

 **HI-FOG[®]**
water mist fire protection



Marijff
A UTC Fire & Security Company

Key land-based business segments & applications

Buildings & Construction



Transportation & Infrastructure



Industry & Energy



HI-FOG® land references

Light and ordinary hazard applications

- Hotels
- Hospitals
- Nursing homes
- Airports
- Offices
- Data centres
- Museums and heritage buildings
- High-rise buildings
- Aircraft hangars



Hotels



HI-FOG on Land



Rome Marriott Park, Rome, Italy

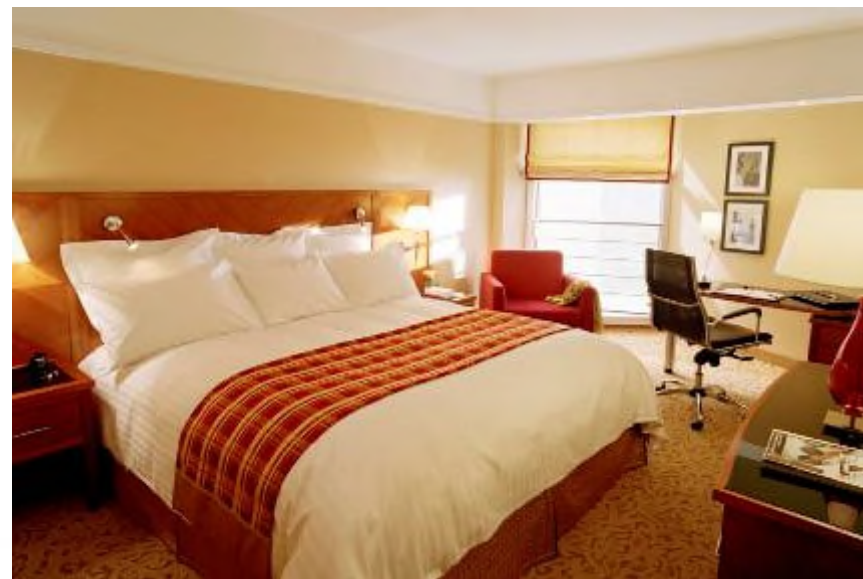


HI-FOG on Land

St. Pancras, London, UK



HI-FOG on Land



Hotel Rive Gauche, Paris, France

Safeguarding almost 100 luxury hotels (Short selection)

- Marriott Regents Park, London
 - Best Western, Venice
 - Radisson SAS, Paris
 - NH Hotel Eurobuilding, Madrid
 - Le Meridien Etoile, Paris
 - Luxury Collection Danieli, Venice
 - Palazzo Genovese, Venice
 - Renaissance Penta, Vienna
 - Ritz-Carlton, Abaco Club, Bahamas
 - Four Seasons, Firenze
- Marriott 47 Park Street, London
Renaissance Rive Gauche, Paris
Sheraton Golden Gate, Prague
Arctic Circle Hotel, Suomulahti
Renaissance La Defense, Paris
Marriott Giardini Naxos, Taormina
Renaissance, Amsterdam
Marriott Park Hotel, Rome
Luxury Collection Gritti Palace, Venice
Holiday Inn, Rue Danton, Paris





Protecting Hospitality (Short selection)



THE LUXURY COLLECTION®



FOUR SEASONS
Hotels and Resorts



RENAISSANCE®

Scandic



High-rise residential

- Cirrus, Helsinki, Finland's tallest residential building
 - 28 floors
 - 1,000 HI-FOG® sprinklers
 - Donau City Tower, Vienna, Austria
 - 9,000 HI-FOG® sprinklers
 - Tallest building in Austria, 55 floors
 - 2 x 60 mm riser pipes (vs 9 x 150-200 mm riser pipes for conventional sprinkler)
 - 150 m³ water tank (vs. 1000m³ for conv. Sprinkler)
- *Less space needed for risers*
 - *No booster pumps needed*
 - *Less water damage compared to traditional sprinklers*



High-rise buildings



Zoofenster, Berlin

**Donau City Tower 1
Vienna**



Roche Tower, Basel

**Spire Tower
Warsaw**



Office buildings and universities



- Head Office of BP
- Germany, Bochum



- Nordea bank office, Helsinki



- University library, Germany



- Domus University, Oslo, Norway

Hospitals



- University Hospital Muenster, Germany
- Currently protecting bedroom towers
- 48 section valves
- 3,200 HI-FOG® sprinklers



- North Karelia Central Hospital, Joensuu, Finland
- 60,000 m²

- *Less water damage*
- *Easy installation*
- *Pure, clean water*

Nursing homes



- Koukkuniemi (Tampere, Finland)
- 11 buildings
- Service building and canteen
- 600 m long service tunnel



