

Artist's impression of Sembcorp Marine's New Yard Phase 1 Development.

# Forging the Future

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To stay at the industry forefront, Sembcorp Marine continued its strategic thrust of forging long-term expansion plans, fostering win-win alliances and sharpening its competitive edge to gear up for the future.



Award of Phase 1 turnkey construction contract for the integrated New Yard Facility.

### Staying Globally Competitive

Sembcorp Marine adopts a multi-prong strategy to further enhance its leading edge as a globally competitive company. Continual investments are made to scale up productivity and operational efficiency through infrastructural expansion, facilities upgrading as well as investing in R&D and innovation.

### Integrated New Yard Facility

To position Sembcorp Marine for sustainable growth, plans are underway to develop a modern, work-efficient and state-of-the-art integrated New Yard Facility – the first of its kind in Singapore – that will strengthen the Group's competitive advantage.

The 206-hectare New Yard Facility will ensure that the Group is well-poised to respond to the anticipated growth in dock capacity demand and the increase in offshore oil and gas activities, spurred by the projected increase in seaborne and oil trades in Asia.

This leading-edge project will harness the Group's more than 47 years of experience while deploying some of the industry's latest technology and revolutionary layouts optimised for work-effectiveness. Besides serving a wide range of vessels including very large crude carriers (VLCCs), new generations of mega containerships, LNG/LPG carriers and passenger ships, it will be geared to meet the requirements of vessels complying with new global regulatory and environmental standards.

Located at Tuas View Extension in the west of Singapore, the integrated design takes into account work flow efficiency, resource optimisation, cost-structure, market potential and future competition. The New Yard Facility will enable the Group to benefit from economies of scale through greater operational synergy, production efficiency and critical mass. This will translate to enhanced services, faster turnaround and more cost-competitive solutions for customers.

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The modern and work-efficient New Yard Facility will be situated at Tuas View Extension.

The project is expected to be developed in three phases over a period of 16 years. The preliminary projection of \$750 million to develop the first phase will be funded through a combination of debt and internal funds generated from operations of existing shipyards.

The turnkey construction contract for the design and construction of the first phase – which includes the design and construction of four VLCC-sized dry docks, quays, piers and other ancillary works – has been awarded to Zhen Hua (S) Engineering. Construction for this phase commenced in

December 2009 and is scheduled for completion by May 2013.

Upon achieving commercial operations for the first phase, Sembcorp Marine's operations in Pulau Samulun will be relocated to the New Yard Facility. The remaining two phases are expected to be developed over a period of 12 years.

## The Asian Foothold

Sembcorp Marine continued its strategic expansion into new growth markets with the establishment of a marine and offshore facility in India to be operated

### Features of Integrated New Yard Facility

- ✓ Docking and berthing facilities optimised with an improved dock and quay ratio to ensure effective utilisation and a faster turnaround.
- ✓ Total dock capacity increased by 62 per cent to 3,075,000 dwt across 11 docks.
- ✓ A centralised and efficient layout that minimises logistical resource movement and redundancy through the effective and efficient deployment of labour and resources.
- ✓ Integrated facilities and utilities coupled with state-of-the-art production technology to ensure lower production costs and to increase flexibility in cross-deployment and multi-tasking of workers, leading to improved workforce productivity and quality of work.
- ✓ Enhanced production systems and processes to ensure integrated capabilities to handle complex and sizable tasks efficiently.

by Sembmarine Kakinada, a joint venture between Sembawang Shipyard and Kakinada Seaports. Sembawang Shipyard, which holds an initial 19.9 per cent share in the joint venture, has an option to increase the stake to 40 per cent.

Located strategically on the east coast of India between Vishakhapatnam and Chennai Port, the yard will enable the Group to serve drilling units and merchant vessels plying one of the world's key oil and gas exploration locations.



Celebrating the Sembmarine Kakinada partnership in India.

The facility, which began immediate first phase operations, will be developed within the next three to five years into a one-stop integrated offshore facility catering to the repair and newbuilding of offshore vessels and ships, riser and equipment repairs, as well as modules fabrication.

## Strategic Brazil Presence

In line with its global hub strategy, Sembcorp Marine further reinforced its presence in Brazil with the establishment of a new shipyard Estaleiro Jurong Aracruz to cater directly to one of the fastest growing offshore oil and gas exploration and production markets in the world.

The 82.5-hectare shipyard with 1.6 km of coastline will be strategically located in the Municipality of Aracruz in the State of Espírito Santo, the second largest producer of oil in Brazil. The site is situated close to the offshore Espírito Santo Basin, one of the recently discovered giant pre-salt oil basins offshore Brazil,

making it an ideal location to support the country's oil and gas activities.

Engineering design for the new shipyard has commenced, with development and construction works to be undertaken in stages.

On completion, the shipyard will be equipped with state-of-the-art facilities, including a drydock, slipways, berthing quays and ancillary steel and piping facilities. It will be capable of drillships construction, building of semi-submersible rigs, undertaking FPSO integration, fabrication of topside modules and PSVs construction, in addition to the traditional activities of drilling rig repairs, ship repairs and modification works.

## Long-term Partnerships

The mutually beneficial long-term partnerships that Sembcorp Marine's yards have built with their customers are important pillars in sustaining the Group's business success.

To earn customer trust and confidence, the yards are committed to delivering on their promises and achieving high quality standards as well as health, safety, security and environmental excellence.

Sembawang Shipyard continued to strengthen its foothold as a leading provider of LNG vessel repair services when it secured a Favoured Customer Contract from BG LNG Services, United States. BG LNG Services is the exclusive partner of Energy Market Authority of Singapore to supply up to 3 million tonnes per annum of liquefied natural gas to Singapore for a period of up to 20 years. The contract covers ship repair, refurbishment, upgrading and related marine services for the company's fleet of LNG carriers. The yard also successfully cultivated two new LNG customers in 2009 – Oman LNG Shipmanagement and China LNG Shipmanagement.

