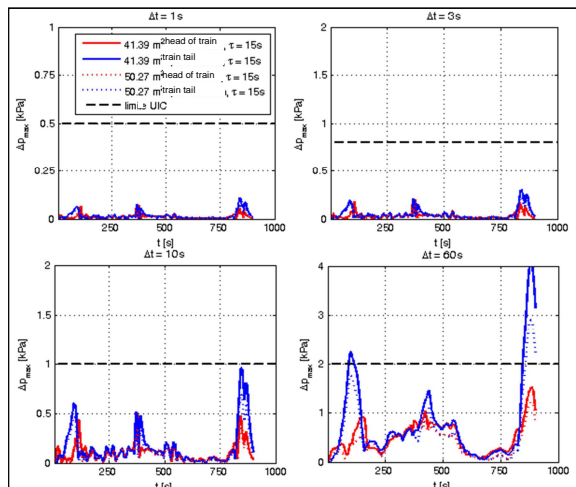
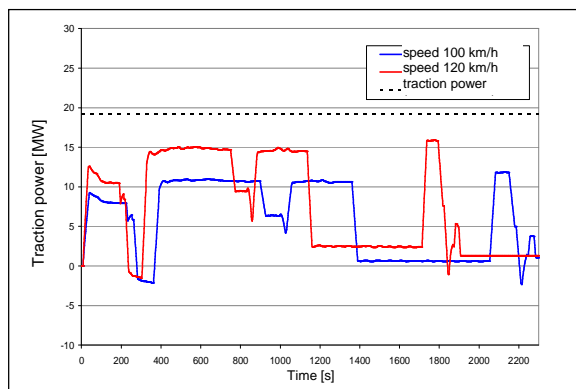


Scheme of the tunnel system



Pressure comfort calculated for a passenger train travelling at a speed of 250 km/h during the passage of the tunnel to determine the conformity with UIC-criteria



Traction power requirement for a freight train travelling at a speed of 100 km/h and 120 km/h with an inclination of the tunnel of 8.3 ‰ and for a free cross-sectional area of 43 m²

Description

The future Brenner Base Tunnel between Innsbruck and Franzensfeste is the key element of the rail link between Munich and Verona. The tunnel being at design stage at the moment will have a length of about 55 km. It consists of two, single-track tubes.

The tunnel system consists of the following major elements:

- Three multifunctional stations (MFS)
- One deviation tunnel, one connecting tunnel and the base tunnel
- Three access tunnels for the MFS
- The cross passages between the two main tunnels of 35 m in length at a distance of 333 m

Services

HBI Haerter Consulting Engineers provided the following services:

- Aerodynamic calculations in order to check the health limits with respect to pressure change, in order to fulfil the criteria of TSI of a maximum pressure change of 10 kPa during the passage of the tunnel of a passenger train at high-speed
- Aerodynamic calculations to verify the pressure comfort limits (criteria applied according UIC, so maximum pressure variation of 0.5 kPa in 1 s, 0.8 kPa in 3 s, 1 kPa in 10 s and 2 kPa in 60 s for a passenger train)
- Analysis of traction power requirement of a train passing the tunnel (traction power is mainly determined by the inclination and the aerodynamic resistance of the train)
- Parametric study of the acceptable tunnel inclination depending on train mass and tunnel cross section, train speed, train length for the traction power requirement corresponding to the one occurring on an open track with an inclination of 12.5 ‰