FOGTEC®
FIRE PROTECTION

The Smarter Way of Firefighting

EN

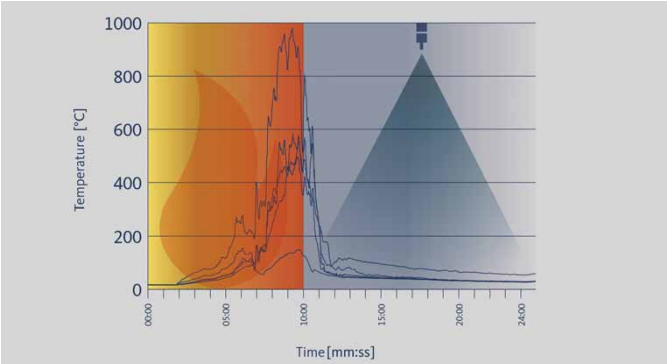
– WATER MIST SYSTEMS –

High pressure water mist – the clean alternative

Less water for optimum effect

Firefighting systems must offer safety and reliability. In addition to their pure functionality however, other parameters have gained increasing importance in a number of cases: conservation of resources, sustainability, individuality, flexible design, aesthetics or environmental friendliness. In many situations, firefighting with high pressure water mist offers an alternative where other fire protection systems have already reached their limits.

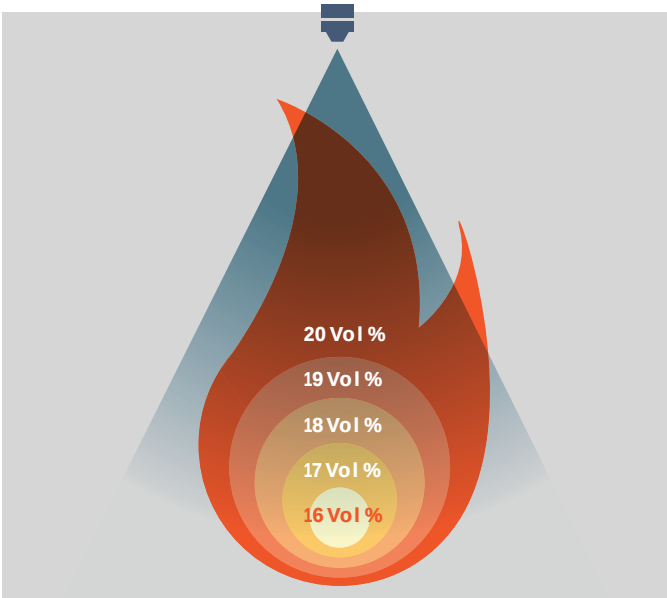
FOGTEC systems fight fires with pure water which is atomised at pressures ranging from 60 to 200 bar. Tiny droplets are produced, that comply with NFPA 750 Class I, increasing the surface area of the water used a hundredfold when compared with a conventional sprinkler system. Two unique effects, with a unique impact, then occur: the intensive cooling effect in the entire area surrounding the fire and the localised oxygen displacement effect right at the source of the fire. These two effects combined mean that the energy of the fire is depleted much faster than it is the case with other firefighting systems. At the same time, people and assets are protected from the effects of heat and water damage.



