The updated VdS 3188 and VdS 3883 test concepts in the context of DIN EN 14972

Christian Kopp, 24th International Water Mist Conference,
Manchester, UK (2025)

Today‘s Agenda

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2 VdS 3883

3 Revision of VdS 3188

4 VdS 3188 and EN 14972 - a comparison

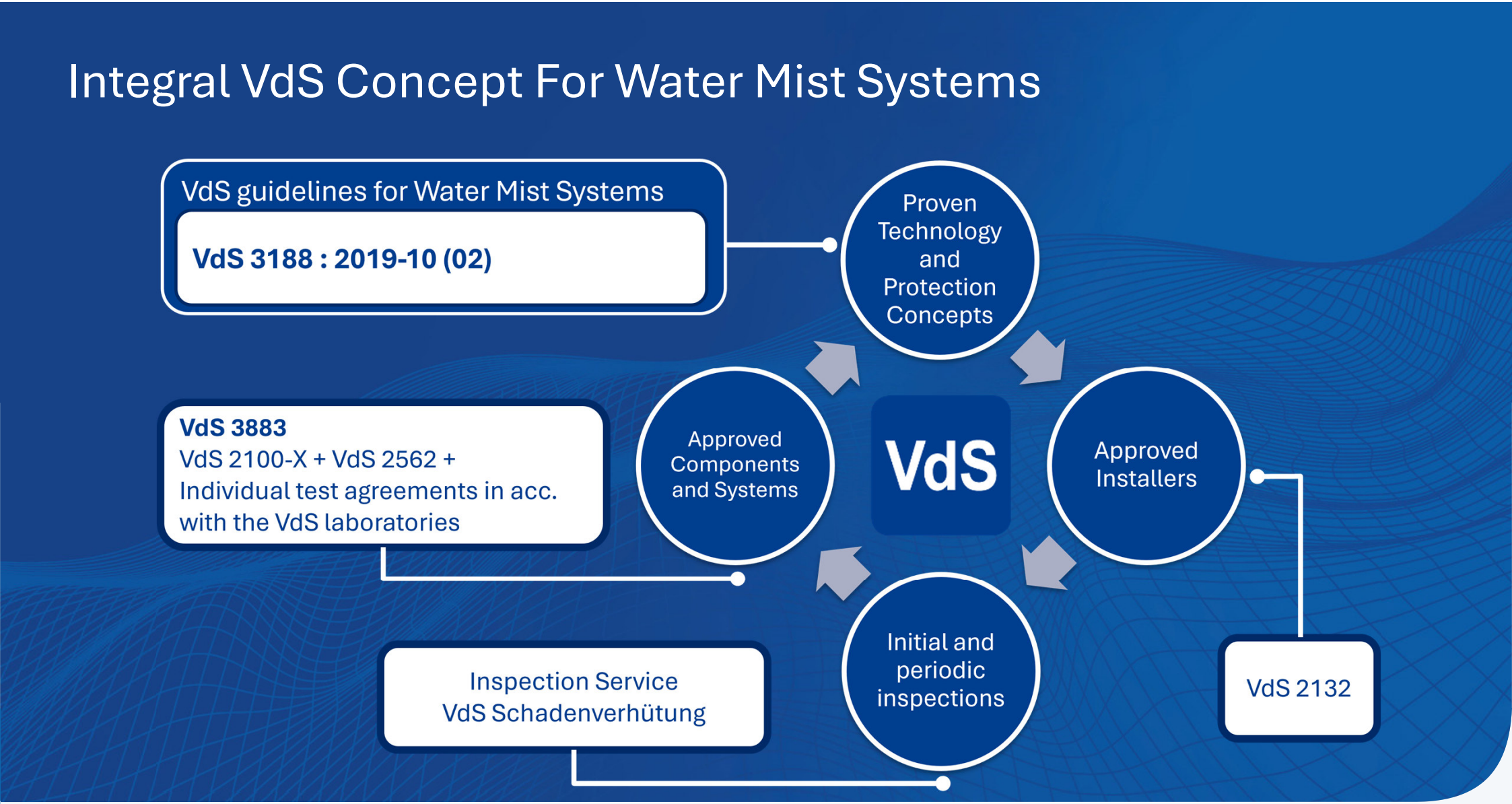
5 Summary

1 | General Information regarding VdS

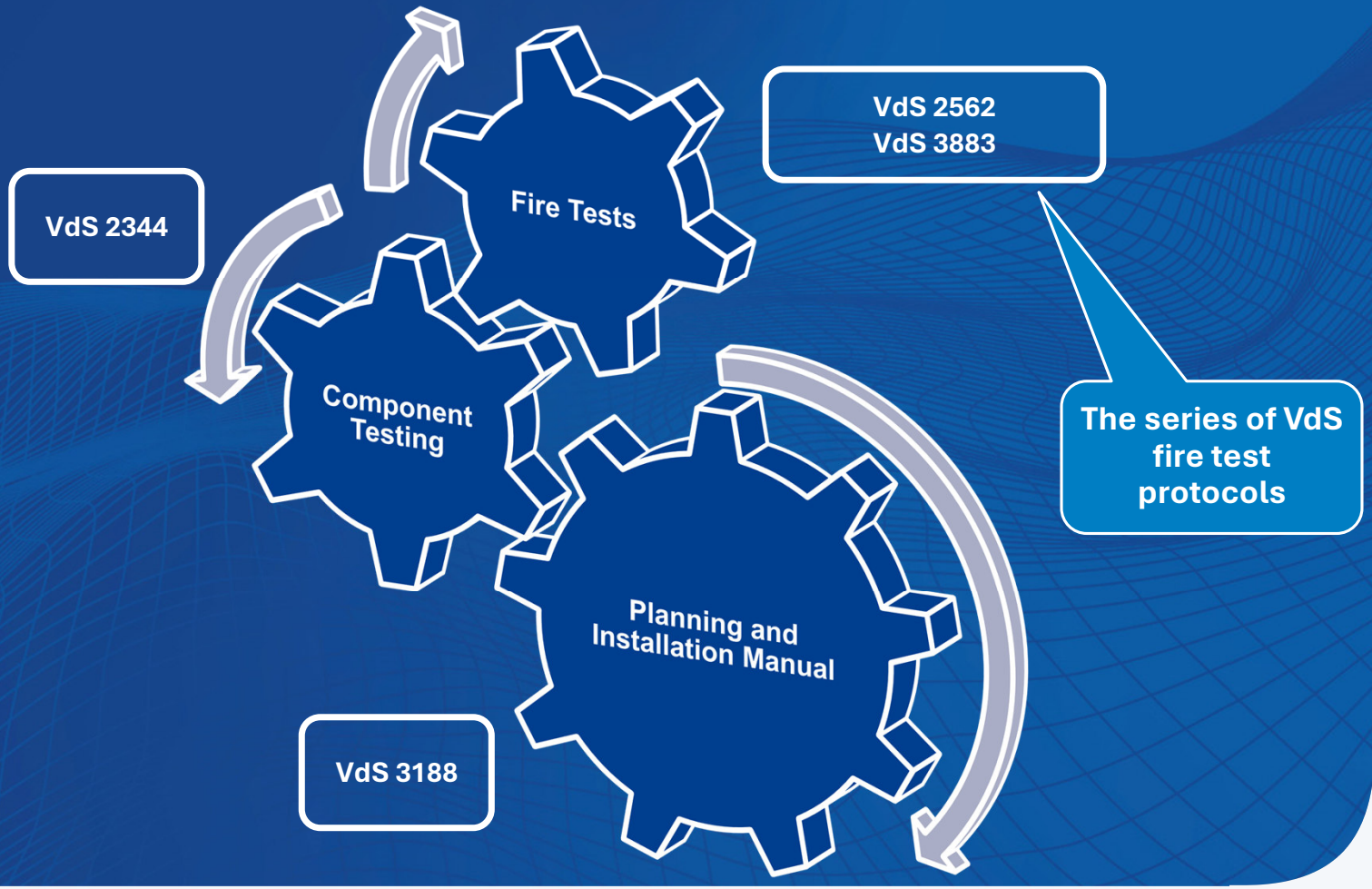
VdS Schadenverhütung offers worldwide...

