EST INVERTER

ENERGY SAVING TECHNOLOGY

EURAPO

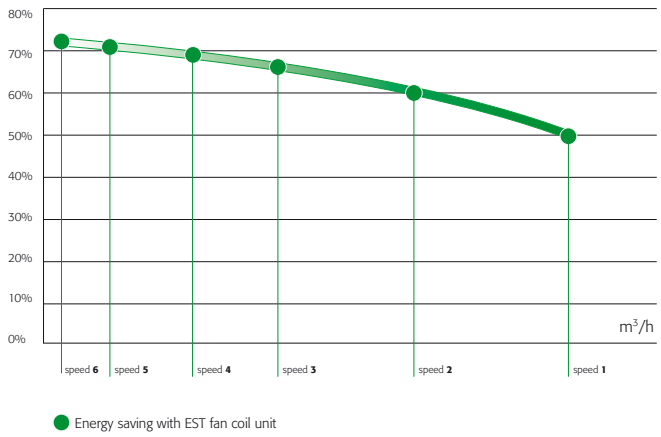
INTEGRATED
COMFORT
SYSTEMS

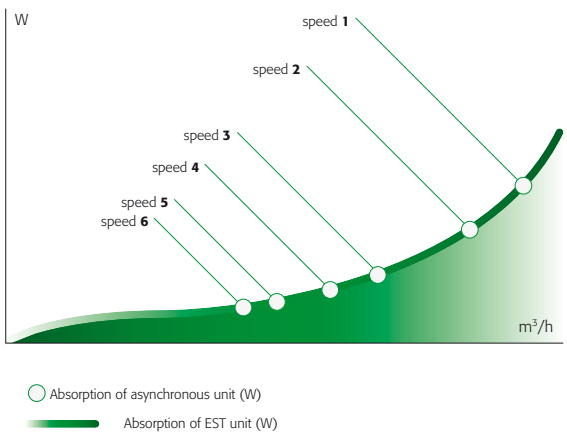
ENERGY SAVING TECHNOLOGY

EST (Energy Saving Technology) is applied to the **EURAPO** fan coil units and cassette units. It permits to obtain extremely low electrical absorption and a continuous modulation of the air flow, constantly related to the concrete need of energy in the room.

EST technology is composed by a brushless motor combined to a dedicated electronic device (inverter), managed by specific regulators developed by **EURAPO**.

In comparison to the traditional units equipped with asynchronous three-speed-motors, the fan coil and cassette units with brushless motors can obtain a considerable **energy saving**, by reducing the power consumption **up to 70%**.





Thanks to the step-less modulation of the fan speeds it is possible to accurately regulate the air volume in a very precise way, in strict relation to the real need of air conditioning in the room. Oscillations in the temperature and relative humidity are reduced at lowest level: a guarantee for the **highest comfort in the room**.

The possibility to reach very low air volumes makes the units **extremely quiet** at the lowest motor revolutions.

EST technology is designed in particular for offices, hospitals, nursing homes and hotels. It is available for the **EURAPO** range of fan coil units, cassette units and ducted units.

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The EST technology

The EST technology consists of a brushless motor combined to a dedicated electronic device (inverter), managed by specific regulators. The controller uses a modulating signal with 0-10Vdc tension in order to regulate the fan speed.

The brushless electric motor is composed by a rotor having permanent magnets, whose magnetic fields interact with the ones produced by the stator winding. The transfer of current is no longer by mechanical commutation (sliding contacts) but by an electronic commutation system: one electronic controller (inverter) powers the motor's stator and generates rotating magnetic fields, that determine the rotor's speed.

For applying the EST technology also to the ducted units, the inverter is provided with DIP SWITCHES that can be also set on site, during start-up of the unit. This high flexibility grants the proper configuration for every kind of installation, by personalization of the Dip Switches accordingly to the pressure drop in the system.

Brushless motors develop much less heat than the traditional brushed motors and they have much lower mechanical resistance than the standard asynchronous ones. They offer several advantages, like as higher efficiency, longer lifetime, less need of maintenance.

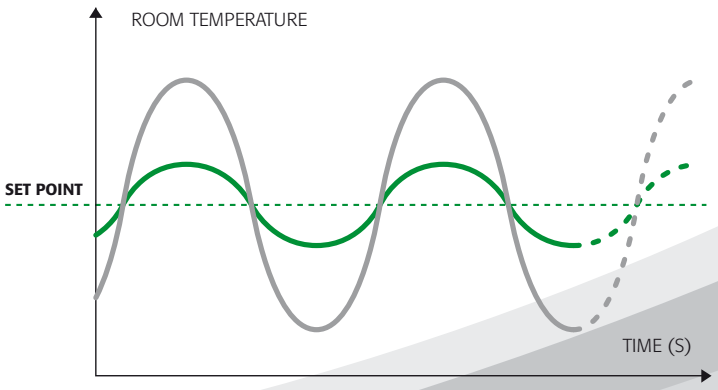
The absence of brushes eliminates also the main source of electromagnetic noise.

