Maxitech
Slukkesystemer

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MINIMAX
Experts in fire protection

Appointed as the contractual partner for sales and distribution of
MINIMAX
fire suppression systems in
Norway

Fire Protection Solutions for Recycling Facilities

BRANCH SOLUTION
RECYCLING FACILITIES

Raw materials sustainably reclaiming

The process associated with granulating, sorting and processing – the recycling of raw materials – consists of various manual and automatic steps. This complexity is also reflected in the fire risks along the process chain. Right at the delivery of the recycling material and its storage it is worth counteracting potential sources of ignition.

The quantities of organic and inorganic material mixtures hold a considerable fire risk due to the fermentation process. Taken together with batteries that are included and containers with flammable liquids that have not been completely emptied or spray cans, the ignition potential of recycling material increases enormously. Even the transport from one processing step to the next creates challenges to fire protection: For example the roller bearings of the conveyor belts may run hot and ignite.

If the fire leaps on to the recycling material being transported, a fire can spread rapidly in other areas of the operation as well. Processing stations at which flammable liquids, for example in the form of hydraulic fluid, are used, represent an extra risk. On these machines an uncontrollable fire can easily develop and become an economic threat to the entire company.

Sprinkler systems are an important component of building protection for recycling plants. A fire detection system complements building protection in all areas. The fire detectors' signals run together into the fire detection and extinguishing control unit. This notifies people in danger as well as the fire service and in many cases assumes control and function monitoring of the fire protection systems. Hydrant systems complete the building protection and allow the fire to be immediately attacked manually.

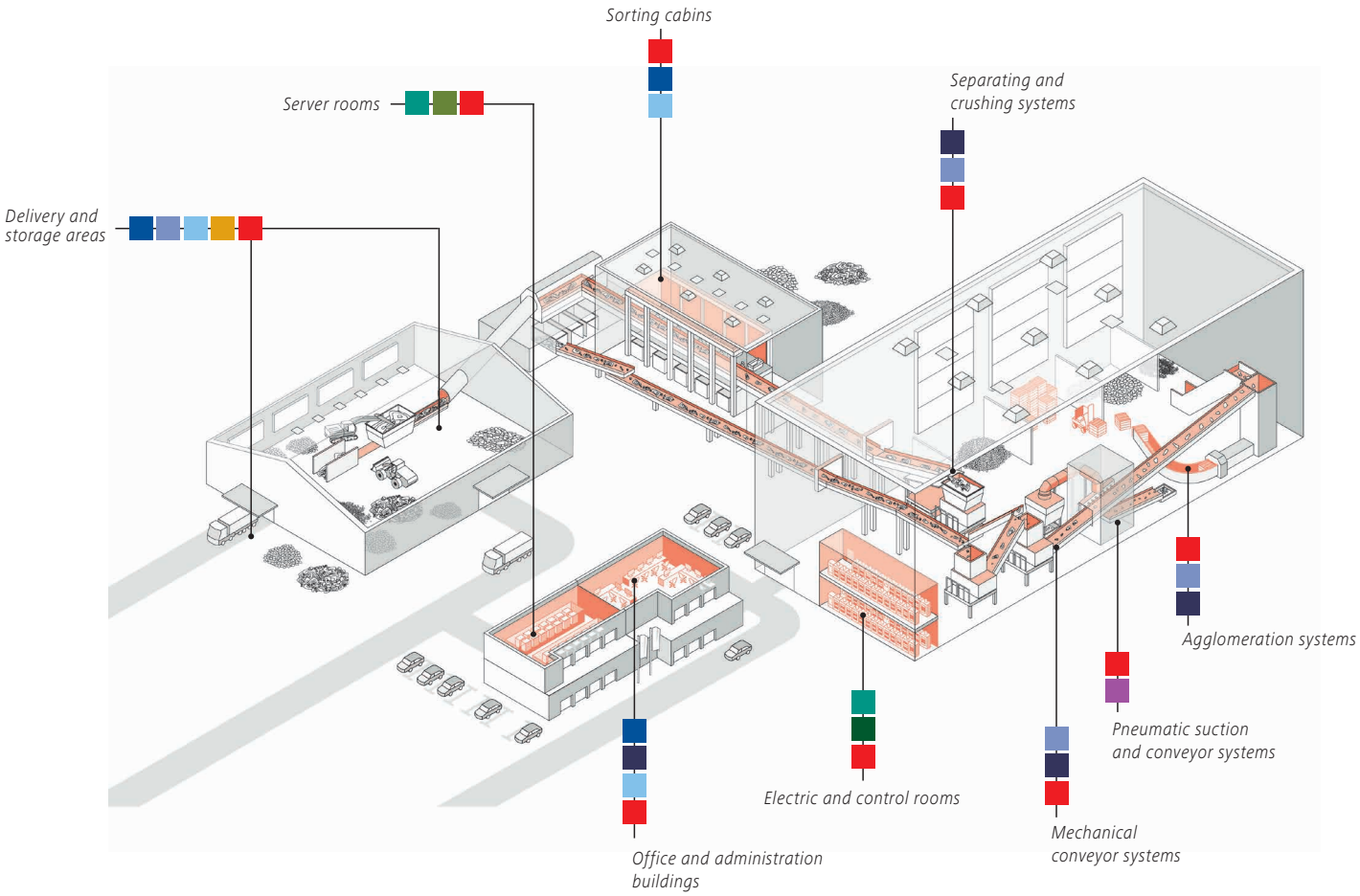
In addition to the basic configuration, other fire protection systems come into operation:

