

Driven by  EC

EC-Fans



 Systemair

The challenge

Energy-saving 2.0

Everyone's talking about climate protection, and calling for immediate action. But what needs to be done? The challenge has to be faced by individuals as well as by organisations. If companies are to take their corporate social responsibility seriously, and consumers are to adopt LOHAS (Lifestyle of Health and Sustainability), the focus will most definitely be on sustainable materials and efficiency. Avoiding the use of energy is one thing, but the true answer in this context is to use it more efficiently. Then it will be possible to maintain the function, comfort and convenience that are part of a modern lifestyle.

Systemair, the ventilation company, offers you an opportunity to play an active part in this process. It has developed a simple, effective answer that creates a win-win situation; in other words you, your customer and the environment all benefit.

Efficient use of energy

= potential savings + environmental protection

More than just hot air!

- In Europe alone, ventilation fans consume about 197,000 GWh
- This puts them among the largest electricity consumers overall
- Fans operate at an efficiency of about 8–28 % (axial pattern) or 40–55 % (centrifugal pattern)
- Even a 12–15 % increase in efficiency could reduce CO₂ emissions by 19 million tons

In other words, companies could cut annual operating costs by as much as 2.6 billion euros by optimising the motor systems. And since the use of fans will increase in the years to come, there is an obvious need for innovative solutions in the motor area.

The solution

EC-fans

What does EC stand for?

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An EC-motor

= electronically commutated motor

EC-technology is intelligent technology, using integral electronic control to ensure that the motor always runs at optimal load.

What can EC achieve?

EC-fans are notable for their economical use of energy and excellent ease of control.

EC-fans are driven by energy-saving motors with electronic control (commutation unit) to keep them running in the optimal operating range. According to their design principle, these are synchronous motors, which run without slip and therefore no slippage losses incur. Compared with AC motors, the proportion of energy utilised effectively is many times higher.

EC-motors with integrated electronic control can be varied in speed to match the airflow demand, and operate at high efficiency levels. For the same air volume, they consume distinctly less energy than AC fan drives.

Another special feature of EC-motors is their energy-saving potential not only at full load, but especially at part-load. When operating at part-load, the loss of efficiency is very much lower than with an asynchronous motor of equivalent output.

Another pro-environmental aspect relevant to air supply and air conditioning equipment in particular is the noise level. Here too, the advantage is with the EC-motor, which runs noiselessly in a controlled operating condition.

Advantages and benefits

Straightforward – modern – economical

Straightforward

Convenient

Easy to install, with no connections to a control cabinet needed.

Demand-oriented

Adjustment of fan performance by stepless speed control; excellent control features.

Maintenance-free

Guaranteed reliable operation and long-term value retention with a minimum of routine upkeep.

Flexible

100 % control technology for all control values.

Modern

Makes efficient use of energy

The proportion of energy used effectively is far higher than with an AC motor.

Space-saving

The control electronics are fully integrated and not visible.

Low noise

The reduction of noise emission is immediately evident.

Economical

Energy-saving

EC-motors consume an average of 30 % less energy than standard alternating-current motors. In some applications, the saving can be 50 % or more.

Flexible

Suitable for use in 50 Hz and 60 Hz mains systems all over the world, so that fewer versions are needed.

A reliable investment

Long operating life and advanced technology with no unnecessary use of scarce natural resources.

Payback-optimised

Reduced energy consumption through high efficiency guarantees a drop in operating costs.

Energy-saving fans: energy-efficient and comfortable

EC-motors, since they use energy so sparingly and are so easy to control, are an obvious alternative. Their electronic control system (commutation unit) cuts energy consumption by keeping the fan running in the most effective operating range at all times. Compared with an AC motor, the proportion of energy used efficiently is several times higher.

Energy-saving fans from Systemair are not only highly efficient, but also quick and convenient to install. Since EC-technology avoids the need for connection to a control cabinet with an electronic power control system, no additional wiring has to be installed. Another advantage is that EC-motors can be used in just about every part of the world, as they do not have to be matched to specific mains supply characteristics.

The products

Product overview

Systemair EC-fans are available in the following versions:

DVC roof fan

- 100% speed controllable
- Integrated motor protection
- Low noise level
- Reliable and maintenance-free operation

K-EC

- 100% speed controllable
- Integrated motor protection
- Can be installed in any position
- Suitable for outdoor use
- Reliable and maintenance-free operation
- Supplied with mounting bracket

Multibox EC

- 100% speed controllable
- Integrated motor protection
- Low noise level
- Can be installed in any position
- Direction of air discharge can be adjusted on site
- Reliable and maintenance-free operation

KVKE-EC

- 100% speed controllable
- Integrated motor protection
- Can be installed in any position
- Reliable and maintenance-free operation
- Runs very quietly
- Motor unit can be folded up for inspection

Besides the fans, Systemair uses EC-motors in the compact units Topvex and Rotovex and the residential ventilation units VR. These are also equipped with high-efficiency rotating heat exchangers. Efficient motor technology makes these well-equipped ventilation units, which operate according to the 'plug and play' principle, even more economical.

