EconAqua
Water mist sprinkler systems

INNOVATION

Efficient building protection

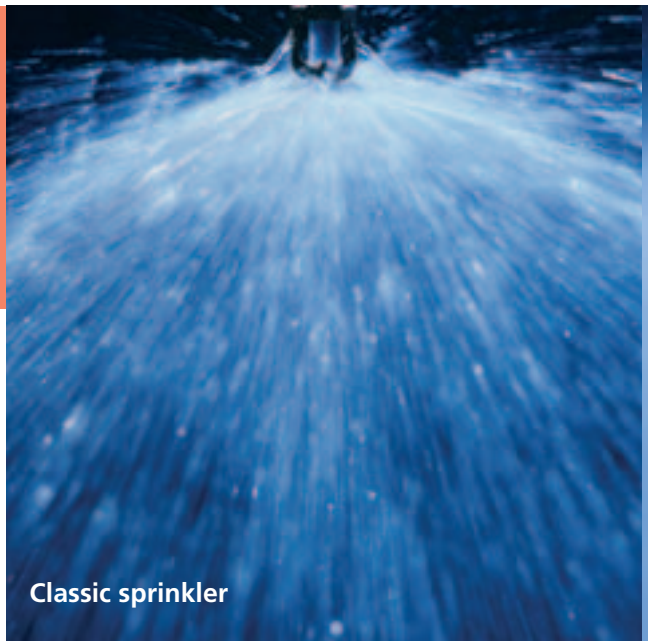
EconAqua water mist sprinkler systems use innovative low-pressure water mist technology to offer a particularly efficient system of fire fighting in office and administration buildings, in underground car parks and in buildings with comparable fire hazards. Persons, physical assets and the environment are thus safely protected round the clock. Their use can meet official requirements – for instance those involved when applying for a building permit. Fire insurers also have recognised the effective fire protection provided by EconAqua by granting premium discounts.

EconAqua uses up to 85% less water than classic sprinkler systems. This level of efficiency can otherwise only be achieved using expensive, high-pressure extinguishing systems that typically work with operating pressures in the range of 40 to 120 bar. With EconAqua, the screening method extensively used during the development of the EconAqua water mist sprinkler means that a maximum operating pressure of 16 bar is quite sufficient. Due to the extremely low amount of water used, potential water damage is reduced to a mini-mum. Moreover, the EconAqua pump room can generally be to a much more compact design than a classic sprinkler pump house.

This saves space and so saves construction costs as well. In addition, the use of pipes with much smaller diameters leads to substantial space savings along the pipe routes, particularly in ceiling areas. Many buildings which could not be fitted with extinguishing systems due to a lack of space can now be retrofitted with a fire extinguishing system, thanks to EconAqua.

EconAqua water mist sprinkler systems can also be used without hesitation for the protection of multi-storey car parks and under-ground garages exposed to frost – the reason is that as with classic sprinkler systems, dry areas can be created which are filled with compressed air instead of water when the system is in an operational state so as to avoid any frost damage.

The outstanding suitability of Econ Aqua has been documented through extensive fire and extinguishing tests carried out under real conditions in mock-ups of original buildings. The EconAqua System is approved and certified by the German VdS.



Classic sprinkler

EconAqua sprinkler

DESIGN AND

Safety at its best

In its design and function EconAqua is similar to a classic sprinkler system. The system is subdivided into one or more extinguishing zones, the corresponding selector valve sets and the EconAqua pump room.

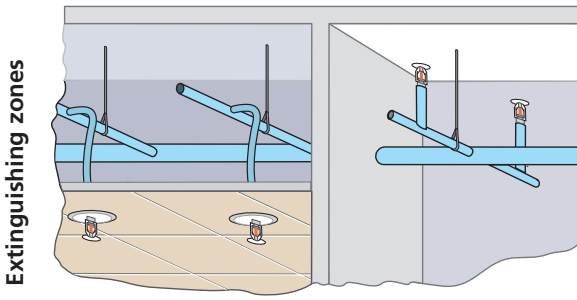
Extinguishing zones

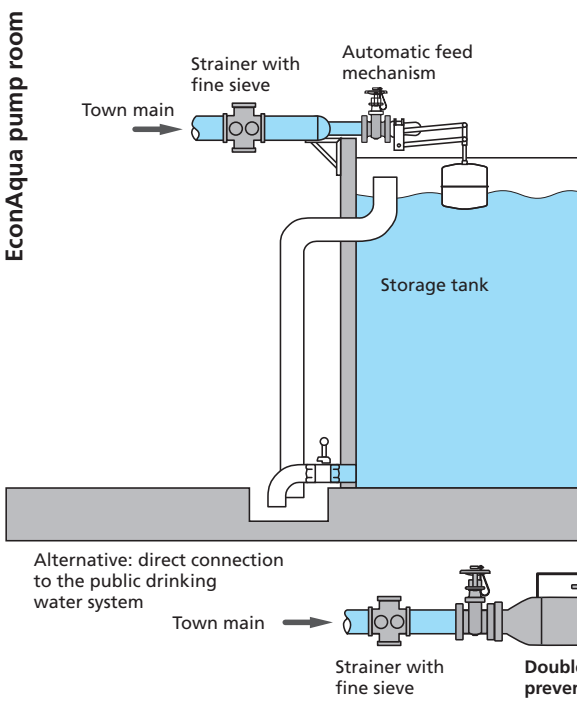
A pipework with EconAqua water mist sprinklers runs through the areas to be protected. The nominal pipe diameters used in these areas mainly lie between DN20 and DN40 and are much smaller than those used in classic sprinkler pipework. In operational conditions the pipework in the extinguishing zones is filled with pressurised water (wet areas) or with compressed air (dry areas). Additional feed is provided by means of a jockey pump or by a compressor. In the event of a fire, only the water mist sprinklers located in the immediate vicinity of the fire source open up. These allow the fire to be fought immediately and using a low volume of finely sprayed water. The remaining sprinklers remain closed.