- Deluge systems
- Minifog water mist systems
- Foam extinguishing systems
- Oxeo Inert gas systems
- Carbon dioxide systems
- MX 1230 systems
- Spark extinguishing systems

Technologies are explained on pages 14 to 18.

Protection zones

Optimum fire protection in recycling facilities requires coordinated solutions for every area of use. Material assets are thus dependably protected, economically-threatening operational downtimes can be avoided and personal safety simultaneously guaranteed. As a supplier of comprehensive solutions, Minimax can rely on a unique range of tried and tested, innovative fire protection systems and system versions and components. These meet the multiple requirements of recycling facilities and quickly and economically fit together to a total solution.



- Hydrant systems
- Deluge systems
- Sprinkler systems
- Minifog water mist systems
- Foam-based suppression systems
- MX 1230 systems (NovecTM 1230)
- Oxeo inert gas systems (Ar/N2)
- Carbon dioxide systems
- Spark extinguishing systems
- Fire detection systems

Delivery and storage areas – securely protected

Depending on the operating process, the materials to be recycled are stored in an outdoor area or in a hall. Both storage options are frequently used at a recycling operation.

Risks

- Stored materials may quickly ignite themselves
- Dust can cause a potentially explosive atmosphere to arise

Fire protection

Outdoor dumps are generally monitored for undesirable heat development using infrared cameras. If there is a threat of ignition, a signal is transmitted to the connected fire detection control panel. Extinguishing monitors directed at the target manually or by remote control provide effective firefighting of the so-called hot spot using water enriched with film forming foam compound. Nearby facilities threatened by a fire are also cooled down in a targeted manner using extinguishing monitors. Inside storage areas can on the other hand be safely protected against fires with sprinkler systems. For ceiling heights above 15 meters, deluge systems provide dependable firefighting. In this case the extinguishing system is automatically activated via a fire detection and extinguishing control panel. HELIOS AMX5000 aspirating smoke detectors or UniVario flame detector types are used for detection. If necessary the extinguishing water can be provided with a foaming agent as for outdoors. For manual firefighting, wall hydrants should be used in internal storage areas.

Extinguishing monitors –
Firefighting from a safe distance
Extinguishing monitors are designed for indoor- and outdoor use. They fight fires from a safe distance and can also carry out preventative cooling. The large swivel ranges allow wide monitoring areas to be covered. The flow of extinguishing water and the shape of the jet can be adjusted during operation. Depending on the version, monitors can be aligned with the target manually, electrically or hydraulically by remote control. The use of sealed-for-life bearings means that they are generally maintenance-free.

If large quantities of organic or inorganic substances are stored, sorted or unsorted, extinguishing monitors are frequently used with foam admixture. Here foam is the most efficient extinguishing agent because it three-dimensionally penetrates the stored substances and suffocates the fire across a wide area.

Infrared cameras –
Detecting hot spots in time
Infrared cameras can record heat radiation and thereby recognize critical temperature developments. They send alarm signals directly to the fire detection and extinguishing control panel, which initiates further actions.

