

Experts in fire protection

**MINIMAX**

## DryerProtect – Fire Protection for Industrial Dryers



SPECIAL SOLUTIONS

DRYERPROTECT



## All fire protection solutions for dryers: DryerProtect

Dryers are used to continuously dry combustible materials such as veneers, wood chips, sewage sludge, and animal feed. They are a crucial part of the production process. As a result of the strong networking in the production process, a fire can spread very quickly and lead to cost-intensive business interruptions or even plant closures.

A fire can have many causes. Overheating, friction, or machine breakage can cause the materials and build-ups in a dryer to ignite quickly. Sparks or glowing embers from upstream production areas can enter the dryer through the material feed point and provide a source of ignition for the development of a fire.

Due to the high fire load of the materials and build-ups, as well as greases or even heat transfer oil, fires can spread rapidly in the dryer. This effect is further enhanced by the strong air flow currents in the drying process.

Sparks or glowing embers from the dryer can reach dust-covered outdoor areas or the filter of a downstream dust collection system via exhaust lines, directly into the open air. This can lead to fires or even explosions.

To avoid these scenarios, an adapted fire protection solution is required on dryers and their adjacent areas that takes into account the interlinking of the individual process areas.

Operators therefore need a solution which detects fires quickly and fights them specifically on the dryer and related extraction devices. In addition, a protection concept which allows for coordinated fire protection for interlinking production areas would be desirable.

Minimax has the right solution: **DryerProtect**.





# Engaged technology

DryerProtect combines fire detection, water mist, and spark extinguishing technology in one comprehensive solution. This enables fire protection which is aligned individually with the requirements of different protection zones.



## Minifog water mist – Fire suppression systems

Minifog water mist suppression systems use the physical characteristics of the water more efficiently than traditional water-based suppression systems. The extinguishing water is finely sprayed by means of special water mist nozzles and sprinklers and increased operating pressure. This increases the total surface area of the extinguishing water, so that it absorbs heat and evaporates more quickly. The associated cooling and smothering effect enables particularly effective fire fighting with reduced use of extinguishing water. Diverse system variants, customized for each application, ensure optimal protection for buildings, rooms and facilities.

## Spark extinguishing systems – Before sparks turn into flames

Spark extinguishing systems detect ignition sources in exhaust and conveyor systems, and the automated suppression system quickly creates a water curtain to extinguish the glowing particles. These are used wherever combustible materials are pneumatically conveyed and at material transfer points where there is a high risk of fires or dust explosions caused by sparks or hot spots. The suppression process normally takes place without interrupting ongoing operation.



## Detection

UniVario flame detectors and spark detectors are used in the protection zones. Both detector types enable fire detection and thus rapid action. UniVario detectors transmit their signals to a fire detection and suppression control panel, which alerts the people at risk in the area and the fire department, while also providing reliable relevant information to the responsible authorities.



## Clunid FMZ6000 – Safer. Easier. Universal.

The Clunid FMZ6000 is a modular fire detection and extinguishing control panel, precisely tuned and assembled to the particular customer requirements. High levels of operating safety and simple operation characterize the unique properties of the Clunid panel generation. The application possibilities are almost infinite. From the standardized and standardconformant control of complex multi-zone extinguishing systems to the freely programmable situational fire control system, anything is possible. With this the Clunid FMZ6000 offers a technology with a high degree of flexibility which is ahead of its time.

# Design and function

DryerProtect combines fire detection, water mist and spark extinguishing technology into a single system. Fire protection for dryers is provided by Minifog ProCon water mist systems, while exhaust devices are best protected by spark extinguishing systems. Joint water supply and joint fire detection and extinguishing control panel can be provided for both systems.

## Fire detection and suppression

Minifog ProCon is a water mist suppression system divided into one or more suppression zones with appropriate zone subdivision, water supply, and fire detection and suppression control equipment. For fire detection in low temperature areas, FMX5000 IR UniVario flame detectors are used, which allow the rapid detection of emerging fires due to their use of infrared technology. In other areas with higher temperatures, modified model YMX5000 spark and flame detectors with fiber optics are used.

