HI-FOG®
water mist fire protection

# Fire fighting excellence

*HI-FOG® water mist fire protection*

Marioff
United Technologies

# Protecting people, property and business continuity

Marioff is the world's largest supplier of water mist fire protection technology, with unrivalled experience supplying system solutions worldwide under the brand HI-FOG®.

HI-FOG® is suitable for most types of fires on land and at sea. It safely controls and suppresses fire by discharging a fine water mist at high velocity, using significantly less water than conventional sprinkler systems.

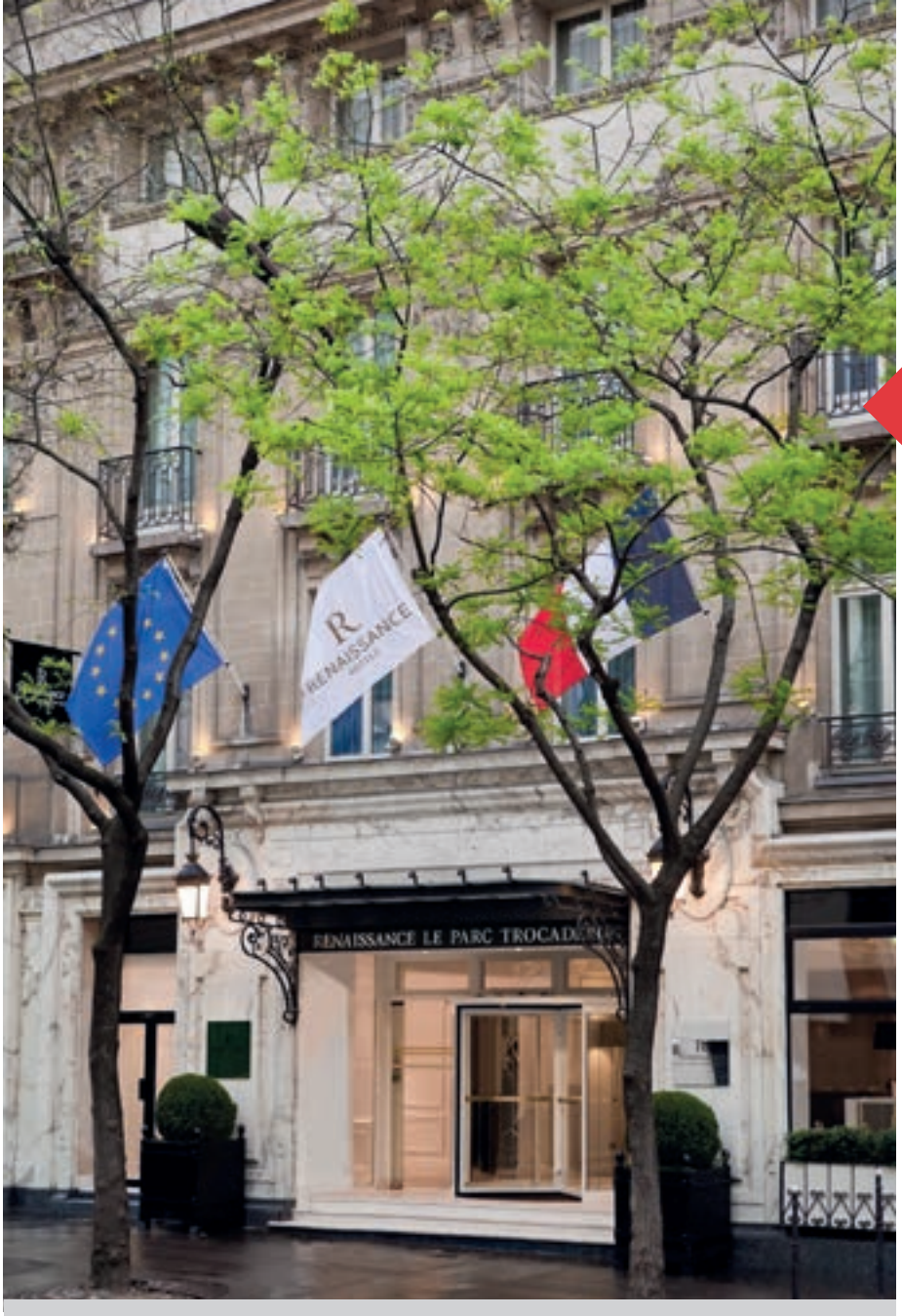
**Relentless fire testing**

Marioff is renowned for its unyielding commitments to innovation. As the pioneer of the water mist fire suppression technology, Marioff helped establish the industry standards and continues to develop leading solutions in close cooperation with local and international regulatory authorities.

Since its launch in 1991, HI-FOG® has received over 100 type approvals as a result of thousands of full-scale fire tests conducted. Each installation benefits from Marioff's deep understanding of how fire behaves, providing customers peace of mind the world over.

**HI-FOG® provides fire protection for:**

- Commercial buildings
- Industry & energy
- Marine & offshore




## Case - sleep easy

Marriott International, Inc., is known for its strict life safety requirements and rigorous inspection program. Marriott's Fire Protection and Life Safety Design Standards recognize HI-FOG® as a practical alternative to traditional sprinkler systems. The flexibility and performance of HI-FOG® enable it to be used in a range of applications, both in new structures and retrofits.

**Experience you can rely on**

Marioff has unrivalled experience in protecting people, property and business continuity on land and at sea.

