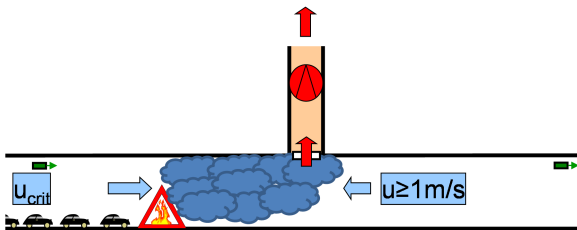
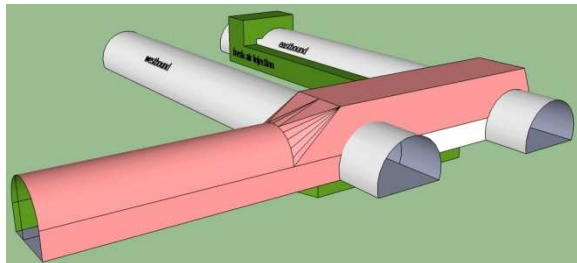


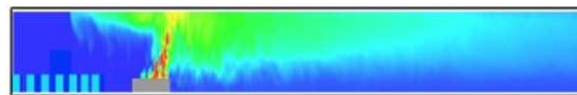
Ovit Tunnel typical section



Schematic of emergency ventilation in eastbound tunnel (point exhaust)



Schematic sketch of Pilot Tunnel and air-exchange station



FDS dynamic CFD simulation of smoke control scenario

Description

An alternative tunnel ventilation design has been developed for a highway tunnel project in Turkey. The Ovit Tunnel will be 12.6 km long with an adjacent closed gallery of 1.4 km length. The project consists of two tunnel tubes for two traffic lanes each. For construction and ventilation purposes, an inclined pilot tunnel will be constructed. The pilot tunnel connects with the main tunnel 4.9 km from the eastern tunnel portal. The ventilation concept has been pre-defined as longitudinal ventilation.

For the alternative ventilation concept, the following installations are required:

- 70 jet fans, 1250 mm, 75 kW
- 2 exhaust fans, 2240 mm, 450 kW
- 1 supply fan, 2240 mm, 250 kW
- 3 fan isolation dampers
- 20 duct isolation dampers
- air quality sensors, combined for CO, NO_x and turbidity
- air flow meters

Services

During the development of the alternative tunnel ventilation design, the HBI Haerter Consulting Engineers' scope included the following deliverables:

- Development of design requirements based on the ventilation design report prepared during a previous design stage
- Evaluation of tunnel ventilation concept, investigation of different concepts, all based on longitudinal ventilation
- Tunnel ventilation concept design for normal and emergency operation
- Definition of interfaces between ventilation installation and civil design as well as M+E design
- Functional sketches of fan station layout and layout of the air exchange station (connection of pilot tunnel and main tunnels)
- Tunnel ventilation control system functional description prepared as scoping document for the control system supplier
- 3-D numerical calculation CFD for an assessment of longitudinal smoke control and operation of point smoke extraction