An Overview of BS8489 series for Design & Installation of watermist Firefighting in Commercial and industrial applications

Bob Whiteley C. Eng.; F.I.Mech.E.; M.I.Fire E.; B.Tech(Hons)
Chair: BSI Watermist Working Group
Why UK standards for watermist?

- CEN document a TS
- EN standard may be over 3 years away
- CEN agenda did not address UK needs and concerns
Development of BS8489

- Draft for Development
- (DD8489: 2006)
- Provisional
- Allows information and experience to be obtained
- Expert group formed to use industry best practice.
Watermist Working Group members

- FSH18/2 + FSH18/6
- Fire Industry Association
- British Automatic Fire Sprinkler Association
- UK Insurers
- Loss Prevention Council
- Factory Mutual

- TG1 - CEN
- TG2 – Domestic & Residential
- TG3 Commercial & Industrial
Testing
Specific area within building can be protected by watermist where relevant fire test protocols exist.

Test protocols
Test protocols must be representative of actual conditions, thus:
• Similar fuel
• Comparable compartment volume
• Compartment height is comparable
• Similar ventilation conditions
• Obstructions are representative
• Duration of protection is compatible with the protection needed.
BS8489 principle requirements – testing cont’d

- Desirability of third party testing and certification.
- Test facilities that operate a quality system with watermist in their scope of accreditation.
- Test protocol recognised
- Test lab record published
- Equipment and systems have demonstrated performance
- Equipment and components listed for their intended application
• Successful test results/test report:
• Components and parameters used in tests
• Maximum and minimum nozzles heights and spacing
• Minimum flows and pressures to be met or exceeded.
• Incorporated into manufacturer’s design manual to replicated the system as tested.
**Local Application:** extinguishing systems designed for object protection with design parameters established by representative fire tests.

**Volume Protection:** (either open nozzles or automatic nozzles) systems designed for hazards within a volume with design parameters established by representative fire tests.
- Extinguishing systems – 2 times the duration to extinguish and prevent re-ignition as established by test.

- Suppression systems:
  - to suit hazard with 60 minutes minimum.

- Automatic nozzle systems flow based upon the most favourable ‘Assumed Maximum Area of Operation’ (AMAO)

- System piping – hydraulically designed.
BS8489
principle requirements - AMAO

Most Unfavourable AMAO

Most Favourable AMAO
**BS8489 principle requirements - components**

- In accordance with LPS1283/FM5560 or equivalent
- Consider components supported by accredited third party assessment
- Nozzles;
  - corrosion resistant
  - permanently marked
  - open nozzles blockage prevention
  - automatic nozzles – thermal release per BSEN12259-1 quick response
- Piping:
  - Stainless steel
  - Copper
  - Galvanised steel
BS8489 principle requirements – water supplies

- Capable of supplying both the hydraulically most unfavourable AND the most favourable AMAOs.
- Wholesome/demineralised/deionised/ sweet industrial water
- Towns main
- One or more automatic starting pumpsets
- One or more pressurised cylinders
- Ensure continuity and reliability
- Pump suction tanks > 30% of full capacity - where infill rate is sufficient to meet discharge duration requirements and can be tested.
- Dedicated pump house: 60 min. fire resistance if separate building, 120 minutes if adjacent to or within a watermist protected building.
BS8489 principle requirements – water supplies cont’d

- Permanent pump flow/pressure test facility
- Cylinders – permanent means to check pressure and water content.
- Pump driver power 110% of rated power demand
- Pump continuous flow to prevent overheating
- Pump suction strainer
- Multiple pumps
  - common suction
  - individual pump isolation
- Sequence starting
- Starting to ensure sustained system pressure
BS8489
principle requirements –
water supplies cont’d
BS8489
principle requirements – Annexes

• A- Elements of typical watermist systems – pump and tank, pump and towns main, cylinders.

• B – Enhanced availability provisions for volume protection systems

• C – Assumed maximum areas of operation – informative text and diagrams.

• D – Testing of nozzles
Fire tests
Commercial & Industrial

- Part 4 - FIRE TESTS FOR WATERMIST SYSTEMS
  - For protection of local applications.
- Part 5 - FIRE TESTS FOR WATERMIST SYSTEMS
  - For protection of combustion turbines and machinery spaces $\leq 80$ m$^3$
- Part 6 - FIRE TESTS FOR WATERMIST SYSTEMS
  - For protection of industrial oil cookers
- Part 7 - FIRE TESTS FOR WATERMIST SYSTEMS
  - For protection of low hazard occupancies.
Thankyou !!