



**Sinorix™ high-pressure water
mist spray bar** - Freedom in design,
strength in safety

www.siemens.com/water-mist-fire-suppression

SIEMENS

Innovative fire protection for modern buildings

The Sinorix high-pressure water mist spray bar offers a new way to safeguard buildings by creating a dynamic curtain of fine water droplets that forms an effective thermal shield and smoke barrier. Using high-pressure water mist nozzles arranged along the bar, the system helps control smoke, heat, and fire spread at door opening and in corridors. The spray bar may be applied as part of a performance-based fire safety solution where conventional fire doors are impractical, subject to project-specific approval.



Enhanced safety through high-pressure water mist technology

Along the spray bar, micro nozzles are positioned at precise 25 cm intervals to ensure consistent, uniform coverage. Micro nozzles are installed at this defined interval to achieve uniform mist distribution across the opening, providing consistent interaction with smoke and heat flows and limiting their passage. When activated, the spray bar generates a water mist curtain that significantly reduces the transfer of smoke and hot gases across openings, helping maintain more tenable conditions for evacuation and fire-fighting operations.

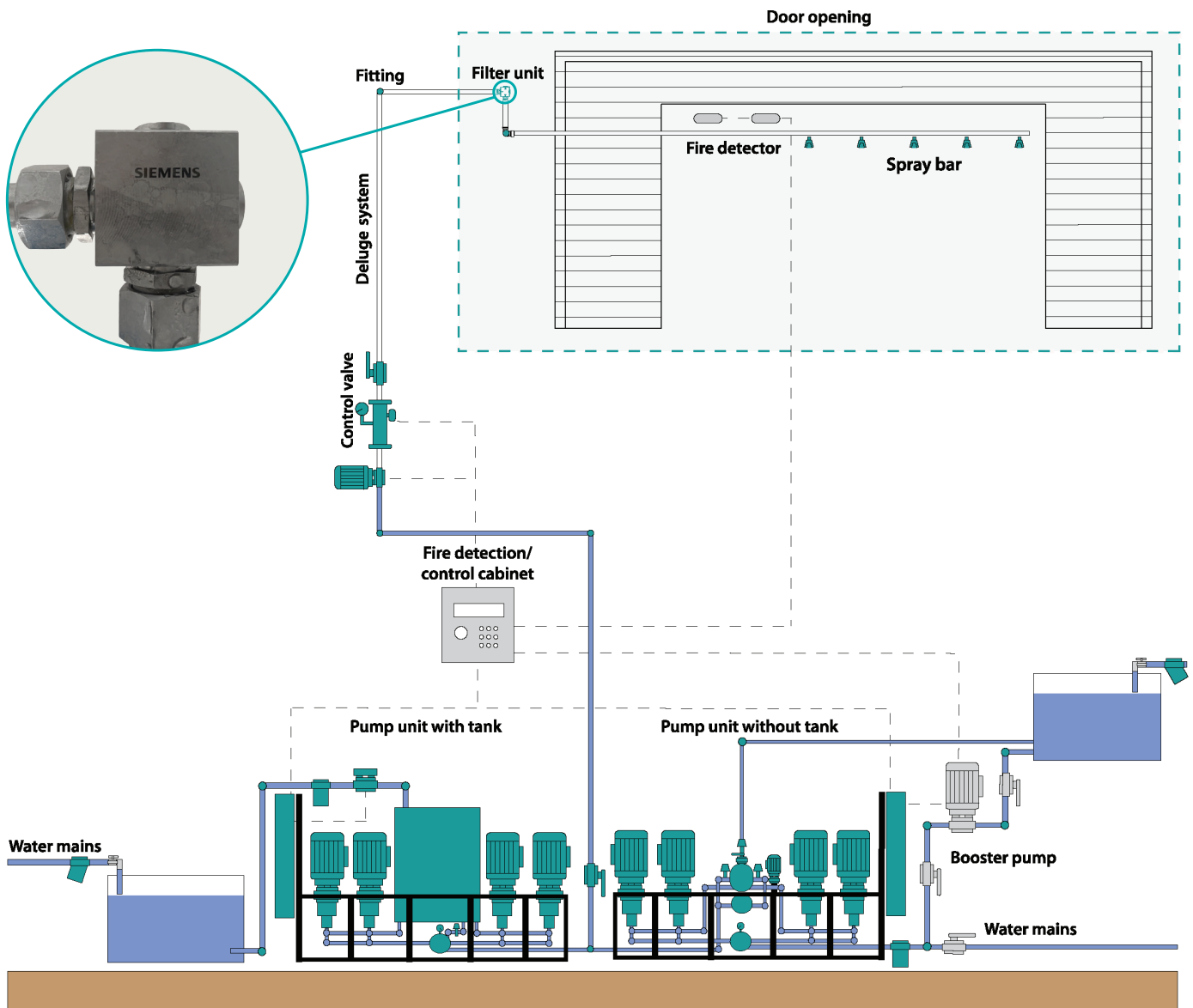


Sinorix high-pressure water mist spray bar creating a protective water mist curtain during fire demonstration

