



Installation and Maintenance Requirements

Water Mist Systems in Buildings

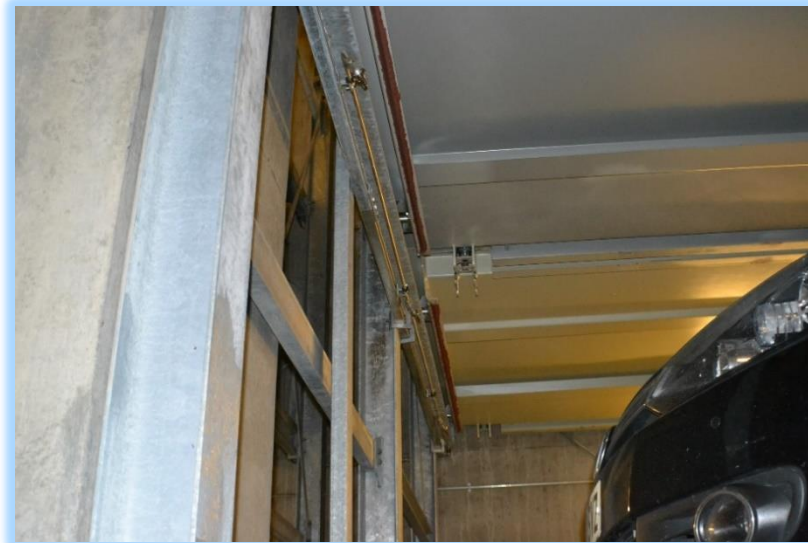
John Sinclair – CompcO Fire Systems

This Presentation Will Cover:

1. Water mist systems for buildings and local applications
2. Products available for Fire Suppression systems today
3. The design and installation of water mist projects
4. Hazard Analysis
5. Products used in Low and High pressure water mist systems
6. Testing and Commissioning
7. Living with a system
8. Future modification and refurbishment
9. Maintenance and after care
10. As a Specifier- Summary

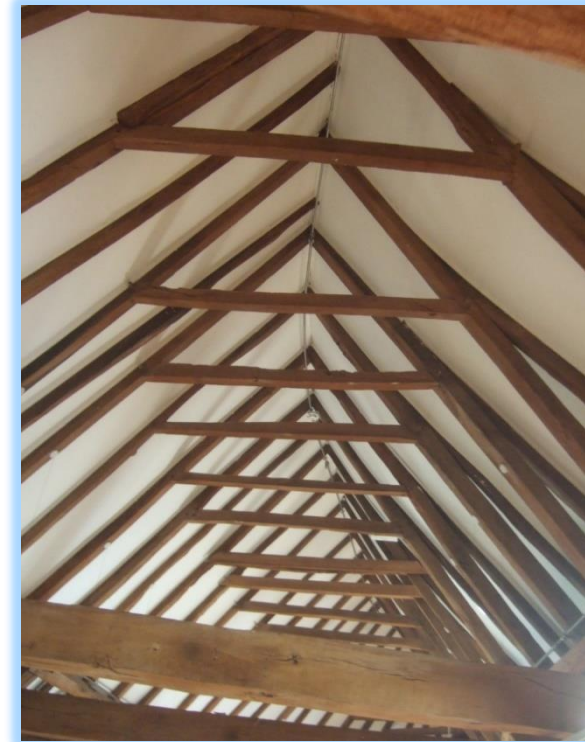
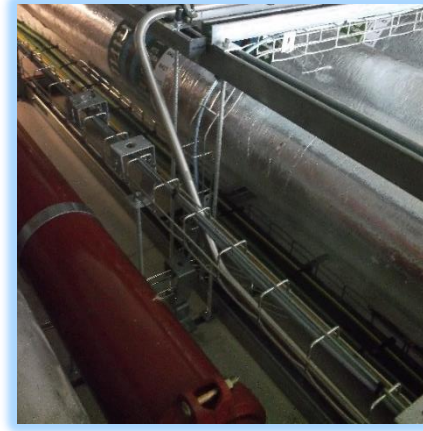
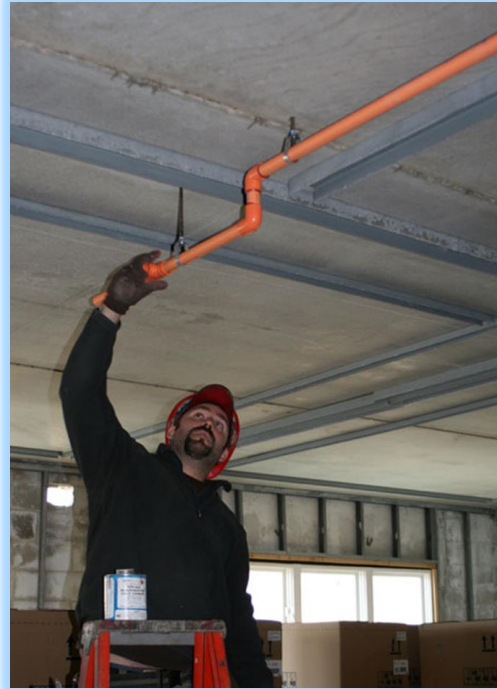
1. Water Mist Systems for Buildings & Local Application

