



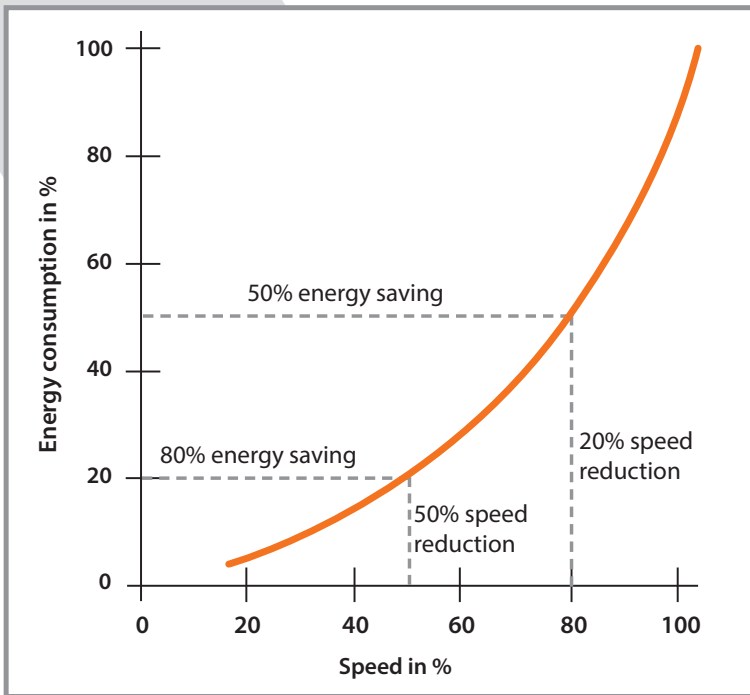
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ENERGY AND COST SAVINGS through automatic extraction capacity control

In terms of energy and cost savings, what are the advantages of an extraction unit with connected frequency inverter for automatic extraction capacity control?

- » A frequency inverter adapts the **motor speed** and the power consumption to the **current demand**.
- » An extraction unit seldom requires the maximum motor power and with a frequency inverter, **no unnecessary energy is consumed** for most of the operating time.
- » Components are protected by slowly starting the motor. The service life is increased and **maintenance costs are reduced**.
- » **Noise emissions** from the fan are significantly **reduced** and employee protection improved.
- » The **extraction unit runs** for a large part of the operating time in a well-regulated **partial load range** and therefore it consumes noticeably less electricity.
- » For example if the motor speed is reduced by 20% the energy consumption, the energy consumption, **decreases over-proportionally by about 50%**.

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Calculation example:

A fan with a motor power of 22 kW consumes **only 11.3 kW** ($22 \text{ kW} \times 0.8 \times 0.8 \times 0.8 = 11.26 \text{ kW}$) at 80% of its speed, thus reducing **energy consumption by about 50%**.

- » In addition to the over-proportional reduction in power consumption, a frequency inverter takes the individual characteristics of the motors into account and adjusts itself accordingly. The motor is supplied with optimum voltage, current and frequency. This increases efficiency and **reduces energy consumption** by a further **3-4%**.
- » The **starting current is reduced**, which is several times the rated current. This is important when designing cabling and fuses.
- » When operated by an inverter, the **current consumption does not rise above the rated current** of the motor. This is far below the current consumption when using a star/delta circuit or a soft starter.
- » When there are more or less welding stations in operation, the **extraction capacity** at all workstations automatically remains **constant**.
- » **Reduced CO₂ emissions** protect the environment. Government support in the form of grants or subsidised loans can be made available through subsidy programmes.

What other advantages do the filter cartridges in the extraction unit have?

Advantages

The power control ensures that no more air is extracted than necessary. **New filter cartridges** with very low flow resistance are **not damaged** by excessive volume flow. A guideline: Halving the volume flow leads to a quadrupling of the filter life.

As the filter resistance increases, the **extraction capacity automatically remains constant**. This is convenient and ensures consistently good capture of hazardous substances.