VdS 3883 – The new fire test protocol series and other new developments

Kamil Świetnicki, 20th International Water Mist Conference, Warsaw, Poland (2021)

Agenda

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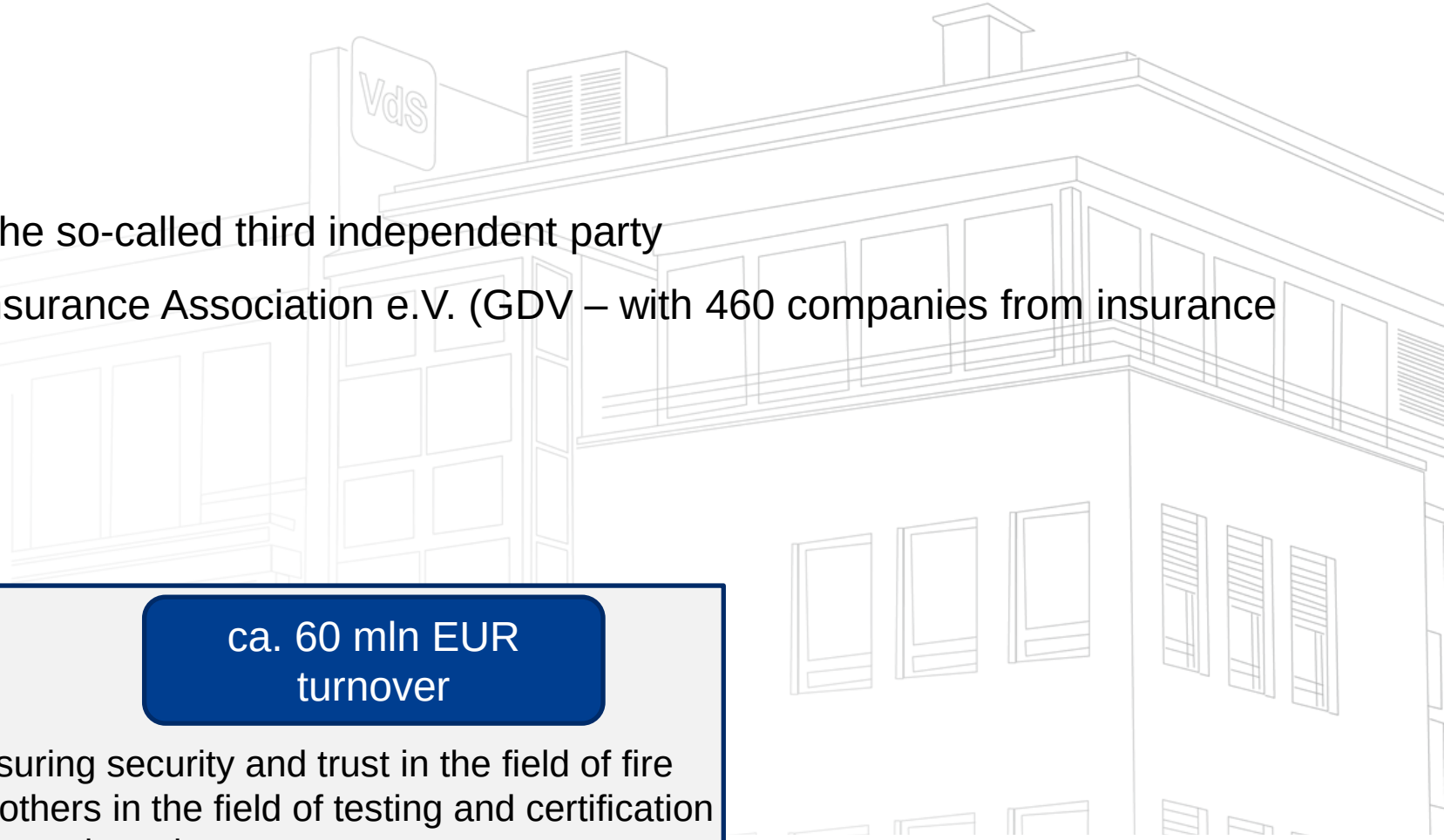
What is VdS?



- VdS – an independent institution, the so-called third independent party
- VdS – Enterprise of the German Insurance Association e.V. (GDV – with 460 companies from insurance business)
- VdS – Vertrauen durch Sicherheit
  (trust through security)

ca. 600 employees

ca. 60 mln EUR turnover

VdS is an independent institution ensuring security and trust in the field of fire protection. For many decades, among others in the field of testing and certification of products and services

6 offices in Germany
5 offices abroad

ca. 20 % turnover abroad

VdS Schadenverhütung Poland

- The VdS branch office is located in Warsaw

We work with customers from Poland as well as eastern countries, e.g. Lithuania, Russia, Ukraine, Georgia, Moldavia, Romania and middle east e.g. Saudi Arabia, Egypt

VdS Schadenverhütung Poland

- from December 17, 2020 VdS Schadenverhütung Sp. z o.o. operates as Acredited Inspection Unit type A according to PN-EN ISO / IEC 17020 standard in the field of fire protection installations according to standards / guidelines: PN-EN, VdS, NFPA, FM Global, ISO, CEA and others

