



## Tunnel Oberau (D) Compensation Grouting

<b>Employer</b>	Highway Directorate, Southern Bavaria
<b>Client</b>	ARGE Tunnel Oberau
<b>Execution of works</b>	Renesco GmbH, Abt. Marti Geotechnik
<b>Construction Period</b>	January 2016 – December 2018
<b>Contract Sum (injection only)</b>	€ 3.400.000

## Project Description

The 3 km long twin-tube Oberau Bypass tunnel is the longest road tunnel in the state of Bavaria and crosses two mountain ranges, as well as the Gießenbach valley which is characterised by fluvial deposits. With an overburden of only 10 m and sensitive industrial buildings on top of the tunnel alignment, the project called for over 7 700 m<sup>2</sup> of compensation grouting as a mitigating measure to counteract the settlements caused by the tunnelling.

## Grouting works

By carrying out pre-heave and interim heave grouting, it was possible to compensate the settlement caused by tunnelling operations, without any damage to the buildings or interruption of the tunnelling works.

The digitization of the machine and measurement data and the digitalization through a web-based grouting data management system, enabled a modern and agile project management and ensured the successful execution of the works.

## Scope of work

- Construction of 6 shafts

### Drilling

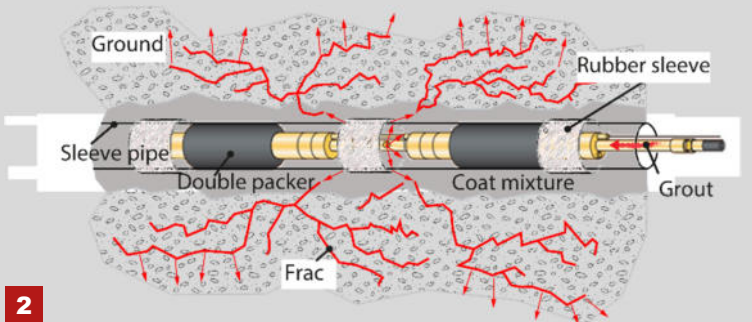
- Drill holes for sleeve pipes: 7 730 m
- Drill holes for inclinometer: 470 m
- maximum drilling length of 53 m
- Area of compensation grouting: 7 700 m<sup>2</sup>

### Grouting

- Cementous Grout: 1 650 000 l
- Sleeve valves: 12 500 nos.
- Grouting time: 6 500 h
- Injections: 36 500 nos.

### Alignment of deformations

- Hose cart system: 116 nos.
- Horizontal inclinometers: 5 nos.



- 1 Project area with shafts and tunnel axis
- 2 Double packer in sleeve pipe
3. Horizontal drill holes with shaft drilling machine