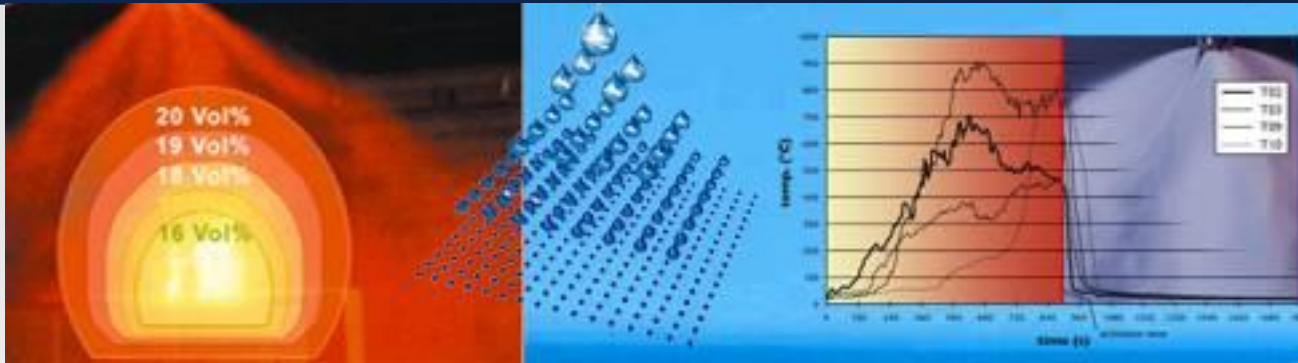


A close-up photograph of a water mist nozzle. The nozzle is at the top center, and a fine, white mist of water is being sprayed outwards in a wide, fan-like pattern. The background is dark, making the white mist stand out prominently.

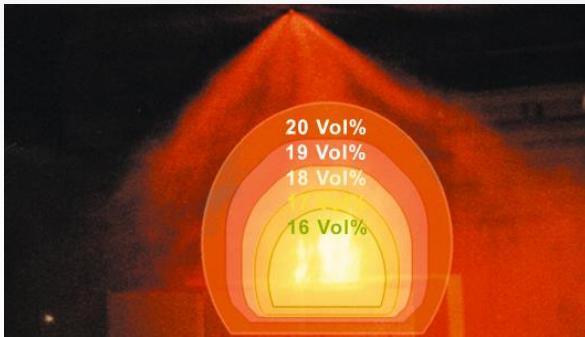
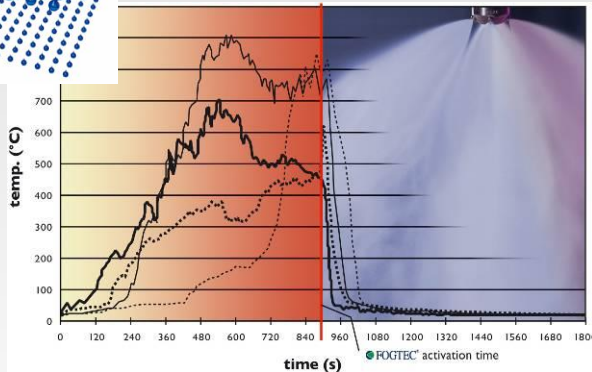
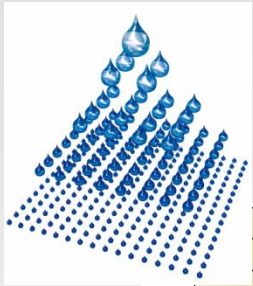
FOGTEC Fixed Systems Optimal Fire Protection with Water Mist

Fire Fighting with Water Mist



- Technology
- Research & Development
- Products
- Applications

Technology – Water Mist Effects



Small Droplets (< 100 μm) / Great Effect

Efficient

- High cooling effect / No re-ignitions
- Local inerting effect
- No enclosure required
- No overpressure

