



AQUAFOG[®]
WATER MIST



The **AQUAFOG®** water mist system optimises the quantity of water used through the distribution of very small droplets to achieve maximum cooling effect.

The **AQUAFOG®** systems operate at working pressures of 80 to 200 bars to produce droplets of very small diameter at very high speed.

The **AQUAFOG®** fire extinguishing systems use water at high pressure as an agent and are based on principles of well established hydraulic technology. Spray heads are designed to discharge water in the form of water mist. The tiny drops create a large effective cooling surface area of the fire and surrounding volume. The high speed of the droplets means that the mist can penetrate the hot fumes and reach the combustion area.

Water mist is based on the principle of combined contribution of 3 main effects:

- **Cooling:**
Water spray in droplets of micron size produces a large surface area for heat absorption. Once in contact with hot bodies and gases, these droplets turn to vapour absorbing a large quantity of heat, equivalent to 540 calories per gram.
- **Smothering:**
The water in its vapour state occupies 1,600 times more volume than as a liquid and displaces an equivalent volume of oxygen, thus creating a smothering effect. If both the water vapour generated and the temperature in the hazard is high enough, the concentration of oxygen can fall drastically in the whole room.
- **Attenuation:**
The mist cloud generated in the enclosure absorbs a large part of the radiated heat thus protecting the adjoining risks.

System functionality:

- **Fire control (Total Flooding):**
Limiting the growth and the spread of fire, cooling the adjoining fuel and containing upper gas temperatures.
- **Fire extinction (Local Application):**
Complete fire suppression of the risk.

Whether it is fire control or fire extinction does not depend on the water mist system but on the configuration of the hazard.

Main advantages of the system:

- . Drastic reduction of temperature.
- . Efficient on deep seated fires.
- . Efficient for flammable liquid fires, preventing re-ignition.
- . Minimal water damage (the quantity of water used is very small).
- . Easy to refill.
- . Suitable for local application and total flood hazards.
- . Environmentally friendly. No damage to the environment.
- . Economical. Minimum cost in system refilling.
- . Does not create by-products of combustion.

AQUAFOG® PROTECTION SYSTEMS

Properties of the system:



- The **LPG** system operates at working pressures of 80 to 200 bar discharging very small droplets at very high speed.
- It uses de-ionised water at high pressure, as an extinguishing agent based on well established hydraulic principles and technology.
- The nozzle heads are designed so that the water discharges to form mist.
- The small droplets create a large effective cooling surface area of the fire and surrounding region. The high speed of the droplets means that the mist can penetrate in full the hot fumes and reach the combustion area.
- The **LPG** system bases its principles of extinguishing and fire control on the combination of 3 different actions:
 - Cooling of the fuel
 - Displacement of oxygen at the seat of the fire
 - Attenuation of heat transfer radiation

APPLICATIONS:

Water mist is used in very different situations. It is designed according to two different functions (according to each hazard): **fire control or fire suppression**.

Through extensive testing and experience **LPG** can identify the application for each kind of hazard:

As control (total flood application):

- . Computer rooms
- . Occupied rooms and class A fires
- . Archives
- . Cable trays
- . Telecommunication centres
- . Spill of flammable liquids



As fire suppression (local application):

- . Commercial kitchens and food industry
- . Warehouses containing flammable liquids
- . Turbine and transformer rooms
- . Engine test cells
- . Diesel engines and alternators
- . Paint spray booths
- . Mechanical escalators (not including the electrical-type risks in the drive rooms)



AQUAFOG® Nozzle heads / accessories

LPG has several different models of nozzles suitable for the hazard to be protected. The nozzle head is made of stainless steel with housing for a maximum of 5 micro nozzles. A compression fitting is provided for direct connection to the stainless pipe network.

The **open nozzle** discharges directly once the system is activated.

The **close nozzle** only discharges when its thermal detection bulb breaks.

The flow of the heads depends on the type of micro nozzle with a range of flows from **1.26 litres per minute up to 40 litres per minute at 120 bars**. The atomization size of the droplets generated by the micro nozzles is approximately 50 microns. All nozzle heads have a FB85 filter to avoid possible blockage of the micro nozzles from particulate contaminant.



OPEN NOZZLE HEADS

These nozzles are the most suitable for application in total flooding systems. The nozzles can be fitted with up to five micro-nozzles depending on the design giving flexibility of a wide range of flows. The connecting adaptor is stainless steel compression for easy connection to the stainless supply pipe work.

The nozzle body is formed in two sections to make maintenance operations easier. The micro-nozzles spray the water correctly with a working pressure of between 80 and 200 bars.



AUTOMATIC NOZZLE HEADS

These nozzles are most suitable for application in wet or pre-action systems. It can be equipped with up to four micro-nozzles depending on the design requirements offering a large range of flows. The head is fitted with a quick response thermal bulb for fire detection with a response time index (RTI) of 36 (m-s)^{0.5}. **LPG** offers a wide range of temperature bulbs from 57°C up to 141°C.



AUTOMATIC/PNEUMATIC NOZZLE HEADS

A mixture of the above-mentioned nozzle heads. When connected to a wet pipe system, they allow the detection of the fire by means of a bulb (same RTI) allowing activation of the remaining nozzles when the pressure in the pipe exceeds a minimum value (60 bar). In this way, it is possible to design total flooding systems with detection included. As with the close head, it can be equipped with up to four micro-nozzles depending on the application.



“T” NOZZLE HEADS TO PIPE

This is the most economical head from the whole **LPG** range. It allows the connection of a unique micro nozzle reducing the cost. **This head is assembled directly onto a T or elbow by means of a nozzle joint with a Ø 12 or 15 mm compression nut included in price.** This is the most suitable nozzle for applications in kitchens, escalators and false floors/ceilings.

PUMP SYSTEMS

The **AQUAFOG®** water mist pump sets have been developed as an alternative to water mist cylinder systems, when the requirement for water demand for the protection of the installation precludes the use of cylinders. **LPG** offers pump sets with flow rates from 40 l/min up to more than 224 l/min. The system includes a panel for control and operation of the pressure set.

AQUAFOG® pump sets can be used in the following type of installation:

- **Total Flood:** the system discharges the extinguishing agent through the atomising heads that are connected to the pipe network; the fire detection system is normally independent to the extinguishing system.
- **Wet Pipe System:** the system is maintained in quiescent (non-fire) conditions with a water pressure in the pipe work of around 20 - 30 bar. The heads that are connected to the pipe work incorporate a heat detection element, which once activated permits the discharge of the pressurised water in the pipe work. The drop in pipe work pressure activates the system and a discharge occurs in those heads that have activated. In this instance, a jockey pump is included with the main pump equipment.



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