Experts in fire protection

MINIMAX

# MX 1230 Fire Extinguishing Systems
# Fire fighting with FK 5-1-12

TECHNOLOGIES

GAS EXTINGUISHING SYSTEMS

# Fire protection – efficient and compact

**MX 1230 fire extinguishing systems fight fires using FK 5-1-12 Fire Protection Fluid. This extinguishing agent is particularly suitable for the protection of spaces with electronic and electrical equipment and offers a compact fire protection solution especially for small and medium- sized rooms. The 50-bar technology of the MX 1230 system makes optimal use of the characteristics of this extinguishing agent.**

The FK 5-1-12 fire protection fluid reduces the heat of the fire and thus stops the combustion reaction. It is very efficient yet unaggressive at the same time.

Stored as a liquid, it transforms into a gas only when it exits from the extinguishing nozzles. It therefore extinguishes, as a rule, even concealed fire sources instantaneously.

The rapid extinguishing of a fire already in the nascent phase minimizes the fire damage and prevents long downtimes or business interruptions.

Furthermore, – unlike the case of water, foam or powder – secondary damage caused by the extinguishing agent itself is practically impossible. FK 5-1-12 is neither corrosive nor electrically conductive: It leaves no residue and can easily be removed from the space concerned through ventilation. Therefore, it is, besides inert gases, the preferred extinguishing agent for electronic and electrical risks.

FK 5-1-12 Fire Protection Fluid achieves its extinguishing effect at a substantially lower design concentration than that of inert gas extinguishing systems. Furthermore, the comparatively small quantity required for use is stored in liquid form. This allows for extremely compact storage of the extinguishing agent. Additionally, in its design concentration the fire protection fluid does not present any health hazard.

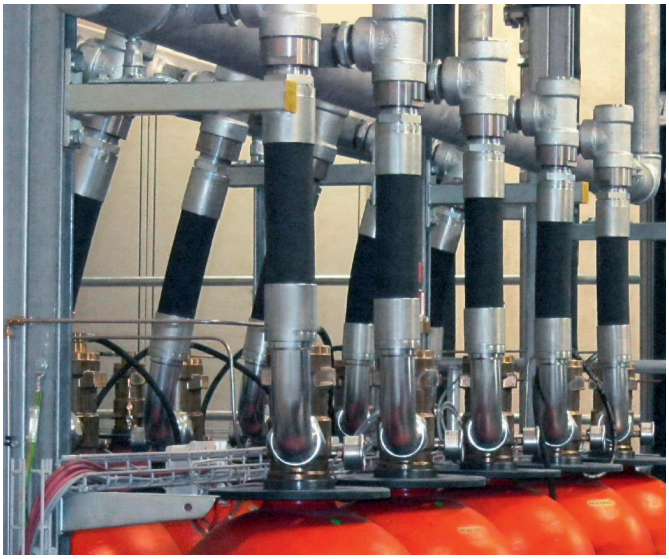
FK 5-1-12 fluid has the best environmental properties, compared to other gaseous chemical extinguishing agents. It does not produce any hazard for the ozone layer and has a very low global warming effect. It dissipates completely within a mere five days.

# 50 bar-technology

**In addition to the operating pressures of conventional fire extinguishing systems of 25 bar and 42 bar, MX 1230 systems are also available in a 50-bar configuration, which offers some significant advantages.**

### Longer pipelines

The regulations for fire extinguishing systems using FK 5-1-12 fire protection fluid require that the protected area can be flooded within a maximum of ten seconds. The 50-bar technology makes it possible to use longer and more complex piping than systems using lower operating pressures. This means that the extinguishing agent can also be stored outside the protected area.



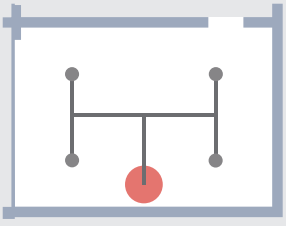
### Multi-zone systems

With 50-bar technology, it is possible to set up one multi-zone system instead of several single-zone systems. Multi-zone systems jointly use a single stock of extinguishing agent for all rooms, while in the case of single-zone systems, a separate storage facility must be provided for each room. This reduces costs and saves space, especially if several rooms of a similar dimension have to be protected in a building.

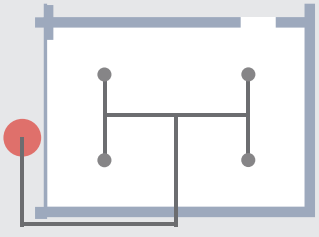
### This option has the following advantages:

- In the event of fire, the extinguishing system itself is not exposed to fire.
- The space in the protected area can be used for its actual purpose, e.g. for additional server cabinets in the server room.
- The stock of extinguishing agent can be serviced quickly and easily without having to enter sensitive areas.

