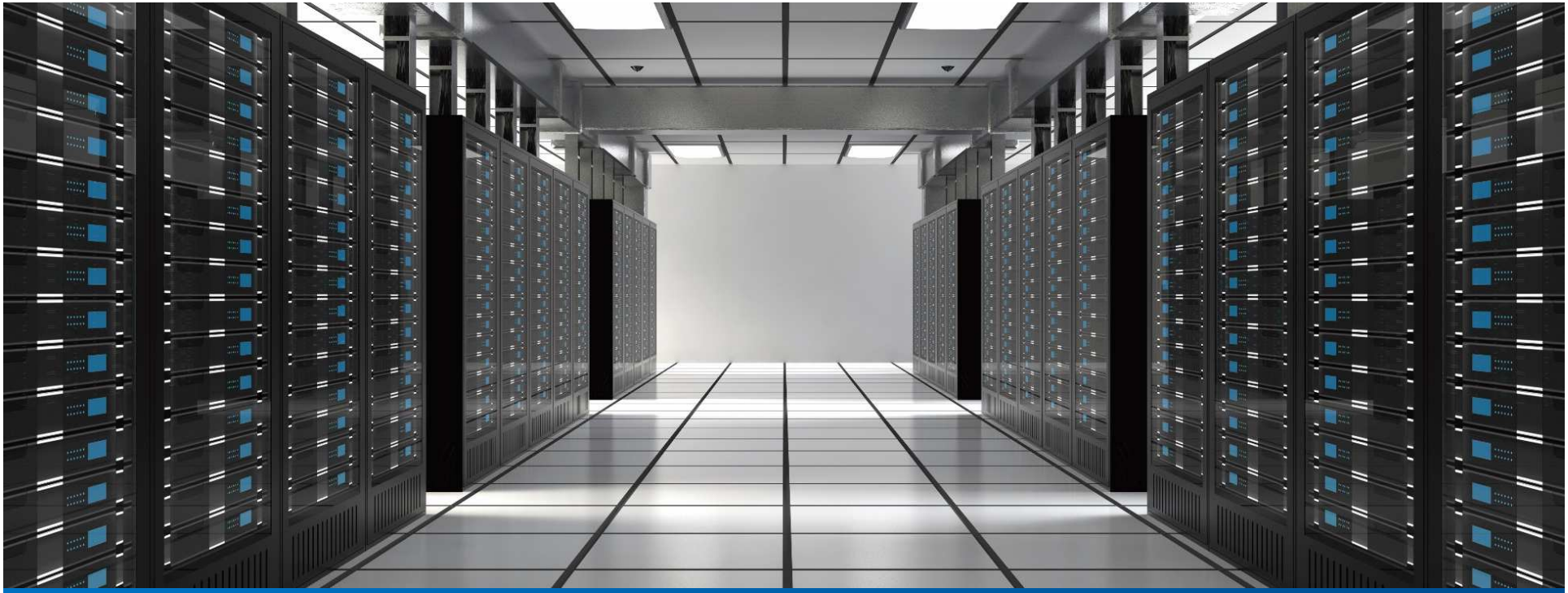

Water Mist for Data Centers

Ganesh Pawar
Business Development Manager
Fire Suppression Products, India Region

The power behind **your mission**

IWMA
International Water Mist Association

Johnson Controls

Ganesh Pawar

Business Development Manager – India

More than 12 years of elaborate experience in Water based Fire Suppression & Mechanical Products having taken on various roles & responsibilities in his career.

Started career with Johnson Controls in the field of sales and then moved to strategic business vertical of Hilti India.

Joined Tyco Fire Protection business in 2012 as Regional Sales Manager for water suppression products in West & East India and Bangladesh.

Currently working as Business Development Manager for Johnson Controls, responsible for driving water mist and water & mechanical business in India. Ganesh is a certified professional on NFPA 13 standards.