The Maxi Comfort 800, which combines cooling, ventilation and heating, also features EC-motors. Thanks to its heat pump and intelligent electronics, it makes extremely economical use of energy.



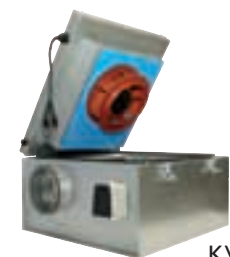
DVC
Roof fan



MUB-EC
Square duct fan



K-EC
Circular duct fan



KVKE-EC
Sound insulated duct fan



Topvex



Rotovex



VR



Maxi Comfort 800

Examples of use

For every requirement the suitable control

EC-fans are the ideal solution for all applications requiring ventilation control.

All control variables can be realised.

Constant air volume control

Example: Residential ventilation

Pressure control

Example: Central ventilation of a hotel

Temperature control

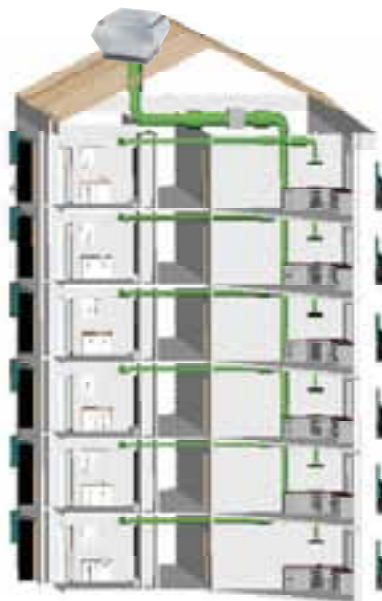
Example: Support of the air-conditioning (night setback) in a shopping mall

Humidity control

Example: Shower rooms of sports facilities

CO₂ control

Example: Fashion store



Schematic sketch of central exhaust ventilation with roof fan

Reference example

'Sun Palace' apartment block in Budapest, Hungary; 2006: Pressure-controlled, demand-oriented ventilation with roof fans.

Example: roof fan

Office building, 1200 m² floor area, four roof-mounted fans DVC 450. Average daily operating level 60%. Potential energy saving up to

6.7 MWh $\hat{=}$ **app. 4 t CO₂** $\hat{=}$ **841 euros*** annually.

21.5%

Potential saving compared with equivalent standard models

Example: Multibox

Industrial building with six fan units type MUB-EC 400. Average daily operating level 50%. Potential energy saving

3.7 MWh $\hat{=}$ **app. 6.13 t CO₂** $\hat{=}$ **461 euros*** annually.

41.2%

Potential saving compared with equivalent standard models

Example: noise insulated circular duct fans

Air extraction from restaurant toilets, with six KVKE I 60 noise-insulated circular duct fans. Average daily operating level 75%. Potential energy saving

1.7 MWh $\hat{=}$ **app. 2.8 t CO₂** $\hat{=}$ **212 euros*** annually.

40.2%

Potential saving compared with equivalent standard models

Example: circular duct fan

Air extraction from smokers' room at the airport with 12 circular duct fans type K-EC 200M. Average daily operating level 75%. Potential energy saving

3.4 MWh $\hat{=}$ **app. 5.66 t CO₂** $\hat{=}$ **425 euros*** annually.

28.9%

Potential saving compared with equivalent standard models

* 12.55 eurocent/kWh, average electricity supply price for industry in Germany; status: April 2008 (source: VdEW)



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**We are thinking about tomorrow already today –
for a perceptible better climate**

Green ventilation

At Systemair, we are aware of our responsibilities. Our contribution to modern environmental protection is efficient use of energy.

The 'Green Ventilation' symbol identifies intelligent technology in harmony with the environment. It shows that our products are suitable for the future.

In this way we offer our customers a means of combining sustainability with economy, and reaping the benefit from straightforward, well-planned installations.

Driven by EC

EC-technology is straightforward and ecologically effective – with no compromises. Driven by technological innovation, our EC-motors are a practically-oriented response to the challenge of climatic change. Systemair supplies an extensive range of products and also complete solutions for all ventilation and air conditioning needs.

A broad range of applications and international compatibility are evidence of our all-embracing approach. In practical terms, this means global thinking and a regional presence – with EC-technology.

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