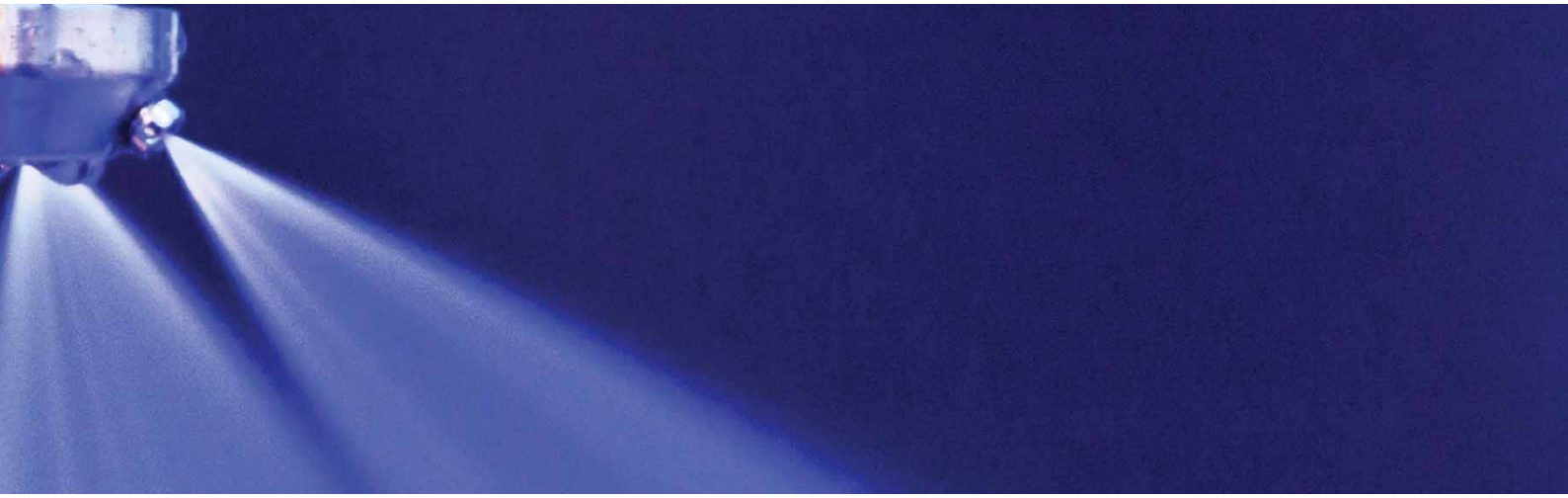
Cooling effect

A team of specialists – All over the world

For 20 years FOGTEC has been leading in high pressure water mist technology. Project-focused planning and our customer advisory service are based on many years of experience in the industry. A global network of over 45 system partners facilitates the integration of country-specific fire protection regulations and an optimum local on-site service at all levels. From the planning stage right through to installation and maintenance our knowledgeable experts are always on-hand. In coordination with national and local authorities and insurance companies, a 24 hour on-call service and the provision of training for end customers and system partners are also an integral part of our extensive portfolio.



Oxygen displacement effect



Advantages of high pressure water mist

- *The use of water reduces environmental damage and the hazard to personnel (no pre-warning times required)*
- *The minimal water consumption significantly reduces water damages*
- *Less damage leads to shorter downtimes*
- *An individual construction leads to special flexibility, protection of resources and efficient use of materials*
- *Straightforward integration in the building thanks to a smaller system configuration (pipes and water tanks)*
- *High cooling effect, providing greater protection from the effects of heat for both people and materials*

Tested and approved

As part of approval procedures, research projects or user-specific test series, all systems and components undergo fire testing. Our systems are tested by inspection bodies such as the VdS, FM or TÜV and are manufactured in compliance with ISO 9001-2000 certification.

FOGTEC is a founder member of the International Water Mist Association (IWMA) and a permanent member of a number of international technical committees.

Continuous fire testing

Unlike gas extinguishing or sprinkler systems water mist systems cannot be designed based on the room volume or coverage of an area. Consequently all international directives, guidelines and certifying authorities require evidence of the efficiency of a water mist system, by using fire testing.

FOGTEC carries out these tests according to international codes and standards, or based on special requirements for individual projects; often in the presence of independent third parties, such as certification bodies.

Nozzles

Special water mist nozzles are the heart of every FOGTEC system. Water is atomised via nozzle outlets, permitting variation of the spray pattern (spray angle), flow rate and droplet distribution according to the specific application. Depending on the system, open nozzles or glass bulb nozzles, similar to those of a sprinkler system, can be used.

Where activation is triggered via a fire detection system, a system with open nozzles is used, with an empty and therefore dry pipe system. In wet systems, glass bulb nozzles are used with wet piping. Pre-action systems are also possible in combination with a fire detection system. A range of different nozzle types is available, for example concealed nozzles.

