BECAUSE WE BELIEVE IN THE VALUE
OF MEASURED PROTECTION.

THE MOST ADVANCED SYSTEMS FOR
SECURITY AGAINST THE MOST DELICATE HAZARDS

RG W-FOG SYSTEMS

W-FOG System

for the protection of

CABLE TUNNELS

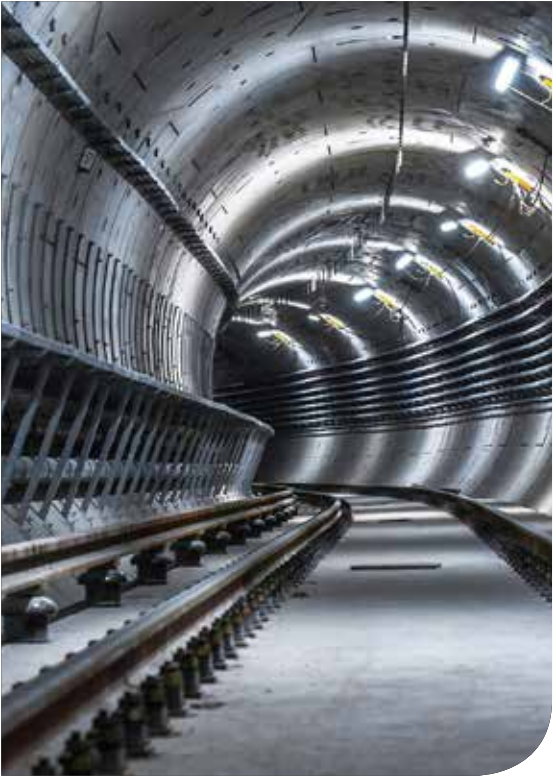
WATER MIST
IN CABLE TUNNELS

Cable tunnels are narrow galleries though which run the medium- or high-tension electrical installations which **feed critical infrastructures and installations** such as electrical plants, stations and sub-stations, telecommunications, etc.

Any interference with these elements may cause service cut-offs, incidents, damage to other equipment, production stoppages and interruptions of all types in the economic and production operations which depend on them.

RG W-FOG is adapted to the protection requirements of cable tunnels and galleries to ensure integral, automated and reliable protection.

It works in an automated fashion preventing damage and even the collapse of the installation in the event of fire. Also thanks to an action mechanism it blocks the release of heat which could affect materials or spread the fire through the galleries, which are normally unmanned and are difficult to access or search.



EFFECTIVE SOLUTION

WITH WATER MIST

Water mist has many advantages over other fire protection systems, but it is in special hazards that its unique features come to the fore:

RG W-FOG equipment offers outstanding advantages, centred specifically on providing specific solutions to the singular characteristics and particular conditioning factors of a cable tunnel.

Hazards of energized fire	Electrically neutral agents	Produces a kind of mist not conducive to electricity.
Limited accessibility and maintenance, little space	Compact and reliable protection	Simplified setup, with direct accessories. Minimum periodic tasks.
High fire load, normally ventilated	Prevents the further spreading	Drastic reduction of the temperature. Blocks radiation, preventing the fire from spreading.
Long and narrow premises	Long distance supply	Guarantees a minimum pressure in the most unfavourable nozzle.
Densly occupied	Full protection, including interstices	Droplets under pressure: high penetrability among decks.

CAUSES OF FIRES IN CABLE TUNNELS

The main hazards to consider for this type of gallery are:

ELECTRICAL FAULTS: SHORT CIRCUITS, OVERLOADS, STATIC ELECTRICITY.

OVERHEATING

INSUFFICIENT MAINTENANCE, BUILD-UP OF DIRT.

SPREADING FROM OTHER POINTS

Apart from the usual causes, these tunnels have critical distinctive features which are particularly relevant to the design of a fixed extinction system:

REDUCED ACCESS:

- Entrances spread out: **hinders maintenance**. In the event of fire this complicates the moving of fire equipment.
- Narrow passages: **limits visual inspection and maneuverability** of operators or manual means of extinction.

