

RECOMMENDATION

How to reduce the risk of fire and accidents on construction sites using mobile wireless fire detection, signalling and alarm equipment

It is the mutual interest of the stakeholders of construction works (principally clients, investors, builders, general contractors, health & safety and fire safety engineers and experts) and insurers to minimize the potential damages caused by fire, hazards and accidents and to protect human life on construction sites. This objective encourages those involved in construction and renovation works to adhere to reasonable preventative measures. Through this guideline, the Association of Hungarian Insurance Companies seeks to reduce the risk of fire and the risk of emergencies requiring evacuation for other reasons, by introducing appropriate systems in accordance with the guidelines of the European Union¹ and Hungarian regulations².

A Building site is a hazardous workplace, As well as the higher probability of a fire break-out, fire also spreads faster as the result of the various ignition sources, changing environments, temporary resources and missing final structural fire protection solutions; especially if the type and amount of flammable and explosive or easily combustible materials are present at the time of the fire, making the alarming and the evacuation circumstances also more challenging. In addition to the dangers to human life caused by fire, the financial consequences and delays can result in further serious losses. It is therefore in the interest of all those who are involved in the investment to ensure that measures of timely fire detection and an efficient alarm system are at their disposal to minimise this consequential loss beyond simply preventing fire and other potential destruction. Fire risk at construction sites is further increased since final fire protection systems (fire alarm and sprinkler systems) are not yet in place or installed at the construction stage. Construction and renovation works, being major sources of risk, require appropriate risk management solutions.

Risk-reduction technology

For protecting human life, the most appropriate solution is the use of manual call points (fire points) which require people to activate (primarily during working hours). In order to have an effective early warning solution, the fire call point should be incorporated with a sounder and strobe to ensure evacuation is started at the earliest possible. In addition, for out of working hours or in areas not used by construction workers (e.g. temporary warehouses, containers), automatic fire detection sensors shall be used to detect fire at an early stage, reducing the potential damage caused by fire. The solutions described above are viable with the condition that the notifications (alarm and faults) immediately appear at the right place and in the right manner- the responsible person can then take action as quickly and efficiently as possible (e.g. notify firefighters, start firefighting with locally available equipment, support of evacuation).

The Association of Hungarian Insurance Companies recommends for construction- and renovation projects the use of an interlinked temporary fire alarm system, specifically designed for the construction industry, equipped with sounders and strobes, to provide an effective and appropriate solution for alarming people on the entire construction site.

¹ European Directive 92/57/EEC - Safety and Health requirements at temporary or mobile construction sites

² 4/2002. (II. 20.) SZCSM–EüM Decree: Minimum Health and Safety requirements on construction workplaces and during the construction phase

In addition, it recommends that, in order to minimise fire damage, these systems shall be supplemented with automatic fire detectors depending on

- the volume of the investment,
- the flammability of the building materials used (e.g. use of sandwich panels resistance to fire (polyurethane PUR, PIR, IPN, styrene, etc.)
- the size of the facility (floor area, number of levels, underground levels, etc.)
- additional risks (e.g. adjacent buildings),
- the manner of financing (e.g. EU investment), etc.

The use of automatic detectors and the level of protection (coverage) contributes to reducing the scale of damage.

In the opinion of the Association of Hungarian Insurance Companies the use of fully wireless (radio), interconnected fire detection, alarming and evacuation systems are deemed to be a technically suitable and economical solution, provided these are

- mobile (i.e., devices can be easily and quickly deployed, repositioned, and disassembled)
- specifically designed for use in harsh environments (e.g., high level IP rating, smoke detectors that are less sensitive to dusty environments),
- their operation is simple,
- anti-tamper protected
- the devices are certified to the relevant European standards (EN 54) which guarantees their technical suitability and reliability.



Example of an interlinked radio-based temporary fire alarm system

It is also important that the location of these devices at the construction site is kept up-to-date continuously and the tests required by the manufacturer are carried out on a regular basis.

It is preferred if a given system – besides being a fire alarm – could also be used for first aid notification (with a medical alarm notification distinctly different from the site-wide fire alarm tone) in case of accidents or injuries at construction sites timely communication and early care is crucial.

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