

**Marioff HI-FOG® high-pressure
water mist fire suppression.**

**Fire protection
for Data centers**

Fire suppression for data center business continuity

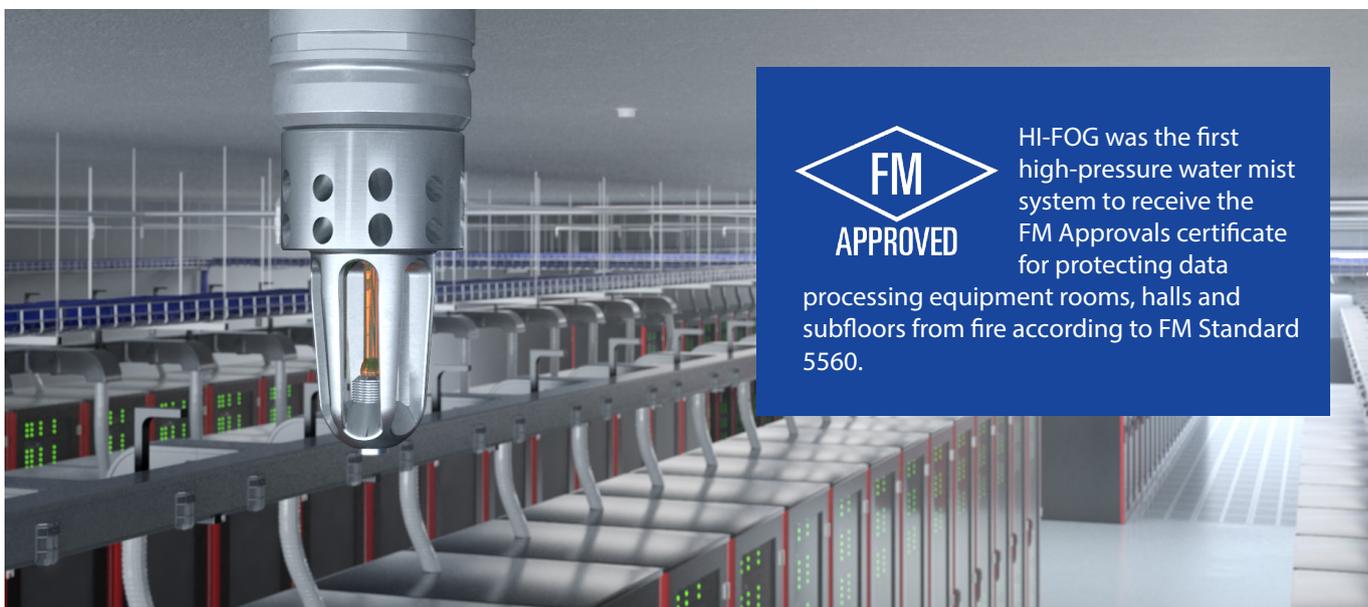
Data keeps businesses running, so no compromises can be allowed in data center safety. Fire suppression in large data centers can be challenging due to high air flow and the increased power density of servers.

At Marioff, we have the expertise to design and manage complex and large data center projects. We consider the specific concerns and requirements derived from economic, environmental, and regulatory factors.

The HI-FOG water mist fire suppression system controls and suppresses fire by discharging a fine water mist at high velocity, creating significantly less water damage than other conventional sprinkler systems. Together, we'll find the best solution for fire suppression in your data center.

The HI-FOG solution protects the entire facility with a single system:

- Server areas
- Subfloors
- Offices
- Warehouses
- Emergency power
- Electrical supply
- Refrigeration
- Cables
- Generator enclosures
- UPS battery rooms
- Lithium-ion batteries



HI-FOG was the first high-pressure water mist system to receive the FM Approvals certificate for protecting data processing equipment rooms, halls and subfloors from fire according to FM Standard 5560.

Benefits of the HI-FOG fire protection system

With Marioff, not only do you get a high-quality fire suppression system, but also a complete end-to-end solution with professional support every step of the way, from design and turnkey deliveries to upgrades.

