

Water Mist For Property Protection Purposes

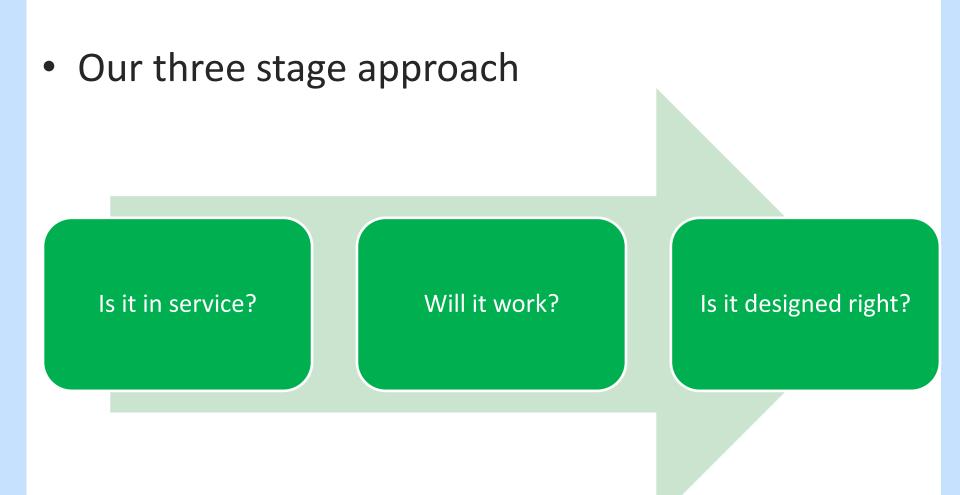
Paul Morrison-Zurich Insurance

Objectives



- 3 stage approach for existing systems
 - Is it in service?
 - Will it work?
 - Is it designed right?
- Zurich Recognized Solutions
 - Listed technology
- Case Studies
 - Sauna
 - Community College
 - Industrial Oil Cooker







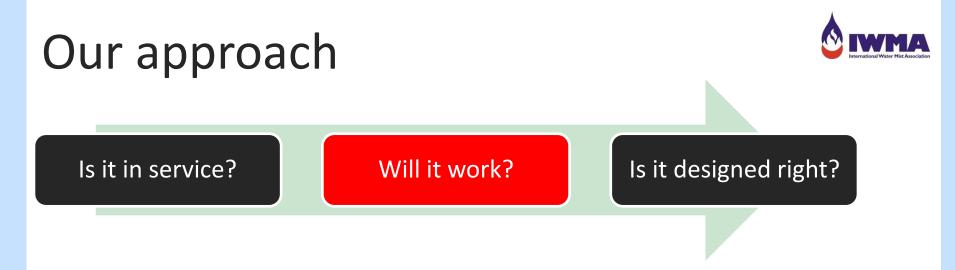


Is it in service?

Will it work?

Is it designed right?

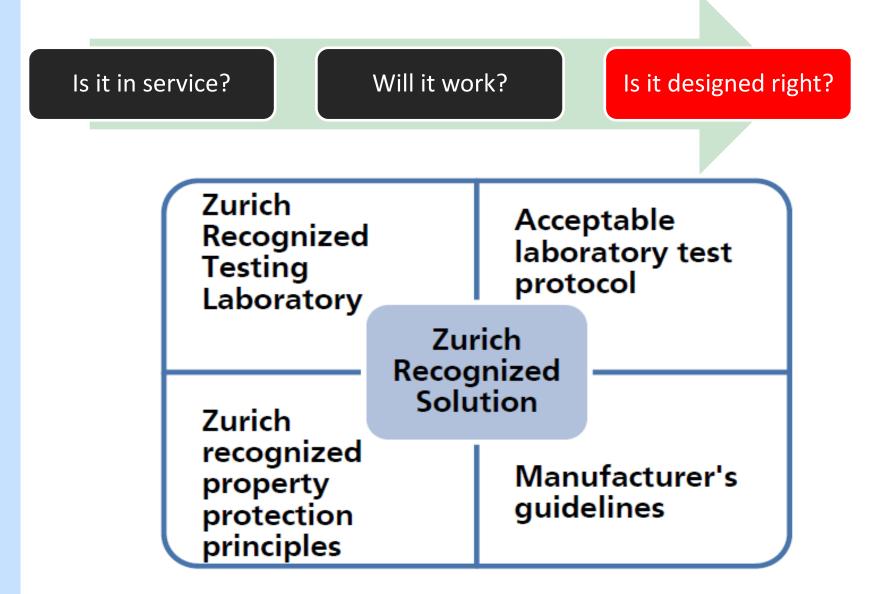
- Valves open?
- Power at pump?
- Impairments?
- Water in tank?
- Town main water supply available?



