

## HEAT LOSSES AND THERMAL INSULATION

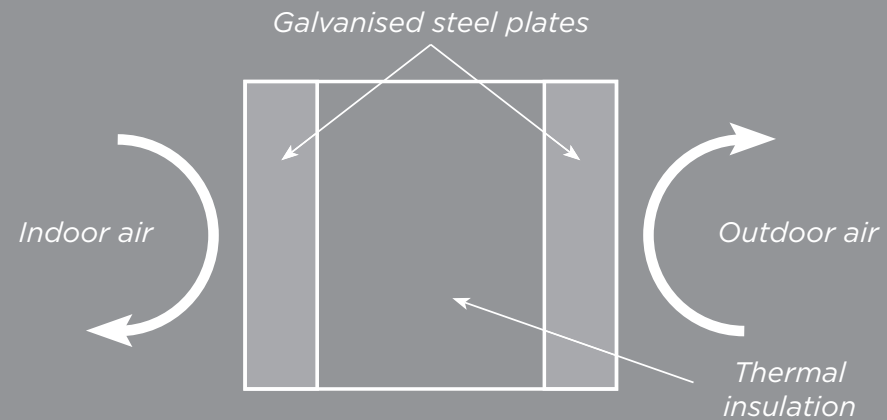
One of the main problems of fans today is constant heat loss, which incurs unnecessary costs due to the use of air conditioning or heating.

The new HATCH systems enable this problem to be eliminated, as they are formed by completely sealed, insulated units made from materials specially studied for this function. The walls of this equipment are insulated with thermal insulation panels with a thickness of 60 mm. This improves heat conductivity and prevents heat loss in the building.



## HEAT TRANSFER

The body and hatch of the HATCH system extract equipment are formed by a three-layer sandwich system. To calculate the heat transfer, both heat transferred through the ducts and heat transferred by convection have been considered.



The heat transfer value of the HATCH systems is:

$$U = 0.6122 \text{ W/m}^2\text{K.}$$

The heat transfer value of the WALL systems is:

$$U = 0.7197 \text{ W/m}^2\text{K.}$$

# ENERGY STUDY

## STUDY EXAMPLE

AREA 3,170 m<sup>2</sup>

HEIGHT 8 m

VOLUME 25,360 m<sup>3</sup>

INDOOR TEMPERATURE 22°C

OUTDOOR TEMPERATURE -5.6°C

HEATING Aerotherms with a total of 250 kW/h

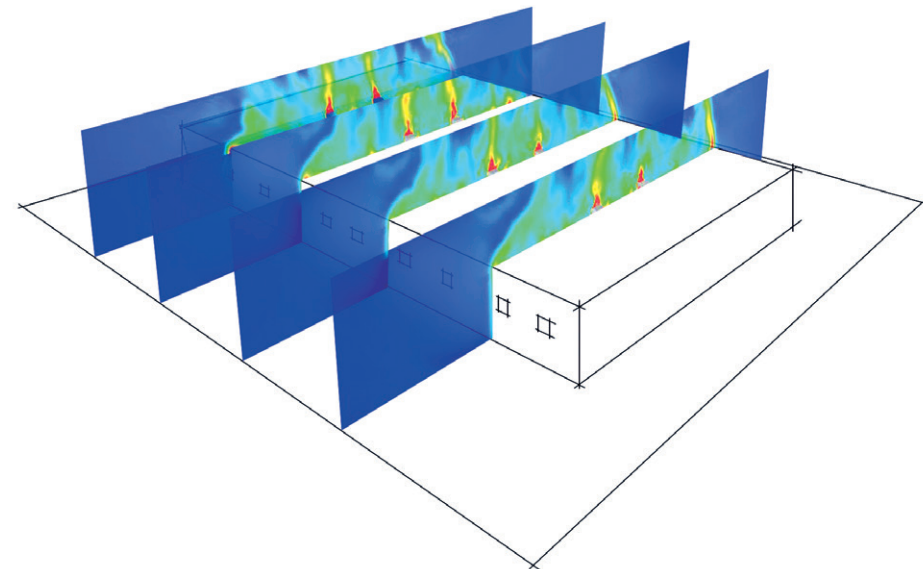
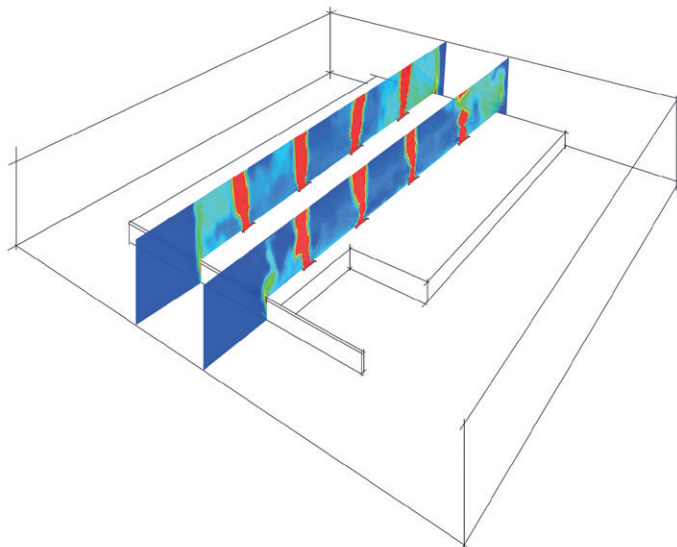
NUMBER OF FANS 8 on the roof and 12 on the façade

## Proven efficiency

To calculate the heat loss in the different extract systems, equal terms are eliminated in the different case studies, thus eliminating losses on façades, roofs and other air entry and exit points other than the extractor fans, as they are all equal, regardless of the system used.

The following are adopted as continuous temperatures in all the systems:

- Indoor temperature: 22°C
- Outdoor temperature: -5.6°C
- Differential: 27.6°C



## Automated HATCH type extractor system

As an example for calculation purposes, 8 size 100 Roof THT/ HATCH extractor fans installed on the roof and 12 Wall size 90 THT/WALL extractor fans installed on the façade are used. Considering the surface area, the heat transfer and changes in temperature, the total heat loss of all the extractor fans will be:

$$Q_{\text{total}} = 1.3 \text{ kW/h}$$

## Current extractor fan system with free air exhaust

As an example for calculation purposes, 8 size 100 axial roof extractor fans installed on the roof and 12 axial extract fans installed on the façade are used. Considering the quantity of air that circulates from the interior to the exterior, the surface area, the heat transfer and changes in temperature, the total heat loss of all the extractor fans will be:

$$Q_{\text{total}} = 251 \text{ kW/h}$$

**The difference in heat loss between both systems will be 249.7 kW/h**



## ENERGY SAVINGS

### Comparison of heat loss in both systems

The difference in heat loss in favour of the HATCH system is equivalent to a difference in kW/h consumption. In the study conducted, the energy savings per hour with the new system will be 249.7 kW/h.

### Comparison of the cost of energy consumed

Based on an average price of €0.1 /kW/h, the savings in heat loss equivalent to 249.7 kW/h for one day under the specified temperature conditions would be €600 /day for one week, meaning savings of €4,200 /week, or €18,000 /month.

### Amortisation of the new equipment

The savings obtained at a time when energy savings are so important justify the investment in these new ventilation systems. In addition, they can be amortised in a very short space of time.