

Compliance & certification for Watermist Fire Suppression Systems

GIVEN THAT THE UK HAS MORE THAN 130 YEARS OF EXPERIENCE IN THE USE AND APPLICATION OF SPRINKLER DESIGN AND INSTALLATION RULES AND MORE THAN 20 YEARS' EXPERIENCE OF THIRD-PARTY CERTIFICATION SCHEMES FOR INSTALLERS, IT IS SURPRISING THAT SO MUCH HEAT AND SO LITTLE LIGHT IS GENERATED BY DISCUSSIONS AROUND THE QUESTION OF STANDARDS AND COMPLIANCE IN THE WATERMIST MARKET
WRITES STEWART KIDD, CHAIR OF THE BAFSA WATERMIST GROUP.



Systems Design Compliance

In the UK, watermist systems should be designed and installed in accordance with one of the two referenced standards. The standards require that the system application complies with the Scope laid down in the standard. For example, in BS 8489 Part 1, Table 1, a number of suitable occupancies for mist systems are specified.

Note for example, that the list of permitted occupancies includes 'hotel bed rooms and their access (only)'. Thus, if it was desired to fit a watermist system to protect all parts of a hotel, it could not be done under BS 8489 Part 1. Reference to the Introduction

to the standard will make it clear that 'The watermist system is to be...tested in accordance with a recognised test protocol'. Sadly, at the time of publication, the test protocols published as part of the BS 8489 series do not include 'hotels'.

This means that the system specifier for the hotel has to resort to requiring the designer and installer to produce other evidence that the proposed system is fit for purpose. This should include one or more of each of the following:

- Fire testing undertaken in a reputable fire laboratory
- Reference to tests already undertaken elsewhere for such an application

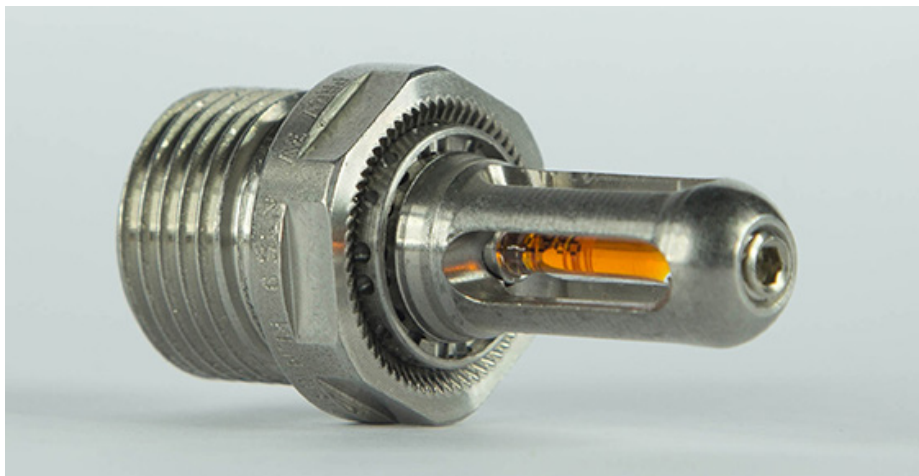
- Reference to an identical, existing installation using the same system components whose design was supported by testing

Care should be taken by manufacturers and installers to avoid claims appearing to fulfil these criteria but which on closer inspection do not.

Systems Product Compliance

As is well established with automatic sprinkler systems, a compliant design is only part of the issue. The equipment to be installed must also comply with fire test protocols (which prove it can fight a given fire) and an appropriate equipment or product standard (which include a variety of tests concerning through-life reliability and durability).

Currently, full compliance with this is impaired by the lack of any widely acceptable equipment standards other than for watermist nozzles. However, it's not enough for a manufacturer or installer to claim that a nozzle has been tested. One company rather misses the point when claiming that their nozzle has 'successfully passed the fire tests in DD 8458'. This is by no means the worst example of a misleading claim as another manufacturer proudly boasts that their mist nozzle has been 'successfully tested to BS 9252' – which is of course, a test standard for residential and domestic sprinkler heads.