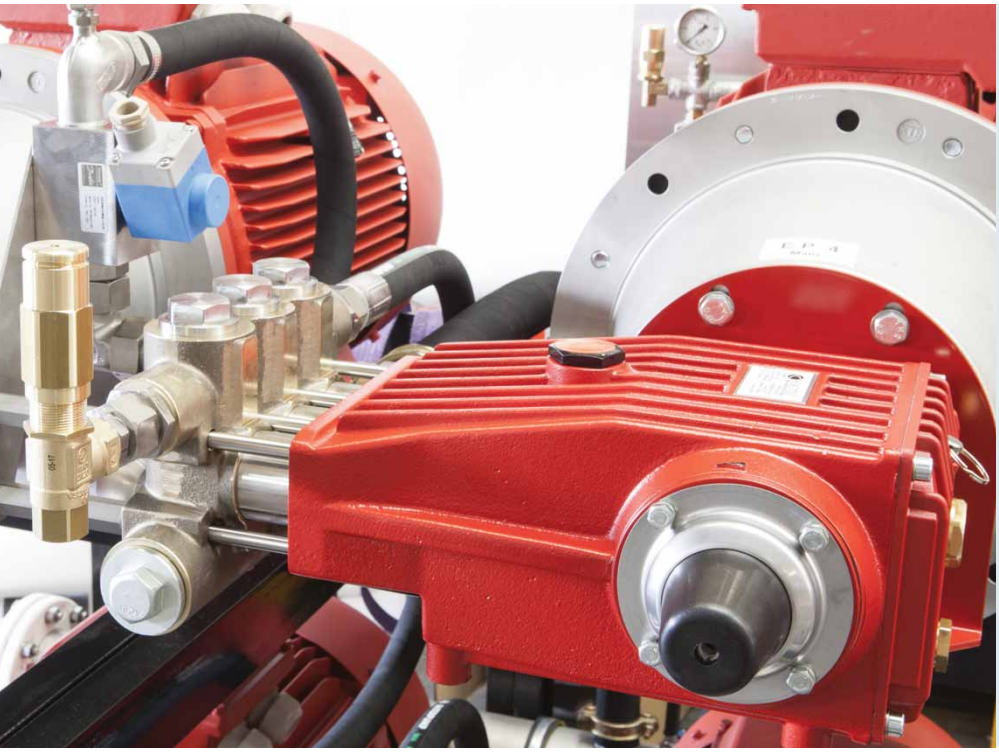
FOGTEC-Systems – Flexible use of standardised components

FOGGUN Wall Hydrants

Control via PLCs

The system is operated via a programmable logic controller (PLC), programmed and built in-house. The PLC facilitates system operation and maintenance via a touchscreen in the desired language, as well as the connection to other systems (for example fire detection systems). System status is monitored in real time by automatically generated protocols.

Error messages, faults or maintenance intervals are also reported. Maintenance itself can also be carried out remotely via the system.



Hydraulic units with different drives

FOGTEC systems operate at pressures from 60 to 200 bar. The high pressure is required to atomise the water and to discharge the droplets at high velocity. Pressure is generated by pump units with flow rates of 25 to 1000 l/min.

The units are modular, making it easy to extend the system without major effort or investment. The pump units are powered by either electric or a diesel motor.

Compact cylinder systems

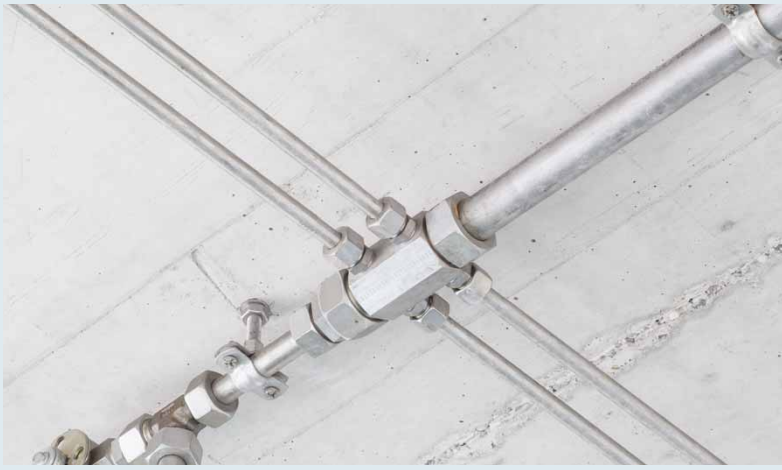
Cylinder systems are a cost-effective alternative to pump systems for smaller applications. Cylinder systems comprise separate cylinders for water and nitrogen, which are interconnected via a manifold. When triggered, all water cylinders are pressurised with nitrogen at 200 bar.

Activation can be manual or by means of an electrical signal from a fire detection system.

Pipework and section control

The entire pipework is made of stainless steel and is therefore more resistant to corrosion. Pipe diameters range from 10 to 40 mm, offering greater space savings and easier integration than the black steel pipes of conventional systems.

