



Construction of cable tunnel (cut and cover method)

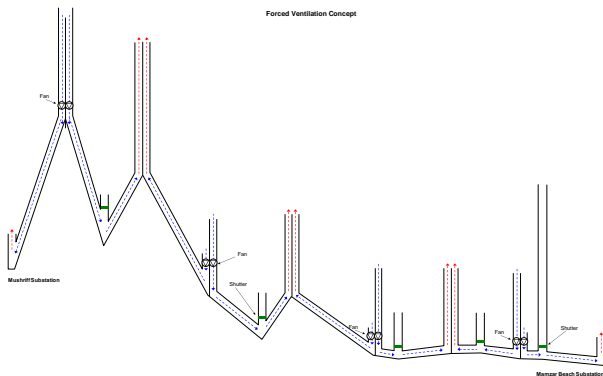
Description

To ensure a sustainable energy supply the Dubai electricity and water authority (DEWA; United Arab Emirates) realised an electric power transmission project between the substations Nahda, Mushriff and Mamzar Beach. This involved the construction of two cable tunnels (ca. 11 and 4 km length). In order to allow for an acceptable environment and energy transmission a sufficient air exchange with the ambient must be achieved. HBI Haerter conducted the required ventilation/cooling simulations and designed the ventilation system as a subcontractor of NEXANS France.

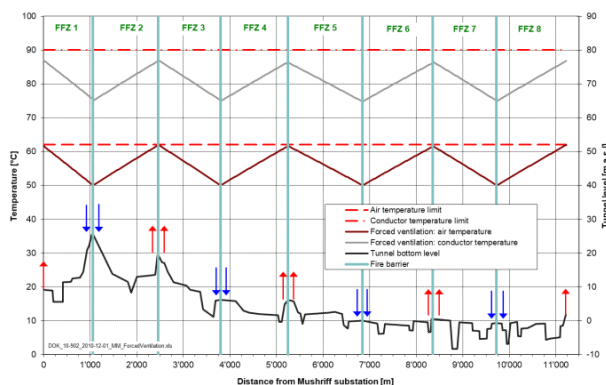
Services

For project execution phase of the cable tunnels Nahda-Mamzar Beach and Mushriff-Mamzar Beach HBI Haerter provided the following services:

- Definition of ventilation objectives (e.g. temperature limits) and requirements (e.g. extraordinary ambient conditions of up to 50°C air and 40°C ground temperatures)
- Design of the natural (i.e. number and position of intake and exhaust shafts), mechanical ventilation (i.e. number of fans and air barriers) and definition of ventilation sections
- Numerical simulation of the natural (i.e. thermal draught) and mechanical ventilation (calculation of air and cable core temperature with simulation code of HBI Haerter) for each ventilation sections to verify the ventilation objectives and as a basis of the specification
- Specification of the natural ventilation system (height and diameter of 32 shafts, bypass dampers, sand trap louvers)
- Specification of the mechanical ventilation system (volume rate and pressure rise of 20 axial fans, noise attenuators, sand filters and dampers)



Concept of the mechanical ventilation for the sections of the cable tunnel Mushriff to Mamzar Beach



Air and cable core temperatures along the cable tunnel with mechanical ventilation, maximum energy transmission and maximum ambient temperature