- By our **Product Management of the VdS Inspection Service** the evaluation of systems with regard to
  - Effectiveness proven by fire and extinguishing tests according to fire test protocols
  - Applicability according to the fields of application of the planning and installation guideline
- By our **Laboratories** and **Certification Body**
  - Testing and certification of components and systems with a focus on their reliability
- By the VdS department of Approval of **installers of fire extinguihsing systems**
  - Examination of specialists and certification of the recognized installers
- By the branch offices of the **VdS Inspection Service**
  - A contact person for water mist systems at each office
  - Before the installation phase: plan reviews
  - During the installation phase: site inspections
  - After the installation phase: initial and recurring inspections including building law and insurance assessment in one inspection

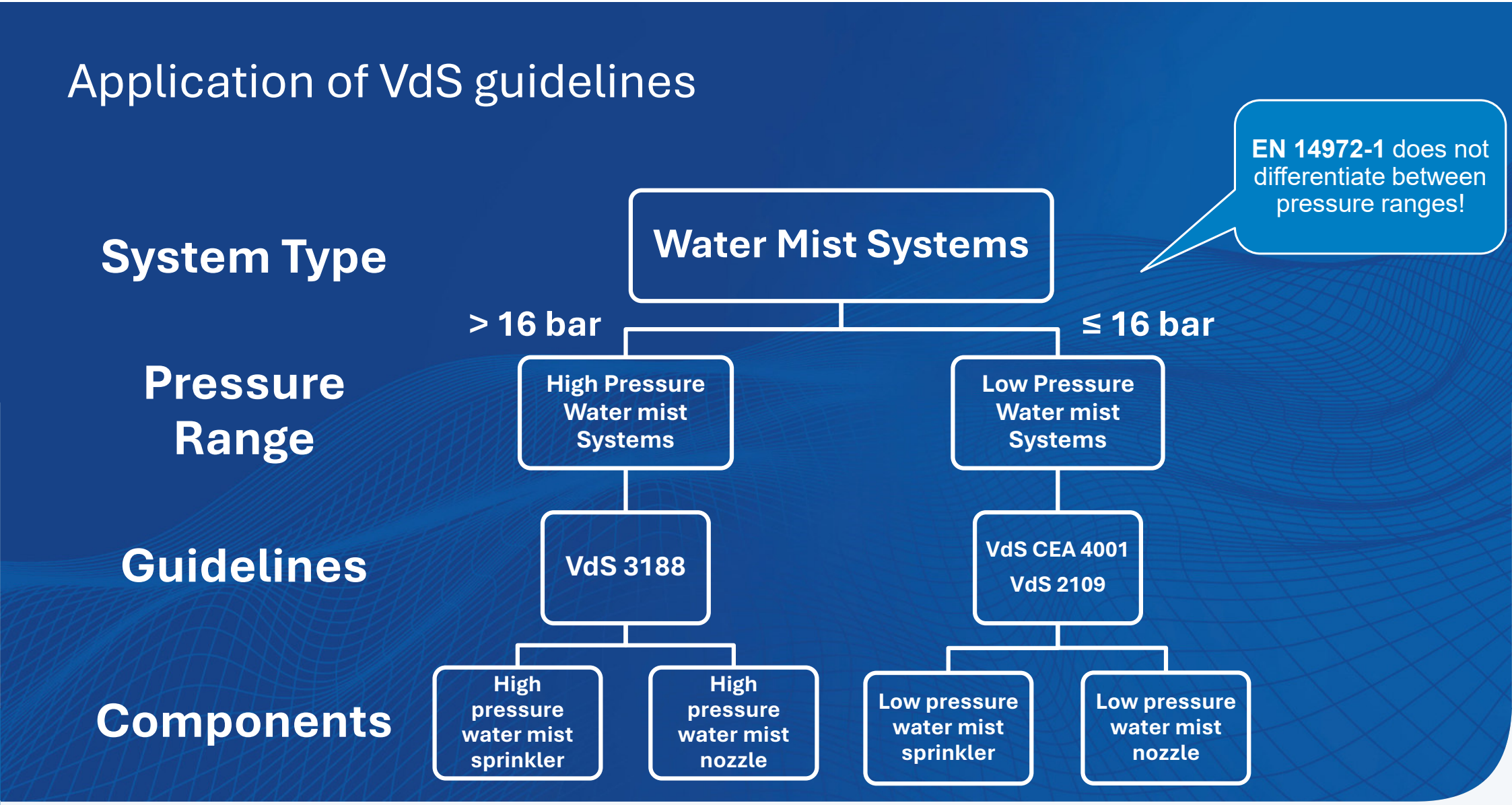
Integral VdS Concept For Water Mist Systems



