

LIFE SAFETY VENTILATION SYSTEMS FOR THE LONGEST LAND TUNNEL IN THE NETHERLANDS



A "GREEN" TUNNEL VISION

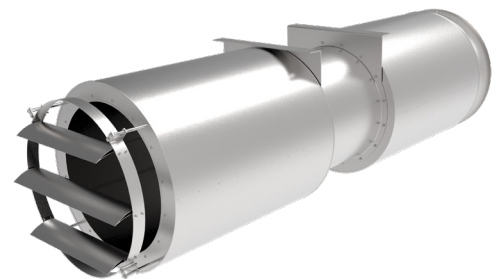
The reconstruction and expansion of the A9, one of the busiest Dutch motorways between Schiphol Airport, Amsterdam and Almere will ease congestion and improve the quality of life. The motorway has been widened to five lanes in each direction plus a tidal flow lane. These extra lanes will improve traffic flow and the accessibility of the Randstad region. The Gaasperdammertunnel is a part of this project. With a total length of 3 kilometres and five tunnel tubes it is the longest and widest land tunnel in the Netherlands. By guiding all traffic through the semi-sunken tunnel, the impact on the living environment is reduced to zero. Furthermore, a park with an area of nearly 15 ha was created on top of the tunnel.

LIFE SAFETY AS A FIRST PRIORITY

IXAS Gaasperdammerweg BV awarded NOVENCO Building & Industry the contract to design and deliver a longitudinal tunnel ventilation system including risk analysis, pressurization systems for the escape tunnel, equipment delivery, installation, testing, commissioning and hand-over. The longitudinal tunnel ventilation system for normal ventilation and smoke control in case of a fire consists of certified NOVENCO NovAx™ smoke tunnel jet fans type AUR 800, AUR 1120 and ARR 800. In the event of an emergency in the tunnel, users can leave the tunnel safely via the escape tunnel. The escape tunnel is split into three compartments. The differential pressure is regulated separately for each compartment. In normal operation, the

fans run at a fixed low speed, contributing to the low energy consumption of the ventilation system.

NOVENCO installed the efficient ZerAx® AZN 1250 axial fans for the pressurization systems of the escape tunnel.



NOVENCO® NovAx™ AUR tunnel jet fan

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EQUIPMENT DELIVERY

For the road tunnel, NOVENCO Building & Industry designed a longitudinal ventilation system, which is dimensioned for both normal ventilation and smoke control in case of a fire inside the tunnel.

For this system, in total 30 pcs uni-directional NovAx™ AUR 1120 and 10 pcs AUR 800 tunnel jet fans are installed as open injector fans at the tunnel entrances. A further 99 pcs 100% reversible NovAx™ ARR 800 tunnel jet fans are installed throughout the tunnel tubes.

All tunnel jet fans are entirely constructed out of stainless steel (AISI 3.16L).

For the escape tunnel, a pressure differential system was designed, to ensure smoke free escape routes and provide access for the fire-fighting services in case of a fire in the road tunnel.

For the pressurization system, in total 12 pcs of AZN 1250 axial fans have been installed, in combination with SCHAKO multi-leaf dampers, silencers and weather protection grilles. Further equipment from NOVENCO also included pressure sensors, filter boxes, cabling and control cabinets.

Besides the design, delivery and installation of all components, the contract also included the complete factory acceptance testing (FAT), site acceptance testing (SAT), commissioning, start-up and handover of the systems to the Dutch road authorities. In addition to the ventilation system, further tunnel safety equipment is installed, such as 360 cameras, 791 loudspeakers and 553 emergency telephones.

FACTS

- LONGITUDINAL TUNNEL VENTILATION SYSTEM
- ESCAPE TUNNEL PRESSURIZATION SYSTEM
- COMPLETE VENTILATION PACKAGE FROM DESIGN TO HAND-OVER



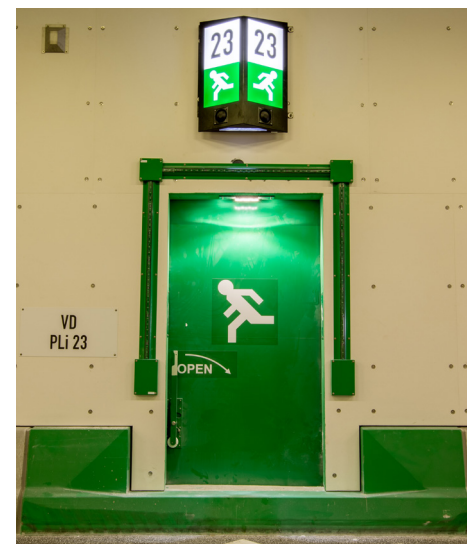
NOVENCO reversible tunnel jet fans in the Gaasperdammertunnel



One of the control panels for the escape tunnel pressurization system



ZerAx® axial pressurization fans ensure smoke free escape routes



Safety first- illuminated escape route of the Gaasperdammertunnel