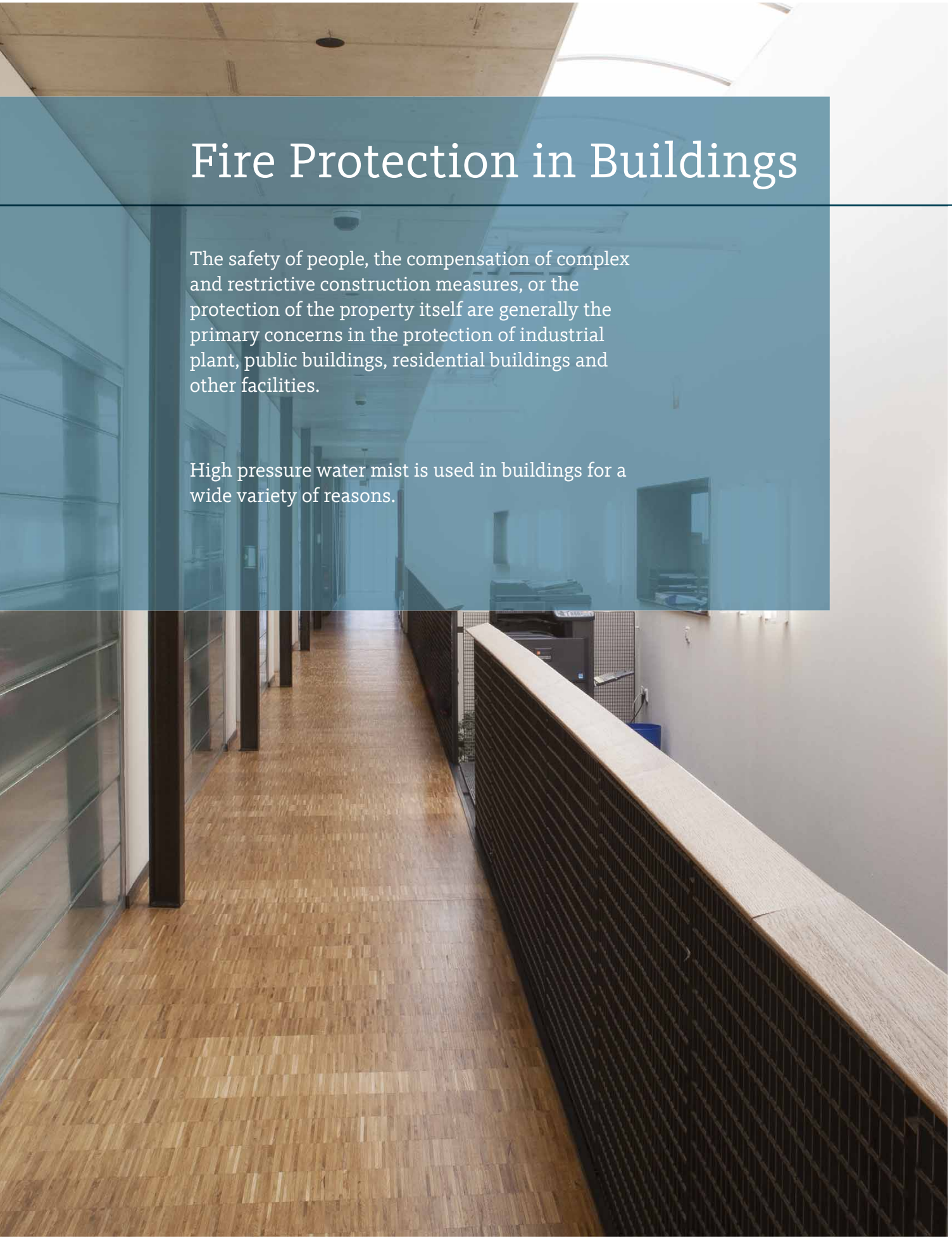
If a fire breaks out, open high pressure water mist systems activate only in the area in which the fire is detected by a separate fire detection system. The system is controlled by section valves, which are equipped with a corresponding testing unit. Alternatively, the open systems can be activated by triggering the glass bulb in every individual nozzle within the area affected by the fire.



Fire Protection in Buildings

The safety of people, the compensation of complex and restrictive construction measures, or the protection of the property itself are generally the primary concerns in the protection of industrial plant, public buildings, residential buildings and other facilities.

High pressure water mist is used in buildings for a wide variety of reasons.