POLSKIE CENTRUM AKREDYTACJI
POLISH CENTRE FOR ACCREDITATION

PCA

Sygnatariusz EA MLA
EA MLA Signatory

CERTYFIKAT AKREDYTACJI
JEDNOSTKI INSPEKCYJNEJ
ACCREDITATION CERTIFICATE OF INSPECTION BODY
Nr AK 036

Potwierdza się, że: / This is to confirm that:

VDS SCHADENVERHÜTUNG Sp. z o.o.
ODDZIAŁ KONTROLI TECHNICZNEJ
Al. Rzeczypospolitej 14, 02-972 Warszawa

spełnia wymagania normy PN-EN ISO/IEC 17020:2012
jako jednostka inspekcyjna Typu A
meets requirements of the PN-EN ISO/IEC 17020:2012 standard
as Type A inspection body

Akredytowana działalność jest określona w Zakresie Akredytacji Nr AK 036
Accredited activity is defined in the Scope of Accreditation No AK 036

Akredytacja pozostaje w mocy pod warunkiem przestrzegania
wymagań jednostki akredytującej określonych w kontrakcie Nr AK 036
This accreditation remains in force provided the Body observes
the requirements of Accreditation Body defined in the Contract No AK 036

POLSKIE CENTRUM AKREDYTACJI

DYREKTOR
POLSKIEGO CENTRUM AKREDYTACJI
LUCYNA OLBORSKA

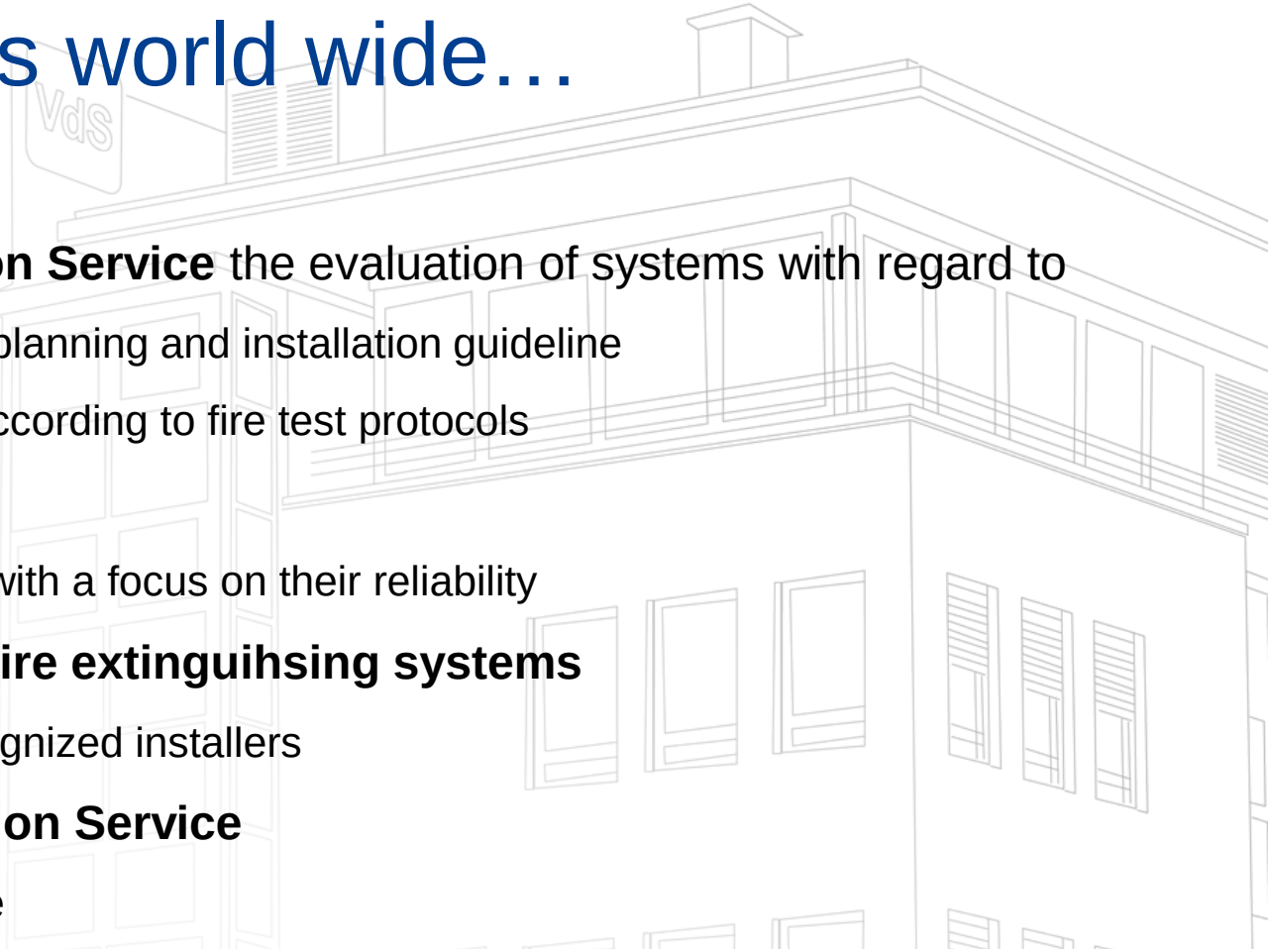
Warszawa, 17.12.2020 r.