- Offices
- Laboratories
- Hotels
- Hospitals
- Care Homes
- Car parks
- Car stackers
- Plant areas
- Heritage Sites
- Industrial
- Automotive



Applications

- Schools
- Museums
- Archives
- Hospitals
- Tunnels
- Turbines
- Generators
- Computer Rooms
- Local Applications



2. Products Available for Fire Suppression Systems Today

- Low Pressure Water Mist
- High Pressure Water Mist
- Traditional Fire Sprinklers
- Gas Suppression
- Wet and Dry Risers
- Combination of the above



3. Design & Installation of Water Mist Projects

- Standards: BS8489 (commercial), BS8458 (residential), CEN/TS 14972, VDS, FM5566, NFPA750
- Hazard classification
- Engineered solutions
- Object protection
- Volumetric considerations for nozzle selection
- Survey
- CAD design
- Full hydraulic calculations (Hazen-Williams formula for LPWM and Darcy-Weisbach for HPWM)
- Operating pressure – up to 12.1 Bar for LPWM and over 34.5 Bar for HPWM
- Health and safety considerations

Design & Installation of Water Mist Projects

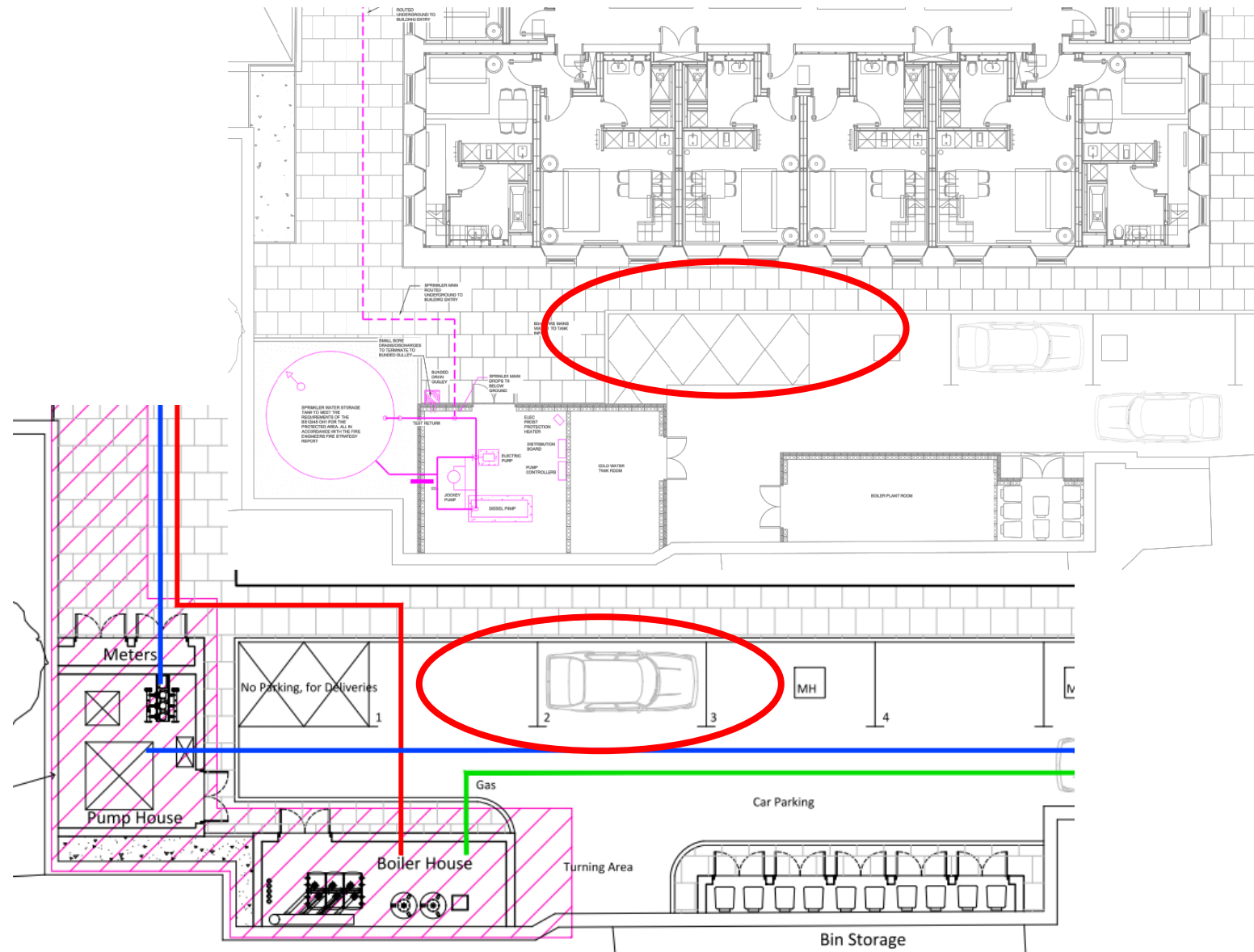
- Size of plant space for water supplies can be less
- Allow for smaller pipes – ease of Coordination
- Less water damage risk
- If Retro fitting a system – would be the clear choice
- Longevity of System - High pressure water mist expectancy of stainless steel is 50+ years
- Quick and simple installation
- Advanced technology of firefighting system since design of sprinklers in 1883
- Highly technical product without being complicated

Example

A project COMPCO has been involved:

Assisting the client to re design and reduce plant space on site and less issue with planning

Adding more high value car parking space by going for High Pressure Water Mist



4. Hazard Analysis

Before designing a Watermist system the following to be identified:

- Volume
- Occupancy
- Object to be protected

A Hazard Analysis is carried out to establish exact nature of the potential fire hazard

The main fire performance objective of Watermist system under test is:

- Fire Extinguishment
- Fire Suppression
- Fire Control

As appropriate for the volume or object being protected

5. Products used in Low and High Pressure Systems & Water Supplies

- Full holding capacity water tank: Galvanised steel sheet, concrete, GRP, etc.
- Reduced capacity break tank reliant on town's main infill
- Towns main with booster
- Water cylinders with nitrogen propellant