Hotels

Interruptions to business operations can have devastating consequences. The low volumes of water used by high pressure water mist systems keep water damages to a minimum, thereby significantly reducing interruption to the normal course of business. Alongside, there are further benefits:

- Straightforward retrofitting thanks to small pipe diameters and tanks
- Use of minimal water volumes
- Short downtimes once the system has activated
- Attractive integration within architectural constraints
- Improved evacuation of occupants thanks to the high cooling effect

Hospitals

Evacuating patients from a hospital is a complicated and time-consuming procedure. If a fire breaks out, the extensive cooling effect of FOGTEC systems allows more time for patient evacuation, increasing safety for staff and patients. Further positive aspects when compared with other systems are:

- Minimal water volumes protect sensitive and costly medical equipment
- Also suitable for installation in laboratories and clean rooms
- Short downtimes once the system has activated
- Easy to retrofit during operation

Archives – Museums – Libraries

Institutions such as archives, museums or libraries are frequently home to unique and priceless items and documents. Fire damage can lead to considerable losses, but so can water damage. High pressure water mist is a safe alternative:

- Protection of exhibits, books and documents by the intensive cooling effect and low water consumption
- Straightforward retrofitting thanks to the low space requirement of pump units and pipes
- Potentially better insurance conditions
- Discrete integration within ceilings

Office buildings

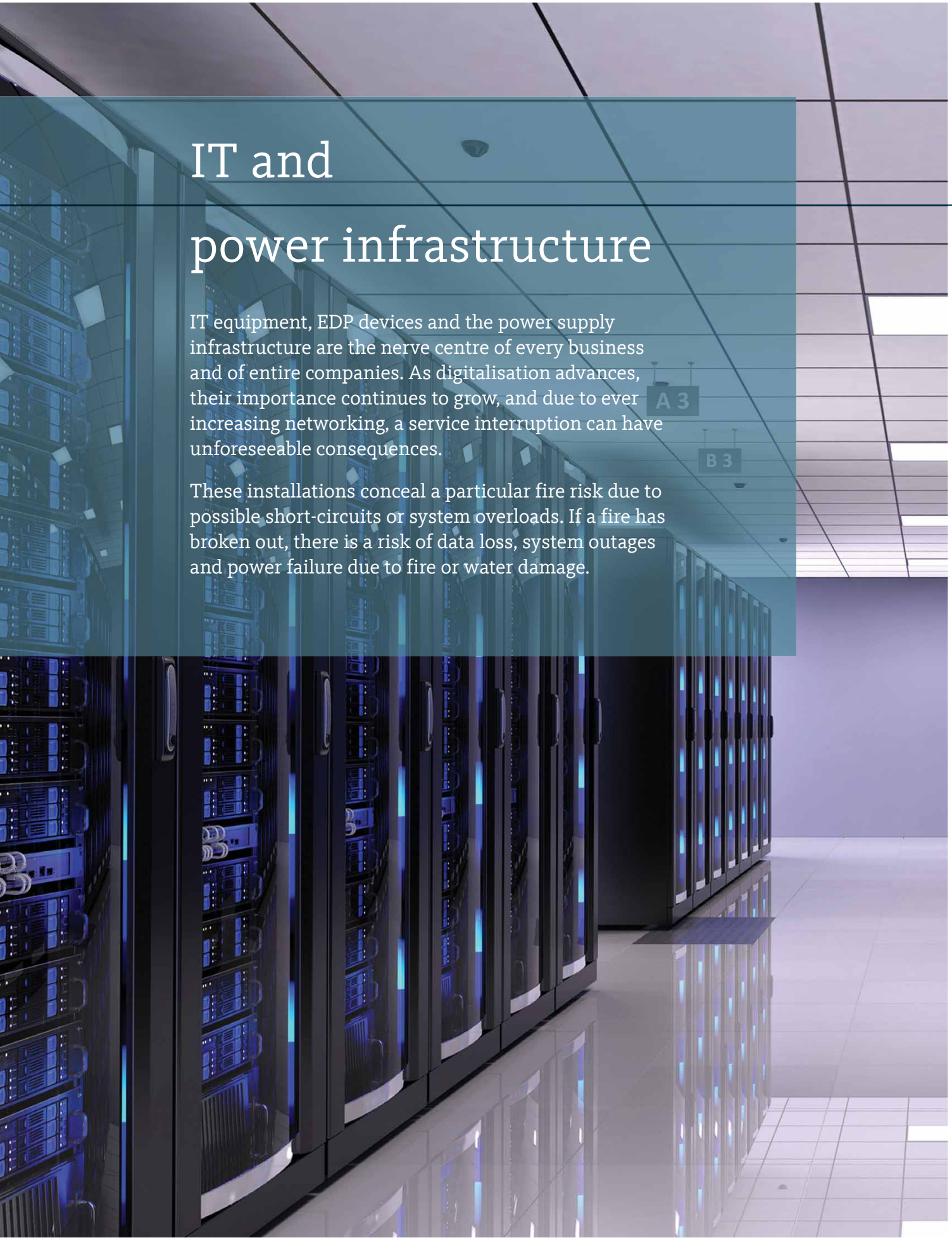
A lack of adequate structural fire protection is a frequent issue in office buildings. In many cases, glass facades or exposed steel beams do not have the required fire resistance. High pressure water mist can provide shielding of radiated heat from the fire as well as directed cooling of specific building areas. Further advantages are:

