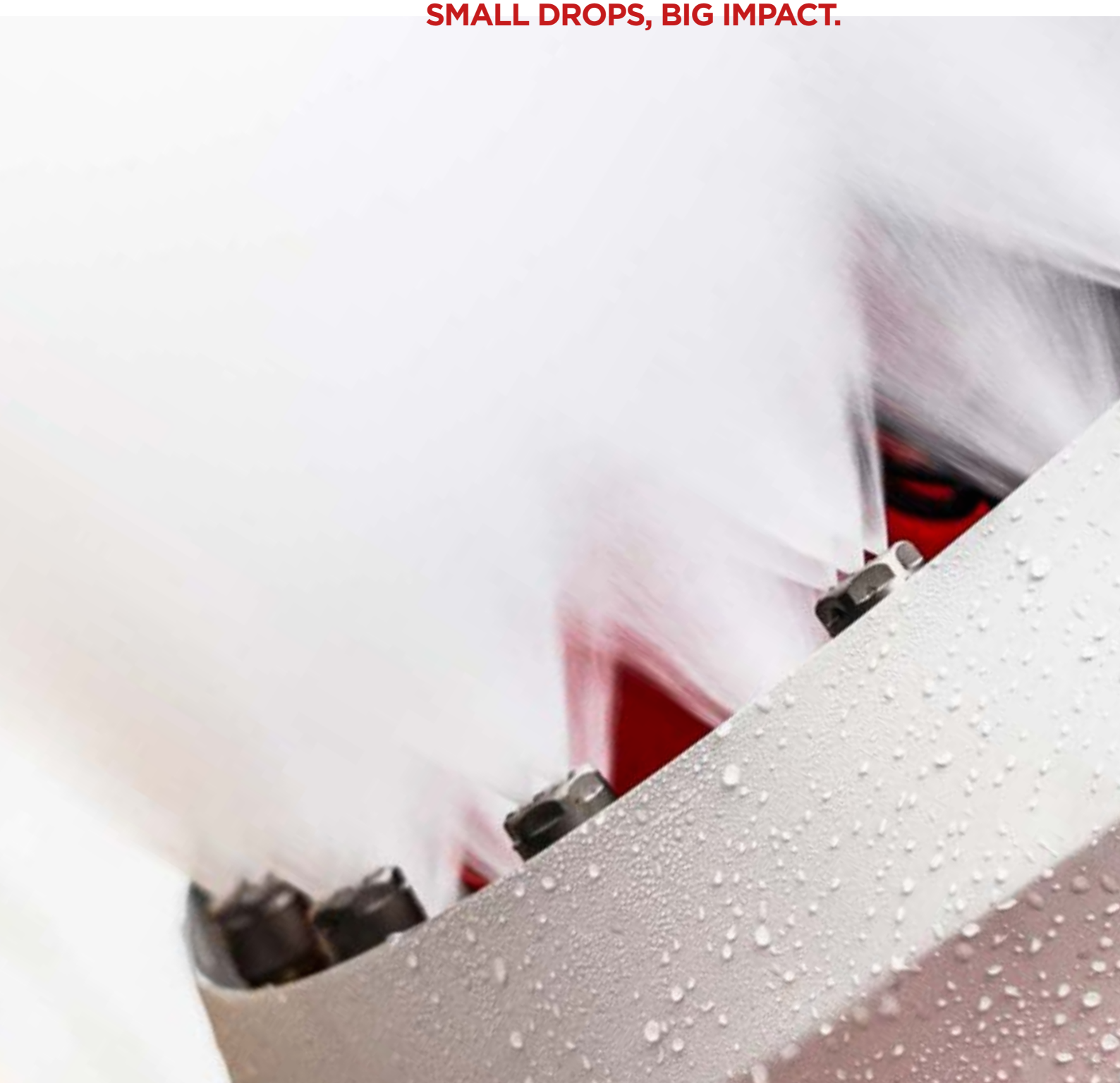
EmiControls®

SOLUTIONS FOR STATIONARY FIRE PROTECTION
SMALL DROPS, BIG IMPACT.



YOUR RELIABLE PROTECTION AGAINST FIRES.

As water mist is an important element in the successful and efficient fight against fire, we have chosen the slogan “Small Drops, Big Impact.” Until now, however, its potential could only be exploited to a limited extent, as it was so far not possible to throw water mist at a long distance.

By combining it with a turbine, at EmiControls, we have solved this problem.

Back in 2011, we were able to organize the largest documented fire test with water mist in Europe. Even then it was clear: the water mist turbine represents a paradigm shift in fire fighting.

Today, everyone is talking about “Sustainability” – already more than a decade ago, we started investing in it. After all, water mist turbines promise one thing in addition to high effectiveness: resource savings.

In the past years we have tested, fine-tuned, refined – and built up an enormous amount of know-how, as well thanks to cooperations with renowned partners in the industry.

During this time, we have systematically developed our product portfolio to offer nowadays complete and automatic extinguishing systems in addition to water mist turbines as individual components.

Small Drops, Big Impact.

THE EFFICIENCY OF WATER MIST

The efficiency of water mist in fighting fires has been known in expert circles for years. Until now, the water mist was applied by means of nozzle technology, which, however, for technical reasons limited the throwing range to only a few meters. This, of course, also limited the range of possible applications.

At EmiControls, we have solved this problem: thanks to the use of a propeller turbine, the water mist can now be applied over longer distances.