To increase reliability and reduce maintenance, detectors with optics visibility monitoring should be used as a preferred option. If a certain level of contamination is exceeded, a warning message is issued. Another option is the use of an air purge device – this uses compressed air to keep the optics of the detectors free of dust buildup.

Dryers are extinguished by Minifog ProCon water mist suppression systems, which operate at low pressure and spray the extinguishing water particularly finely over the defined protection zone. The system uses the physical characteristics of water more efficiently than classic deluge systems. The particularly small droplets have the effect of enlarging the total surface area of the extinguishing water which leads to an increase in contact surface for the heat transfer. The cooling performance of the water is thus significantly improved. In addition, the sudden warming of the small water droplets in the area of the flame immediately causes greater quantities of steam which prevents the supply of oxygen to the fire. The extinguishing principle of the cooling and sticking effect enables particularly effective fire fighting with reduced use of extinguishing water, and can also control rapidly spreading fires.

To ensure reliable suppression, Minifog ProCon water mist nozzles are used, which can be operated with a minimum

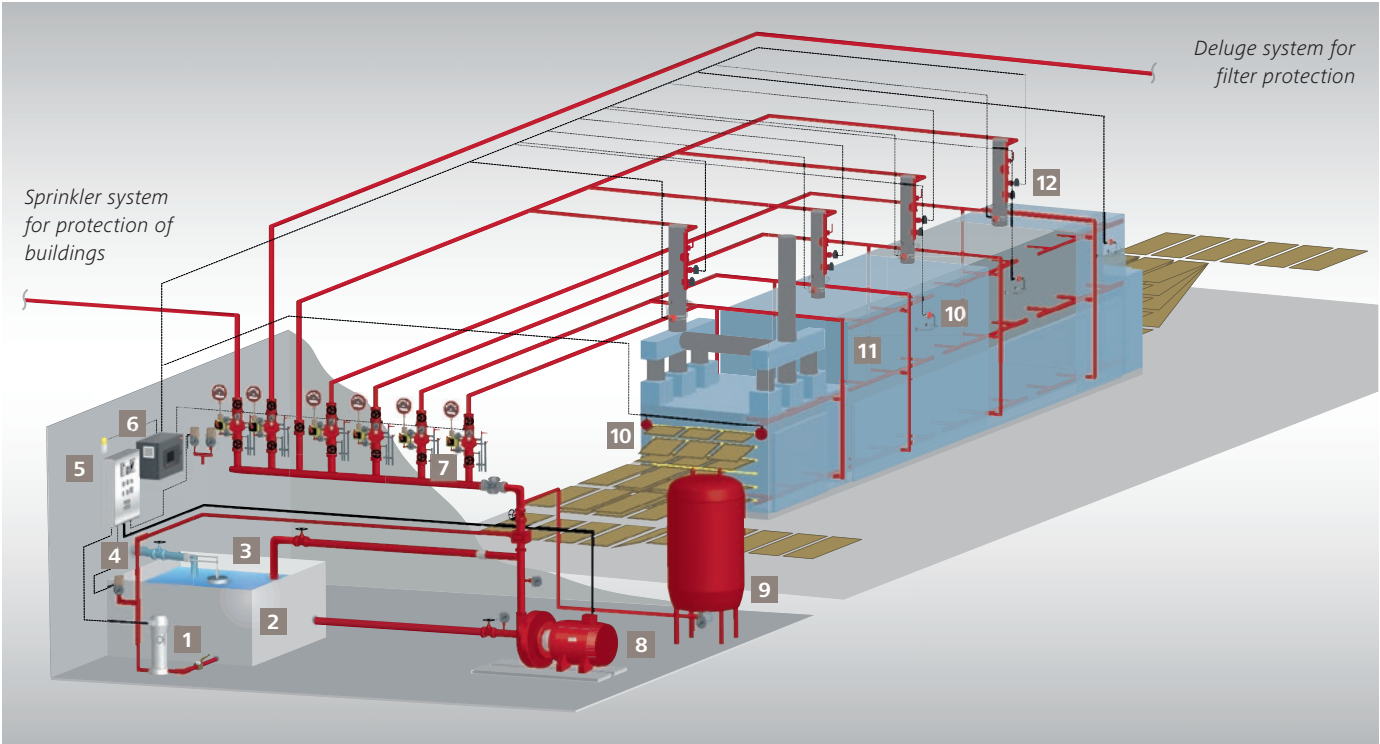
pressure of just 4 bars at the nozzles. Due to their relatively large discharge openings, they are less susceptible to obstructions caused by impurities in the extinguishing water. As additional protection, each water mist nozzle is fitted with an internal fine filter. A robust stainless steel protective cap with safety chain also protects the nozzle from outside contamination. It is thus ideal for use in the harsh environmental conditions of a dryer.

