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OBSTRUCTIONS CAN AFFECT THE PERFORMANCE

NFPA 750_2015 A.8.2.5 “Spray that strikes obstructions too close to the nozzle will not fully atomize, and a portion of the water mass will be removed from suspension in the space.”
OBSTRUCTIONS CAN AFFECT THE PERFORMANCE

NFPA 750_2015 A.8.2.5 “Water mist that impacts directly on surfaces will not be available as fine droplets for heat absorption, radiation attenuation, or evaporation. Such losses diminish the extinguishing effectiveness of total flooding or local application systems.”

Hazard: OH1
Flux per volume: 0.35 LPM/m³
OBSTRUCTIONS CAN AFFECT THE PERFORMANCE

NFPA 750_2015 A.8.2.5 “For Class A fire scenarios where pre-wetting of combustibles is an important factor in preventing fire growth, obstructions to spray development prevent wetting of unburned materials and diminish the performance of the system.”

Wetting the surfaces helps in preventing fire growth
OBSTRUCTIONS CAN AFFECT THE PERFORMANCE

NFPA 750_2015 A.8.2.5 “The degree to which obstructions can affect the performance of water mist protection differs according to the type of spray technology and the type of application.”

Flux per volume below the obstruction is about 0.15 L/min
OBSTRUCTIONS CAN AFFECT THE PERFORMANCE

NFPA 750_2015 A.8.2.5 “Additional nozzles can be required to ensure complete water mist fire protection when obstructions and maximum coverage distances to obstructions are not evaluated as part of the manufacturer’s listing.”

Pump size in this case would be certainly affected
NFPA 750_2015 Figure A.8.2.5 (a)

FIGURE A.8.2.5(a) Dimensions to Be Considered for Locating Nozzles Relative to Beam, Duct, or Other Continuous Obstruction.
FIGURE A.8.2.5(b)  Position of Nozzle Relative to Beam, Duct, or Other Continuous Obstruction Against a Wall.
EXAMPLES FROM NFPA 750

NFPA 750_2015 Figure A.8.2.5 (c)

Not to exceed maximum listed spacing “S”

Ceiling

Nozzle

B

A

C

A + C ≤ ½ × maximum listed spacing

FIGURE A.8.2.5(c) Dimensions Governing the Position of Nozzles on Either Side of a Continuous Obstruction.
EXAMPLES FROM NFPA 750

NFPA 750_2015 Figure A.8.2.5 (d)

FIGURE A.8.2.5(d) Dimensional Considerations for Nozzles Located Above Continuous Horizontal Obstructions Such as Ducts, Pipes, Cable Trays, and Light Fixtures.
FIGURE A.8.2.5(e) Dimensional Considerations for Suspended or Floor-Mounted Continuous Obstruction Under a Water Mist Nozzle.
FIGURE A.8.2.5(f) Dimensional Considerations for Locating a Sidewall or Horizontally Discharging Water Mist Nozzle with Respect to the Ceiling and a Continuous Obstruction Within the Spray Path.
EXAMPLE OF COORDINATION

Four nozzles to protect an area

Design area (VdS 3188): 72 m²
Number of nozzles: 4
Required flow rate: \(x\) L/min
Four nozzles to protect an area

**Problem**

- Design area (VdS 3188): 72 m²
- Number of nozzles: 4
- Required flow rate: $x$ L/min

**EXAMPLE OF COORDINATION**

Performance according to manufacturer’s listing achieved
EXAMPLE OF COORDINATION

Two nozzles obstructed with duct and cable tray

Design area (VdS 3188): 72 m²
Number of nozzles: 4
Required flow rate: x L/min

Performance not achieved
Performance according to manufacturer’s listing achieved
EXAMPLE OF COORDINATION

Two nozzles obstructed with duct and cable tray

Design area (VdS 3188): 72 m²
Number of nozzles: 4
Required flow rate: $x$ L/min

Problem

Performance not achieved

Performance according to manufacturer’s listing achieved
Adding nozzles is required to achieve the required performance.

Design area (VdS 3188): 72 m²
Number of nozzles: 6
Required flow rate: 1.5x L/min

Performance according to manufacturer’s listing achieved
Adding nozzles is required to achieve the required performance

Design area (VdS 3188): 72 m²
Number of nozzles: 6
Required flow rate: 1.5x L/min

Performance according to manufacturer’s listing achieved
Adding nozzles is required to achieve the required performance.

Design area (VdS 3188): 72 m²
Number of nozzles: 6
Required flow rate: 1.5x L/min

Performance according to manufacturer’s listing achieved
VdS Installer Approval

VdS 3188 - 1.4.1
VdS-approved systems and installers

1.4.1 VdS-approved systems and installers

Water mist systems shall be installed in compliance with these Guidelines, by VdS-approved installers, using a VdS-approved system, and on the basis of the system specific P&I manual for the corresponding application. The approved installer shall be approved for each system installed by this installer.

VdS 3188 – 3.1
General

3 Contract planning and documentation
3.1 General

Installation, extensions, modifications, and repairs of water mist sprinkler systems shall be carried out by VdS-approved installers using VdS-approved systems.
IMPORTANCE OF QUALITY ENGINEERING

Walkthrough site

Walkthrough Revit model
REAL-LIFE CASES # 2

3rd IWMA Water Mist Seminar in Dubai on 21st January 2018 / Intersec 2018
REAL-LIFE CASES

3rd IWMA Water Mist Seminar in Dubai on 21st January 2018 / Intersec 2018
Ensuring that:

- Minimal additional cost would impact the construction phase
- Human errors are reduced
- The system is performing according to manufacturer's listing
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