FOGTEC High Pressure Water Mist System

fire protection TECHNOLOGIES

GASEOUS SUPPRESSION | WATER SUPPRESSION | FOAM SUPPRESSION | EXPLOSION PROTECTION | FIRE DETECTION | MILITARY & DEFENCE | SPECIAL APPLICATIONS | SUPPORT SERVICES

FOGTEC

High Pressure Water Mist Systems

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"FOGTEC systems use pure water, converting it to fine mist at a pressure of 60 to 200 bar."

THE SMARTER WAY OF FIRE FIGHTING

FOGTEC water mist systems offer substantial advantages in comparison with conventional fire fighting systems

The key to FOGTEC's fire fighting effectiveness is the generation of very fine water droplets. The size of the droplets is classified as NFPA 750 Class 1. This extremely small droplet size makes the FOGTEC system highly effective and uses only small amounts of water. The key factors are the systems ability to cool and the localised oxygen displacement effect.

Cooling effect

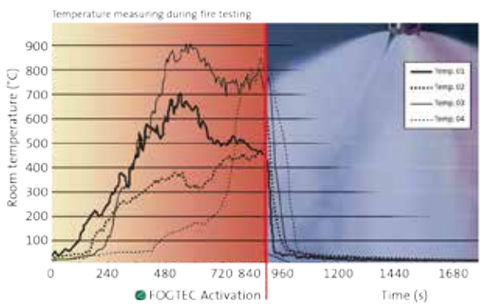
As a result of the water being atomised at high pressure, the surface area available for cooling is considerably greater than that of conventional low pressure systems. This means FOGTEC systems extract the energy (heat) far more rapidly and effectively from the fire. The strong cooling effect serves not only to fight the fire but also to protect persons and property against the effects of radiated heat. Water mist shields also effectively protect construction elements such as walls, doorways, facades etc.

Oxygen displacement

The small water droplets rapidly evaporate at the fire source. Evaporation occurs only where there is a high temperature. Where there is a low temperature there is no steam generated so these areas may be used to escape. The vaporiation of the water increases the water volume by 1640 times and the oxygen is displaced locally at the fire source. As a result, a localised inerting effect is generated at the fire source. This is comparable to the effect of an inert extinguishing gas, although when using such a gas, the air oxygen content has to be reduced in the whole area to be effective.

Small droplets, big effect

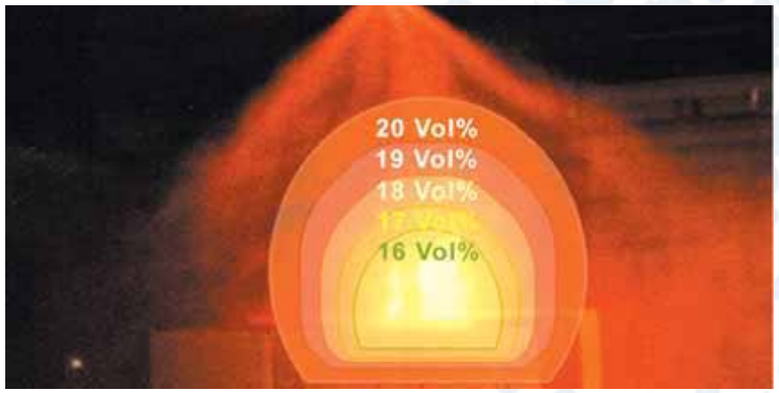
Droplet diameter	Reaction surface per litre of water
1 mm	2 m² (conventional technologies)
0,1 mm	20 m²
0,01 mm	200 m² (FOGTEC water mist)



By contrast, the larger water droplets generated by low pressure water mist systems or other conventional water fire fighting systems, convert to vapour at a much slower rate, and here there is a substantial part of the droplet that does not convert at all. Therefore the localised oxygen displacement effect of the FOGTEC systems, operating with high pressure, is a considerable advantage.

In order to achieve optimum results in fire fighting, FOGTEC adapts the amount of water used, the droplet size distribution and the number and positioning of nozzles to each specific application.

FOGTEC systems are 100% environmentally friendly and harmless to personnel. Unlike many chemical extinguishing gases, FOGTEC water mist systems neither destroy the ozone layer nor do they contribute to the greenhouse effect. A pre-warning time prior to activation to protect persons normally is not necessary.