Airport references

- Hungary, Budapest, The Ferihegy Airport terminal 1
- One of oldest airport terminal in the Europe still in service
- Renovation project guarded by Hungarian heritage building conservation centre



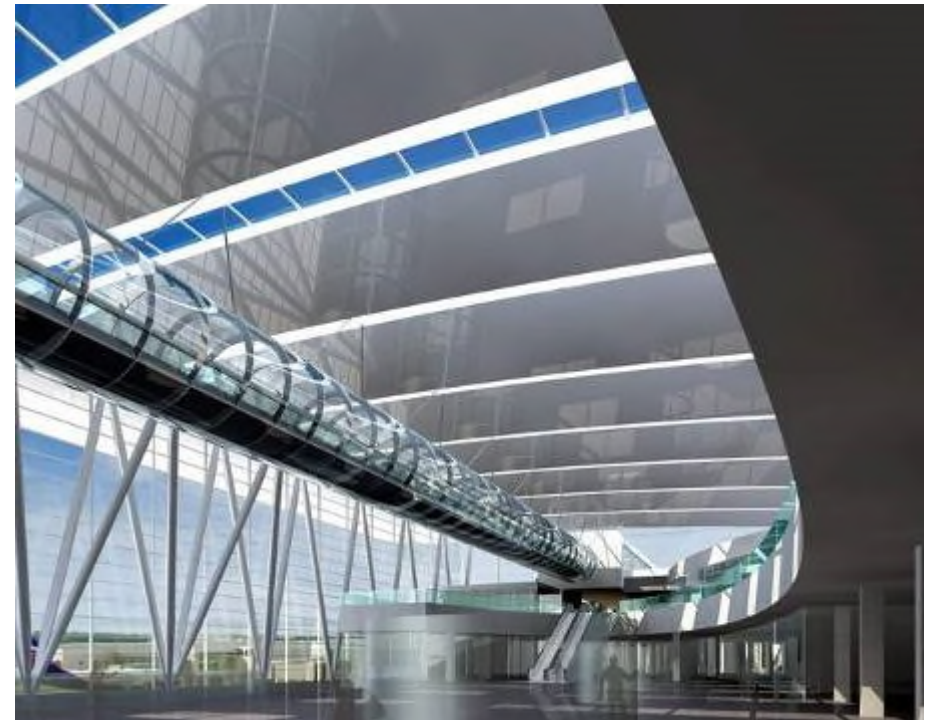
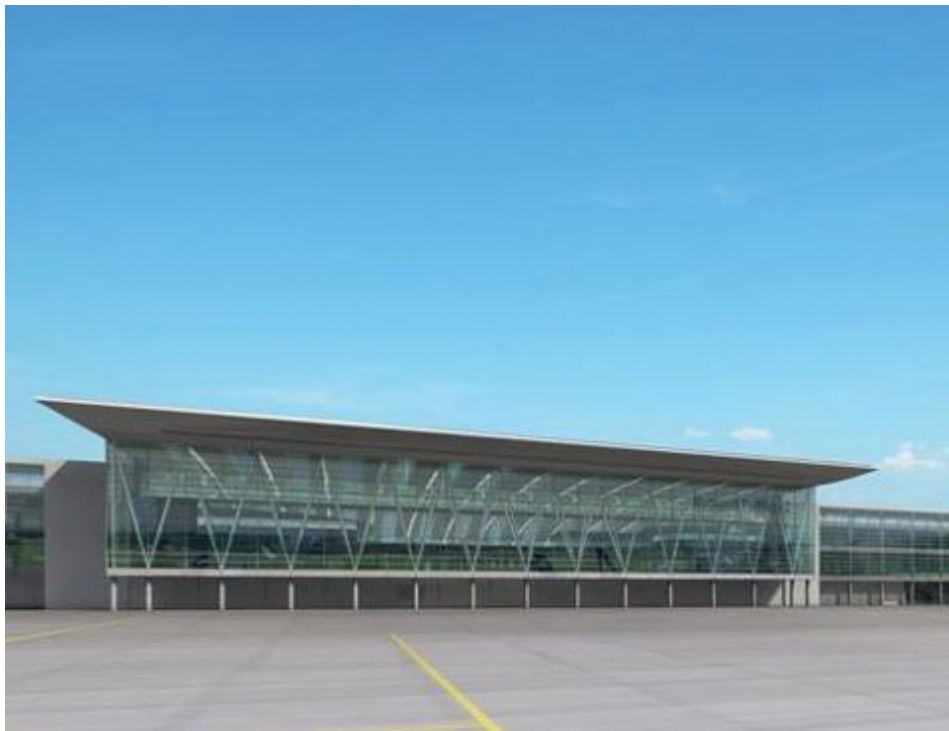
Airport references

