



Case Study LNG #21

LNG Bunkering Terminal
with Integrated Gas Feed for
Factory Boilers

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Highlights:

Location — Oksvoll, Norway

Scope of Project:

- Complete bunkering solution incorporating in-house design and manufacture of principal equipment
- LNG evaporation system provides natural gas for the boiler operation at the adjacent fish processing factory
- Bunkering capability @ 1700 liters/min.
- Evaporation capability @ 2000 Nm³/hr (for 20MW boiler consumption)
- 24/7 operation
- Zero emissions to atmosphere
- Commissioning and start-up support with training
- Operations started March 2014

Application:

The bunkering station was commissioned to support Marine Harvest's ability to fuel LNG powered fish farm feeder vessels serving 40 offshore farms. An integral evaporation plant re-gasifies LNG to provide a source of natural gas for nearby fish feed processing facility's boiler system. The LNG storage tanks are designed to be supplied with LNG by ship but also have the facility to unload LNG by road tankers.

Environmental concerns were top of the list. The complete system is designed and built to ensure no loss or venting of product to atmosphere under normal operations.

System Configuration:

- Supply vessels are connected to the terminal via a jetty module
- Solution comprising three perlite vacuum insulated horizontal storage tanks
- Three tanks provide 750 m³ of LNG storage (approx. 500 m³ for bunkering and 250 m³ for the boiler)
- Both the bunkering and boiler feed sections were designed for low and high operational modes
- Designed and built fully in accordance with relevant compliance standards and local legislation
- Chart engineered and supplied 945 ft (290 m) of vacuum insulated pipe (VIP) with 6" inner diameter / 8" outer diameter in 12 m sections for optimal transport
- Outer pipe SS316L/316
- Reduced cost of install with field welded joints and no insulating of pipe needed on site
- Residual gas from the bunkering line is returned to the boiler tank or direct to the boiler itself to eliminate any gas being vented to atmosphere

Significant Accomplishments:

- Bunkering station and boiler feed support Marine Harvest's initiative to minimize their environmental impact
- The bunkering station fuels the vessels for a 55 hour round trip around the fish farms
- Chart proprietary VIP decreases heat leakage by 90% and provides a functional life up to 10 times longer than conventional mechanically insulated pipe