- Service and maintenance
- Regular testing
- Pumps achieving rated duty?
- Dry systems trip tested?

Our approach

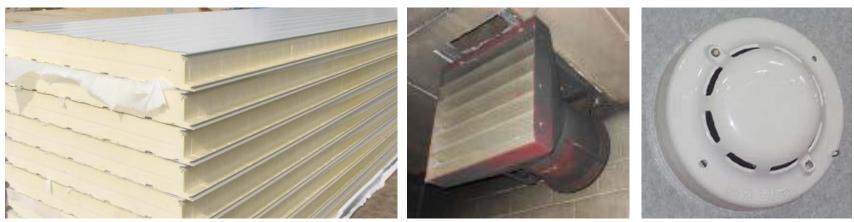




Zurich Recognized Solutions



- May include a range of fire prevention and protection technology products
 - Not limited to active fire protection systems
 - Construction products and passive systems can be assessed



Building materials

Fire protection devices

Fire detection devices



 A product certification bod Evaluated by a third-particular body Qualified to perform self product tests they conduct 	ty accreditation	1		
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	recognized property protection principles			ufacturer's elines

Image source: Rich Gallagher, The Zurich Services Corporation



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Image source: Rich Gallagher, The Zurich Services Corporation



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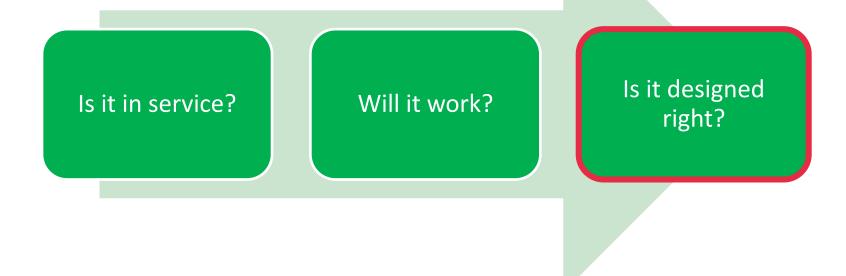


 A product certification body who has been: Evaluated by a third-party accreditation body Qualified to perform self-accreditation of th product tests they conduct 	A test protocol: • Used for the evaluation of a product • Which is acceptable to Zurich e
Zurich Recognized Testing Laboratory	Acceptable laboratory test protocol
Re Zurich	Zurich cognized colution
recognized property protection principles	Manufacturer's guidelines
 A third party codes and standards: Recognized by Zurich for property assessment purposes Along with additional Zurich insights where provided 	Guidelines Acceptable to Zurich for property assessment purposes with sufficient instructions for: design, installation, commissioning, inspection, testing, and maintenance of listed products

Case Studies – Water mist



- Sauna
- College / School
- Industrial Oil Cooker





Example - How do we consider water mist?

- NFPA 750
- BS8458
- BS8489
- CEN14972
- FM/ANSI 5560
- VdS
- SP
- DNV
- IMO

1.1* Scope. This standard contains the minimum requirements for the design, installation, maintenance, and testing of water mist fire protection systems. This standard does not provide definitive fire performance criteria, nor does it offer specific guidance on how to design a system to control,

suppress, or extinguish a fire. Reliance is placed on the procurement and installation of listed water mist equipment or systems that have demonstrated performance in fire tests as part of a listing process.



