 10 to 40 years, and unyielding commitment and support to the Group.

“Not many companies in Singapore have so many long-serving employees. All of you have helped Keppel O&M make its mark in the world.

“You have remained with the Group through good times and bad, and you have contributed your experience and expertise to the Group,” said CEO of Keppel O&M, CH Tong, who had himself been with the Group for 40 years.

Harry Loh, Senior Manager (Projects) of Keppel Singmarine, who received the 35-year long service award, reminisced, “Truly, it has been a long and fulfilling journey in Keppel. Despite all the tough challenges and long hours, there’s always a sense of satisfaction whenever the projects are completed.

“I have been very fortunate to be able to work in Keppel, which is a very nurturing organisation. Looking ahead, I hope I can pass on my skills and experience to the younger generation.”

Lim Ai Kok, Yard Manager (Major

Projects) of Keppel Shipyard said, “This is my first job and I enjoy every lesson learnt here. In my 37 years in Keppel, I have made many friends and I’m happy with the career progression too. I must say Keppel fosters a healthy corporate culture that encourages all employees to learn and grow together to build the business.”

Ai Kok further encouraged his fellow Keppelites to build long-term careers in Keppel, sharing that the company provides ample opportunities for development and advancement in Singapore and overseas.

# Touching lives in Brownsville

Faculty members of the University of Texas at Brownsville and the Texas Southmost College (UTB/TSC) are brimming with excitement at the prospect of a brand new Arts Centre.

This vision is made possible with contributions made by Keppel AmFELS, a wholly-owned US subsidiary of Keppel O&M.

This March, Keppel AmFELS pledged US\$50,000 towards the construction of the Centre, out of which US\$30,000 was raised through its annual charity golf tournament.

This is in line with the Keppel Group's long-term goal and corporate thrust to nurture lives by making positive impact on the communities in which it operates.

Keppel AmFELS' support with help encourage the growth of education

and the fine arts in Brownsville, Texas. In recognition of the contribution, the University named a box seat in the new Arts Center The Keppel AmFELS Inc. Box.

GS Tan, President & CEO of Keppel AmFELS said, "What we have been doing at Keppel AmFELS with the University and with the city of Brownsville are just a small part of what we aspire to do for our community.

"We have always placed top priorities in education and fine arts. I am confident that the new Arts Centre will greatly benefit students and the community."



Proceeds from Keppel AmFELS' annual charity golf tournament also went to the UTB/TSC Chess Scholarship Endowment while another US\$3,000 was contributed towards UTB/TSC's 'Planting Flowers of Hope' event which commemorates the agreement between the University and the federal government to upgrade the school's facilities.

Keppel AmFELS also supported this year's Charro Day, an annual week-long event celebrating the cultures of the border towns of Brownsville, Texas, and Matamoros, Mexico, by sponsoring the event poster designed by Brownsville artist Don Breedon.

# In a league of its own



The Keppel FELS team strategises its winning game plan

**10** games, 10 wins! With that, Keppel FELS achieved a perfect score of 30 points to emerge football champions of the first series in the National Corporate League 2009 on 24 March 2009.

As this round's champion, Keppel FELS's Ronaldos and Beckhams will next face the challenging task of competing with the winners and runner-ups from the second and third series for the prestigious championship title.

The five-a-side indoor football league is organised by the Football Association of Singapore (FAS) together with FICO Sports Hub as part of the FAS outreach programme to help spread the healthy lifestyle message in the business sector through active participation in football.

# Distinction of a different degree



CB Choo, has been conferred the Honorary Degree of Doctor of Civil Law from Newcastle University

**F**or his enormous contributions to the marine and offshore industry, Keppel Corporation's CEO & Chairman of Keppel O&M, CB Choo, has been conferred the Honorary Degree of Doctor of Civil Law from Newcastle University, UK on 3 April 2009.

The honorary degree is the highest award that can be made by the University, and is bestowed to a small number of outstanding individuals every year.

The University's Senate was resolved to invite CB Choo to accept the award, based on its recognition that "Over the years, [Mr Choo] had risen from a Colombo Plan Scholar in Naval Architecture to become the Chief Executive of Keppel O&M whilst transforming that company into one of the largest offshore and marine groups in the world.

"In addition to [his] engineering achievements, [he] had worked hard to encourage future scholars in the field of marine engineering, for example, through the establishment of Newcastle University's MSc in Marine Technology."

