



Danish Guideline

Approval of water mist systems in buildings

Back ground

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Vandtågeanlæg
i bygninger

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Background

- 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

DBI NYHEDSBREV 01/06

DBI informerer om - Projektering, installation, drift og vedligeholdelse, inspektion og godkendelse af vandtågeanlæg

Baggrund
I Danmark bliver der installeret flere og flere vandtågeanlæg som erstatning for traditionelle sprinkleranlæg. Der findes ikke et dansk regelsæt og på europæisk plan findes der endnu kun et forslag til en standard, som der p.t. ikke er fastlagt en endelig udgivelsesdato for.

Derfor ønsker DBI at udarbejde en retningslinje for projektering og installation af vandtågeanlæg. Indtil retningslinjen er færdig kan vandtågeanlæg installeres ud fra følgende kriterier, idet det dog allerede nu skal nævnes, at kriterierne kan forventes ændret, når retningslinjen foreligger.

Klassificering
Vandtågeanlæg kan installeres som erstatning for sprinkleranlæg i Lav Risikoklasse og Normal Risikoklasse gruppe 1, 2 og 3. Det er en forudsætning, at der inden installationen påbegyndes findes tilfredsstillende dokumentation vedrørende slukkeevne og/eller sammenlignende brandforsøg i overensstemmelse med

- o International Maritime Organization (IMO) Resolution A.800(19) Revised guidelines for approval of sprinkler systems equivalent to that referred to in SOLAS regulation II-1/2 – Appendix 2
- o Fire test procedures for equivalent sprinkler systems in accommodation, public space and service areas on passenger ships. Eller
- o prEN 14972 Fixed firefighting systems – Watermist systems – Design and installation, annex 3, fire tests: procedures for office occupancies of ordinary hazard group 1.

Projektering
Udføres i overensstemmelse med leverandørens anvisninger og med testresultaterne fra sammenlignende brandforsøg. Forskrift 251 'Automatiske Sprinkleranlæg' følges i størst

muligt og relevant omfang, hvilket i praksis vil sige, at følgende kapitler anvendes:

- o 200, anlæggets omfang
- o 300, sprinklercentral
- o 400, vandforsyning
- o 500, pumper og el-forsyning til pumper
- o 600, anlæg og anlægsdele
- o 900, orienteringsplaner

Der kan være situationer, hvor enkelte bestemmelser i de ikke nævnte kapitler med fordel kan anvendes, for at sikre vandtågeanlæggets korrekte funktion.

Installatører
Vandtågeanlæg kan installeres af virksomheder, der er godkendte som installatører af sprinkleranlæg og som har indgået et samarbejde med en leverandør af komponenter til anlægget.

Inspektion
Inspektion og godkendelse gennemføres ud fra principperne i DBI Retningslinje 004 'Færdigmelding, inspektion og godkendelse'.

Vedligeholdelse
Drift og vedligeholdelse gennemføres på anlægsejers foranledning og ud fra principperne i DBI Retningslinje 005 'Anlægsejers driftsansvarlige person'.

DBI kontakt
Skulle der være spørgsmål hertil, kan DBI's Rådgivningsafdeling (Henrik Bygbjerg) kontaktes på telefon 36 34 90 00.

Nævnte DBI forskrift og retningslinjer kan bestilles i DBI's forlag på telefon 36 34 90 00.

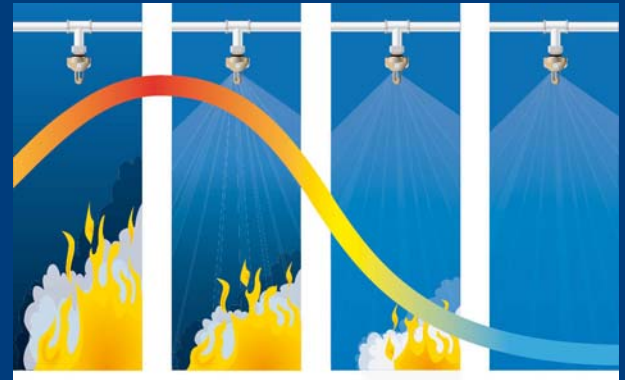
Med venlig hilsen
Dansk Brand- og sikringsteknisk Institut
Henrik Bygbjerg
DBI's Rådgivningsafdeling

Dansk Brand- og sikringsteknisk Institut 

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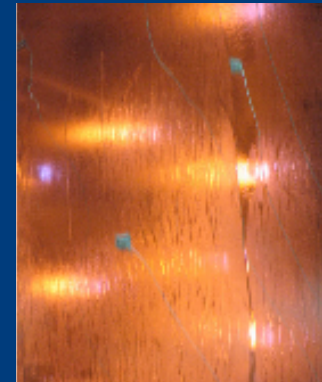
- Introducing of water mist system
 - Low pressure systems (pressure < 16 bar)
 - Medium pressure (16 bar < pressure < 60 bar)
 - High pressure (pressure > 60 bar)
 - definitions taken from CEN/TS 14972 "Fixed fire fighting systems – water mist systems – design and installation"
- How to ensure safety 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 spinkler system