Approval procedure for water mist systems



Application of VdS guidelines



2 | VdS 3883

VdS 3883: Goals of Developing

- General improvement and update of the existing fire test protocols.
- Further development of existing fire test protocols taking into account many years of experience with these test protocols
- Taking into account feedback from the market
- Set standardized requirements, e.g. for measurements
- Transfer to official and published VdS document series
- Implement revised fire test protocols to **EN 14972 series** (where possible)

VdS 3883 - Standard Applications for Water Mist Systems

- **VdS 3883-1**: Offices and accomodation areas (EN 14972-3)
- **VdS 3883-2**: Offices and accomodation areas with sidewall sprinklers
- **VdS 3883-3**: False ceilings and false floor in OH1 areas (EN 14972-6)
- **VdS 3883 4**: Parking garages (EN 14972-5)
- **VdS 3883-5**: Selected sales, storage and technical areas (prEN 14972-2)
- **VdS 3883-6**: Painting booths
- **VdS 3883-7**: Areas with combustible liquids (Future WI)
- **VdS 3883-8**: Cable tunnels (EN 14972-11)

To achieve (DIN) EN Conformity:
The requirements must be met 100%!
One-way process only!

Standardized vs. system-specific design parameters

- **Standardized Design Parameters**, e.g. **VdS 3188** and **EN 14972-1**:
  - Distances of water mist sprinklers to each other, to ceilings, walls, skylights, joists.
  - Operating Time
  - Design Area
  - Requirements for the water supply

- **System-specific design parameters** determined by fire test (**VdS 3883 / EN 14972-x**):
  - Spacing
  - System Pressure + Operating Pressure
  - Ceiling Height
  - Acceptable room volume (open nozzle systems)
  - Special requirements, e.g. type of storage or container

3 | Revision of VdS 3188

Revision of VdS 3188

Features and focal points of review

- Current Edition: VdS 3188 : 2019-10 (02)
- General improvement and update of guideline
- Incorporating practical experience (e.g. from VdS Inspection Service)
- Adaption of requirements of **EN 14972-1** where applicable
- Involvement of stakeholders:
  - VdS Approved Manufacturers & Installers
  - IWMA
  - Bvfa

Your IWMA contacts:
IWMA: Rüdiger Kopp
Bvfa: Dirk Laibach, Thomas Helmle
VdS: Cristian Kopp

Revision of VdS 3188

Examples

- **0.3 Classification system for water mist systems**
  - Water mist systems that are planned and installed acc. to VdS 3188 correspond to the protection level of the **previous Class 1** >> No subdivision into Class 1 and Class 2 systems

- **2 Definitions**
  - Complete revision.
  - Example: Minimum flow rate: The minimum flow rate (in l/min) of a water mist sprinkler or nozzle is determined by the required minimum pressure and its K-factor.

Revision of VdS 3188

Examples

- **4.4 Fire compartmentation and separation**
  - Now **Annex U** - Fire compartmentation & separation of outdoor storage of flammable materials and protected buildings (informative)

- **5.4 Selected storage in OH areas** (VdS 3883-5)
  - Adoption of EN 14972-1: *Individual areas used for **storage** may have a maximum combined area of 500 m² and must be fire-retardant partitioned with non-combustible building materials.*

- ***7.3 Installation site of components for water supply***
  - New requirements regarding installation of decentrally installed section valve stations close to the protected area

Revision of VdS 3188

Examples

- **Ch. 8.6.2 Single water supply with increased reliability**
  - *Pump systems must be designed in such a way that the necessary water rate is available in the event of **failure of an individual pump** module or **energy source**. If the **pump control cabinet fails**, it must be ensured that the required water rate is still available.*
  - *If more than one pump system is installed, these must be supplied by independent energy sources.*

- **10.2.1.2 Protection against freezing**
  - New: branch pipes may be heated electrically. Additional requirements must be followed. Alternatively dry-pipe system.

Revision of VdS 3188

Examples

- **11.6.3 Water mist sprinklers – Ceiling gradient**
  - Ceiling gradient of >10° only acceptable if approved by fire testing (in acc. to EN 14972-1)

- **14 Alarms and alarm devices**
  - Complete revision in accordance with applicable regulations

- **17.1 Commissioning tests**
  - Dry pipe systems shall be pressure tested for at least 24h with the specified standby pressure. Maximum permissible pressure loss is 2.5 bar.