Infrared cameras are used for wide-area early detection of fire in many industrial facilities – thanks to special housing models, even in the open or in explosion hazard zones. The operation of the cameras on pan-tilt systems allows effective monitoring of particularly large areas. Various lenses with motorized or manual focusing allow the best possible recording results, depending on the area of application. Air flushing and optional water cooling allow use even in the toughest environmental conditions.

Mechanical conveyor systems – safety in motion

During the overall sorting process the recycling materials are being constantly fed to the next processing stations via enclosed or open belt systems.

Risks

- Overheated roller bearings
- Sparks generated during maintenance or welding works
- Spontaneous combustion of the material to be conveyed

Fire protection

The combined installation of UniVario flame detectors and multi-sensor gas emission detectors is a proven fire protection measure for promptly and dependably identifying a fire. As a room protection system Minimax deluge systems are a widely distributed solution for firefighting, given that based on the extremely rapid spreading of conveyor belt fires, immediate and wide-spread activation or extinguishing is required over the entire protected area.

Minifog ProCon water mist systems are an effective alternative for the direct protection of belt systems. A crucial advantage is that with this system significantly less extinguishing water is used in comparison with a deluge system.

Sorting cabins – a tight grip on fire risks

Recyclable materials and sub-fractions are manually presorted in sorting cabins. The cabins are encapsulated areas that are run through by conveyor belts. So-called manual workstations are located on both sides of the conveyor belts.

Risks

- Defects in electrical equipment for ventilation or air conditioning
- Hot-running roller bearings in mechanical belt systems
- Ignition of dust particles

Fire protection

Sprinkler systems guarantee dependable fire protection in these enclosed areas. Fire extinguishers and wall hydrants are a useful addition for rapid initial use.

To guarantee very early detection of fire and thus increase personal safety measures, a fire detection system to cover the whole area should also be installed alongside the extinguishing system.

Fire-safe separating and crushing systems

For the purposes of recycling the materials must be separated, sorted and sometimes prepared. In order to obtain the so-called separated fractions, a multitude of various stages are required. In doing so a wide variety of equipment and machinery is used, such as vibrators, drum sieves, magnets, shredders, grinders or air sifters.

Risks

- Hot-running roller bearings or compressors with technical defects
- Sparks during maintenance and welding work
- Spontaneous ignition of the material being transported
- High concentration of material in a narrow space and hence high fire load

Fire protection

The combined installation of UniVario flame detectors and multi-sensor gas emission detectors ensures early and unmistakable detection of fires in these areas.

Because fires quickly develop and spread, deluge systems with an admixture of film forming foaming agent have been proven for this fire risk. The immediate and wide-area activation and firefighting over the defined area of protection ensures maximum safety.

A more innovative solution is represented by the Minifog ProCon water mist system. The crucial advantage of these systems is that they efficiently fight fire with significantly less extinguishing water in comparison with deluge systems.

Pneumatic suction and conveyor systems

In areas in which flammable materials are pneumatically sucked up or transported, an increased risk of fire exists. This applies especially to the material mix in the pneumatic suction and conveyor systems in the recycling process.

Risks

- Sparks, hot particles or glowing embers in the processing machinery that penetrate into the conveyor systems
- Dust explosions

Fire protection

Function-monitored spark detectors, which react to the infrared radiation of potential sources of ignition flying by, ensure dependable and above all immediate detection. If the spark detectors identify potential sources of ignition in the materials being conveyed, a signal is sent to the control panel. This unit then activates the extinguishing unit solenoid valve in milliseconds. The extinguishing water is released through patented, self-closing nozzles. The glowing particles fly into the water curtain formed by the nozzle. Immediately after this the solenoid valve closes automatically.

Agglomeration systems – fire-safe even under pressure

When fractions are being agglomerated by means of baling presses and briquetting systems, the materials that were separated from one another beforehand are bundled together for further treatment.

Risks

- Hydraulic and thermal fluids in the processing machines may accumulate
- Hot surfaces on which fluids ignite
- Leakages in oil-carrying lines

Fire protection

UniVario flame detectors guarantee rapid detection and in the event of fire send a signal to the connected fire detection control panel, which in turn can activate the installed extinguishing system.

Conventional deluge system with foaming agent admixture are a dependable solution for hydraulic systems built into the processing machines.

The "Minifog ProCon water mist systems for hydraulic systems" protection scheme is an innovative alternative. The recognized design, developed in collaboration with insurers and operators, manages with considerably less extinguishing water than conventional deluge systems.

