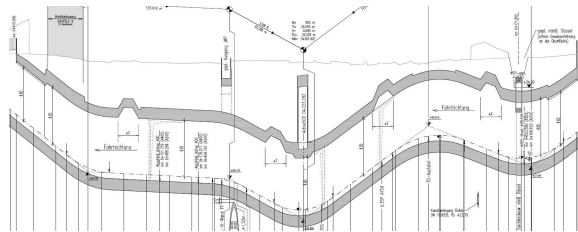


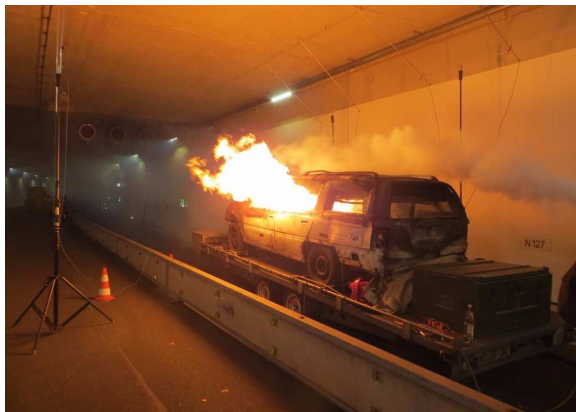
Tunnel system-overview Kö-Bogen (final stage)



Longitudinal section of the main southbound tunnel



Access with jet fan group in the Kö-Bogen Tunnel



Fire test in the Kö-Bogen Tunnel

Description

With the opening of the "Kö-Bogen" tunnel streets in the centre of Düsseldorf moved underground. The interconnected tunnels constitute a complex structure that includes three underground connections to new or existing underground parking lots.

The tunnels are used only for uni-directional traffic at a posted speed of 50 km / h in sections with up to three traffic lanes. There are strong changes of the longitudinal gradients up to 8%.

Due to the complex network structure, a mechanical longitudinal ventilation with jet fans was planned in all pipes as tunnel ventilation system for the fire case.

In case of fire, the underground parking lots are isolated from the tunnels by fire doors. For rapid detection of fire events, smoke detection by the visual turbidity meters is supported by a video image detection system capable of recognizing stranded vehicles as well as fire.

Services

For the Kö-Bogen the following services have been provided in connection with the tunnel ventilation:

- Preparation of an expert opinion on the tunnel ventilation according to RABT
- Creation of a total safety concept
- Quantitative safety evaluation with risk analysis
- Draft planning of the tunnel ventilation
- Development of control specifications for the tunnel ventilation
- Specialized preparation and support of the fire tests
- Realization of functional tunnel tests