K-Sim® Cargo
LNG tanker – Membrane

Operators of LNG tankers must be familiar with process-controlled operations to maintain control at the start of loading and discharging. If the cargo boils off too fast or the tank is cooled down too fast, pressure or vacuum can lead to extreme temperatures damaging the tanks or the hull structure.

Model description
Our K-Sim Cargo-LNG membrane model is based on a real LNG tanker. The model consists of four Gaztransport Technigaz (GTT) design membrane tanks able to take fully refrigerated cargoes. A compressor room is fitted with two high-duty compressors and two low-duty compressors. Several cargo heaters/vaporizers are fitted in the compressor room, as are a separate ballast system, a nitrogen generator, and an inert gas generator with dryer system. The cargo temperature and environment data may be set individually. The tank atmosphere and temperature data are calculated continuously. The boiling-off operation is also a natural part of the scenario.

STCW requirements
The LNG-M model meets the requirements of STCW section A-II/1, A-II/2, A-II/3, A-III/1, A-III/2, and A-V/1. These sections cover
- planning and ensuring safe loading
- care during the voyage and unloading of cargoes
- trim, stability, and stress to maintain seaworthiness of the ship

DNV GL certification
This model is certified and approved according to DNV GL’s Standard for Certification of Maritime Simulator Systems ST-033 March 2017.
MODEL FEATURES AND DETAILS

Vessel's main particulars
- Displacement: 114153 MT
- Length overall: 285.40 m
- Length bpp: 274.40 m
- Breadth moulded: 43.40 m
- Depth moulded: 26.00 m
- Summer draught: 11.35 m
- Design speed loaded: 19.75 knots

Vessel details
- Cargo tanks: 4 – Gaztransport Technigaz (GTT design)
- Cargo capacity: 145914 m³
- Max pressure: 23 kPa
- Min. perm. temp.: -163°C
- Max. perm. specific grav.: 500 kg/m³
- Disch. pump capacity: 1650 m³/h at 150 mLC
- Ballast tanks: 15

Note: Specifications subject to change without notice

TRAINING LEVELS AND OBJECTIVES

Training levels
The simulator solution can be provided both as a desktop system for classroom training and as a full mission system. A BigView 3D interactive mimic with 3D pop-up display is also available for enhanced familiarization of the cargo operations.

The simulator is suited for the following training:
- Junior officers in basic cargo operations
- Senior officers in full-scale cargo operations (loading/discharge/cooling down/venting)
- Senior officers and captains in advanced cargo-handling operations

Training objectives
The training objective of this model is to understand the total cargo-handling operation. Specific training objectives include the following:
- Familiarization with all parts of the cargo system
- Planning a cargo-loading or discharge operation using the high duty compressors and cargo heaters when required
- Lining up for loading and ballast handling simultaneously (check atmosphere)
- Controlling the flow into each tank and the trim/list of the ship
- Controlling the atmospheric pressure and temperatures
- Topping up and finalizing loading
- Laden voyage with boil-off to boiler
- Preparing and lining up for discharge
- Starting up discharge
- Emptying and draining tanks
- Finalizing departure ballast
- Inerting tanks after docking, and cooling down before loading (use of spray system)
- Inerting and venting tanks for inspection/docking