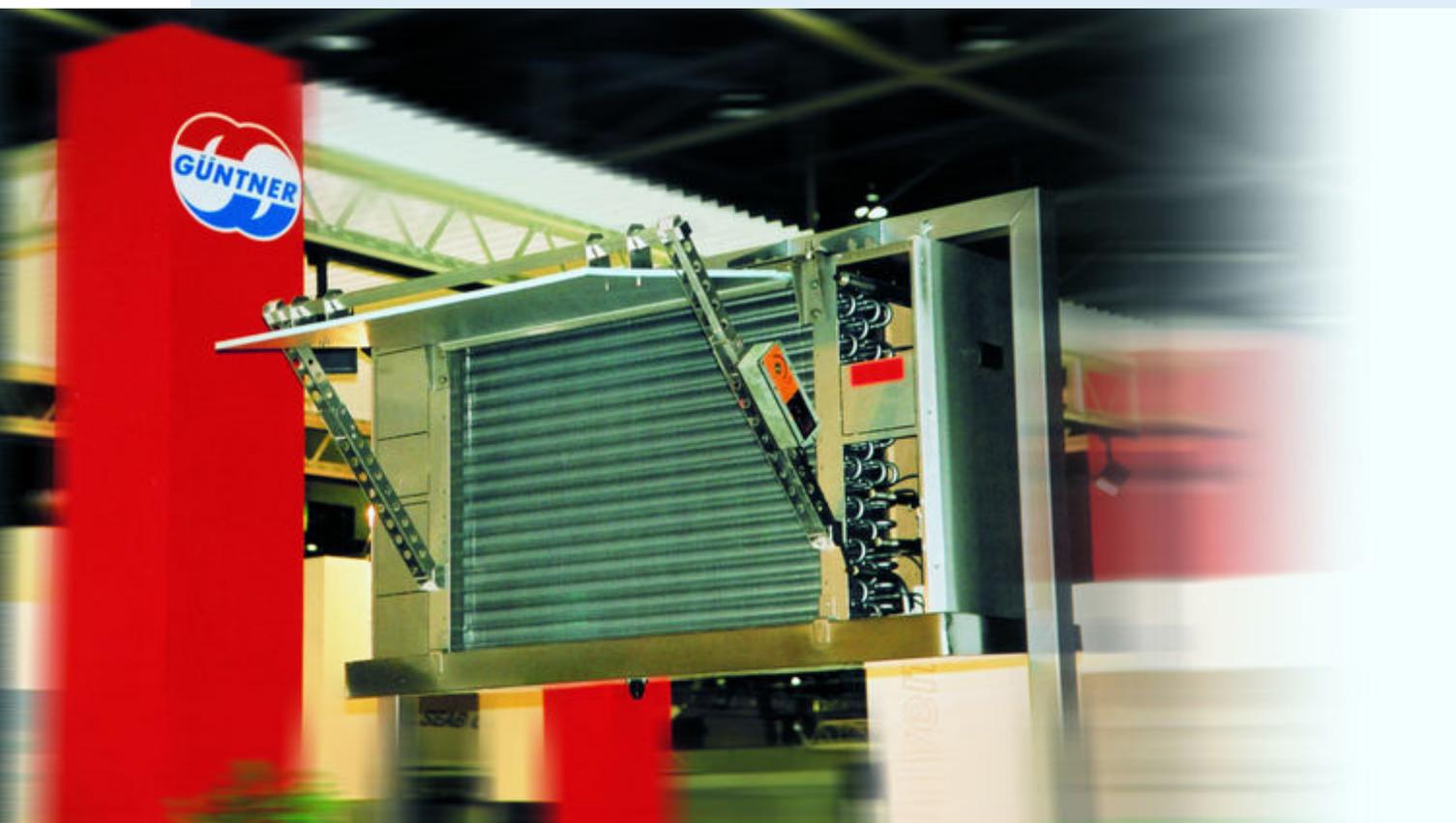


## *Defrost flap for air coolers*



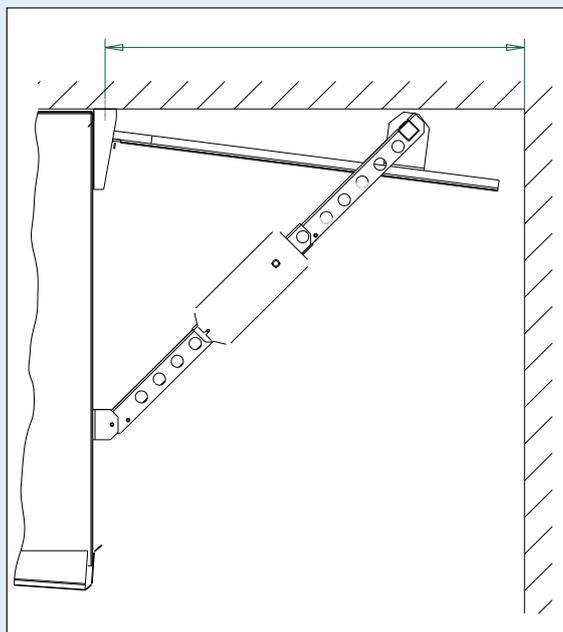
Presentation of the defrost flap on an AGHN air cooler at IKK 2001

When air coolers are used in rooms at temperatures below 0 °C, frost accumulates on the heat transfer areas during their operation, resulting in heat transfer losses. To defrost, the heat transfer areas are heated several times per day with electrical heat, hot gas or warm water. During the defrost period, the fans remain switched off. Air coolers generally available on the market continue to emit large amounts of heat into the room, even if the fans stand still. Due to the temperature differences, air circulates between the heat exchanger and the ambient air as well as inside the air cooler. The strongest air circulation appears where the hot heat exchanger coil of the air cooler is located. This results in an ambient air "roll", which leads to warm air condensing on the ceiling and to frost accumulating.

During the defrost period the following conditions may appear

- High energy losses due to heat emission into the cooling chamber
- Vapour and frost forming under the ceiling

With the defrost damper illustrated in the drawing, an insulated sheet closes the air cooler during the defrost period on the open, finned side. Therefore, no air exchange is possible between the heat transfer areas and the ambient air. As the heat exchanger is closed on one side, circulation and air exchange with the ambient air on the other side (fan side) can be largely excluded. During the defrost period, the heating energy remains in the heat exchanger and the new warm air accumulates in the air cooler casing. Therefore, the defrost limit temperature should be set at a value above +5 °C.



- No pressure losses due to interruptions of the air flow

This defrost flap offers the main advantage that, contrary to other traditional systems, the air flow is not disturbed when it is open. No additional pressure losses, which would need to be taken into account when considering the total energy consumption, occur when the flaps are open. The flap has an insulated sheet and a special layout of its mechanical components. It does not require any maintenance and cannot freeze. No additional electrical heaters are required. The drive is suitable for room temperatures down to  $-30\text{ }^{\circ}\text{C}$  and is equipped as standard with switches that indicate the position of the flaps. It is also advantageous that this accessory can be added onto nearly all Guntner air cooler series. Only the distance of the air cooler from the wall and the correct wiring of the motor (rotation direction: ON-OFF) need to be taken into account. Extensive instructions are supplied with the product.

#### Advantages of the insulated defrost flap

- Energy saving
- No unnecessary heating of the cooling chamber
- Shorter defrost periods
- More efficient defrost process
- No vapour building
- No frost accumulation in the vicinity of the air cooler