Approval of water mist systems in buildings

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Back ground
Manufacturers wanted to use their water mist systems in buildings.

DBI gave out a news letter in 2006:
- specifies requirements from sprinkler rules to apply for water mist systems
- Specifies in which risk classes water mist can be used
- Specifies which classification test could be used when comparing the extinguishing with sprinkler systems
- Set requirements for installers
- Set requirements for third party inspection
- Give minimum requirements for maintenance
• Introducing of water mist system
  – Low pressure systems (pressure < 16 bar)
  – Medium pressure (16 bar < pressure < 60 bar)
  – High pressure (pressure > 60 bar)
  – definitions taken from CEN/TS 14972 ”Fixed fire fighting systems – water mist systems – design and installation”

• How to ensure safety and reliability of water mist systems
  – Requirements for energy the same as for sprinkler system
  – Requirements for water supply the same as for sprinkler system
  – Requirements for maintenance the same as for sprinkler system
• Classification test that can be used
  – CEN/TS 14972 ”Fixed fire fighting systems – water mist systems – design and installation”
  – IMO Resolution A.800(19) “Revised guidelines of sprinkler systems equivalent to that referred to on SOLAS regulation II-2/2”
  – MSC 265(84) ”Amendments o the revised guidelines of sprinkler systems equivalent to that referred to on SOLAS regulation II-2/2 (Resolution A.800(19))”

• Classification test can be used as documentation of water mist system can control or extinguish a give fire

• Classification test shall be conducted in an accredited fire test laboratory
• Any building should be classed against the risk involved
  – CEN/TS 14972 ”Fixed fire fighting systems – water mist systems – design and installation” does not contain a method of risk classing
  – The risk class shall be done in accordance with the sprinkler rules

• When risk classes are determined the system should show appliance of extinguishing fire in such class, i.e. according to the methods described in CEN/TS 14972 ”Fixed fire fighting systems – water mist systems – design and installation”
The main components of a water mist system should as minimum be approved:
- Nozzles
- Pump unit with control panel
- Alert devices
- Section valves

Components and systems can be tested against IMO regulations and system approved by the maritime classes can be used.

Other standards:
- DS/EN 54 (all parts)
- DS/EN 12094 (all parts)
- DS/EN 12259 (all parts)
- CEN/TS 14972
Installers should be certified as sprinkler system installers
  – Design
  – Installation
  – Service
  – Maintenance

The installers should as minimum have received
  – Education
  – Training

The education and training should fulfill the requirements in
  – DBI guideline 001 ”Automatic fire systems – Approval of companies for design, installation, service and maintenance of automatic fire systems”
  – DBI guideline 002 ”Automatic fire systems – Certification of persons that design, installation, service and maintenance of automatic fire systems”
The design manual or data sheet should at minimum specify:

- Nozzle type
- Minimum water density at minimum pressure
- Minimum and maximum nozzle spacing
- Nozzles location
- Covering area
- Maximum system pressure
- Pressure calculation
- Height of room and maximum volume
- Procedure for testing the pressure
- Procedure for flushing pipe installation
- Assembling of pipe and material requirements
- Procedure for handling materials
- Users manual
- Service and maintenance manual
- Water quality
• If additives is to be used the design manual or data sheet should specify:
  – Type of additive
  – Concentration
  – Method for mixing
  – Replacement interval
  – Specification for protection of life and health
  – Precautions for preventing corrosion in the system

• If the systems uses gases for dispersion of the water the design manual or data sheet should specify:
  – Gas used for dispersion of the water
  – Connection between gas and water container
  – Specification for protection life and health
  – Specification for preventing damages from pressure
• Water mist systems can be treated as a traditional sprinkler system

• Normally authorities, insurance companies and/or the end user requires an inspection of the system by a third party

• How to inspect a water mist system
  – The inspection company's procedures for accredited first inspection of sprinkler systems or gas extinguishing systems shall apply
  – See further in DBI guideline 004 “Automatic fire systems – finished report, inspection and approval”
• Water mist systems should be maintained correctly to secure
  – the daily functioning of the system in order to reduce damages on people or property completely or partly
  – Preventing unnecessary alarms to the fire brigade

• by which it is necessary that
  – The installer, system supplier or manufacturer hand over a thorough instruction on maintenance of the system to the building owner or user
  – Elements described in DBI guideline 005 “Automatic fire systems – Maintenance” required for sprinkler system or gas extinguishing system may apply
Making a standard that is replacing the guideline including detailed specifications on
  - Components
  - Systems

Uses the same structure as DBI / CEA 4001 “Sprinkler systems – Design, installation and maintenance”

To be finished in 2010

Will increase the usage of water mist systems in buildings in Denmark
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