- Hungary, Budapest Airport terminal 2 expansion project



Airport references

- Hungary, Budapest Airport terminal 2 expansion project



Airport references

- Slovenia, Ljubljana Airport
- Ljubljana Airport was expanded to meet Schengen requirements and accommodate a growing volume of passenger traffic



Airport references

- Vienna International airport
- Check-in area



Protecting cultural heritage

- UNESCO: "Heritage is our legacy from the past, what we live today and what we pass on to the future generations. Our cultural and natural heritage comprise irreplaceable sources of life and inspiration".
- Cultural heritage protected by HI-FOG® fire fighting technology include e.g.:
 - Museums, art galleries, theatres, historic houses, churches, libraries, archives, castles, mansions and other cultural heritage visitor attractions
- In Europe, up to 1 important heritage building is lost to fire every day
 - (COST, *Memorandum of Understanding*, Dec 2001)
- In Finland, totally 65 churches lost during 1939 – 2008 (~ 1 per year)
 - (Rakennusperinto.fi, *Kirkkopaloja torjutaan*, Jan 2008)



Design considerations in cultural heritage

- Minimal damage due the real or accidental discharge
- Hideable installations due to small pipe diameters (OD typically 12 – 30 mm), small section valves and piping components.
- HI-FOG® sprinklers and pipes can be painted according to a color code.
- High-pressure pipe fittings (cutting rings)
 - No leaks, no welding
- Stainless steel piping allows long life time and black water free discharge



The Nobel Peace Center, Oslo

Cultural heritage



Newport Country Club, USA

Art galleries, museums

Photo © Jussi Tiainen



- Wellamo Maritime Museum,
Kotka, Finland

*HI-FOG® protects the building
and preserves the art*



- National Portrait Gallery,
London



Winnipeg Art Gallery, Canada

Photo © Manuel G. Vicente



- Museum of Contemporary Art,
Vigo, Spain



National Gallery of Art,
Washington D.C.

Theatres



The Bolshoi Theatre, Moscow



La Scala, Milan

One HI-FOG® system can neutralize several different types of fire hazard

Castles and mansions



The Lyndhurst Mansion, USA



Norwich Castle Museum, UK



Kotkan Hovi, Finland



Södra Strandverket, Sweden

Introduction to the library

Duchess Anna Amalia Library, Weimar, Germany

- Built during 1562 – 1565
- UNESCO World Heritage Site
- Goethe worked here for over 30 years
- Famous for its oval Rococo hall featuring a portrait of Grand Duke Carl August
- Includes a major collection of mainly German literature and historical documents (about 850,000 volumes)
 - 16th Century Bible connected to Martin Luther
 - 10,000 volumes of Shakespeare



Aircraft hangars



- Norwegian Air Force
- Swedish Air Force
- Department of National Defence, Canada
- Avjet business jet hangar, Burbank, CA, USA

Large Data Centres

Some HI-FOG® References



Telecity IV Data Centre, The Netherlands

- High risk / value spaces are HI-FOG® protected
 - 5 server halls, each 800 m²

BAE SYSTEMS

REAL PRIDE. REAL ADVANTAGE.

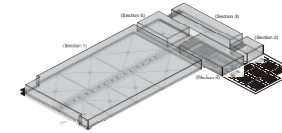
National Support Centre for the Eurofighter, UK

- High risk / value spaces are HI-FOG® protected
 - 1800 m² of server areas



•Data Hotel CX2, Kuala Lumpur, Malaysia

- The whole facility is HI-FOG® protected
 - ~10 000 m² of server areas



Data Hotel TCN Eemsdelta, The Netherlands

- High risk / value spaces are HI-FOG® protected
 - ~10 000 m² of server areas



Telefónica Data Centre, Madrid, Spain

- All the spaces are HI-FOG®-protected
 - Main server hall 900 m²

Protecting transportation infrastructure



Road tunnel references



Abu Dhabi

- Al Salam street twin tunnel
- HI-FOG® protects 2 x 2,3km of heavy traffic tunnel



Paris

- A86 West tunnel, part of “super-ring” road
- HI-FOG® protects 10 km section, two super-imposed levels
- Three pumping stations



Madrid

- Tunnels of the M30 inner ring road
- HI-FOG® protects 5 important sections



Helsinki

- HI-FOG® protects city's downtown service tunnel
- Finland's first automatic tunnel fire protection system

