

LNG Fuel Gas Systems



Hamworthy Gas Systems AS delivers LNG fuel gas systems for propulsion gas engines for ships. The LNG fuel gas system conditions the LNG into a gas suitable for the actual gas engine.

Hamworthy Gas Systems has a co-operation with **Rolls-Royce Marine**, the supplier of gas engines, propellers/thrusters and rudder systems.

Hamworthy Gas Systems and **Rolls-Royce Marine** can supply the complete propulsion system for a ship from bunkering station to propeller thrust.

LNG used as fuel for ships gas engines is the best choice as far as the emissions of CO₂, SO_x and NO_x are concerned. When considering the life-time cost for a gas engine (CAPEX + OPEX), LNG is also the best fuel.

The combined supply from Hamworthy Gas Systems and **Rolls-Royce Marine** thus provide an important cost and environmental protection measure.



Complete gas propulsion system delivered by Hamworthy Gas Systems and Rolls-Royce Marine

The LNG fuel gas system covers the following functions:

- ▶ Storage of LNG
- ▶ Bunkering of LNG
- ▶ Supply of conditioned natural gas to the gas engine
- ▶ Required safety functions

The LNG fuel gas system is delivered as complete skids and pipe assemblies plus any complementary valves:

- ▶ The LNG fuel tank skid (one/two off per vessel) encompasses equipment and systems for storage, evaporation, heating and pressure holding. The skid will supply natural gas at required pressure and temperature to the engine's gas regulating unit.

- ▶ The bunkering station piping assembly (one/two off per vessel) will encompass equipment and systems for filling of the LNG fuel tanks.

The LNG fuel tank skid will be designed to be lifted into the vessel's hull.

The system interface points with the ship systems are by:

- ▶ Pipe nozzles
- ▶ Termination boxes for instrumentation and control

Although integrated, the LNG fuel tank skid consists of two main parts:

- ▶ The LNG fuel tank
- ▶ The tank room

The LNG fuel tank will typically be a double shell vacuum-insulated pressure vessel with design pressure ranging from 5 to 10 bar.