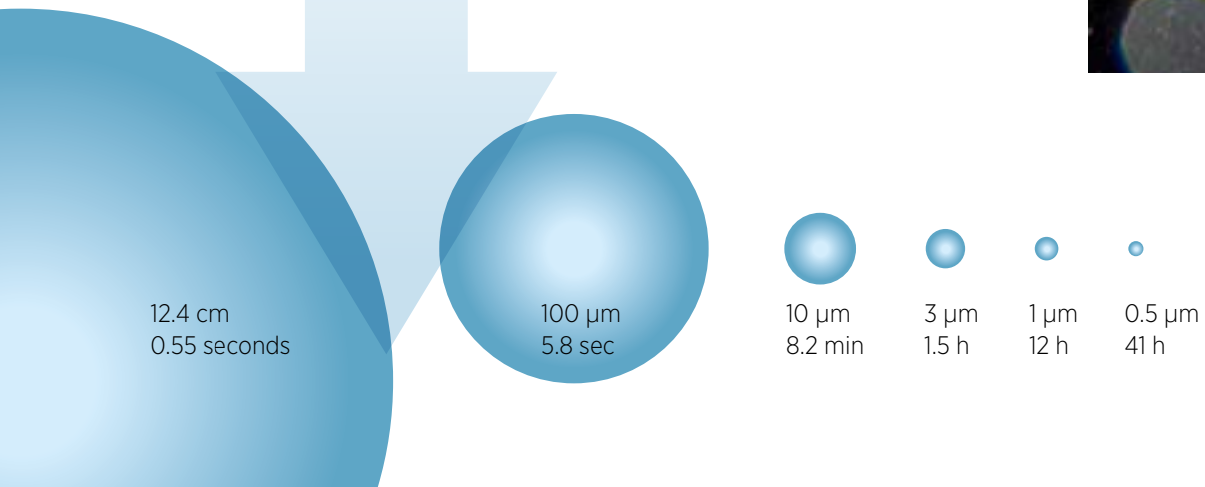
WHY USE WATER MIST?

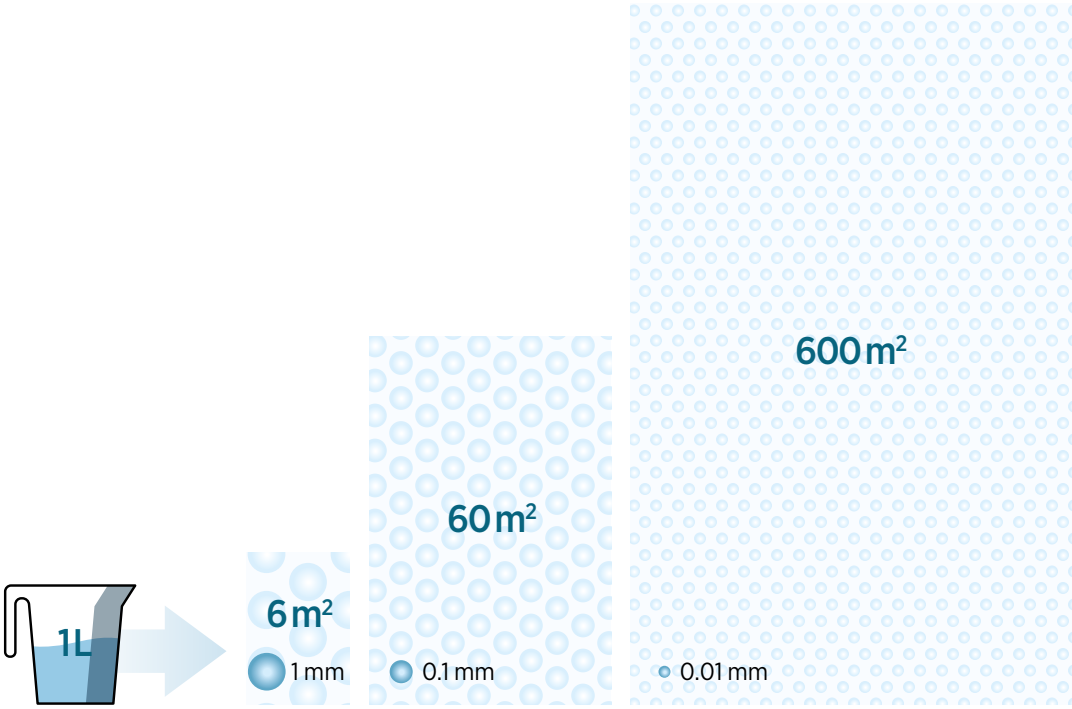
In a nutshell: Water mist achieves a higher cooling effect when extinguishing fires and at the same time requires less water. The question now: what's behind it?

One first advantage of water mist over conventional water jets is, that it envelops objects and therefore cools and extinguishes them very efficiently.

HERE'S HOW IT WORKS:

The turbine atomizes the water into a fine mist. Compared to conventional monitors, fire extinguishing turbines produce smaller droplets that are then sprayed while using propellers. The advantage of these smaller droplets is that they create a larger water surface area and thus a larger heat absorption surface. The fine mist also has a lower sedimentation rate and can easily envelop burning objects. In this way, it is able to reach hidden fire sources that are inaccessible to the conventional extinguishing jet.