Today, HI-FOG® safeguards many of the world's most well-known buildings, machinery spaces and largest cruise ships. The greatest reward is the growing list of fires successfully suppressed or extinguished by HI-FOG®.

# High performance fire prote

HI-FOG® delivers the performance and reliability needed to ensure operational continuity on land and at sea. Using small amounts of pure water, HI-FOG® effectively fights fire while remaining harmless to people and the environment. HI-FOG® helps ensure downtime after a fire is kept to a minimum.

**HI-FOG® water mist in action**
HI-FOG® uses significantly less water than traditional sprinkler systems for the same application with equivalent or better performance.

The system discharges a very fine water mist as a high-pressure fog, which as such blocks radiant heat and absorbs heat efficiently through evaporation, cooling the surroundings and minimizing the collateral damage fire can cause.

**Safe for people and the environment**
HI-FOG® uses pure water mist as a suppression agent which is entirely harmless to people and the environment. Spaces do not need to be evacuated or closed off for the system to be activated, and they can also be entered while the system is discharging as it does not affect the fire fighting efficiency or pose risk to human life.

**Easy implementation**
Designers, consultants, architects and installers find HI-FOG® remarkably easy to work with. Narrow tubing that can be bent into position on-site, compact pumps and discrete spray or sprinkler heads fit into retrofits as easily as new structures.

**Save with HI-FOG®**
HI-FOG® leads to real savings on the bottom line. Costs can be cut by including HI-FOG® in the early design phases of a project.

HI-FOG® even brings with it a freedom to design without the restrictions of more conventional approaches. For example, HI-FOG® allows architects to create bigger open spaces and can even eliminate the need for passive fire protection measures like fire rated windows, special coatings, and fire curtains.

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## Case – industrial protection

swb AG operates power generation facilities at four sites in the Bremen metropolitan area, with a total installed capacity of over 1,000 megawatts.

The main cause of fire in this coal-fired power plant is the conveyor belt system. If the moving belt gets stuck, significant heat is generated which can cause the belt to set fire. A conveyor belt that has caught fire continues to move down the corridor, putting the entire space at risk.

HI-FOG® protects 460m of elevated corridors with a single MSPU13 pump unit, 370 spray heads and 15 section valves. HI-FOG® spray heads were installed in two positions along each corridor to discharge water mist at high pressure from both the ceiling and walls to assure complete coverage of the conveyor belts as well as power cables that run along the ceiling of the corridors. Thanks to HI-FOG®, fire-caused disruption to business and customer power supply is minimized.

**HI-FOG® key benefits:**

- **Fast:** immediate activation and rapid cooling
- **Safe:** harmless to people and the environment
- **Proven:** success in countless tests and real fires
- **Low water usage:** minimized damage

# Water savings

In a controlled demonstration, one HI-FOG® nozzle discharged around 380 liters (100 gallons) of water in 30 minutes using a gas-driven pump unit.

A traditional sprinkler system, in turn, discharged some 3,600 liters (951 gallons) from a single nozzle within the same time period.


# Lifecycle commitment

HI-FOG® is backed by a team of professionals who share a commitment to help create safe environments for a true peace of mind.

Marioff along with its authorized distributors offer complete dedication from system design through delivery and services, even in the most challenging projects.

**Ensuring operational reliability**
Marioff supports its customers throughout the lifecycle of its installations. Marioff Services extend from rapid delivery of spare parts and fully optimized maintenance, to turnkey system upgrades and customized, long-term service agreements.

The commissioning of the system is carried out by skilled service engineers in order to ensure compliance with design specifications. Preventive maintenance, troubleshooting and 24-hour emergency service are all designed to ensure rapid response times worldwide.


## Case - cruise control

At 220,000 gross registered tons, Oasis of the Seas, operated by Royal Caribbean Cruises Ltd., is 40 percent larger than any other cruise ship ever built. Providing fire protection for a vessel of this size required a seasoned project management team and fire safety solutions that meet the highest industry standards, while also minimizing space and weight requirements. Today, Oasis of the Seas and its sister ship Allure of the Seas, are protected by HI-FOG®.

**Dedication to quality**

To maintain high standards of quality, Marioff controls the entire system development process. Raw materials are obtained only from selected suppliers who can ensure the best grades. Manufacturing of key components is carried out entirely in-house.

Every installation of HI-FOG® is taken seriously. A proactive approach is used in each case, assisting in finding the right combination of fire fighting measures, taking care of approvals – whatever is needed ensure customers and their business are protected as best possible.

HI-FOG® 2000-series sprinkler

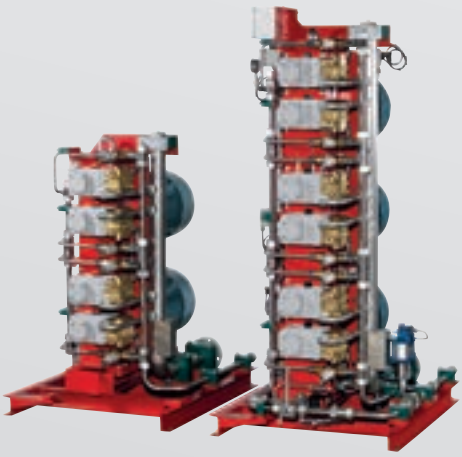
The HI-FOG® system uses small diameter stainless steel tubes.

HI-FOG® 1000-series sprinkler

The high quality HI-FOG® tubing bends easily around corners and obstructions

HI-FOG® sprayhead

HI-FOG® gas-driven pump unit (GPU)



HI-FOG® modular electric pump unit (MSPU)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