# OVERVIEW

## Total Turnover

2013 was a milestone year for the Singapore marine and offshore engineering industry as it set a new record in newbuild rig construction and delivery. The industry performed well in 2013, maintaining its total turnover above the S$15 billion mark amid an improved but still uncertain global economic climate and intense overseas competition.

In spite of the challenging market conditions, the industry achieved a total turnover of S$15.302 billion in 2013. Its turnover rose by 1.93% over the turnover of S$15.012 billion attained a year ago. The increase of S$290 million is attributed to higher activity levels as well as higher revenue recognition from the completion and delivery of more projects during the year.

The rigbuilding and offshore sector is the largest contributor to the industry's total turnover in 2013. It generated S$9.72 billion in 2013, constituting 63.5% of the total industry turnover. The ship repair and conversion sector contributed S$4.74 billion or 31% of the industry's turnover. The shipbuilding sector brought in S$0.84 billion, accounting for 5.5% of the total turnover.

Rigbuilding in Singapore achieved a milestone in the industry's 45-year history when it hit a new benchmark with a record high number of new rigs delivered. Singapore shipyards delivered a total of 31 newbuild rigs in 2013, the highest number of rigs delivered in a single year. These deliveries are the results of the successful completion of contracts secured 2 to 3 years before.

This success is the result of many factors including the shipyards' execution expertise and experience, their operational capabilities and innovative construction methodologies, the availability of equipment and resources as well as synergies with supporting yards, sub-contractors, vendors and other ancillary partners.

## Order Book

The industry secured contracts for new orders totalling some S$11.2 billion in 2013. Most of these orders are for rig projects and does not include ship repair and upgrade contracts. As at end 2013, the industry's net order books reached more than S$26.5 billion. These contracts have completion dates and deliveries stretching into 2019.

## Docking Capacity

Docking facilities and capacity in Singapore increased in 2013 following the expansion of Raffles Dock in Keppel Shipyard's Tuas yard location, and the completion and operation of Phase 1 of Sembmarine Integrated Yard facility in Tuas which saw more and larger docks being built.

These additions brought the total number of dry docks in Singapore to 19 dry docks, up from 15 in 2012. The 19 docks have capacities ranging from 5,000 to 500,000 deadweight tonnes. The total docking capacity now stands at 4.952 million deadweight tonnes.

The number of floating docks and ship lifts remained at 15 with lifting capacities ranging from 6,000 to 58,000 tonnes. However, the total capacity of these floating docks and ship lifts has reduced to 237,150 tonnes in 2013, from 237,900 tonnes in 2012.

## Total Employment

The industry employed slightly more workers in 2013 compared to the year before. The total marine workforce in 2013 numbered 109,700 workers. This was an increase of 3% or 3,200 more workers employed compared to the workforce of 106,500 workers in 2012.

Quality human capital is a critical factor of success and competitive advantage for the industry. It relies on a strong complement of disciplined, skilled and competent workforce at various levels to compete globally. There is a strong training culture in the industry led by the major shipyards. They have built up training infrastructure and resources in-house for workers training and reskilling to ensure that the workforce is well equipped to carry out their work safely and expeditiously.

The Association has been catalytic in pulling the industry players together, to develop generic curriculum and set

minimum competency standards for the training of marine workers and supervisors as well as in the certification of workers' skills competency.

During the last decade, the government has introduced and invested in new academic courses from technical to tertiary levels in the technical institutes, polytechnics and universities, to build a continuous pipeline of trained manpower to support the specialised manpower needs of the industry.

### Workplace Safety & Health

Workplace Safety and Health (WSH) is a priority for the marine and offshore engineering industry and a key area of focus in the Association's agenda. The Association is a strong advocate of WSH, and is active in raising awareness on hazards and risk management as well as in safety training. Industry members are committed to inculcating good WSH among their workforce and in practicing WSH at their workplaces.

