

PROTECTING A HEALTHCARE FACILITY

In a healthcare facility, such as hospitals or nursing homes, protection by means of a fire detection and alarm system (FDAS) must be addressed starting from verification of the results of the evaluation carried out according to regulations in force and using CPR certified products in line with EN 54 product standards.

The choice of the fire detection control panel (FDCP) must be made based on the size and composition of the building, providing an adequate number of detection lines (Loops) depending on their extension and the number of devices to be installed. In the event the structure is composed of several compartments or buildings, it may be necessary to install several control panels connected in MASTER/SLAVE mode, with the use of appropriate communication systems.

The system should be located in the room dedicated to 24-HOUR fire protection, known as the Unique Emergency Centre. It is also advisable to foresee signal repetition of the FDAS system in the caretaker's area or in rooms with surveillance personnel, using remote management and control panels and, if necessary, integrating a supervision system with graphic pages to reduce the time for event location. It should be noted that a supervision system does not replace the control panel and/or the remote management panel.

If the system is located in a premises without 24-HOUR supervision, it is mandatory 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.

Protection of the different areas must take place mainly through smoke detection devices, with technology adapted to intended use. For example, point-source detectors are particularly suitable in hospital wards, clinics and small storage rooms, while in operating rooms or in environments with specific diagnostic machines, it is preferable to use air extraction and sampling systems. In large premises, such as entrance areas, corridors of some pavilions and lecture halls, reflective or receiver and transmitter linear optical detectors can also be used.

If there are multiple detection points in an in-patient area or an out-patient area, both in the environment and in the false ceiling, and if it is necessary to return these signals outside the access door, we recommend use of intelligent repetition devices, which simplify the layout of the system and understanding for security personnel.

Ministerial decrees for health facilities also state the obligation to provide, in smoke-proof filters, special emergency management panels (EMP), which must repeat the status of the FDAS system, the electrical system and the medical gas system. It is essential to carefully examine the design of these panels, also considering any interfaces with other systems.

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

Particular attention must be paid to the protection of kitchens, thermal power systems and technological premises, where interfering phenomena may occur, requiring use of suitable detectors, such as temperature or flame detectors, with a degree of IP protection higher than the standard.

The entire protected area must be equipped with manual signalling buttons on all escape routes, with a maximum route to reach one of 15 or 30 metres, depending on the results of the risk assessment.

A very delicate aspect in healthcare facilities is the correct dimensioning of optical and acoustic signals, which must be adapted to the type of wards/departments. For example, in areas with bedridden patients, alarm signalling should be designed in such a way as to avoid panic. It will be essential to consider use of optical devices certified according to EN 54-23 or optical/acoustic devices compliant with EN 54-3/EN 54-23. If audible warning devices are used, it is necessary to guarantee a sound level at least 5 decibels higher than the background noise. Optical signals, in particular those EN 54-23, must also be present in the toilets for the disabled, to ensure that isolated people are informed of a possible alarm event. The acoustic signals must emit tones compliant with the UN I11744 standard.

All signals and activations must respect different time intervals, depending on whether it is a pre-alarm or zone alarm, and these times must be evaluated according to the emergency plan and the specific needs of the individual departments.

The FDAS system can be integrated with the smoke and heat evacuation system, for example in the stairwells, following the relevant reference regulations. If present, fire doors or smoke-proof filters, designed to restore the compartmentalisation, must be equipped with retaining electromagnets, connected to the FDAS to allow closure in the event of an alarm, in compliance with the cause-effect matrix or in accordance with the operating logic of the system. Often the filters are equipped with overpressure systems, which must also be properly interfaced with the system.

Finally, it is necessary to provide a sufficient number of additional power supplies certified EN 54-4, which can guarantee an autonomy of at least 24 hours in the event of a lack of primary power supply. These power supplies must support linear optical detectors, extraction systems, optical-acoustic signals, electromagnets, smoke and heat evacuation systems, etc. In the specific case of evacuation systems, the power supplies must also be certified according to EN 12101-10.

Formal delivery of the system and subsequent checks must be carried out in accordance with standard UNI 11224 in force.