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While BS 8458 and BS 8489 set out the essential features of a watermist fire suppression system and include some limited fire test protocols, the standards contain little component detail – presumably on the basis that specific test standards for nozzles, pumps, pipework, valves and control equipment will be forthcoming (indeed, BS 8663-1 “Fixed fire protection systems – Components for watermist systems – Part 1: Specification and test methods for watermist nozzles” is in advanced stages of drafting at BSI).

In the transitional phase in which the watermist industry finds itself, it has to be accepted that there is a shortfall in respect of product standards (although this is rapidly being addressed by CEN). Not all observers are entirely happy with the quality of some of the work emerging in this area which may be a reflection of the need for swift delivery of the documents to support the imminent publication of the CEN watermist standard, EN 14972.

However, even when there is a suitable standard against which components can be tested, there needs to be a test laboratory willing to undertake the tests. In the UK, traditionally it has been the LPCB which has tested, certificated and listed active fire system components.

Reference to the January 2019 edition of Red Book Live indicates that at present, the LPCB/BRE Certification work on watermist relates to the support of two schemes:

- LPS 1283: Requirements and test methods for the approval of watermist systems for use in commercial low hazard occupancies
- LPS 1285: Requirements and test methods for the approval of watermist systems for use in domestic and residential occupancies

There is a strong caveat printed in bold (which appears often to be ignored) which relates to the approval of individual components – ‘Watermist component approval does not mean LPCB watermist system approval’.

Thus, in Section 1.2 of Part 5 of the Red Book we find confirmation that watermist nozzles from two manufacturers have been successfully tested by LPCB but no reference to any systems being tested and approved. In fact, the only approved system so-far listed is a stand-alone ‘personal protection system’.

For the sake of clarity, it should be understood from that to be able to claim full third party certification, the body undertaking the test must be nationally accredited for that purpose. In the UK this means listed by the United Kingdom Accreditation Service (UKAS). Note that LABC is not UKAS accredited so its ‘approvals’ of fire suppression systems is worth only as much credence as you can place on that body.

Installer Certification

The third essential element part of the quality requirements for installations is an assurance that the designer /installer of the system is fully competent to undertake this work. It should not really be necessary to explain in any further detail why this is necessary but, it should suffice to say that, third-party certification is the only certain way to ensure that the requirement in BS 8458 and BS 8489 that the design and installation of fire suppression systems under the standard are ‘entrusted to appropriately qualified and experienced people’.

This article has already referenced the LPCB scheme for watermist systems and components but as yet, there does not appear to be an LPCB or BRE Certification scheme for watermist system installers.

Warrington FIRAS does have such a scheme and there are a small number of companies accredited by them. IFC Certification also maintains a watermist installer certification scheme and at the time of writing had one listed installer.

System Design

The problems which inevitably arise in respect of watermist system design result from the fact that there is no universality of design (as there is with sprinkler systems) and this situation is engendered by the fact that watermist nozzle design is unique to each manufacturer. The normal approach to managing system design is for the system manufacturer to issue a Design, Installation, Operation and Maintenance manual (DIOM manual) which can be used to provide a detailed design for a watermist system to counter a specific fire risk in a specified property. The critical components in watermist systems are the nozzles and the pumps and



even a superficial assessment will reveal that there is no commonality of design in respect of the nozzles. By contrast, the pumps used in low pressure watermist systems tend to be drawn from the available ranges. High pressure watermist pumps are, like the nozzles, manufacturer-specific. The material from which pipework is fabricated can be copper, (black) steel, CPVC and stainless steel – this will often be dictated by whether a system is high or low pressure.

Insurers’ Concerns

Insurers (and other such as the Fire Protection Association) have expressed concerns about the wider use of watermist in buildings and are known to have made it clear that in locations such as schools, they do not regard watermist as providing an equivalent level of protection as an automatic sprinkler system.

To this end, the RISC Authority which undertakes research work on behalf of insurers has produced three questionnaires which it suggests should be utilised by any property owner considering the installation of a watermist system as opposed to a sprinkler system.

For would-be buyers and specifiers, watermist may be a good option in specified occupancies, however, end-users and their advisers are urged to exercise caution and recognise the risks which exist. Authorities having jurisdiction including the fire and rescue service and building control officials should also exercise caution when recommending or proposing the use of watermist without ensuring that the systems which will be installed are fully compliant with British Standards and are undertaken by installers who are fully competent using tested equipment.