

FIREKILL™

by VID Fire-Kill ApS

Retro-fitting low pressure watermist systems in high-rise buildings

Presented by Dean Reeve

2017 VID Fire-Kill presentation conclusion

Project - Protection of a single occupancy flat within a block of 12 flats



The property is a single bedroom, second floor flat within in a block of 12. The flat, was fitted with a low pressure water mist installation in 2012.

2017 VID Fire-Kill Presentation conclusion

In February 2014 a fire occurred within the kitchen of the flat.

The occupant was in the premises at the time, yet was unaware of the fire starting. The cause, as reported from the fire investigation appears to have been related to a misused or malfunctioning toaster.





Financially - This collaboration has potentially saved

Cost of the system approximately £3234

We can say that

If the system saved a single fire death estimated at £1.65 million*.

Then it follows that the system installation was **.196% of the cost of a single fire death.**

Or you can say that taking the installation costs of approximately
£3234

the system saved a potential rise in costs of approximately 50,920%

** Source: The economic cost of fire: estimates for 2008*

Fire research report 3/2011 – Research commissioned by the government of the time.



What did this project tell us ?

- The system saved at least a single life!
- The system saved a vast amount of money!
- The system gave the neighbours some security!
- The system saved a logistical nightmare!

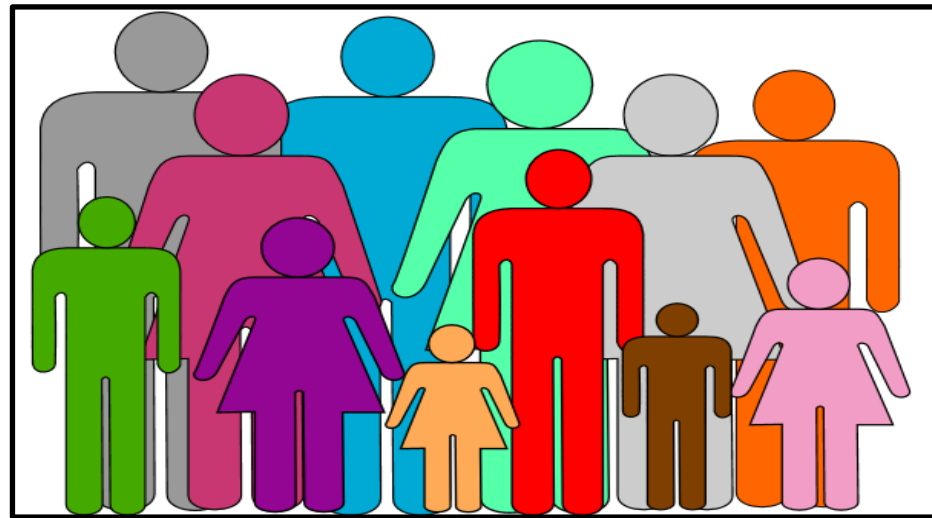
The project proved -

- That it would be very hard to justify a decision to say that installing the low pressure watermist system in this property would not have been reasonably practicable.



What about scaling up

- The larger the buildings get, the larger all the associated figures grow.
- There are many studies of the costs versus the benefits that show the ratio of the benefits against the costs grow in favour of the benefits from day one throughout the life of the property.



Is watermist acceptable for high rise buildings?

✓ **Yes** - There are published British Standards and industry guidance. The scope of these standards gives guidance and recommendations on the design, installation, water supplies, commissioning and maintenance of watermist systems.

There is also some other specific guidance on high-rise buildings to be found such as the FIA guidance and VDS.