By giving a 0-10Vdc signal to the inverter, an electronic regulator intervenes by simply managing the fan speed and the rotor's torque in a continuous way, adapting with extreme precision the air volume to the real and punctual requirements in the room.

For managing all units equipped with brushless motors, EURAPO developed a new microprocessor control, available both built-in the unit (EDCL) and for remote installation on the wall (EDCR).

Also the OMNIBUS digital system has been implemented in order to be combined to the EST technology: the new cards for fan coil units (OBV10) and for cassette units (OBU10) can be connected to the new OMNIBUS consoles, designed for managing fan coil and cassette units with brushless motors. The consoles are available for on-wall installation (ODC236), fitted in the fan coil unit or for built-in the wall installation, on 503 modules (ODC235 white colour and ODC245 black colour).

OMNIBUS regulators give the possibility to fully control the fan speed (0-100%) and/or to manually select three fan steps (high, med and low speed): it is actually possible to set in every moment and very easily the three different levels of motor's rotation, in order to fulfil specific thermal or acoustical requirements.

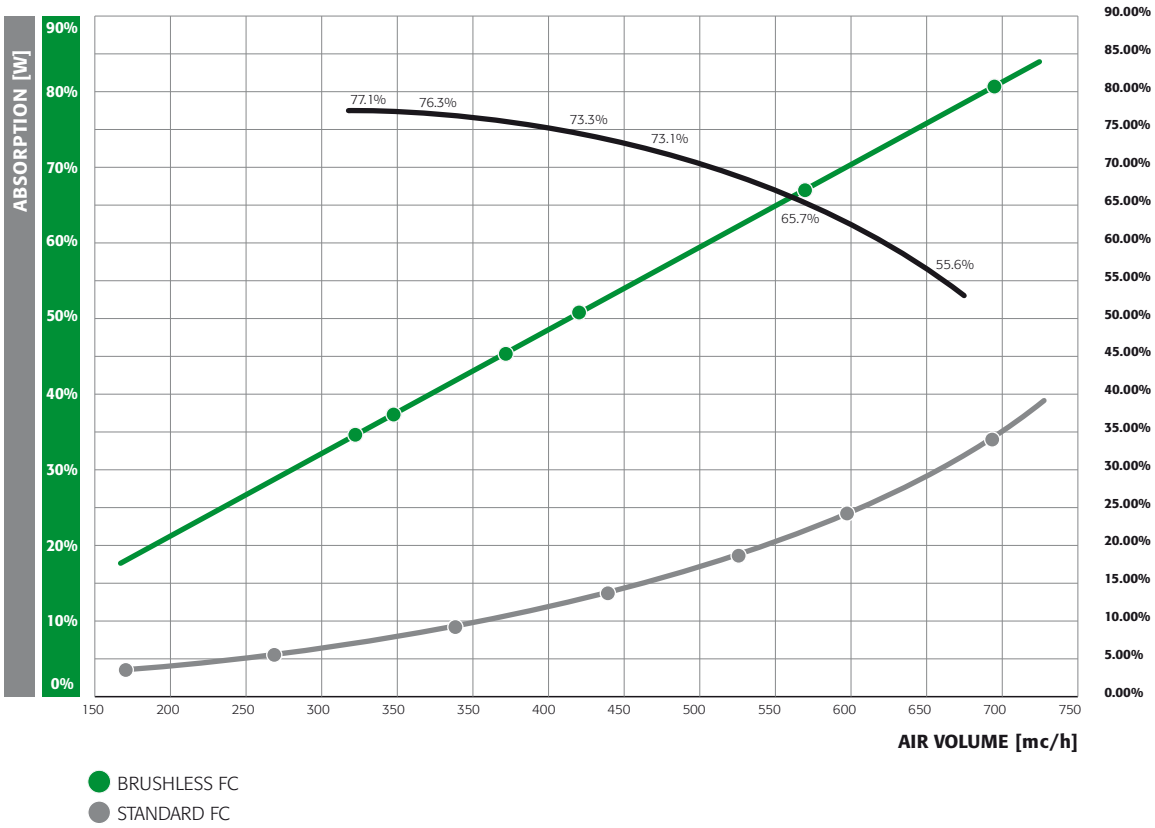


Traditional fan coil unit with a 3-speed motor
Inverter with brushless motor

Advantages of the Eurapo EST technology:

- **Energy saving: electrical absorption reduced up to 70%**

Energy Saving (%)



- **Bigger systems:**

the EST brushless technology gives big advantages in particular in terms of simplification of the electrical plant structure.

It is possible to connect more than 25 units to the same power supply line, with very low values of current dissipation at fully operational functioning.

