LNG FUEL TANK INSULATION SOLUTIONS

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MGIT has developed an inverted insulation system in which the insulation is applied on the hull structure with an integrated full secondary barrier protecting the hull in case of leakage of liquefied gas from the tank. This allows for the well proven and relatively low cost LPG IMO A tank design - also for LNG tanks.

IMO A-tanks are considered the most economical solution for LNG cargo tanks as all available space is utilized and steel weight is low. MGIT’s insulation system is developed for both LNG cargo and LNG fuel tanks.

The demand for more environmentally friendly solutions has been a driving force for the development of large size LNG fuel tank solutions. The sizes are beyond what is feasible for vacuum insulated tanks and the concept is as such not competing with vacuum insulated tanks. It is aimed at a new market for LNG fuel, namely deep sea ships with a fuel storage requirement of more than 500 m³.

MGIT’s inverted insulation system was class approved by DNV in 2010 and is currently the only approved insulation system for IMO Type A tank for LNG.

MGIT has long experience with development and installation of insulation systems for IMO type B LNG cargo containment and is continuously working on developing new solutions for adoption to fuel tanks.

Our careful engineering approach, cooperation with specialist material manufacturers and proven application methods puts us in a unique position, and we can offer general engineering services as well as complete new system development.
Apart from the challenge of designing a system of structural integrity at cryogenic temperatures, the main problem with most cold insulation systems is ingress and accumulation of humidity over time.

Regardless of combinations of insulation materials, vapor barrier and jacketing systems, there will be joints and link-up regions hence a potential for moisture ingress. The vacuum caused by cooling and the inevitable vapor pressure directed from warm to cold side can force moisture into and through the system - reducing insulation efficiency and potentially cause frost wedging of insulation and corrosion of the tank or pipe structure.

MGIT’s spray foam insulation is a fully bonded system sprayed on the tank surface. The insulation is flexible and follows the tanks contraction and expansion. There is no space for accumulation of moisture between containment structure and insulation and there are no joints. This is currently the most efficient low temperature insulation system available and maintenance demand is low.

**FULLY INSULATED LNG BUNKERING PIPE**

MGIT delivers LNG bunkering pipe systems
- Dual pipe system with cold nitrogen in outer pipe system
- Bunker pipe system always at cryogenic temperature
- Fully bonded flexible insulation system
- Gas free after bunkering
- Gas detection nitrogen system
- Approved by Class
Governments and international organizations have already decided to implement more stringent emission regulations for ships and other transportation means. New IMO ECA and SECA rules require reduced emissions from ship engines, and LNG is emerging as the most environmentally friendly fuel. Most marine engine makers have already developed engines for running on dual-fuel or pure LNG. However, one of the key issues is the design of a containment system including insulation - especially for oceangoing vessels with storage requirements of more than 500m³ LNG. MGIT delivers complete insulation systems for self-supporting LNG fuel tanks.