Nonetheless, there was an increase in the number of workplace accidents in 2013. There were 501 workplace accident cases reported during the year, as compared to 430 in 2012. This was 16.5% higher or 71 accident cases more than the previous year. As a result, the Accident Frequency Rate (AFR) rose 23% to 1.6 accidents per million man-hours worked in 2013 from 1.3 in 2012.

There were three workplace fatalities in 2013, three fewer than the six fatalities recorded in 2012. This represented a 50% decline in workplace fatalities in the industry. Hence, the industry's workplace fatality rate also dropped to 2.7 per 100,000 persons employed in 2013. There has been a downward trend in workplace fatality rate in the industry, decreasing from 11.1 per 100,000 persons employed in 2009, to 9.0 in 2011 and 5.6 in 2012, and 2.7 in 2013.

The Accident Severity Rate (ASR) also declined to 107 man-days lost per million man-hours worked in 2013. This is a decrease of 28.2% in ASR from 149 man-days lost per million man-hours worked in 2012.

Efforts to raise WSH awareness would continue to bring down accident frequency and curtail workplace injuries. Shipyards and marine companies are encouraged to implement effective risk management strategies and intervention programmes towards zero injury as well as to continuously review and enhance their systems and production processes to ensure a safe and healthy workplace.

## Sectoral Performance

### Ship Repair & Conversion Sector

The ship repair and conversion sector consists of a comprehensive ecosystem of shipyards, marine engineering companies, equipment suppliers and contractors. This sector performed creditably in 2013 with repair and upgrading works carried out mainly on tankers, bulk carriers, container ships, gas carriers, passenger ships, drillships, Floating Production, Storage and Offloading (FPSO) vessels, dredgers and offshore supply and support vessels.

Long-term partnerships from fleet agreements and repeat customers provided a stable base load for ship repair, upgrading and refurbishment activities and a steady income stream for the local shipyards. Alliance contracts and regular customers accounted for a significant volume of the respective shipyards' repair workload.

Nonetheless, the shipyards also won new customers attracted by quality work, safe execution, timely and reliable delivery.

The total turnover from ship repair and conversion sector in 2013 was S$4,744 million, accounting for 31% of the total industry's turnover. This is a decrease of 1.2% year-on-year. It is S$60 million lower than the S$4,804 million achieved in 2012. The sector's contribution to the industry's turnover fell by 1%, from 32% the year before.

More vessels called in Singapore for repairs in 2013 compared to the year before. According to port statistics from the Maritime and Port Authority of Singapore (MPA), there were 6,881 vessel calls for repairs in Singapore in 2013. This was an increase of 3.36% or 224 vessels more than the 6,657 vessels that called in Singapore in 2012. Despite the increase, the number of vessel calls for repairs was much lower than the record number of 8,631 vessels that came here for repair work in 2010.

However, the total gross tonnage of the vessels that called for repair was lower at 34.076 million grt. This was 0.81 million grt or 2.32% lower than the total gross tonnage of 34.886 million grt in 2012.

The global FPSO conversion market was slow in 2013, in part affected by rising costs. Eight FPSO/FSO (Floating Storage and Offloading) conversion and upgrading projects were completed in Singapore in 2013. These

comprised four tanker-to-FPSO/FSO or Early Production Vessel (EPV) conversions and four FPSO/FSO repair, upgrading and modification projects.

### Shipbuilding Sector

Singapore is a niche builder in the construction of customised and specialised vessels. In 2013, the shipbuilding sector generated a total turnover of S$841 million. This is S$285 million or 25.3% lower than the turnover of S$1,126 million earned in 2012. Shipbuilding activities accounted for 5.5% of the total industry turnover in 2013, down from 7.5% in 2012.

Port statistics from the MPA showed a total of 111 vessels launched in 2013. This is one vessel more than the 110 vessels launched in 2012. There is an increase in the total gross tonnage of 300,419 grt for the vessels launched in 2013. This is 16.6% higher or 42,755 grt more than the total gross tonnage of 257,664 grt for vessels launched in 2012.

Majority of the vessels launched in 2013 were offshore support and supply vessels, followed by barges, workboats, ferry boats and fast crew & supply boats. Other vessels launched included several tugs, dredgers, yachts, motor launches, a container ship and a research vessel.