Sembmarine Kakinada marked an auspicious start with the award of three Favoured Customer Contracts. One of these is to support the offshore drilling units of Transocean Offshore International Ventures Limited (India). The others are with Aban

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## Alliance and FCC vessels form 83% of the Group's repair business in 2009.

Company	Contract Type
BHP Billiton Limited	Alliance
BP Shipping Limited	
Chevron Shipping LLC	
Jo Tankers AS	
NOL Shipping	
Shell International Trading & Shipping Company	
Alaska Tanker Company	FCC
ASP Holdings Ltd	
BG LNG Services, LLC	
Bocimar Shipmanagement	
BW Gas ASA	
Camillo Eitzen ASA	
Euronav Shipmanagement	
Exmar Shipmanagement	
Kumiai Senpaku	
Marcas Services SA	
Northwest Shelf Shipping	
Polar Tankers Inc.	
TMT Ltd	
Transocean Eastern Pte Ltd	
Aban Offshore Limited	
Marcas Services SA	
Transocean Offshore International Ventures Limited (India)	
Nor Offshore	Docking & Maintenance
Police Coast Guard	
PSA Marine	
Republic of Singapore Navy	New LST Maintenance

Offshore Limited, Asia's largest private drilling company, to repair and upgrade its drilling units, and with Marcas, which includes the world's largest ship-management company V Ships, to repair its fleet of vessels trading to India.

## Investing in Productivity & Innovation

In making the next leap in productivity, investments were made to bolster the Group's operational capabilities and work efficiency for enhanced competitiveness.

### Operational Improvements

The Group's yards enlarged their operational capacity and capabilities through facility developments and equipment additions during the year.

Jurong Shipyard installed a new workshop to centralise its mechanical, electrical and machining work processes for greater efficiency and synergy. The convergence of these work processes at one location has resulted in an estimated 30% increase in productivity levels. The yard also reinforced its equipment capacity with the purchase of two new 300-tonne cranes.

Over at Sembawang Shipyard, three new hull fabrication shops were added, doubling the yard's overall sheltered fabrication area to 23000 m<sup>2</sup>. In



Equipment additions to boost operational capabilities.

ensuring better service to customers, the yard set up the Aquarius, a new complex for superintendents.

### R&D and Innovation

Sembcorp Marine continued to leverage innovation to differentiate and distinguish itself from the competition. The Group's research and development efforts have resulted in proprietary designs and critical components for rigs and ships as well as innovative engineering, construction and operational processes that further enhanced work efficiency, resource utilisation, cost-competitiveness and workplace safety and health standards.

Most notably, they have encompassed product developments such as the well-received Pacific Class 375 jack-up rig design by PPL Shipyard and the Jubilee Class 2,646 TEU containership design by Jurong Shipyard. They also covered operational innovations like the Group's proprietary Load-out and Mating in Dock and Transverse Skidding methods of accelerating the construction of deep-drilling semi-submersibles.

The spirit of innovation is also evident in the Group's daily operations as employees and contractor partners actively seek ways to innovate their work processes for improved productivity and operational efficiency as well as improved cost-savings and better HSSE performance.

Shopfloor innovations developed by personnel from Sembcorp Marine's yards also won industry acclaim when they garnered five awards – three gold, one silver and one bronze – at the Association of Singapore Marine Industries Workplace Safety and Health Innovation Convention in 2009.

The Super Trolley, which won the gold award, was developed by Jurong Shipyard's LIFE team to move large and heavy cable drums with greater ease. Besides increasing work effectiveness and efficiency, the innovation minimised the usage of cranes during the process leading to improved safety on the job.

Another gold-winning innovation was the High Definition Lifeboat and Rescue Boat Cradle conceived by the Hull Team B from Sembawang Shipyard. The gadget worked by automatically locking onto the hull to secure the lifeboats during use. This reduced

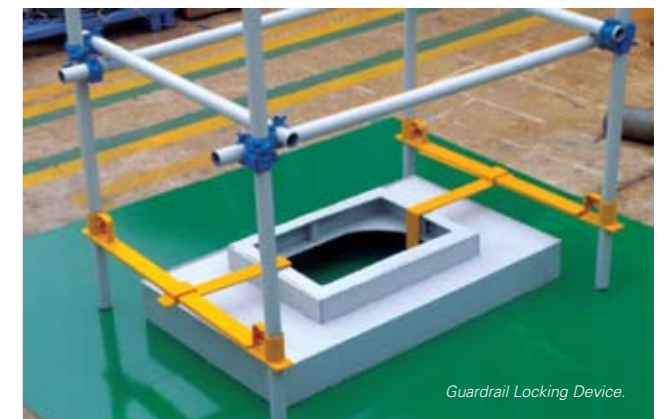


High Definition Lifeboat and Rescue Boat Cradle.

workers' exposure to potential hazards such as pinch points or boats toppling.

The third gold award went to the Claminator, a device invented by PPL Shipyard's RIG-2 team to clamp the various sections of the jack-up rig's legs during the fabrication, joining and straightening process. The innovation replaced the traditional welding and grinding processes, effectively reducing risks such as fire hazards.

Jurong Shipyard's HP<sup>3</sup> team clinched a silver award with the Guardrail Locking Device, which effectively secured guardrails around manholes and access openings to minimise the risk of falling. The invention also eliminated the need for hot work traditionally used in the erection of conventional railings.



Guardrail Locking Device.

The Coupling Extractor, developed by Sembawang Shipyard's Team Rocket, clinched a bronze award for enabling the effective and efficient removal of couplings from motor shafts and pumps without the use of hot work.