

# FSRUs pose an emerging risk – **but one worth taking**

**James Addison**, of The Standard Club, discusses floating storage regasification units as an emerging risk, what they are, what they offer and the available cover for them



**F**loating storage regasification units (FSRUs) are relatively new and unique vessels. They are essentially floating LNG import terminals which play an important part in the global natural gas supply chain.

## What do FSRUs do?

After initial extraction and treatment to remove impurities, natural gas is either transported using pipelines or liquified and transported. Liquefaction involves cooling the gas to -162C, reducing its volume to around 1/600th of its gaseous volume, allowing far greater volumes to be transported, usually by LNG carrier. When the LNG reaches its destination, it needs to be reheated or “regasified” before it can ultimately be piped onshore for consumption.

Regasification is done either by an onshore plant or an FSRU, which is permanently moored in or near a port and acts as the import terminal. While onshore plants are preferred in some countries, FSRUs have a number of advantages, which has seen their greatly increased use since the first was built around 14 years ago.

## Pros and cons of FSRUs

### Upfront cost

First, the initial capital outlay (CAPEX) of an FSRU is much lower than an onshore plant. Building an onshore facility requires leasing or purchasing shoreline real estate. This potentially makes finding a suitable location difficult and/or costly (or, if there are space constraints, maybe impossible). The physical plant needs to be built as well as related infrastructure such as roads, offices and accommodation if the plant is remote.

Depending on the location/size of the project, a new FSRU (ie to own one) could cost around 50 per cent to 60 per cent of an onshore terminal (or maybe half of that in the case of a converted LNG carrier). An alternative option is to charter the FSRU. In each case, when deploying an FSRU, certain onshore structures may still need to be built (eg a jetty or turret mooring system, offshore/onshore pipelines) but the real estate/construction costs should be far lower.

### Lead time

A shore-based plant could take five years to plan and build (or longer); conversely, the lead time to deploy an FSRU is far less. A new FSRU could take three years to build, or it could take one to one-and-a-half years to convert an LNG carrier. For a party looking to charter an FSRU, the lead time is even less and an FSRU could potentially be chartered and available in a few months.

One of the main advantages of FSRUs is speed. For countries looking to increase their gas supply, FSRUs can offer a “quick fix” regasification solution: politically, an attractive option.

### Financing and planning

Financing an onshore plant may be one of the major hurdles to construction, depending on where it is located and who will own and operate it. Some projects will be funded by their participants, but institutional lenders will want to carry out extensive due diligence to assess; eg legal and political risks, construction-related risks (eg delays or cost overruns), upstream/downstream supply risks, natural disaster risks. Financing is an issue for FSRU owners/charterers although lender requirements may be less stringent. In either case, local regulatory/environmental approvals

will also be required. Depending on the location, regulations (particularly environmental) could be strict and obtaining approvals for an onshore plant could be time-consuming and costly. It may also be necessary to consult with local communities. There are likely to be fewer regulatory hurdles than deploying an FSRU.

#### Crewing/staffing

Personnel issues should not be forgotten: the personnel to staff an onshore terminal plant will have to be recruited (often locally) and trained or laterally recruited, which takes time.

Conversely, an FSRU comes with a specialised crew. When deploying an FSRU, personnel may be required to operate related onshore infrastructure and/or work on/with the ship, but the overall personnel requirements are fewer than are required to operate a full regasification plant.

#### Commercial flexibility of FSRUs

Like any ship, an FSRU can be released from service at the end of its charter. This happened in 2018 in Brazil, Argentina, Egypt and the UAE. Alternatively, they can be redeployed. For charterers, this offers commercial flexibility. Owners can of course plan ahead and redeploy their vessels to other markets. Recent examples include the *MOL FSRU Challenger* which moved from Turkey to Hong Kong (having previously been in Uruguay) and the *Höegh Esperanza* which will move from China to Australia.

Globally, countries (China in particular) are increasingly turning to gas as an energy source as it is 45 per cent to 55 per cent cleaner than coal when used to generate electricity. Some countries are meeting energy needs using onshore facilities, and some using floating facilities. New markets open and existing markets change. The market for FSRUs is dynamic which affords challenges but also opportunities to owners. FSRUs can even be operated as LNG carriers to maintain operational uptime.

#### Advantages of onshore facilities

Onshore facilities of course have advantages. They may have a higher regasification and/or gas storage capacity. Onshore terminals are also a permanent solution offering long-term energy security. They can potentially be expanded to add capacity, whereas increasing capacity using FSRUs would likely require the addition of another vessel.

Further, commercially, the operating expenditure (OPEX) of an FSRU is higher than an onshore plant. Assuming a charter rate of US\$80,000 to \$120,000/day and regasification costs adding 15 per cent to 20 per cent to that, this can add up to \$30 million to \$50 million per year; conversely, the operating costs of a plant could be \$100,000/day but this will of course depend on the location and scale of the project. While the initial capital outlay can be avoided by chartering in an FSRU, the OPEX is higher. The tipping point may be around six to seven years after which the increased OPEX makes a FSRU more expensive than a plant. These factors will be weighed up by a party/country seeking to install/increase its gas supply.

#### Weather/natural disaster risks

Ultimately FSRUs are subject to the risks inherent to ships, particularly the weather and named windstorms. Weather-related risks can be managed by placing the vessel in protected areas or by using weather-vaning turret systems or dynamic

positioning. Carefully monitoring and responding to weather patterns can also reduce risks. However, these risks can only be managed/mitigated (but not avoided altogether).

#### Insurance

An FSRU may have several insurances. Once operational, the vessel will require hull and machinery insurance to cover physical loss of, or damage to the hull or machinery on board. There may be other insurances in place covering, eg, war risks or marine delays/loss of hire, general liability or political risks.

The vessel will require P&I insurance which a club can provide. The club's P&I cover is wide-ranging liability insurance which is intended to dovetail with hull and other insurances and protect members from liabilities which arise as a result of the operation of the ship. International Group of P&I Clubs (IG) members have risk-sharing arrangements and a reinsurance programme which offers very high limits of cover of up to \$8 billion for certain liabilities. FSRUs as a ship type are eligible for this "mutual" cover.

In terms of the types of claims which may arise, P&I can cover crew/personnel claims; property damage, eg, collision or contact damage; liabilities to remove of the wreck of the ship here may be a pollution incident, eg involving fuel on board the vessel. There can even be cargo-related liabilities, eg if cargo is lost following the member's fault, through spillage/excessive boil-off/failure to properly manage/roll-over different cargoes on board.

The FSRU owner may also be party to various contracts, eg a charterparty, terminal lease agreement, conditions of use contracts with LNG tankers calling at the facility, gas offtake and supply agreements, or ancillary contracts with support vessels. Some contractual liabilities cannot be covered by the IG's risk sharing arrangements, but the club provides a contract review service which aims to identify liability exposures and underwriters can provide extensions to mutual cover where required, which are separately insured.

#### **Outlook**

The LNG markets have seen considerable growth in recent years. Total global LNG trade was up around 12 per cent in 2017 and almost 10 per cent in 2018. Further growth of 10 per cent or more in 2019 is possible. FSRUs play, and are expected to continue to play, an important part in this.

Speed is key. FSRUs can provide regasification solutions more quickly than onshore terminals. Politically this is attractive in many countries. In 2019 Russia, Jamaica, Bangladesh, Puerto Rico and India are expected to add FSRU capacity and there are planned future projects for 2020–2021 in Ghana, El Salvador and Croatia. Numerous other countries are also considering FSRU projects.

The outlook is positive. **MRI**



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