



Water Mist (Watermist) fire protection systems current status of the European Standard




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The current edition of 14972 standard

- The current edition of the 14972 is a TS published in 2010; it is a complete standard on design, installation and maintenance of water mist systems.
- It includes an appendix for water mist nozzle specification and testing
- And it includes a series of fire test protocols developed by the working group during the over than 10 years activity.
- The TS 14972 has been adopted in some European Countries, although there are countries, UK and France are the main ones, that are developing their own national standard on design, installation and test procedures.

TECHNICAL SPECIFICATION SPÉCIFICATION TECHNIQUE TECHNISCHE SPEZIFIKATION	FINAL DRAFT FprCEN/TS 14972
May 2010	
ICS 13.220.20	Will supersede CEN/TS 14972:2008
English Version	
Fixed firefighting systems - Watermist systems - Design and installation	
Installations fixes de lutte contre l'incendie - Systèmes à brouillard d'eau - Conception et installation	Ortsfeste Brandbekämpfungsanlagen - Feinsprüh-Löschanlagen - Planung und Einbau
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The structure of the new draft

14972

**Design &
installation**

Components: 14974

14974-1: Water Mist Nozzles

14974-2: Water control valves

14974-3: Filters and strainers

14974-4: Pressure Switches

14974-5: Check Valves

14974-6: ?

Fire test protocols: 14973

14973-1: test protocol abc...

14973-2: test protocol xyz...

...

...

14973-xx: test protocol wyz..

The Design and Installation document

- The new 14972 document will cover the Design, Installation and Maintenance of watermist systems with a direct reference to the components standards and to the protocols for testing watermist systems.
- It is ready as a final draft, already agreed within the working group and it might be released for WG5 approval and public enquiry after the next meeting of WG5 –TG3 scheduled for next November 26-27th in Berlin
- It is entirely re-written with respect to the previous document.

CEN/TC 191
Date: ...
CEN/TS 14972:2010
CEN/TC 191
Secretariat: BSI

Fixed firefighting systems — Watermist systems — Design and Installation
Ortsfixe Brandbekämpfungsanlagen — Fehsprühschleimlagen — Planung und Einbau
Installations fixes de lutte contre l'incendie — Systèmes à brouillard d'eau — Conception et installation

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Normen_CEN_TC191_WG5_14972_CEN TS 14972 - Working document ab 2012/TS14972 draft for
revision[2013-09-02]_clean_copy.doc STD Version 2.3e

The Design and Installation document

- There are several innovations in the document:
 - The main one is the differentiation between the so called Automatic Watermist systems (sprinkler like) and the Watermist Deluge Systems
 - They are differentiated in the design and in the installation indications.
 - There is a Pump section
 - There is a water supply section dealing with duration and water additives

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2. **Reference documents**
3. **Terms and Definitions**
4. **General Requirements**
5. **System Requirements**
 - Automatic watermist systems
 - Watermist Deluge systems
6. **System Design**
7. **Watermist system Components**
8. **Installation**
9. **Water supply**
10. **Pump for watermist systems**
11. **Testing , Acceptance and Docs**
12. **Inspection and maintenance**
13. **Documentation**

The Design and Installation document

- The document is written to be submitted to the WG5 and to TC191 as a Candidate EN standard:
 - It is prepared in conformity with the CEN/CENELC instruction for standard preparation
 - So far all the indications received are in favor of the publication as a EN.
 - The document structure is ready for future implementation of new information; meanwhile there is a frequent reference to the DIOM (Design Installation Operation and Maintenance Manual issued by the Manufacturer of the system.

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The component standards

- The main components of the water mist systems are covered by specific component standards.
- In general the low pressure systems will make reference to the EN-12259 series for sprinkler and deluge system components
- The gaseous part of the system will make reference to the EN 12094 series for gas systems
- The other components will have specific standards that will include the construction characteristics and the test requirements per each one.
- They will be published as EN standards, but they will not be “harmonized” for the time being, which means that no CE marking will apply.
- They are mostly ready for the approval process.



The component standards

- In the detail there are:
 - 14974-1 Watermist Nozzles – Requirements and Test methods
 - 14974-2 Watermist Deluge control valves and their actuators
 - 14974-3 Watermist Strainer and wire mesh filters – Requirements and test methods.
 - 14974-4 Watermist Pressure switches for system intervention and pump control – Requirements and test methods.
 - 14974-5 Watermist Check and Non-return valves – Requirements and test methods.