He has a B.E. Degree in Information Technology and Master's in Business Administration from Mumbai University in India

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Dirk Laibach

Senior Product Manager – Global

Dirk Laibach boast over 30 years of varied global experience in the fire suppression/detection industry, including 23 years related to Water Mist.. He has held positions of-increasing responsibility with Siemens, KIDDE , FOGTEC Fire Protection, Marioff and currently as Senior Product Manager for Water Mist at Johnsons Control.

Through his involvement and membership in a number of trade associations, codes and standards organizations (CEN) and approval authorities (like VdS, FM) in Europe and USA. He also has extensive relationships within the industry and AHJ bodies.

Dirk Laibach holds a degree in electrical engineering (Dipl.-Ing.) from the University of Applied Sciences Düsseldorf, Germany, and is a VdS-certified engineer for Water Mist Fire Suppression Systems.

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Water Mist for Data Centers

- **Customer Background**
  - Leader in Data Center construction and operation
  - FM Global Insured
  - Multiple Global Sites
  - Multiple risk protection

- **Fire Protection Systems**
  - Sprinkler System
  - Clean Agents
  - Water Mist

Risk Assessment

- **Objective of Fire Protection Systems**
  - Protect cabinets?
  - Protect facility?

- **Considerations**
  - Ventilation
  - Approved solution
  - Data hall configuration & size
  - Installation & maintenance cost
  - Footprint of protecting equipment

