

# LNG Terminal Zeebrugge - First Extension Technical Assistance and Client's Engineer



**Financed by:** Fluxys LNG, Brussels

**Client:** Fluxys LNG

**Date:** 2003 – 2004

**Budget:** € 182 000

**Location:** Zeebrugge, Belgium

**Partners:** Jacobs Belgium nv

## 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.

## Assignment:

Fluxys LNG invested € 165 million to double the capacity of the Zeebrugge LNG terminal by 2007. The capacity enhancement project consists of building a fourth storage tank (140 000 m<sup>3</sup>) for liquefied natural gas (LNG) and additional facilities for LNG regasification and transport into the national transmission network.



© Fluxys Infographics LNG terminal Zeebrugge - Extension works



Overall view LNG terminal Zeebrugge (before first extension)

## Scope of Services:

- Screening FEED documents
- Authority engineering
- Technical tender evaluation

## Technical Description:

The assignment of Soresma-haecon includes assistance to the Principal and the Leading Engineer, Jacobs Belgium with respect to the authority engineering and the civil engineering aspects for the construction of the fourth LNG tank and related infrastructures. The following topics are studied:

- screening of FEED documents prepared by Fluxys LNG
- authority engineering: document preparation for building and gas transportation permit
- evaluation of Contractor's technical EPC tender documents
- study of geotechnical aspects with regard to tank construction.

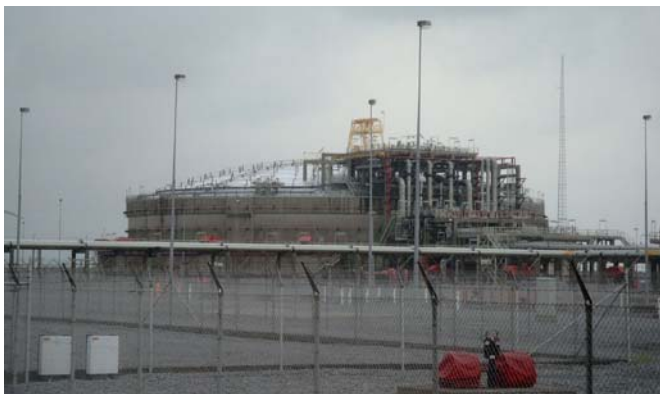


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LNG terminal Zeebrugge - Existing LNG tank (87 000 m<sup>3</sup>)

Special attention is given to the structural stability of diaphragm wall and LNG tank taking into account the life cycle behaviour of the Bartonian clay layer.

The tank is erected partly above and partly below ground level in dry conditions. The excavation is limited by a 95 m diameter diaphragm wall (depth is about 40 m). The diaphragm wall is anchored in the impervious Bartonian clay formation. For the sake of the tank's dimensions optimization, construction methodology requires pressure dewatering in the Wemmeliaan sand below the Bartonian clay in order to guarantee the stability of the latter.

