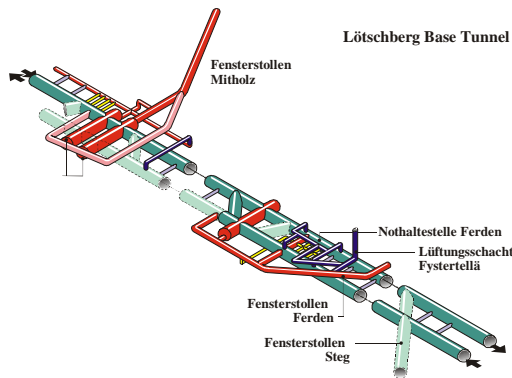
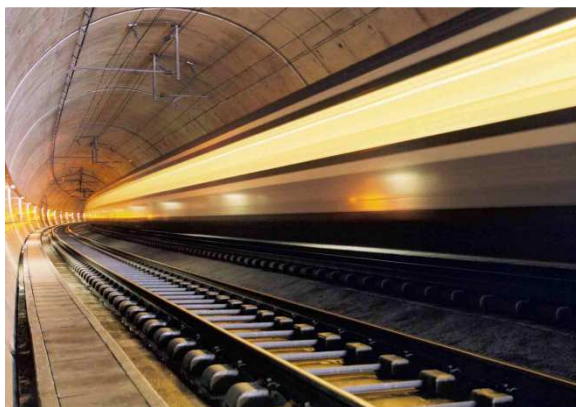


Staggered arrangement of portals to reduce recirculation of tunnel air



Scheme of Loetschberg Base Tunnel (CH)



Double-track tunnel at Grauholz (CH)

Major parts of modern, high-speed rail links are often built as tunnels. Because of the elevated train velocities, various aerodynamic phenomena occurring during train passage need to be considered for tunnel design. Additionally in long tunnels and in metro systems the tunnel climate might be an important issue for the tunnel design.

Our services

- Calculation of pressure fluctuations for train passages in tunnels and optimisation of tunnel cross-section based on the effects of pressure waves on passenger comfort, with respect to traction power of trains and micro-pressure waves (sonic boom) employing THERMOTUN developed by DTR
- Assessment of air exchange rates and the maximum air velocities in underground stations
- Planning of draught relief installations and pressure relief shafts for underground stations and tunnels
- Simulation of smoke movement in underground systems
- Assessment of existing tunnels regarding their suitability for higher train speeds
- Assessment of the expected tunnel climate (temperature, humidity) for underground transport systems
- Planning and implementation of installations for ventilation and cooling of underground transport systems using THERMO of HBI
- Calculation of pollutants from diesel trains
- Planning of measures to improve the climate in existing and planned transport systems

Your benefits

- Profiting from our international experience we offer qualified consultancy and partnership for the complete range of services during a project in the area of aerodynamics and thermodynamics of tunnels.
- With a competent and experienced team of engineers and physicists we provide solutions in a reliable and efficient manner.