

# Tornio Manga

## LNG receiving terminal

### CASE STUDY



## An important environmental milestone for the Baltic Sea area

Manga Terminal Oy is building a liquefied natural gas (LNG) import terminal in Tornio, Finland. This terminal will be the largest such facility in the entire Nordic region. An efficient logistics chain is being developed around the terminal, which will create a diversified fuel market benefiting both Northern Finland and Sweden.

Wärtsilä, on the basis of its unique experience and in-house capabilities, was selected to provide a complete turnkey solution for the project. This includes all the engineering, procurement, and construction (EPC) work involved. We have an exclusive ten year contract to provide all the service and maintenance required. The terminal is scheduled to be operational by early 2018.

"The Tornio Manga LNG terminal represents a long-term infrastructure investment programme. The beneficiaries include shipping and road transportation companies, power and heat utilities, as well as numerous industrial and mining companies in the region. We appreciate Wärtsilä's participation as a valued partner in this project; notably their special value-adding capabilities in LNG related operations."

Pekka Erkkilä, Chairman of the Board,  
Manga LNG Oy (Jan 2014)

"This major industrial investment in the Maritime Lapland area will support the region's transition from oil to gas fuelled operations. It will thus help reduce CO<sub>2</sub> and sulphur emissions in line with the increasingly stringent requirements for the environmentally sensitive arctic area."

Timo Mahlanen, Senior Business Development  
Manager, Wärtsilä Energy Solutions

## MAIN DATA

### CUSTOMER

Manga LNG Oy (industry)

**TYPE** LNG receiving terminal

### TANK NET VOLUME

50,000 m<sup>3</sup>

### SHIP UNLOADING RATE

3000 m<sup>3</sup>/h

### SEND OUT RATE

40 t/h

### OUTLET GAS PRESSURE

6.0 barg

### LNG IN-TANK PUMPS

3 x 175 m<sup>3</sup>/h

### BOG COMPRESSORS

3 x 3000 kg/h

### SCOPE

Engineering, procurement & construction (EPC)

**DELIVERY** 2018

LNG is an environmentally friendly fuel that is becoming increasingly relevant for industrial facilities, the shipping industry, and energy providers. The new terminal opens significant opportunities for the region's steel mills, mining operations, factories and other industrial customers to reduce their dependency on conventional fossil fuels. Similarly, the terminal will provide bunkering fuel for the new generation of LNG powered ships. LNG contains virtually no sulphur and far fewer particulates than diesel fuels, which is why it is an accepted means of complying with the latest maritime regulations, notably in Sulphur Emissions Control Areas (SECA).

Wärtsilä's turnkey solution for the terminal includes complete unloading, storage, pipeline distribution, and regasification facilities. The storage tank has a 50,000 m<sup>3</sup> capacity. Railroad connections and truck access to the terminal will facilitate fast and efficient deliveries of the LNG.

While Wärtsilä is a recognised leader in gas engine technology, our company also offers products, solutions and services throughout the entire LNG distribution chain. In particular, we focus on developing smaller scale capabilities, including the technology for both liquefaction and regasification. For example,

more than one third of the world's floating storage and regasification units (FSRU) in active operation have been supplied by Wärtsilä. Additionally, our Tank Control Systems are used in many of the world's leading LNG facilities.

The Tornio Manga LNG receiving terminal will play an extremely significant role in lessening the carbon footprint of the region's industrial operations. It is, therefore, an important environmental milestone for the Baltic Sea area, and especially for Northern Finland and Sweden. The project also showcases Wärtsilä's expertise in this field.

CHALLENGE	WÄRTSILÄ'S SOLUTION	BENEFIT
Need of project financing	EPC solution combined with a long-term maintenance contract	Mitigating risks for financiers by guaranteed cost, schedule and performance
Development support	Wärtsilä research studies and engineering services	Availability of documentation related to permits and scheduling during the financing process and final investment decision (FID)
Stringent environmental legislation	Replacing diesel and heavy fuel oil (HFO) with environmental friendly LNG	Clean power for an energy intensive industrial region



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