Environmentally friendly

- Small water consumption
- Smoke washing effect

Safe

- Safe extinguishing agent (water)
- No pre-warning times required

Technology – System Benefits

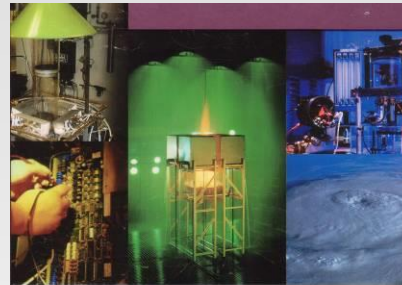
- **Safe for personnel / No pre-warning time required**
- **Effective fire fighting / Reach of hidden fires**
- **Rapid and uniform cooling of hot surfaces and surrounding areas / No re-ignitions**
- **Negligible effect on electronic and electrical components**
- **Minimal water consumption**
- **Minimal business interruption**
- **Easy installation / Retrofit with small bore pipes as room protection**

Fire Fighting with Water Mist



- Technology
- **Research & Development**
- Products
- Applications

R&D – Guidelines and Standards



Systems are tested and installed in accordance with

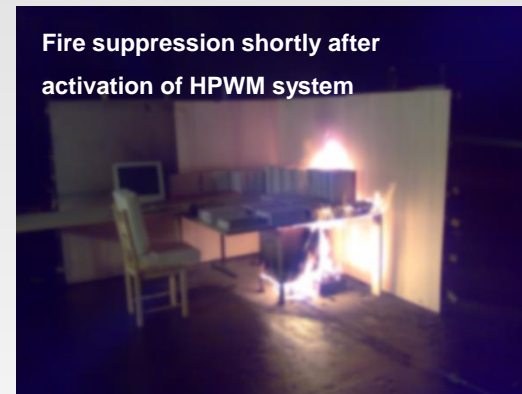
- NFPA 750
- FM 5560
- CEN TS 14972

standards

R&D – Fire Tests for OH1 Fire Risks



VdS OH1 fire test for office areas and similar risks



VdS OH1 fire tests for false ceilings



R&D – Fire Tests for OH3 Fire Risks



VdS OH3 fire test for storage areas



R&D – Fire Tests for Machinery Spaces



Specific fire tests for

**Machinery spaces
containing engines and
other hydraulic fire risks**

Fire tests up to 3000 m³

**Object protection of
individual machines**



Spray and pool fires



Tests with door opening

R&D – Fire Tests for Flammable Liquid Areas

VdS



Flowing fire test



Pool and spray fires



R&D – Fire Tests for Cable Tunnels



Test arrangement



Forced ventilation



**PVC, PE and PP cable
fire load**

R&D – Approvals / Independent Fire Tests



Approvals

- Machinery spaces (GL)
- Local Applications (GL)
- Accommodation Areas (GL)
- Gas Turbines (FM)
- Deep Fat Fryers (NVBB and GL)
- Machinery Rooms (VdS)
- Flammable liquid areas (VdS)
- Transformers (VdS)
- Ordinary Hazard Risks OH1, OH3 (VdS)

Independent Tests

- Archives (CSTB)
- Engine Test Cells (TÜV)
- Industrial Ovens (ISV)
- Cable Tunnels (TÜV)
- Flammable Liquid Stores (ISV)
- Diesel Generators (TÜV)
- Raised Floor / IT Rooms (TÜV)
- High Voltage Areas (IBEXU)
- Metro Platforms (TÜV)
- Water Mist Curtains (MPA)
- Paint Cabinets (ISV)
- Escalators (Chiltern Fire)

Fire Fighting with Water Mist



- Technology
- Research & Development
- **Products**
- Applications

Products – Nozzles



- Nozzle spray pattern adapted to the risk
- Open nozzles in dry pipe systems
- Glass bulb operated nozzles in wet pipe systems
- Caps for each micro nozzle possible
- Easy mounting and maintenance



Products – Wall Cabinet



- **Combination of fixed and mobile water mist systems**
- **Effective fire suppression at strategic places ready to use**
- **Easy handling**
- **Unlimited operation time**

Products – Pipework and Section Valves



- Diameters from 12 mm - 50 mm
- Stainless steel AISI 316
- High durability
- No contaminated water when discharged
- Low maintenance requirements
- Solenoid or pneumatically operated section valves

Products – Cylinder Systems



- Filled with demineralised water
- Nitrogen as propellant at 200 bar
- Cylinders with internal lining
- 20 / 50 / 80 l cylinders
- Automatic and electric actuation
- Stand alone system
- Low refilling costs

Products – Pump Systems



- **Compact design**
- **100 / 120 / 140 bar pressure**
- **50 / 98 / 120 / 150 l/min pumps**
- **Immediate re-operation after activation**
- **High reliability**
- **Small break tank sizes**

