

LNG Terminal Zeebrugge - Extension Storage and Unloading Facilities



Financed by: Fluxys LNG

Client: Fluxys nv

Date: 2003 – 2004

Budget: € 152 500

Location: Zeebrugge

Partners: University of Ghent (Civil Engineering Department, Harbour Construction Works)

Project context:

Fluxys is the independent natural gas transport operator in Belgium. The Zeebrugge LNG terminal is one of Fluxys' main infrastructures. At this moment (2005) 15 % of Western Europe natural gas consumption is passed over Zeebrugge. The LNG market is growing for two major reasons: compared to gas transport by pipeline LNG can be transported in a flexible way to the destination at choice and moreover the available natural gas sources are located at greater distances from the end users. To cope with the growing LNG market Fluxys envisages further extension of its Zeebrugge LNG facilities.

Scope of Services:

- General research and conceptual engineering
- Research on nautical accessibility (jumbo LNG carriers, safety, ...)
- Hydrodynamic modelling (waves, wind, ships, ...)



LNG tank Zeebrugge

Technical Description:

The project aims at the feasibility analysis for a second LNG unloading / loading jetty in the Port of Zeebrugge in order to meet the ever increasing demand for LNG as an energy source.



Existing LNG jetty in Zeebrugge



Overall view LNG terminal Zeebrugge (before first extension)



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The study was to analyse the technical feasibility for nautical accessibility and the mooring of 200 000 - 250 000 m³ LNG carriers at the existing LNG jetty and to install a new LNG jetty:

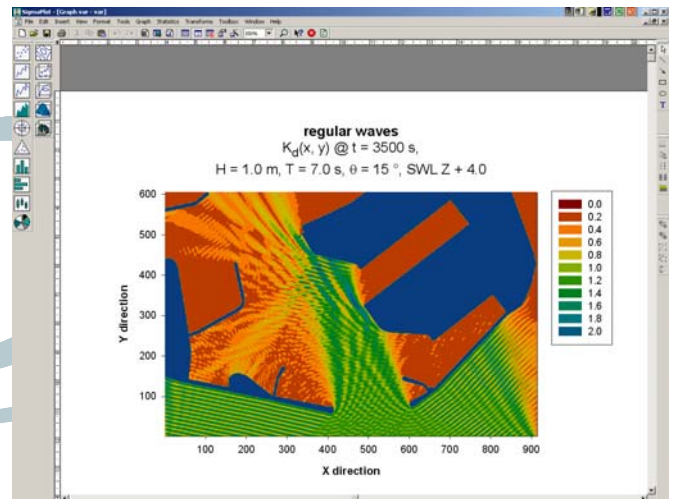
- investigation and research about technical and nautical characteristics of jumbo LNG carriers
- data collection and appraisal of the existing LNG jetty, including control calculations
- mooring of jumbo methane tankers at the existing LNG jetty for different conditions, speeds, ...
- conclusions and recommendations with regard to the mooring conditions to be taken into account
- conceptual design of an LNG jetty.



LNG carrier at the existing jetty in Zeebrugge

The feasibility to extend the existing LNG terminal with additional storage tanks and/or a second LNG jetty for jumbo carriers was also investigated:

- definition of relevant criteria (safety, construction costs, environmental impact, geological conditions, ...)
- background for the construction of additional LNG storage tanks
- background for the construction of a second LNG jetty for jumbo LNG carriers
- checking of criteria and conclusions.



Wave diffraction pattern in LNG harbour