An example: If you spray 1 liter of water processed in different droplet sizes the following happens:

1 mm diameter	>	heat absorption surface of 6 m^2
0.1 mm diameter	>	heat absorption surface of 60 m^2
0.01 mm diameter	>	heat absorption surface of 600 m^2

The graph shows the relationship of droplet size to heat absorption surface: the heat absorption surface of 1 liter of water is inversely proportional to the diameter of the droplets it produces.

CONCLUSION

The characteristics of water mist allow efficient firefighting with minimal use of water:

› more heat is extracted from the source of the fire

› the cooling effect has a positive effect on the direct ambient temperature

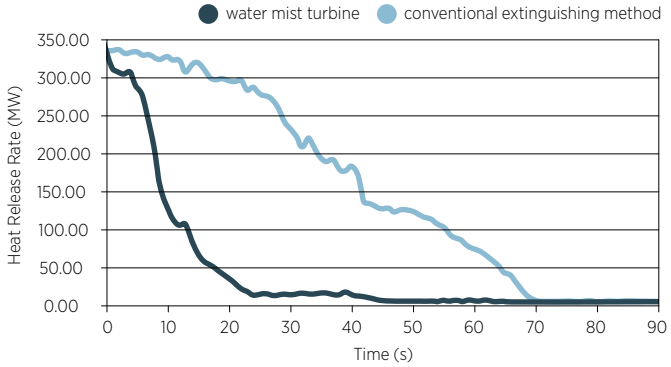
› smoke and soot particles are bound and knocked down more quickly by the water mist

THE WORKING PRINCIPLES OF WATER MIST

From a physical and thermodynamical point of view, there are several mechanisms acting simultaneously, by which water mist extinguishes fire.

COOLING EFFECT

Primarily the water mist efficiently cools the fire plume and the fuel surface, extracting a significantly high quantity of heat out of it. This happens thanks to the high latent heat of evaporation (2,442 J/g) of water.



The table shows how quickly the turbine removed the heat from the fire (dark colored curve), compared to the conventional extinguishing method (light colored curve).

TESTED EFFICIENCY

A test trial (carried out in 2011) clearly shows the difference between the water mist turbine and a conventional extinguishing method (see table). Tested on a 160 m^2 area with 2,400 liters of gasoline set on fire (350MW HHR – 1% AFFF foam), this is the largest documented fire test with water mist in Europe.

The test was conducted with MPA Dresden, at the MOL refinery training site in Hungary (see the above image).

INERTING EFFECT

The water mist is carried with the air into the source of the fire, where it quickly evaporates due to the high heat. As a result of the enormous increase in the volume of the water droplets as they evaporate (up to 1,700 times), the oxygen at the source of the fire is displaced and the fire is smothered.

ADDITIONAL POSITIVE SECONDARY EFFECTS INCLUDE:

- gas suppression
- burnt gas knock-down
- personal protection (as water mist lowers the temperature and eliminates burnt gases faster than any other agent)
- cooling of objects

ABSORPTION OF RADIANT ENERGY

Water mist also absorbs radiant energy as a secondary mechanism and therefore acts as a thermal barrier, preventing surrounding surfaces (or the fuel itself) from being heated by radiation.

Small Drops, Large Throwing Distance.

OUR WATER MIST TURBINE

The water mist turbine combines all the previously mentioned advantages of water mist with the power of a turbine: it thus represents a new and innovative generation of firefighting. Its unique selling point: the water mist turbine is capable of atomizing large quantities of water and distributing it over a large area, yet with pinpoint accuracy – and all this at low water pressure.


Enveloping effect on objects
High cooling capacity
with low water consumption
High proven efficiency in the
suppression of harmful substances
Suitable for use with fluorine-free foam
Gentle application


FULL JET


CLOSED SPRAY JET


OPEN SPRAY JET

SUCCESS STORIES AUTOMATIC EXTINGUISHING SYSTEMS FROM EMICONTROLS

Our turbines can operate either in the area of stationary fire protection or in use for mobile application in firefighting units, there is a whole range of possible application areas.

More details about our costumized solution.

RECYCLING

BLUE RIVER RECYCLING GMBH, GERMANY

Based on the customer's existing fire protection concept, a fully automatic extinguishing system for an extensive sorting plant, with various shredders and separators, was planned and implemented to secure Blue River Recycling. The very compact system design and the storage of material with a high fire load were an additional challenge that made it necessary to develop an ultimately high-quality and customised solution.

As components of the extinguishing system, the FT10e water mist turbines cover larger areas of the system. These are supplemented by extinguishing turrets, whose purpose it is to ensure fire protection even in more compact areas. The combination of fire extinguishing and foam bunker extinguishing systems ensures comprehensive property protection for the entire production process.

RECYCLING

NORIS WASTE DISPOSAL COMPANY, GERMANY

An innovative extinguishing system with water mist turbines now protects the new RDF hall of Noris in Hannover. A total of five FT10e fire-fighting turbines, a fire extinguishing system, and three PYROsmart® infrared systems were installed in the storage and production areas.

The automatic fire protection system from EmiControls and "Orglmeister Infrarotsysteme" was accepted by the test expert without any complaints. The system test was based on the standards of the VdS. Noris Hannover decided to install this innovative extinguishing system in order to be able to fight fires efficiently at an early stage. The customer's fire protection planner was involved in the creation of the extinguishing system concept right from the start.

According to local authorities, the implemented automatic fire extinguishing system is to be classified as superior to a sprinkler system.