- Compensation for a lack of structural fire protection in all building areas
- Allows architectural design freedom
- Visually appealing integration within new or existing buildings

Retrofitting in historic buildings

Historic buildings have an almost immeasurable value. In general, however, their architecture is not designed to accommodate a firefighting system. When it comes to the installation of pipes and the necessary water tanks, conventional sprinkler systems are often out of the question due to a lack of space.

However, high pressure water mist systems can be integrated with ease. The cooling effect and minimal water consumption also protect the building structure.



IT and power infrastructure

IT equipment, EDP devices and the power supply infrastructure are the nerve centre of every business and of entire companies. As digitalisation advances, their importance continues to grow, and due to ever increasing networking, a service interruption can have unforeseeable consequences.

These installations conceal a particular fire risk due to possible short-circuits or system overloads. If a fire has broken out, there is a risk of data loss, system outages and power failure due to fire or water damage.

Data centres and server rooms

Insufficient heat extraction due to a non-existent or defective cooling system increases the risk of a fire in these areas. The indirect damage caused by smoke is usually much worse than the damage caused by the fire itself. In the event of a fire plastic cable insulations in particular release corrosive combustion gases and soot particles, which are settled down onto drives and data media, probably destroying them.

Water mist is able to adhere to soot particles and partially washes out water-soluble gases. This greatly limits the damage caused in the event of a fire.

Equipment rooms and transformers

There are high voltages in equipment rooms and transformers, which also means risk of a short-circuit. Transformers and equipment rooms are often housed in sealed rooms, and this circumstance can lead to fast fire spread with high energies. If the fire is visible, in many cases it is already too late to prevent further damage or even total loss.

FOGTEC systems can be integrated directly within the electric plant area and can fight a fire efficiently, in the earliest stages. The low water volumes significantly minimise the risk in these types of installations.

Cable tunnels and ducts

Until now, most cable tunnels and ducts were rarely properly protected as a result of the lack of suitable firefighting systems, although they often house all the power supply cables and many of the data communication cables. This was mainly due to the fear of water damage in the event of system activation. FOGTEC systems avoid these specific risks. Cable fires generate extremely high temperatures, so the cooling effect can considerably contribute in terms of damage reduction.

To protect a cable duct or tunnel with cable racks on both walls, a single line of nozzles usually suffices being installed in the centre of the ceiling. As a result, straightforward installation of FOGTEC systems is assured, both in a new build and as part of a retrofit.

An overview of all the advantages

- 100% environmentally-friendly and completely non-hazardous for people
- No pre-warning or delay required before activation
- No sealed rooms required
- No area limitation
- Use as room protection and to protect raised floors
- Binds soot particles and washes out combustion gases
- Minimal water damage
- No dependency on extinguishing gas manufacturers
- Extinguishing agent produces no corrosive by-products

Versatility in a wide range of industries

The range of industrial fire risks and hazards is vast. The fuels and lubricants which are typically used contain the potential danger of the rapid spread of a fire. The risks are present in individual equipment, production lines and even in entire factories.

Consequently local protection as well as volume protection are of great benefit.

Engine test cells

Fires are a regular occurrence in engine test cells due to the high temperatures developed in the test specimens. For this reason, an active firefighting system is essential. In this area in particular, FOGTEC systems offer an environmentally-friendly alternative to gas extinguishing systems. They fight fires efficiently and effectively, but represent no danger to any personnel present.

There is no need to seal rooms or to issue pre-warning or evacuation times. Having only minor fire damage keeps downtime to a minimum.