HIGH FIRE LOAD:

- Profusion of plastic insulators, rubber and / or oil: **releases a large amount of heat** on burning, as well as **dense smoke** of varying toxicity.
- Generally underground: the heat builds up and makes it necessary to use **agents with high refrigeration capacity.**

SPREADING TO / FROM OTHER USES:

- Linear configuration: facilitates and accelerates spreading of the fire.
- Installations normally associated with other establishments: Risk of fire spreading to other locations or from critical installations such as petrol stations, hospitals, power stations.

Uses such as industrial facilities employ two basic types:

- ***feeding cables*** *(supply to equipment)*
- ***signaling and control cables*** *(fire safety installations)*

In both cases they should be non-propagating, without halogens and with low smoke emission.

FUNCTIONING OF RG W-FOG IN CABLE TUNNELS

The main objective is to ensure the tunnel's structural stability and the integrity of the cable bundles so as to minimise damage.

This is a hazard which is amplified due to the confined nature of the hazard and the limited ventilation, with the fire and the smoke causing a sudden increase in temperature making it very difficult for fire crews to work in such life-threatening conditions.

The high fire-extinguishing capacity of RG W-FOG has been amply demonstrated in full scale tests in prestigious international laboratories.

These consist of various trials, with different scenarios, in which the nozzles have to totally extinguish the outbreak of fire without it re-igniting.

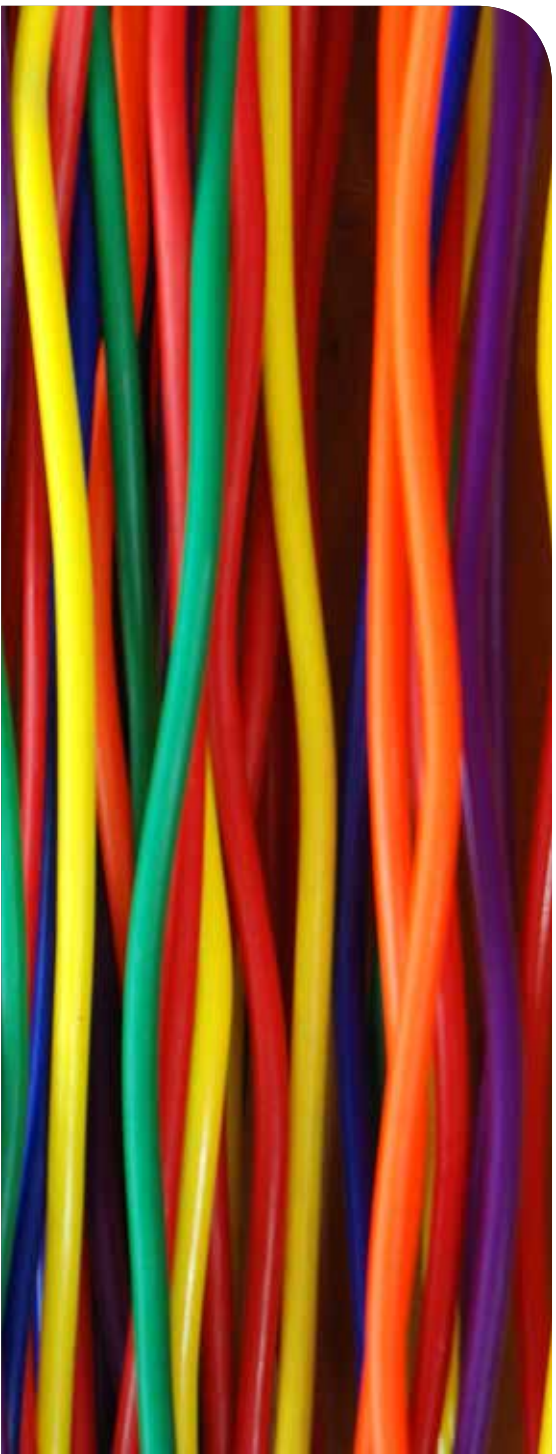
Firstly the bundle of cables is left to burn for a pre-set time, after which the open nozzles positioned for such purposes come into operation. After they operate the flame disappears and, shortly afterwards, the pump is disconnected. As the agent dissipates the fire cannot break out again.