KEY ADVANTAGES

- In case of a fire, the turbine starts operating immediately, preventing the fire from spreading
- Gentle application of the extinguishing agent thanks to water mist

WOOD PROCESSING INDUSTRY

WITHOLZ, GERMANY

The company Witholz GmbH supplies wood processing industry, as well as timber construction trade in Germany and Switzerland.

To secure the supply chains of its long-standing customers, the management has invested in innovative fire extinguishing technology. From now on, water mist turbines protect the halls of the production plant. The firefighting turbines are automatically aligned and activated by the signal from “Orglmeister Infrarotsysteme”, the connected early fire detection system.

The entire fire protection system was inspected by a testing expert in accordance with the VdS guidelines and accepted without any objections.

KEY ADVANTAGES

- Gentle surface impact
- Water mist enables deeper penetration into piles than a classic monitor jet
- Efficient suppression of smoke and cooling of the area

KEY ADVANTAGES

- The water mist is indicated for operations on systems under tension
- Water mist can be used when extinguishing oil fires
- Water mist is generally considered a safe extinguishing method

SUBSTATIONS AND TRANSFORMERS

TRANSFORMER PROTECTION IN CHINA

Fires in substations can lead to power outages and major property damage. As the transformers are filled with large quantities of oil, they need to be extinguished quickly and efficiently. Since water mist technology is an excellent extinguishing agent in this field, more and more countries and companies are considering this innovative technology a solution. Numerous extinguishing turbines from EmiControls have been protecting electric power plants in China since 2020.

Planning a fire protection concept for a substation is not an easy task: water conducts electricity and this makes it unsuitable, and in some cases even prohibited as an extinguishing option for substations. Instead, our firefighting turbines produce microscopic water droplets and spread them through a fan, so they’re not cohesive and cannot conduct electricity.

In other words, the main advantages of water mist in this field are, that it cools the ignited object, shortens extinguishing times, and keeps the fire under control.

MOBILE SOLUTIONS

Mounting a firefighting turbine on a mobile base (crawler or tanker) greatly increases the safety of firefighters in operations, while optimizing the usage of the available water volume at the same time.

Overall, under more challenging environmental conditions, as for example in tunnels and metro shafts, garages or inside industrial production halls, a turbine on a fire truck or an additional firefighting robot can be a great alternative. Mobile solutions can not only be used for rapid fire extinguishing with water mist, but also to create escape routes and to cool specific areas, for example at airports or in hangars.

AIRPORTS / HANGARS

- Cooling of the fuselage, if an aircraft catches fire
- Creation of escape routes
- Efficient cooling and rapid fire extinguishing with water mist

CHEMICAL INDUSTRY AND REFINERIES

- Suppression of toxic substances
- Cooling of structure
- Unmanned solutions ensure more safety of both staff and specialized workers
- Turbine can be used with foam