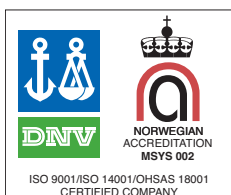
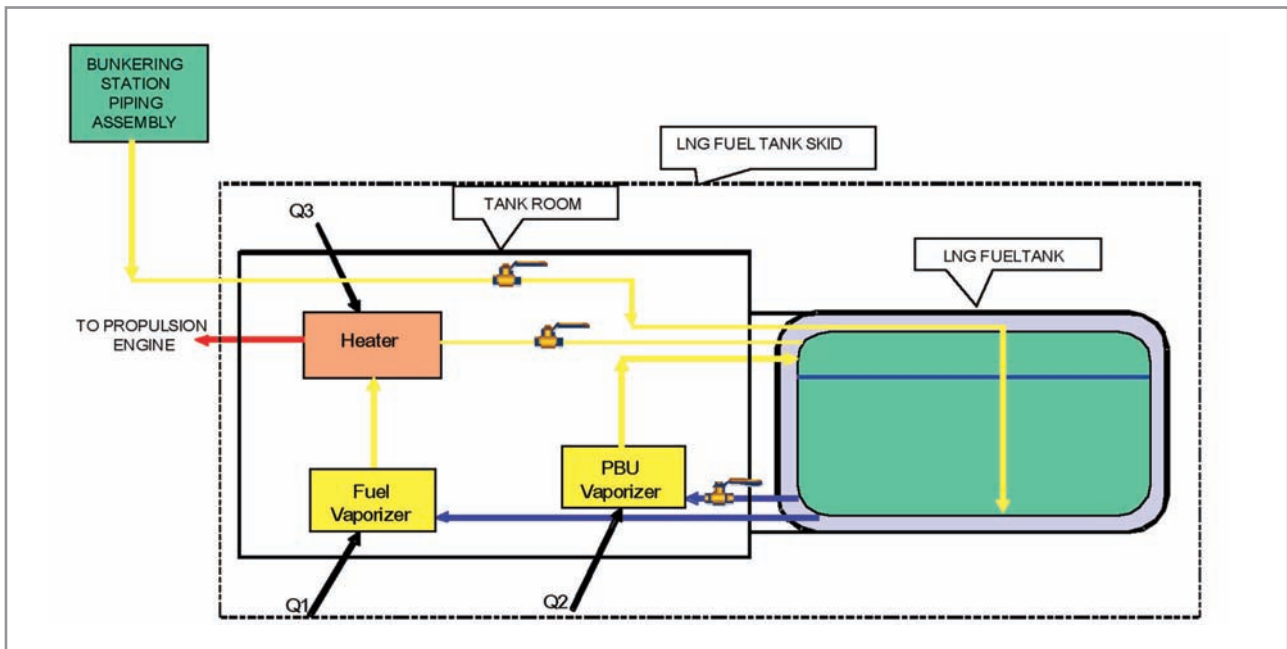
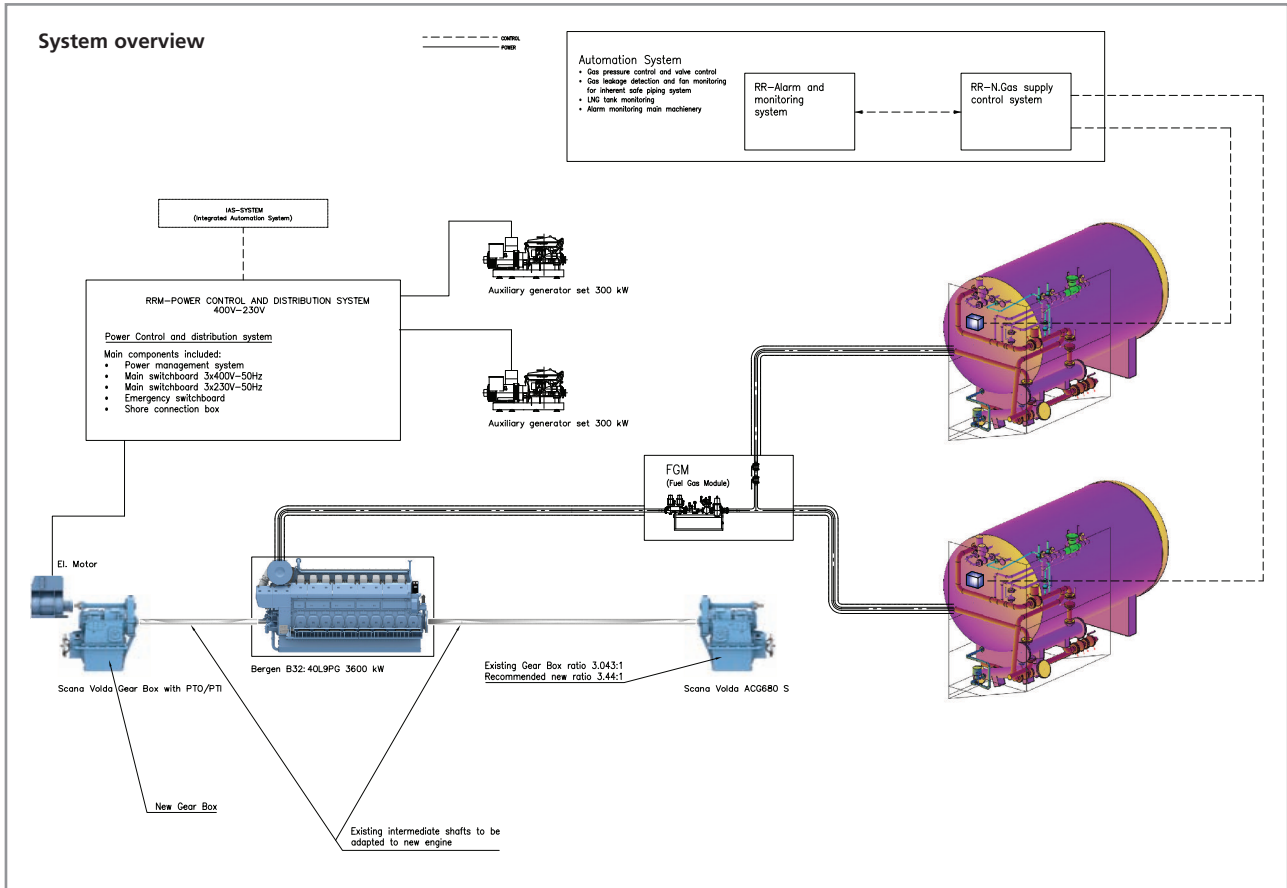
The gas tight tank room contains equipment for evaporating LNG, heating of natural gas, and pressure holding.

The tank room will be shaped as a prismatic room gastight attached to the LNG fuel tank, or may be contained in the conduit formed by the extension of the LNG fuel tank outer shell.

The interface points with the ship systems are by nozzles located on the tank room exterior - typically:

- ▶ Glycol/water mixture to/from engine jacket cooling water secondary circuit.
- ▶ Fuel gas (NG) to engine's gas regulating unit.
- ▶ Top/bottom LNG filling lines
- ▶ Tank room ventilation lines
- ▶ System relief lines

The bunkering station piping assembly will contain all necessary piping and valves for the filling, tank pressure control and nitrogen purging functions.



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The manufacturers reserve the right to alter the specification and data to incorporate improvements in design. Certified drawings will be issued on request.

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