

KEPPEL SINGMARINE SECURED TWO CONTRACTS FOR AHTS VESSEL AND ICE-CLASS VESSEL

US\$265M Contract to Build Ice-Class Multi-Purpose Vessel for New Orient Marine

Specialised shipbuilder Keppel Singmarine Pte Ltd, a wholly-owned subsidiary of Keppel Offshore & Marine Ltd (Keppel O&M), has secured a contract from New Orient Marine Pte Ltd, for an ice-class multi-purpose vessel. The contract for the newbuild is worth about S\$265 million.

New Orient Marine is a subsidiary of Luxembourg-based Maritime Construction Services SA. The latter has vast experience in the construction, operation and chartering of a variety of vessels, and offers a range of marine services such as brokering, contracting, towage, consulting and crewing.

The ice-class with multi-purpose vessel will be built to the proprietary design of Keppel O&M's ship design and development arm, Marine Technology Development. It will be designed to operate in ambient temperature as low as minus 30 degree Celsius. It will have an Ice Class Arc 5 notation and capabilities such as Class 3 dynamic positioning and diving support functions. It is scheduled for completion in mid 2017.

Keppel Singmarine, a leading shipyard in design and construction of ice-class vessels, having built seven ice-class vessels for the Arctic and Caspian regions. In addition to the contract from new customer Maritime Construction Services, the shipyard currently has three more ice-class vessels on order. This brings the number of ice-class vessels in its orderbook to a total of four.

According to Maritime Construction Services, there is a demand for modern ice-class multi-purpose vessels in the market, and the new state-of-the-art vessel it is building with Keppel Singmarine will help meet this need.



Contract from Seaways International for Multi-Task Anchor Handling Tug Vessel

Keppel Singmarine was awarded a contract by Seaways International Pte Ltd to build a multi-task Anchor Handling Tug (AHT) vessel suitable for an array of offshore activities. When completed in second quarter of 2016, this vessel will be the fifth AHT unit that Keppel Singmarine has built for Seaways.

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

Seaways International, owner of a fleet of modern offshore support vessels, provides dynamic positioning class offshore support vessels to support FPSO, FSO and drill rigs. It also provides anchor handling tugs for pipe lay, derrick and accommodation barges, ocean and in-field towages, offshore support services as well as tug and barge combinations.



Keppel Singmarine will build the fifth Anchor Handling Tug (AHT) vessel for Seaways. Seaways 22 (pictured) was the fourth AHT it delivered to Seaways in 2013.

Keppel Singmarine will be building an ice-class multi-purpose vessel using Keppel's proprietary design for Maritime Construction Services SA.

ST MARINE COMPLETED REPAIR ON CONSTRUCTION/FLEXLAY VESSEL FOR SUBSEA 7

ST Marine successfully completed the installation of DNV class approved T-Bar for construction/flexlay vessel, *Skandi Acergy*. The vessel was redelivered to Subsea 7 Norway AS.

The duration of repairs in the yard lasted a total of 19 days. Despite earlier vessel arrival to the shipyard and festive holidays, *Skandi Acergy* was completed and redelivered ahead of schedule. This demonstrated the excellent teamwork between the project teams from ST Marine and Subsea 7.



ST Marine successfully completed the installation of DNV class approved T-Bar for construction/flexlay vessel, *Skandi Acergy*.

DYNA-MAC CLINCHED TWO FPSO TOPSIDE MODULE FABRICATION CONTRACTS FROM BW OFFSHORE AND ARMADA CABACA

S\$89M Contract for Catcher Development FPSO's Topside Modules from BW Offshore

Dyna-Mac Holdings Ltd has secured a contract for the construction of ten units of Floating Production Storage and Offloading (FPSO) topside modules and one unit of flare tower from BW Offshore. The contract is worth around S\$89 million.

BW Offshore is a leading global provider of floating production services to the oil & gas industry. It is the world's second largest contractor with a fleet of 14 FPSOs and one FSO in all major oil regions world wide.