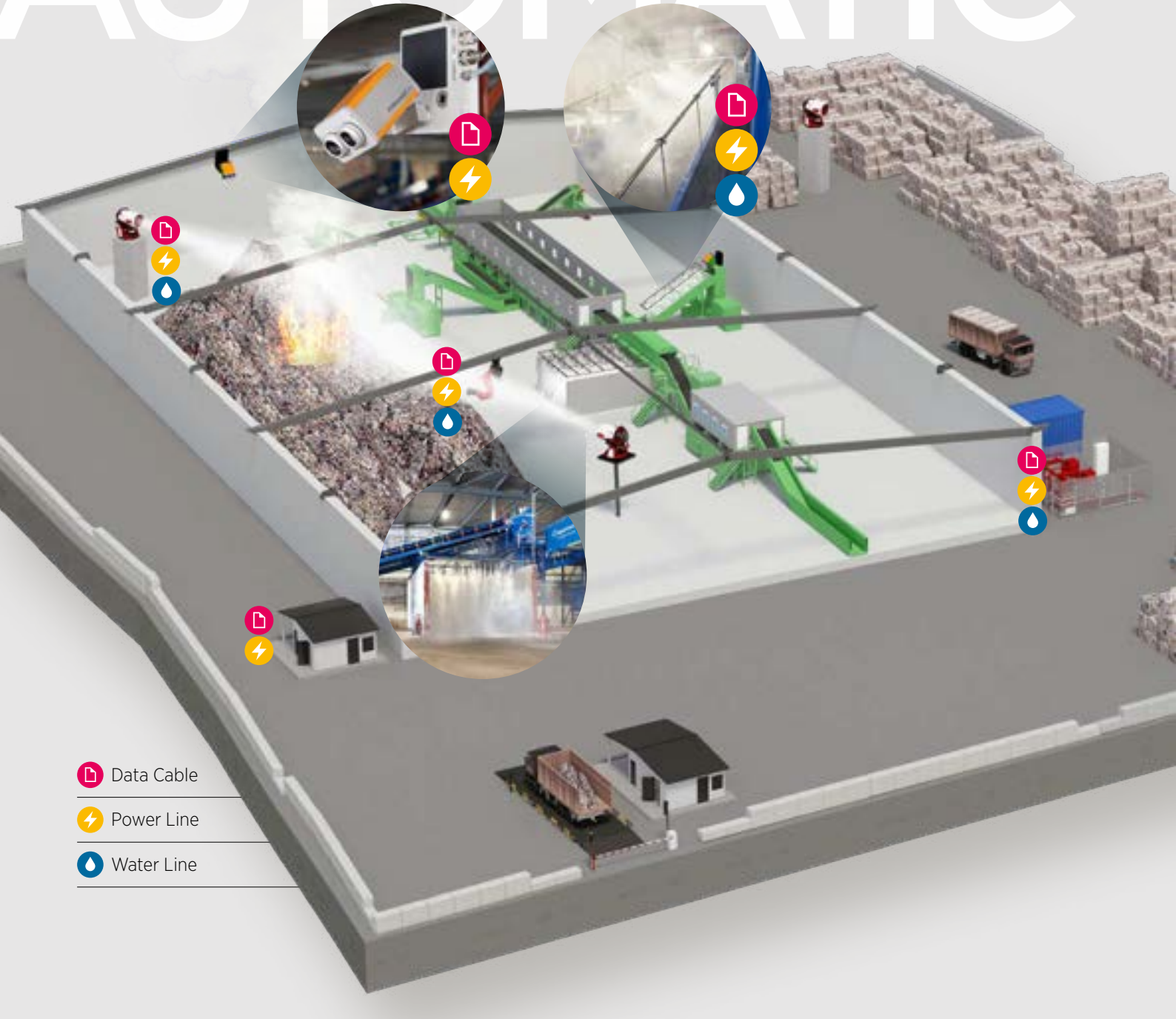
GARAGES, TUNNELS AND METRO SHAFTS

- Rapid fire extinguishing with water mist
- Create escape routes
- Cool specific areas


miControls

THE MOST RELIABLE PROTECTION AGAINST FIRES

SECURE
EFFICIENT
AUTOMATIC



THIS IS HOW AN AUTOMATIC EXTINGUISHING SYSTEM WORKS WITH INFRARED DETECTION

Infrared systems permanently scan the halls surface and register the surface temperature. If a temperature increase is detected in one of the defined monitoring areas, the system triggers.

1. The fire alarm goes to the extinguishing control panel, which starts an acoustic and visual alarm and sends it to the responsible fire alarm panel.
2. At the same time, the early fire detection system starts an extinguishing cycle, with the extinguishing monitor or extinguishing turbine closest to the source of the fire. The extinguishing medium is directed precisely to the source of the fire.
3. During the extinguishing cycle, the infrared system continues to scan the defined monitoring area and analyzes the panoramic thermal image again. If the criteria for the fire alarm are still given in the next monitoring cycle, the extinguishing cycle starts again. This continues until the hot spot has been successfully extinguished.

Depending on the distance of the fire source to the extinguishing monitor or extinguishing turbine, the type of spray and the swing range around the fire source are adjusted in order to achieve the best possible result.

If a hot spot is detected at another position in the monitoring area, the infrared system investigates which of the hot spots is the largest and most dangerous. This one will be tackled first.

Automatic extinguishing system in action

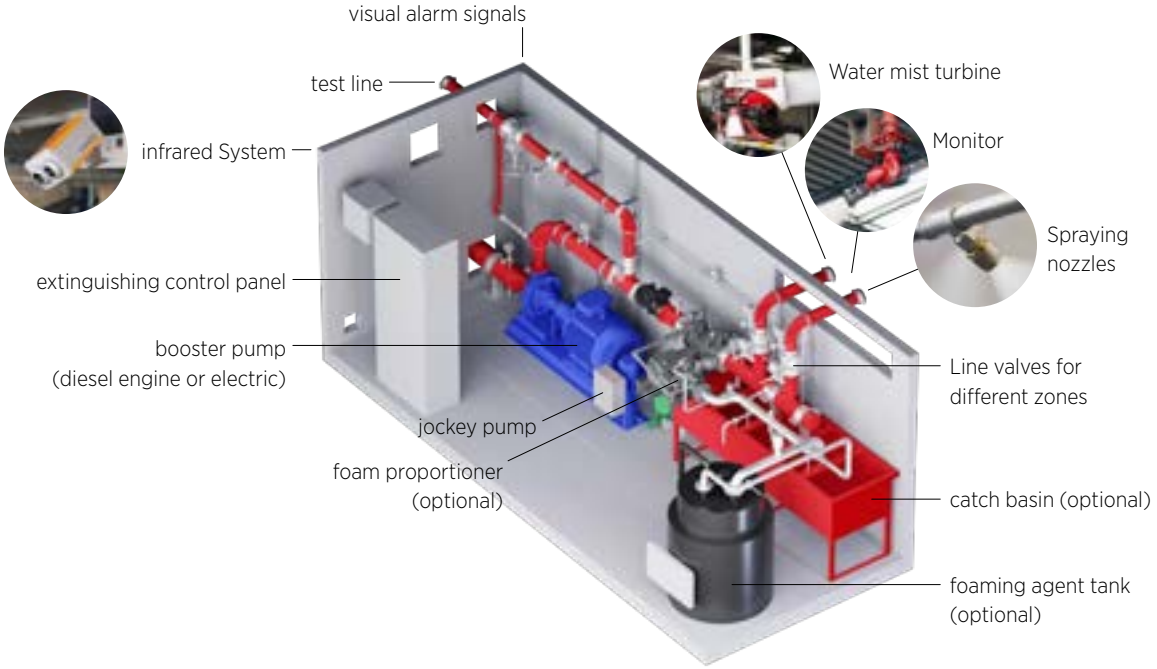
THE AUTOMATIC EXTINGUISHING SYSTEM CONSISTS OF:

a customized and modular PumpContainer

an efficient extinguishing technology

a reliable detection technology

control and visualization



PUMPCONTAINER

An ideally matched pump station forms the basis for an optimally functioning extinguishing system. The pump station is not only the water supply but also the central element of every fire protection system. In the event of an emergency, it must be reliable and 100% operational. The system works fully automatically and is fully adapted to the wishes and needs of the customer – considering local conditions.

