



EIC INSIGHT REPORT: FLNG AND FSRU

Executive summary

Traditionally, liquefied natural gas (LNG) facilities have been built onshore. However, a rise in construction costs and times as well as a reluctance to commit to long-term facilities have resulted in an increase in the use of offshore LNG units as an alternative. The global market for floating LNG can be divided into two distinct areas: floating liquefaction (generally referred to as FLNG) and floating storage and regasification units (FSRUs). This report addresses both the FLNG and FSRU markets, looking at their respective supply chain requirements and key projects under development.

The future of the floating LNG market is promising, with over US\$40bn predicted to be spent over the next five years. The full industry potential, particularly that of FLNG, will become clearer in the coming years as pioneering projects such as Satu and Prelude come online and provide benchmarks for the rest of the industry.

Ever since operations began back in 2001, a key factor in the FSRU industry's success has been the flexible LNG transportation

which it allows. Three companies: Exceleerate Energy, Golar LNG and Høegh LNG own the majority of floating regasification vessels, though several other companies have started to enter the market.

There are currently 22 FSRUs operational in Asia, Europe, the Middle East, North America, South America and South East Asia. Floating regasification vessels will be particularly useful in areas where there are, at present, major gas shortfalls (e.g. Egypt, India, Pakistan, Equatorial Guinea and Bangladesh). Due to the relatively low CAPEX per million metric tonnes per annum of capacity, and quicker build time than their onshore counterparts, FSRUs will continue to be proposed in locations around the globe. They also provide added flexibility as they can be used for short or long periods and can be leased or owned, whereas onshore terminals are constructed for decades of use.

FLNG is a concept that has been proposed as an economical solution to monetising small gas reserves and associated gas. PETRONAS' Satu came online on 12 November 2016 at the Kanowit field, offshore Malaysia and became the first ever operational FLNG vessel. However, the most

anticipated project in the industry is Shell's Prelude. The vessel will be the largest hull ever built, measuring 488 metres in length.

It is worth noting that the floating LNG supply chain requirements differ to that of conventional onshore LNG as the assets used include offshore production facilities, floating offshore gas treating and liquefaction facilities, LNG loading facilities, LNG cargo transportation, LNG unloading facilities, FSRU storage and regasification facilities and tie-ins to gas distribution pipeline networks.

While a lot of the work for hull construction and modification is awarded to Asian shipyards, British suppliers have the skills and expertise to win work on other parts of the development, particularly on topside work. With lucrative projects such as the Fortuna FLNG and Coral FLNG likely to achieve FID this year there will be significant opportunities within the industry. Black & Veatch is one of the EPC contractors well placed to win work on each of these projects, and with previous examples of the company partnering with UK companies there is every reason to be optimistic about the UK supply chain adding value to these projects also.



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