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ESSMANN Case Study Aeration and Ventilation for Injection Moulding Plants

Ludwig Peithmann GmbH & Co. KG manufactures plastic injection moulding components that are, for example, built into kitchen appliances. Melting the plastic granules during the production process generates considerable heat. The company's continued growth necessitated the installation of ever more machinery, which caused massive heat problems on the production line. The work environment became virtually intolerable during the summer months and equipment shutdowns had a negative impact on production process reliability.

ESSMANN complete solution



Arched ESSMANN arcade rooflights type 940/10 support the ESSMANN air intake ducts of the fresh air equipment and ESSMANN all-weather double flaps installed beneath them

→ Project definition

- Cost effective aeration and ventilation solution, which clearly lowers the temperatures in the halls, is economical to maintain and able to admit the necessary draught-free fresh air into the work environment.
- Installation of aerodynamically effective smoke extraction and melt-out heat extraction surfaces.
- Improvement in incident daylight.

→ ESSMANN Solution

After extensive ventilation measurements and analyses, the following solution was developed together with the client: Three arched ESSMANN arcade rooflights provide daylight and a melt-out heat extraction surface, ensuring the necessary smoke extraction while at the same time acting as supports for the ESSMANN all-weather double flaps. These discharge the excess thermal load irrespective of the weather conditions and significantly improve the climate in the hall. Air must be fed in from the outside as this concept is based on natural ventilation of the hall.

The project planners opted to use mechanical, decentralised ESSMANN air treatment units with textile ventilation ducts. These ensure the systematic admission of fresh air without causing any draughts. The ESSMANN air intake ducts for the necessary internal fresh air units were also integrated into the arcade rooflights and fitted with pumped warm water heating coils to guarantee the supply of heat in winter.

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→ Customer benefits

- **Low energy costs**
The ESSMANN arcade rooflights supply natural daylight to the work environment, therefore reducing the energy costs for artificial lighting.
- **Low risk of leakage**
The ESSMANN arcade rooflights act as supports and minimise both the risk of breakthroughs and any possible leakage.
- **Reduced investment and operating costs**
The ESSMANN all-weather double flaps provide rainproof ventilation using the natural thermal buoyancy in the plant, while at the same time serving as SHE systems. No additional ventilation system is needed, which reduces investment costs. And no auxiliary power is needed to ventilate, which reduces operating costs.
- **Easy integration in complicated geometries**
The building is ventilated and heated using decentralised Tornado air treatment systems. The modular design of the system ensures easy integration in complicated geometries, even in old buildings.
- **Static limitations**
The building had reached its static limits. The air treatment systems are made of zinc-aluminium. This lightweight design eliminated the need for any additional static measures.
- **Selective, localised ventilation**
The fresh air and discharged air units are controlled from a central switch cabinet. The ability to ventilate either the entire building or only selected problem areas improves energy efficiency.



Air intake ducts for the internal fresh air units with integrated pumped warm water heating coils

Further information can be found at www.essmann.de

→ Result

Peithmann now has a hall that is flooded with daylight and an ergonomically optimised work environment. The ESSMANN all-weather double flaps combined with the Tornado air treatment system ensure the best possible aeration and ventilation, irrespective of the season or weather.

ESSMANN GmbH
Im Weingarten 2
D-32107 Bad Salzufflen

Telephone +49(0) 5222.791-0
Telefax +49(0) 5222.791-236
E-Mail info@essmann.de

Frankfurt branch office
Kurhessenstrasse 3
D-64546 Mörfelden-Walldorf

Telephone +49(0) 6105.2090-0
Telefax +49(0) 6105.2090-20
E-Mail nl-frankfurt@essmann.de

Augsburg branch office
Depotstrasse 5 1/2
D-86199 Augsburg

Telephone +49(0) 821.40805-0
Telefax +49(0) 821.40805-55
E-Mail nl-augsburg@essmann.de