Revision of VdS 3188

Examples

- **New: 18.4.4 5-year inspection by the VdS-approved installer**
  - *The characteristics of the installed water mist sprinklers and nozzles of each installer must be randomly checked by an accredited laboratory after 5 years acc. to EN 12259-1, unless other values are specified in the system-specific P&E manual.*

- **New: 18.4.5 10-year inspection by the VdS-approved installer**
  - Flushing the complete pipework installation
  - Check of storage containers of cylinder systems shall be checked internally and externally for corrosion and the condition of the coating or lining.

- **19 Monitoring of water mist systems**
  - *The operational readiness of water mist systems must be monitored automatically.*

Revision of VdS 3188

Examples

- **G.3.3.3 Design area for small rooms**
  - *In the case of rooms that are structurally separated in at least a fire-retardant manner (F30/T30) and that are smaller than the actually required design area, the actual room size can be used for the hydraulic calculation.*

- ***Annex I Components and systems***
  - The following components were added:
    - Foam concentrate
    - Monitoring control panels, control and indicating equipment for water mist system monitoring

Revision of VdS 3188

Examples

- **K.1.4 False ceilings and false floors**
  - *Requirements for false ceilings were moved here from main body text.*

- ***K.1.5 Parking garages***
  - If the use of underground garages by electric or hybrid vehicles cannot be ruled out, the operating time must be at least 60 minutes, and a water feed-in option shall be available for the fire department.

- **K.2.4 Storage and processing areas for flammable liquids**
  - *For storage quantities > 2000 l in a room, the minimum operating time specified in the system-specific P&E manual shall be doubled (instead of foam proportioning!)*

4 | VdS 3188 and EN 14972 - a comparison

VdS 3188 and EN 14972 - a comparison

Field of Application

VdS 3188	EN 14972
▪ Applies exclusively to high-pressure water mist systems (system pressure > 16 bar)	▪ Applies to water mist systems of all pressure levels
▪ Applies to pump and cylinder systems as well as gas driven pump units	▪ Applies to pump and cylinder systems

VdS 3188 and EN 14972 - a comparison

Fire Test Protocols

VdS 3883	EN 14972
▪ VdS 3883: Fire test protocols published in a separate VdS guideline	▪ EN 14972: fire test protocols in part 2 - 17 of the standard
▪ Fire test protocols linked to protection concepts from Annex K of VdS 3188	▪ Fire test protocols partly adopted from certification bodies using "Fast Track Criteria", partly test developed in WG
▪ Always witnessed by VdS representatives	▪ No supervision by independent third parties required (professional competence?)
▪ DIN EN ISO/IEC 17025 required, alternatively verification of measurement calibration by VdS on site	▪ DIN EN ISO/IEC 17025 only required in some fire test protocols
▪ Test report part of the VdS certificate	

VdS 3188 and EN 14972 - a comparison

System manual / DIOM

VdS 3188	EN 14972
▪ Issued by the manufacturer	▪ Issued by the manufacturer
▪ Contains system-specific parameters: scope, minimum operating pressure, K-factor, distances, special instructions + restrictions	▪ Contains system-specific parameters: scope, minimum operating pressure, K-factor, distances, special instructions + restrictions
▪ Is reviewed and approved by VdS as part of the approval procedure	▪ No third-party check of the system manual
▪ Part of the VdS certificate	

VdS 3188 and EN 14972 - a comparison

Planning and Installation

VdS 3188	EN 14972
▪ Planning basis: VdS 3188	▪ Planning basis: EN 14972-1
▪ Carried out by a VdS-approved installer (VdS 2132)	▪ Carried out by installer in accordance with EN 16763

VdS 3188 and EN 14972 - a comparison

Checking the installation & maintaining operational readiness

VdS 3188	EN 14972
▪ Initial and periodic inspections by VdS ▪ Specified inspection intervals for the operator and installer	▪ Initial and periodic inspection by independent body not required ▪ Specified inspection intervals for the operator and installer

Summary

- With VdS 3188 and EN 14972-1 users now have access to various regulations for planning and installing water mist systems
- Fire test protocols are available for a wide range of applications. Following VdS 3883, EN conformicy can be achieved
- The level of detail of the requirements in VdS 3188 and EN 14972-1 differs significantly in some cases
- When applying VdS 3188, all requirements of EN 14972-1 are met
- Safe and reliable systems require a responsible planning and installation by well trained and experienced installers

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