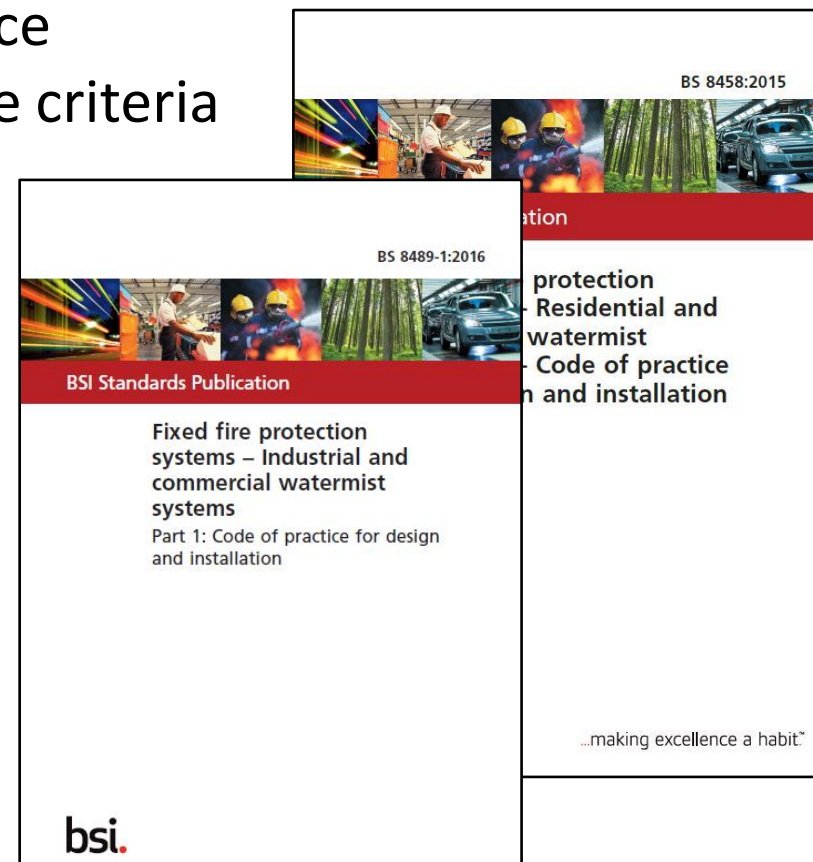
Hazard Class	Sprinklers	Watermist
Domestic & Residential	BS 9251	BS 8458
Commercial	BS EN12845	BS 8489



Reasons for non-acceptance?

There is NO performance reason for non-acceptance of a low-pressure watermist system in a high rise building for AHJ acceptance purposes, providing the installation meets the acceptance criteria of the relevant standard and approvals.

Any non-acceptance of a system proposal for a high rise, would be on a basis of the system not meeting the acceptance criteria of the standard/ approval, or another reason based on a commercial decision or policy preferences.



Can watermist physically be installed in high rise?



Physically, if a sprinkler system can be fitted into a building, then a low pressure watermist system can be fitted into the building, whether it is a residential system or a commercial system.

Low pressure watermist and sprinkler systems share the same base pressure class for components, from the pumps and tanks, through the pipe system, strainers and valving, to the detection and delivery devices. The signalling requirements and maintenance are also the same. As with a sprinkler system, all components should be listed for use in the fire system.



Defining high rise?

Varies

- 15-20 storeys?
- Is it where the height difference of a nozzle is 45m higher than the lowest nozzle?
- Against what? Building Regulations or Sprinkler / Watermist Standards or parts of both?
- What about the risks in medium rise, maybe one or two floors less than high rise?



Defining the design approach?

Varies

- Individual flats?
- Full building coverage?
- A mixture of both?
- Defining where one approach should end / start?

- British standard?
- Industry guidance?
- British standard in combination with guidance from others?
- CEN Standards are on their way.



What are we dealing with?

We definitely have a tall building built with a lot of fire resisting compartments and a lot of people.

Inside this building we have the contents similar to

- A DIY Store.
- A Furniture Store.
- A Supermarket.
- Storage facility.

We have

- An uncontrolled environment with thousands of variables.
- Difficult for evacuation.
- Difficult environment for fire-fighting.