Conceptual Layout of Data Center Facility

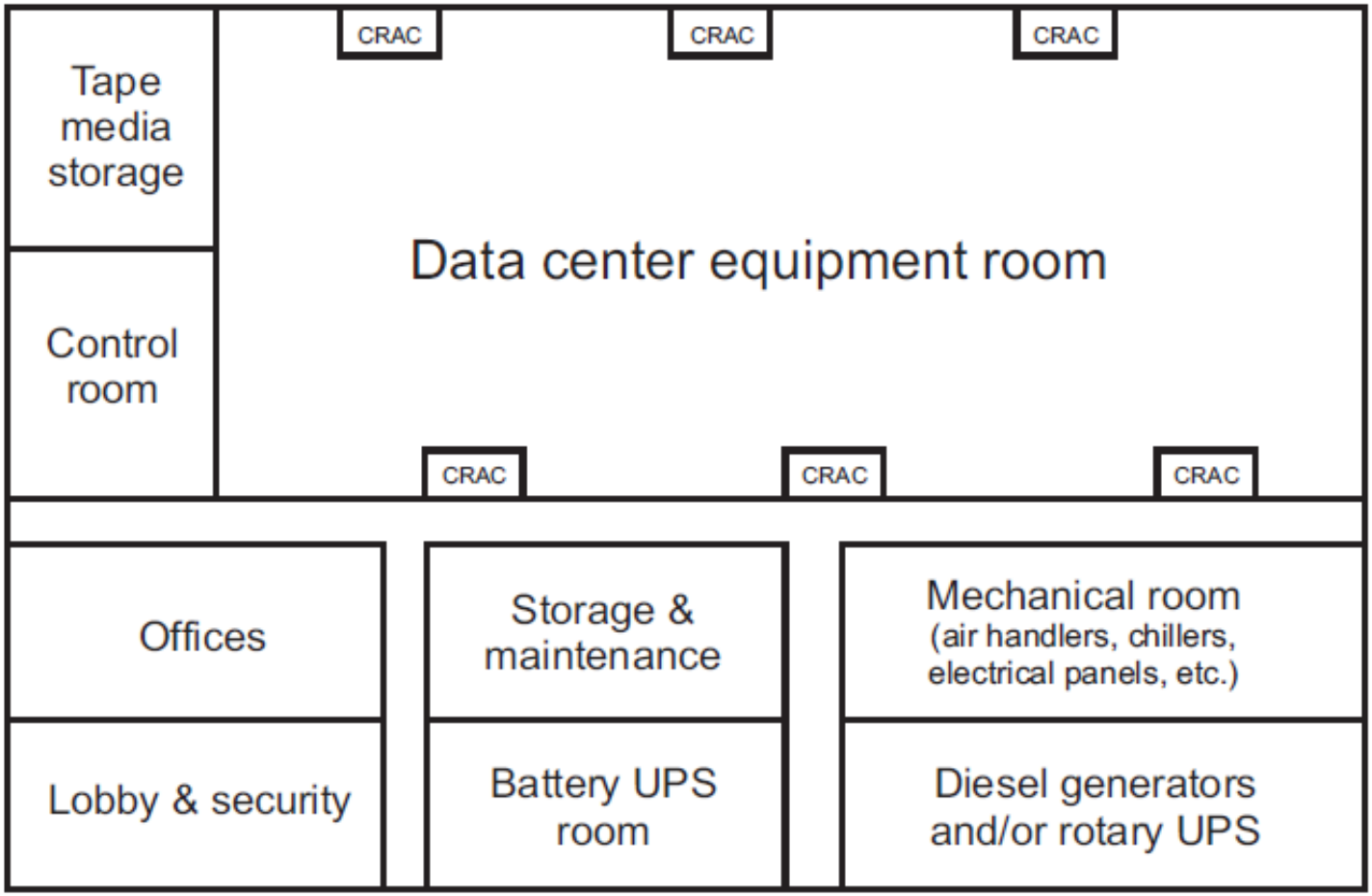


Fig 1 – FM Data Sheet 5-32

What are we protecting?

- **Data Processing equipment rooms / halls**
  - Above-floor areas containing a high density of computers and energized cables.
  - Highly ventilated below-floor areas containing a high density of energized cables.
  - Concealed space protection

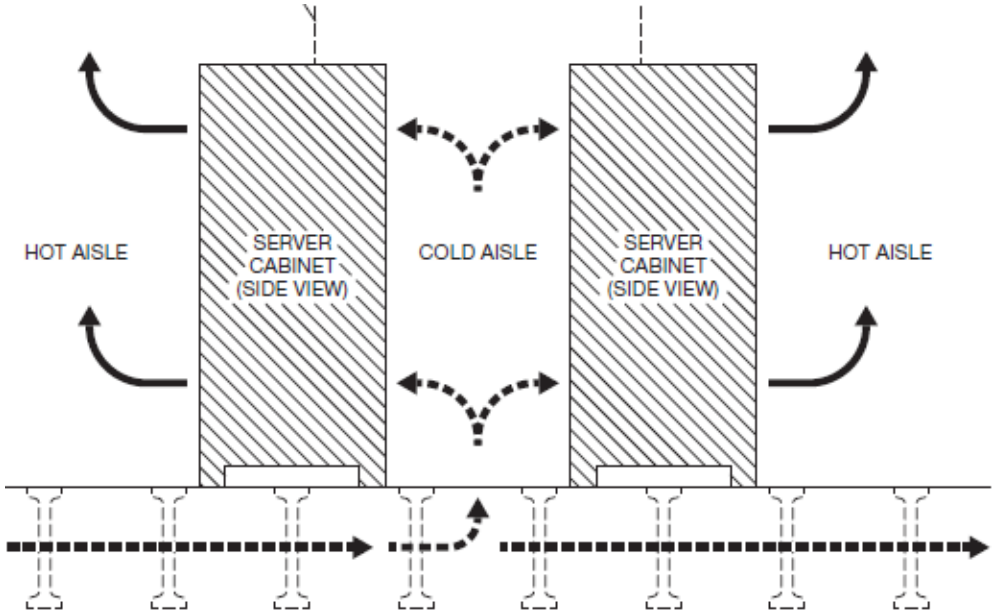
- **Surrounding facilities**
  - Offices, meeting rooms (HC1)
  - Corridors, lobbies (HC1)
  - Generator rooms & transformer rooms (Machinery Spaces)