Reliable system activation

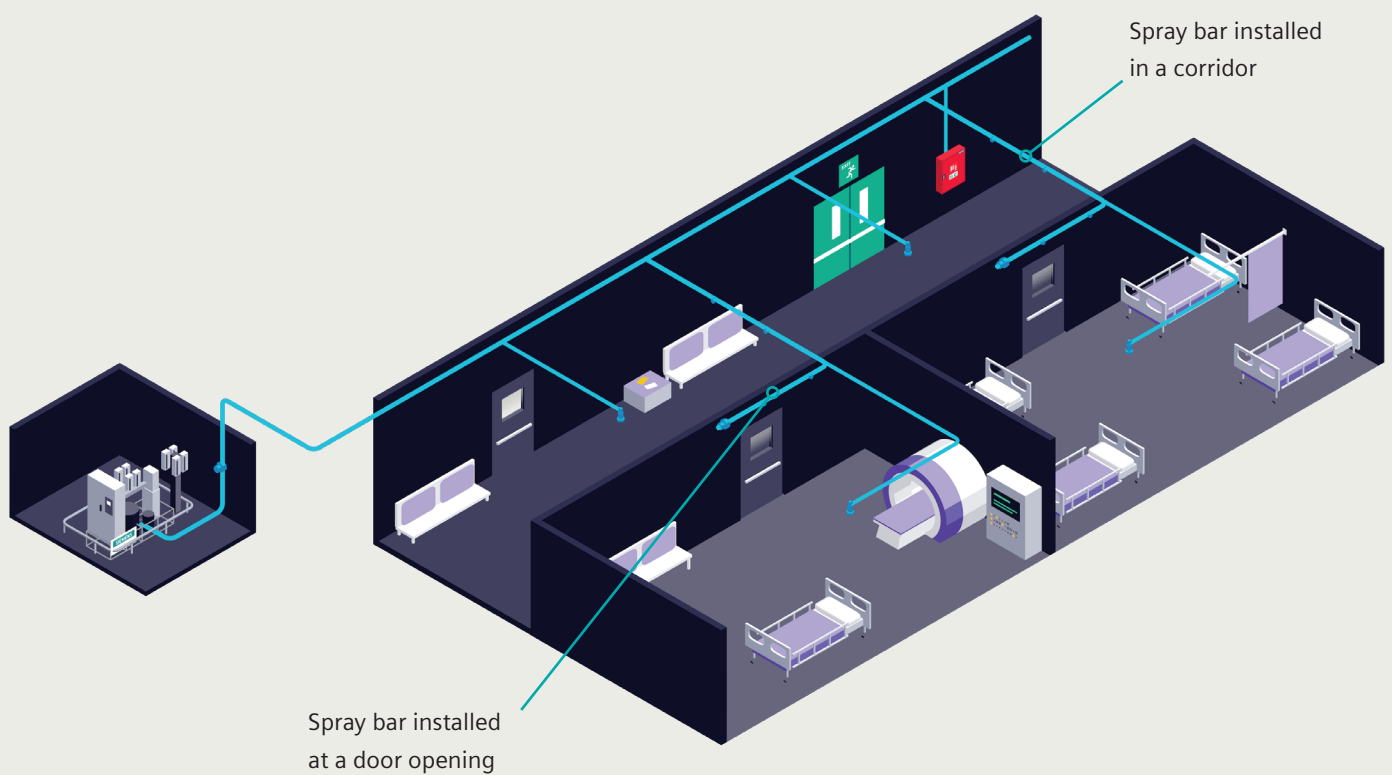
The Sinorix spray bar operates as a dry-pipe system with open nozzles. Water is supplied to the spray bar only when the system receives a signal from an automatic fire detection system, ensuring controlled and reliable activation.

Every spray bar installation includes a dedicated stainless steel filter unit that protects the micro nozzles from debris and maintains stable operating performance. The filter features a 100- μm mesh and is designed to handle high-pressure water flow, ensuring long-term reliability and easier maintenance.



