

Ceneri Section 851, Switzerland

Back-up system

About the Project

With Alp Transit Gotthard, a future-oriented flat rail through the Alps is being created. The Ceneri Base Tunnel which will be opened in 2019 is part of this flat rail.



Back-up system ready for the ceremonial start-up

Rowa's order

By order of Alp Transit Gotthard AG, the Consorzio Monte Ceneri (CSC Impresa Costruzioni SA, Lugano; Frutiger AG, Thun; Rothpletz, Lienhard + Cie AG, Aarau) is building the access tunnel Sigirino Los 851 of the Ceneri Base tunnel.

The working pool CMC has placed an order with Rowa Tunnelling Logistics AG to build the back-up installation.

Project data

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|-----------|-----------------------------|
| Country | Switzerland |
| Execution | 2008 |
| Owner | AlpTransit Gotthard AG |
| Customer | CMC; Consorzio Monte Ceneri |

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|---------------------|-------------|
| Tunnel length | 2.3 km |
| Forwarding | TBM-heading |
| Descent | 4.8 % |
| Excavation diameter | 9.73 m |



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Construction Site Conveyor belt Installation



Suspension Crane



Construction Site Back-Up 1 Installation



Rear back-up; shortened for start-up

Objectives

Objectives for Heading Installations

This order comprises development, production, installation and start-up of the back-up installation with the following specifications, functions and objectives:

- Anchor, shotcrete, network and steel installation with a heading performance of 26m/day, with the back-up aiming at twice the performance of the TBM.
- Minimum amount of personnel for the operation

The Concept

During implementing of the plan of action, the various necessary work procedures have to be analyzed carefully and matching installations have to be developed, resulting in an innovative back-up system. The implemented solution comprises the following high lights:

- Adaptation to the variable gradient of 5%. All equipment and cranes must be properly adjusted. Additional brakes for the back-up are needed.
- Costly coarse grain separation on the back-up. Rocks > 15cm are sorted onto the conveyor band via a vibrating chute with rod strainer before transloading.
- Separation of heading operation and bottom sealing

A conveyor band takes care of excavation material removal from the heading to the interim storage site in the portal area.

The decrease of operating errors is a direct result of the extensive automation in the back-up area.

Scope of Supply

An open TBM Robbins 309 is used as heading machine.

Rowa Tunneling Logistics' back-up consists of:

Back-up system infrastructure 'Back-Up 1', length 57m

- The back-up comprises one suspension crane, one material crane, the dust removal unit, the shotcrete robot, transformer, compressors and one WC-container.

Suspension platform 'Back-Up 2', length 55 m

- The suspension platform with suspension crane, enable the bridging of the invert construction site.

Back-up system supply and removal 'Back-up 3', length 33 m

- The back-up 3 forms the back part of the heading installation. This part contains the infrastructure for supply of electrical energy, cooling and industrial water and fresh air, the coarse grain separation, the loading site of the conveyor band, as well as the conveyor extension and a handling crane for the air pipe storage.