EconAqua selector valve sets

The extinguishing system is subdivided by means of EconAqua selector valve sets into individual wet and dry areas. When the system is ready for operation, the units that maintain the pressure in the pipework of the extinguishing zones are controlled via these sets. In the event of a fire, i.e. after a sprinkler has opened up, the pressure in the pipework of the extinguishing zone affected drops to a level such that the associated valve set opens up. This initiates the extinguishing process. At the same time an alarm is set off and the location of the fire is indicated.

Wet pipe system for frost-protected rooms





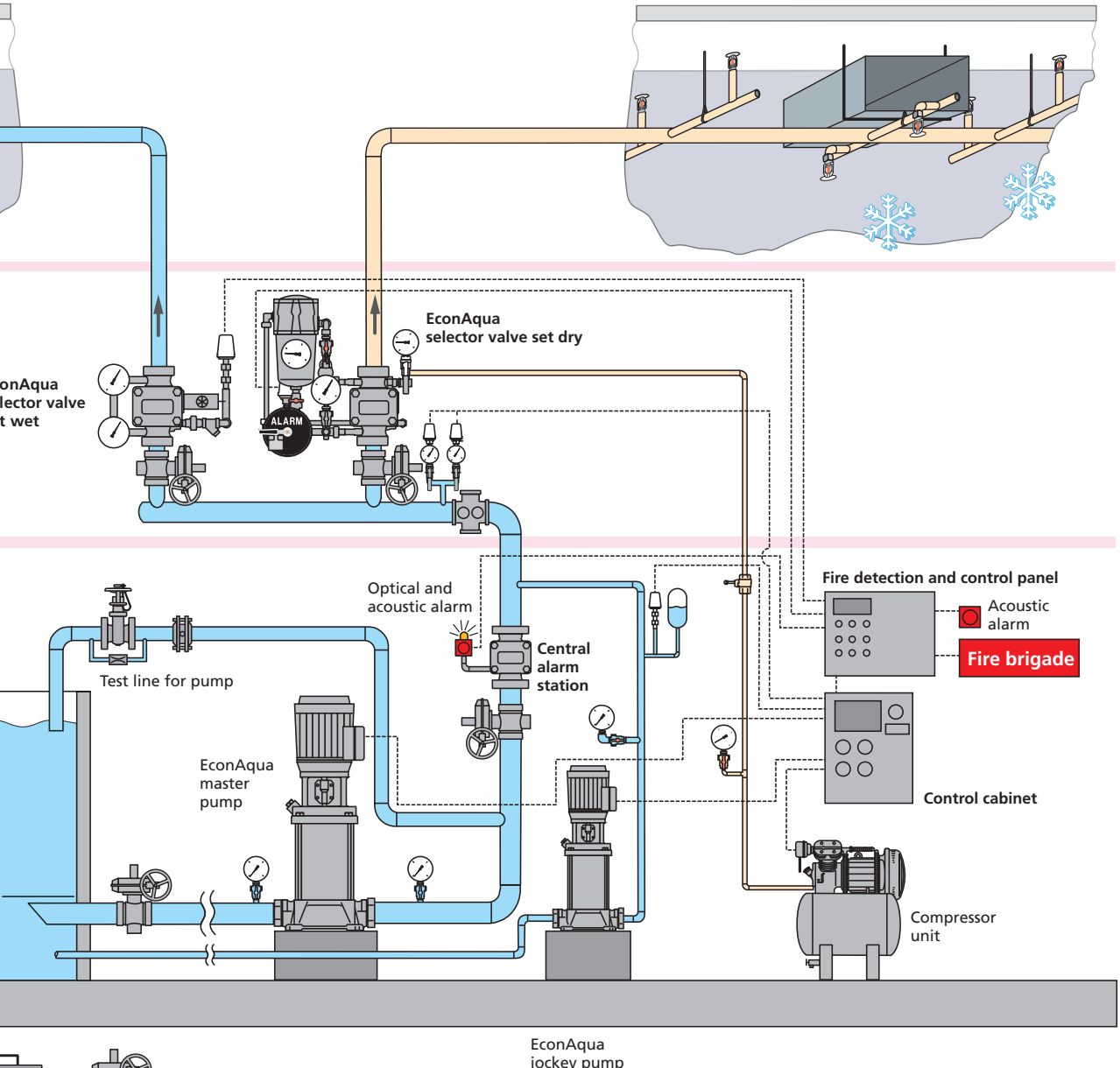
FUNCTION

EconAqua pump room

In addition to the units which maintain the pressure in the pipework of the extinguishing zones the EconAqua pump room also includes the fire detection control panel, the central alarm station, the main pump, a water source, and various other components that ensure operation of the extinguishing system. The much smaller amount of extinguishing water used means that the space required for the EconAqua pump rooms is up to 80 % less than that for corresponding classic sprinkler pump houses. The signals of the selector valve set are transmitted to the fire detection control panel, from where alarms are set off to alert rescue teams. The central alarm valve ensures both visual and audible alarms in the EconAqua pump room.

The pump starts up if the pressure in the main distribution piping drops as a result of one of the selector valve sets opening up. Alternative sources of water for feeding the main pump or the jockey pump are available, either a water tank with automatic additional feed or a direct connection to the public drinking water system, e.g. via the BAMX double backflow preventer.

Dry pipe system for rooms subject to frost hazard



APPLICATION

A class of its own

The range of applications for which the EconAqua water mist sprinkler system can be used is divided into fire hazard classes as defined in the VdS guidelines for sprinkler systems (VdS CEA 4001). These include fire hazard classes LH, OH1 (which do not involve risks to production) and OH2 (only multi-storey car parks and underground garages).

Typical applications

- Banks
- Churches
- Hospitals, old people's homes and other care facilities
- Hostels and apartment houses
- Hotels
- Libraries
- Multi-storey car parks
- Office and administration buildings