The tests involve medium to high fire loads with free fire times which allow it to reach high strength for when the system comes into operation. The system must operate autonomously with the water reserves, pressure and spacing between nozzles laid down by the manufacturer.

Accreditation covers the total extinction of fires in cable tunnels with open nozzles by spraying on the affected area.

RG-Systems also has certificates for the control of outbreaks of fire (prevention of growth, spreading or re-ignition)

COMPONENTS



PUMP UNIT + TANKS

NOZZLES:

tested specifically at full scale according to the VdS protocol for cable tunnels in the SINTEF laboratories.

DIRECTIONAL VALVES:

to cover long tunnels, their length being subdivided into zones.

MANUAL PROTECTION:

protection in addition to the fixed automatic systems. The RG Systems carts with mist launcher are of high capacity, compact and very easy to handle.

The system's flexibility makes it possible to personalise capacity, autonomy or length of hose, among other factors, adjusting these to the dimensions and accessibility of the tunnel.

APPROVALS

All products have approvals according to tests on organisms of international renown.

VdS

SINTEF

VTT

EXAMPLE OF INSTALLATION

The objective is to control, suppress or extinguish the fire and to clear the air until the arrival of fire crews.

The most common installation is pump unit with misting nozzles which act on the affected area according to VdS design criteria. Long tunnels are divided into zones governed by a control valve which opens on the affected area, and the valves coming before and after it. This achieves suitable protection with optimised dimensions and guaranteed protection.

Due to the narrow and impassable nature of this type of infrastructure the use of water mist is key for:

Reducing piping diameters and space requirements of PCI equipment

Minimising the damage caused by the discharging of water, as is the case with sprinklers.

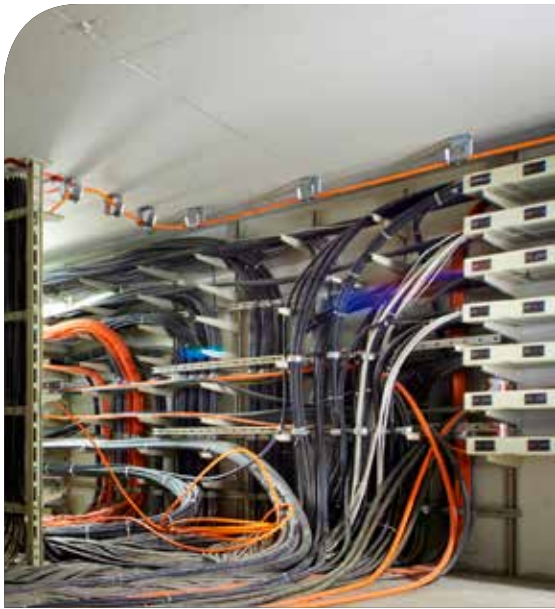
Ensuring the structural integrity of the tunnel and associated operations.

COMMITMENT

PCI water mist installations are of fully proven efficiency, as all critical parameters are calculated and checked in full scale tests by external entities of wide international recognition.

RG Systems tests and documents:

- The type of nozzle
- Minimum water reserve
- Distances between nozzles
- Range of distances from nozzle to fire outbreak
- Operating pressure.



C. Alfoz de Bricia, 4 P.I. Villalonquéjar
09001 BURGOS (SPAIN)

Tlfno. +34 947 28 11 30
Fax. +34 947 28 11 12

www.rg-systems.com

RG SYSTEMS