



4

ESSMANN Case Study

Fire prevention concept for frozen food storage

Axiom is a full-service logistics company operating in the frozen food sector. Manufacturers ship their products to a central warehouse for onward distribution.

A new frozen food storage facility measuring 84 m in length, 64 m in width and 17 m in height has been built in Unna to meet increasing demand.

ESSMANN Complete Solution

→ Project definition

- A fire protection concept for either natural or mechanical smoke and heat extraction had already been incorporated into the design of the building.
- A coherent solution had to be developed for extracting smoke from a total warehousing area of about 4,300 m² and a volume of 64,500 m³, based on a warehouse length of 67 m.
- The client also required the building to be as leak tight as possible.

→ ESSMANN Solution

The partial internal pressure prevailing in frozen food storage facilities means that roof openings for a natural smoke and heat extraction system cannot be guaranteed entirely leak proof. The ice that forms on the components of any natural smoke and heat extraction systems is not only an indication of thermal bridges; it also raises doubts about the reliable opening of the same in case of fire!

Based on these findings and their years of experience, the experts at ESSMANN opted for a mechanical solution. The building was divided into four fire sections.

The ESSMANN solution is based on a duct system which extracts any fumes close from their point of origin.

This ensures that any fires can be quickly and efficiently located and fought by a combination of SHE, on-site fire detection system and warehouse sprinkler system, while at the same time providing the best possible protection to both the building and the stored goods. ESSMANN's research team incorporated an ESSMANN smoke extract fan, which performs well even on such large premises. The advantages of this solution are obvious.



Duct system instead of roof openings

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→ Customer benefits

- **Fewer roof openings**
Only one wall opening was needed, which eliminated the need for 21 roof openings that were originally planned.
- **Valuable space saved**
The ESSMANN smoke extract fan was mounted outside the building to save valuable warehouse space. Maintenance work can be performed without interrupting production since all the SE equipment can be accessed from the outside.
- **Less expensive wiring**
The system is fed independently using a separate power supply straight from the provider's transfer point, which eliminated the need for E 30 or E 90 wiring.
- **Minimised leakage**
ESSMANN planned the smoke extraction system to incorporate an automatic heat-sealed ISO sliding door for cold storage facilities at the junction between the smoke extraction duct in the cold storage warehouse and the fan.
This ensures both the reliable opening of the door in case of fire and the least possible leakage.



Automatic heat-sealed ISO sliding door for cold storage facilities

Perfect smoke extraction: Combination of ESSMANN smoke extract fan and duct system

→ Result

The fire protection concept using an ESSMANN smoke extract fan outside the building not only satisfies the client's challenging requirements; it also guarantees functionally reliable smoke extraction in case of fire.

Further information can be found at www.essmann.de

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