The contract includes preparation of shop drawings and fabrication of ten units of topside modules for the vessel. The FPSO will operate at Premier Oil's Catcher oil fields in the UK sector of the North Sea. The topside FPSO modules are scheduled to be delivered progressively within first quarter of 2016.

The Catcher FPSO will be capable of processing up to 60,000 barrels of crude

per day. It will have a storage capacity of 650,000 barrels with first oil targeted for mid 2017.

Dyna-Mac, listed on SGX Mainboard and headquartered in Singapore, has shipyards in Singapore, Malaysia and China. It has an established track record of constructing topside modules and has delivered 233 topside modules to-date.

S\$60M Contract for six units of Topside Modules from Armada Cabaca

In addition, Dyna-Mac has also secured a Letter of Award for construction of six units of FPSO topside modules from Armada Cabaca. The contract is worth approximately S\$60 million.

Armada Cabaca is an affiliate of Bumi Armada Berhad, a Malaysia-based international oilfield services provider. Bumi Armada is the fifth largest FPSO player in the world and an established owner and operator of Offshore Support Vessels across Asia, Africa and Latin America.

Dyna-Mac's scope of work for the project includes detailed engineering and fabrication of six units of topside modules for an FPSO vessel, currently undergoing conversion from a very large crude carrier. The 4th Generation FPSO will have a topside weight of 15,000 tonnes. It will be deployed at Eni's Block 15/06 East Hub field, located 350 km northeast of Luanda in deep water offshore Angola. The topside modules are scheduled to be delivered progressively within first quarter of 2016.

The FPSO will be capable of crude oil production rate of 80,000 barrels of oil per day with a storage capacity of 1,800,000 barrels and 120,000 barrels per day of water injection and 120 million standard cubic feet per day of gas handling capacities. It will be moored at a water depth of 450 meters with first oil targeted in fourth quarter of 2016.

Dyna-Mac has successfully delivered 14 units of topside modules to Bumi Armada's fleet of FPSOs since 2011. It is currently working on four more modules which are at various stages of construction.

JURONG SHIPYARD SIGNED LETTER OF INTENT WITH HEEREMA FOR NEW SEMI-SUBMERSIBLE CRANE VESSEL

Jurong Shipyard Pte Ltd, a wholly-owned subsidiary of Sembcorp Marine Ltd, has entered into an exclusive letter of intent with Heerema Offshore Services B.V. for the engineering and construction of a new semi-submersible crane vessel (NSCV).

The NSCV is designed to install and remove offshore facilities worldwide and will be equipped with two Huisman heavy-lifting offshore cranes of 10,000 MT lifting capacity each and a large reinforced work deck area. With a vessel length of 214m

and a width of 97.5m, the NSCV will be the largest crane vessel in the world.

The NSCV will be self-propelled with a transit speed of 10 knots, with power generated by means of dual fuel engines - MGO & LNG. Station-keeping is by means of dynamic positioning (DP3) or mooring system.

Heerema Offshore Services B.V. is a subsidiary of Heerema Marine Contractors Nederland Holding SE (HMC),

a world leading marine contractor in the international offshore oil & gas industry. HMC transports, installs and removes offshore facilities, including fixed and floating structures, subsea pipelines and infrastructures in shallow waters, deep and ultra-deep waters. It currently owns four of the world's largest crane vessels. The NSCV demonstrated HMC's belief in the offshore oil & gas industry and its commitment to offer installation services to the industry.

KEPPEL FELS DELIVERED SEVENTH KFELS B CLASS JACKUP RIG TO MEXICO

Keppel FELS delivered YUNUEN, a KFELS B Class jackup rig to Mexican national oil company Petróleos Mexicanos (PEMEX), on time, with a perfect safety record and within budget. The rig is the first of two jackups Keppel is building for PEMEX.

YUNUEN will join another six KFELS B Class rigs PEMEX has chartered from drilling contractors for deployment in offshore Mexico. The shipyard has another eight similar rigs currently under construction for Mexican companies.