Applications



- Technology
- Research & Development
- Products
- **Applications**

Applications – Key Applications



Prestigious Buildings / Heritage Buildings / Museums

- High cooling effect, thus potential compensation of structural fire protection
- Effective prevention of fire spread
- Minimal water discharge / water damage
- Small pipe sizes / Small water storage tanks
- System can easier be integrated into architecture of the building

Applications – Reference Projects



Training Building of Heidelberger Druckmaschinen AG (Germany)

- Protection of the entire office building (33.000 m²) including the 44 m high atrium
- The water mist system compensates missing structural fire protection measures
- 2800 nozzles

Applications – Reference Projects



Town Hall Cibeles in Madrid (Spain)

- Protection of the entire heritage building with 15.000 m²
- 1300 nozzles

Applications – Key Applications



Libraries / Archives

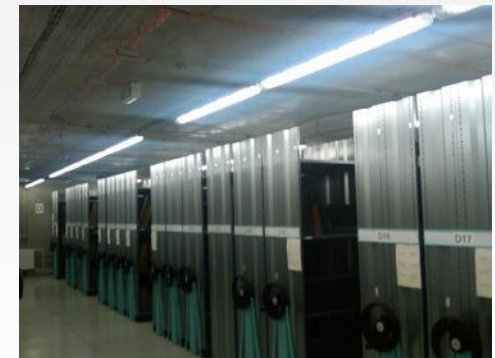
- Effective prevention of fire spread
- No requirement for enclosures
- Minimal water discharge / water damage
- Protection of valuable goods
- Small pipe sizes / Small water storage tanks
- System can easier be integrated into architecture of the building

Applications – Reference Projects



Technical Library in Prague (Czech Rep.)

- Protection of the entire library building (38.000 m²)
- Special nozzle arrangement for atrium protection
- 4200 nozzles



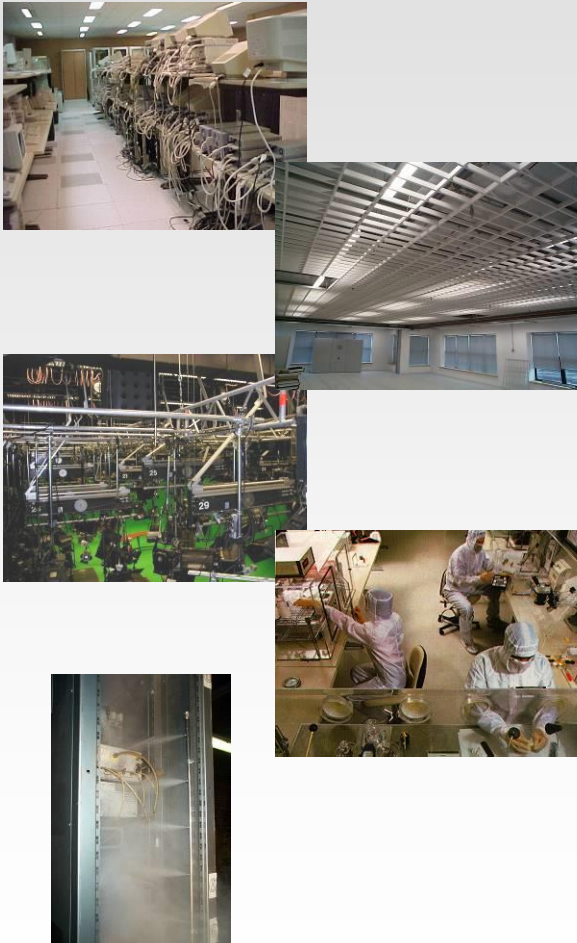
Applications – Reference Projects



EMOC National Archive in Paris (France)

- Protection of 200 archives of each 200 m² and the adjacent office building (48.000 m²)
- Specific archive fire tests have proven the efficiency of the system
- 5100 nozzles

Applications – Key Applications



IT Areas / Telecommunication

- No area restrictions
- Smoke washing effect
- No structural measures required
Easy retrofit
- Optional in-cabinet protection

