

# Mission-critical fire protection

*HI-FOG<sup>®</sup> for large data centres*





# Modern fire protection



# for a data-driven world

The HI-FOG® water mist fire protection system delivers efficient fire protection for your mission-critical facilities.

In case of fire, it safely controls and efficiently suppresses the fire with small amounts of pure water while minimizing damages and keeping the business downtime to an absolute minimum.

The operational strength of HI-FOG® is reflected by the numerous data centres around the world currently fitted with HI-FOG®.

The HI-FOG® water mist fire protection system controls and suppresses fires by discharging a fine water mist at high velocity. The water mist is made by discharging plain, potable water at high pressure through specially designed, patented HI-FOG® sprinklers and sprayheads.

HI-FOG® blocks radiant heat and cools the surroundings, preventing the fire from spreading or reigniting and causing damage to surrounding structures. This is achieved with remarkably little water: HI-FOG® uses up to 90% less water than conventional sprinkler systems.

Fire, water, smoke and heat damage are minimized. Clean-up is fast. Business downtime is kept to an absolute minimum.



#### HI-FOG® protects the total facility from fire:

- Server areas
- Sub-floors
- Back-up power generator areas
- Chiller/HVAC rooms
- Storage rooms
- Electrical rooms
- Common areas: corridors, meeting rooms, offices

#### A typical HI-FOG® system for data centres consists of:

- A high-pressure pump unit
- A small water supply tank (optional, depending on requirements)
- Section valves
- Small-diameter stainless steel tubing
- Fast-activating HI-FOG® sprinkler or sprayheads

# Meeting the needs of da

## Minimized business disruption

Interruption of normal operations caused by a fire comes at a premium cost. Minimizing downtime is crucial.

The effective fire fighting of HI-FOG® minimizes potential damage from both fire and water. It has no additives or corrosion related contamination.

Furthermore, HI-FOG® system discharge is always localized, i.e. the system discharges only at the point of fire.

## Operational reliability

Marioff continues to make significant investments into research and development to improve the components and system performance.

The risk of leakages and false discharges is minimized by the use of high quality materials and various system configuration options.