VdS Schadenverhütung Poland

- Kamil Świetnicki – water mist expert in VdS Poland. Work in VdS since 2012. Responsible for water mist systems, sprinkler systems, hydrant systems. Product Manager for FM Guidelines.
- Biggest inspection of water mist extinguishing systems in past years:
  - Tesla Gigafactory Berlin-Brandenburg
    - High pressure water mist system
    - Low pressure water mist system

  - Saudi Arabia, Egypt - high pressure water mist system
    - Telecom
    - Transformators in Cairo
    - Kapsarc and Harman Railway – Saudi Arabia
  - Volkswagen Września – low pressure water mist system

VdS Schadenverhütung offers world wide…



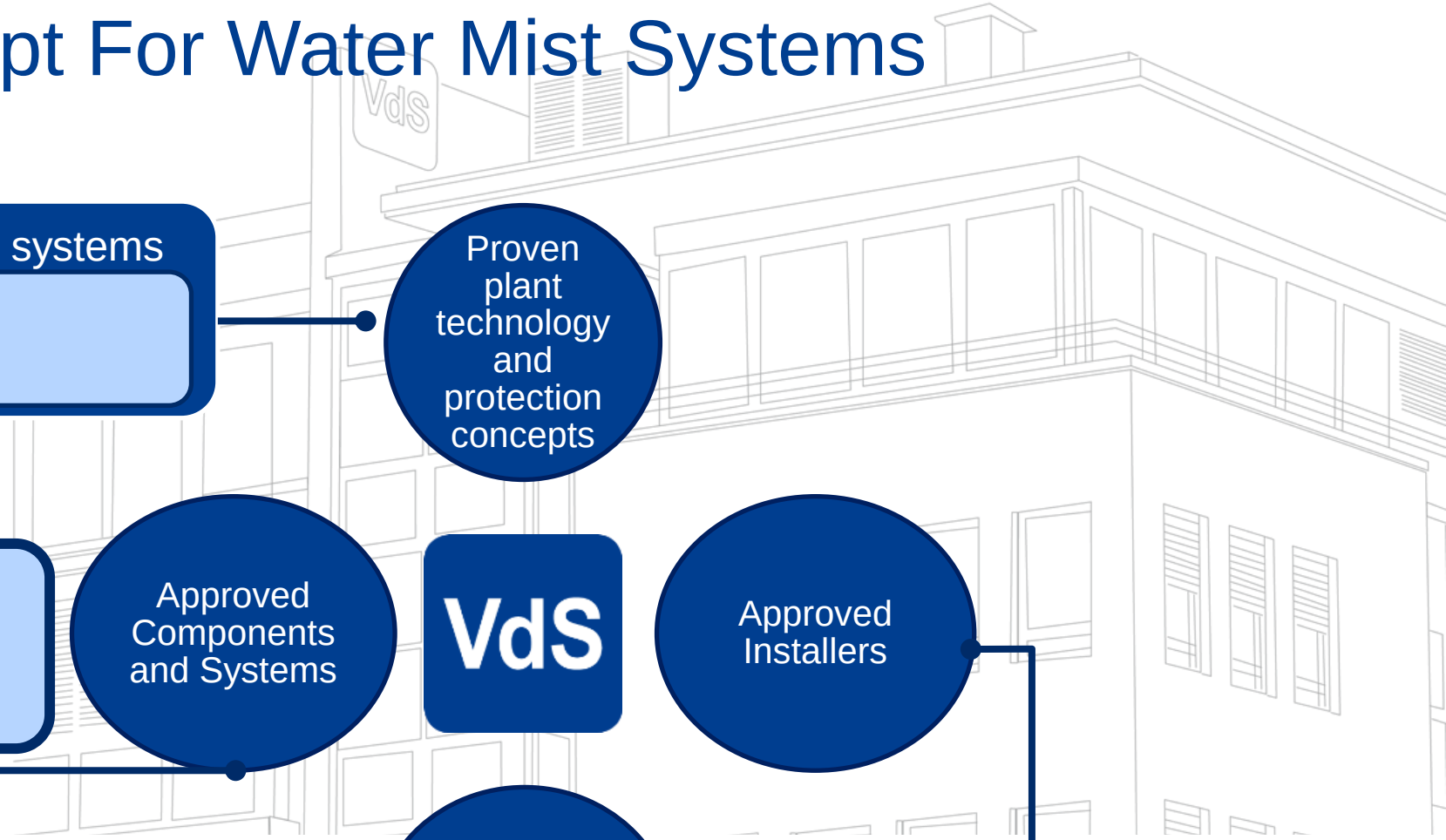
- By our **Product Management of the VdS Inspection Service** the evaluation of systems with regard to
  - Applicability according to the application areas of the planning and installation guideline
  - Effectiveness proven by fire and extinguishing tests according to fire test protocols
- By our **Laboratories** 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 Technical 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

