

Calculation of the heating load

Air exchange <i>Safety cabinet for flammable materials</i>	30 m³/h
Air exchange <i>Safety cabinet for acids and alkalis</i>	50 m³/h
Air exchange <i>Safety cabinet for toxic materials</i>	50 m³/h
Air exchange <i>V-LINE MULTIRISK</i>	- 20 m³/h
Air exchange savings	110 m³/h
= Air exchange savings per year	963.600 m³/a

Calculation of the heat load*:

Specific heat capacity air	0,34 Wh/(m³K)
Indoor temperature	20,0 °C
Outdoor temperature	-10,0 °C

Air exchange savings × **Heat capacity** × (Indoor temperature – Outdoor temperature) / 1000

$$110 \text{ m}^3/\text{h} \times 0,34 \text{ Wh}/(\text{m}^3/\text{a}) \times (20^\circ - 10^\circ) / 1000 = 1,122 \text{ kW heat load}$$

* Calculation example according to DIN EN 12831

Calculation of the energy consumption

Calculated heat load 1,122 kW

Proportionate power consumption of the air handling unit * 0,038 kW

Annual operating time (24 hours, 7 days/week) 8.760 h/a

Heat recovery efficiency * 90%

Calculation energy consumption per year:

$(\text{Heat load} \times \text{Proportionate power consumption}) \times \text{Annual operating time} \times (100 - \text{Heat recovery}) / 100$

$(1,122 \text{ kW} \times 0,038 \text{ kW}) \times 8.760 \text{ h/a} \times (100 - 90) / 100 = 1.016 \text{ kWh/a energy consumption per year}$

Total annual savings with the V-LINE MULTIRISK

Calculated energy consumption per year 1.016 kWh/a

Electricity costs * 0,40 €/kWh

Total savings per year:

Consumption/year × Electricity costs

$$1.016 \text{ kWh/a} \times 0,40 \text{ €/kWh} = 404,45 \text{ €}$$



* Exemplary values