The PumpContainer can be combined with an extinguishing monitor, the FT10e fire-fighting turbine or spraying nozzles, depending on the area of application.

ALL ADVANTAGES AT A GLANCE

› Complete solution – ready for operation
› Customizable
› Best protection for critical areas
(turbine, monitor and nozzles)
› Fully automatic / early detection (infrared)

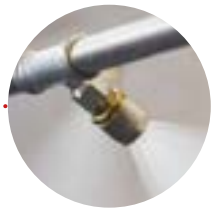
EXTINGUISHING TECHNIQUES

A PumpContainer can be combined with an equipment of different extinguishing devices, depending on the areas which need protection.

Each extinguishing medium has its own advantages. Water mist turbines are particularly suitable for large areas and areas with possible hidden fire sources. However, there are also areas where firefighting turbines do not make sense and monitors or spraying nozzles are more suitable.

water mist turbine

extinguishing monitor



spraying nozzles

	water mist turbines	extinguishing monitor	spraying nozzle
Large halls	●	●	
Transformer protection	●		
Liquid fires	●		
Preventive cooling of material stockpiles	●		
Containment of battery fires	●		
Penetration into open steel structures	●		
Precipitation of gases	●		
Conveyor belts			●
Bunker protection		●	●
Halls with ceiling height below 4 m		●	
Enclosed areas			●

EXTINGUISHING MONITOR

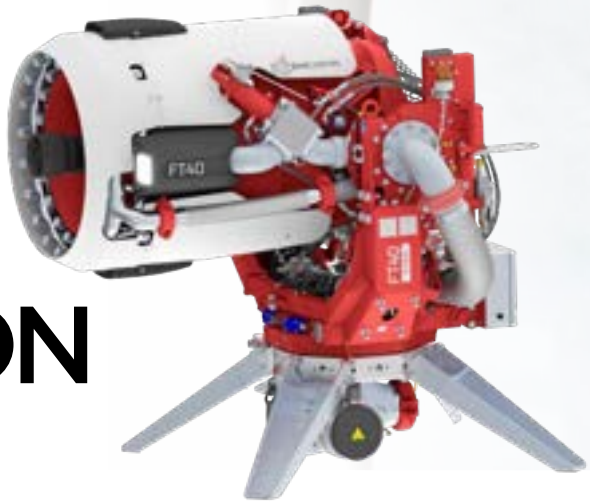
Extinguishing monitors can reach a point with precise coordination and extinguish in a targeted manner. This is especially important in the case of incipient fires in order to keep them under control immediately. Extinguishing monitors allow long ranges and can easily be connected with automatic fire detection systems as well as fire alarm control panels.

SPRAYING NOZZLES

Spraying nozzles make sense, especially where protection against fires must be provided in hard-to-reach and small areas. These are mainly: conveyor belts, bunkers, enclosed areas, etc.

FT40 FIRE

EFFICIENCY AND PRECISION IN TARGETED FIREFIGHTING



With superior performance and high reliability, the FT40 water mist turbine is the ideal solution for precise and effective firefighting in stationary applications. With the FT40, you are ideally equipped to fight fires at an early stage and minimize the risk of damage.

WHAT MAKES THE FT40 UNIQUE?

The FT40 offers a wide range of mounting and positioning options, including overhead, ceiling, roof and wall mounting. This flexibility allows the turbine to be optimally positioned depending on the situation and local conditions. With an increased working range and extended reach downwards, areas can be covered even more efficiently: The turbine can be positioned to save space without causing downward shading.

ADVANTAGES OF THE FT40 AT A GLANCE:

- Fast response and precise targeting
- Flexibility in mounting and positioning
- Reliability and accuracy in extinguishing even after long periods of use
- Efficient management of resources through the use of water mist
- Compatibility with various detection systems for a customized solution
- Compatible with environmentally friendly (fluorine-free) foam concentrates

THE RIGHT CHOICE: WHY THE FT40 SIGNIFICANTLY INCREASES FIRE PROTECTION

The key component of the FT40 is its innovative water mist concept. In contrast to conventional extinguishing methods, water mist achieves a significantly higher cooling effect, which leads to faster and more efficient firefighting. The fine water droplets penetrate deep into the source of the fire and draw energy from it, reducing the ambient temperature more quickly.

The FT40 therefore goes far beyond pure fire protection efficiency. With optional features such as batteries for the emergency power supply and an additional nozzle ring for an even higher water mist volume, it offers a comprehensive solution that meets the individual requirements of every customer. Thanks to high-quality components and a robust design, the FT40 is not only powerful, but also reliable and durable.

The turbine is compatible with a wide range of detection systems and offers both fully automatic and manual control options. It can be adapted to the individual requirements of different areas of application, ensuring reliable firefighting.

FT10E FIRE

Still available: Find out more.