VdS Schadenverhütung offers world wide…

VdS Schadenverhütung offers world wide…

- VdS experts are present in all relevant bodies establishing a set of regulations and standards

Integral VdS Concept For Water Mist Systems



VdS Guidelines for water mist systems

VdS 3188 : 2019-10 (02)

Proven plant technology and protection concepts

VdS 2100-X + **VdS 2562** + individual test plans in the VdS laboratories **VdS 3883**

Approved Components and Systems

VdS

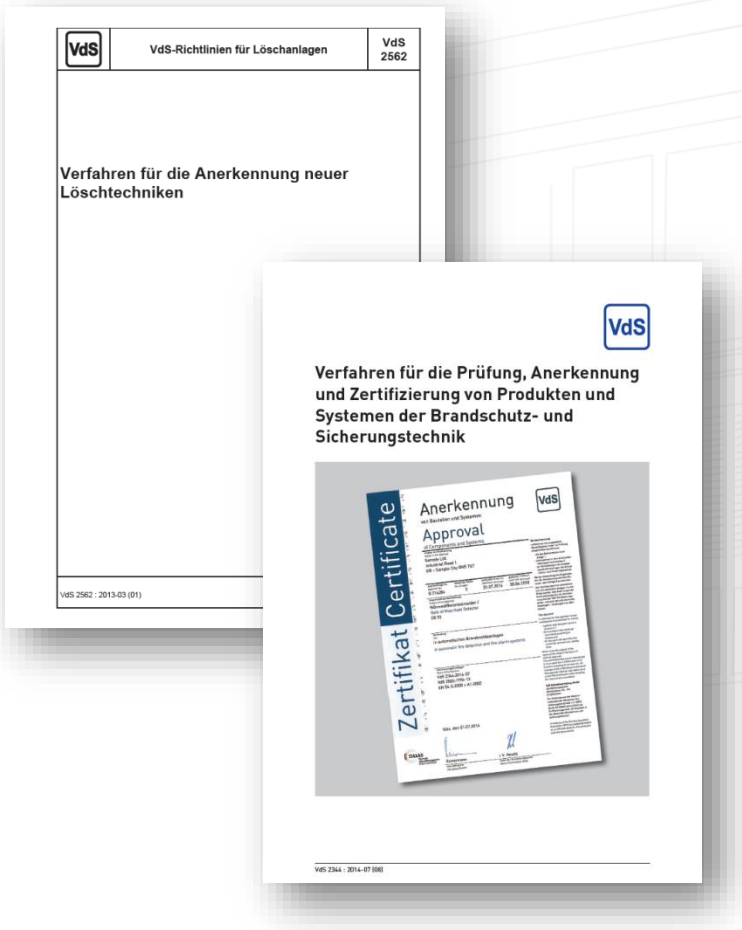
Approved Installers

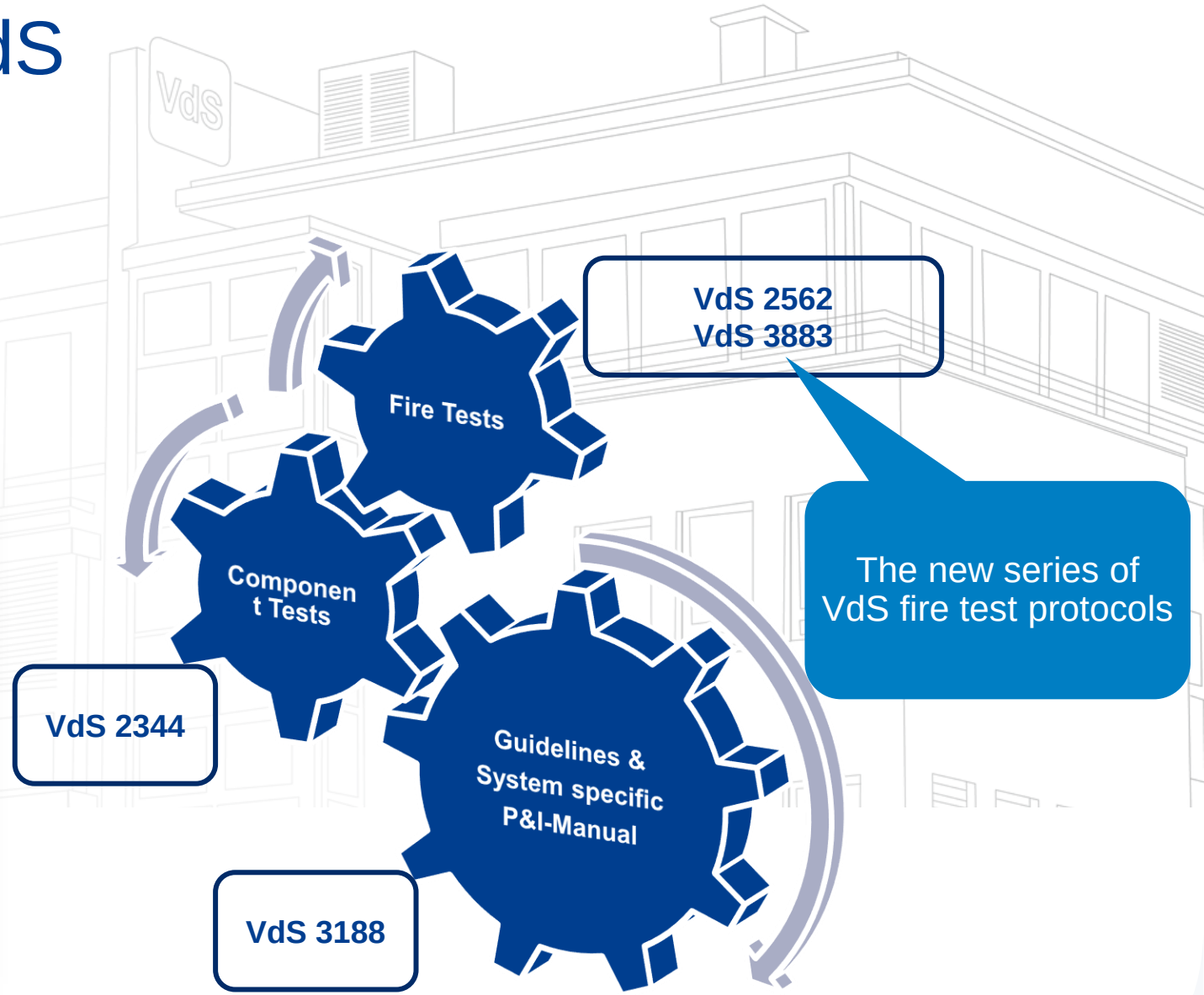
Technical Inspection Service VdS Schadenverhütung