The KFELS B Class jackup is designed to operate in water depths of up to 350 feet and drill to depths of 30,000 feet. It is equipped with an advanced and fully-automated high capacity rack and pinion

jacking system, and Self-Positioning Fixation System. It has accommodation with full amenities for 120 persons.

As Mexico's exploration and production (E&P) programme continues to grow, high specification and high performance jackup rigs will be vital to increase oil production. PEMEX is the largest company in Mexico and one of the few oil companies worldwide that develops the full productive chain of the industry, from exploration to distribution and commercialisation of all the products.



Keppel FELS has delivered YUNUEN, the first of two KFELS B Class jackup rig to Mexico's PEMEX.

KEPPEL SHIPYARD SECURED US\$705M CONTRACT FOR SECOND FLNG VESSEL CONVERSION FROM GOLAR

Keppel Shipyard has secured a firm contract from Golar Gimi Corporation (Golar Gimi), a subsidiary of Golar LNG Limited (Golar LNG), to perform the conversion of a second Moss Liquefied Natural Gas (LNG) carrier, the *GIMI*, into a Floating Liquefaction Vessel (FLNGV). The contract is worth approximately US\$705 million.

The conversion award of the *GIMI* marks the exercise of the first of two options, which were part of an earlier firm contract awarded by Golar to Keppel Shipyard for the conversion of another Moss LNG carrier, the *HILLI*, into an FLNGV. The second contract was exercised in end December 2014, six months after the first contract.

The work scope for the conversion of the *GIMI* is similar to that for the *HILLI*. Keppel Shipyard will provide the design,

detailed engineering and procurement of the marine systems and all of the conversion-related construction services.

The shipyard will once again engage Black & Veatch, its partner for the conversion of the *HILLI*, to provide the design, procurement and commissioning support services for the topsides as well as the liquefaction process utilising its established PRICO® technology. Black & Veatch is an employee-owned, global leader in building Critical Human Infrastructure™ in energy, water, telecommunications and government services.

Full construction activities of the *GIMI* will commence when Keppel Shipyard receives the notice to proceed, expected to be issued no later than November 2015. In the meantime, orders for long-

lead primary equipment such as gas turbines and cold boxes will be placed. The *GIMI* is expected to be delivered around 33 months after receipt of the notice to proceed.

Golar LNG is one of the world's largest independent owners and operators of LNG carriers. Golar's innovation delivered the world's first Floating Storage and Regasification Units (FSRU) based on the conversion of existing LNG carriers. Golar LNG plans to grow its business further upstream by deploying its floating liquefaction technology (GoFLNG).

Keppel Shipyard, together with Golar LNG and Black & Veatch, see FLNG conversion solutions as the answer to a need to bring small and mid-scale LNG supplies to market in a more timely and cost-efficient manner.



The *HILLI* before conversion.



A starboard view of the Golar FLNG vessel after conversion.

PPL SHIPYARD DELIVERED PACIFIC CLASS 400 DESIGN RIGS TO BOT LEASE AND ORO NEGRO

PPL Shipyard, a subsidiary of Sembcorp Marine, has delivered *Hakuryu 12* and *Impetus* to BOT Lease and Oro Negro

respectively. Both jackup rigs are built based on PPL Shipyard's proprietary Pacific Class 400 design.

The Pacific Class 400 (PC 400) design rigs are capable of operating in deep waters of 400 feet and drilling high pressure and high temperature wells to depths of 30,000 feet.

Hakuryu 12 features a two million pounds hook load capacity and the latest drilling equipment for improved drilling efficiencies, along with offline handling features and simultaneous operations support. It is also equipped with accommodation facilities for 150 persons with full catering services and amenities.

Impetus is the third Pacific Class 400 design jackup rig built by PPL Shipyard for Oro Negro. It is in a series of six units of this rig design for Oro Negro.



PPL Shipyard constructed *Hakuryu 12*, a PC 400 design jackup rig for BOT Lease.