- **Areas not covered by FM water mist approvals**
  - Storage Areas.
  - Battery UPS Rooms

Design Aspects

Ventilation

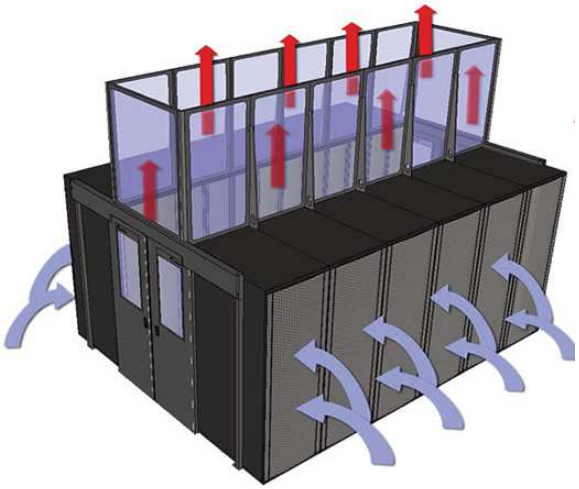
- Maximum horizontal air flow of 1.2 (4 ft./sec.) m/s
- Maximum upward air velocity of 1 m/s (3.2 ft./sec.) through the perforated floor openings
- If limits are exceeded automatic interlocks for ventilation shutdowns are required.



Hot and Cold Aisle Containment

Hot aisle containment

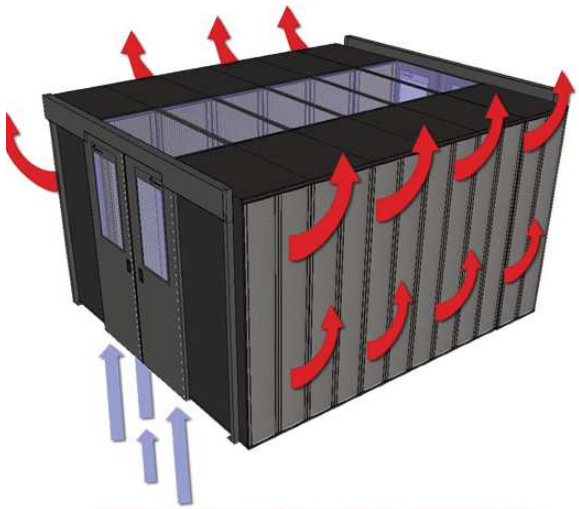
- Cold air from CRAC units enter through floor or open room space
- Cold air enters containment through servers and becomes hot air
- Hot air is returned to CRAC units through hot air plenum



Hot Aisle Containment

Cold aisle containment

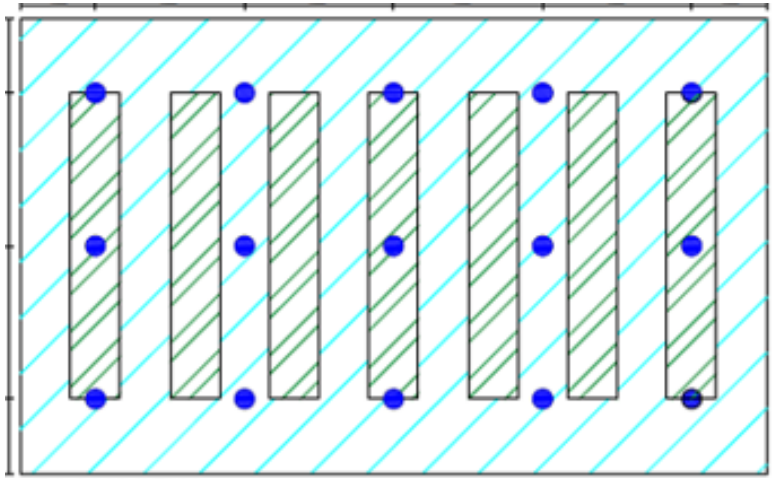
- Cold air from CRAC units enter through floor into containment
- Cold air enters room space through servers and becomes hot air
- Hot air is returned to CRAC units through open room space

