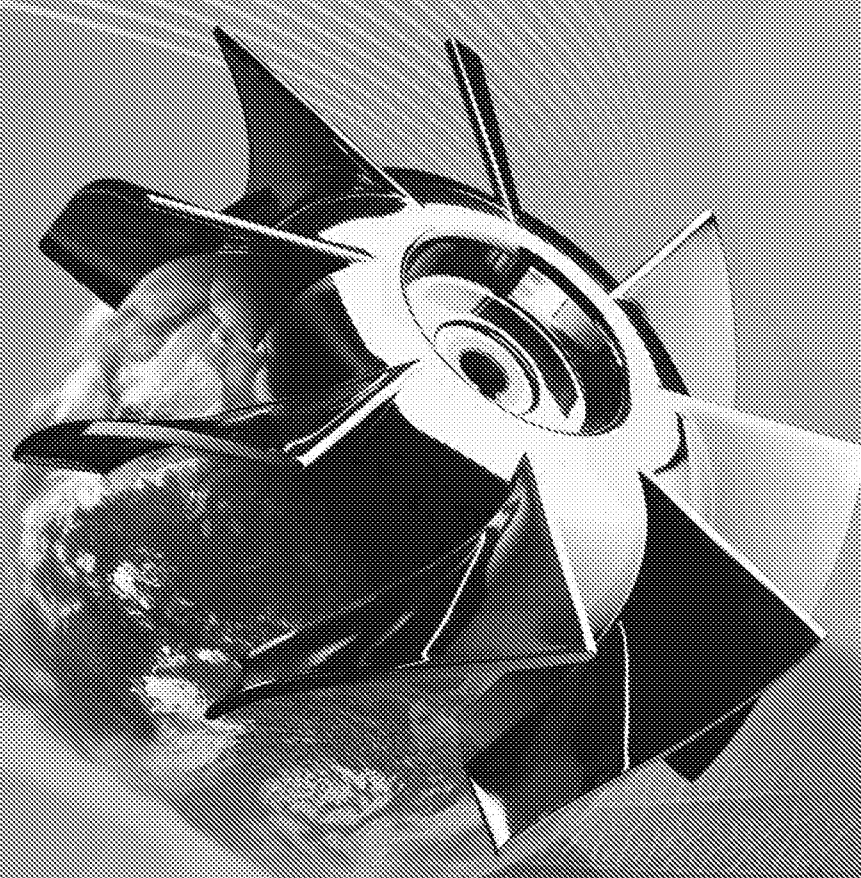


ECgreenVent®

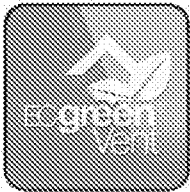
The ventilation of the future.



The professionals choice

ECgreenVent

Energy, the topic for the future. Efficiency, the demand of our time.



Across the globe energy is the topic of the future. Due to the rapid increase in global economic growth and the increasing population, the enormous additional demand for energy presents us with great challenges. By 2030 alone the increase in the demand for energy is expected to rise further by another 40%.

The demand for energy burdens our environment and as a consequence the pressure to move over to a more sustainable energy supply is growing.

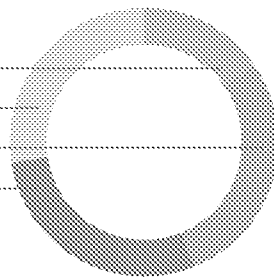
The buzzword of the day. Energy efficiency improvement.

The most effective and most economical method for a safe and climate-friendly energy supply is to increase energy efficiency. Considering the fact that about 45% of energy is used in industry and trade, for example in Germany (see graphic) it is obvious that these areas particularly should be targeted.

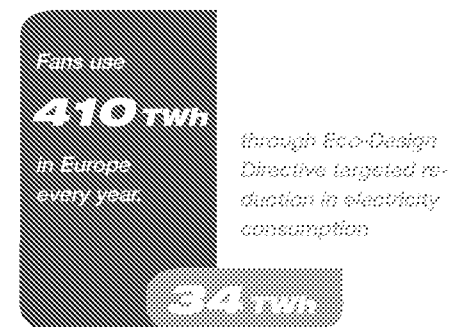
Until a few years ago the optimisation of heating was almost exclusively the focus point, primarily in non-residential buildings and all building control technologies including ventilation, cooling and illumination.