## Laurels for CB Choo

"Chiau Beng has succeeded in positioning Keppel O&M as the world's leading supplier of the jack-up rigs which are used by the oil and gas industry worldwide for offshore drilling.

"From humble beginnings, he has risen to the status of a global icon in the marine and offshore sector. His competitive prowess is tempered with the finest of human values."

### Professor Paul L. Younger

*Pro-Vice-Chancellor (Engagement)*

*Newcastle University*

"Chiau Beng's sterling leadership in the offshore and marine industry, as well as remarkable contributions towards the international communities are highly regarded. His honorary doctorate conferred by the University of Newcastle is well deserved. We acknowledge his strong support in the set-up of the Keppel Professorship and the formation of the Centre for Offshore Research & Engineering (CORE) in our university, and look forward to deepening our partnership with Keppel."

### Professor Choo Yoo Sang

*Lloyd's Register Educational Trust Professor*

*Director (Research) of Centre for Offshore Research & Engineering (CORE)*

*National University of Singapore*

"I would like to congratulate Mr Choo Chiau Beng on a richly deserved honour and a tribute to his energetic leadership. He is a decisive but gentle person, unfailingly warm and courteous to everyone, making no distinction between young and old, powerful and humble."

### Professor Andrew Palmer

*Keppel Chair Professor*

*National University of Singapore*

# Around our yards

OffshoreMarine tracks works at various Keppel yards

## Singapore

### Keppel Shipyard Tuas

Name : **Eneos Tokyo**  
Type : Tanker  
DWT : 300,976  
Owner : Nippon Oil Tanker  
Date : 12-27 May 2009  
Scope : Hydro-blasting, Power-tooling & painting in WBT 2 port / star-board & 5 port / star-board, Hull blasting

& Painting, Overhauling of main engine, High pressure washing of auxilliary boiler & engine, Renewal of wires for midship crane, monorail crane & accommodation ladders.

Name : **Elise Schulte**  
Type : Tanker  
DWT : 106,122  
Owner : Bernhard Schulte Ship Mgmt

Date : 9-19 June 2009  
Scope : Hull blasting & painting, Steel plate renewal in WBT 1C & 5 port / star-board, Anchor chain & Anchor shackle pins renewal, Thermographic survey on main switchboard, Lifeboats, lifeboat davits & ships cranes load test

## Philippines

### Keppel Batangas Shipyard

Name : **Crimson Forest**  
Owner : MK Ship Management Co. Ltd.  
Country : Japan  
Type : Bulk Carrier  
GRT : 19, 734 Mt  
Date : 18-27 May 2009  
Scope : Hull Cleaning, Blasting, Painting, Aluminum anodes renewal, anchor and chain painting, chain locker cleaning, lifeboat and davit load testing deck crane repair Existence, Port and stbd windlass repair, Sea valves overhauling, propeller and Shaft repairs. Piping renewal auxiliary blower overhauling, switchboard cleaning, Bottom and bilge keel replating and motor overhauling, and other normal routine drydocking works.

Eneos Tokyo



Elise Schulte





Name : **General Geronimo**  
 Owner : Magsaysay Ship Management Inc.  
 Country : Philippines  
 Type : General Cargo  
 GRT : 2,854 tons  
 Date : 4 May till 7 June 2009  
 Scope : Tank Cleaning, Hatch Cover Repair, Steel Renewal, Blasting and Painting, and other normal routine drydocking and repair works.

Name : **Petro Anica**  
 Owner : Translift ShipManagement Inc.  
 Country : Philippines  
 Type : Oil tanker  
 GRT : 4, 881 tons  
 Date : 4 June till 11 June 2009  
 Scope : Cargo Monitoring system, Blasting and painting works and other normal routine works.