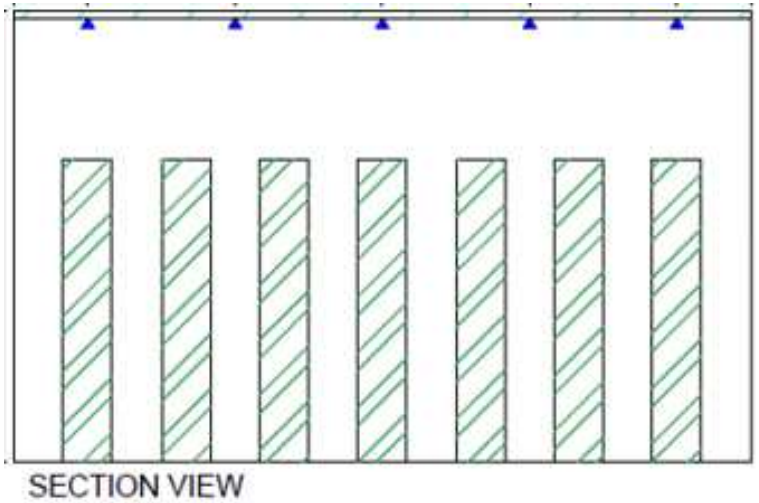


Cold Aisle Containment

Above-Floor Design

- Based on the approved no of nozzles.
- Pre action system : Single interlock and water should reach to remotest nozzles within 30 sec.
- Water duration : 60 minutes





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Below Raised Floor Protection

- **Area of coverage Design**
  - The “area of coverage” design method is used when, at the time of the installation, it is unknown where the cable trays will be located. The nozzles are installed to protect the entire area below the raised floor.

- **Local application**
  - The “local application” design method is used when, at the time of the installation, it is known where the cable trays will be located. The nozzles are installed in direct proximity to the cable trays.

- For systems with **above** and **below** floor protection use the **most demanding** of the two.

Components

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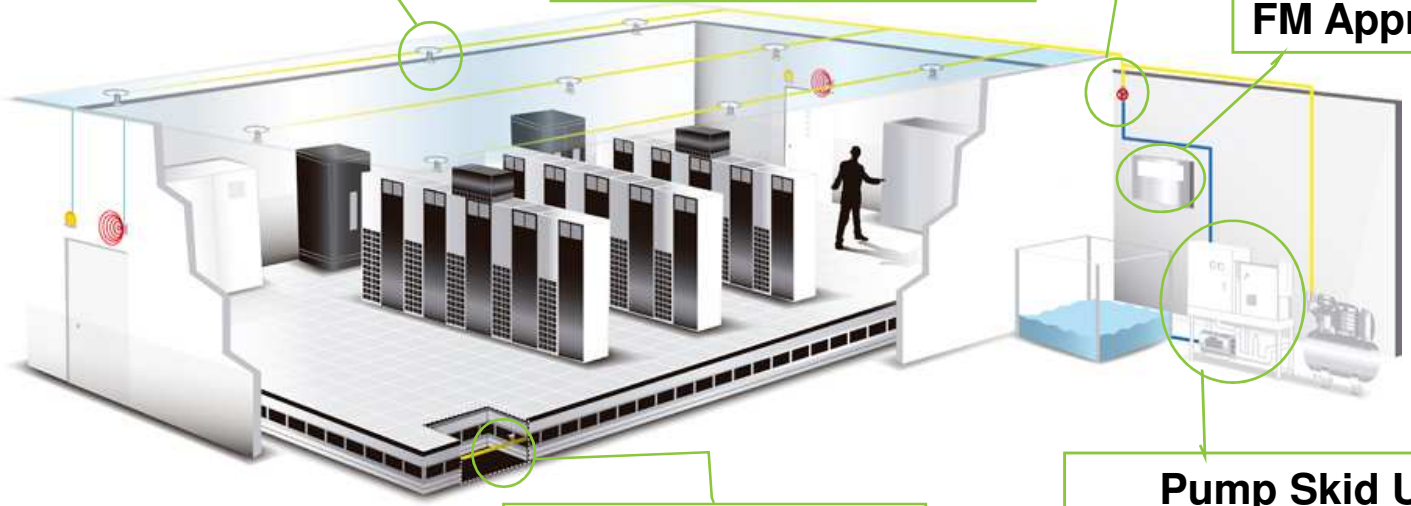
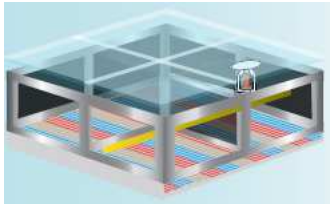
Discharge Nozzles