Electric and control rooms

Control stations, switchgear and electronic rooms are sensitive facilities with important central control functions. In terms of operational safety, they are the central core of the process chain.

Risks

- Short circuits
- Highly flammable materials

Fire protection

The choice of extinguishing agent used in these areas is crucial to fire protection. Oxeo inert gas systems are therefore deployed in electronic and control rooms in which residue-free firefighting is particularly important to maintain functioning capacity, and can be operated as desired with the non-toxic and thus non-injurious gases argon or nitrogen. Carbon dioxide systems are only used in those areas where there are no permanent workstations.

A fire detection system with smoke detectors or the HELIOS AMX5000 aspirating smoke detector system for early fire detection activates the Oxeo inert gas system if necessary.

Office and administration buildings

During working hours employees are regularly in office and administrative areas and in rest or break rooms. Outside of normal working hours these areas are generally unmonitored.

Risks

- Defective electrical devices such as projectors and computers
- Overheating of the lighting
- Short circuits at vending machines

Fire protection

Minifog EconAqua water mist systems offer a space- and water-saving fire protection solution and can be connected to an existing sprinkler system. If ceilings exceed a height of 5 meters, sprinkler systems provide dependable fire protection.

Fire detection systems complement the Minifog EconAqua water mist system and sprinkler system and ensure that the alarm is given even earlier. Wall hydrants and fire extinguishers are available for initially attacking the fire manually.

Server rooms – data safely protected against fire

Maintenance of all processes controlled by computers and servers are of crucial importance to guarantee the uninterrupted functioning of operations. The security and availability of centrally stored data also assumes a greater focus. Therefore fire protection in the server room deserves particular attention.

Risks

- Overheating of technical equipment
- Defects such as short circuits
- Considerable damage even in the case of small fires

Fire protection

MX 1230 systems are ideal fire protection systems for server rooms. They extinguish without leaving a residue using the innovative extinguishing agent Novec™ 1230 and do not require much space. Oxeo inert gas systems are ideally suited for larger rooms.

The HELIOS AMX5000 aspirating smoke detectors allows earliest possible detection of fire and with the fire detection system assumes automatic activation of the extinguishing system.

Technologies used

Optimum fire protection in recycling facilities requires coordinated solutions for every area of use. Material assets are thus dependably protected, economically-threatening operational downtimes can be avoided and personal safety simultaneously guaranteed. As a supplier of comprehensive solutions, Minimax can rely on a unique range of tried and tested, innovative fire protection systems and system versions and components. These meet the multiple requirements of recycling facilities and quickly and economically fit together to a total solution.

Sprinkler Systems –
Universal protection
Sprinkler systems detect and report fires and automatically initiate the extinguishing process with water. The underlying principle of selective extinguishing makes them extremely effective: In the event of a fire, only the sprinklers located in the immediate proximity of the fire will be activated. Immediate extinguishing action using water is taken, while the remaining sprinklers remain closed. Sprinkler systems provide dependable fire protection for buildings and industrial plants. For special fire risks, a film-forming foam agent can be added to the extinguishing water to increase the extinguishing effect.

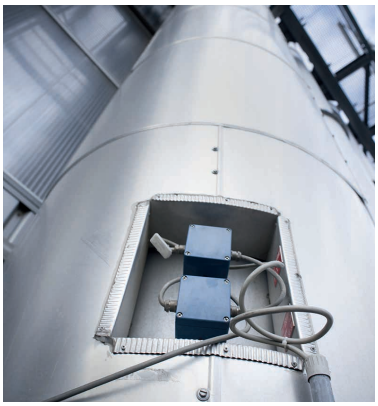
Deluge Systems –
Fast, with overall coverage
Deluge systems are triggered hydraulically, pneumatically or electrically and disperse water throughout the entire protection zone with open nozzles. In this way they dependably fight fires in rooms and facilities, even if a particularly fast spreading of the fire is to be expected. If necessary, a film-forming foam agent can be added to the extinguishing water. Deluge systems are also installed to keep the fire from spreading to neighboring areas by means of water curtains, or to cool down particularly vulnerable areas through irrigation.

Hydrant Systems –
Be prepared for action
Wall hydrants and external hydrants are only the visible end of a dependable extinguishing water supply for manual extinguishing action by fire departments, operator personnel or building occupants. They are visible extension of dependable water supply components designed to fit with local conditions, such as pump systems, underground pipework and filling and drainage stations. These components ensure a dependable supply for safe hydrants.