Impetus is the third PC 400 jackup rig built by PPL Shipyard for Oro Negro.

JURONG SHIPYARD DELIVERED ACCOMMODATION SEMI-SUBMERSIBLE TO PROSAFE

Jurong Shipyard has delivered *Safe Boreas*, an accommodation semi-submersible rig to Prosafe in January 2015.

Featuring the latest in technology, the GVA 3000E design accommodation semi-submersible rig is capable of operating gangway connected in deep water and in harsh environment alongside fixed platforms, floating

platforms and floating production and offloading vessels. *Safe Boreas* has a full complement of deck cranes and fire-fighting capabilities.

Safe Boreas is equipped with a DP3 (dynamic positioning) system as well as 12 point mooring. It is built in compliance with stringent Norwegian Offshore health and safety standards and is suitable for harsh environment operations in the Norwegian Continental Shelf. The rig has the capacity to accommodate 450 persons in single man cabins.



Safe Boreas, a GVA 3000E design accommodation semi-submersible built by Jurong Shipyard for Prosafe.

KEPPEL FELS DELIVERED WORLD'S LARGEST JACKUP RIG TO MAERSK DRILLING

Keppel FELS has delivered ultra-harsh environment jackup rig, *Maersk Integrator*, to Maersk Drilling. The rig was delivered 30 days ahead of schedule, on budget and with a perfect safety record.

Maersk Integrator is the world's largest rig, and third in the XL Enhanced (XLE) series of jackup rigs delivered to Maersk Drilling. The XLE rigs constructed for Maersk Drilling include *Maersk Intrepid* at the Martin Linge field for Total Norway and *Maersk Interceptor* at Ivar Aasen for Det norske oljeselskap ASA. The XLE rig has a leg length of 206.8m (678ft) and is designed for year round operations in the North Sea, in water depths up to 150m (492ft).

Maersk Integrator is customised for operations in the North Sea. It is

chartered on a four-year term by Statoil for development drilling in the Gina Krog field in the Norwegian sector of the North Sea.

Collaborations between Keppel and Maersk Drilling span some 30 years and include the design, engineering, repair and construction of a variety of rigs and ships. Keppel has built eight jackups and four semi-submersibles for Maersk Drilling over the years.

Maersk Drilling has a modern fleet including drillships, deepwater semi-submersibles rigs, high-end jackup rigs and a ultra harsh environment jackup rig.



Maersk Integrator, the world's largest rig and the third ultra-harsh environment jackup rig in the XLE series of jackup rigs delivered by Keppel FELS to Maersk Drilling.

DAMEN SHIPYARDS SINGAPORE DELIVERED DAMEN FAST FERRY TO SEASPOVILL

Damen Shipyards Singapore delivered *Sea Star 5*, a Damen Fast Ferry, to South Korean operator Seaspoivill in February. Seaspoivill approached Damen with the order for the Damen Fast Ferry (DFF) 4212 as a result of the vessel's efficient fuel consumption and excellent sailing performance. This is essential for the often-rough seas of the 80 nautical mile route on which the vessel will operate.

The DFF 4212 is a catamaran passenger ferry 42.2m in length with a beam of 11.6m. Its passenger capacity is distributed over the main deck, which can accommodate 306 persons, and the upper deck, which caters for 144.

The DFF 4212 is designed and built to comply with the international code of safety for High Speed Craft, 2000 HSC Code. It is powered by her four MTU main engines (16V2000 M72), and can reach considerable speeds exceeding 40 knots.

Damen kept the popular DFF 4212 model on stock and the unit was customised to meet Seaspoivill's needs. This allowed fast delivery of the vessel in time for the tourist season, which commenced in March. *Sea Star 5* will transport up to 450 people between Gangneung on east coast of South Korea and island of Ulleung-Do.



Damen Shipyards Singapore delivered a second Damen Fast Ferry *Sea Star 5* to Seaspoivill.