Pre-action system

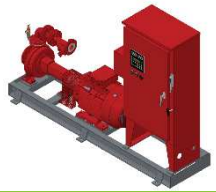
Detection equipment, FM Approved





Discharge Nozzles

Pump Skid Unit



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Water Mist for Other Areas within Data Center

Other Areas…

Light Hazard

- Offices
- Meeting Rooms
- Corridors & Lobbies

FM Approval HC-1

Design Area

140m² AMAO

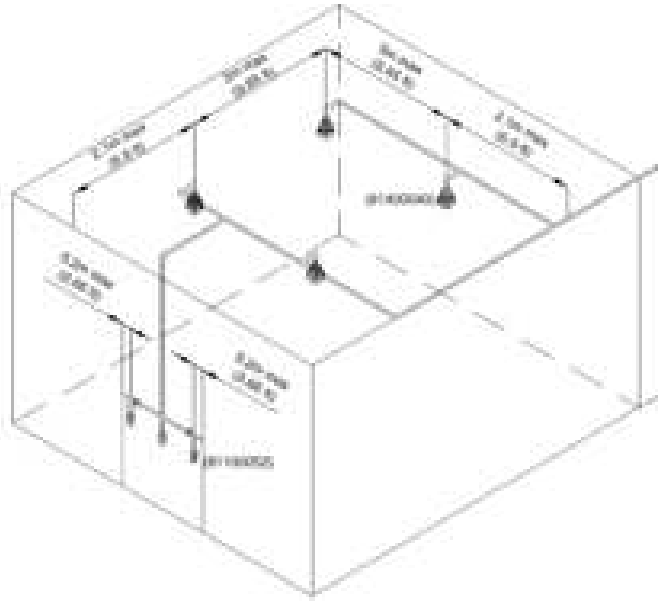
Water Supply

60 minutes

Machinery Spaces

- Generator rooms
- Transformer rooms

FM Approval Machinery Spaces



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Complete Solution

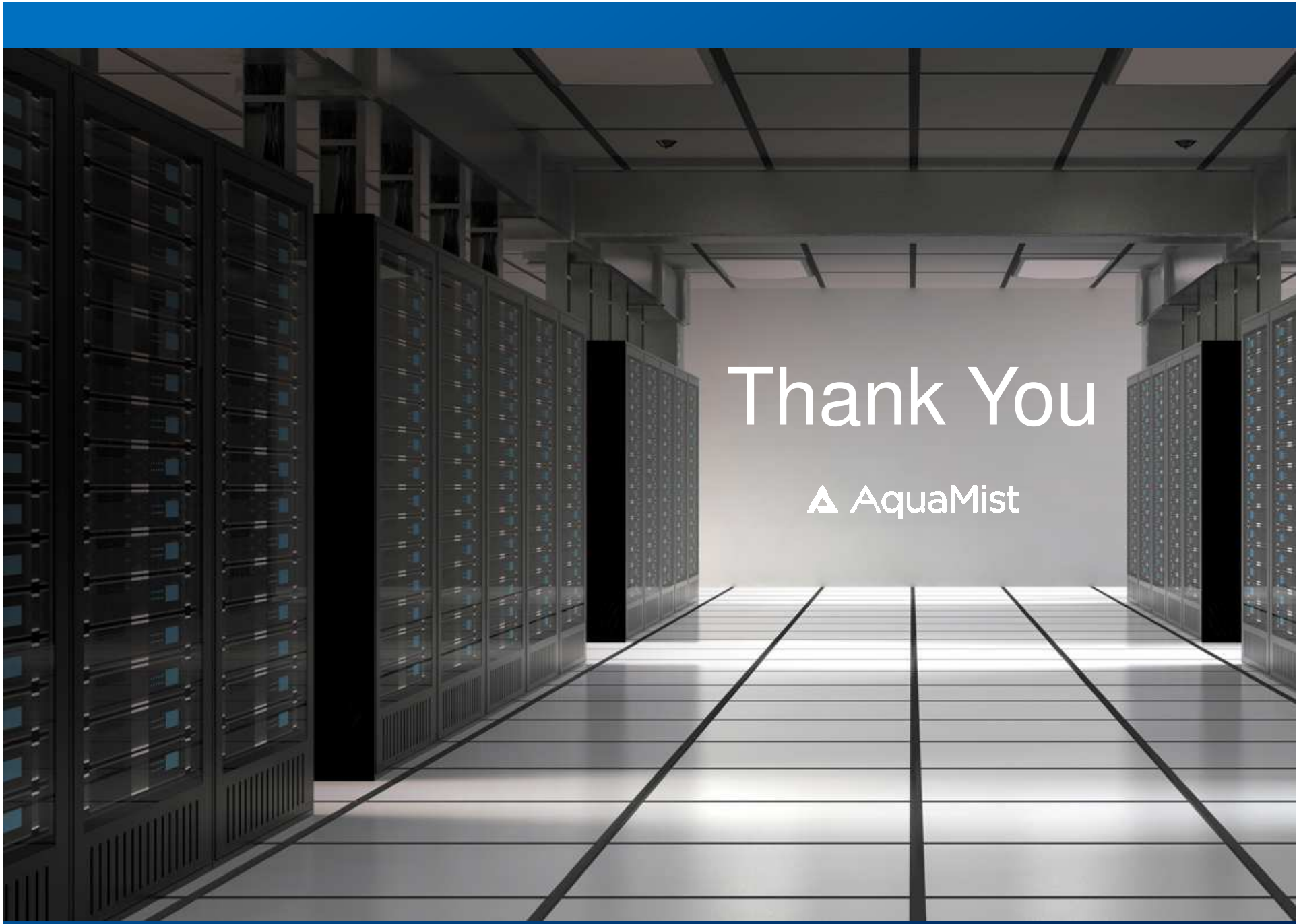
- **Data Processing equipment rooms / halls**
  - Above-floor areas containing a high density of computers and energized cables.
  - Highly ventilated below-floor areas containing a high density of energized cables.
  - Concealed space protection

- **Surrounding facilities**
  - Offices, meeting rooms
  - Corridors, Lobbies
  - Generator Rooms

- **Areas not covered by FM water mist approvals**
  - Storage Areas.
    - 2.3.5 Protect storage areas in accordance with FM Data Sheet 8-9 (FM Datasheet: 5-32)
  - Battery UPS Rooms
    - 2.8.4.1.11 Provide one of the following protection systems: (FM Datasheet: 5-32)
      - An automatic quick response (QR) sprinkler system.
      - Clean Agents.

Benefits to Customers

- Proven through rigorous full scale fire testing.
- Third party verified and approved.
- Continuous protection for ventilated environments.
- Pre action system to avoid false activation of water mist.
- Considerably less water than traditional sprinkler systems.
- Easy to scale-up to new areas when the facility is expanding.
- The safe and sustainable way to fight fires.


Thank You
AquaMist