Fixed Fire Protection of Saunas

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Introduction

- History of fires occurring within saunas – a fact!
- Solutions required.

Photograph by kind permission of Dr JH Burgoyne & Partners.
Successful fire tests and performance to agreed and independent test protocol

Verification of hydraulic calculations, cause and effect matrix, system design, installation, commissioning, acceptance and maintenance documentation

Insurance acceptability

Operational requirements including dedicated low voltage power supply, integrity and route of water supply, battery back-up and periodic flow test facility

Nozzles, equipment, components and infrastructure that are listed, approved, or certified by a recognised testing laboratory that have been subject to robust examination & performance testing
Guidance

- UK RISC Authority guidance.
Solutions

• What’s out there already?

• LPC Rules for Automatic Sprinkler installations 2009 Incorporating BSEN12845.

• Water mist suggested as a solution with no evidence of fire test data or proof of effectiveness.

• Confidence needed to recommend water mist solution to Zurich Underwriting.
Introduction

- Zurich evaluation of two options marketed for saunas by two separate Fire Protection Companies.
- Narrowed down to selection of ‘Sauna Safe’ for evaluation, test and scrutiny.
- Requirement for independent evaluation of ‘Sauna Safe’ by an accredited test laboratory.
- Zurich stance -
  - Water mist is a specific application solution which must be proven by suitable fire tests at a recognised testing laboratory. An independent test report should be issued.
  - Equipment used such as nozzles and controls must be listed or approved for the intended application.
- This is to ensure reliability of the equipment and components and overall system performance for this type of application.
- In the absence of a suitable/recognised published test protocol, one was developed by Zurich/Flamefast and with an approved testing laboratory.
Target market – who is going to benefit?

- Local authority sports and leisure Centre's
- High net worth client base
- Hotels.
- Fitness clubs.
- Gyms.
- Hospitals, healthcare and rehabilitation Centre's.
- Football clubs.
Zurich key requirements of the Test Protocol

- Development of a specific test protocol in partnership with Zurich & DFL.
- Robust, specific and challenging protocol that can be replicated.
- Replicate site conditions, not just similar.
- Forced ventilation requirement.
- Sauna door to remain open during testing.
- Obscured position of heater unit.
- No penetration of fire spread to cavities or beyond the compartment of origin.
- Zurich requirement to witness test agreed protocols.
- Agreement on accredited test laboratory selection.
- First time testing has ever taken place for this specific application.
Test protocols

- Test 1: reference test involving a 12m² sauna of spruce construction protected by a single K80 15mm 141°C CUP sprinkler head.

- Test 2: water mist test involving a 12m² sauna of identical construction protected by 5 water mist nozzles (four for the room and 1 for the heater).
Sprinkler protection of Saunas

- Test 1: reference test involving a 12m² sauna of spruce construction protected by a single K80 15mm 141°C CUP sprinkler head.

- What was measured?
  - Peak ceiling temperature.
  - Sprinkler activation time
  - Run time.
  - % of damage.
Sprinkler protection of Saunas - Assessment and conclusions

- Successful as expected.
- Simplest, proven reliability and most economical solution.
- Acceptable to Zurich.
- Can be added to existing system.
- Control and suppression of fire.
Water mist protection of Saunas

- Test 2: water mist test involving a 12m² sauna of identical construction protected by 5 water mist nozzles.

- What was measured?
  - Aspirating/smoke detection activation time.
  - Water mist activation time.
  - Peak ceiling temperature
  - Run time.
  - Damage to sauna.
Water mist protection of Saunas - Assessment and conclusions

- Successful.
- Provides an alternative solution for premises without sprinklers.
- Acceptable to Zurich.
- Control and suppression of fire.
- Not better than sprinklers.
Assessment and conclusions

- Did testing meet Zurich’s aims and objectives?

- Sprinkler protection proven solution.

- Water mist proven solution **subject to** strict adherence to design manual, fire test data parameters and Zurich requirements.
Assessment and conclusions

- Water Mist is a challenging market where:
  - No Contractors are approved by certification schemes
  - A lack of third party approvals for installations and equipment
  - Some companies are prepared to sell any kind of system with no proof it will perform in the event of a fire
  - Only systems using suitably approved components and equipment, installed by trained personnel in accordance with the unique system design manual that reflects the original proven design can be considered as effective.
Assessment and conclusions

- My involvement as a representative of the Fire Protection Team of Zurich Risk Engineering UK has ensured:
- A robust test protocol has been developed for ‘Water Mist Protection of Saunas’
- A system, has been proven as a stand alone protection system for use in premises without sprinkler protection
- Zurich can consider ‘SaunaSafe’ and any future system proven to the same protocol and verified by a Zurich FPE as an effective solution.
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Any questions?

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