A86 tunnel, Paris

The world's largest fixed fire protection system in road tunnels

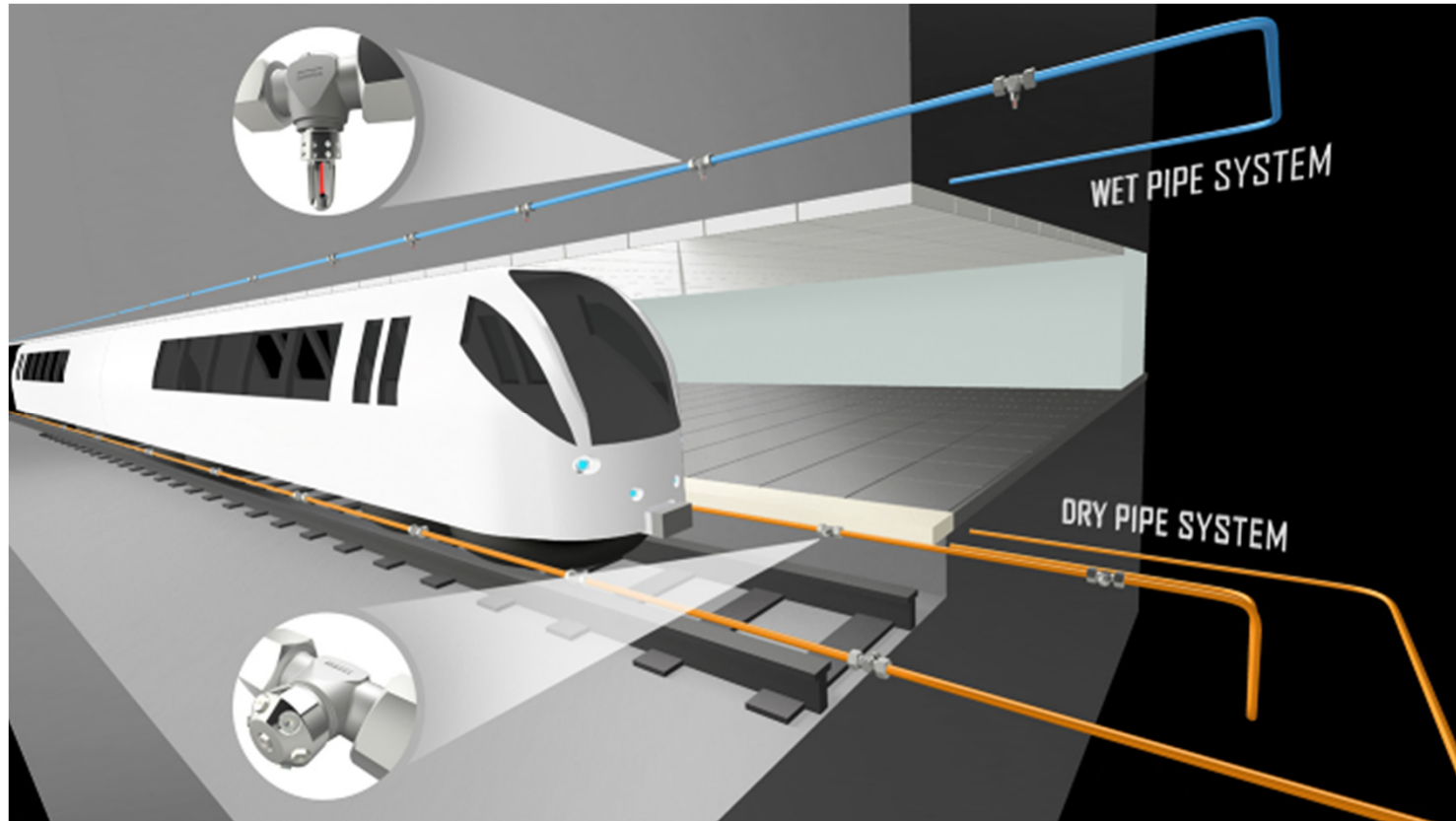


A86 tunnel, Paris

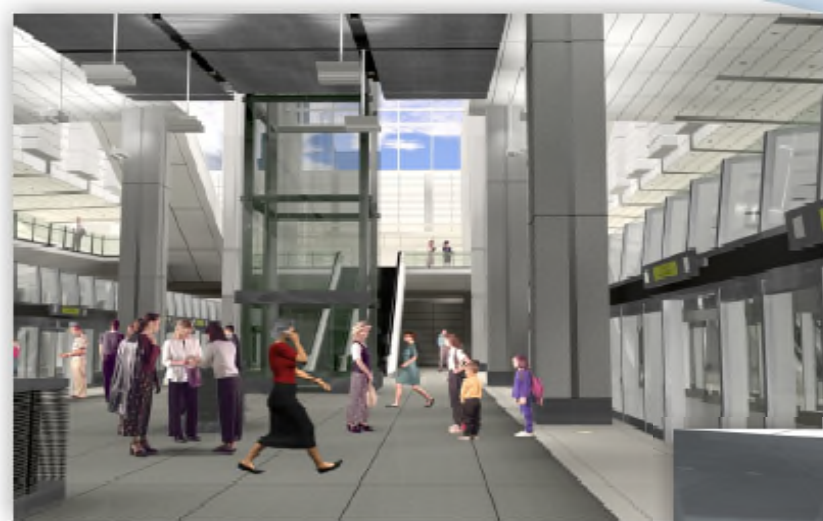
The A86 West is the link in the 80 km long A86 ring road around Paris.



Trainway protection



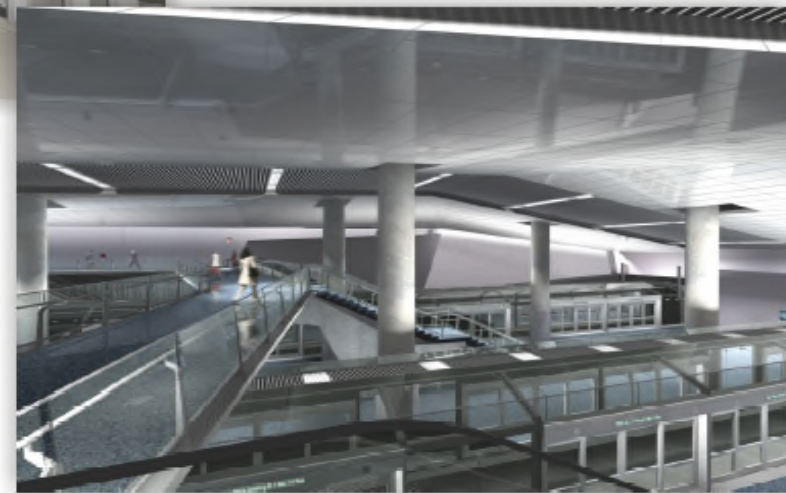
Washington Dulles International Airport AeroTrain



Concourse B Train Station

- Concourse B

Tier 2 Concourse C



Tier 2/Concourse C Train Station

HI-FOG® Station References

Madrid Metro



London Underground



Barcelona Metro

Bilbao Metro

Palma de Mallorca Metro

Washington Dulles Airport ATS



HI-FOG® Rolling Stock References

Madrid Metro

- 226 trains today, over 1,300 carriages
- 286 trains by 2011