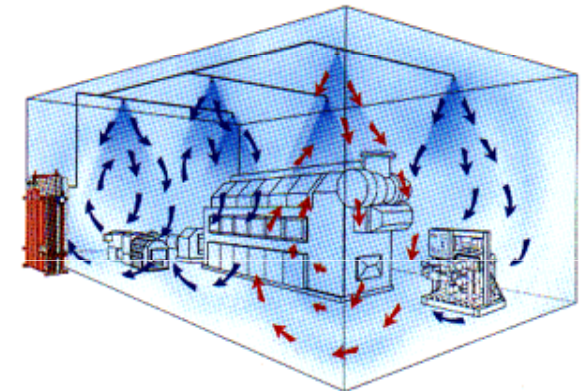
The fire test protocols



- It is the “qualifying” part of the European Standard developed by TG3
- It also is the most critical issue in water mist system standardization

The main protocols already adopted

- **CEN prEN 14973-1 Fire Tests for Water Mist Systems for the Protection of Special Hazard Machinery Spaces with Volumes not Exceeding 9175 ft³ (260 m³) light diesel type**
- Fire Hazards that are addressed by the protocol include the followings: rooms with machinery such as oil pumps, oil tanks, fuel filters, generators, transformer vaults, gear boxes, drive shafts, lubrication skids, diesel engine driven generators, and other similar machinery using fuel and/or lubrication fluids with volatilities less than or equal to light diesel. All hazards included under the scope of this total flooding application shall be protected for a minimum of twice the longest time to extinguish the test fires, the time to shut down process equipment, or 10 minutes, whichever is greater.



The main protocols already adopted

- **CEN prEN 14973-2 Fire Tests for Water Mist Systems for the Protection of Special Hazard Machinery Spaces with Volumes not Exceeding 9175 ft³ (260 m³) Heptane grade**
- Fire Hazards that are addressed by the protocol include the followings: rooms with machinery such as internal combustion engines or other equipment using fuel and/or lubrication fluids with volatilities less than or equal to heptane, and incidental use or storage of limited quantities of flammable liquids of not more than two 55 gal (208 L) drums. All hazards included under the scope of this total flooding application shall be protected for a minimum of twice the longest time to extinguish the test fires, the time to shut down process equipment, or 10 minutes, whichever is greater.

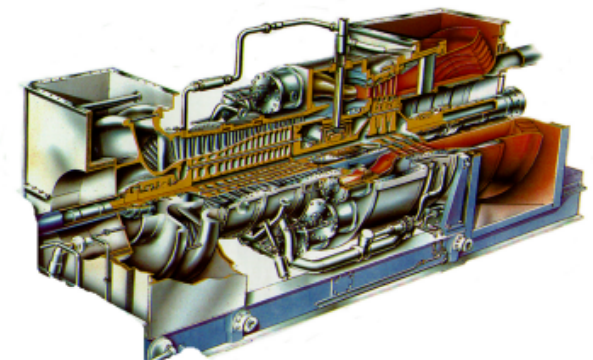


The main protocols already adopted

- CEN prEN 14973-3 **Fire Tests for Water Mist Systems for the Protection of Combustion Turbines with Volumes not Exceeding 9175 ft³ (260 m³)**
- Fire Hazards that are addressed by the protocol include the followings: combustion turbines in enclosures with volumes not exceeding 9175 ft³ (260 m³). Combustion turbines included under the scope of this total flooding application shall be protected for a minimum of twice the longest time to extinguish the test fires, turbine rundown time (including the time that the turbine surfaces are above the auto ignition temperature of the lubricating fluid), the time to shut down process equipment, or 10 minutes, whichever is greater.



MS7001



The main protocols already adopted

- **CEN prEN 14973-4 Fire Tests for Water Mist Systems for the Protection of Machinery Spaces and Special Hazard Machinery Spaces with Volumes Exceeding 9175 ft³ (260 m³)**
- Fire Hazards that are addressed by the protocol include the followings: rooms with machinery such as oil pumps, oil tanks, fuel filters, generators, transformer vaults, gear boxes, drive shafts, lubrication skids, diesel engine driven generators, and other similar machinery using fuel and/or lubrication fluids with volatilities less than or equal to light diesel. The special hazard machinery space application includes rooms with machinery such as internal combustion engines or other equipment using fuel and/or lubrication fluids with volatilities less than or equal to heptane, and incidental use or storage of limited quantities of flammable liquids of not more than two 55 gal (208 L) drums. All hazards included under the scope of this total flooding application shall be protected for a minimum of twice the longest time to extinguish the test fires, the time to shut down process equipment, or 10 minutes, whichever is greater.