Generally a smaller room and plant footprint needed, the higher the pressure is



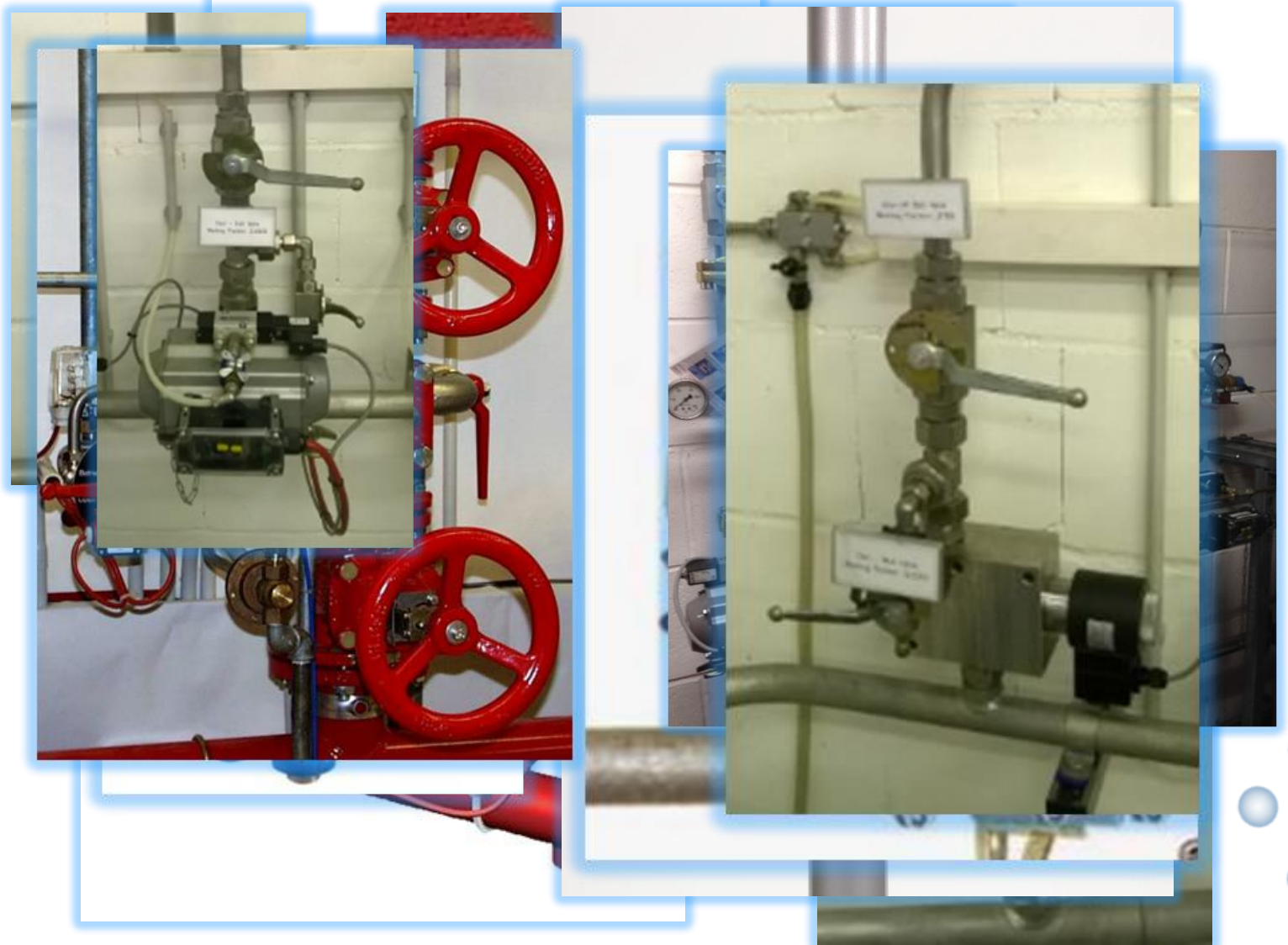
Water Supplies

- Single duty pump
- Duty and stand-by pump
- Multiple pump arrangement (more common for HPWM)
- Electric and diesel motors
- UPS power packs



Control Valves

- Wet
- Dry
- Pre action
- Deluge
- Zone valves
- Foam enhanced



Pipes & Fittings

Low Pressure Water Mist

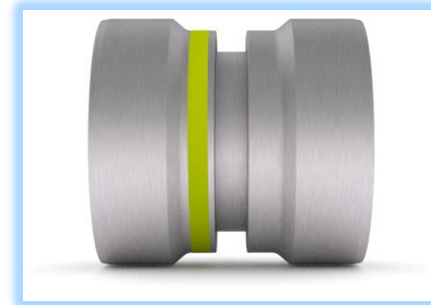
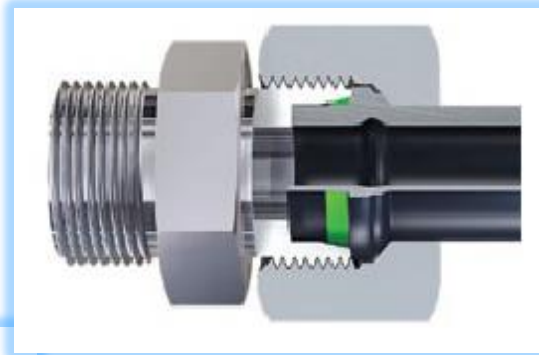
- Galvanised medium grade steel pipe
 - Grooved, flanged & screwed fittings
- CPVC
 - Glued fittings
- Stainless steel
 - Press fittings
- Copper