- Starting year 2000
- 3 manufacturers
- System: Compact GPU



•Daegu Monorail

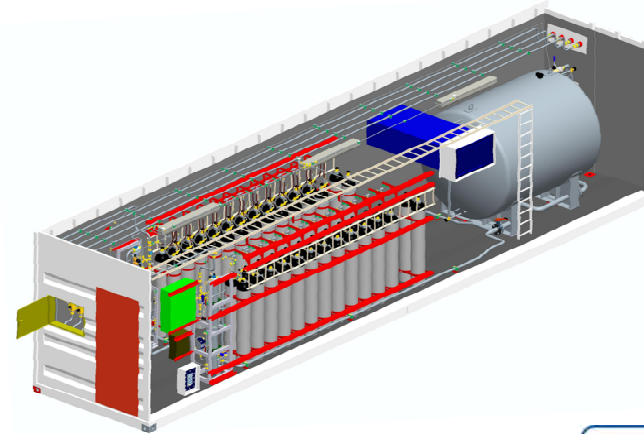
- 28 trains, 84 carriages
- By 2014
- System: Horizontal Accumulator Unit



Gas turbines

Turbine manufacturers who have accepted the use of **HI-FOG** include:

- Solar Turbines
- Rolls Royce Industrial & Marine
- Siemens
- Nuovo Pignone
- GE Energy
- Pratt & Whitney
- ABB
- Dresser Rand



*Better safety for personnel
than with CO₂*



Pulp and paper industry

Machinery

- Inside the hood
- Coater
- Drives and gears
- Pulp dryer
- Conveyor belts
- Main transformers



M-real / Metsä-Botnia pulp mills (Kaskinen, Finland)

Aircraft wing painting facilities



Airbus A380 production site, Wales, UK

Thank you