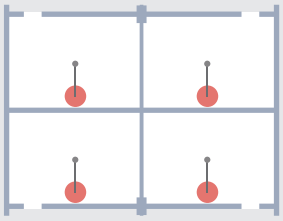
Conventional extinguishing system with 25 bar



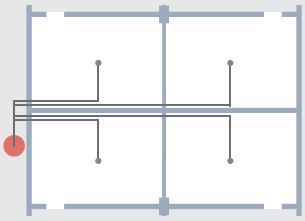
MX 1230 fire extinguishing system with 50 bar



Conventional single-zone systems



MX 1230 multi-zone technology



# Installation with single-zone or multi-zone technology

**MX 1230 fire extinguishing systems can be designed as single-zone systems protecting single areas or in the form of a multi-zone systems to protect two or more areas each.**

## Single-zone systems

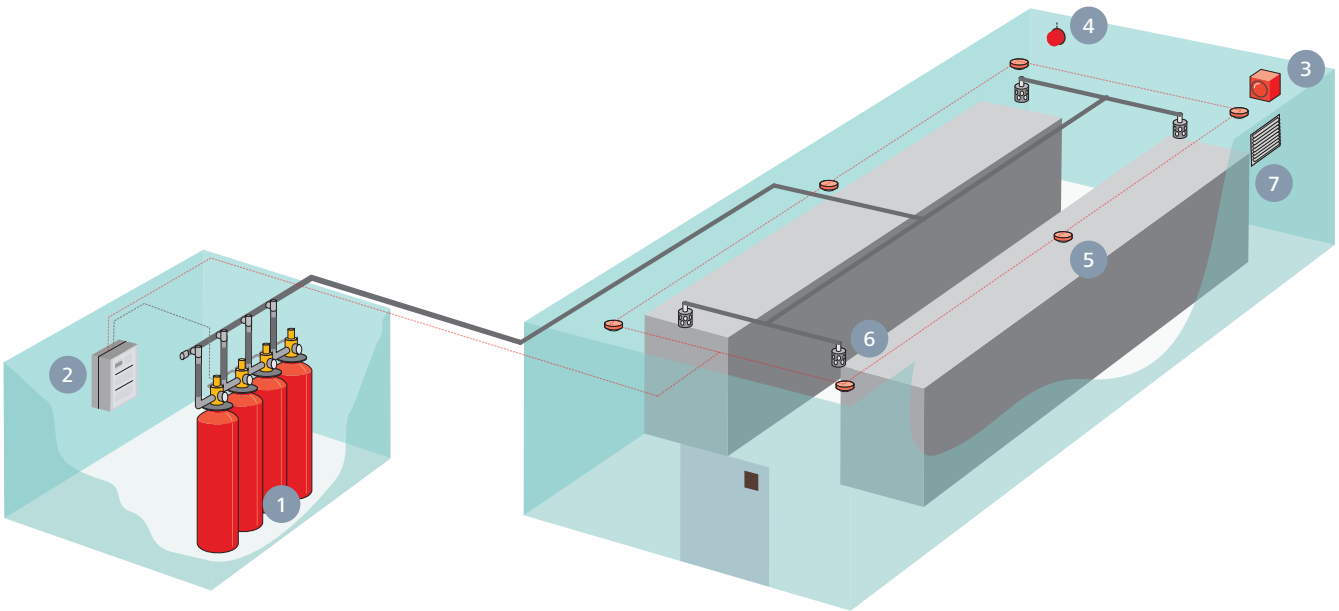
A pipework system with MX 1230 extinguishing nozzles is installed in the protected space, while the dimension of the pipework, as well as the number and layout of the extinguishing nozzles, is determined by the risk concerned and the specific local conditions. The extinguishing agent is stored in liquid form in special cylinders. A nitrogen cushion is superimposed over the extinguishing agent generating the operating pressure of 25, 42 or 50 bar.

