AQUASYS HIGH PRESSURE WATER MIST SYSTEM

Case Study: Concepts for Health care services and facilities

IWMA International Water Mist Association

AQUASYS firefighting is responsibility

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Topics

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Typical applications and challenges

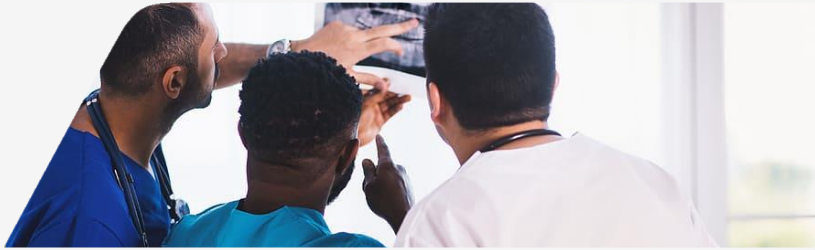
Special requirements

Design characteristics

Way of executing a project:
examples, benefits and success factors

Specific areas in focus

- Laboratories
- Clinical service areas
- Patients and visitor areas
- Technical or storage rooms



The complexity of fire risk

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Category	Patients and visitor areas	Clinical service areas	Technical and storage areas	Laboratories
Critical Fire load	Furnishings and material for medical purpose giving off quantities of heat and smoke			Complex material handling processes
Smoke	Rapid spread of smoke and flue gases with risk of very high property damage and danger to human			
Time to escape	Limited capacity of staff to be able to evacuate all those unable to do so themselves, especially at night.			Closed area slowing down the possibility of escape

Characteristics of Water Mist

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- Immediate effect and immediate return to operation after an activation
- Reducing of contamination by smoke
- Avoiding of contamination by extinguishing agent
- Small size of retention area

Main rules and regulations

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- National building codes
- Common standards for High Pressure Water Mist Systems
- Additional design rules and recommendations

  => for example:
  Statement from the German ELATEC - Expertenkreis Labortechnik
  (from 28.11.2006; adjusted 4/2017)

Impact of biosafety precautions

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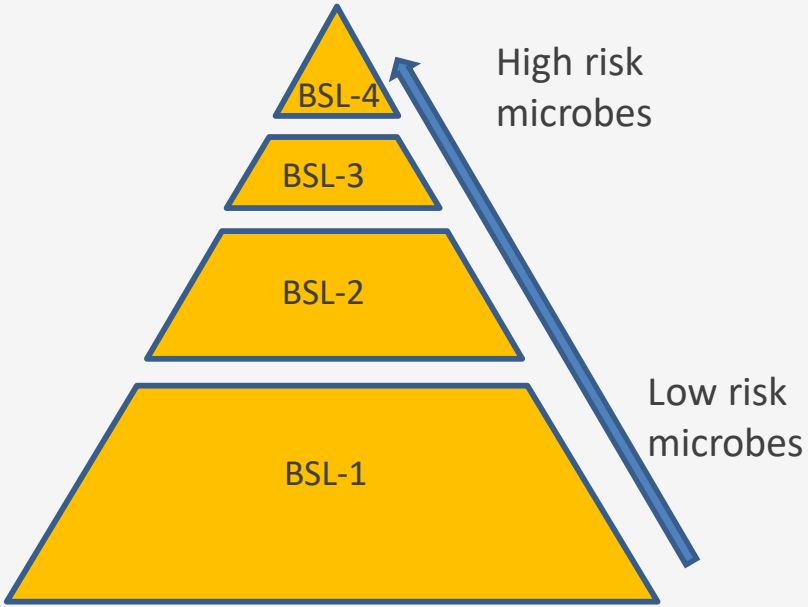
Prevention of infection:

- Extinguishing medium must be threatened
- Isolation of the protection zone affects also piping network
- Piping to the sections can be separated by the use of section valves and check valves



Installation in existing premises

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Requirements:

- Requires flexibility for adaptation of existing systems
- Easy recommissioning
  - within short time
  - small (no) costs for any refilling, …
- Easy structural integration and retro fit installation in new areas

