



### PROJECT NAME

Road Tunnel 1,1 km long and 11 m internal diameter crossing under the so called Dead Vistula river in the vicinity of Danzig (Poland)

### CLIENT

Gdanskie Inwestycje Komunalne (GIK)

### ENGINEER

PSP Consulting Engineers GmbH

### GENERAL CONTRACTOR

Obrascon Huarte Lain SA (OHL)

### SPECIALIST CONTRACTOR

RODIO GmbH Spezialtiefbau

### CONTRACT VALUE

EURO 4,7 Mio. CHF 7,3 Mio.

### BEGINNING OF WORKS

APRIL 2014

### END OF WORKS

MARCH 2015

### ■ JOB DESCRIPTION

The Slovaki road tunnel links the new airport of Gdansk, the stadium and many of the road connections to west Poland, with the old portual city on the eastern side of the Vistula river. The freezing of the soil with the so-called indirect method (brine freezing) was chose to permit the construction of the 7 cross passages located into loose ground and below the water table. The main tunnels were excavated using a Herrenknecht Hydroshild type TBM. The TBM has a cutting diameter of about 12,5 m. The cross passages are located in very heterogeneous alluvial deposits with peat to roll gravel layers and some with large boulders. The water head above the sole of the cross passages ranges between 15 and 25 m. The planned frozen wall thickness of 1.80 m was achieved using only one row of freezing pipes. The initial freezing phase required 60 to 70 days. The holes for the installation of the pipes freezing and thermometer were drilled from the south tube against water pressure, using special preventers (BOP). The freezing, thermometer and drainage pipes were installed as lost drill pipes by rotary drilling. A drill mast type EGT VD 400 mounted on a hydraulic lifting platform was used. Due to the huge dimensions of the main tunnels, the construction and implementation of an intermediate working platform was required for the achievement of the upper drilling positions.

### ■ WORK QUANTITIES

340 Drillings, average drill length 12 to 19 m. total length 4.500 m  
Total volume of frozen soil: approx. 5.600 m<sup>3</sup>  
300 freezing pipes, 30 Thermometer pipes, 450 temp. measuring points.

### ■ MAIN EQUIPMENT

1 drill mast EGT VD 400 installed on an hydraulic lifting platform  
1 mixing and grouting plant  
1 Freezing plant with a cooling capacity of 380 kW at -35 °C  
4 Freezing plants with a cooling capacity of 130 kW each at -35 °C  
Recording of drilling parameters by means of LUTZ LT3 System



RODIO GmbH Spezialtiefbau  
Siemensstraße 2a  
D-86356 Neusäß  
T +49 821 450 428 0  
F +49 821 450 428 20  
E-M admin@rodio.de  
www.rodio.de



RODIO Geotechnik AG  
In der Luberzen 17 P.O. Box  
CH-8902 Urdorf ZH  
T +41 43 500 09 30  
F +41 43 500 09 31  
E-M admin@rodio.ch  
www.rodio.ch



# Ground Freezing



PROJECT

## SLOVACKI TUNNEL DANZIG POLAND



One cross passage in freezing stage



Two freezing units inside the main tunnel



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