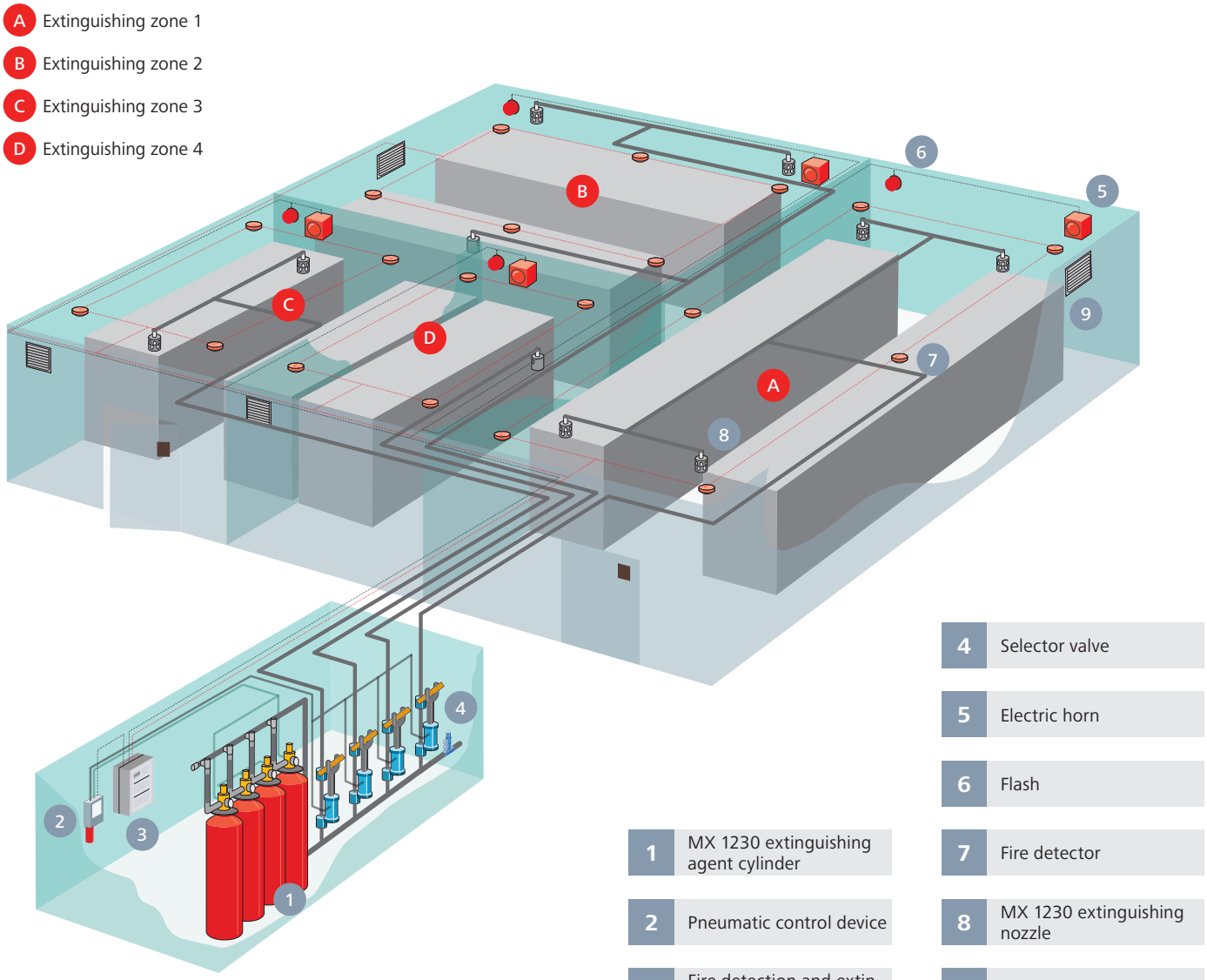
To protect smaller rooms, a single cylinder is often sufficient. Multi-cylinder systems are used to protect larger rooms.

Smoke detectors continuously monitor the extinguishing zone and send a signal to the fire detection and extinguishing control panel in the event of a fire. In the case of single-cylinder systems, the control panel then opens the electrical valve of the extinguishing agent cylinder to release the agent into the pipework. In the case of multi-cylinder systems, the first cylinder is electrically activated and through the nitrogen cushion in this first cylinder, the other cylinders are triggered pneumatically.

At the same time the fire detection and extinguishing control panel triggers an audible and visual alarm, whereby persons present will be asked to leave the room. At the same time, it transmits a signal to a permanently manned station. After expiry of a predetermined warning time, the extinguishing process starts: The extinguishing agent is carried through the pipework into the extinguishing zone within 10 seconds.

| | | | |
|---|---|---|---|
| 1 | MX 1230 extinguishing agent cylinder | 5 | Fire detector |
| 2 | Fire detection and extinguishing control panel | 6 | MX 1230 extinguishing nozzle |
| 3 | Electric horn | 7 | Pressure relief flap |
| 4 | Flash | | |






| | |
|---|---|
| 1 | MX 1230 extinguishing agent cylinder |
| 2 | Pneumatic control device |
| 3 | Fire detection and extinguishing control panel |
| 4 | Selector valve |
| 5 | Electric horn |
| 6 | Flash |
| 7 | Fire detector |
| 8 | MX 1230 extinguishing nozzle |
| 9 | Pressure relief flap |

## Multi-zone systems

Multi-zone systems are very similar to single-zone systems, except that they use a common stock of extinguishing agent to protect all rooms. In the event of a fire, the fire detection and extinguishing control panel controls specific selector valves. These valves release the extinguishing agent only into the extinguishing zones affected by the fire. The required quantity of extinguishing agent is always calculated in relation to the largest protected space. If a smaller space is affected by the fire, only as much extinguishing agent as required is released to extinguish the fire in this space. Due to the reserve of extinguishing agent, the fire extinguishing capacity of the system is guaranteed even after the extinguishing system has been triggered – providing continuous, uninterrupted operation.