The HI-FOG system offers four main benefits:

Business continuity

The HI-FOG system controls and suppresses fire by discharging a fine water mist locally, causing significantly less water damage than conventional sprinkler systems.

Flexible system design

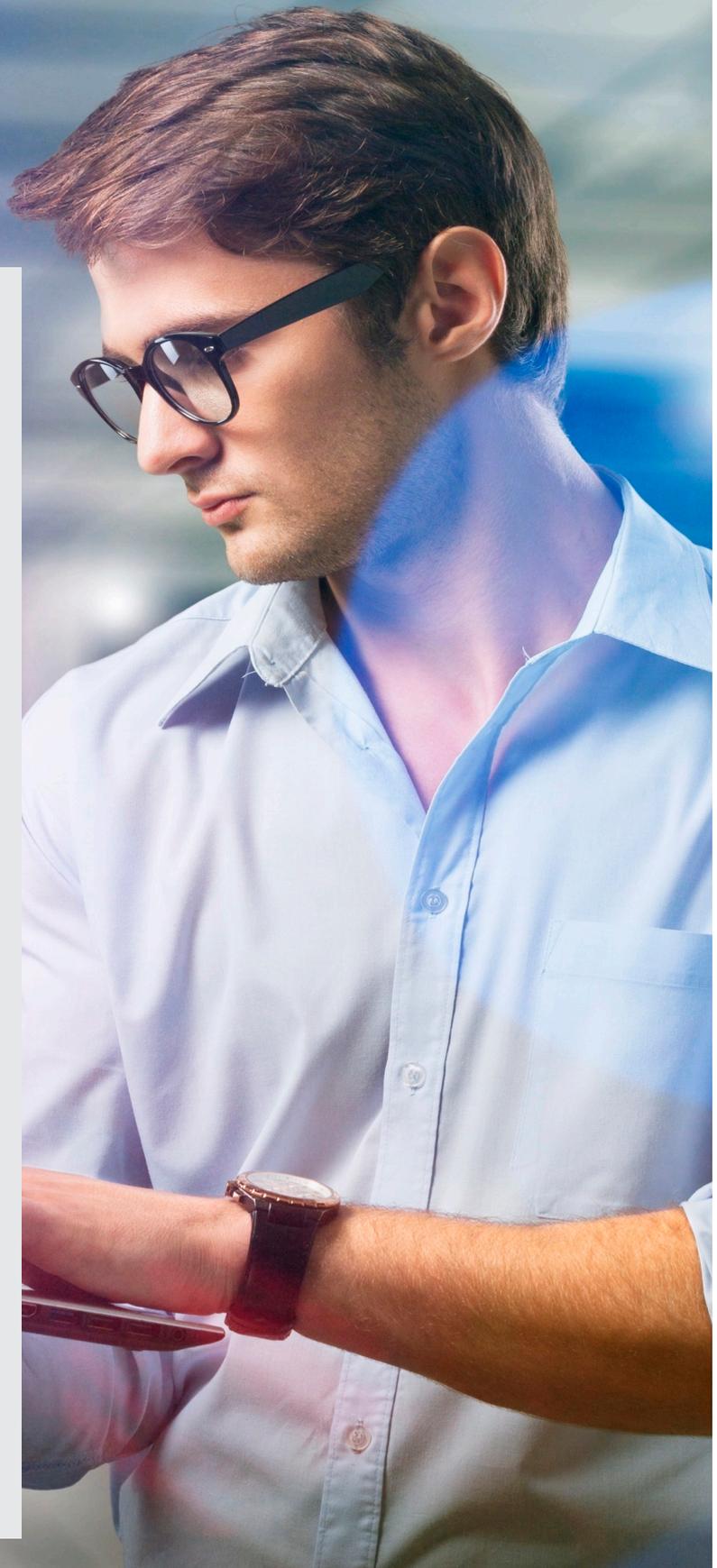
If spaces need to be altered after the installation, the HI-FOG system can be modified easily. You can also extend the system to protect new areas when your data center is expanding without needing to alter the plant room and add equipment.

