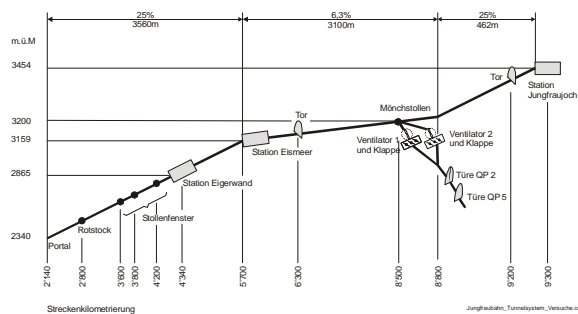




Jungfraujoch with the highest underground railway station of Europe



Rail tunnel system at Jungfrau



Air extraction with axial fans from the Jungfrau railway tunnel

Description

The single-track Jungfrau railway tunnel is a particular construction. With a length of 7'122 m and a gradient of up to 25 %, it connects the portal at the Eigergletscher and the station Jungfraujoch at 3'454 m above sea level. This station is the highest railway station in Europe. Parts of the tunnel are the crossovers at Eigerwand and Eismeer which offer integrated waiting areas for passengers.

Services

The operator of the tunnel, the Jungfrau Railway Interlaken, employed HBI Haerter Consulting Engineers to examine smoke extraction and emergency operation scenarios in case of fire in the tunnel or at the underground station of Jungfraujoch.

Safety objectives have been elaborated. The resulting modular ventilation concept allows stepwise implementation of elements. The possibility of an implementation in phases of the safety measures was applied during an extended period of time.

HBI services focused on the planning of the following aspects:

- Provisions for preventing of smoke propagation into protected waiting areas at the crossover at Eigerwand and Eismeer, the station at the Jungfraujoch as well as the passages to the tourist attractions at the top of the mountain
- Mechanical and operational improvements on the existing galleries in the tunnel by integrating the fire ventilation system
- Installation of exhaust fans at the Mönchstollen, which keeps the escape routes in the tunnel and the Jungfraujoch station free of smoke regardless of the meteorological conditions and supports the self-rescue of passengers
- Verification of the performance of the ventilation system according design specifications by performing several smoke tests