SUITABLE FOR FIRE CLASSES (ACCORDING TO EN 2):

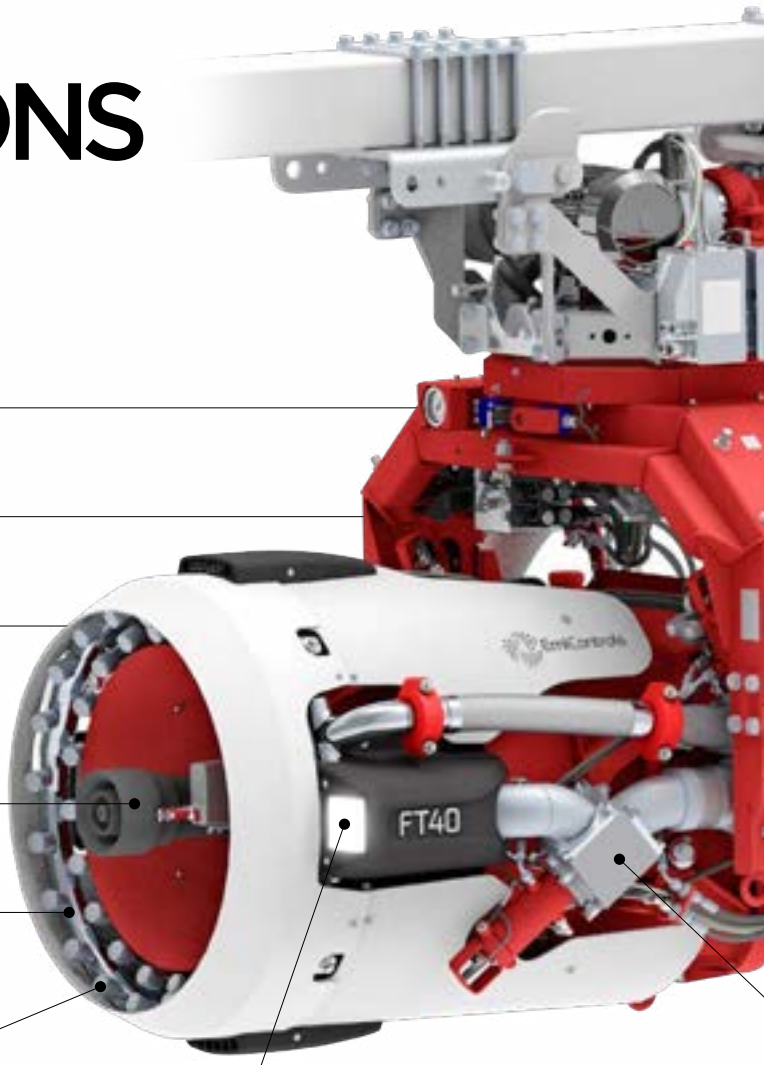
- A = solid fuels
- B = liquid fuels
- C = gaseous fuels
- F = grease fires

AREAS OF APPLICATION:

- Recycling plants & landfill sites
- Oil & gas industries
- Chemical industries
- Wood processing industries
- Large storage and production areas, as well as hangars with a high fire load
- Substations