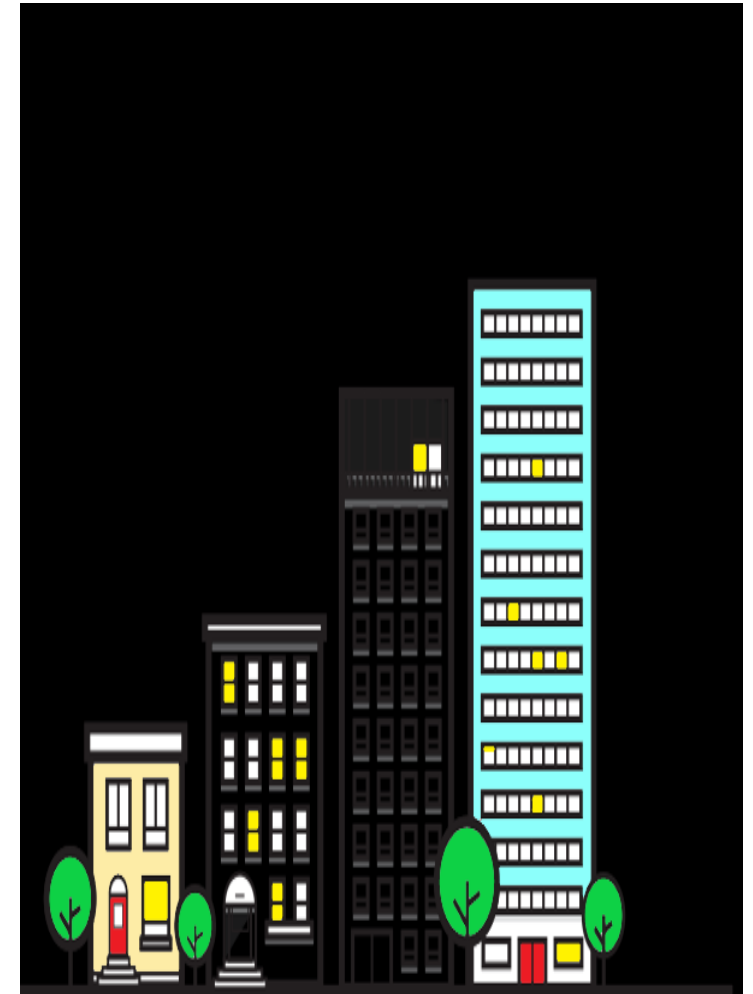


Picture ITV

What this tells us

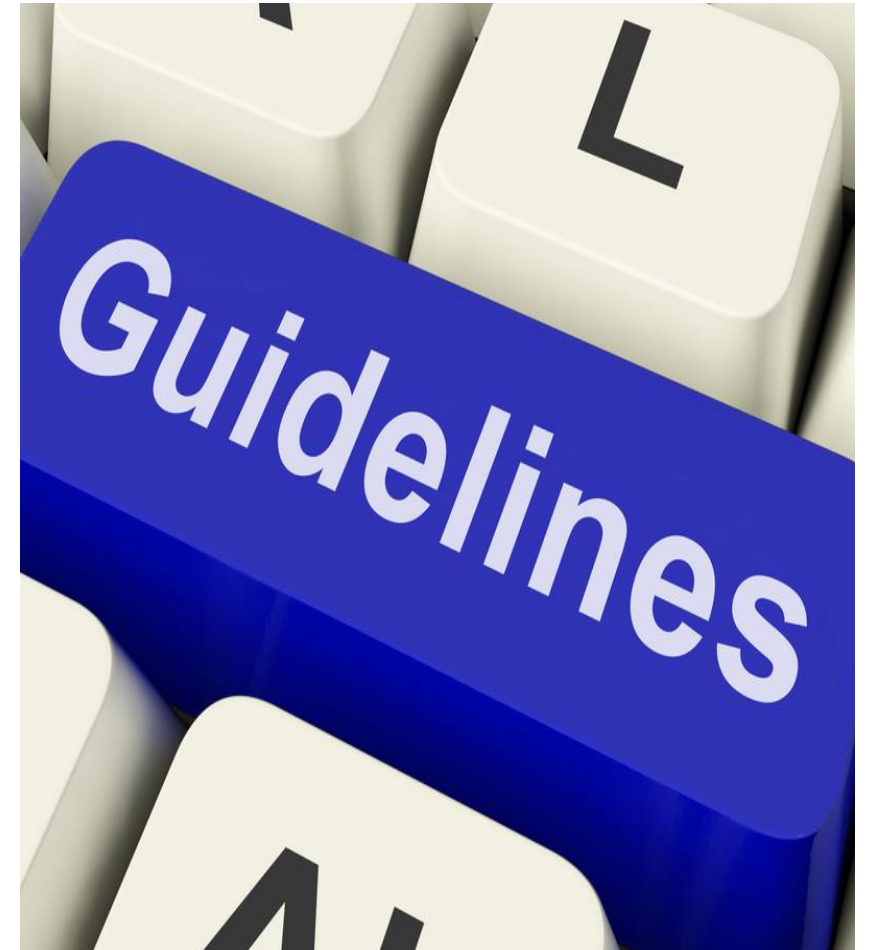
- There is room for clarifying the definitions of these and similar classes of building.
- There could be room for additional suppression standard guidance focusing on resilience measures with ‘if - then’ scenarios. This will make it easier for AHJ and other decision makers including designers to get it right.
- E.g. Maybe

<p>If there is external cladding</p>	<p>Or, if there is a partial system coverage</p>
<p>Then any room with an opening to the exterior must have an additional sprinkler / nozzle within 300mm of the opening.</p>	<p>Then any room with an opening to an escape route must be sprinkler protected. Maybe the entire ground floor?</p>



Why more guidance in one place?

- To make it easy for decision makers to grant correct acceptance.
- To make it easier for designers.
- To stop the watering down of robust specifications.
- To ensure a safe and appropriate level of cover.
- To ensure best practice.
- To ensure the occupiers and stakeholders get best value.



Back to the installation



- So a design and installation standard and design approach have been agreed.
- System resilience measures are in place.
 - **There has to be.** There cannot be a medium or high rise building anywhere that wouldn't qualify for these measures whether it is watermist or sprinkler technology.
- The most straight forward reason being that of vulnerable people.

Other considerations



- 99.9% of retro-fit installations go into buildings not designed to take any more services than necessary at the time of building.

