

World's First Ever FLNG 1-Row with Membrane Technology

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Second part of 2010s has seen the LNG business with a major breakthrough concept: starting operation of liquefaction facility in remote offshore environment with first NewBuilt Floating LNG Units (FLNGs), now being reality (Shell Prelude, Petronas Satu & Dua, ENI Coral).

In the actual context of new environmental regulations, LNG is one of the available options to reduce emissions. FLNG units supports the LNG demand by making possible gas extraction from stranded gas offshore fields.

All these first NewBuilt Units were with GTT membrane technology based on the 2-rows tanks concept to manage sloshing due to the influence of filling levels. Indeed, contrary to LNGCs which navigate under conventional filling levels (<10%H or > 70%H), Offshore units must operate at all filling levels. Sloshing activity being more severe in the range 10%H to 40%H, dedicated assessment was performed to define operational windows for partial fillings operations. Due to sloshing loads level, the 2-row concept was adopted since the tank resonance period is not interacting with the vessel response area.

In parallel, close to end of 2010s, GTT technology was selected for the first LNG fuel tanks of Ultra Large Container Vessels.

Key driver was to optimize cargo space and develop the most compact tank possible. In this context, GTT developed a 1 row tank with breath >50m capable to operate all filling levels.

For this purpose, modification of the shape of the tank and upgraded material strength was necessary to develop to reach the target. Today, there are tens of ultra large container vessels with GTT 1-row LNG membrane tanks operating in the world.

The return of experience on the ultra large container vessels with GTT LNG membrane tanks allow GTT to design the FLNG 1-row which brings cost & schedule competitiveness as well as additional flexibility to the Client. This design has also environment impact.

The first FLNG 1-row tanks with GTT membrane technology is now under construction (EPC awarded). The purpose of the paper is to explain how the return of experience on the ultra large container vessels with GTT LNG membrane tanks allow GTT to design the FLNG 1-row and to propose this design to the market,

The key technical adaptations to provide assurance on the subject will be described in detail,

Finally, a summary of the required Cargo Containment System (CCS) configuration required depending on site conditions will be presented.

To view the **full technical programme**, visit <https://lng2026.com/technical-programme>

This abstract will be presented during LNG2026 conference on 2-5 February in Doha, Qatar