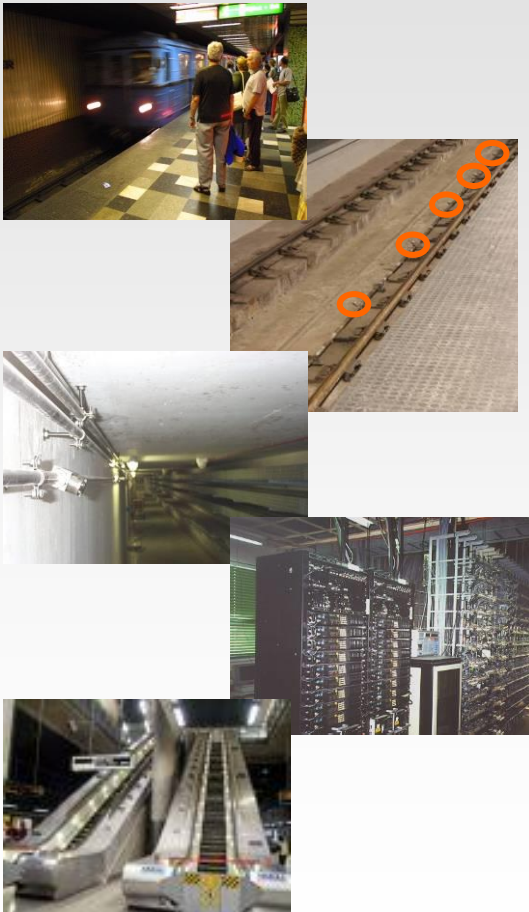
Applications – Reference Projects



Bank of China in Shanghai (China)

- Protection of the entire data centre with 30.000 m²
- 3500 nozzles, 30 section valves

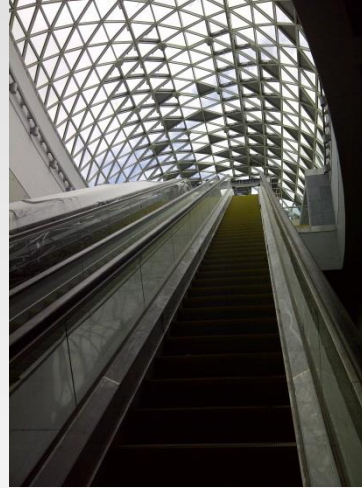
Applications – Key Applications



Underground Stations

- High cooling effect
- Partial smoke washing effect
- Short business interruptions
- Easy retrofit
- Small water storage requirements
- Typical risk areas
 - Cable tunnels
 - Escalators
 - Platforms
 - Machinery Rooms

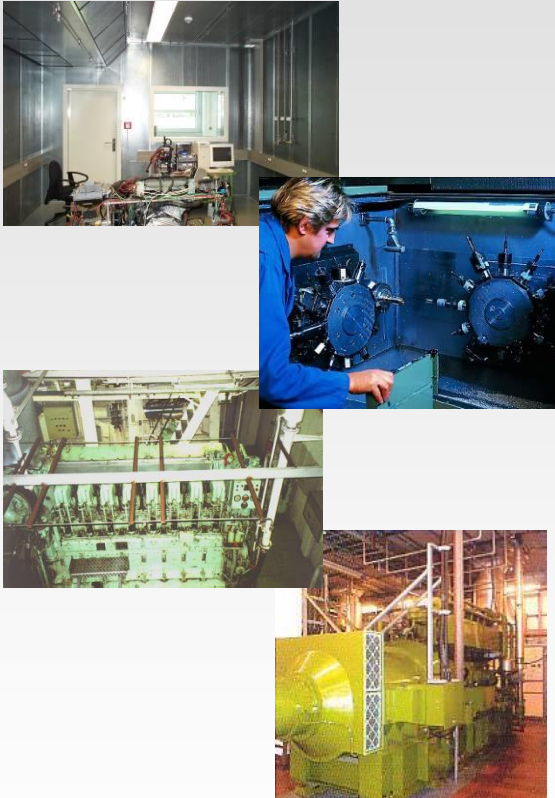
Applications – Reference Projects



Metro Linie M2 and M4 in Budapest (Hungary)

- Protection of 18 underground metro stations, the train depot and the main control tower
- In each station the platforms, escalators, cable tunnels and technical rooms have been protected
- 6200 nozzles, 230 section valves, 80 high pressure wall hydrants

Applications – Key Applications



Machinery Protection

- Rapid extinguishment / Cooling
- Safe for operators
- Short business interruption
- Typical risk areas
 - Generators
 - Engine test cells
 - CNC machines
 - Turbines
 - Transformers