Acceptance and annual inspections

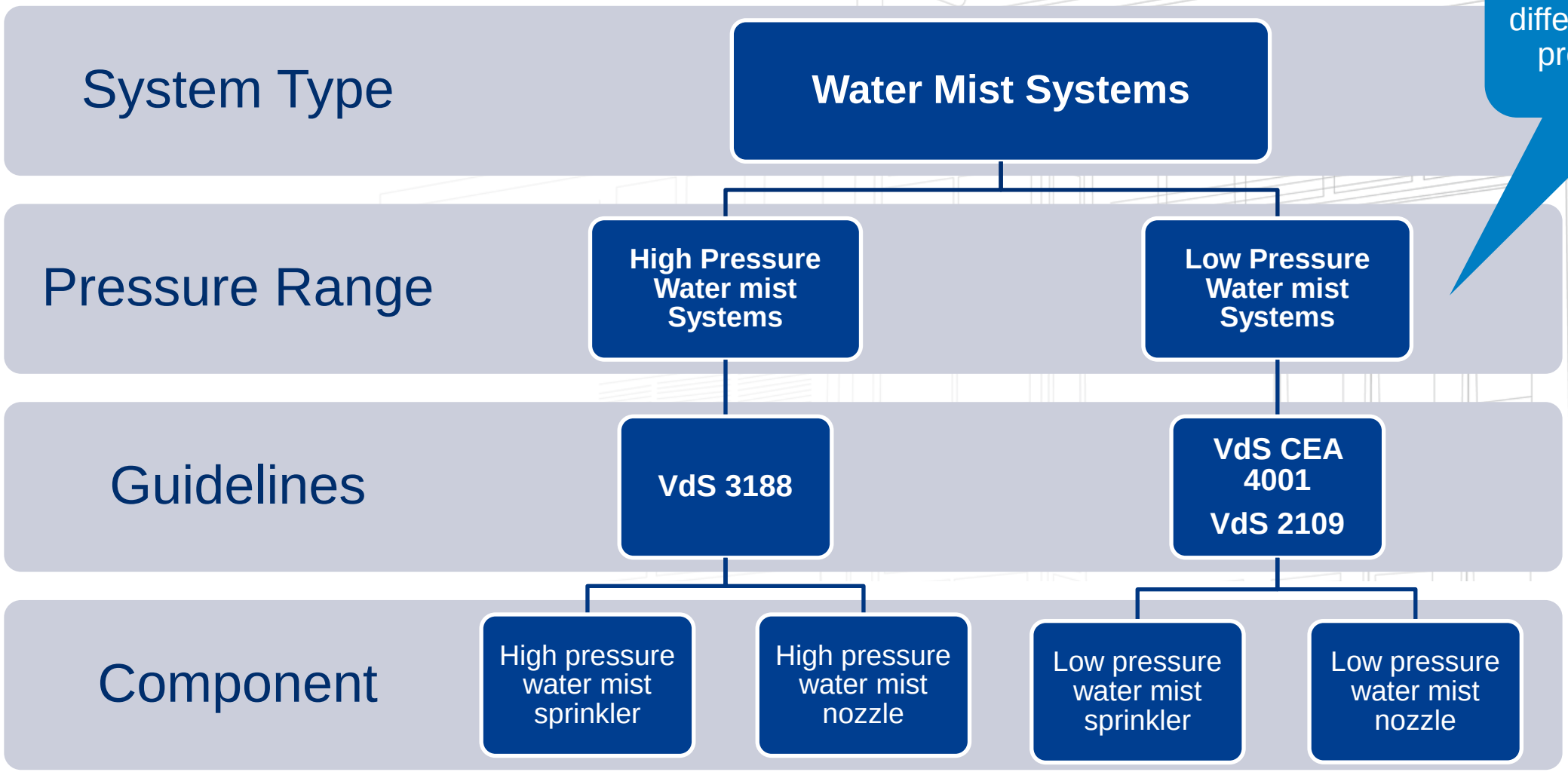
VdS 2132

Guidelines Concept At VdS





