

A long, dimly lit road tunnel with a car in the distance. The tunnel has a curved ceiling and walls, with a series of lights along the top. The floor is a dark road with white lane markings. A red car is visible in the distance, driving away from the viewer. The overall atmosphere is dark and industrial.

ROAD AND RAIL TUNNELS

FIREFIGHTING WITH HIGH-PRESSURE WATER MIST

AQUASYS



THERE IS AQUASYS TECHNOLOGY IN HERE

In road tunnels

Very high fire loads and temperatures of over 1000°C are some of the challenges encountered in road tunnels. Our AQUASYS firefighting system has been tested in numerous full-scale fire tests. It guarantees effective protection of humans and structures and therefore ensures high availability of the tunnel.

Patented nozzle solutions make it possible to master a variety of different fire scenarios such as fires involving solids or liquids. The high-quality materials and special coating processes we use meet the demanding requirements of this aggressive environment as well as high temperature differences.

In rail tunnels

Rail vehicles are operated by highly trained personnel and this makes them very safe. Despite this, accidents or malfunctions and fires cannot be ruled out and present a high level of risk to users. It is often difficult to provide

escape routes and significant costs can accrue if tunnels have to be closed. Our firefighting systems guarantee safety throughout the whole tunnel or in the emergency stop stations respectively.

FIREFIGHTING IS RESPONSIBILITY

EFFECTIVE AND INCONSPICUOUS

Millions of people all over the world travel through road and rail tunnels every single day. High costs for constructing them and the large numbers of passengers using them, mean it is crucial to have a reliable fire protection system.

Installing a high-pressure water mist system not only ensures a rapid response to a fire, less damage and reduced shutdown times for a tunnel, but also ensures that escape routes can be safely used and provide access for firefighters.



OUR TECHNOLOGY



Water mist nozzles

High-quality stainless steel nozzles ensure that the system will work reliably and last for a long time in dirty environments that contain exhaust fumes. The patented In-Line-Design means they have a minimal installation height and can easily be integrated with other tunnel components. Variable nozzle assembly allows the water mist nozzles to be adapted easily to cater for different fire loads.



Section valve units

Motor-driven ball valves ensure that the water mist system is activated reliably. The integrated remote maintenance function allows for straightforward and routine function testing. When section valves are installed inside the tunnel bore they are protected by a fire-retardant housing.

Pump station

The core element of the water mist system is the pressure water supply, which is powered by electric motors or diesel engines or combinations thereof. Proven standard components can be combined flexibly, so that each system can be adapted perfectly to the required parameters (length of the tunnel, number of lanes, ...). An automated maintenance mode, which can be integrated as an option, guarantees maximum availability and a long service life.



REFERENCES



Arlberg Road Tunnel, Austria

- Challenge:**
- // Length of 14 km
 - // 24,000 water nozzles
 - // Two pump rooms

- Solution:**
- // 24,000 nozzle heads are supplied through a continuous main line
 - // One pump room at each of the tunnel portals is capable of supplying the whole tunnel
 - // Complex matrix control concept for a rapid build-up of pressure and for preventing pressure surges in the 14 km long main line



Koralmbahn Rail Tunnel, Austria

- Challenge:**
- // Protect the emergency stop stations
 - // Ensure the safe evacuation of passengers in the presence of high-voltage catenary when the firefighting system is activated

- Solution:**
- // Design the firefighting system for fires with a heat release of up to 200 MW
 - // Demonstrate safe evacuation by conducting tests in the high-voltage laboratory at the Technical University of Graz (up to 65 kV)
 - // Operation and service using automated remote maintenance concept



Heathrow Airport Tunnel, England

- Challenge:**
- // Protect the four-lane main access road underneath the runway.
 - // The installation of the firefighting system must not have any impact on the clearance height or width of the low, narrow tunnel.

- Solution:**
- // In-Line-Nozzle heads allow installation in a small space // Main line is routed in channels beside the carriageways
 - // Prefabrication of the components and a logistics concept for carrying out rapid installation during night closures

WE ARE THE RIGHT PARTNER

WHEN YOU NEED INNOVATIVE FIREFIGHTING SOLUTIONS



PARTNERSHIP

In our dealings with customers, partners and employees, we consider long-term partnerships based on reliability, appreciation and a solution-oriented approach to be of great importance.

OUR SYSTEM

We are not alone in valuing our firefighting system so highly – our customers are equally impressed, however they use it. It is space-saving, long-lasting and environmentally friendly.

TECHNOLOGY AND DEVELOPMENT

Our developers are delighted to be confronted with new challenges and will find the right solution for your requirements.

Josef Hainzl
Managing Director AQUASYS Technik GmbH

Based on our years of expertise in development, design, installation and service, we deliver high-quality firefighting systems for

// INDUSTRY AND BUILDINGS
// ROAD AND RAIL TUNNELS
// RAIL VEHICLES