CNC machinery and hydraulic presses

The failure of CNC-machines or hydraulic presses will lead to gaps in the production chain and as a result to delays, or in the worst case scenario, to longer downtimes.

The high availability of the machines is usually a major deciding factor for operators when choosing high pressure water mist, as downtimes due to system outages can be shortened thanks to the very low water consumption.

Paint shops / coating lines

When paints catch fire, they can very quickly reach extremely high temperatures. The spray and spill fires which arise must be controlled and extinguished as quickly as possible in order to minimise any consequential damages. The cooling effect of water mist constitutes a major advantage.

By immediately extinguishing the fire, its spread can be quickly prevented and business interruptions reduced.

Storage and production of flammable liquids

Spill fires of flammable liquids often spread very quickly and release toxic combustion gases. This leads to incalculable risks for personnel, production downtime and environmental damage. Consequently the operators of these plants are required by law to put in place preventive measures to stop a fire from breaking out and to comply with the technical regulations governing flammable liquids in warehouses or storage facilities and the retention of extinguishing water. Gas or foam extinguishing systems are often employed.

Water mist is just as effective, but is completely harmless for both people and the environment.

Turbines and generators

Fires in turbines and generators are usually extremely difficult to detect, or may be completely missed. A lack of free space in these applications in particular often poses a problem for the installation of a conventional firefighting system. The small nozzles and pipe diameters of FOGTEC systems offer a perfect solution and room sealing and pressure relief dampers are not required.

Power stations

The availability of power stations is extremely relevant for the public and plant operators. Downtimes lead to significant economic costs for the public purse. Hazard areas can be determined using fire risk assessment. On the basis of this assessment, protection can be provided by fixed fire extinguishing systems based on water mist configured to specifically target the risk areas. Mobile systems and wall hydrants based on water mist can also be used as primary intervention means to tackle a fire.

This way the system is integrated within the existing fire protection regulations and concepts.

There are virtually no limits to the possible applications

Water mist systems are specially designed and developed for the case of need. These compact systems, in conjunction with the unique properties of water mist, can be used as a sustainable alternative for virtually every application.

Clean rooms and laboratories

Clean rooms and laboratories are subject to stringent hygienic requirements. Water mist can be used in all laboratory classifications. The low water volumes protect instruments and technical equipment if activated, and are non-hazardous for employees who may be present.

The high-quality stainless steel used for the nozzles and pipework minimizes system corrosion and consequently the occurrence and depositing of undesirable particles.

Ships and offshore oil platforms

FOGTEC systems protect machine rooms and gas turbines as well as accommodation and sleeping areas on ships and offshore oil platforms.

High pressure water mist is ideal for marine risks, as stringent safety requirements are unavoidable on ships and in the offshore industry, and for reasons of stability, it is essential to minimise the amount of water used.

Rail Systems

Over 10,000 FOGTEC systems are in use in rolling stock all over the world. FOGTEC fire detection systems are used alongside FOGTEC firefighting systems. For passenger areas in particular, water mist has proven to be the most appropriate firefighting method. It can also be utilised in locomotives and engine rooms.

Water mist systems comply with the ever-more stringent safety requirements of rolling stock and allow for greater transparency, avoiding physical fire partitions, in passenger areas.

Smart Concepts – Complete concepts for metro and underground rail stations

The large numbers of passengers gathering in trains and at stations, combined with the limited options for escape routes in underground traffic systems, pose very particular challenges for fire protection concepts.

Until now, it has only been possible to meet these challenges by making major financial investments. By intelligent integration of fire protection measures in both rolling stock and stations, FOGTEC's Smart Concepts offer rail operators increased transport infrastructure availability whilst at the same time significantly reducing investment and operating costs.

Platforms, escalators, equipment rooms, shopping areas, cable tunnels and trains are protected.

Tunnel Systems

A large number of studies have shown that major fires in tunnels can only be prevented effectively if an incipient fire is brought under control as quickly as possible, preventing its spread. The usual measures of structural fire protection or smoke extraction systems alone cannot assure this level of protection.

Water mist systems significantly increase the level of safety and availability of tunnels. FOGTEC develops water mist systems to extinguish fires in tunnels across the world.

Mobile fire fighting

Mobile FOGTEC systems are used by fire services and industrial operators. The extremely compact systems can be installed in small fire trucks, such as off-road vehicles or pick-ups, or used remotely in at risk areas.

For operations without a fire brigade, or at large companies with long path routes routes, mobile FOGTEC units are a proven and tested rapid intervention system.