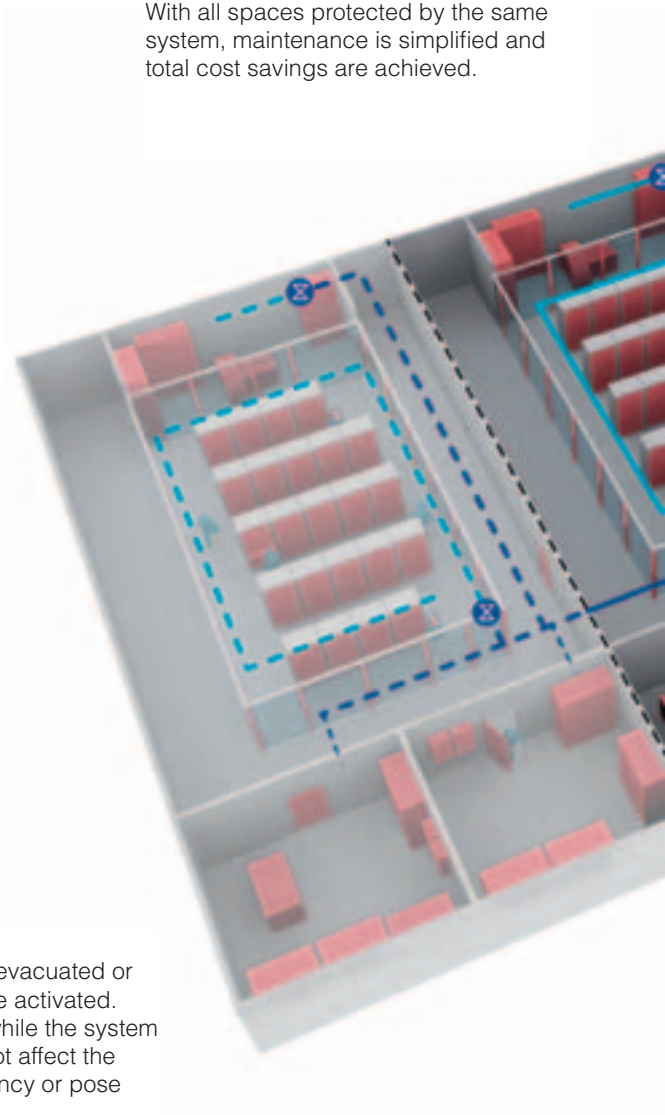
## Safety

Spaces do not need to be evacuated or closed off for HI-FOG® to be activated. Premises can be entered while the system is discharging as it does not affect the system's fire fighting efficiency or pose any risks to human life.

## Total facility fire protection

Through extensive R&D HI-FOG® has become a high performance solution well suited to protect all spaces of a modern data centre.

With all spaces protected by the same system, maintenance is simplified and total cost savings are achieved.

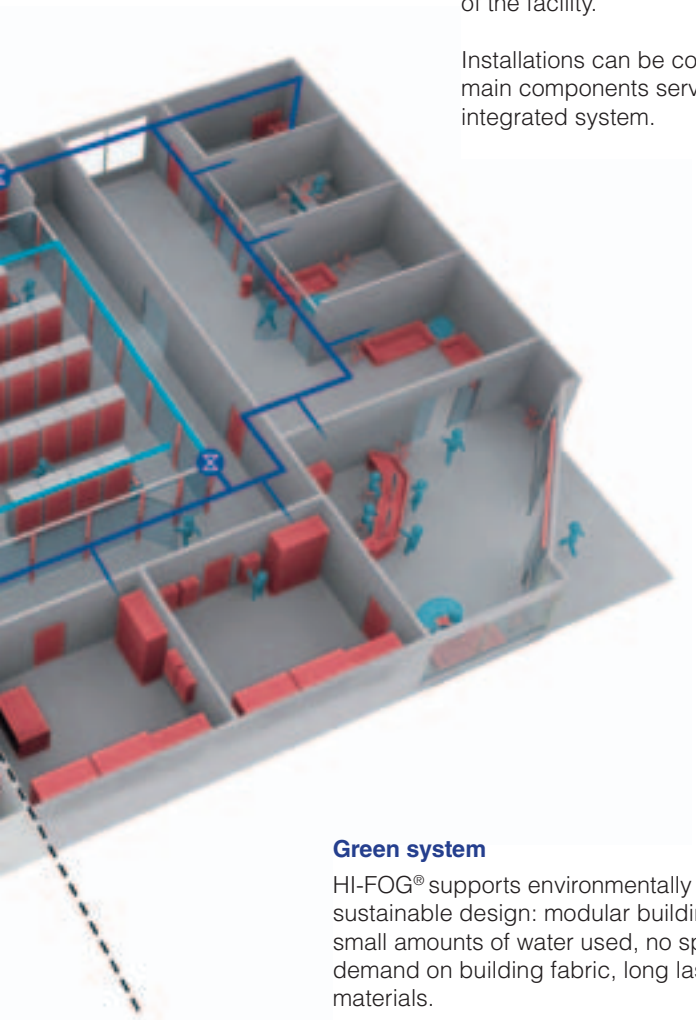


# ta centre fire protection

## Scalable

HI-FOG® supports the modular building concept of a data centre. HI-FOG® is easily expanded to cover the new phases of the facility.

Installations can be combined with same main components serving the entire, integrated system.



## Flexible installation

Thanks to its compact design, HI-FOG® fits well with other equipment. It requires little space due to small-diameter tubing, compact pump units and small water tanks.

HI-FOG® has no enclosure integrity requirements, gas-tight spaces are not required in order to ensure proper system functionality.

## Green system

HI-FOG® supports environmentally sustainable design: modular building, small amounts of water used, no special demand on building fabric, long lasting materials.

