

Experts in fire protection

MINIMAX

WoodTechProtect Fire Protection for Wood Processing Machines



SPECIAL SOLUTIONS

WOODTECHPROTECT

Fire damage to woodworking machines

In wood processing plants, essential work processes such as sawing, planing or sanding of wood or wood-based materials are performed by automated processing machines. These machines are equipped with exhaust devices and connected to dust extraction systems. This means that fires can spread quickly to other production areas. Extended operational disruptions and high costs are often the result.

Ever rising processing speeds increase the risk of fire emanating from wood processing machines. Especially high feed rates and fast rotating machine components or blunt tools may lead to an unwanted build-up of heat. In addition, highly stressed or defective components such as drive motors or inclusions of foreign bodies in the material may damage the wood processing machines and cause a fire.

Released dust and debris from material residues and lubricants on machine parts or surfaces are conducive to the rapid development of a fire. Furthermore, if sparks or small glowing embers should be transported by the exhaust system into silos or filters an additional risk of the outbreak of a fire or even of a dust explosion exists. Sprinkler systems monitor and protect the production halls as a basic protection. To avoid extended operation downtimes due to fire damage to the actual wood processing machines, however, fast detection of a fire and focused extinguishing through additional local protection is essential.

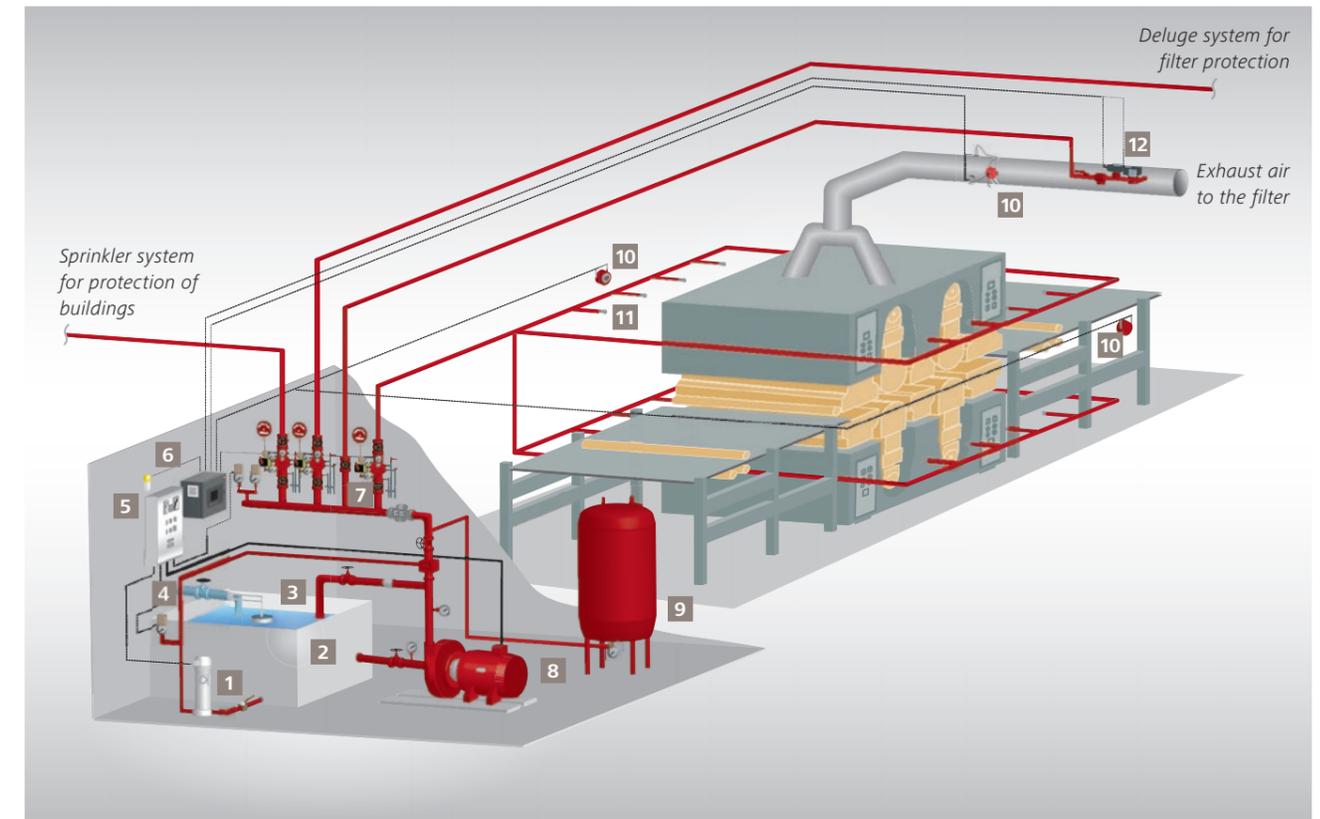
From the perspective of an operator, a solution which detects fires quickly and fights them targeted on the wood processing machine and related exhaust devices is required. In addition, a protection concept which allows for coordinated fire protection for interlinking production areas would be desirable.

Minimax has the right solution:
WoodTechProtect.



WoodTechProtect combines fire detection, water mist and spark extinguishing technology into a single system. Fire protection for wood processing machines 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.



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

Fire detection and extinguishing with Minifog ProCon



Fire detection with Minifog ProCon takes place in the open and inner areas of a wood processing machine by means of intelligent UniVario flame detectors. These respond to infrared radiation and are ideally suited for use on wood processing machines because of their robustness and dependability.

