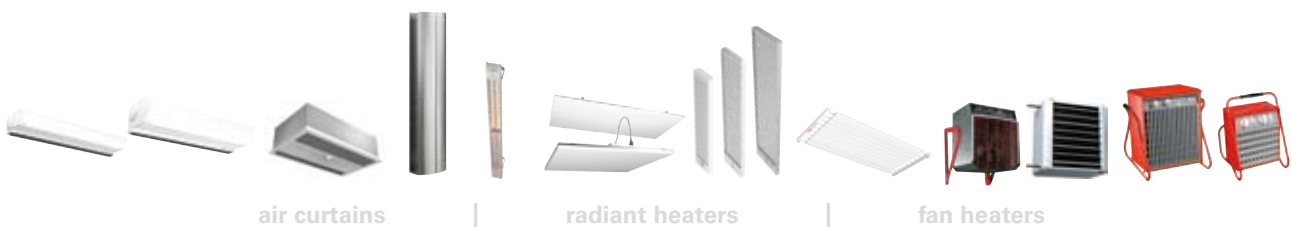


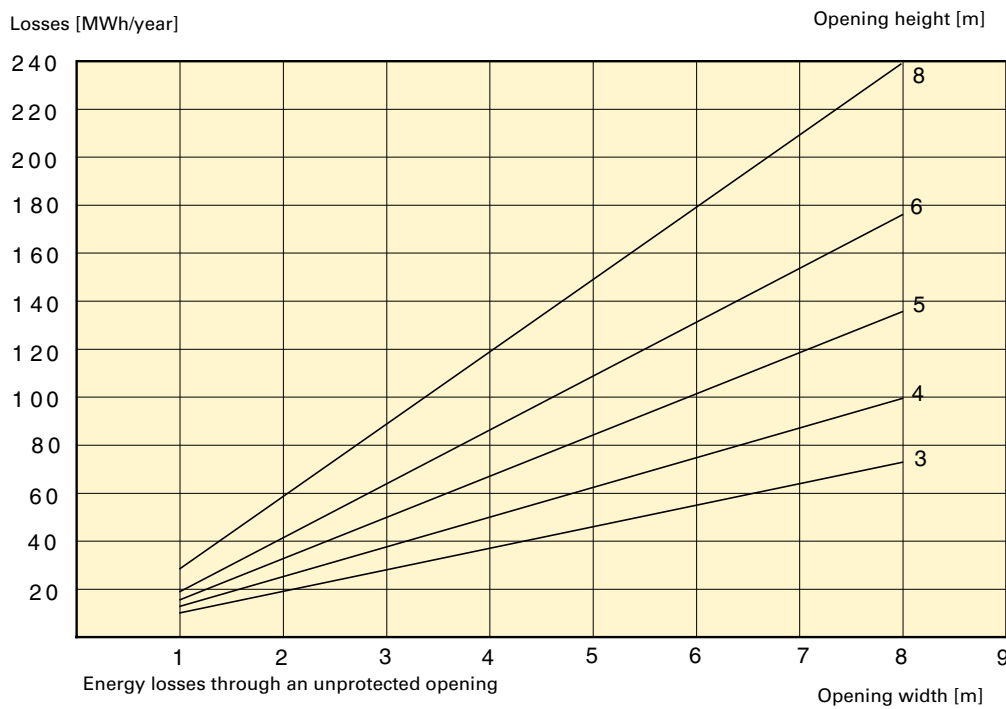
## Save energy with Air Curtains



### Energy savings with air curtains

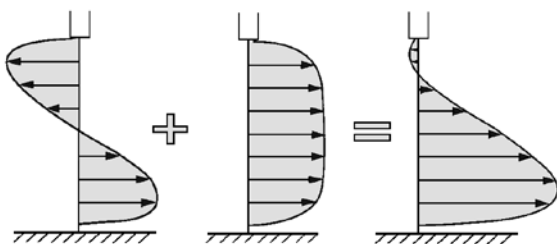
The diagram below shows how big the energy losses can be through a door without air curtains as protection.

