

PROTECTING A WASTE DISPOSAL CENTRE

Fire protection in a waste disposal and processing centre using a fire detection and alarm system (FDAS) must be managed starting from the assessment in accordance with regulations in force, using CPR certified devices according to respective EN 54 product regulations.

The fire detection control panel (FDCP) must be selected according to the extension of the building, providing an adequate number of detection lines (Loops), in relation to their extension and the number of detection devices to be installed. For structures consisting of several compartments or buildings, it may be necessary to use several control panels connected in MASTER/SLAVE mode, using a special communication system.

If there is a caretaker with 24-HOUR security, FDAS signals must be conveyed to it through a remote management and control panel, possibly integrated with a supervision system with graphic pages to speed up the fire location process. It is important to remember that a supervision system does not replace the control panel or remote control panel.

If there is no 24-HOUR caretaker, it is necessary to install an alarm and fault transmission system certified according to EN 54-21, connected to an alarm receiving centre (A.R.C.) certified according to EN 50518.

Waste disposal and processing centres often house warehouses intended for different processes, such as the treatment of plastic and cellulose waste or the mechanical biological treatment of separated waste. The facilities also include storage areas for differentiated waste for which the disposal of the dry fraction in a landfill and the biological stabilisation of the wet fraction are foreseen. The sites have storage areas dedicated to those categories of differentiated waste that need adequate protection from external atmospheric agents. They also house offices, control rooms, electrical cabins, changing rooms, repair shops and staff services.

Particular attention must be paid to environmental conditions, sometimes particularly severe and characterised by the strong presence of dust and suspended volatile elements, even heavy, with possible permanent contamination of the detection elements, environments with potentially "aggressive" climates for electronic components due to the presence of gases deriving from the fermentation of the stored elements, devices for handling materials often with endothermic combustion and with very high

outlets with respect to the coverage height.

In premises such as offices, changing rooms and technical cabins, point-source smoke detectors can be used, while for environments with fixed openings that could compromise detection due to air currents, use is recommended of thermal-source detectors. For the most critical areas, such as waste spillage and fermentation, flame detectors are ideal, offering sensitivity to both ultraviolet and infra-red light, depending on the type of fuel.

It may be useful to assess whether the standards also allow for use of advanced alternative solutions such as thermography, using thermal cameras compatible with certified devices to improve the timeliness and accuracy of detection.

In all outdoor or work environments, it is essential to guarantee a high level of IP protection for the devices and to provide corrosion-resistant containment boxes. In forklift or electric vehicle charging areas, which are often classified as ATEX, it is essential to choose suitable detectors and integrate a hydrogen (H₂) detection system to monitor any leaks from the batteries and activate safety measures, such as air extraction.

The entire area must be equipped with manual signalling buttons, positioned along all escape routes and evacuation routes, with a maximum distance between each button not exceeding 15 or 30 meters, depending on the risk assessment.

Another crucial aspect concerns the dimensioning of optical and acoustic signals, to ensure a difference of at least 5 decibels with respect to background noise. It is recommended to integrate the system with powerful sirens to meet this requirement in every room. In areas where workers wear hearing protection, it is advisable to use flashers certified EN 54-23.

The FDAS system must be integrated with the smoke and heat evacuation system, designed in compliance with current regulations. Fire doors, if any, must be equipped with retaining electromagnets and connected to the FDAS to allow them to be closed in the event of a fire alarm, in accordance with the operating logic of the system.

If there are conditioning channels for personal well-being, it is necessary to check the presence of fire dampers, which must be connected to the FDAS system. The air handling units (AHU) must also be equipped with detectors for ducts, with the system blocked in the event of a fire alarm.

Finally, it is necessary to provide an adequate number of additional power supply units certified EN 54-4 to ensure a minimum autonomy of 24 hours in the event an interruption in the primary power supply. These power supply units must be dimensioned to support any linear optical detectors, suction systems, thermal cameras, flame detectors, acoustic optical signals, electromagnets, smoke and heat evacuation systems, etc. In the specific case of evacuation systems, said power supply units must also be certified according to EN 12101-10.

The formal delivery of the system and the subsequent checks must be carried out in accordance with current legislation.