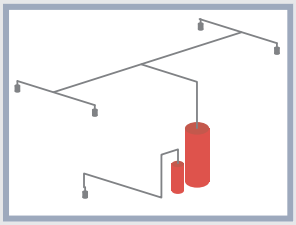
## Fire detection and extinguishing control technology

The control and function monitoring capacity of MX 1230 fire extinguishing systems should be provided ideally by the tried and tested Minimax Clunid FMZ6000 fire alarm and extinguishing control technology. This ensures optimal compatibility – supported by relevant certifications – of electrical and mechanical system components and avoids unnecessary coordination expense and interface problems between different system parts.

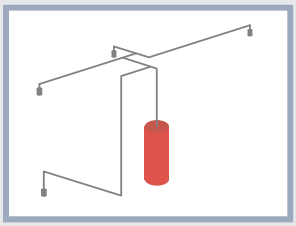
# Optimal Design – with Minimax DesignManager

**For the customer-specific design of our MX 1230 fire extinguishing systems, our planners have a calculation program with unique accuracy at their disposal: The Minimax DesignManager meets the high requirements placed on such calculation programs by the international certification authorities VdS, UL and FM Global. It is based on a specially developed simulation model for two-phase flow, which has been verified in numerous flow tests on extinguishing system models.**

Conventional extinguishing system with symmetric pipework



MX 1230 fire extinguishing system with asymmetric pipework



In the pipework, a two-phase flow – composed of FK 5-1-12 Fire Protection Fluid and gaseous nitrogen – is generated after activation of the extinguishing system; this presents a particular challenge for the hydraulic calculation when planning the system. Whether a 25-, 42- or 50-bar system, single- or multi-zone, symmetric or asymmetric pipework – the Minimax DesignManager will always find the ideal system version and solution for each project.

Thanks to the calculation accuracy of the Minimax DesignManager, extinguishing systems can be optimally designed – both as regards safety systems and from an economic perspective. Because unlike conventional design programs, the Minimax Design-Manager is also able to include zone distributors of multi-zone systems with up to 15 outlets in the calculation. It also calculates complex and asymmetric pipework, thus offering more flexibility in the system design.

To further safety in the design of the system, the guided menu of the Minimax DesignManager is designed to perform an error and plausibility check even while the basic data are entered into the system.

Another highlight: An interface to the AutoCAD software integrated into the Minimax DesignManager offers a convenient design of the installation and makes it possible to import the result into the project documents and system records afterwards.

# Wide Range of Applications

MX 1230 fire extinguishing systems are particularly suitable for the protection of spaces with electrical and electronic facilities.

**Examples of use**

- Server rooms and other IT facilities
- Data archives
- Telecommunications equipment
- Control rooms and control stations
- Instrumentation and control rooms
- Electrical switch rooms
- Switchgear and distribution cabinets

**Compact system needs no piping**

In the compact design control panel, extinguishing agent supply and on request also extinguishing nozzles, buzzers and flashing lights are housed in a cabinet. The system can hence be installed in the area it is designed to protect, which saves space and requires minimal assembly and installation.

## Benefits at a glance

There are many reasons for choosing a MX 1230 fire extinguishing system by Minimax:

- The systems provide an excellent extinguishing effect in rooms with electronic and electrical equipment.
- The FK 5-1-12 fire protection fluid is neither corrosive nor electrically conductive and it has a very high environmental compatibility. It leaves no residue and can easily be removed from the space in question through ventilation.
- Operating pressures up to 50 bar allow for more extensive pipework and storage of the extinguishing agent outside the protected area.
- Through cost-effective multi-zone systems, a single stock of extinguishing agent is sufficient to cover several zones.
- The Minimax DesignManager calculates complex, asymmetrical pipework automatically and delivers optimal solutions – both from a safety-related and an economic perspective.
- Also available as compact system without piping.

**Internationally approved**
All system variants and options of the MX 1230 fire extinguishing systems, including the Minimax DesignManager, are tested and certified by FM Global, by UL as well as by VdS Schadenverhütung (independent German testing institution for fire protection and security). In addition, there are approvals by other international certification bodies.

**Photos**
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