### Subic Shipyard & Engineering

Name : **MV "KOHFUKUSAN"**  
 Owner : Daishin Shipping Co., Ltd.  
 Country : Japan  
 Type : Bulk Carrier  
 DWT : 193,787  
 GRT : 87,473  
 Date : 24 May 2009 – In-progress  
 Scope : Drydocking; Hull preservation; Cargo hold upgrading; Cargo hold no.1 & 9 hold bilge hopper plate partial renewal; Hatch coaming top plate & rest pads repair; Tank anodes renewal; Securing stopper of cargo hold no.1 & 2; Sounding pipe renewal; Boiler cleaning; Mounting & safety valves overhauling; Sea valve, windlass port side brake lining renewal; Diesel generator governor overhauling;



Name : **MV "MARA"**  
 Owner : Scorpio Ship Management S.A.M.  
 Country : Monaco  
 Type : Bulk Carrier  
 DWT : 64,850  
 GRT : 39,836  
 Date : 30 May 2009 – in-progress  
 Scope : Drydocking; Hull blasting / painting; Hydraulic pressure test fuel oil & diesel oil line; Calibration of 15 ppm oil bilge separator; Measurement of rudder pintle clearance; Repair rudder pintle to workshop; Propeller withdrawal for modified survey; Aft shaft seal renewal; Propeller normal polishing & dye check.

### Keppel Verolme

Name : **Heytrop**  
 Owner : Zodiac Maritime  
 Country : United Kingdom  
 Type : Bulk carrier  
 DWT : 165,729  
 GRT : 85,721  
 Date : 26 April till 06 May 2009  
 Scope : Alongside and assistance. This Aframax bulkcarrier managed by Zodiac Maritime in London was at the yard because of a rudder problem. As the dry-docks were occupied the vessel was moored alongside one of the yard's quays and trimmed to access the rudder. In this position a rudder pintle bush.

# Keppel Group | Newsbytes

**Keppel Oil and Gas Services Pte Ltd**, a wholly-owned subsidiary of Keppel Corporation, has completed the sale of its entire 45.51% stake in the share capital (excluding treasury shares) of Singapore Petroleum Company Limited to PetroChina International (Singapore) Pte Ltd (Purchaser), an indirectly wholly-owned subsidiary of PetroChina Company Limited (“PetroChina”) via PetroChina International Company Ltd for a consideration of \$6.25 per Sale Share or approximately \$1.47 billion.

**Keppel Land** had three of its entries nominated for top spots amidst other prestigious developments from all over Asia at the Cityscape Asia Real Estate Awards. In each category, only the top three entries were shortlisted to compete.

Both *Ocean Financial Centre* (OFC), a commercial development in Singapore and *The Estella*, a residential property in Ho Chi Minh City, Vietnam, were shortlisted to contend in the category for “Best Green Development – Future.” While judges were faced with a tough decision, the highest score rating went to *OFC. Reflections at Keppel Bay*, another Keppel development, were also shortlisted in the category of “Best Waterfront Development – Future”.

The Awards recognise architecture excellence and project designs that have reflected outstanding performance and achievement in key markets.

**Keppel Seghers’** equipment and technologies fitted to Finland’s first waste-to-energy (WTE) plant was inaugurated on 28 April 2009 by Mr Taisto Turunen, Director for Energy Department at

Finland’s Ministry of Employment and the Economy.

The WTE plant is able to produce about 90 GWh of process steam, 60 GWh of district heat and 50 GWh of electricity annually. Processing about 90,000 tonnes of source-sorted household waste and a small amount of industrial waste

**Keppel Energy**, which operates the Keppel Merlimau Co-generation Plant, has

signed a Memorandum of Understanding (MOU) with the taskforce to develop charging stations and other infrastructure to support the test-bedding of EVs.

The taskforce is chaired by the Energy Market Authority (EMA) and Land Transport Authority (LTA). It also comprises members across different ministries and statutory boards, including the Agency for Science, Technology and Research (A\*STAR), the Economic Development Board (EDB), and the National Environment Agency (NEA).



Finland’s first waste-to-energy plant, featuring Keppel Seghers’ technology, will contribute to the country meeting the EU’s waste recycling targets

# Global Reach

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# Delivering a series of success to Ensco

In June this year, Keppel FELS delivered ENSCO 8501 to longtime customer, Ensco International Incorporated (Ensco) with a sterling safety record. She is the second of seven identical ENSCO 8500 Series® ultra-deepwater semisubmersibles (semis) being built exclusively by Keppel FELS.