Component characteristics

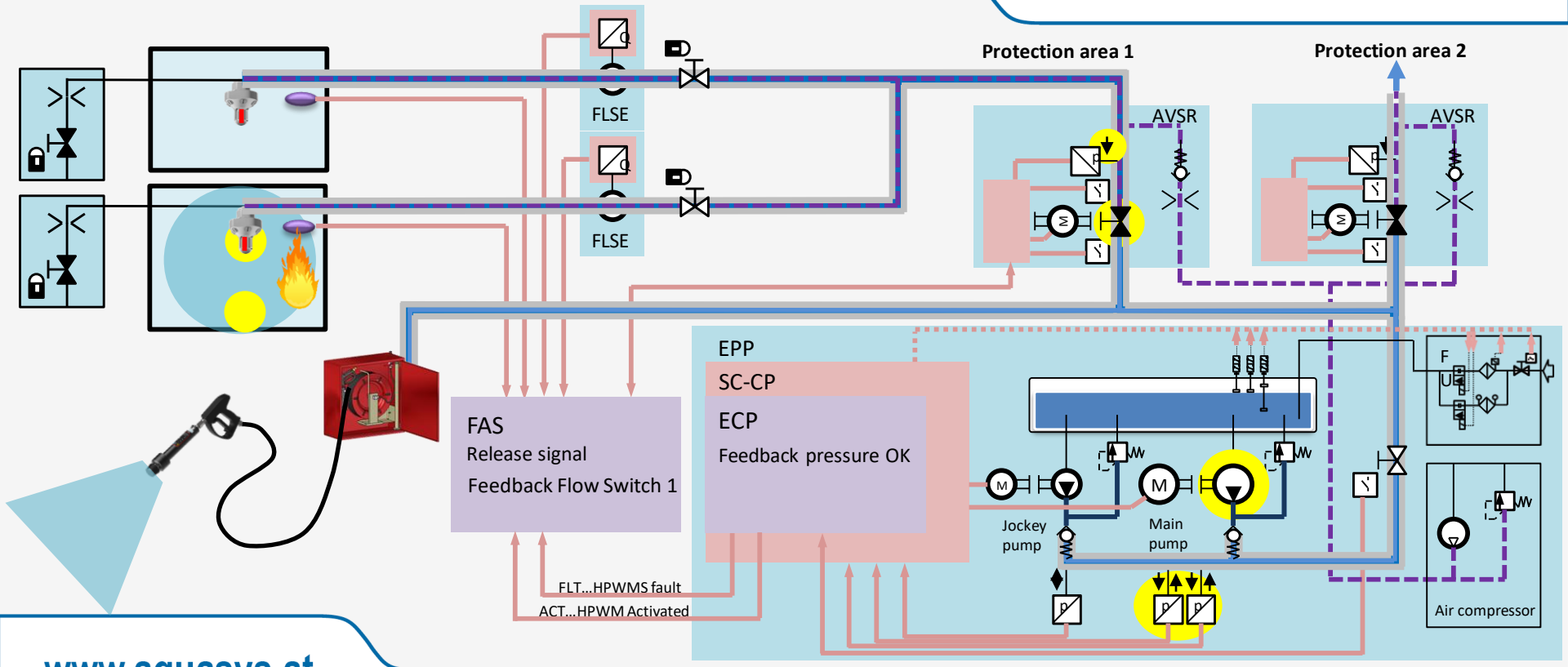
Pump unit	Piping and valves	Nozzles
Compact and modular design	Easy to extend or to adapt in the future	Pressure range of 50 – 80 bar
Adaptable for the use of demineralized water	Reduced piping size between 12 – 42mm	pendent, upright, sidewall type
All components for pressure level minimum 160bar		
High grade stainless steel for all components		

System types

Table based on experience:

Application	Common types	Separation of zones
Laboratory	Open system	via section valves (plus check valves)
Patient and visitor areas	Wet system (OH1, OH2)	via alarm valve + flow switch
Storage rooms or technical rooms	Wet System (OH3)	
Clinical service areas (Operating rooms or other selected hospital areas)	Pre Action system (OH1)	via alarm valves (pre action)
	open system	via section valve

Pre Action – Type A



Water Mist: adaptations easy made

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The possibilities of specially designed systems have direct positive influence in every project phase:

ideal adaptation to…

- Space and surroundings conditions

→ **Technical clarifications**

Flexibility in…

- Hydraulic concept
- Water supply concepts

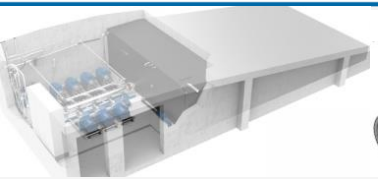
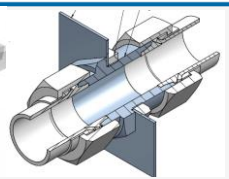
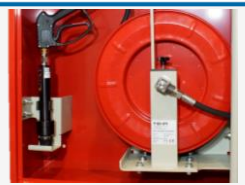
→ **Detail Design**

Higher quality and lifetime

- Pipe installation

→ **Installation**

Special solutions


Example	Description
Special valve solutions	Placed in the main line, to activate open nozzles by electrical or hydraulic trigger signal
Use of water mist wall hydrants	In combination with fixed system or in single form
Special tank form	In PE or stainless steel; delivered in modular form
Prefabricated pipe systems	Installation kits: Engineered and pre-manufactured
Bulk head connectors	For fast and easy integration into wall breakthroughs

Project: Laboratory in Berlin

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Project facts:

- S3 laboratories in the four-storey building protected with open nozzles
- Compact unit with 112 l/min flow
- Small tank: 2 x 2 m³ tank


Bild: kister scheithauer gross architekten und stadtplaner GmbH

Project: Hospital in Zürich

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Project facts:

- Clinical service areas protected with water mist
- Use of a compact pump unit with 224 l/min and automatic refilling concept
- Pre cutting of pipes before delivery to site

Source: Neue Zürcher Zeitung AG

Project: Nursing home near Oslo

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Project facts:

- Protection across a total of three floors
- Elimination of the need for extensive upgrade work on the public water pipeline
- Combined wet and dry system installation

Conclusion

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High sensitive areas require flexible and efficient fire fighting systems

Water mist increases safety for patients, healthcare workers and employees

Water mist contributes to the ongoing maintenance of health care services and facility

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Thank you!

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