

# Profound IS - Liquid Leveling system

## Project: HSL tunnels Dordtsche Kil and Oude Maas

### Project description

In 2007 the Netherlands will get a connection to the European network of High Speed Railroads. Ultra-fast trains with a maximum speed of 190 mph an hour will take travelers directly from Amsterdam to Schiphol Airport, Rotterdam, Antwerp, Brussels and Paris.

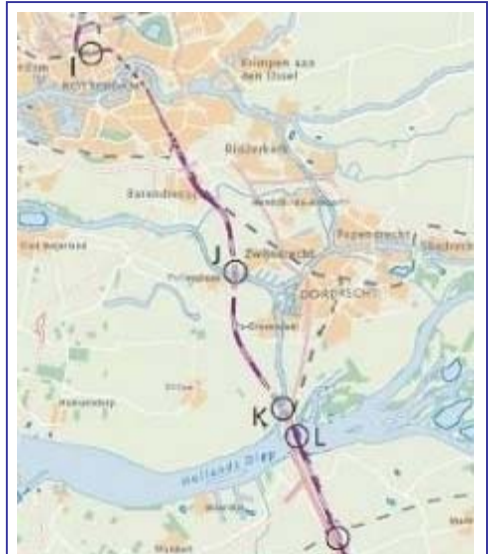
The route includes two tunnels, each some 1.5 miles long. To accurately monitor any settlements a Profound Liquid Leveling System has been installed in each tunnel. These systems have proven to be extremely precise, and easy to install and use.

Due to local geological conditions the tunnel under the Oude Maas was constructed using a combination of the cut-and-cover and immersed tube construction methods, whereas the tunnel under the Dordtsche Kil was constructed using just the immersed tube method. This latter tunnel not only crosses this waterway, but also 2 major highways (incl. the A16 motorway).

**Client:** Fugro Ingenieursbureau BV, The Netherlands

**Location:** Zuid-Holland

**Equipment:** in each tunnel the IS-network consists of:  
45 IS-LL sensors including 2 reference sensors, connected with special tubing and cables for fire safety reasons.  
4 IS-potentiometers  
1 IS-power supply  
1 central network PC including GSM connection



J = Oude Maas Tunnel  
K = Dordtsche Kil



IS-Liquid Leveling Sensor



IS-Liquid Leveling Reference Sensor incl. liquid reservoir and air dehumidifier

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## HSL-tunnel Dordtsche Kil



Photo: HSL-Zuid/Ton Poortvliet - oktober 2004



Photo: HSL-Zuid/Ton Poortvliet - oktober 2005

## HSL-tunnel Oude Maas



Photo: HSL-Zuid/Ton Poortvliet – juli 2004



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