Distribution of final energy consumption in Germany 2008 among various sectors of consumption

15,5 % business, trade, service
28,5 % traffic
28,7 % industry
27,3 % household



SOURCE:  Forschungsbund
Gebäude-
Urban- und
Raumforschung



Ventilation. Great potential saving.

Special attention must be paid to ventilation: according to the EU commission the energy consumption of fans at present is about 410 TWh in Europe every year. This number offers great potential for making a contribution to the achievement of the Eco-Design Directive. This seeks to save about 16 million tons of CO₂ per year and reduce the current consumption by 34 TWh.

Helios has taken up this need of the moment as one of the leading European fan manufacturers and offers a complete EC-program already today. **By use of electronically commutated fan motors, energy savings of over 50 % can be achieved during speed control.**

ECgreenVent

Small principle. Big effect.

The main component of a fan today is still an AC-motor. This runs according to the number of pole pairs and mains frequency (in general 50 Hz) and the resulting static rotating field of the slip.

Example for a 2-pole motor, 50 Hz:
50 Hz x 60 sec./pole pair. – 5 % slip
= **2850 R.P.M.**

In contrast, the rotating field at the EC-motor becomes brushless by constant electronic switching and adapting to the required operating conditions.

Permanent magnets form the magnetic poles, the frequency is thereby not of importance. According to the desired speed the motor winding with a fixed switching frequency is alternately supplied with energy. Thus a continuous, almost linear regulation is possible over the entire speed range (fig. 2).

From the use of modern, energy efficient EC drive technology clearly higher fan efficiencies (fig. 3) are the result, since almost no losses occur in the EC-motor by iron, copper and slip. In addition, EC-fans operate wearless and maintenance-free and are characterised

by a noiseless run. The disturbing motor humming of AC-motors when controlled does not occur.

fig. 1 Energy consumption within the control range

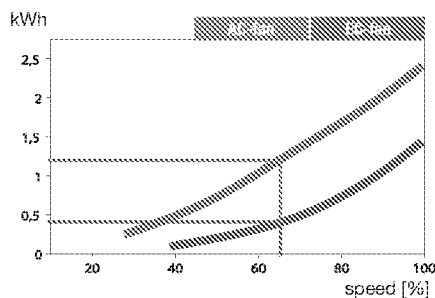


fig. 2 Speed control

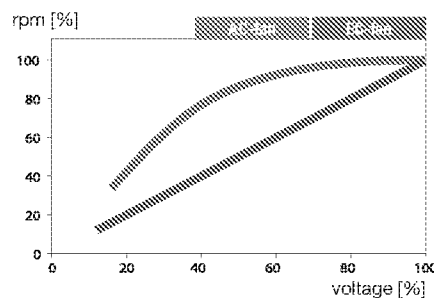
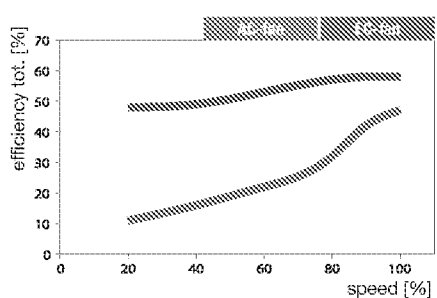


fig. 3 Efficiency



All important: EC-energy saving and reduction of operating costs

Thanks to the energy efficient EC-technology energy savings of over 50 % are achieved in the speed controlled operation. The saving is 30 % in the rating, i.e. at nominal speed.

Since fans are to a large extent speed adjusted operated, the operating cost can be reduced to the half by use of EC-fans (fig. 1). In addition there are lower capital costs for speed regulation.