Minifog EconAqua Water Mist Systems –
Innovative low-pressure technology for effective building protection
By using innovative low-pressure water mist technology, Minifog EconAqua water mist systems offer particularly effective protection for buildings. Compared to conventional sprinkler systems, EconAqua systems consume up to 85 percent less extinguishing water, which reduces possible water damage to a minimum. The EconAqua pump room can be designed in a considerably more compact form than conventional sprinkler pump rooms. This saves space, on-site costs and makes Minifog EconAqua water mist systems ideal for retrofitting in existing buildings.

Foam Extinguishing Systems –
Large-scale dampening
During a fire, foam extinguishing systems spread large-scale foam blankets through foam pipes, foam monitors, sprinklers or nozzles. The foam is applied on the burning material, extinguishes the fire and serves as a deterrent against re-ignition. Foam extinguishing systems are suitable for protecting high-risk areas, e.g. due to flammable liquids or plastics. The adjustable low to extremely high foaming option offers an optimal extinguishing effect for every type of risk.

Spark Extinguishing Systems –
No sparking off
Spark extinguishing systems detect initial ignition in suction and conveying systems and produce instantly a water curtain with their automatic extinguishing feature to smother smoldering particles. These systems are recommended for use in areas where combustible materials are transported pneumatically and where there is a high risk of fires or dust explosions due to sparking or smoldering particles. As a rule, the extinguishing process occurs without interrupting operations.



Carbon Dioxide systems –
Highly efficient in many situations

The extinguishing effect of carbon dioxide is caused by the fast displacement of oxygen in the vicinity of the source of the fire and a high heat-retention capacity. Due to their special extinguishing agent properties, carbon dioxide extinguishing systems are not only able to specifically protect entire rooms, but also open facilities. Carbon dioxide is a natural component of the ambient air and electrically non-conductive. Carbon dioxide extinguishing systems require only little space for storing the extinguishing agent.

Fire Detection Systems and Suppression Control –
Detecting fire hazards and reacting accordingly

Flames, smoke, gas emissions, heat – fire has many facets. Minimax has the right detectors and fire detectors for every kind of manifestation. All signals converge in the fire alarm control panel, which warns people at risk and the fire department and dependably provides all relevant information to the competent bodies. In addition, the fire detection technology controls and monitors in many cases all fire protection systems in the object and electrically triggers the extinguishing systems.

Fire Detection and Suppression Control Panels –
Heart of active fire protection

Fire detection and extinguishing control panels process detection results detected by sensors, control of alarm devices and set off alarms to permanently manned stations and the fire department. They continuously monitor extinguishing systems for functionality and trigger them electrically if necessary. In addition, they communicate with risk management systems or via web interface with Internet-enabled devices. Different model versions, from a compact small panel to sophisticated large control panels make it possible to select the appropriate fire detection and extinguishing control panel.

Oxeo Inert Gas Systems –
Residue-free fire extinguishing

Oxeo inert gas extinguishing systems fight fires by introducing inert gases, such as argon or nitrogen, and the resulting lowering of the oxygen content. They are particularly suitable for protecting areas with high-quality and sensitive equipment, where residue-free extinguishing – without the use of water, foam or powder extinguishing agent – is to be preferred. Argon and nitrogen are natural constituents of the ambient air and, moreover, non-toxic and non-electrically conductive.

Inveron Hazard Management System –
Safety at a glance

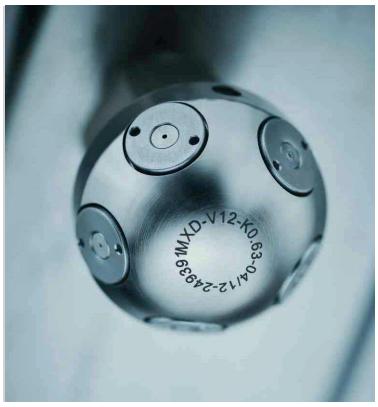
Inveron is a transparent and user-friendly system for visualizing and operating fire detection, extinguishing and hazard detection systems. All reports and events are automatically merged in a user interface an represented on a screen. Inveron offers ideal monitoring especially for sprawling, complex building structures. In addition, the hazard management system supplies operators with a range of additional information and help on individual messages and supporting them in carrying out the required measures.

