



**Principal:** GATE (NV Gasunie / Koninklijke Vopak NV)  
**Contractor:** TSLNG (Techint / Sener)  
**Main contractor:** Ooms Construction BV  
**Execution period:** January 2010-April 2010  
**Machine:** AVN  
**Pipes:** reinforced concrete with steel core  
**ID-OD:** 2.200 - 2.610 mm  
**Length:** 1.060 m

### Gate Terminal: a storage and transport company

The increasing need of natural gas demands for additional import. Because of that background, NV Nederlandse Gasunie and Koninklijke Vopak NV started with the development of Gate Terminal (Gas access to Europe), a LNG-import terminal, in 2005.



LNG is brought to pressure and made into fluid shape on the terminal for delivery to the Dutch gas transportation network, with a goal of equality in the emission of natural gas. The complete LNG-import terminal has as main function a storage and transport company and this without producing any waste. The terminal will consist of three storage tanks and two construction jetties. Each of the tanks will have a storage capacity of 180.000m<sup>3</sup>. The terminal will have an initial transit capacity of 12 billion m<sup>3</sup> every year. The total project costs for the LNG-terminal count around 800 million Euros. The terminal will be fully operational from September, 1st 2011.



### The functions of an LNG-terminal

The functions of an LNG-terminal are: supply, a buffer between supply and continuously delivery of natural gas, evaporation and drainage. The ships which supply LNG are specially designed for this purpose and meet up to very strict safety measures. For example; they have standard double-walls. Some LNG-ships also use the natural gas they transport as fuel and are therefore environmentally extra clean.



### The drilled cooling water pipe

To put the delivered liquid LNG per tank anew in the gas phase, a cooling water tunnel under the Yangtzeport is necessary. This transports remaining cooling water from the nearby EON-power plant to the LNG-terminal.

With a closed pipe jacking DN2200x2610mm with a length of 1060m, a maximum depth of 33m under the groundwater level, slopes up to 13% and an arrival depth of 22m depth the boundaries of the technique have been approached. Reinforced concrete jacking pipes with steel core, tested on inner pressure of 8,2 bar on ground level, form the eventual cooling water pipe connections under the Yangtzeport.

The shield had arrived within an accuracy of 10cm.