HI-FOG® features may even be beneficial in helping data centres fulfill the requirements of green building certificates.

# Protecting data centres globally



## Examples of Marioff customers:

- Colocation service providers
- Banks and stock exchanges
- Telecom operators
- Industrial companies
- Military



## Telecity IV data centre

A wet-pipe HI-FOG® system protects the high-value spaces: five server halls and the power generation areas. Both the “hot” and “cold” aisles are protected in the data spaces.

HI-FOG® was selected over competing technologies because it could be used to protect all the identified risk areas.

## TCN Eemsdelta data centre

This facility is the largest and most advanced data storage and hosting centre in the Netherlands, with free air cooling and green energy technology.

HI-FOG® protects the majority of the building. It was chosen for its performance, economic feasibility and suitability for the location.

## CX2 Cyberjaya science township

This data hotel, the largest of its kind in South-East Asia, provides outsourcing services with two interconnected wings of 5 and 6 storeys.

A HI-FOG® system composed of wet-pipe, deluge and pre-action sections protects roughly 95% of the facility: 9,000 m<sup>2</sup> of server areas, sub-floors, a back-up power generator room, electrical rooms, UPS rooms, offices and public areas. The system comprises an SPU4 pump unit, 2,800 HI-FOG® sprinkler heads and spray heads, and 17 section valves.

## Examples of countries with HI-FOG® protected data centres:

• United Kingdom • The Netherlands • France • Spain • Germany  
Switzerland • Sweden • Finland • United States • Thailand • Malaysia

# A trusted partner

Marioff offers a range of professional services to help you maintain your HI-FOG® system and operate it in the best way possible.

We offer after-sales support and services all around the world. Along with comprehensive systems and components support, we also provide training to all our customers.



## Design & project management

Marioff designs the right HI-FOG® system for each data centre that is optimized for the specific needs and demands of the facility. A Marioff project manager ensures smooth and correct system delivery.

## Installation

Marioff is expert at installation in various environments world-wide. The full range of our experience will be placed at your disposal in the project planning stages. The installation is scheduled in accordance with your operations with minimal disruption.

## Marioff Services

Marioff provides annual, 5-year and 10-year service packages. All activities are performed by certified service engineers who have deep understanding of HI-FOG® systems

Monitoring and regular checks help ensure the system operates as expected. Marioff offers basic operator training to all HI-FOG® customers. Each training is tailored based on the customer-specific HI-FOG® installation.

As the original manufacturer of HI-FOG® components, the system will be well supported with the timely supply of top-quality spares.

## Tested and approved

HI-FOG delivers the performance and reliability needed to protect data centres from fire. With thousands of full-scale fire tests completed, HI-FOG® is the world's most tested water mist solution.

HI-FOG® has been tested across a wide variety of applications and holds a large number of type approvals from recognized approval authorities.



HI-FOG® 1000-series  
sprinkler



HI-FOG® 2000-series  
sprinkler



HI-FOG® spray head



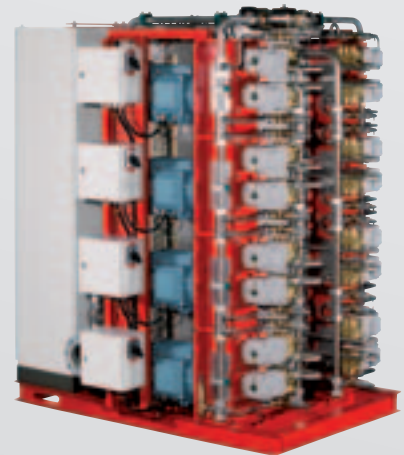
Shown actual size: 12 mm tube to the HI-FOG® sprinkler/spray heads



Shown actual size: 30 mm tube



Gas-driven pump unit (GPU)



SPU8 electric pump unit. Provides constant flow of 140 bar pressure during activation. Can be reset quickly and automatically after a discharge.



A UTC Fire & Security Company

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