### Offshore Rigbuilding Sector

The offshore rigbuilding sector included repair, upgrading and construction of drilling rigs and offshore platforms. This sector is the largest contributor to the industry's total turnover and account for a significant volume of work undertaken by the industry today. The rigbuilding and offshore sector has led the industry's output since 2007 as it moved towards higher value add projects.

In 2013, the offshore rigbuilding sector generated a total turnover of S$9,717 million, contributing 63.5% to the total industry turnover. This is S$635 million or 7% more than the turnover of S$9,082 million generated in 2012. Its share also increased by 3%, up from 60.5% in 2012.

In 2013, Singapore delivered an all-time high record number of newbuild rigs and offshore platforms to customers globally. A total of 31 new rigs including offshore platforms were delivered with Keppel FELS leading the delivery with 21 rigs. The remaining rigs and platforms were delivered by Jurong Shipyard, PPL Shipyard and SMOE.

The 31 new rigs delivered comprised 27 jackup rigs, one semi-submersible drilling tender, one offshore platform and two accommodation semi-submersible platforms. This high number of rig deliveries was possible due to investment in new technology and equipment, optimisation of production processes and the leveraging of other and subsidiary shipyards in neighbouring countries to support production and fabrication. Innovative construction methods, high operational capabilities and the availability of equipment and labour resources also helped to shorten the construction timeline and facilitated the high number of projects completed.

Majority of the delivered were built according to proprietary designs such as KFELS Class B jackup rig design, Pacific Class 400 design series, and Friede & Goldman JU3000N and Friede & Goldman JU2000E designs.

### Industry Outlook

### Prospects

2014 started positively for the industry on the back of a strong order book. Moving forward, the industry will continue to face a challenging operating environment with continued uncertainties in the macro-economic environment and volatile global market conditions. Nonetheless, the long-term fundamentals driving the marine & offshore and oil & gas sectors remain sound underpinned by stable high crude oil prices, growing energy demand, continued healthy spending in offshore exploration and production as well as exploration activities in harsh environment and new field development programmes.

With increased energy needs from developing countries, the demand for oil and gas remains robust. The International Energy Agency expects oil demand to increase by 1.3% in 2014, rising by 1.3 million barrels per day to reach 92.5 million barrels per day in 2014. According to Barclays Capital survey, global exploration and production (E&P) capital is expected to be robust, increasing 6% year-on-year to reach a new record of US$723 billion in 2014, up from US$682 billion in 2013.

The need to increase production to replace depleting oil and gas reserves, nationalisation of resources by government of some emerging countries, and the opening up of the oil & gas sector to private companies in Mexico to raise its oil output will provide strong impetus to oil companies to increase if not maintain E&P budgets and spending. In the longer term, there is room for E&P budgets to grow with the ramping up of developments of

new fields as oil reserves are increasingly found in more complex and technologically challenging fields which require investments in high specification equipment.

Inquiry levels remain healthy as industry members continued to receive active tender inquiries from both existing and potential customers. The demand for rigs remains strong and is expected to come from the Middle East, North Sea, South East Asia, East and West Africa, and Brazil and Mexico.

### Rigbuilding

In the shallow water segment, demand for jackup rigs will continue with sustained rig replacement cycle as some 60% of the jackup rig fleet in the world are over 25 years old. Replacement and upgrading of older rigs have been on-going in recent years but still insufficient to replace the number of ageing rigs. There is increasing focus for new, safer and more efficient rigs with better capabilities to drill more challenging wells.

The demand will be for ultra-premium high specification rigs capable of working in harsh environment and meeting stringent requirements for challenging well operations. Pareto Securities expects continued strength in jackup rig day rates through 2014 supported by a high jackup rig fleet utilisation of 97% and a record fleet backlog. Demand for shallow water jackup rigs will come from the Middle East and South East Asia regions, India and Mexico.