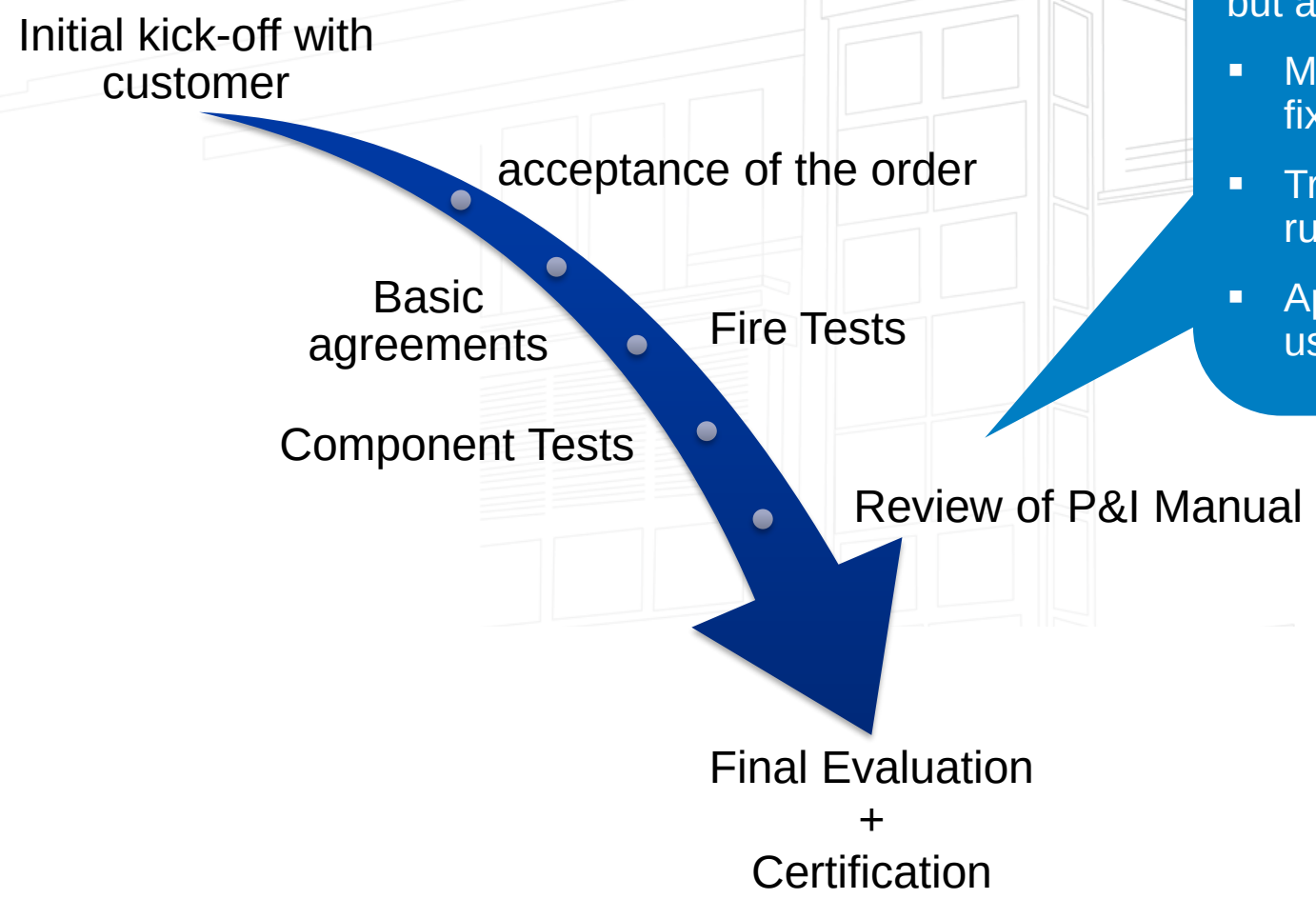
Application of regulations (VdS)



EN 14972-1 does not differentiate between pressure ranges!