Industrial fryers and kitchen deep-fat fryers

Attempting to extinguish an oil fire using large amounts of water is futile and can in fact worsen the situation, as deflagrations and explosions may occur.

FOGTEC systems are able to fight these types of fire using pure water only, the characteristic of the exceptional effectiveness of this technology. The system is designed so that the small droplets evaporate on the surface of the oil, thereby suffocating the fire. The nozzles do not clog thanks to the use of special Teflon caps.

The metal surfaces are cooled by the water mist, reducing the potential of re-ignition. Systems that use chemical agents involve time-consuming cleaning work, leading to the associated business interruptions after a firefighting system has been activated.

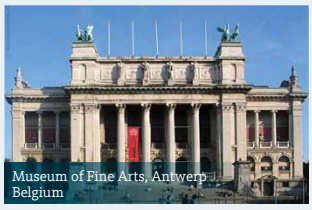

TV-Tower Munich
Germany


Heidelberger Druckmaschinen PMA
Germany


EMOC National Archive Paris
France

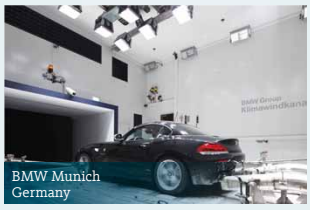

BP Bochum
Germany


Warehouse for flammable liquids,
Bayer, Germany


Museum of Fine Arts, Antwerp
Belgium


Main Station Cologne
Germany


Egypt Museum Turin
Italy


BMW Munich
Germany


Balamand Universit
Lebanon


Mecca Clock Tower, Mecca
Saudi Arabia


State Hospital Baden
Austria


Power station Linth Limmern
Switzerland


Parliament Library, Muscat
Oman


Impala Platin-Mine corporation Rustenburgh
South Africa


Bosch-Curitiba
Brazil

Robert Koch Institute Berlin
Germany


Metro Line 1 & 4, Budapest
Hungary


Thyssen Krupp coating plant
Germany

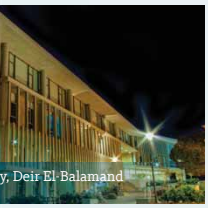
Holiday Inn, Vienna
Austria


Bank of Scotland Edinborough
UK


Hospital Aarhus
Denmark


Metro of Mecca
Saudi Arabia


Elbphilharmony, Hamburg
Germany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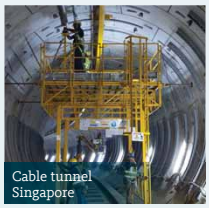
Main Station Sotschi
Russia


Rüstem Paşa Mosque, Istanbul
Turkey


Cable tunnel
Singapore


Beijing New Archive
China


Palacio de Cibeles, Madrid
Spain


Technical Library Prague
Czech Republic

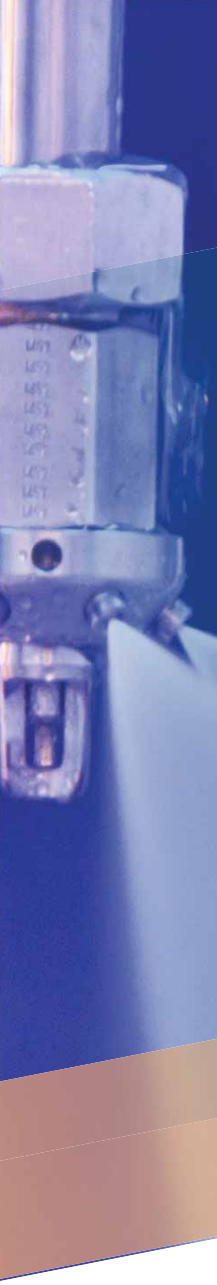

Teatro La Venice
Italy


Tata Pune paint shop
India


Samsung Production line
South Korea

Indira Gandhi Memorial Museum, New Delhi
India


Tianjin Bridge Culture Museum
China



Benefits of FOGTEC Systems

- *Environmentally friendly*
- *Safe for people*
- *High cooling effect*
- *Reduction of radiated heat*
- *Low water consumption*
- *Minimal water damage*
- *No pre-warning time required*
- *Straightforward space-saving installation*
- *Minimal space requirements for system components*
- *Activation via glass bulbs or a fire detection system*
- *Alternative to gas extinguishing systems and sprinklers*

FOGTEC®
FIRE PROTECTION

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