Example – water mist for saunas Local application for inception hazard



Photo source: Gary Howe, Zurich Risk Engineering UK



Example – water mist for saunas Local application for inception hazard

DFL www.dafila.com			Fire Te		DFL ww.dafila.com
	Zurich Recognized Testing Laboratory		labo prot	ptable ratory test ocol	ZURICH
NFPA	Zurich recognized property protection	Recog		ufacturer's elines	
Norma sobre Sintemas de Protocolos contex locandios de Agos Notoditada 2015	principles		J		SIEMENS

Case study – Community College





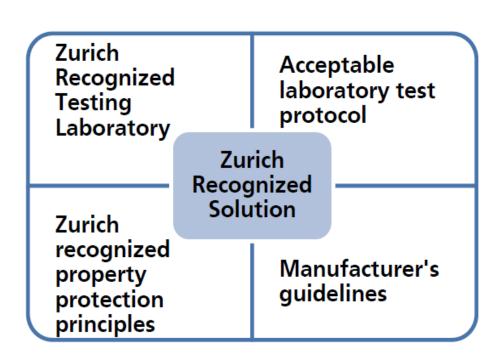


Case study – water mist for a Community College



Fire Protection Specification Review

A review of a proposed fire protection design



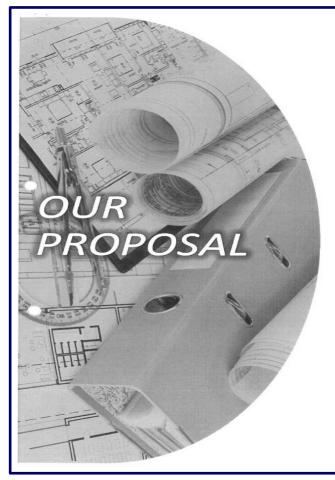


Case study – water mist for a **Community College Proposal statements**



- Confirm costs for design, supply, installation and commissioning of our approved low pressure water mist system to all relevant areas of the scheme
- 30 minute water supply duration based on 5 nozzles (72m2) to the commercial OH1 classified hazard
- The installation and design will be fully compliant to the relevant British Standards for this development with specific referral to BS 8489:2016
- System proposed has been fully tested by BRE to both residential and commercial standards (BS 8458:2015 and BS 8489:2016)
- Low pressure water mist is an emerging technology...very few companies that can provide a system that fully meets requirements of British **Standards**

Case study – water mist for a Community College Proposal statements – red flags



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Case study – Community College