FT40 FIRE

TECHNICAL SPECIFICATIONS



Dust covers for sensitive machine components

Nominal voltage: 400 V 50 Hz or 480 V 60 Hz available

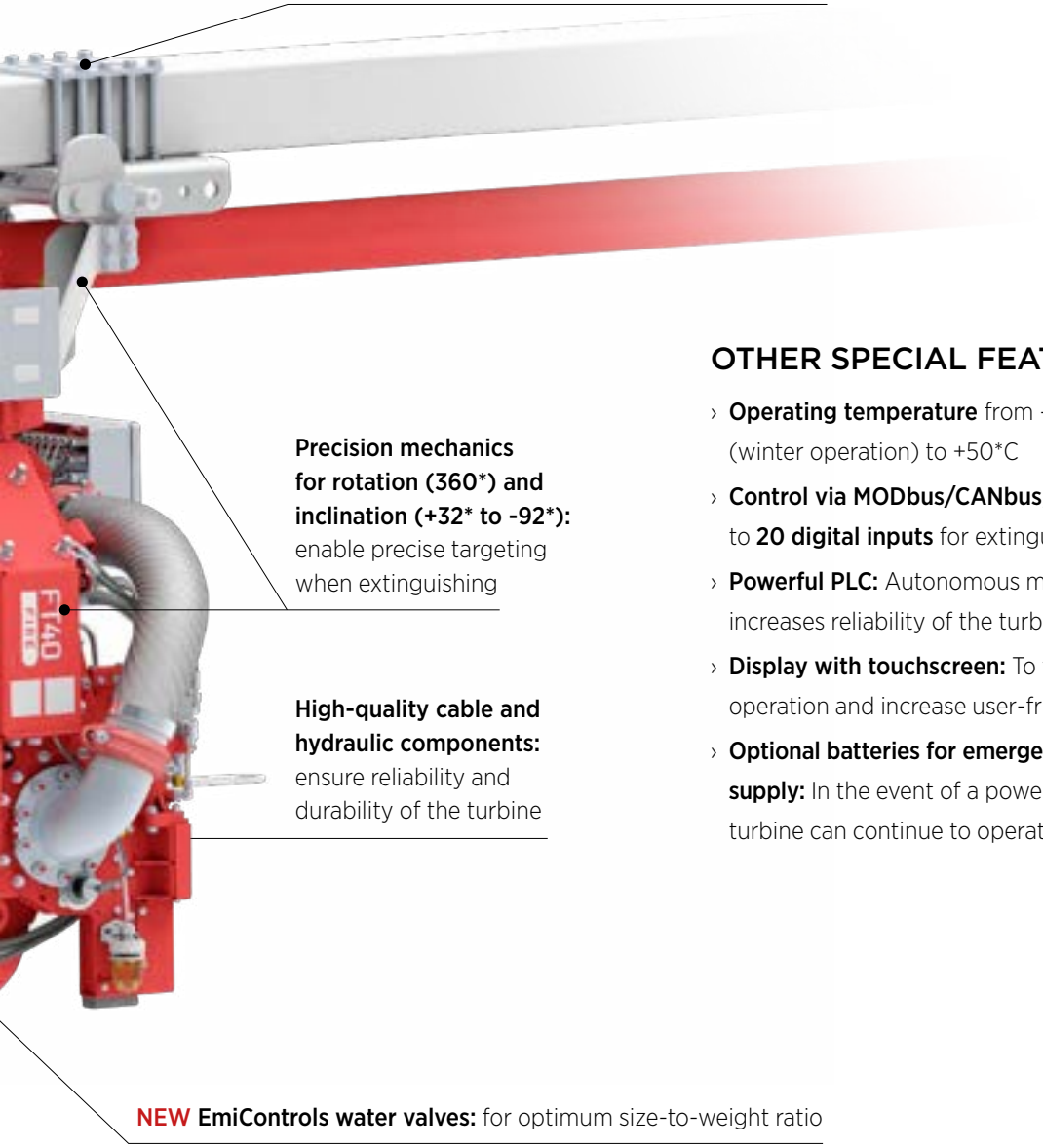
Turbine weight: approx. 700 kg

Choice of different nozzle heads and monitors with electrical monitoring: determination of the water mist volume and the cooling effect

Propeller performance: 12.5 kW

20 Quadrijet nozzles per crown (optional max. 40)

LED spotlight (2x3,000 lumens)



Clever docking system of the turbine to the carrier

Precision mechanics for rotation (360*) and inclination (+32* to -92*): enable precise targeting when extinguishing

High-quality cable and hydraulic components: ensure reliability and durability of the turbine

NEW EmiControls water valves: for optimum size-to-weight ratio

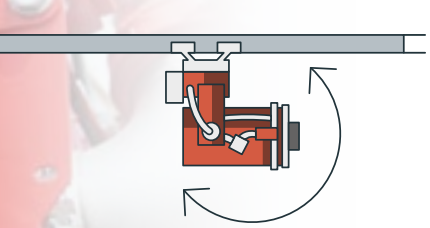
OTHER SPECIAL FEATURES:

- **Operating temperature** from -15*C (winter operation) to +50*C
- **Control via MODbus/CANbus**, as well as up to **20 digital inputs** for extinguishing zones
- **Powerful PLC:** Autonomous monitoring increases reliability of the turbine.
- **Display with touchscreen:** To facilitate operation and increase user-friendliness.
- **Optional batteries for emergency power supply:** In the event of a power failure, the turbine can continue to operate.

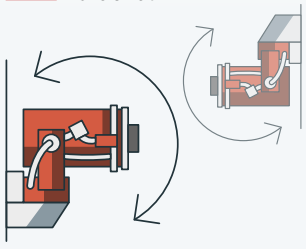
PENDING PATENTS

POSSIBLE VARIANTS FOR SYSTEM INSTALLATION OF THE FT40:

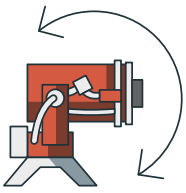
1 Fire extinguishing turbine ceiling mounting (e.g. beam/hall ceiling)



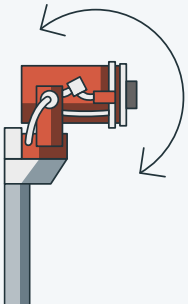
2 Fire extinguishing turbine on wall bracket



3 Fire extinguishing turbine on substructure



4 Fire extinguishing turbine on tower



In the picture: early fire detection and targeted extinguishing.

DETECTION TECHNOLOGY

A reliable detection is required for automatic activation of the extinguishing system. In many areas, the use of infrared detection is advantageous because fires can be detected and fought at an early stage.

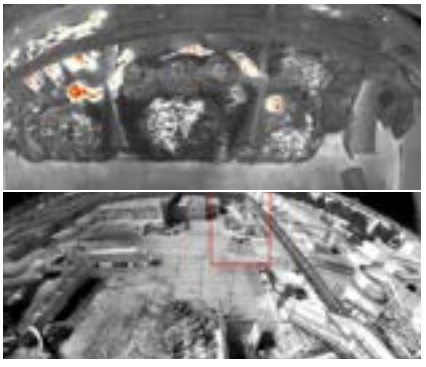
Infrared detectors can detect and localize fire hazards at an early stage and directly control targeted automatic extinguishing attacks. The camera regularly scans the surface and detects dangerously hot surfaces. This information is passed on to the extinguishing medium with precise coordinates. The system is able to decide independently whether the source of the problem is an imminent fire or another source of heat (e.g. a vehicle with a hot muffler or other sources of heat generated in everyday operation).

Other detection systems such as flame detectors and smoke detectors can also be used.

CONTROL AND VISUALIZATION

The detector transmits the alarm signals to the extinguishing control panel. Depending on the design of the system, it can provide a complete thermal visualization or display important data on an information panel.

The extinguishing control panel is used to monitor and control the EmiControls fire extinguishing system. It has a modular structure and is equipped with an LED panel with key switch, an interactive graphic panel and the respective network, input and output cards to monitor all signals of the fire detection and extinguishing system and to control the latter.



Everything in sight: thermal all-round view of fire hazards with patented technology.

SMALL DROPS, BIG IMPACT.

EmiControls®

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