

Trends in FSRU development

Since the inception of the floating regasification concept and the decade since their first operation in 2005, there has been tremendous growth to the current level of 24 vessels operating as fully-fledged Floating Storage and Regasification Units (FSRUs).*

Initially, such units were either newbuildings or vessel conversions, but all of them fit the mould of a conventional LNGC in terms of size and functionality, but with regasification systems fitted on board.

As the market has matured, more and different vessel concepts have made their way into the marketplace, focusing on different parts of the value chain.

An FSRU would typically have larger storage capacity than the discharging carrier and as the size of LNGCs has grown, older LNGC tonnage has been rendered too small for standalone FSRU conversion, paving the way for multiple units or even a barge alongside with an FSU or FSRU system.

Petronas pioneered this concept with the ABS-classed Melaka Terminal, where it employs its older 'Tenaga' class vessels alongside a jetty with a common regasification skid on the jetty. This approach allows for 250,000 cu m of LNG, which is ample for all but the Q-Max vessels while still providing buffer volume.

Another element that encourages the use of floating LNG storage units rather than complete FSRUs is seasonal demand. A simple solution for this is to place the regasification onshore or on the jetty and use an LNGC for storage - an approach taken by Teekay for its Bahrain LNG facility.

An additional factor is that in the conventional LNG size segment there are many ships available for FSRU or FSU conversion, which are still comparatively young. This 'middle-aged' tonnage is not as efficient as the modern vessels coming on



ABS has classed Petronas' Melaka Terminal, which employs an older MISC LNGC as a storage unit connected to a regasification unit on the jetty.

stream given the improvement that has taken place with propulsion and containment systems on newer ships.

The use of barge-based regasification units is a concept many players are investigating because of their potential multiple applications. A unit with some storage and regasification kit on board could effectively work together with an older and somewhat smaller FSU to provide the functionality of a large scale FSRU, also allowing the larger storage unit to trade as an LNGC if there is a low season with little or no gas demand.

SMALL AND MID-SCALE

A second and fast-growing segment of the market is for barges to serve as regasification units for the small and mid-scale segment. Units with a typical storage volume of 10,000 to 25,000 cu m are increasingly popular, can serve a smaller power station for an island nation or any other remote location and can be easily served by small scale LNGCs.

The current overcapacity in the market is leading owners to look toward new solutions

for how to best use their assets. This process typically also involves class, both as a discussion partner but most importantly, in ensuring that any new concepts are in line with applicable rules and regulations.

Finally, a concept that is gaining momentum is combining the FSRU with a floating power generation plant. Very often the LNG demand is driven by the need for clean power generation. So rather than having to build a power plant onshore, a floating LNG-fired power plant can provide a fully integrated solution, with clear advantages regarding project schedule and flexibility.

ABS anticipates a continued strong growth in the FSRU segment given both the current surplus of LNG and its very attractive pricing, as well as the pressure towards more sustainable power and transport solutions.

This growth will however, include a variety of concepts including regas barges, FSUs with barges or onshore regasification, large, purpose-built FSRU concepts, as well as the proven and tested LNGC with regasification facilities fitted on board. ■



*This article was written exclusively for *LNG Shipping Review* by Tor-Ivar Guttulsrød, Director FSRU & FLNG, Global Gas Solutions, ABS.

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While with Teekay, he started out working with FPSOs, FSOs and shuttle tankers and moved to the gas sector initially with FLNG and then LNG as a marine fuel, LNG bunkering and FSRUs.