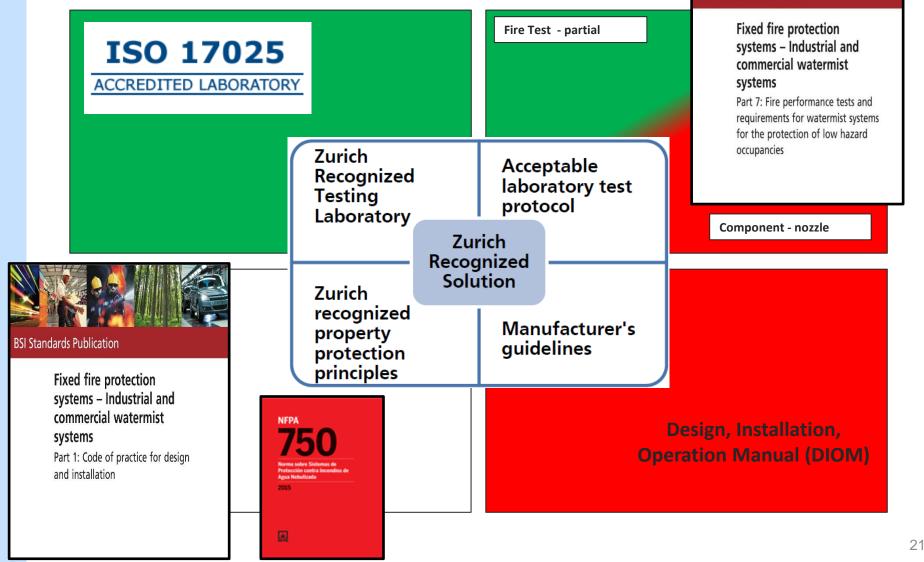
3	Terms and definitions	i	Table 1	Occupancies and acceptable	e fire test protocols for an automa	tic watermist s	system ^{A)}
-	For the purposes of this part of BS BS 8489-1 and the following apply	8489, the terms and definitions given in	Occupancy		Description of occupancy	Exceptions	Fire test protocol
3.1	category I system			s (where BS 8458 cannot be vith or is not appropriate)	Lightly loaded non-storage and	Mat stores	BS 8489-7
	system that covers rooms up to an loads	d including 37 m ² containing low hazard fire	Churches		non-manufacturing areas		FM 5560:2016, Appendix G
3.2	category II system		Concealed :	spaces	with ordinary combustibles		
5.2		7 m ² containing low hazard fire loads	Gymnasium	ns	Expect fire with relatively		
3.3	category III system		Hotel bed r	rooms and their access (only)	low rates of heat release in these occupancies		
	system that covers rooms containin	ng low hazard fire loads	Local lendir	ng libraries	in these occupancies		
3.4	non-storage, non-manufacturing c	occupancy where the quantity and/or w and fires with relatively low rates of heat	homes whe	or nursing or convalescent ere BS 8458 cannot be compl not appropriate	ied		
	release are expected, with maximu	um fuel loads and obstructions as indicated	Offices				
	in 4.7 to 4.10		Restaurant	seating areas			
			Schools and	d university classrooms			
received or the r	deemed necessary to the following	areas as stated within BS 8489, the specification he system is designed and installed; therefore these	containing stored mate mechanical	ics in low hazard premises no combustible contents or erials and no electrical or I services other than lighting listed test protocols are applical	ble with the following limited paramet	ers.	
			• BS 8489-	-7 covers Category 1, 2 and 3 sy	stems for:		
	ts/Showers/Wet Rooms <5m2	Ceiling Voids		loads ≤ 500 MJIm ² (covered in C ing heights ≤ tested height up to			
	ns – with a floor area less tan 2m² imension is 1m or less	Electrical Rooms / Comms Rooms / Sub Stations	• floor	r area = restricted and unrestric D:2016, Appendix G covers:			
Enclosed Staircas	ses / Vertical Shafts / Risers / Lifts	Uninhabited Loft/Roof Voids	 fire ceilin 	loads \leq 150 MJ/m ² ; ng heights \leq tested height up to			
Non Communica	ting / Attached Buildings	Kitchen Extraction Canopies		r area = restricted and unrestric areas within buildings can be pre	<i>ted.</i> otected by watermist where relevant f	ire test protocol	s exist.
Crawl Spaces		External Balconies / Canopies					

Case study – Community College





BSI Standards Publication

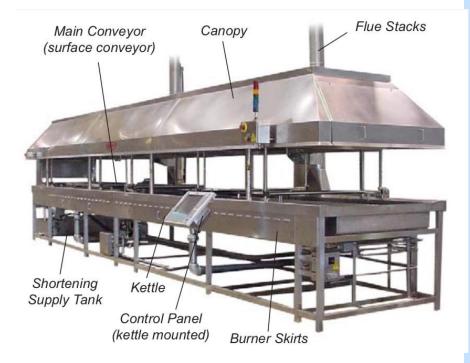




Case study – Bakery

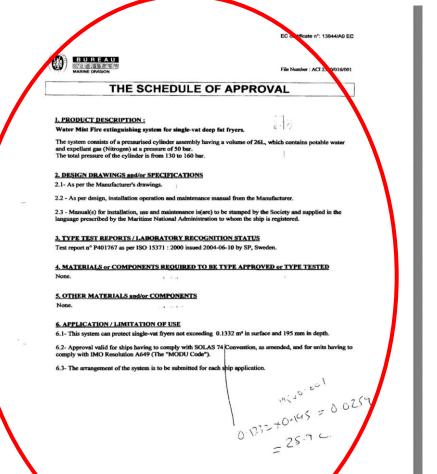
- Industrial oil cooker (deep fat fryer)
- Doughnut production
- 8m x 1.1m containing 2360L oil