Applications – Reference Projects



Prinovis in Dresden (Germany)

- Protection of 5 retro-gravure printing machines each in an 2.400 m³ enclosure
- 560 nozzles, 20 section valves, high pressure wall hydrants

Applications – Reference Projects



Daimler AG - Motorenhaus III in Stuttgart (Germany)

- Protection of 72 engine test benches

Applications – Reference Projects



ThyssenKrupp AG, Factory in Duisburg (Germany)

- Protection of 180 m long electrolytic steel coating machine

Applications – Key Applications



Flammable Liquids Storage and Production Areas

- Rapid extinguishment / Cooling
- Safe for operators
- No pre-warning times required
- Small quantities of contaminated water

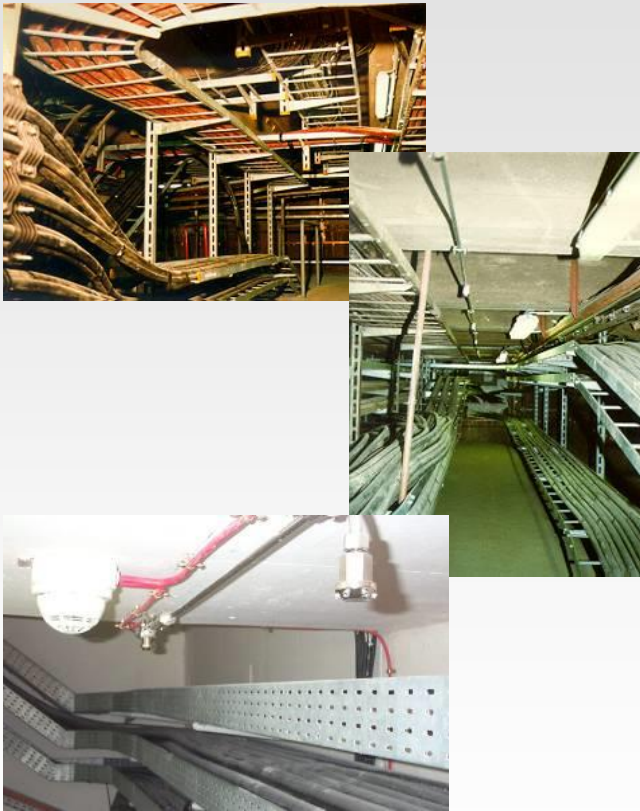
Applications – Reference Projects



Votteler in Stuttgart (Germany)

- Protection of a production and storage facility in a paint factory (16.000 m²)
- 700 nozzles, 33 section valves

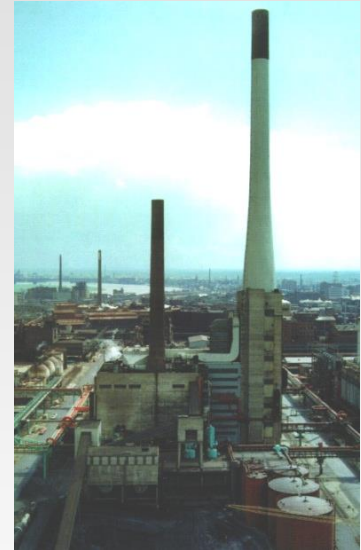
Applications – Key Applications



Cable Tunnels

- High cooling / Smoke washing effect
- Minimal water damage
- Short business interruption
- Easy installation at ceiling level

Applications – Reference Projects



Bayer Factory in Krefeld (Germany)

- Protection of the entire power distribution network of the factory with ca. 1500 m length
- 550 nozzles, 17 section valves

Applications – Reference Projects



Chongming Cable Tunnel in Shanghai (China)

- Protection of 15 km long power supply cable tunnel to the Chongming island
- 5300 nozzles, 460 section valves

Applications – Reference Projects



Singapore Power Transmission Cable Tunnels (Singapore)

- Protection of 35 km long power supply cable tunnel with 6 to 9 m diameter
- 25700 nozzles, 1100 section valves, 12 pump stations

A close-up photograph of a water mist nozzle. The nozzle is at the top center, and a fine, white mist of water is being sprayed outwards in a wide, fan-like pattern. The background is dark, making the white mist stand out prominently.

**Thank You for Your
Attention**