

# Wienerwald, Austria

## 2 Back-up installatiaons



Back-up installation in front of the Section



The back-up system is fit for double-track passage over the entire length of the train station. Thereby both, the heading supply as well as the invert lining supply, are equally ensured.



Back-up installations ready for the heading

### About the Project

The Wienerwald tunnel is a major construction of the Austrian National Railway (ÖBB) for the Western Railway's four-track expansion between Vienna and St. Pölten. The traveling time of the trains is to be reduced drastically with two one-track tubes with a length of 10,75 km each, an excavation diameter of 10,6 m and cross passage connections every 500 meters. This tunnel construction basically consists of two very long one-track tubes and one 2,4 km long double-track tube on the Vienna side of the Wienerwald tunnel. The inside diameter of the lining segment sleeve socket amounts to 9,65 m.

### Project data

Country	Austria
Start of construction work	2005
Building owner	ÖBB – Infrastruktur Bau AG
Client	Herrenknecht AG, Schwanau
Tunnel length	2x 10.75 km TBM-heading
Forwarding	Single Shield-TBM
Ascending gradient	Max. 0,28%
Excavation diameter	10.64 m
Segment Lining	Without screws, without sealing
Invert Lining	In situ concrete in the back-up
Interior Timbering and Walling	In situ concrete interior sleeve behind the back-up
Double-Track-Supply	2 x 900 mm track
Removal	Tunnel conveyor continuously expandable to back-up

### The End User's Opinion

Joint Venture Wienerwald Tunnel, Mr. Diewald, Project Manger, Porr Tunnelbau GmbH



The Wienerwald tunnel project made very high demands on the two heading systems. With the development and supply of two back-up systems via innovative solutions, Rowa has satisfied very stringent requirements within the given time frame. The flexible train station area, which enables a parallel high performance transloading of supply material (such as lining segments, gravel and mortar components as well as invert concrete), should especially be mentioned.

Supply capability is designed for transloading lining material for two lining segment rings at a time. Operationally, the two back-up systems have proven to be very successful.

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Unloading of invert concrete transport container (4.5 m<sup>3</sup>) with special crane.



A high performance transloading crane with basket discharge installation (360°) supplies the floor lining construction site with fresh concrete.



Simultaneous transloading of sand and bonding agents with invert concrete transloading.

## Objectives for Heading Installations

The heading installations consist of two single shield hard rock tunnel boring machines and two back-up installations.

Rowa Tunnelling Logistics AG has received its assignment from Herrenknecht AG. The assignment covers the development, production, installation and starting up of two mirror inverted TVM back-up installations with the following features:

- Segment lining with a length of 2,25 m
- Logistics for maximum performance of 54 m per day
- In situ concrete invert lining with slide finisher, integrated into the heading
- Minimum amount of personnel to operate the heading machines

## The Concept

For its realization, the various required operation sequences had to be analyzed in detail and suitable installations had to be developed. The result is an innovative back-up concept. The realized solution contains the following highlights:

- Automated lining segment transloading over long distances and automatic transloading of the back-up tracks with special consoles
- Just in time wet mortar production on the back-up from three components
- Disentangling of heading and floor lining
- Highly mechanized invert concrete transloading and -installation in the back-up.

## Remarks

The afore-mentioned heading installations are an example for the current development in tunnel construction mechanization. The implementation of a 2,25 m long lining segment is a new achievement. It improves the relation between heading time and ring construction time and, therefore, increases the heading performance. The consistently implemented mechanization and partial automation of the working sequences have led to two high performance state of the art heading systems.