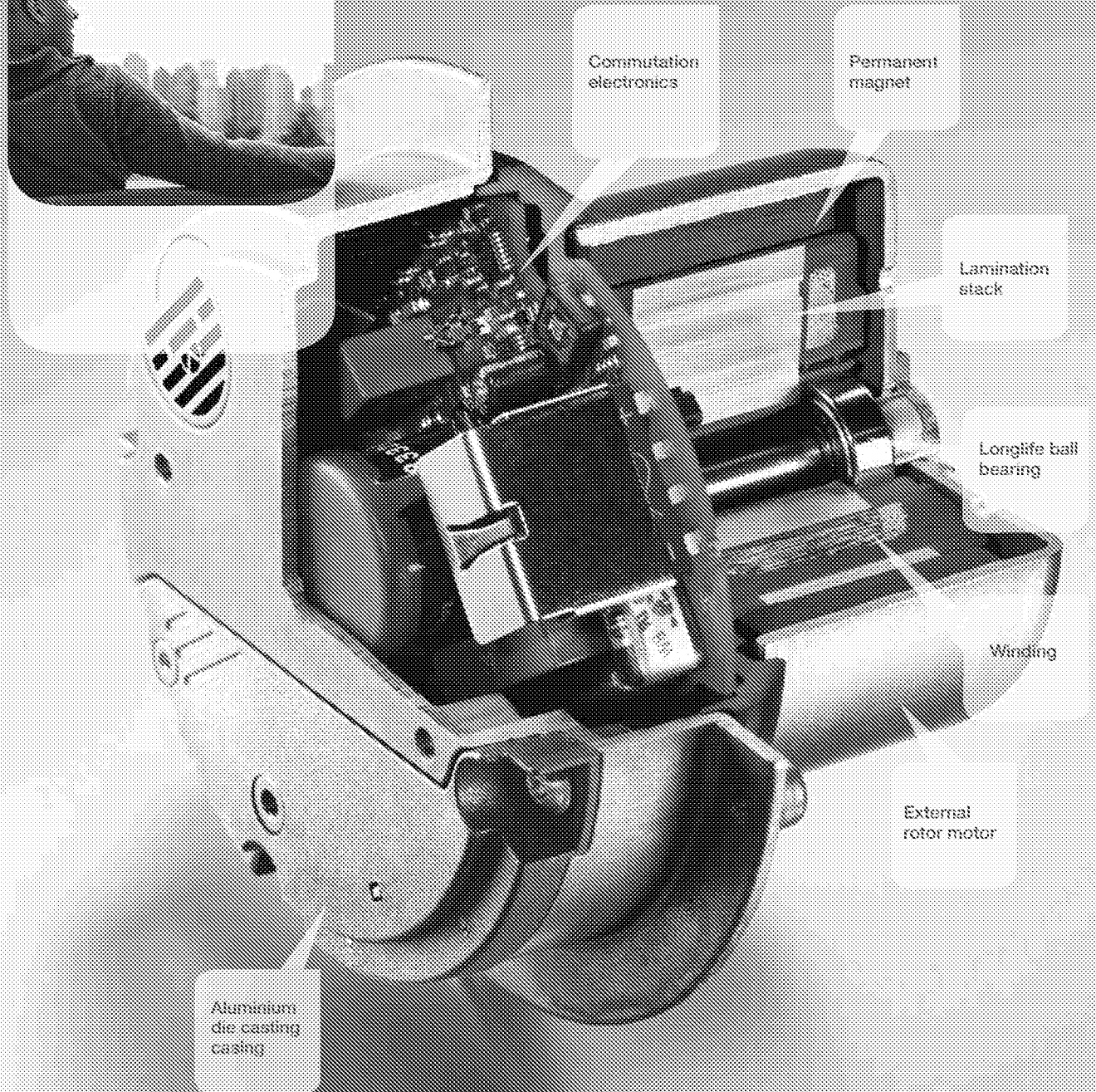
Clearly superior: EC-technology within the range of speed regulation

The clear advantages of EC-technology become obvious during the speed control. While AC-fans are often speed controlled with cost-intensive transformer or phase angle firing controllers, EC-fans get along with more economical solutions. Since the required control components are already contained in EC-motor electronics, merely a control signal (speed potentiometer) is needed.

Spectacular: Difference in efficiency

With AC-motors, as is widely known, efficiency losses must be accepted, which substantially result from the slip losses in the speed control range (fig. 3). These disadvantages do not exist with EC-motors. The motor losses remain almost invariably small over the entire speed control range.

EC-motors are brushless direct current motors with shunt characteristic, which were developed specifically for use in ventilation and climate technical systems.





Universal controller EUR EC
Electronic control automatic
with 0–10 V DC control output.

Operation

For stepless control or adjustment of single- and 3-phase EC-fans with an input control signal of 0–10 V DC.