Proven performance

Thousands of full-scale fire tests performed on our products ensure that the performance of HI-FOG systems is top-quality. The system only activates in real fire situations, reducing false activations to almost zero.

Sustainability

The HI-FOG system protects your data center and personnel without harming the environment. The system uses pure water, so it is safe to use, and it consumes minimal power in stand-by mode.



Your safety is our expertise

As the pioneer of water mist fire protection technology, we have experience in installing fire protection systems for new or existing data centers.

Today, the HI-FOG system protects hundreds of data centers around the world for telecom operators, service providers, banks and other financial market operators. We provide peace of mind to data centers.

NorthC Datacenters, Groningen and Eindhoven, the Netherlands

NorthC Datacenters is the largest regional data center business in the Netherlands. The HI-FOG fire suppression systems were chosen to protect their Groningen and Eindhoven sites from fire.

NorthC Datacenters Groningen, a Tier 3 facility

The facility at Groningen is a multi-tenant data center with customers across industries. One significant client is Overheids Datacenter (ODC) Noord, one of the four government data centers in the Netherlands, underscoring the need for uninterrupted operation. Groningen is a Tier 3 facility with 1,000 m² of space to protect. The facility is in a quickly developing digital ecosystem in the northern region of the Netherlands.

Business continuity at NorthC Groningen, as for all data centers, is paramount. Fire suppression in the facility is particularly challenging because of the need for the high airflow and high-power density.

NorthC, Groningen





NorthC Datacenters Eindhoven needed a reliable fire protection system for their Tier 4 certified site.

NorthC Groningen ultimately chose the HI-FOG system, through Marioff's partner FireX, as the fire suppression solution to protect their critical infrastructure with a complete suppression and detection system. The HI-FOG system discharges high-pressure water mist that effectively suppresses, controls and cools fires. It uses less water than traditional sprinkler systems, minimizing water damage in the event of fire and reducing the possibility of a false discharge when compared to gas suppression.

The first carbon-negative data center with Tier 4 certification

The NorthC Datacenters facility at Eindhoven is the first carbon-negative data center in the world that also holds a Tier 4 certification, the highest guarantee of reliability possible.

Eindhoven's Tier 4 certification means that failure of their digital systems must be avoided at all costs. All systems and installations at the 1,200 m² facility must be redundant and separate.

This meant thinking through the fire protection plan from the ground up, while simultaneously meeting the fire suppression challenges of high airflow and power density presented by data centers. Finally, Eindhoven's commitment to cradle-to-cradle sustainability principles meant accounting for water usage.

The fire safety concept for the facility was developed in collaboration with RHDHV and FireX. For Eindhoven, detection was made highly sensitive, with automatic and localized discharge to protect the data center's business continuity – a tailor-made, premium fire protection solution for protecting the most critical data.



Telia Helsinki Data Center, Helsinki, Finland

Telia is a media and technology company operating in 17 countries, with one third of all internet traffic in the world passing through Telia's backbone network. Telia Helsinki Data Center is a world-class data center located in Helsinki, Finland – the most modern and energy-efficient data center in the country.



Fire protection in an urban data center

Choosing a reliable and effective fire safety solution is a critical facet of securing customer data, equipment and business continuity. For effective fire protection, Telia needed a facility-wide solution to prevent, quickly detect, and effectively extinguish fires.

Telia Helsinki Data Center stretches across 33,500 square meters, housing 5,000 server racks with 20,000 servers. The facility is located in an urban area with limited operating space, so a compact fire protection solution was required.

The HI-FOG Solution

Telia chose the HI-FOG high-pressure water mist fire protection solution, powered by an Electric Pump Unit, to protect the facility – including white space, technical space, and offices.

