Fire Fighting with Water Mist
Experts in Water Mist

Company

The Smarter Way of Fire Fighting
Company – FOGTEC Services

- Private German company with headquarter in Cologne
- Water mist system component development and manufacturing
- Application fire testing, component testing and system approval
- International market presence by own offices or system partners
- System design and planning
- Installation (direct or via local partners)
- After sales service and maintenance
Company – FOGTEC Set Up

- Head Office in Cologne, Germany
- R+D Office (IFAB) in Berlin, Germany
- Office France in Paris, France
- Office Middle East in Jeddah, Saudi Arabia
- Office South East Asia in Mumbai, India
- Office China in Shanghai, China
- Office South America in Sao Paolo, Brasil
## Technology – Small Droplets - Big Effect

- Cooling by heat absorption via large surface
- Inerting by local oxygen displacement

<table>
<thead>
<tr>
<th>Droplet Diameter</th>
<th>Reaction surface per litre of water</th>
</tr>
</thead>
<tbody>
<tr>
<td>1mm</td>
<td>2m² (Convent. Technologies)</td>
</tr>
<tr>
<td>0.1mm</td>
<td>20m²</td>
</tr>
<tr>
<td>0.01 mm</td>
<td>200m² (FOGTEC Water Mist)</td>
</tr>
</tbody>
</table>
Technology – Cooling / Radiant Heat Attenuation

- Safe environment for people
- Protection of nearby objects from radiant heat
- Prevention from flash over

Energy binding potential of 1 l of water:
- 335 kJ heating from 20°C to 100°C
- 2257 kJ by transition from liquid to gas
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Technology – Inerting by Local Oxygen Displacement

„Suffocation“ of the fire by displacement of oxygen at the fire source

Volume enlargement of 1 litre of water by evaporation:
1 l, liquid ⇒ 1650 l, gaseous

Oxygen reduction only at the source of the fire

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Technology – Absorption of Smoke

- Binding of smoke particles by small droplets
- Washing out of gases (e.g. HCL) via huge reaction surface
- Less contamination by smoke
## 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
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R&D – Guidelines and Standards

Systems are tested and installed in accordance with

- NFPA 750
- FM 5560
- CEN TS 14972 (VdS, CNPP,...)
- IMO standards
R&D – Approvals / Independent Fire Tests

**Approvals**
- Machinery spaces (IMO MSC 668/728)
- Local Applications (IMO MSC 913)
- Accommodation Areas (IMO A 800)
- Gas Turbines (FM)
- Deep Fat Fryers (NVBB and GL)
- CNC Machines (VdS)
- Flammable liquid areas (VdS)
- Transformers (VdS)
- OH1, OH3 (VdS)

**Independent Tests**
- Archives (ISV, CSTB)
- Engine Test Cells (TÜV)
- Industrial Ovens (ISV)
- Cable Tunnels (TÜV)
- Flammable Liquid Stores (ISV)
- Diesel Generators (ISV)
- Raised Floor / IT Rooms (ISV, TÜV)
- High Voltage Areas (IBEXU)
- Wind Turbines (AGM)
- Filters (HP)
- Paint Cabinets (ISV)
- Escalators (Chiltern Fire)
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
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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
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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
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Products – Pump Systems

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

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Applications

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Applications – Key Applications

Offices / Archives / Museums

- Minimal water damage
- Safe environment / High cooling effect
- Easy retrofit
  No water storage requirements

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Applications – Key Applications

IT Areas / Telecommunication

- No area restrictions
- Smoke washing effect
- No constructural measures required
  Easy retrofit
- Optional in-cabitet protection
Applications – Key Applications

Industrial Applications

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

Cable Tunnels

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

**Mobile Systems**
- Industrial or fire brigade use
- Rapid intervention units
- Effective for small fires
- Various options
Applications – Reference Projects

Training Building of Heidelberger Druckmaschinen AG (Germany)
- Protection of the entire office building including the 44 m high atrium
- The water mist system compensates missing constructural fire protection measures
- 2800 nozzles
Clock Tower in Mekka (Saudi Arabia)

- Protection of the 2nd tallest building in the world (600 m)
- Protected areas are an astronomical museum, prayer areas and technical areas
- 2700 nozzles, 83 high pressure wall hydrants
Applications – Reference Projects

Castle Museum in Moers (Germany)
- Protection of the entire museum and the integrated theatre
- Integration of the pipes and nozzles into the heritage structure of the building
- 200 nozzles
La Fenice Theatre in Venice (Italy)
- Protection of the attic above the theatre hall
- Minimal water usage to protect the ancient ceiling of the theatre hall
- 220 nozzles
Applications – Reference Projects

Town Hall Cibeles in Madrid (Spain)
- Protection of the entire heritage building
- 1300 nozzles
Elbphilharmony in Hamburg (Germany)
- Protection of the concert hall
- Special fire protection concept with floor mounted nozzles
- 400 nozzles
Library in Trier (Germany)

- Protection of the entire library building
- 750,000 books from the last 1200 years with a total value of ca. 250 Mio. Euro
- 600 nozzles, 4 section valves, 12 high pressure wall cabinets
Library in Bilbao (Spain)

- Protection of the entire library building
- Integration of the pipes and nozzles into the heritage structure of the building
- 1200 nozzles, 10 high pressure wall cabinets
Technical Library in Prague (Czech Rep.)

- Protection of the entire library building
- Special nozzle arrangement for atrium protection
- 4200 nozzles
EMOC National Archive in Paris (France)

- Protection of 200 archives of each 200 m² and the adjacent office building
- Specific archive fire tests have proven the efficiency of the system
- 5500 nozzles
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
Main Station in Essen (Germany)

- Protection of all underground sales areas and technical rooms
- 900 nozzles
Applications – Reference Projects

Telecity in Frankfurt (Germany)
- Protection of a 6,000 m² data center
- 750 nozzles, 12 section valves
Applications – Reference Projects

Votteler in Stuttgart (Germany)
- Protection of a production and storage facility in a paint factory
- 3 % AFFF additive
- 700 nozzles, 33 section valves
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Applications – Reference Projects

Bayer Factory in Krefeld (Germany)
- Protection of the entire power distribution network of the factory
- 550 nozzles, 17 section valves
Applications – Reference Projects

Main Train Station in Cologne (Germany)
- Protection of the entire cable tunnel network under the train station
- 400 nozzles, 20 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
The smarter way of Fire Fighting