

PROTECTING RETAIL

Within a Shopping Centre, fire protection by means of a fire detection and alarm system (FDAS) must be designed by verifying the results of the assessment carried out by the fire-safety professional in accordance with guidelines and regulations in force. The design must also comply with UNI 9795 standards in force and must use CPR certified products, complying with the relevant EN 54 product standards.

The choice of the fire alarm control panel (FACP) will depend on the extension of the building, taking into account the appropriate number of detection lines (Loops), their extension and the number of detection devices needed. If the structure consists of several separate compartments or buildings, it may be necessary to provide several control panels connected in MASTER/SLAVE mode, using an appropriate communication system.

If 24-HOUR supervision is provided, FDAS signals flow to it, thanks to a remote management and control panel, possibly integrated with a supervision system equipped with graphic pages, to reduce the time required to locate the event. It is important to underline that the supervision system cannot replace the control panel or the remote management panel.

If the site does not provide 24-HOUR supervision for the MASTER control panel, the system must be equipped with an EN 54-21 certified alarm and fault transmission device, connected to an EN 50518 certified Alarm Receiving Centre (A.R.C.).

The analysis of the environments must follow the regulatory provisions, as indicated.

In Shopping Centres, we can identify the following environments, for each of which the most suitable solution will be suggested:

Shopping Centre and Shops:

- Detection mainly takes place by means of point-source detectors, positioned in the passageways, such as the corridors and under the ceiling clouds. Sometimes, if spaces and heights allow, linear barriers can be used.
- For hidden spaces, where there are technological and mechanical systems (such as ventilation, sprinkler and electrical systems), the use of air extraction and sampling systems is planned. The same technology can be used for high altitude areas where it would be difficult to carry out maintenance on the system.
- The individual shop units may have their own smoke detection system, which must be interfaced with the "Complex" management control panel, acquiring the alarm and fault status through appropriately configured input/output modules.
- Fire doors (sliding or hinged) or curtains (smoke barrier/fire barrier) are crucial for compartmentalisation inside the centres and must be managed by the FDAS control panel using specific modules.
- The entire area must be equipped with manual signalling buttons, positioned along the escape routes. The maximum distance to reach a button should not exceed 15 or 30 metres, depending on the risk assessment.

Superstores:

- In large shopping areas, which are often very high and extensive, protection will be provided by means of linear optical reflective detectors or with a receiver and transmitter, with a maximum coverage of 1600 m² per detector. This technology is suitable for environments up to 12 metres high. It is essential that the optical beam does not interfere with technological systems or billboards hanging from the ceiling.
- If spaces do not allow passage of the optical beam, other technologies should be used, such as smoke detection systems by air sampling.
- For stock zones, the same approach can be taken.
- The areas intended for processing (bakery, butcher's, fishmonger's, deli, etc.) require special attention in the choice of detectors due to interference caused by operation of ovens or high-pressure washing systems. In such cases, temperature detectors (even with an IP65 watertight case) are the most suitable.

Offices Area:

- In these areas, the choice of point-source smoke detectors is generally sufficient, both for the main areas and for those in the false ceilings, with relative repetition indicators in the environment.
- The manual activation buttons must be positioned near the emergency exits and in any case within a 30-metre walk from any point of the protected area.

Indoor Parking (where applicable):

- Detection is typically carried out by means of temperature detectors, with attention to the roofing, based on the presence of thick beams.
- If necessary, the smoke detection system is integrated with a gas detection network (PV for petrol vapours and CO for carbon monoxide). If there is an air washing system, it can be activated in the event of an alarm from the gas detectors. Remember that the sizing of a CO and PV detection system follows different standards to the FDAS system and in some cases it is the responsibility of dedicated control panels.
- The manual activation buttons must be placed near the emergency exits and in any case within a 30-metre walk from any point of the protected area.

Control of Conditioning and Ventilation Channels:

- If the air flow rate is above 3500 m³/hour, it is necessary to monitor the air output from the conditioning machine through an air collection and analysis system in the pipes.
- The closure of the Fire Dampers (FD) is essential for the compartmentalisation of the air ducts and to prevent the propagation of smoke.
- Blocking of the air treatment machine is a necessary safety measure.

Optical-acoustic devices certified EN 54-3 and/or EN 54-23 must be installed throughout the structure to signal the state of pre-alarm or alarm. As indicated by the UNI 9795 standard, the acoustic signal must guarantee a sound level at least 5 dB higher than the background noise in the environment. This is particularly important in environments frequented by people with disabilities, such as toilets, where acoustic signals must be certified EN 54-3 and optical signals certified EN 54-23. The acoustic signals must emit tones in accordance with the current standard.

If there is an AUDIO_EVAC signalling system, it must be integrated with the FDAS control panel to guarantee two-way interaction. This allows, for example, to disable acoustic signals from the FDAS control panel during activation of the audio system, to ensure speech intelligibility. The AUDIO_EVAC system should be dimensioned in accordance with relevant regulations.

The formal delivery of the system and the subsequent checks must be carried out in compliance with regulations in force.