## Spark detection and extinguishing

In the exhaust and conveyor systems of a dryer, sparks or glowing embers need to be detected and extinguished quickly.

Spark extinguishing systems are the right choice for these demands. Detection is provided by spark detectors from series YMX5000. These detectors have a detection spectrum that is specifically aligned for the detection of sparks or glowing embers. If the spark detector YMX5000 detects sparks or glowing embers in the exhaust- and conveyor systems of a dryer must be detected and extinguished quickly. The fire alarm control panel activates a high-speed solenoid valve in the extinguishing zone within milliseconds and releases the suppression water through flat spray nozzles. In the case of a single spark, an optical and acoustic alarm is generated and time-limited extinguishing takes place, however the production process continues without interruption. If several spark signals are detected within a freely configurable time window or if a threshold value is exceeded, in addition to the alarm and a permanent suppression, a shutdown relay is also activated to stop the process in a controlled manner.

The type F180 flat spray nozzles used generate a fan-shaped water curtain across the entire channel cross-section, through which the detected spark or hot spot then flies and cools, or is reliably extinguished.



1	Jockey pump	4	Town water connection	7	Deluge valve set	10	Fire detector
2	Storage tank	5	Pump control cabinet	8	Main pump	11	ProCon impulse nozzles
3	Automatic water make-up	6	Fire detection and suppression control panel	9	Pressure accumulator	12	Automatic extinguishing unit for spark extinguishing

## Water supply

Due to the low-pressure technology, the Minifog ProCon can usually be supplied with extinguishing water economically via the existing water supply for a sprinkler or hydrant system. If a suitable water supply is not available, the water is supplied by a storage tank that is automatically replenished and equipped with a pump system.

To operate the spark extinguishing system, the water supply must also be equipped with a pressure accumulator so that non-delayed water flow can be guaranteed with the required quantity and corresponding pressure at the F180 spark extinguishing nozzle.

## Your advantages with Minimax DryerProtect

- Solution for all areas and processes from one provider
- Comprehensive solution avoids the fire spreading to neighboring areas
- Integration of all fire protection systems to one fire detection and suppression control panel
- Fire fighting from the starts:
  - Minimal fire and water damage
  - Short operational interruptions
- Lower costs for water supply and pipe network installation
- Ideal for retrofitting
- Early fire detection by UniVario flame detectors
- Water-efficient solution with water mist
- Water mist nozzles with protective cap to protect against external contamination



### Photos

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Page 3: Stela Laxhuber GmbH  
Page 8: Stela Laxhuber GmbH  
Raute Corp.

Minimax Fire Solutions  
International GmbH  
Industriestraße 10/12  
23840 Bad Oldesloe  
Germany  
+49 4531 803-0  
wood@minimax.de

Publisher:  
Minimax GmbH  
Industriestraße 10/12  
23840 Bad Oldesloe  
Germany  
+49 4531 803-0  
www.minimax.com