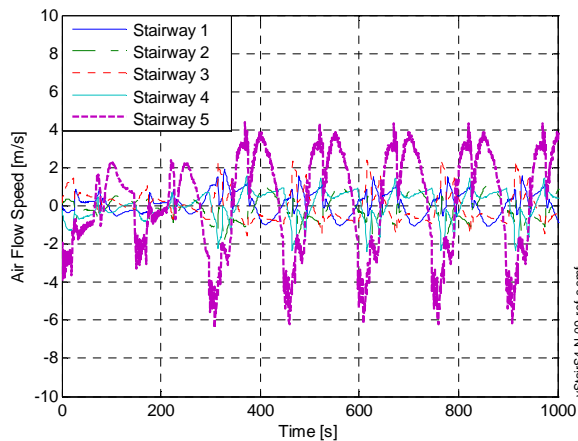


Ventilation during an incident between two underground stations



Flow speed of air in the stairways of an underground station during normal operation



Metro station with side platforms (Tehran)

Description

Line 1 of the underground in Tabriz (Iran) comprises a 3.2 km long double track tunnel. The installation includes three underground stations. During an emergency it is essential to provide the passengers with smoke free escape paths. This is valid for the tunnel sections as well as for the stations. A ventilation system can establish smoke free escape paths.

HBI Haerter Consulting Engineers has been charged with the planning of the ventilation installations for the tunnel and the underground stations. In a first phase, different ventilation concepts were evaluated. This work formed the basis for the detailed design phase. In this second phase the ventilation components were specified in detail to provide a proper basis for the tender of the ventilation system.

Services

HBI provided the following services:

- Definition of the ventilation objectives for various operating conditions (normal, congestion, emergency)
- Development of the possible ventilation concepts for the various operating conditions taking into consideration the boundary conditions given by the construction
- Verification of the ventilation goals (minimum/maximum air speeds, pressure constraints, air quality limits) using transient 1D-flow simulations and thermodynamic analyses
- Examination of the conformity of the rescue/escape possibilities versus existing international norms
- Provision of a bill of quantities of the ventilation components
- Provision of detailed civil drawings for the installation of the ventilation components