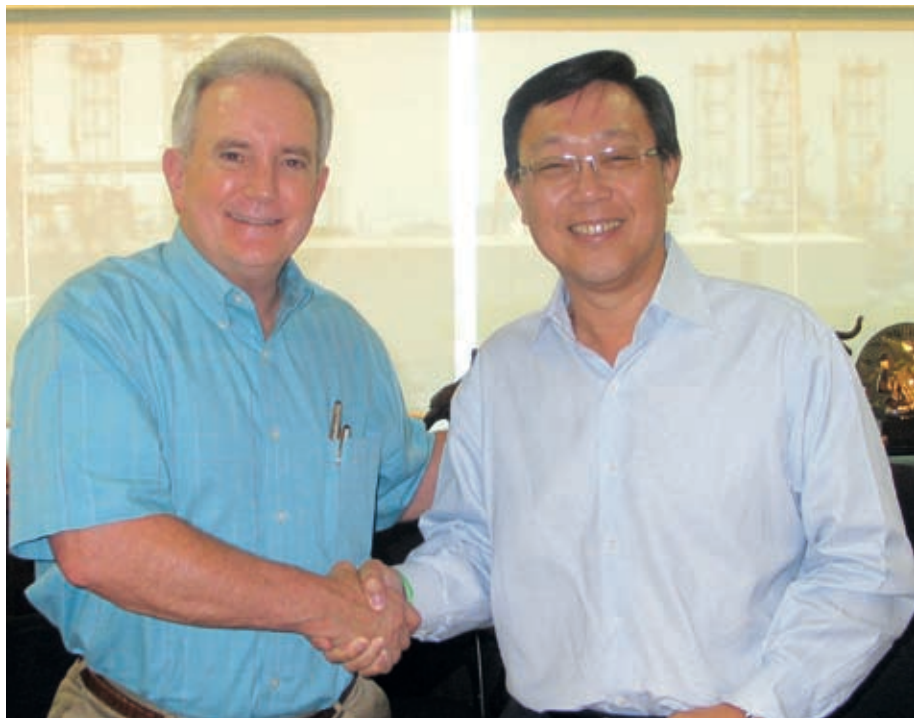
Mr Dan Rabun, Chairman, President and CEO of Ensco, said, "We are pleased with the successful completion of ENSCO 8501, made possible by the excellent teamwork and synergy with our preferred partner Keppel FELS.

"The delivery of our second ultra-deepwater semisubmersible rig in the ENSCO 8500 Series® is an important milestone in our deepwater expansion programme. We anticipate a smooth startup of operations following final outfitting, sea trials and deep water acceptance testing once ENSCO 8501 arrives in the Gulf of Mexico."

ENSCO 8501 is expected to commence its 3 1/2 year drilling operation for Nexen and Noble Energy in the Gulf of Mexico as early as October 2009.

CH Tong, CEO of Keppel O&M, parent company of Keppel FELS, said, "Keppel and Ensco have enjoyed an enduring partnership of nearly 15 years, during which we have worked closely to build up and renew Ensco's rig fleet. The incident-free delivery of ENSCO 8501 is the hallmark of our win-win relationship with Ensco and Keppel FELS's continuous drive for operational excellence."

Meanwhile, the first deepwater rig of this Series, ENSCO 8500, has successfully commenced operations in the Gulf of



Ensco's preferred partner – Bob Isaac (left), Ensco's Associate General Counsel and Michael Chia, ED of Keppel FELS at the delivery of ENSCO 8501

Mexico under a four-year contract with Anadarko and Eni.

"Over the past several years, we have strategically committed more than US\$3 billion to the expansion of our ultra-deepwater fleet to better serve the needs of our customers. Today, we achieved a milestone in the implementation phase of the ENSCO 8500 Series® deepwater initiative with the commencement of operations by ENSCO 8500 under a long-term drilling contract signed in September 2005," said Mr Rabun.

"Our ultra-deepwater semisubmersible drilling rigs complement our premium jackup fleet and will become a progressively larger segment of Ensco's total rig fleet around the world," he added.

The ENSCO 8500 Series® of ultra-deepwater rigs are capable of drilling in 8,500 ft of water, and may be further upgraded to 10,000 ft water-depth capability. They also have a drilling depth of 35,000 ft and can accommodate up to 150 workers.

Suitable for deployment in deepwater fields worldwide, the ENSCO 8500 Series® streamlines operational functionality, training, spare part requirements, repairs and maintenance to control costs and enhance the overall reliability of rig operations.

"As the exclusive builder of Ensco's 8500 Series® semis, we are confident that this fine fleet will raise the benchmark for cost-effective ultra-deepwater drilling," CH Tong affirmed.