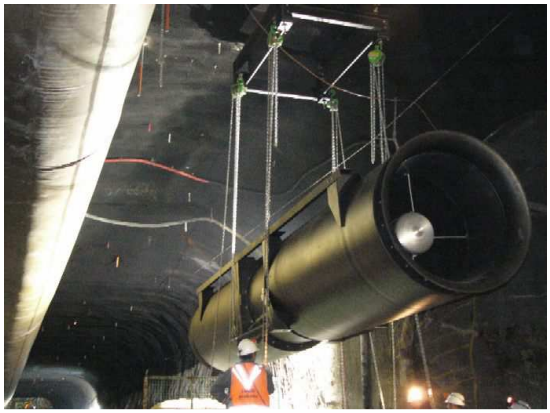
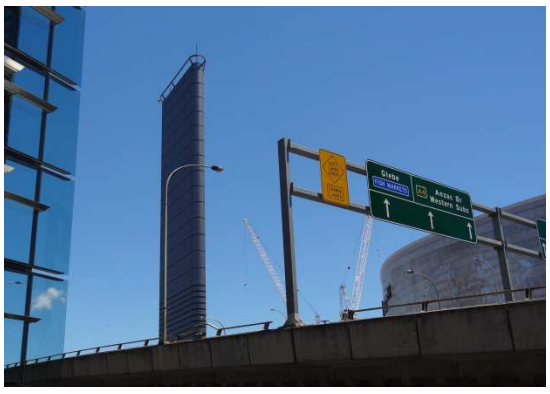
Cross City Tunnel, Sydney (AU)
Tunnellüftung

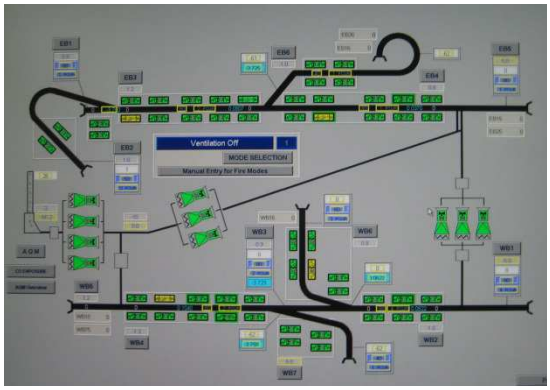


Jet fan installation

Tunnel entry in Darling Harbour



Ventilation outlet at the western portal



Ventilation schematic as shown in the TVCS

Description

The 2'200 m long Cross City Tunnel Sydney consists of two tunnel tubes, each with uni-directional traffic. Both tunnels include several entry and exit ramps.

The tunnel is situated in an urban environment. During normal operation, portal air discharge of air at portals is not permitted to the greatest extent practical.

The special challenge in this project was the dynamic control of air flow along the tunnel under normal traffic conditions. A complex control methodology was necessary to avoid tunnel air discharge at any of the tunnel ramps and portals.

The ventilation system consists of the following elements:

- Longitudinal ventilation using 54 jet fans (∅1400 mm, static thrust of 1650 N)
- Air extraction at the portals:
- Cross-ventilation station 250 m^3/s
- Bypass-ventilation station 340 m^3/s
- Exhaust-ventilation station 690 m^3/s
- Longitudinal smoke control during fire

Services

HBI Haerter Consulting Engineers provided the following services:

- Ventilation design for normal operation
- Ventilation design for emergency operation
- Calculation of aerodynamics in a complex tunnel network
- Design of portal air extraction
- Dynamic model of tunnel ventilation
- Ventilation control system design, design check using the dynamic ventilation model ("tunnel simulator")
- Ventilation consulting on various subjects

The Cross City Tunnel was opened for traffic on 28th August 2005.