

Sandwich building panels and battery chargers do not mix well

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Allianz Risk Consultants

Occupancy:

Meat processing for large and medium-size supermarkets

Property Damage:

9,000,000 €

Business Interruption:

12,000,000 €



Circumstances:

This site is entirely devoted to meat processing for large and medium-size supermarkets. It covers second-cutting production, sausage making and packaging. It is a ground-floor, single building structure, with 5,500 m² of surface area.

Production is shut down from Saturday evening until Monday morning, during which time there is no one on the premises. There is also very little activity around the plant on weekends (location in an industrial zone). Most of the electrical facilities remain turned on and in operation during production down-time (refrigeration units, programmed controllers, battery chargers, etc.).

The land is entirely fenced in but the site has no intruder detection system, no smoke detection system and no automatic sprinkler system.

On a Sunday, at around 2:30 p.m., passers-by noticed smoke coming out of the North side of the building (maintenance shop, employees' lounge, clean equipment storage room) and immediately sounded the alarm.

The fire department showed up at the site a few minutes later. The manager of the cleaning company, who also happened to be passing by, opened the entrance gate. During their inspection, the firemen found no signs of forced entry. They were thus obliged to break into the building to gain access.

It seems that the first flames were noticed soon after the fire-fighters entered by the North side of the building.

The adduction of fresh air created by the access openings very rapidly fanned the fire and contributed to overall ignition of combustible gases. A huge cloud of smoke was then emitted from the building.

In addition, a strong wind facilitated the fire spreading to the rest of the building in a Northeast/Southwest direction.

In total, some 50 firemen were called in to fight the fire, using 6 major hose lines, 2 of them on ladder trucks. Despite this massive operation, the plant was totally destroyed.

Cause of the loss:

- Arson seems to be an unlikely explanation for the blaze since there were no signs of forced entry and the fire started inside the building.
- The possibility of human carelessness (e.g. unextinguished cigarette butt) was ruled out due to the time elapsed (22 hours) between the time the last employees left the building and when the first smoke was sighted.
- The most plausible cause would thus seem to be an electrical fire, particularly in the battery charger that was in operation (charging a forklift truck). The charger had been rented temporarily and set up in the clean equipment room (where the fire broke out). This room housed the storage of polystyrene trays and other packaging materials for the finished products.

Extent of the damage:

- The fire rapidly spread to the entire plant. The building (metal frame, exterior walls and inside partitioning - all made of combustible sandwich panels, and the roof - made of cement-asbestos panels), as well as the inventory and equipment, were totally destroyed.
- Following the fire, total shutdown of production that lasted 2 months. Operations were then partially resumed at a temporary site.

Allianz Risk Consultants
France

Tel: +33.1.58.85.98.80

arc.france@allianz.com

www.agcs.allianz.com

What has worsened the loss:

- The presence of sandwich panels with a polyurethane and styrofoam core. These substances are highly combustible and difficult to extinguish due to their location between two metal sheets.
- A large amount of combustible matter (packaging: polystyrene trays and plastic films) in the storage areas (especially where the fire broke out).
- The nearly complete lack of interior fire cutoff compartmentalisation.
- The existence of an unpartitioned, attic space covering the entire building. This facilitated rapid spread of the fire due to the accumulation and extension of combustible gases.
- The lack of fire cutoff partitions for utilities, and especially of a room specially set aside for battery charging.
- The presence of a battery charger set up right next to stocks of highly combustible packaging materials.
- The absence of smoke detection and automatic sprinkler systems that would have provided an early warning to emergency crews and allowed the fire to be contained where it originally broke out.
- Very thick, toxic fumes caused by the combustible sandwich panels.

What has limited the loss:

- A few rooms with concrete walls and an outdoor gas tank were partially spared from the flames due to their fire-proof construction and to the quick and massive intervention by the firemen.
- The existence of a contingency plan enabled production to be partially resumed in a short time at a temporary site. This involved additional costs.



↑ Gas tank, intact amid the rubble

Comments and learnings:

- Battery chargers often cause fires to start. The most common scenario is a fire started by a short circuit. The first materials to catch fire are the components of the charger itself, followed by combustible materials located nearby, including those used in construction, such as sandwich panels with combustible cores. As a general rule, battery chargers are often left in operation during off-hours and thus when no employees are present. They should be systematically consolidated in a specially-designated fire cutoff room that is free of combustible materials and adequately ventilated. These measures are also required for equipment on temporary rental.
- The presence of sandwich panels (with combustible cores) is a major factor in many large fires. These panels contribute to the rapid spread of fire and make it hard for firemen to put out (if there is no automatic sprinkler system).
 - As much as possible, panels with non combustible cores should be used. The former French "M" classification system for fire-resistance categorized these panels as M0. The new European classification system ("Euroclasses") categorizes these panels as A1 or A2.
 - If the use of combustible sandwich panels (French Class M1-M4 or Euroclasses B-F) is inevitable due to operating conditions, the specific provisions of the French Technical Document D14-A must be rigorously applied. This standard was developed by the French Insurers' Association and describes the installation regulations to be followed, as well as precautions to be taken with equipment layouts (especially electrical).
- Given the major amount of combustible matter (sandwich panels, polystyrene packaging, etc.) present, an automatic sprinkler type system is the best means of protection for this sort of production activity.



↑ Burnt-out building