Control functions

Simple and quick start-up of parameters via integrated "start-up wizard". Depending on the connected sensor a control can be carried out according to following control variables:

- **Manual speed control**, e.g. adjustable via keyboard
- **Temperature standard** (required accessory, temperature sensor LTR 40 or LTK 40)
- **Temperature with additional functions** hard-wired, (required accessory, temperature sensor LTR 40 or LTK 40)
- **Differential temperature control** (required accessory, temperature sensor LTR 40 or LTK 40)
- **Differential pressure standard** (required accessory, differential air pressure sensor LDF 500)
- **Differential pressure with outside temperature compensation** (required accessory, differential air pressure and temperature sensor LDF 500 and LTR 40 or LTK 40). Ideally used in central extract ventilation systems according to DIN 18017 in domestic applications.
- **Air velocity** (required accessory, air velocity sensor LGF 10)

The required sensor is to be ordered as accessory separately. The control ranges are freely adjustable within the sensor's range.

The aligned output voltage according to nominal value and current value is between 0 % (35 V) to 100 % (correspond to approx. 80 V – 230 V).

Inputs and outputs:

Outputs:

- 2 x analogue output 0–10 V control of e.g. a frequency inverter, shutter, EC-motor.
- 2 x voltage free relays, programmable, alarm, heating or status signals.

Inputs:

- 2 x sensor inputs, programmable on the particularly needed sensor type.
- 3 x digital inputs, programmable to enable, external interference, limit on/off, switching night time mode, internal/external, automatic/manual, reset, max. speed on/off.

Settings

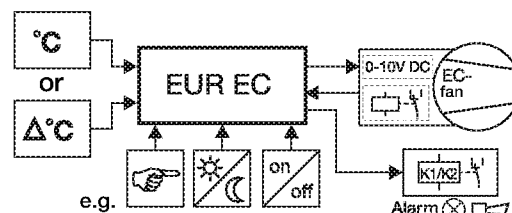
- Stepless selection of nominal values and control range.
- Min./max. power (speed) limitation.
- On/off switching of minimum air flow volume.
- Setting for a switched output e.g. for a heater via programmable relay.
- Stepless selection for alarm indication at over and under temperature, output on display or additionally on relay.
- Min. and max. shutter opening.
- Reverse control functions.
- Continuous control of ventilation dampers.
- The setting is carried out through a dirt resistant membrane keyboard.

Display

- Multi functions LC-display
- Numerical nominal and actual value display with scale
- Symbols (alarm, heater, selection)
- Bar graph/level indicator
- Text display for menu, status and fault indications

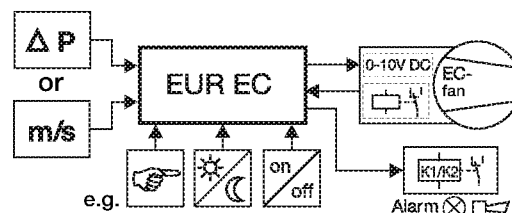
Mode 2.03: Temperature control with additional function

Mode 2.05: Differential temperature control



Mode 4.01: Differential pressure control

Mode 6.01: Air velocity control



Casing

Polymer, light grey, for surface mounting.
Protection to IP 54
Dim. mm W 223 x H 200 x D 115

Required accessories

LDF 500 Ref. No. 1322
Differential air pressure sensor.

Range 0 – 500 Pa
LGF 10 Ref. No. 1325

Air velocity sensor.
Range 0 – 10 m/s

LTA 40 Ref. No. 1336
Temperature sensor for outside.

Range –20 to +60 °C
Protection to IP 54

LTK 40 Ref. No. 1324
Temperature sensor for in-duct installation.

Range 0 to +40 °C

LTR 40 Ref. No. 1323
Room temperature sensor.

Range 0.5 to +40 °C

EUR EC

Ref. No. 1347

Voltage 230 V, 1 ph., 50/60 Hz
Control output 0–10 V / max. 10 mA
Controlled output voltage 0 – 100 %
Control range temperature 0 – 40 °C
Control range pressure 0 – 500 Pa
Control range velocity 0 – 10 m/s
Permitted ambient temperature 0 to +40 °C
Weight approx. 1.0 kg
Wiring diagram-No. SS-1001



The professionals choice

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