Enabling performance-based fire design

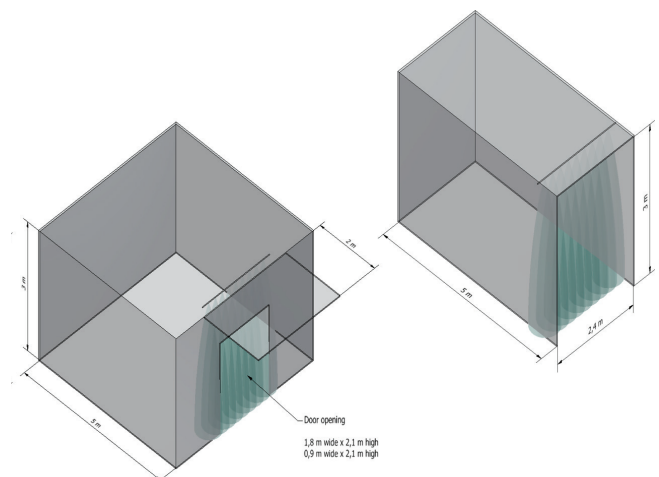
Designed for flexibility, the spray bar supports performance-based fire safety design in locations where conventional fire doors are impractical, subject to fire engineering assessment and approval. It is ideal for enhancing fire compartmentation in corridors and door openings, and it supports performance-based design by focusing on meeting performance criteria rather than one-size-fits-all prescriptive code. This approach allows the spray bar to adapt to a wide range of building layouts while preserving design intent. Used to control smoke and reduce heat radiation, the spray bar delivers efficient, modern fire protection for diverse architectural solutions while enhancing safer evacuation routes.



Successful fire test results

The performance of the spray bar has been validated through both fire and cold smoke tests. Fire tests were conducted in single (0.9 × 2.1 m) and double (1.8 × 2.1 m) door openings, as well as in a corridor set up.

All fire tests were successful, maintaining heat radiation below 2.5 kW/m² and temperatures below 60 °C. Cold smoke tests confirmed the spray bar's ability to limit smoke spread through openings, maintaining visibility of at least 10 meters.



Adaptable fire protection tailored to your architecture

The Sinorix spray bar is available in several standard lengths, enabling precise adaptation to a wide range of applications. For longer coverage, multiple spray bars can be connected with straight couplings or tee fittings, while maintaining the required spacing between micro nozzles. This modular approach allows designers to create continuous water mist barriers tailored to the project's specific architectural and performance requirements.

Key applications



Room fires: Creates tenable conditions on the non-fire side of the door to allow evacuation and contain the fire.

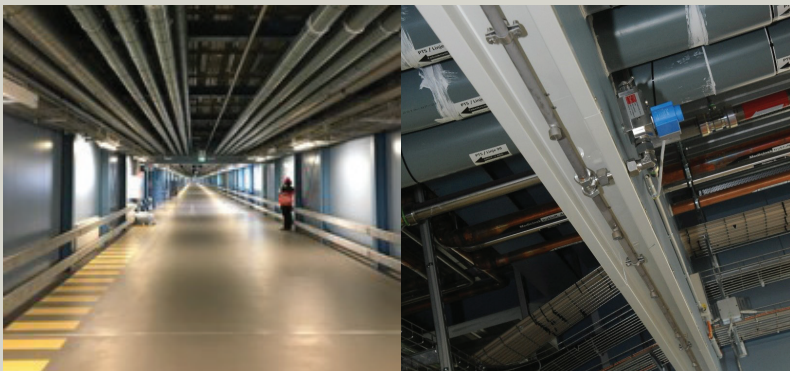


Corridors: In corridors, the spray bar can serve as a compensatory measure within a performance-based design, reducing heat transfer and limiting smoke spread where permitted by local regulations.



Conveyors: Used to protect dedicated sections of conveyor systems.

Validated performance in real-life applications



The Sinorix high-pressure water mist spray bar protects an 875-meter-long logistics corridor at a Danish super hospital.



The Sinorix high-pressure water mist spray bar is installed at the door opening of Fredheim senior care home in Norway.

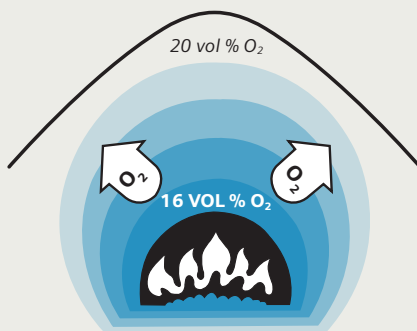
The intelligent use of water

How does it work?