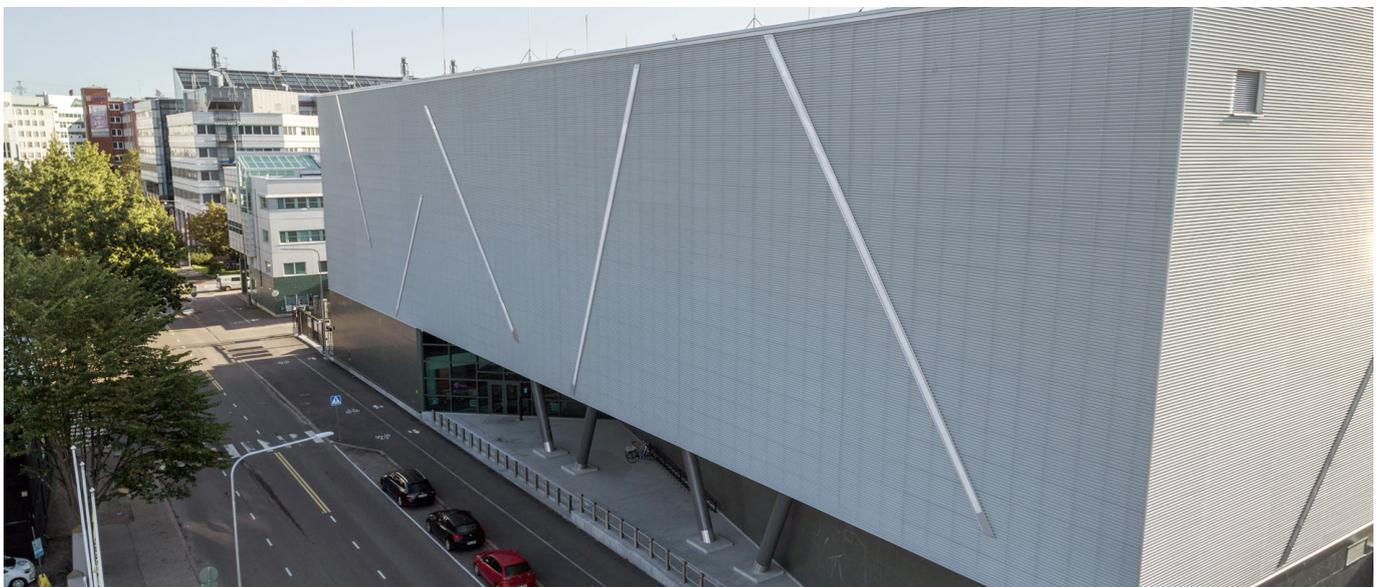
The system uses small amounts of water, meaning it is safe for people, has minimal impact on server hardware, and is sustainable. It has a pre-action security mechanism, which helps to prevent accidental water leakages and false discharges.

The water mist can be discharged locally, and functions in the ventilated areas and narrow spaces under raised data hall floors. The system's small footprint and piping made installation in these cramped spaces possible.

Results

Marioff's expertise and experience in the data center environment as well as the benefits of the HI-FOG system's low water usage and localized suppression made it an easy choice for Telia. When comparing total costs for the initial investment and operation costs, the HI-FOG system's costs were lower in comparison to gas-based systems. Telia's customers also appreciate the HI-FOG solution's FM approval for data center use.

The initial project included 3-D HI-FOG system design, engineering, project management, materials, commissioning and maintenance agreement. The large and complex project was executed on schedule and on budget, equipping Telia Helsinki Data Center with a reliable fire suppression solution that will last for decades.



Lifetime support

Marioff-certified service engineers help you to maintain your HI-FOG system and to operate it economically – from commissioning to upgrades and extensions. They train, operate and maintain HI-FOG systems according to applicable FM and VdS Approvals, NFPA Standards and local requirements. Your personnel can also get custom-made training programs to deepen and refresh their knowledge of the system.

Every hour of every day, our dedicated service call center reacts promptly to your needs and provides quick action. As the original manufacturer of core HI-FOG components, we offer an extensive spare parts availability. Our strategically-placed and well-stocked service hubs make it possible for us to deliver spare parts fast.

We are at your service all over the world.

Marioff is a leading developer of water mist fire protection technology and supplies system solutions worldwide. The company's innovative HI-FOG water mist fire protection system controls and suppresses fire using significantly less water than conventional sprinkler systems, reducing water damage, cleanup time and operational downtime. For more information, visit www.marioff.com.

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Your safety is our expertise.