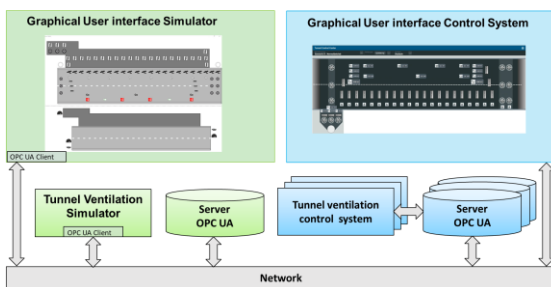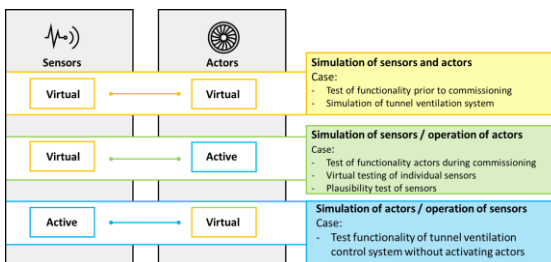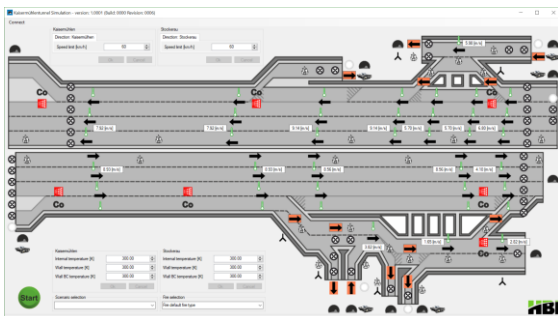# Service: Tunnel ventilation simulator

Virtual and real tunnel

Simulator principle

Simulation options

Example of a HBI tunnel ventilation simulator

Current trends show that underground facilities become increasingly complex. At the same time, the requirements to their availability increase. The consequences are increasingly advanced tunnel ventilation control systems. With conventional methods, it is difficult - if at all possible - to conduct the required tests. HBI's tunnel ventilation simulator, which utilises a novel modelling technique, resolves this. It interacts directly in real time with the control system and visualizes the results directly in the user interface (instantaneous values only).

Our services

- Development and integration of the tunnel ventilation simulator as "software-in-the-loop" (SIL)
- Simulation of aerodynamics / thermodynamics by means of novel modelling
- Simulation of all relevant system components (sensors, actuators e.g. fans) as well as the influencing factors (traffic, environment, fire, etc.)
- Graphical user interface for input / output and clear visualization of instantaneous results
- Real-time interaction with control system
- Custom made interface based on OPC UA protocol
- The tunnel ventilation simulator is delivered pre-installed on a PC/laptop as a "hardware-in-the-loop" (HIL). **No licence fees**.

Your benefits

- Virtual commissioning as complete tunnel ventilation control factory tests (FAT)
- Testing of the tunnel ventilation control system even before components for the tunnel ventilation systems are installed
- Complete testing of all traffic and fire scenarios also such that are costly, difficult or even impossible to test in the real tunnel
- User intervention during ongoing simulation e.g. by prescribing values of sensors and/or manual activation of actuators
- Early detection of errors in the control system and minimization of control-system testing during commissioning
- Training of operators and optimisation of operation
- Integration with "Siemens Digital Factory" for concept tests
- Economically beneficial solution (good cost-benefit-ratio)

HBI Haerter

Beratende Ingenieure   Consulting Engineers   Ingénieurs Conseils   Ingegneri Consulenti   Ingenieros Consultores