Approval Process / Certification

Exemplary procedure according to **VdS 2562**

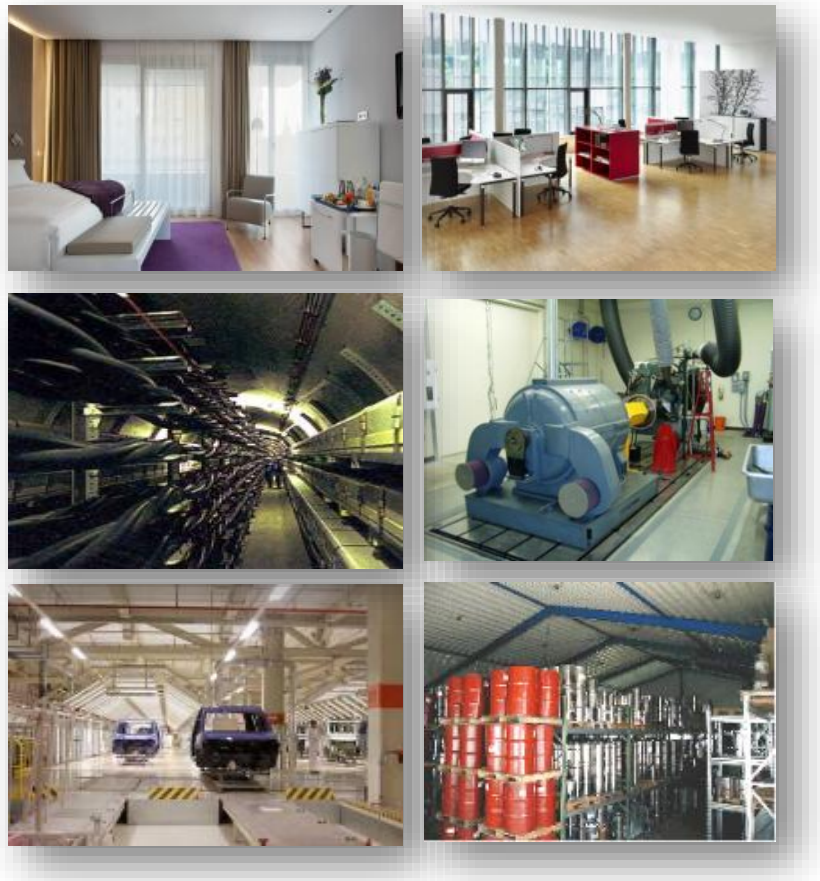


Similar procedure for EN 14972, but advantage VdS:

- Monitoring of the project with fixed contact persons
- Transparent processes through rules and guidelines at VdS
- Approved components can usually be used in other systems

Standard Applications for Water Mist Systems

- Offices and recreation areas
- Selected sales, storage and technical areas
- Cable Tunnels
- Parking Garages
- Machinery Spaces
- Painting Booths and Storages for flammable liquids
- …



VdS 3188 - Annex K
EN 14972 – Parts 2 - 17

Standardized and system-specific Design Parameters

- **System-specific design parameters** determined by **fire test** (VdS 3883 / EN 14972-x):
  - Max. Spacing
  - System Pressure + Operating Pressure
  - Ceiling Height
  - Max. acceptable room volume (Deluge Systems)
  - Special Requirements, e.g. type of storage or container
- **Standardized Design Parameters**, e.g. VdS 3188, Chap. 11 und Annex K:
  - Distances of water mist sprinklers to each other, to ceilings, walls, skylights, joists.
  - Operating Time
  - Design Area

Standardized and system-specific Design Parameters

- Fire detection device
- Ceiling Height
- Cross Flows
- Spacing
- Pressure
- Orientation
- Distances

Degree of detail of the requirements very different!

VdS 3188 Ch. 11 and 12
EN 14972-1 Ch. 4 and 5

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 the many years of experience with the existing ones
- Taking into account feedback from the market
- Set standardized requirements, e.g. for measurements
- Transfer to official VdS document series.
- Implement revised fire test protocols to EN 14972 (where possible)

VdS 3883: Applications Covered

- VdS 3883-1: Office spaces and accommodation areas
- VdS 3883-2: Office Spaces and Accommodation Areas with Water Mist Sidewall Sprinklers
- VdS 3883-3: False Ceilings and False Floor of OH Group 1
- VdS 3883-4: Car garages
- VdS 3883-5: Selected sales and storage areas and mechanical floors
- VdS 3883-6: Paint Booths
- VdS 3883-7: Areas with Combustible Liquids
- VdS 3883-8: Cable Ducts

VdS 3883: Some new features in detail

- Clear **Scope** for each fire test protocol
- Revised description of „**Field of Application**“ in accordance with VdS 3188 Annex K
- Revised **specification of fire loads** where required (e.g. office)