Local oxygen displacement in the flame zone

Applied water amount

	FOGTEC water mist	Sprinkler	Low pressure water mist	Inert gases	Chemical gases
Cooling effect	extensive / radiant heat attenuation	small	limited	minimal	minimal
Inerting effect (oxygen displacement)	Locally at fire source	none	locally at fire source	in entire volume	not applicable
Effect to people and environment	safe / none	large water consumption	safe / none	safe / none	safe / minimal
Damage by extinguishing agent	negligeible (pure water)	extensive water damage	small	none	none
Pre-warning times	none	none	none	essential	essential
Effect on electrical components	small (pure water)	extensive	extensive	none	none
Requirement for enclosures	none	none	none	yes	yes

CATEGORY// Water Suppression

FOGTEC Systems

operate at a pressure of 60 to 200 bar

FOGTEC systems operate at a pressure of 60 to 200 bar. The high pressure is utilised in two ways, to split the water into fine droplets and to create momentum for the droplets created.

Special water mist nozzles are the heart of every FOGTEC system. They are optimised for specific applications and have undergone extensive testing with independent testing houses such as Factory Mutual, to ensure their reliability. FOGTEC water mist nozzles are subjected to a 100 % quality test. Each individual micronozzle, within the main nozzle body, is furnished with an individual filter.

To supply the system with high-pressure water, FOGTEC pump and pressure cylinder units are used. The pump units are comprised of individual pump modules. Since FOGTEC uses pump modules with flow rates between 25 and 800 l/min, the total performance of a system can be optimally adapted to site requirements. The use of large numbers of small pumps is avoided to minimise possible sources of failure.

To reduce the number of moving parts to a minimum, there is one drive motor directly connected to each pump. No gearboxes are used. Both electric and diesel motors are offered.

required, operator guidance ca be provided via touch screen. Remotecontrolled maintenance via modem is optionally available.

The entire piping systems are made of stainless steel as required by international standards for water mist fire fighting equipment. Pipe diameters range from 10 to 40 mm. Layout and installations are carried out to conform to international standards.

Open type nozzles are installed in dry pipe systems, as well as closed type nozzles which are activated in a similar way to conventional sprinklers by a fast acting glass bulb.

The modular nozzle design concept allows the use of both standard application nozzles and special applications nozzles for false floors, ceiling voids, zones with particularly high temperatures, areas exposed to the wind, etc.

In a FOGTEC system, filters of different mesh sizes are used at different points so that a particularly high degree of reliability can be assured. Section valves are available for dry and wet pipe networks, for dry pressurised, and for pre-action areas. All valves can be supplied with testing devices.

For systems not activated via glass bulb, almost all fire detection systems can be used. FOGTEC control panels have state of the art PLC control equipment and can easily be connected to fire alarm systems. If

Not only are these systems 100% environmentally friendly but they are often more effective than conventional gas or water fire fighting equipment.

RESEARCH & DEVELOPMENT, APPROVALS

FOGTEC Technology undergoes a continuous level of improvement through development and testing

In-house fire test facilities enable FOGTEC to carry out full-scale fire testing on a continuous basis. Such tests are performed as part of approval procedures, research projects or user-related test series. In addition, fire tests are carried out in cooperation with some of the most reputed scientific fire protection institutes in the world. Computer simulations and modelling are a standard element of such research activties.

FOGTEC uses state of the art nozzle development laboratories comprising measuring devices such as Laser Doppler equipment. Design work is carried out on 3D CAD work stations. As a result of the excellent reputation in the development sector, FOGTEC is involved in some of the largest European fire research projects.

All development activities are carried out on the basis of the ISO 9001-2000 certification.

Fire tests carried out by FOGTEC's specialist engineers

Laser Doppler droplet measurement

Nozzle Testing

Full scale fire test

CATEGORY// Water Suppression

Application Profiles

Offices, Hotels, Hospitals, Archives & Museums

In public buildings high priority is given to the protection of human life. FOGTEC water mist has highly efficient cooling qualities and is therefore ideal for dramatically reducing the spread of heat and creating better conditions for people escaping. FOGTEC systems thus provide optimal fire protection for these types of buildings.

When using conventional sprinkler systems or low-pressure mist systems, the resulting water damage often even exceeds the damage directly caused by the fire. FOGTEC systems, in contrast, use the water so efficiently that the risk of water damage is reduced to a minimum.

Sensitive areas such as archives or museums, which have in the past been left unprotected, can be protected effectively with a FOGTEC system. Operators of hotels, hospitals and offices appreciate the additional benefit of shorter interruptions. Very small pipe diameters mean the system can be unobtrusively fitted in existing buildings, or historical buildings and are ideal where modern architectural techniques have been employed.

The central pumping unit requires considerably less space than in the case of sprinkler systems. Large water storage tanks are not required.