- Nuts and bolts installation.

Building fabric, fixings, asbestos, drilling, noise, intrusion into private spaces, smell. Power for installation.

- Immediately we have space issues. Space = £

Pumps, supply tank, pipe routes, floor valves etc.

- Voids-small or non-existent.

Surface running of pipes.

Other considerations



- Power supplies
For pumps etc.
- Signaling system – cable routes, signaling panels and sounders, flow switches.
- Testing Maintenance system – Access for visual inspection, discharge points to drain.

Other considerations

- Residents – Willing, unwilling, to allow access.
- Residents - Willing, unwilling, to have a system!
- On- site - Security, access, parking.

- All this adds up to Costs



Design and Installation costs

- Retro-fitting any project will come out more expensive than a new build, due mainly to the additional factors highlighted on the previous slides. Unless there is some assistance.
- It is not reasonable, to squeeze the prices of retro-fitting a project below financially acceptable parameters, for a number of reasons.



Number 1

- Someone will get angry, when they do not get their wages at the end of the month!



Number 2

- If the installer companies do not get enough revenue to maintain a healthy financial system they will do any of three things we do not want to see.
 1. Fail – During the project.
 2. Cut Corners.
 3. Fail – After the project, leaving no maintenance and highly possibly, a sub standard installation that will cost at least 50% more to correct, if a company can be found to take it on.