Fires on wood processing machines are extinguished by Minifog ProCon water mist systems, which are based on low pressure technology and disperse the extinguishing water particularly finely across the defined protection zone. The system uses the physical qualities of water more efficiently than conventional deluge systems. The particularly small drops cause an enlargement of the total surface of the extinguishing water and lead to an increase in the contact surface for heat transfer. This significantly improves the cooling capacity of the water. In addition large amounts of steam are immediately created by the very sudden vaporization of the small

water droplets in the vicinity of the flame, which hinder the supply of oxygen to the fire. The extinguishing principle, which works by means of cooling- and smothering effect, allows particularly effective fire-fighting with reduced use of extinguishing water which also brings rapidly spreading fires under control.

To ensure dependable extinguishing of fire, Minifog ProCon water mist nozzles are used, which can be operated with a minimum pressure of only 4 bar at the water mist nozzles. Due to their relatively large discharge openings, they are less susceptible to obstructions caused by impurities in the extinguishing water. As an additional safeguard, each water mist nozzle is fitted with an internally situated fine mesh. Furthermore a robust stainless steel protective cap with safety chain protects against contamination of the water mist nozzle from the outside. Thus, they are ideally suited for use in the harsh environment of a wood processing machine.

Spark detection and extinguishing



Sparks or glowing embers in the exhaust- and conveyor systems of a wood processing machine must be detected and extinguished quickly. Spark extinguishing systems are the suitable choice for these requirements. Detection is provided by spark detectors of the UniVario YMX5000 series. These detectors have a detection spectrum that is tailored specifically for the detection of sparks or hot parts.

If an YMX5000 spark detector detects sparks or glowing embers, the spark detector will activate a high-speed solenoid valve within milliseconds via the fire detection control panel and will release extinguishing water through the flat spray nozzles. In the case of a single spark an optical as well as audible alarm is generated and the time-limited extinguishing activated even without interrupting the production process.

If within a configurable time frame several spark signals are detected or a threshold is exceeded, then along with the alarm and continuous extinguishing a cut-off relay is activated in addition in order to stop the process in a controlled manner.

The deployed type F180 flat spray nozzles generate a fan-shaped water curtain across the total duct cross-section; the detected sparks or glowing embers pass through this curtain and will be cooled or dependably extinguished.

Water supply

Thanks to the use of the low-pressure system, the Minifog ProCon can typically be supplied cost effectively with extinguishing water through an already existing water supply of a sprinkler or hydrant system. If no existing water supply is available for use, water can be supplied alternatively through a storage tank with an automatic feeding and pump system.

For the operation of the spark extinguishing system, the water supply must be equipped additionally with a pressure accumulator to ensure instantaneous water flow at the required quantity and pressure at the nozzle.

Fire detection systems and suppression control

The FMZ6000 fire detection and extinguishing control panel is responsible for controlling the fire event. If flame detectors of the Minifog ProCon water mist system or spark detectors of the spark extinguishing system detect a fire, they transmit a signal to the fire detection control panel. It activates the affected extinguishing zone and triggers the extinguishing action; and simultaneously releases an acoustic and optical alarm. In addition, potential free contacts are available at the fire detection and extinguishing control panel to switch off the machine controls in the event of a fault or fire.

All Minimax fire protection systems can be operated by a common fire detection and extinguishing control panel and thus allow unified and user-friendly operation. In order to ensure permanent access to operation and data, the fire detection control panel should preferably be positioned in a permanently manned post.



Engaged technology

WoodTechProtect combines fire detection, water mist and spark extinguishing technology to form a holistic solution. This combination provides fire protection which is tailored individually to the requirements of the various protection zones.

Sprinkler systems

Sprinkler systems provide a dependable basic protection for production halls where the wood processing machines have been set up. To protect the actual wood processing machines against fire, Minifog ProCon water mist systems offer a particularly efficient fire extinguishing technology. ProCon water mist nozzles serve to finely spray the extinguishing water. This means that Minifog ProCon systems, compared with conventional deluge systems, consume up to 70 percent less water. Accordingly, systems can be designed with a smaller scale water supply and pipework. This does not only save costs, but also space – a significant advantage in particular for retrofitting.

Spark extinguishing systems

In exhaust- and conveyor systems, spark extinguishing systems detect ignition sources and instantly generate a water curtain by means of an extinguishing unit to

extinguish sparks or glowing particles. They are always an ideal solution when there is a high risk that sparks or glowing embers will be transported unnoticed to other areas and cause a fire there.

Detection

UniVario flame detectors and spark detectors are used in the protection zones. Both types of detectors allow for the early detection of fires and hence for a fast response. All signals converge in the fire detection and extinguishing control panel, which warns people at risk and the fire department plus dependable provides all relevant information to the competent bodies. In addition, the fire detection control panel electrically triggers the Minifog ProCon and spark suppression systems. Furthermore, it can operate other fire protection systems in the vicinity of the wood processing machines and monitor their functioning.



Advantages at a glance

- Holistic solution across all processes and for all areas by a single provider
- A comprehensive solution prevents fire from spreading to adjacent areas
- All fire protection systems are integrated into one network through a common fire detection and extinguishing control panel
- Firefighting starts already in the early stages of an emerging fire
 - minor fire and water damage
 - brief business interruptions
- Low costs for water supply and pipe network installation
- Ideal for retrofitting
- Early fire detection by UniVario detectors
- Water saving solution with water mist suppression system
- Water mist nozzles with cap to protect against external contamination

Photos:

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