- Assumptions: Large room
- Average annual temperature 6,5°C
  - Average annual wind velocity  $u_{10}$  4 m/s
  - Duration of open door 1 hr/day

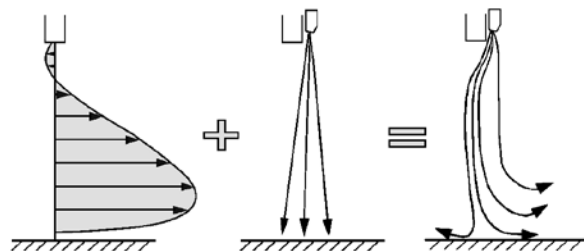


Several factors affect air exchange and energy losses through an opening. The main factors are the size of the opening, the frequency of the traffic and the stress in terms of wind as well as temperature and pressure differences.

With an air curtain installed inside the opening you limit the energy losses, the amount saved depends on the character of the opening. Overleaf is an example showing some given factors and an estimated saving.



The stress on the door is caused by temperature and pressure differences and wind.



The stress on the opening counteracted by an air curtain.

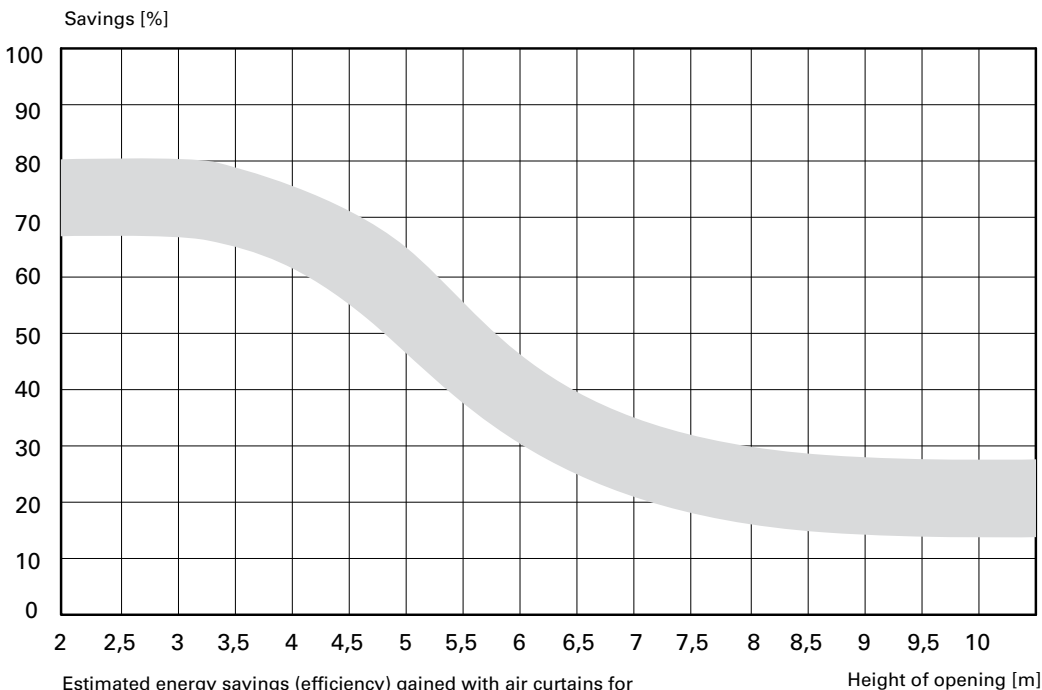
### Calculation on energy savings

Door height	5 m
Door width	4 m
Days per week in operation	5 days
Open time per 24 hours	1 h/24
Duration of each opening of door	5 min/opening
Dim. indoor temperature	18 °C
Dim. outdoor temperature	-18 °C
Average annual temperature	5 °C
Wind velocity	4 m/s
Volume of the room	6400 m <sup>3</sup>

We will compare the energy losses through an open, unprotected door to an equivalent door with air curtains installed. The calculations should be seen as guidelines. Calculations on energy savings is no exact science, it is difficult to determine the effect of draughts, how well sealed the building is, the stack effect, the wind speed and direction etc. What we can see, however, is that the energy losses are high if an opening is left unprotected.

If we compare the values in the diagram on the previous page with the diagram below we can see that the air curtain eliminates up to 65% of the air exchange through the door.

Energy losses, unprotected opening:	69 MWh/yr
Energy losses, opening with air curtain:	24 MWh/yr
Energy savings:	45 MWh/yr



#### Contact Frico

You are very welcome to contact us to discuss conditions in your opening. With some information from you we can estimate possible energy savings. See check list to the right with useful parameters.

- The width and height of the door
- Type and size of premises
- Days per week in operation
- Open time per 24 hours
- Indoor and outdoor temperature
- Wind exposure
- Under pressure