Typical applications

- Banks
- Churches
- Hospices, old people’s homes
- and other care facilities
- Hotels and apartment houses
- 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

Wherever a Minifog EconAqua water mist sprinkler system can be used, it is generally the optimal solution, since Minifog 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 Minifog EconAqua or classic sprinkler systems – it is not possible to create dry areas.

Example: Minifog EconAqua saves on construction costs. The use of Minifog EconAqua for a hospital in Germany can lead to a pump room which is around 15 m² smaller than one for a classic sprinkler system. Taking into account the average building costs for hospitals of 1,780 €/m² (source: German BKI 2004), this reduced space requirement alone leads to construction cost savings of some 27,000 €.
MINIFOG ECONAQUA

INNOVATION

86942 MX_Minifog-EconAqua

Due to the extremely low amount of water used during the development of the EconAqua, the screening method extensively used in expensive, high-pressure extinguishing systems can be replaced by a low-volume system. 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 Minifog EconAqua.

Minifog EconAqua water mist sprinkler systems can also be used without hesitation for the protection of multi-storey car parks and underground 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 Minifog EconAqua 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.

FUNCTION

The EconAqua selector valve sets

In its design and function Minifog 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 DN25 and DN50 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 (low area) or with compressed air (dry area). 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 fires to be fought immediately and using a low volume of finely sprayed water. The remaining sprinklers remain closed.

Extinguishing systems

Since 1995, Minifog has developed and installed high-pressure and low-pressure water mist extinguishing systems under the “Minifog” brand name for a wide range of applications, thus making it one of the pioneers of water mist technology. The fire spray technology – often also called fine water spray technology – utilises the physical properties of the water more efficiently than classic water extinguishing systems. The water is exited through special nozzles and sprinklers as a very fine spray under increased operating pressures. The result is a larger total surface of the extinguishing water, allowing it to absorb heat and to evaporate more quickly. The cooling and smothering effect allows for particularly effective fire fighting using a minimum amount of extinguishing water.

Water mist extinguishing systems

In addition to the systems which maintain the pressure in the pipework of the extinguishing zones and the compressed water mist pump, the fire detection control panel, the central alarm valve set in the pump room, 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 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 BAMK double backflow preventer.

Safety at its best

The EconAqua selector valve sets are 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 zones 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.

Efficient building protection

An extinguishing 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 DN25 and DN50 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 (low area) or with compressed air (dry area). 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 fires to be fought immediately and using a low volume of finely sprayed water. The remaining sprinklers remain closed.
Safety at its best

Minifog EconAqua water mist sprinkler systems developed by Minimax 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. Pensions, 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 Minifog EconAqua by granting premium discounts.

Minifog 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 48 to 120 bar. With Minifog EconAqua, the screening method extensively developed by Minimax use innovative low pressure water mist sprinkler systems that work with extremely low amount of water. The operating pressure of 16 bar is quite sufficient. Minifog EconAqua has been documented through extensive real conditions in mock-ups of original buildings.

Since 1993, Minimax has developed and installed high pressure and low pressure water mist extinguishing systems under the “Minifog” brand name for a wide range of applications, thus making it one of the pioneers of water mist technology.

The fire spray technology – often also called fine water spray technology – utilises the physical properties of the water more efficiently than classic water extinguishing systems. The water is emitted through special nozzles and sprinklers as a very fine spray under increased operating pressures. The result is a larger total surface of the extinguishing water, allowing it to absorb heat and to evaporate more quickly. The cooling and smothering effect allows for particularly effective fire fighting using a minimum amount of extinguishing water.

Due to the extremely low amount of water used, potential water damage is reduced to a minimum. Moreover, the EconAqua pump room can generally be to a much more compact design than a classic sprinkler pump house.

The EconAqua System is approved and certified by the German VdS. The remaining sprinklers remain closed. 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 Minifog EconAqua.

Minifog EconAqua water mist sprinkler systems can also be used without hesitation for the protection of multi-story car parks and underground garages exposed to frost – in the opinion of the manufacturer, the system is a necessary means of protection. The outstanding suitability of Minifog EconAqua has been documented through extensive real conditions in mock-ups of original buildings.

In design and function Minifog 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 (jet area) or with compressed air (dry area). 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.

Alternative: direct connection

To the fire detection control panel, from where alarms are sent off to the alarm panel, 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.
Minifog EconAqua water mist sprinkler systems developed by Minimax use innovative low-pressure water mist technology to offer a particularly efficient system of fire fighting in offices and administration buildings. In underground car parks and in buildings with comparable fire hazards, Penins, 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 Minifog EconAqua by granting premium discounts.

Minifog 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. Minifog EconAqua, the screening method extensively used during the development of the EconAqua, has been documented through extensive testing and extinguishing tests carried out under real conditions in mock-ups of original buildings. The EconAqua System is approved and certified by the German VdTUV.

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Extinguishing zones

A sprinkler with EconAqua water mist sprinklers runs through the areas to be protected. The nominal pipe diameters used in these areas mainly lie between DN25 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 area) or with compressed air (dry area). 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.

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Efficient building protection

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 ceilings. 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 Minifog EconAqua.

Minifog EconAqua water mist sprinkler systems can also be used without hesitation for the protection of multi-storey car parks and underground 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 Minifog EconAqua has been documented through extensive testing and extinguishing tests carried out under real conditions in mock-ups of original buildings. The EconAqua System is approved and certified by the German VdTUV.

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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 zones 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.

EconAqua selector valve sets

In addition to the units which maintain the pressure in the pipework of the extinguishing zones the EconAqua system also includes the fire detection control panel, the central alarm station, the 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 if needed. 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 BAMK double backflow preventer.

Dry pipe system for rooms subject to frost hazard

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 ceilings. 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 Minifog EconAqua.

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The range of applications for which the Minifog 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 care facilities
- Hotels and apartment houses
- 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

Minifog EconAqua – the optimal solution

Whenever a Minifog EconAqua water mist sprinkler system can be used, it is generally the optimal solution, since Minifog 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 Minifog EconAqua or classic sprinkler systems – it is not possible to create dry areas.

Typical result of an assessment of the alternatives:

Minifog EconAqua is the optimal solution

<table>
<thead>
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Technical criteria

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| Potential saving | | | |
|------------------|------------------|------------------|
| by eliminating dry areas | very beneficial | beneficial |
| – dis disadvantageous | very disadvantageous |

Wherever a Minifog EconAqua water mist sprinkler system can be used, it is generally the optimal solution, since Minifog 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 Minifog EconAqua or classic sprinkler systems – it is not possible to create dry areas.

Example:
Minifog EconAqua saves on construction costs.

The use of Minifog EconAqua for a hospital in Germany can lead to a pump room which is around 15 m² smaller than one for a classic sprinkler system. Taking into account the average building costs for hospitals of 1,780 €/m² (source: German BKI 2004), this reduces the costs of around 27,000 €. Taking into account the savings of 35,000 €, the reduced space requirements alone lead to construction cost savings of some 27,000 €.

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

VdS

Minifog EconAqua
Water mist sprinkler systems

A class of its own

OPTIMAL

Safe for certain.

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Fax: +49 (0)4531/803-248
E-mail: info@minimax.de
www.minimax.de

OPTIMAL

A typical result of the assessment of the alternatives:

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**Very beneficial** | **Beneficial** | **Neutral** | **Disadvantageous** | **Very disadvantageous**

---

**A Classic sprinkler pump house**

**B Minifog EconAqua pump room**

including storage tank

**C Minifog EconAqua pump room with direct connection to the public drinking water system**