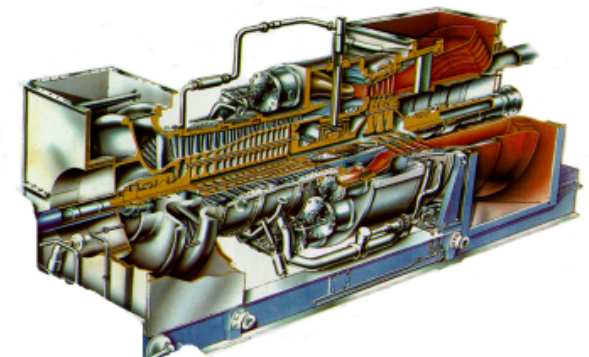


The main protocols already adopted

- CEN prEN 14973-5 **Fire Tests for Water Mist Systems for the Protection of Combustion Turbines with Volumes Exceeding 9175 ft³ (260 m³)**
- Fire Hazards that are addressed by the protocol include the followings: Combustion turbines included under the scope of this total flooding application shall be protected for a minimum of twice the longest time to extinguish the test fires, the turbine rundown time (including the time that the turbine surfaces are above the auto-ignition temperature of the lubricating fluid), the time to shut down process equipment, or 10 minutes, whichever is greater.

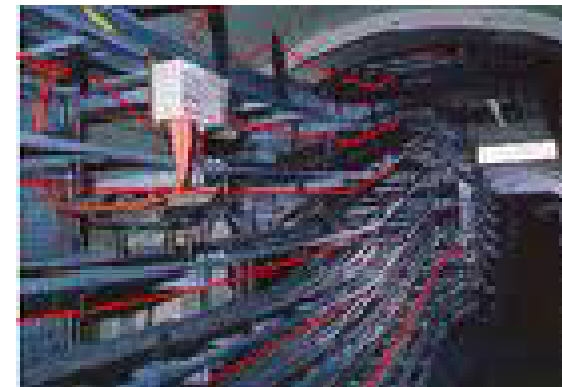


MS7001



The main protocols already adopted

- CEN prEN 14973-6 Fire test protocol for water mist systems for the protection of cable tunnels (control and suppression systems)
- This test protocol is only applicable to mainly horizontal (max. 10°) cable tunnels. It does not include testing of the function of the cables.
- NOTE Horizontal cable tunnels relate to the orientation of the tunnel, not to the cable orientation.



The main protocols already adopted

- CEN prEN 14973-7 **Fire test protocol for car park garages (pertaining to OH2 classification under the 12845 standard)**
- These tests are carried out to evaluate the extinguishing effectiveness of fine water spray systems for the application to car park garages classified as OH2 according to EN 12845. In the tests specified in this concept the fine water spray system to be approved shall have at least equal extinguishing effectiveness as a sprinkler system. These tests can only be applied for the evaluation of the extinguishing effectiveness of fine water spray systems for the application to car park garages. It is not possible to apply them to other OH2 risks or higher room heights. In case of a positive result of the tests the fine water spray system to be approved can be approved for the protection against the following OH2 risks: Protection of non-automatic, fully enclosed garages and underground garages.



The main protocols already adopted

- CEN prEN 14973-8 **Fire test protocol for water mist systems for the protection of industrial oil cookers.**
- Application of the water mist system is limited to the protection of the industrial oil cookers only, and does not include the protection of other equipment such as exhaust ducts, heaters, heat exchangers, and food processing areas, unless tested for these applications. Consideration of the application and use of nozzle protection caps to prevent or reduce the amount of nozzle contamination should be given and the use of such caps should be included in the fire test and nozzle performance test requirement programs.



The main protocols already adopted

- CEN prEN 14973-9 **Fire test protocol for water mist systems for the protection of wet benches and other similar processing equipment**
- This application includes tools which consist of ventilated and unventilated compartments, spin rinse dryers, alcohol vapor dryers, chemical mechanical polishing tools and step and repeat exposure systems. All hazards included under the scope of this local application protocol shall be protected for a minimum of 10 minutes or double the time needed to extinguish the worst case fire scenario, whichever is greater.



The main protocols already adopted

- CEN prEN 14973-10 **Fire test protocol for water mist systems for the protection of False Floors and False ceilings**
- TG 3 agreed to accept the test protocol for false floors and false ceilings as stand-alone.
- They were developed by VdS and have been adopted as such.



The protocols still under discussion

- The current 14972 already includes a fire test protocol for offices pertaining to OH1 hazard categories as mentioned in EN 12845.
- There is also a fire test procedure currently used by VdS for the “Hotel Occupancy hazards”
- There is another fire test procedure established by Factory Mutual for the so called “Light Hazards occupancies or Hazard Category I” that overlaps the previous two.
- On top of all this there are the studies conducted by BRE on the actual fire testing of the office scenario included in the 14972
- **The last information is that the objection from BRE might be withdrawn and therefore the office protocol as well as the Hotel VdS and the FM Light Hazard might be published.**



The protocols still to be discussed

- There are also several protocols still to be taken into consideration to decide whether to accept them in the standard 14972 or not and to which extent different protocols may overlap each others.
- Examples include:
 - All the marine protocols developed during the '90 and currently used by several manufacturers.
 - The protocols issued by UL Underwriter's Laboratories, that are of particular interest because based on Hazard categories
 - The big un-explored area of residential water mist systems for which the INSTA 900-3 standard is going to be published.





THANK YOU

IWMA

International Water Mist Association



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