

FSRU / Power Barge



Floating storage and regasification unit (FSRU)

Natural gas is currently becoming the primary source of energy for various applications because it is highly efficient and environmentally-friendly, making it the fuel of choice not only for domestic and industrial applications but also for power generation.

The development of gas pipeline networks and LNG infrastructures is growing steadily. However, these infrastructures are designed for high-volume consumers and are not practicable for small and isolated energy markets that cannot be linked to a primary network. As a result, until the supply of gas becomes economically viable, islands and isolated communities continue to base their energy needs on more expensive diesel oil or more pollutant heavy fuel oil.

TGE Marine Gas Engineering GmbH (TGE Marine) has developed small and medium scale LNG import solutions to make the supply of gas attractive to mid-size energy centres with output ranging from 60 – 150 MW or even smaller centres or groups of centres. Floating LNG storage systems can be used for import barges with regasification equipment (FSRU).

TGE Marine designs with IMO type C tanks (i.e. pressure vessels) covers the range from 5,000 m³ to 80,000 m³ storage capacity.

Shuttle tankers with up to 40,000 m³ and IMO type C tanks are an economic shipping solution for the mid-scale LNG market. TGE Marine is the leading supplier of cargo handling systems and cargo tanks for the small- to mid-scale LNG market.



FSRU with ambient air vaporisers and shuttle tanker

The re-gasification technology is based on ambient air vaporisers or on intermediate cycle vaporisers technology with seawater (open loop) or gas (closed loop) used as a heating source. For an integrated solution with a power barge waste heat is utilised for the LNG vaporisers.



Power barge – gas fuelled

TGE Marine's FSRU and regas barge designs can be coupled with floating storage units (FSUs) or integrated with floating power barges for on site electricity production in LNG-to-wire projects.

Power barge designs are based on state-of-the-art medium speed 4-stroke fuel fuel or gas engines with plant outputs of 60 – 150 MW.

Based on its considerable experience with IMO type C cargo tanks for ethylene carriers, TGE Marine has upgraded its in-house tank design to cope with the LNG service.



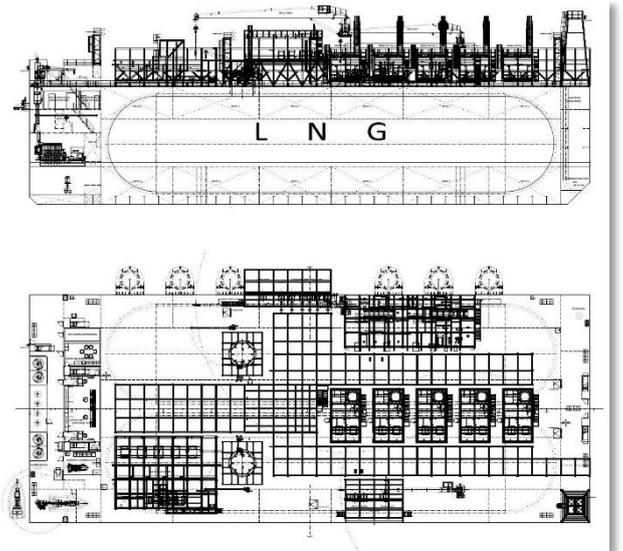
IMO type C tank

This pressure vessel design approach offers significant advantages for LNG floating applications, both for FSRUs and floating production storage and offloading units (FPSO's) as well as for mid-scale shuttle tankers:



Type C cargo tank installation on a FLNG

- Design pressure of approx. 4 bar g allows pressure build-up in tanks
- Tanks have no problems with sloshing loads
- Type C cargo tanks do not require a secondary barrier
- Tanks can be fabricated in workshops outside the shipyard, reducing overall barge and vessel construction time



FSRU design with 28,000 cbm storage

The key specifications of the **FSRU** are (example):

- Length o.a.: abt. 94.9 m
- Breadth moulded: 38.4 m
- Depth: 19.8 m
- Cargo tank capacity (100%):.....abt. 28,000 m³
- Gas send-out rate:..... 195-335 t/h
- Send-out pressure:.....60-65 bar

Positioning of the barges may be based offshore, nearshore or at a jetty. Different mooring solutions such as offshore jetties or spread mooring may be applied to accommodate the project specific site conditions.



Artist impression: LNG-to-power

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