Maintenance considerations

- Number 1 – Maintenance is so important.
- It must somehow be enforceable.
- 24 hour call out facility.
- Access to individual flats ?
- Access to all other areas.
- Initial system design should be made with ease of maintenance in mind.
- As many as possible of the physically serviceable components, should be kept outside of the individual flats.



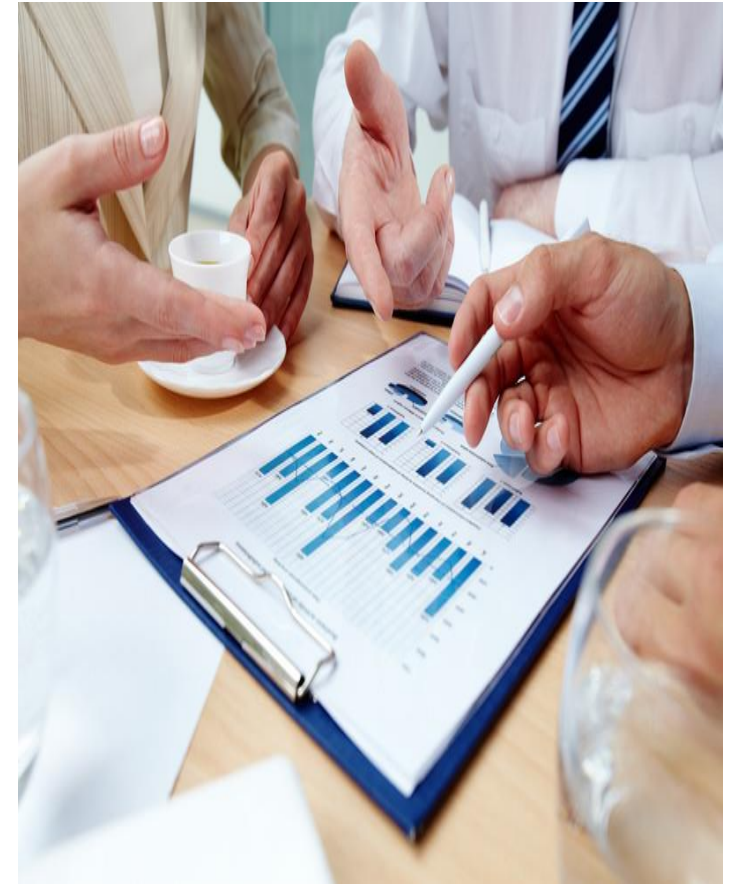
On-costs

- The on-costs associated with a low pressure watermist system should be in line with a traditional sprinkler system of the same class of standard.
- The main costs will be maintenance based over the life of the system.
- A low pressure watermist system has the same life expectancy as a traditional sprinkler system.
- The maintenance regime will be dictated by stake-holders, standards and manufacturers requirements but no less than the standard in conjunction with the manufacturers published maintenance manual.



In Summary

- ✓ High rise buildings are unique and bring many challenges.
- ✓ Low pressure watermist is a viable solution for high rise buildings.
- ✓ There is work to be done on standardization and guidance to help the suppression industry as a whole.
- ✓ Low pressure watermist is just one of the tools in the industry, and the guidance on high rise should be applicable to all.



In summary

- ✓ If a project is going to use any suppression technology, it is not acceptable for it to be designed and installed by a company that does not have the proven training and skills in that exact technology.
- ✓ All components should be approved and listed for use in a fire suppression system.



In summary

- ✓ A high rise building must be safe for emergency services to gain entry for fire-fighting and rescue purposes.
- ✓ A fire does not know whether it is a domestic / residential or commercial fire.

Fire is Fire. The suppression system must be robust and able to control the fire loads in and around the property and must be traceable, from the smallest component to the installers. Guidance is guidance when used professionally. If it's border line residential then it's commercial.



- ✓ High rise buildings do not only exist in cities

Thank You

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