Data Centres, Telecommunication Systems & other EDP Areas

IT areas and telecommunication rooms constitute a major fire hazard because of possible short-circuits and system overloads. Inadequate heat removal as a result of insufficient or defective cooling systems further increases the risks. A breakdown of such EDP facilities results in major damage. A fire in an IT or telecommunications area produces large amounts of acidic and hazardous smoke particles as a result of the burning of insulation materials and plastics. This soot is deposited on all surfaces including sensitive electronic circuitry. When this occurs it damages sensitive circuits and data media as it is extremely corrosive. Major system breakdowns may result. The resulting loss of data or transmission is the worst scenario for the operator of an IT centre.

Unlike conventional gas extinguishing technology, high-pressure water mist rapidly suppresses the fire while limiting the spread of smoke. This is achieved by the fine water droplet absorbing parts of the smoke particles and dropping to the floor. Owing to the extremely small amounts of water used, the effect on EDP components is negligible.

FOGTEC systems can be used for both the protection of rooms and of false floor voids and control panels. The same pump unit can be used for protecting all areas. When different areas such as offices, cable ducts, etc. are to be protected within the same building, this can be done using a single central pump unit.

Industrial Applications

There are many fire hazards in industry. FOGTEC systems offer a solution for almost all of them.

Production materials and lubricants are fire hazards that are present in most areas of industry. Their worst feature is their ability to become major fires quickly. In many full-scale fire tests as well as in real fires, FOGTEC systems have proven to be extremely effective when fighting hydrocarbon fires. This applies to fires in gas turbines, hydraulics cellars, generators, engine test stands, CNC machines, etc. Depending on individual requirements, FOGTEC systems may be designed as object protection or total flooding systems.

From the operator's point of view, the normally short shutdown times after activation as well as the fast and inexpensive re-commissioning of the FOGTEC system are major considerations. The minimal amounts of water used in most cases result in short interruptions.

Because water is used in the form of a fine spray, normally no thermal stresses occur that could shorten the life of the machine. This is due to the small droplets creating uniform surface cooling.

Special protection measures against the effect of the water mist for staff are not required since the FOGTEC mist is absolutely safe.

Cable Tunnels, the Nervous System of Business Enterprises

Fires in cable tunnels can cause immense economic damage

In the past, cable tunnels often remained unprotected despite the fact that they carry the important cable infrastructures of manufacturers, IT companies or telecommunications providers. This was mainly due to the lack of a suitable fire suppression system.

The risk of water damage lead companies to leave these valuable resources unprotected. This no longer needs to be a concern.

Our customers choose FOGTEC systems as a recognised and accepted way of protecting cable tunnels. The minimum amounts of water used and the maximum effect make FOGTEC the number one choice. A fire within a cable tunnel can rapidly reach very high temperatures. FOGTEC system's impressive cooling capability enables fire damage to be kept to the minimum. A single row of nozzles positioned on the ceiling is often all that is required to protect a tunnel.

Cable trays can be positioned on either side. With low pressure systems it is often necessary to install multiple levels of pipe and nozzles. This is not the case with FOGTEC. The system is flexible and the user can easily install additional cables. Unlike gas systems the FOGTEC system can be fitted in tunnels with forced air ventilation and openings.

PRODUCTS:

Gaseous Suppression

- Inert Gas (IG-01, IG-55, IG-100, IG-541)
- Novec 1230™ Fluid (FK-5-1-12)
- FM-200® / NAF S 227 (HFC-227ea.)
- Ecaro 125® / NAF S 125 (HFC-125)
- Carbon Dioxide (CO_2)
- Hybrid Systems (N_2 / Water)
- Pressure Relief Vents
- Enclosure Integrity Testing Equipment
- Pipe & Fittings

Water Suppression

- Water Mist - High Pressure
- Water Mist - Intermediate Pressure
- Water Mist - Low Pressure
- Hybrid Systems (Water / N_2)
- Monitors & Delivery Systems
- High Speed Deluge

Foam Suppression

- Foam Concentrates
- Foam Proportioning
- Foam Delivery Systems
- Foam Concentrate Testing

Explosion Protection

- Explosion Suppression
- Explosion Isolation
- Explosion Vents & Pressure Relief
- Spark Suppression
- Explosibility Testing

Fire Detection

- Linear Heat Detection - Digital
- Linear Heat Detection - Fibre Optic
- Linear Heat Detection - Micro Chip
- Flame Detection
- Video Imaging Detection
- Spark Detection
- Control & Indicating Equipment
- Thermal Imaging Detection
- Bushfire Detection

Military & Defence

- Military Vehicles
- Naval Vessels

Special Applications

- Micro Environment
- Oxygen Reduction
- Kitchen Protection Systems
- Dry Chemical
- Vehicle Systems
- Compressed Air Foam
- Marine & Offshore
- Vapour Mitigation

Support Services

- Design / Engineering
- Technical Support
- Services & Testing

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'Every solution for your special hazard needs'