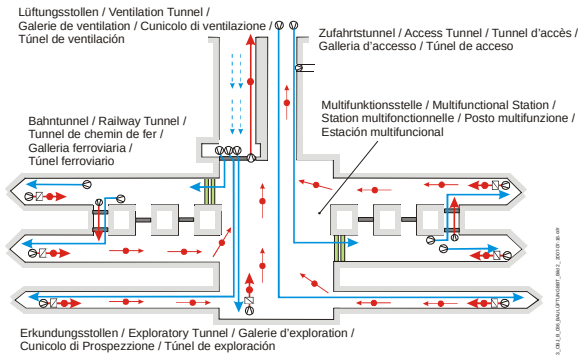
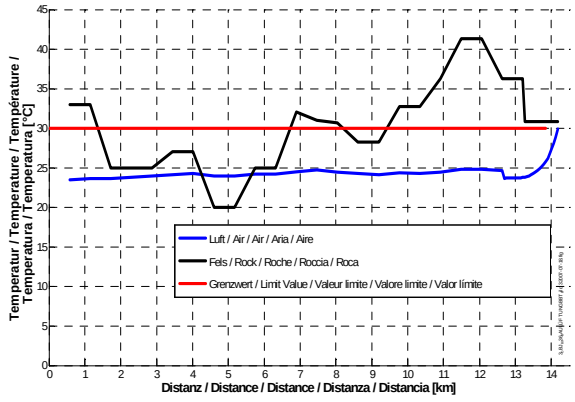
Brenner Base Tunnel (AT)
Ventilation/cooling during excavation and equipment

Application of air ducts, fans and air coolers during construction



Ventilation concept during the excavation phase of the Brenner Base Tunnel, section of the multi-functional station Steinach



Air and rock temperatures with given limits for ventilation and cooling (simulation with BAUKLIMA)

Description

The phases of excavation, lining and installation of railway equipment of the Brenner Base Tunnel are challenging tasks in many respects. More than 2 x 56 km of railway tunnels, 170 cross-passages, 6 crossovers and 3 multifunctional stations must be built and equipped. During these phases major heat and pollution loads from the surrounding rock and the engaged machinery have to be handled.

The preliminary ventilation and cooling must provide adequate climatic conditions, both, during normal and emergency (e.g. fire) operation.

Services

HBI Haerter Consulting Engineers provided the following services during the phases of excavation, lining and installation of railway equipment within the framework of the environmental impact assessment (UVE project, Progetto Definitivo) of the Brenner Base Tunnel:

- Assembly and definition of climatic threshold values according to standards of occupational medicine (MAC values, air speed, temperature, humidity, etc.)
- Partitioning of the construction schedule in ventilation and cooling relevant tunnel sections and phases to guarantee a seamless operation of ventilation and cooling
- Calculation of the fresh air requirements at the working sites
- Calculation of the cooling power requirements at the working sites (using the simulation program BAUKLIMA)
- Elaboration of the ventilation and cooling concepts for each tunnel section and each phase
- Mathematical confirmation of the compliance with the threshold values
- Dimensioning of all construction ventilation equipment (fans, dampers, air locks, etc.)
- Dimensioning of all construction cooling equipment (air coolers, cooling towers, pipes, etc.)
- Elaboration and documentation of the environmental impact assessment (UVE project, Progetto Definitivo)