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Classification test

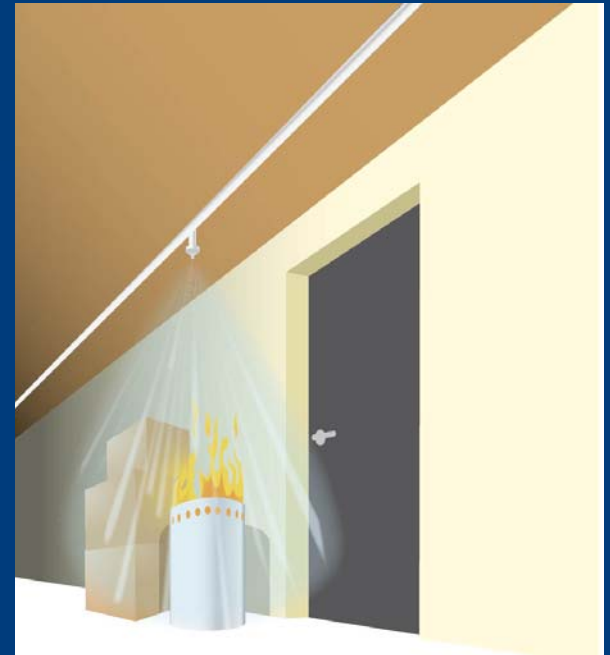
- Classification test that can be used
 - CEN/TS 14972 "Fixed fire fighting systems – water mist systems – design and installation"
 - IMO Resolution A.800(19) "Revised guidelines of sprinkler systems equivalent to that referred to on SOLAS regulation II-2/2"
 - MSC 265(84) "Amendments o the revised 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



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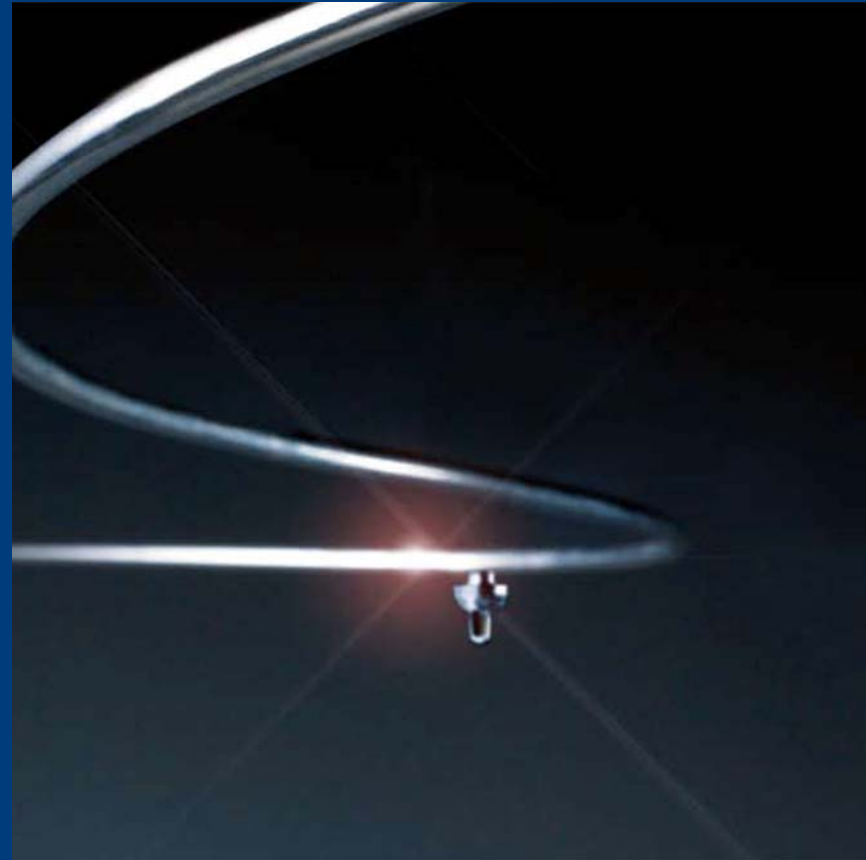
Risk Classes

- 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"



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- 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



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Systems

VdS

FM Global

Danish Institute of
Fire and Security
Technology

DBI

**Systems
approvals**

UL

**Approval form
Maritime classes**

**Accredited
Certification organs**

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Installers

- 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 fulfil 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"

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Design manual

- The design manual or data sheet should as 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



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Design manual continued

- 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



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Third party inspection

- 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”

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- 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

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Future

- 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

Acknowledgement

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