KEPPEL FELS DELIVERED ITS 100TH JACKUP RIG



PV Drilling VI is the 100th jackup rig Keppel FELS has built since 1970.

Keppel FELS achieved a significant milestone in its rigbuilding history with the delivery of its 100th jackup rig in March. *PV Drilling VI*, a KFELS B Class jackup rig, was delivered to PV Drilling Overseas (PVDO) on time, on budget and with a perfect safety record.

This achievement reaffirms Keppel FELS' position as the largest manufacturer of jackup rigs in the world. The KFELS B Class design accounts for more than half of the jackup rigs built by Keppel FELS. This design was developed by Keppel's technology arm, Offshore Technology Development, and has a market share of about a quarter of all jackup rigs delivered since 2000.

PV Drilling VI is the fourth KFELS B Class jackup rig to be delivered to Vietnam, and first jackup rig for PVDO. This rig design is able to operate in water depths of up to 400 feet with a drilling depth of 30,000 feet. *PV Drilling VI* has been

enhanced with features like engines that meet more stringent emission standards, increased capacity for mud pit tanks, a secondary tensioning system, and accommodation for 150 persons. It has also been equipped with a lower spud can bearing pressure for operation in areas with soft soil conditions.

PVDO is a strategic joint venture between Singaporean and Vietnamese partners. Established in 2013, PVDO aims to become a reliable drilling contractor, owning a fleet of modern offshore drilling rigs and providing advanced oil and gas drilling services for potential markets in Southeast Asia and beyond. The company is a subsidiary of PetroVietnam Drilling & Well Services Corp. The latter's portfolio of services include drilling, well-technical services, and oil & gas equipment inspection & repairs. It is a major service provider to the oil & gas industry in Vietnam.

ST MARINE CELEBRATED NAMING OF SECOND PATROL VESSEL *RNOV SHINAS* FOR ROYAL NAVY OF OMAN

Singapore Technologies Marine (ST Marine) held a naming ceremony on 31 March for *RNOV Shinas* and the interim delivery of *RNOV Al Seeb*, built for the Royal Navy of Oman (RNO).

RNOV Shinas is the second patrol vessel designed and built by ST Marine based on its proprietary Fearless-class Patrol Vessel, for RNO. It won the contract to design and build four patrol vessels for the RNO in 2012. This contract was awarded by the Ministry of Defence of the Sultanate of Oman through a competitive international tender. The first vessel, *RNOV Al Seeb*, is expected to be delivered in second quarter 2015 while the final vessel will be delivered in third quarter 2016.

RNOV Shinas will be deployed to watch over the Gulf leading into the Straits of



RNOV Shinas is the second of four patrol vessels designed and built by ST Marine based on its proprietary Fearless-class patrol vessel, for the Royal Navy of Oman.

Hormuz to ensure that the sea lanes are kept open and safe. The vessel will

also ensure the sovereignty of the Sultanate of Oman.

SEMBCORP MARINE ENTERED INTO NEW RESEARCH COLLABORATION TO DEVELOP MORE EFFICIENT AND ECO-FRIENDLY SHIPS

Sembcorp Marine Ltd has entered into a Memorandum of Understanding (MoU) between A*STAR's Institute of High Performance Computing (IHPC), University of Glasgow (UOG) and University of Glasgow Singapore (UGS), to collaborate and improve hull designs for large ocean-going vessels. The objective is to make these vessels more environmentally friendly.

Under the three-year MoU, the four partners will use computational modelling and visualisation technologies to design vessels with improved hydrodynamics for better fuel efficiency. In addition, they will collaborate and innovate on features to reduce harmful exhaust emissions and discharges by enhancing the vessel's scrubber and ballast treatment systems.

The partnership will form an ecosystem that creates value from unique technologies and research talent. The collaboration will employ multi-physics computation to build modelling and simulation capabilities. It will combine the scientific expertise from IHPC, UOG and UGS, with Sembcorp Marine's knowledge and wealth of experience in industrial maritime applications.