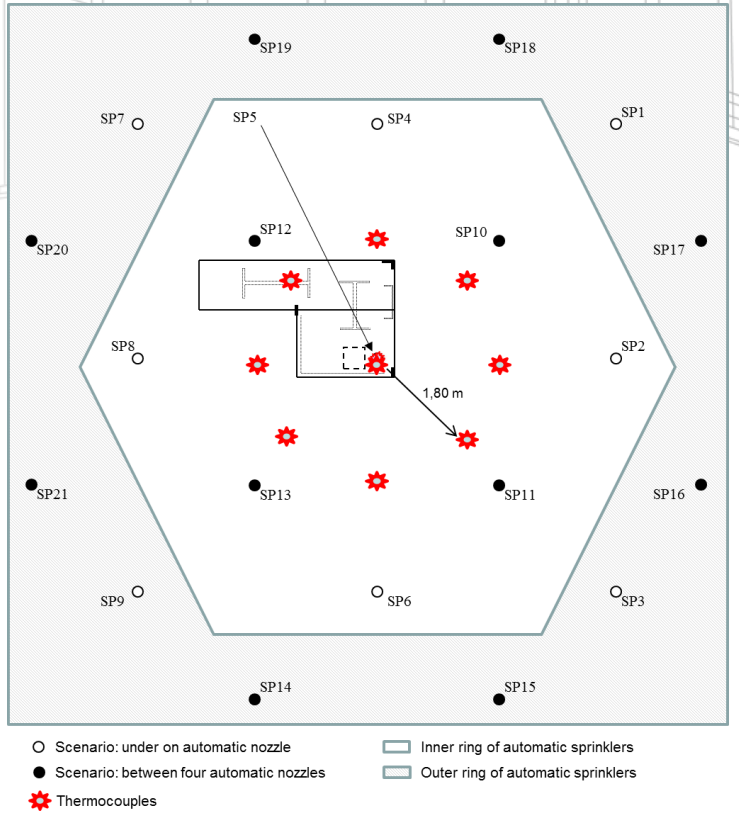
Monitor and Keybord where removed

VdS 3883: Some new features in detail

- New features for OH fire test protocols, e.g. Office

- **Constant safety factor** in terms of water flow over several fire test protocols (5,75 mm/min*m²)
- Increase number of (water mist) sprinklers to be installed
- Total number of tests was increased to create a more solid data base in each test series

Test	Ignition source	System
Spr.U1	below one sprinkler	Reference sprinkler system
Spr.U1 (repeat test)		
Spr.B4	between four sprinklers	
Spr.B4 (repeat test)		
WM.U1	below one automatic water mist sprinkler	Water mist system
WM.U1 (repeat test)		
WM.B4	between four automatic water mist sprinklers	
WM.B4 (repeat test)		



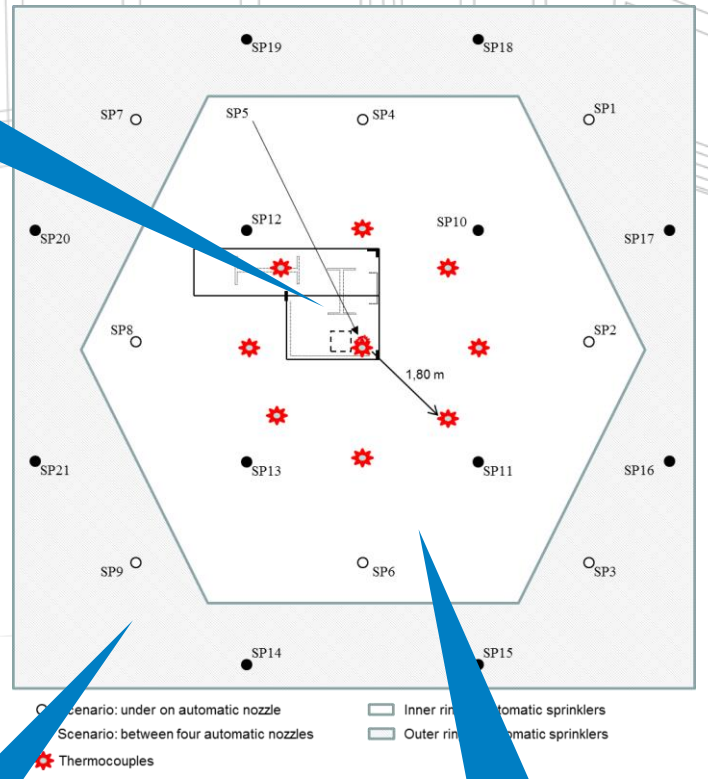
VdS 3883: Some new features in detail

- New concept of temperature measurement
- **Pass/Fail Criteria were completely revised**, to compare the overall performance of both the reference system and the water mist system to be approved

The tests have been passed, when the following applies:

- the total averaged damage of the water mist test series is less than or equal to the total averaged damage of the sprinkler test series
- the total averaged ceiling gas temperature of the water mist test series is less than or equal to the total averaged ceiling gas temperature of the sprinkler test series
- no more than four automatic water mist sprinklers activate in any of the tests, while only one automatic water mist sprinkler from the outer ring is allowed to be activated

Annular arrangement of thermocouples



Outer Ring

Inner Ring

VdS 3883: General Benefits

- Linkage of **VdS 3188**, especially **Annex K**, and corresponding fire tests
- **VdS Approval** and **EN conformity** in one procedure (for those fire test protocols implemented in **EN 14972**) >> conversely reduction of additional fire tests
- Up to date fire test protocols based on continuous further development of existing concepts and addition of further concepts

Summary

- Users now have access to various sets of standards for planning and installing of water mist systems
- VdS 3883 includes various new features and improvements
- Fire test concepts covering new applications or project specific requirements may be developed if required
- In future: when VdS 3883 is applied, the requirements of EN 14972 are also met.
- A contact person for water mist systems at each office

Contact

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