- Official and government buildings
- Penal institutions and approved schools
- Railway stations
- Restaurants
- Schools, universities and other educational establishments
- Underground garages

VdS

OPTIMAL

EconAqua – the optimal solution

Wherever a EconAqua water mist sprinkler system can be used, it is generally the optimal solution, since EconAqua combines the advantages of a sprinkler system with those of a high-pressure extinguishing system. One important criterion to be considered in evaluating the various alternatives for a specific application is the total cost of the equipment. Besides the direct costs of installing the equipment this also includes the cost of constructing the pump room, costs for connections to the electricity and water supply networks, and the maintenance costs.

With high-pressure extinguishing systems used in areas subject to frost there are usually additional costs for an associated pipeline heating system, because with these systems – other than for EconAqua or classic sprinkler systems – it is not possible to create dry areas.

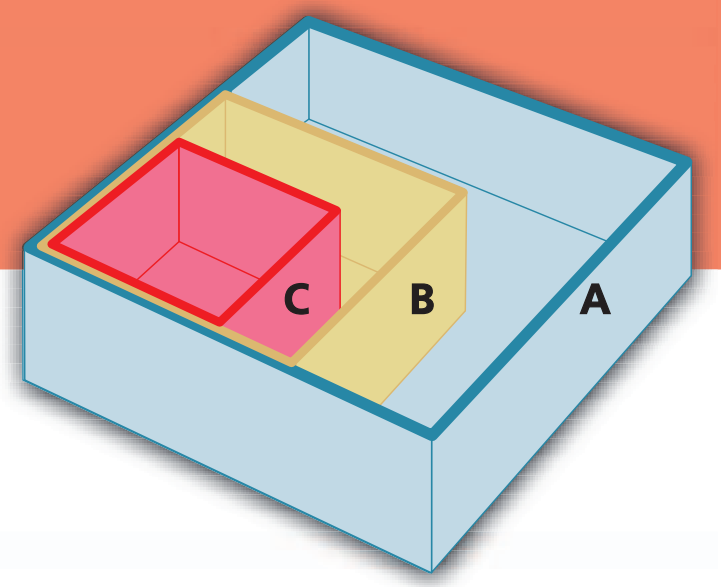
Example:
EconAqua saves on construction costs.
The use of EconAqua for a hospital in Germany can lead to a pump room which is around 15 m^2 smaller than one for a classic sprinkler system. Taking into account the average building costs for hospitals of 1,780 €/m^2 (source: German BKI 2004), the reduced space requirements alone lead to construction cost savings of some 27,000 €.

Typical result of an assessment of the alternatives: EconAqua is the optimal solution

Criterion	*Classic sprinkler system*	*EconAqua water mist sprinkler system*	*High-pressure extinguishing system*
Technical criteria			
Use of water	–	+	++
Space required for the pump room	–	+	+
Space required for the pipe routes	–	+	++
Opportunities for connecting to other water networks, opportunity for fire brigade inlet	++	+	o
Provision to prevent sprinkler clogging	++	+	o
Economic criteria			
Direct system installation costs	++	+	––
Costs for the construction of the pump room	–	+	+
Cost for connections to the electricity and water supply networks	o	+	o
Maintenance costs	+	+	––
Total cost of the equipment	+	++	–

++ very beneficial + beneficial o neutral
– disadvantageous –– very disadvantageous

A Classic sprinkler pump house
B EconAqua pump room including storage tank
C EconAqua pump room with direct connection to the puplic drinking water system



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