Fire requires three elements of the “fire triangle” to ignite and burn: oxygen, heat, and combustible material. Removing any one of these elements will extinguish a fire. The Sinorix high-pressure water-mist system goes further. It attacks two elements of the fire triangle: oxygen and heat. The unique feature of the high-pressure water mist is that it combines the suppression effects of gas and sprinkler systems. In addition to removing oxygen-like gas systems, it simultaneously cools the fire, as a traditional sprinkler does. The cooling effect also lowers the risk of re-ignition.

Oxygen

The very small droplets in a high-pressure water mist system quickly absorb so much energy that they evaporate and transform from water to steam due to their high surface area relative to their small mass. This means that each droplet will expand more than 1,700 times as it approaches the combustible material, displacing oxygen and combustible gases, thereby reducing the oxygen locally, at the vicinity of the fire.

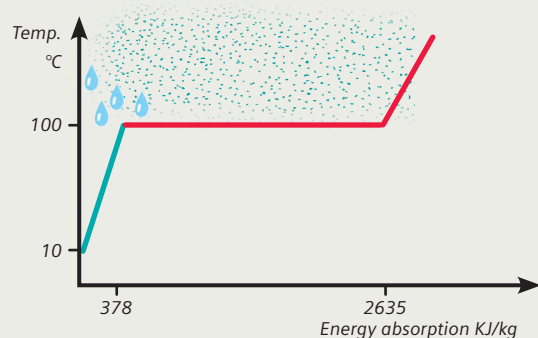


Heat

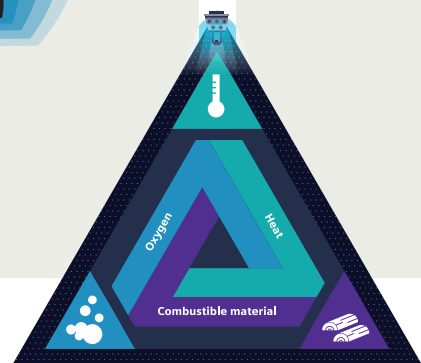
To fight a fire, a traditional sprinkler system disperses water droplets over a given area, which absorb heat to cool the room. Because of their large size and relatively small surface area, most of the droplets will not absorb enough energy to evaporate and quickly fall to the floor as water. The result is a limited cooling effect.

By contrast, high-pressure water mist consists of very small droplets that fall more slowly. Water mist droplets have a large surface area relative to their mass and, during their slow descent toward the floor, absorb much more energy. A large portion of the water will follow the saturation line and evaporate, meaning that water mist absorbs much more energy from the surroundings and thus from the fire.

That's why high-pressure water mist cools more efficiently per liter of water: fine water mist droplets provide efficient heat absorption per unit volume of water, particularly in fire scenarios that promote rapid evaporation.



Water mist cooling effect per kg water
Traditional sprinkler cooling effect per kg water



Key components of the Sinorix system

The Sinorix high-pressure water mist system integrates advanced fire suppression technology through a comprehensive set of components, including a high-pressure modular pump unit, section valves, specialized nozzles, press fittings, and a stainless-steel piping network.

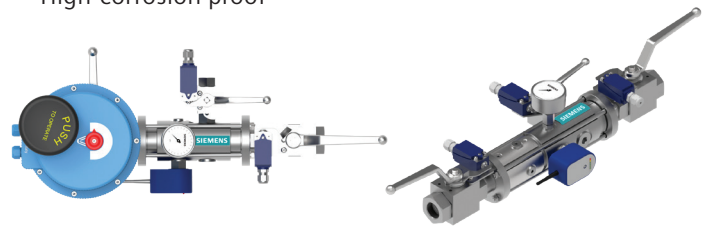
Sinorix high-pressure water mist nozzle

- 100% capacity and spray pattern tested
- Provides rapid cooling and smoke absorption
- Low water consumption minimizes water damage



Sinorix high-pressure water mist section valve

- Easy servicing, installation, and testing
- Types: wet, pre-action, deluge
- High-corrosion proof



Sinorix high-pressure water mist pump unit

- Durable and compact design
- Low energy consumption
- Lubricated by water, making the pump maintenance-free



Sinorix high-pressure water mist pipes and fittings

- Lightweight thin-wall piping
- Quick and flexible installation
- Corrosion-resistant contact surfaces



Sinorix high-pressure water mist spray bar

- Controls smoke and heat
- Enables architectural freedom
- Enhances conditions for safe evacuation within minutes



Sinorix high-pressure water mist fire hose reel cabinet

- Directly integrated into the high-pressure water mist system
- Large coverage (30m) and easy to operate
- Tested against Class A (solid-fuel) and Class B (flammable-liquids) fires



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