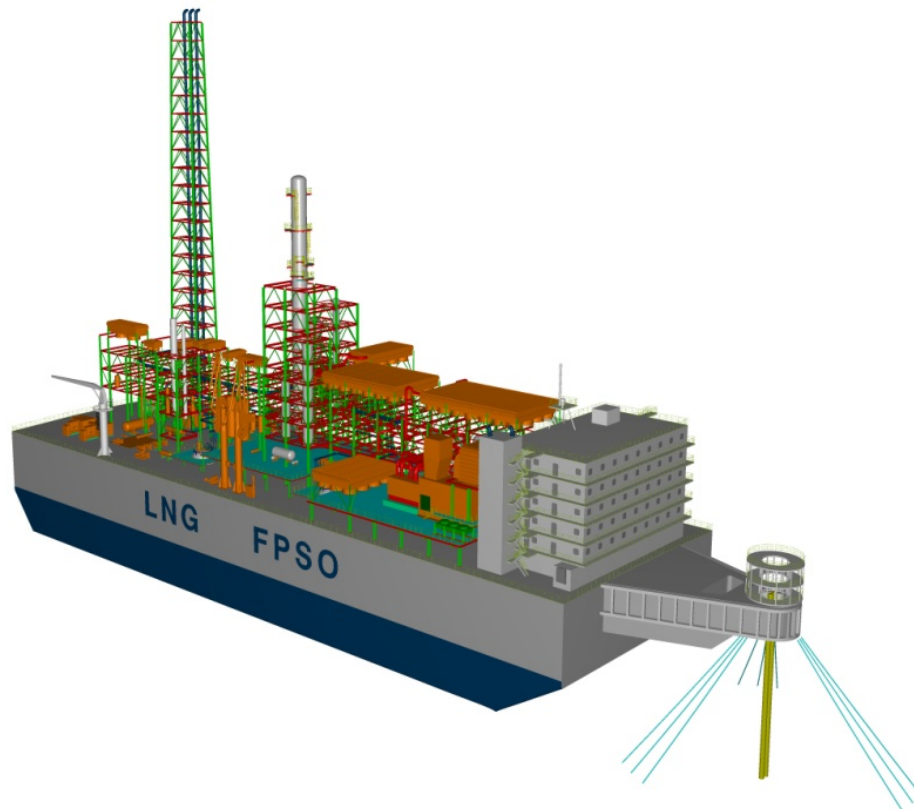


Design concept for a 40,000 m³ LNG-FPSO (Floating Production Storage and Offloading)



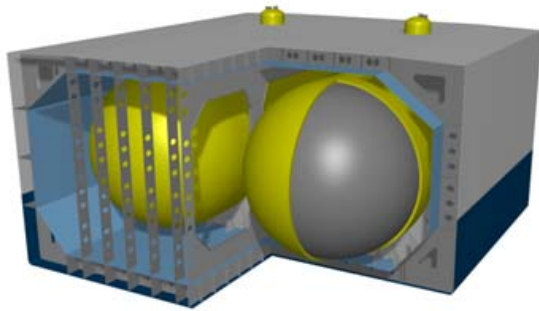
Natural gas is becoming a primary source of energy for various applications being highly efficient and friendly to the environment. The high hydrogen-to-carbon ratio and minimal content of toxic components make natural gas the preferred fuel not only for domestic and industrial applications, but also for power generation. The use of natural gas is also increasing in the transportation sector.

The development of gas pipeline networks and of LNG infrastructures has grown, and continues to grow significantly, to serve large consumer markets. However, these infrastructures are designed for large volume consumers and are not economically viable for small isolated energy markets that cannot be linked to a main network.

Consequently islands and isolated communities continue to base their energy needs on more expensive diesel oil or more polluting heavy fuel oil, until supply of gas will become economically viable.

TGE Gas Engineering and TGE Marine Gas Engineering have developed small and medium scale LNG import solutions able to make supply of gas affordable also to mid-size energy centers of 100-500MW, or even smaller centers in multiple combinations. As part of the mid scale offshore supply chain TGE has developed a 40,000 cbm LNG Floating production and offloading unit which is capable of producing 0.5 mmtpa LNG from stranded gas fields.

New applications in the field of floating LNG request a technically sound and economical technology for storage, liquefaction and offloading implemented in as short a time schedule as possible.



- Specific tank weights are comparable to prismatic IMO type B tanks, making the design cost efficient.
- Tanks can be fabricated in workshops outside the shipyard, which reduces the total LNG-FSRU/FPSO construction time

Under consideration of the experience gained as consortium leader for the EPC contract of a mid scale liquefaction plant built in Urumqi, China, TGE has developed a design for a 0.5 mmtpa LNG-FPSO.

Based on its vast experience with IMO type C cargo tanks (i. e. pressure vessels) for ethylene carriers, TGE has upgraded their in-house design for LNG service. This pressure vessel design approach has significant advantages for LNG floating offshore applications, both FSRUs and FPSOs:



The identical single mixed refrigerant process has been adapted for this project and placed onto a LNG floater barge design with 40,000 cbm storage capacity based on cylindrical type C tanks.

- Design pressure of approx. 4 bar g allows a pressure build up in the tanks
- Tanks can accommodate sloshing loads
- Type C cargo tanks do not require a secondary barrier

The main characteristics of the TGE LNG-barge are (example):

Length over all: 172.0 m
 Breadth moulded:..... 50.4 m
 Depth:..... 21.5 m
 Cargo tank capacity (100%)..... 40,000 m³
 Barge net steel weight: 12,900 tons

Liquefaction capacity: 0.5 mmtpa

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