

Detail design of a 50 000m³ LNG tank in Tornio, Finland



Norconsult was responsible engineer for the design of a 50 000m³ full containment LNG storage tank for Midroc Rodoverken AB. Norconsult prepared all technical documentation and drawings for the contractor and for third party approval, by Inspecta.

Assignment

Norconsult was engaged as responsible engineer to perform the design of all foundation works at site, including the foundation for the LNG tank. This also included risk assessment, as well as HAZID of the LNG tank and process line between LNG tank and the process plant. The project included an early phase study of the LNG tank with regards to location, tank type selection, sizing and design pressure.

Solution

Norconsult designed a full containment LNG tank according to the European standards EN 1473 and EN 14620. The design includes an inner tank of 9 percent nickel steel, and an outer tank of cast concrete. The design included

evaluation and selection of insulation materials to minimize evaporation (BOG) of LNG stored at -162°C. Abacus was applied to perform finite element analysis (FEA) for the tank, based on earthquake calculations from a response spectrum analysis. Other software such as 3D analysis, Staad-Pro and Concrete Design - Postprocessing (developed by Norconsult) was also used in the tank design. Norconsult assisted the client during the construction phase and follow up towards accredited control body Inspecta, process contractor and other relevant subcontractors.

Result

The project was delivered at budget cost and on time. It was erected as planned, with no harm to personnel or equipment.

► Disciplines and services

Detail Tank Design, LNG, Onshore LNG

Key figures

- 50 000m³ LNG tank design
- BOG < 0.06%
- EN 1473
- EN 14620

Time span

2015-2018