MX 1230 Systems –
Efficient and compact

MX 1230 fire extinguishing systems fight fires using the chemical extinguishant Novec™ 1230 by 3M™. This extinguishant is neither corrosive nor electrically conductive. It is thus especially suitable for protecting rooms containing electric and electronic equipment. MX 1230 systems extinguish fires without leaving residue, while offering a high level of personal and environmental protection at the same time. They are particularly suitable for the protection of small and medium-sized rooms, and the extinguishing agent can be stored compactly, either inside the room or in another area.

Minifog Water Mist Systems –
Extinguishing with water mist

Minifog water mist systems disperse the extinguishing water very finely through special nozzles and sprinklers and/or increased operating pressures. At the same time, the overall surface of the extinguishing water is increased, enabling it to absorb heat and evaporate faster. The related cooling and smothering effect makes it possible to fight fires in a particularly effective way with a reduced consumption of extinguishing water. Diverse system variants, customized for each application, ensure optimal protection for buildings, rooms and facilities.



UniVario industrial fire detectors –
Fit for every situation

UniVario industrial fire detectors are intelligent, platform-based, microprocessor-controlled fire detectors with robust housing and installation technology for the harshest working conditions. Thanks to a modular design and use of the latest signal processing technology, these devices meet individual specifications in an extraordinarily wide range of uses. Thus they function both indoors and outdoors, in the immediate vicinity of the protected facility or from greater distances, in clean rooms or areas as well as in extremely dirty process conditions.

Preaction Sprinkler –
Doubled safeguard

If a sprinkler is damaged, for example during works on building facilities, water may leak. To improve safeguards against erroneous activation, each preaction sprinkler unit consists of a housing with two sprinklers. These special sprinklers can be simply connected to the existing or planned sprinkler pipework, providing double safety against the unwanted release of the sprinkler system, while offering the same fire protection. Before sprinkling water is released, both sprinklers must always release a preaction sprinkler unit. The risk of water leakage and related damage through accidental damage to a sprinkler is therefore dramatically reduced.

Smoke and Heat Venting Systems –
Clean air and an unobstructed view

Smoke and heat venting systems keep escape and rescue routes open in the event of a fire. The system is triggered manually or automatically by heat or smoke detectors. Pneumatic or electric actuators open skylights, windows or other smoke and heat venting systems. This ensures an unobstructed view and orientation as well as fresh air in the event of a fire. In addition, the system prevents explosion-type flash overs.

Structural Fire Protection –
Blocking off fires

Structural fire protection helps to prevent or contain fires and to secure escape and rescue routes in the event of a fire. This requires subdividing buildings into fire zones that spatially contain the spreading of fires for a defined period. This means that openings are closed off with fire and smoke protection doors, fire protection gates and fire-resistant glazing. Fire protection coatings dependably protect steel constructions against the impact of fire. Minimax solutions for ventilation systems prevent the spreading of smoke and combustion fumes.

About Minimax

Minimax has been one of the leading brands worldwide in fire protection for more than 110 years. We deliver bespoke solutions to your fire protection requirements. Qualified and certified specialists plan and install modern fire protection systems – in Germany, in Europe and all over the world. With a comprehensive range of services, we also provide assistance after installation.

Technologies

Whether it's sprinkler systems, gas-based extinguishing systems, fire prevention systems or fire detection systems, Minimax has access to a unique range of tested and certified components and systems from its own development- and production facilities. Our claim: Minimax quality from the simplest fire extinguisher to the most complex extinguishing system. Intensive development work carried out in our fire protection research center also ensures advanced technologies into the future.

Solutions

Recycling systems or power plants, sales- or assembly points, ships or logistical centers – every industry, every property and every application requires different fire protection solutions. Our expert team has many years of experience and support each project individually in order to meet the requirements of authorities, insurers and operators and taking into account valid directives.

Minimax can rely on a unique range of tried and tested, innovative fire protection systems and system versions and components. These meet the multiple requirements of recycling facilities and quickly and economically fit together to a total solution.

Fire protection for all areas:

- Delivery and storage areas
- Mechanical conveyor systems
- Sorting cabins
- Separating and crushing systems
- Pneumatic suction and conveyor systems
- Agglomeration systems
- Electric and control rooms
- Office and administration buildings
- Server rooms

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