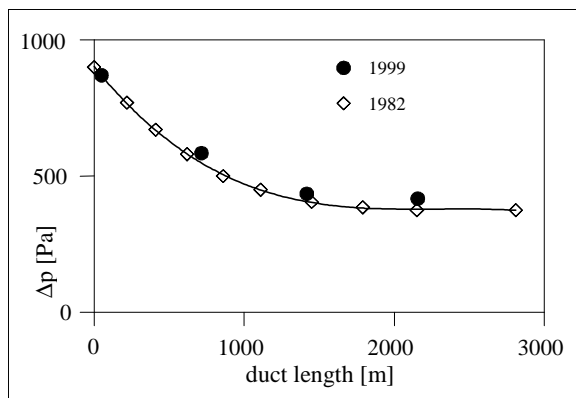




*Jet fans before the refurbishment*



*Fresh air ventilators before the refurbishment*



*Pressure measurement in the ventilation duct*

HBI Haerter Consulting Engineers analyses your ventilation system and provides a new ventilation design for safe and economic operation. For the refurbishment or optimisation of an existing ventilation system, HBI provides knowledge of specialists in various disciplines such as tunnel construction, control system, simulation, fire protection, mechanical equipment etc. HBI provides the adequate approach meeting the requirements of your tunnel project.

## Our services

- Review of all mechanical components
- Check of structural components such as ventilation ducts, false ceilings, exhaust stacks etc.
- Selection of relevant design scenarios for the ventilation (traffic, fire, climate etc.)
- Analysis of current ventilation control system including sensors
- Analysis of ventilation operation and power consumption
- Analysis of operator's experience
- Analysis of the existing system considering ventilation, construction and equipment
- Calculation of minimum air flow rate based on current requirements
- List of measures to refurbish the ventilation system
- Cost/benefit analysis of ventilation system refurbishment
- Computer simulation of current ventilation control system and optimisation
- Control system design for adequate air quality in normal traffic with minimum power consumption
- Call for tender
- Site supervision and commissioning
- System documentation and training of staff

## Your benefits

- HBI provides a comprehensive assessment of the status of the civil construction, the electromechanical installation and the tunnel ventilation system resulting in a work schedule for all project phases.
- We achieve a safety level that meets the current requirements.
- You obtain an improved, more economical ventilation system.