In the deepwater segment, although some oil companies are cutting back on their budgets in the near term and this is expected to lead to slower growth, the prospects for the longer term is good. Demand will be driven by deepwater rig fleet renewal post-Maconda and the need for more sophisticated rigs capable of development drilling and well operations in deeper waters. There continues to be a shortage of high specification drilling rigs, hence demand for high specification and ultra-deepwater rigs with advanced technical features and equipment are expected to remain strong.

In the floater market segment, oil companies are holding back commitments into new deepwater exploration programmes to ease up on cash flow in the near term and because of availability of a large number of newbuild deepwater rigs in the market. However, Douglas Westwood remains optimistic in its projection of deepwater expenditure to hit US$260 billion from 2014 to 2018, an increase of 130% as compared to the preceding 5-year period. Growth is expected to come from East Africa's natural gas developments, Brazil and Mexico.

Singapore has the capability to offer a full spectrum of proprietary-designed technologically advanced and high specification rigs for drilling operations in shallow or deepwater, for benign or harsh environment. Singapore rigbuilders with its expanding suite of proprietary rig designs and proven rig performance on field as well as their track records on timely delivery, are well-positioned to seize and benefit from growth opportunities in the rigbuilding market segment.

### Ship Repair & Conversion

Shipping analysts have forecasted an improvement in overall freight rates in 2014 giving rise to cautious optimism in the shipping industry. The local ship repair sector will face challenges from labour shortage, increasing costs and price competition from rival shipyards. Although not new, these challenges have intensified.

Singapore shipyards have already moved into niche market segments of LNG carriers, passenger/cruise ships including the conversion of LNG vessels into Floating LNG vessels. Alliance partnership and fleet agreements with long term customers have provided win-win solutions for both shipyards and their clients, and will continue to be the preferred arrangement. This will ensure a continuous stream of vessels calls in Singapore for repairs.

The outlook for FPSO conversion is positive. According to International Maritime Associates, around 55% of the over 234 floating production projects in various stages of planning at end 2013 would involve FPSOs. 25% of these involve liquefaction or re-gasification units while 5% of them involve storage offloading units. Re-deployment of existing FPSOs is likely to satisfy only 20% of the future FPSO requirements. Douglas Westwood estimates that some 100 new FPSOs would be needed from present till end 2017.

Douglas Westwood also forecasts total expenditure on floating LNG to reach US$64.4 billion from 2014 to 2020, with two-thirds of this spending for liquefaction infrastructure and the remaining for import and re-gasification facilities such as LNG carriers. The conversion of Floating LNG vessels is a good market potential for Singapore shipyards.

### Shipbuilding

With E&P activities continuing and moving further offshore and increasing offshore drilling activities in deeper waters, there will be a corresponding demand for more offshore support and supply vessels. Rising demand is

also expected for subsea support vessels. The construction of such specialised vessels is a niche market for Singapore shipbuilders.

With more E&P programmes in the development phase, there is a requirement for vessels capable of performing development and completion drilling in addition to exploration drilling. Local shipyards are developing designs and constructing drillships to meet this global industry need.

The increasing number of oil and gas fields nearing their depletion date would see a demand for vessels capable of handling offshore maintenance, well-intervention and decommissioning work. This is an area of opportunity that Singapore shipbuilders can seize on to increase its shipbuilding activities.

As the industry moved up the value chain and technology ladder, Singapore shipyards have stepped up their research and development (R&D) efforts to develop innovative technologically more advanced products and provide value added solutions to meet customers' requirements and new market conditions in the oil & gas industry. To instil a culture of continuous improvements through innovation, industry majors have set up R&D laboratories in 2013.

With increasing growing energy demand and competitive energy sources such as shale oil and gas, the exploration and production of oil and gas in deeper water and harsher environment will have to be done safer and more cost effectively. Innovative products and trendsetting solutions will help Singapore to differentiate itself from its competitors, maintain its global leadership position and sustain long term growth in the industry.

With the tightening of foreign manpower resources by the government, shipyards and marine companies will have to improve productivity in their operations to stay in business. This will entail the adoption of more efficient methods of production and higher capital investment for the use of more equipment and further implementation of mechanised and automated systems in production.