

By-pass Saas GR, Schweiz

Back-up installation for Gripper-TBM with conveyor belt



Main Tunnel portal and safety tunnel portal



Back-up installation



Transfer back-up conveyor into muck car

About the project

The Saas tunnel between Kueblis and Klosters in the Praetigau area in Graubunden has a length of 2580 meters. As with the Gotschna tunnel, a safety tunnel is built for the Saas tunnel. Its purpose is to provide an escape route for traffic users. The planned safety tunnel runs parallel to the main tunnel, separated by 30 m towards the valley side. The breakthrough of the Saas tunnel is scheduled for the end of 2008.

Project data

Country	Switzerland
Execution period	2005 - 2011
Building owner	Tiefbauamt Graubünden Chur
Client	Arge ATUS
Arge ATUS	Walo Bertschinger AG, CSC Impresa Costruzioni SA, Rothpletz, Lienhard+Cie AG, Gebrüder Vetsch AG
Driving method	Gripper TBM
Excavation diameter	4.50 m
Driving length	1'950 m
Inclination	2.6 %
Lining method	Spritzbeton
Curve radius	> 300 m

Rowa's order

On 30 June 2005, the company Rothpletz, Lienhard+Cie AG in Aarau awarded Rowa with the contract for the manufacture and supply of a back-up installation for a gripper TBM with tunnel belt.

By-pass Saas, Switzerland



Invert cleaning conveyor



Base segment-installation with lining segment transloading crane



Track installation bridge at the front tongue

The Concept

The concept of a back-up installation consists of an anchor boring sledge, a shotcrete sledge, a lining segment-/track installation bridge and an apparatus- /double rail rolling platform supported by auxiliary rails, with the necessary superstructures and a direct rail to the segment lining construction site. After completion of the boring stroke, the TBM pulls the back-up train by means of a towing cylinder.

Special aspects

The characteristics of Rowa's supply scope lie in the development of an optimized back-up system making use of existing components.

Supply and removal logistics

Installation and waste material are transported by rail. The installation material can be transported from the platform car to the rear of the shotcrete sledge via base segment transloading cranes.

Shotcrete is delivered in a mixing container. The latter is mechanically transferred across from the platform car to the shotcrete transloading station.

The muck material is transported directly into the rotary tipper via a back-up conveyor. The muck train loading is supervised and controlled by the locomotive via video monitor.

Scope of delivery

- Trailing installation, consisting of butt straps fixed to the rear of the TBM, as well as the corresponding towing rods
- Transfer and back-up conveyor
- Anchor boring- and shotcrete sledges, supported on skids by the tunnel floor
- Invert cleaning conveyor
- Lining segment- /track installation bridge
- Lining segment transloading crane
- Apparatus- / double rail rolling platform
- Car relocating station
- Mortar transloading station
- Dust removal, ventilation
- Shotcrete installation
- Airduct storage transloading station
- Auxiliary rail transloading station

Technical data

Back-up system

Length 120 m
Weight ca. 250 t

Conveyor belt

Length of conveyor belt 100 m
Connected electrical load 18 kW
Output 200 t/h

Base segment-transloading crane

Route length 17 m
Crane capacity 2x1,6 t