Pipes & Fittings

High Pressure Water Mist

- **Stainless steel AISI 316 or higher**
 - Compression fittings (ferrule or flare)
 - Mechanically pressed connections
 - Flanged fittings



Pipe Fixings / Anchors

- Suitable for each application depending on weight and structure to fix into



Nozzles

The array of heads are similar to traditional sprinklers

- Automatic
- Open
- Upright
- Pendent
- Ceiling c/w rosettes
- Sidewall
- Undercover
- Dry
- Pre action
- Floor
- Etc.
- Multi choice colour



6. Testing & Commissioning

- Each system shall be subjected to an air & hydraulic test in accordance with manufacturers guidelines
- Once all the systems are completed the systems shall be commissioned, performance tested and left live as per BS 8489

7. Living with a Water Mist System

Typically High Pressure water mist pipes are charged with a standing pressure of 20 to 35 BAR.

Only upon activation of the system, the pumps will increase to operating pressures.

The potential energy in pipes at such small water volumes and pressure is very low.

Low Pressure systems would be static at 8 to 14 BAR typically as an approximate indication

8. Future Modification & Refurbishment

Simple and cost effective changes can be carried out on any water mist system

- Zone valves allow partial isolation of a building
- Easy drain downs (Due to less water in systems)
- Simple fittings and pipes to ease modifications in situ
- Generally faster installation due to pipe sizes and fixings

Life Expectancy

- Exceeds 50 years
- Subject to appropriate maintenance and equipment selection
- Robust design for the pumps
- Stainless steel pipe: 50+ years
- CPVC pipe: 25+ years
- Galvanised steel pipe: 40+ years

9. Maintenance & Aftercare

The maintenance of the water mist is set out specifically by each manufacturer's design guides but similar to traditional sprinklers:

- Valves need servicing
- Pumps need flow and pressure checks
- Strainers need cleaning
- Bells and flow switches need checking
- System status and condition need recording
- Building hazards and products need auditing

System Operation & Maintenance Manuals

- To be provided on completion as per BS 8489
- Description of the system
- Operation of the system
- Testing requirements & procedures
- Dealing with emergency & fault findings
- Record drawings and hydraulic calculations
- Commissioning sheets

Inspections & Regular Checks

Same as traditional sprinklers, all fire fighting water mist systems must be regularly inspected by competent and trained engineers
Including:

- Weekly
- Monthly
- Quarterly
- Half yearly
- Yearly
- Three yearly
- Ten yearly routine

Replacement Parts

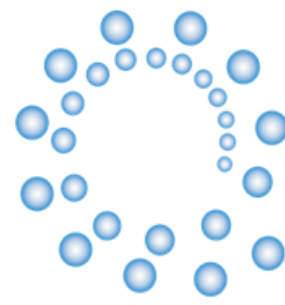
- High and Low pressure water mist manufacturer operate with approved and certified contractors. Must be trained and approved by them
- Spare water mist nozzles should be available within the premises protected...it is important again to use a reputable manufacturers product

10. As A Specifier - Summary

Make Sure:

- Products used have recognised third party approvals (UL/VDS/LPC/NFPA/FM)
- Products are from reputable suppliers with long track record of manufacturing fire engineering products
- The Contracting Company has proven track record of projects
- The products offered have been tested to meet the fire risk of your application





COMPCO

Fire Systems

Excellence in Fire Engineering

- COMPCO Fire Systems
Cleeve House
Malvern Road
Worcester
WR2 4YX
Telephone: 01905 741600

Thank You



@CompcoFire



COMPCO Fire Systems