Test laboratory certification



- Page 2





Test laboratory certification



DFL ApS Svalbardvej 13, DK-5700 Svendborg, Denmark Tel: +45 6262 1024 - Fax: +45 6262 3661 CVR nr. 2921 3542

1.0 Purpose of tests:

The fire tests were conducted in a 1 x 3m tray with 150 l of frying oil to test the fire fighting performances of the VID FIRE-KILL N-pipe with BM1 nozzles installed in a Low Pressure Water Mist System.

2.0 Test hall:

DFL is an international accredited fire test laboratory. The fire test laboratory is accredited in accordance with DS/EN ISO/IEC 17025:2005 by DANAK accreditation Reg. No. 487.

The fire tests were conducted by Danish Fire Laboratories (DFL) in DFL's fire test hall at Svalbardvej 13, DK-5700 Svendborg, Denmark.

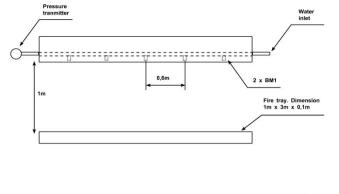
The test hall is insulated and heated. The test hall volume has a floor area of approx. 19,5m x 19,5m and a height of 15m. The test hall is equipped with an adjustable pendent ceiling. The ceiling size, position and height are adjustable. The test laboratory has water storage tanks and continuous fresh water supply, pump station with controlled water pressure supply and installations for handling of smoke and waste water.

2.1 Fire test room:

The sides of the hall were measured to $19,6m \ge 19,65m$. The mock-up was placed in centre of the test hall.

2.2 Fire test set up:

2.2.1 Test fire was constructed as the drawing shows underneath.



150 l Fat Fryer protected with N-pipe with BM1 nozzles

Page 3 of 7



Test laboratory certification

ATTACHMENT TO CERTIFICATE OF TYPE APPROVAL No. 5A5 D00220 s Design Appointed Document forms part of the Certificate. PROVAL DOCUMENTATION Menviron: Locatomics, Inc., Illuncis, United States of America, Test Report No. Ex5201 Project 97NK22814 ed 23 (by) 1990. Swedich National Testing and Research Institute (Statess Provraingsanstall), Brueligatan 4, Sweden, Fire Requirements for the System 7. For use in Machinery Spaces of Category A of volume geneter that 500m for the protection of local hazards. The capacity and amagement of space particle is a total entering a total the following: Province Information of the System 7. For use in Machinery Spaces of Category A of volume geneter that 500m for the protection of local hazards. The capacity and amagement of space particle activeness particle particle actives and the following Production than area be roundicated in accordance with a guildy control option, they have the protection of a secondary setting a signal active and active particle active	Lloyd's Kegister EMBA Technics, Note, Landau, CLXM 485 Technics, Note, Not					
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Nozzle Designation Max. Distance Min. Distance Spacing Lateral Distance	above Hazard above Hazard from Hazard ⁽¹⁾ M M M M M		Max. Distance		Spacing	
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931028-202 4.0 1.75 2.25 0.56				M	M	M
	inimum distance of the outer nozzles of grid are to be installed outside the protected area.	Nozzle Designation	М			



Take away messages



- Zurich Recognized Solutions Methodologies is a powerful tool to evaluate existing and proposed installations.
- It is based on basic fundamental criteria that should be expected to provide a suitable level of compliance and protection
- Zurich's goal is beyond 'Life Safety' we also want Property Protection systems.
 - People can escape a fire safely
 - The building can be occupied quickly after an event
 - Businesses can re-start operations from the same location
- Your objective may be a different one is it fully considered ?



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