The inverter used in the EST technology, unlike other similar products on the market, is using specific devices called active harmonic filters which permit to manage (and protect) with only one differential safety device (type A or B), different zones or areas in the same plant, by preventing a risk of interferences produced by the inverter itself.

The result is a sensible money saving for the plant, the possibility to reduce the section of the power supply cables and to reduce the number of safety devices to install in the system.

This technology is particularly indicated in buildings where the number of units is quite important.

Installation

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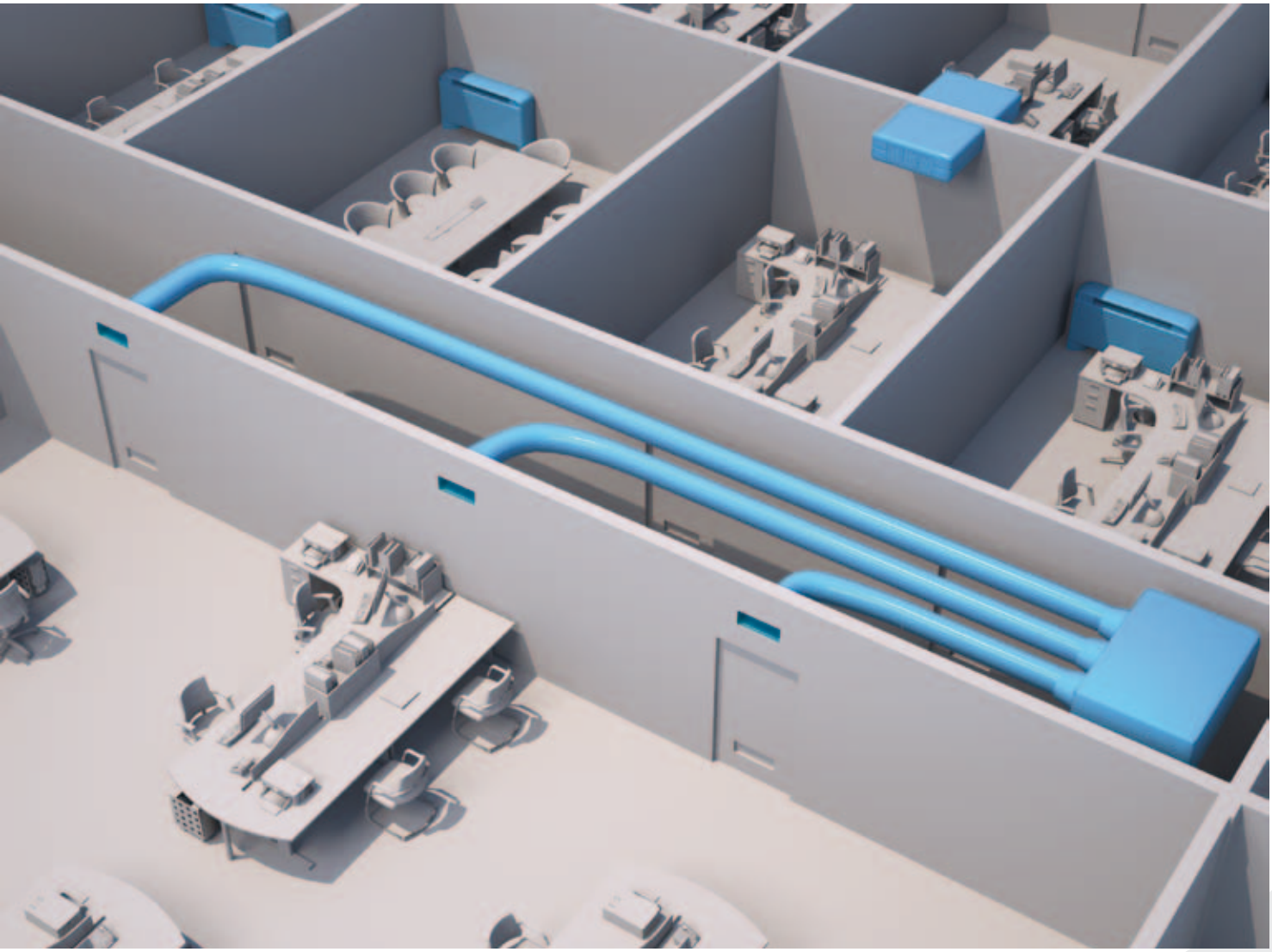
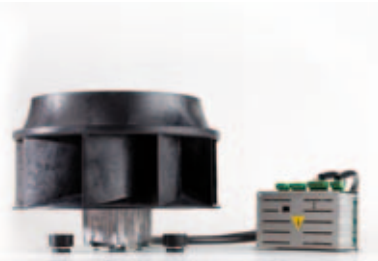


EST TECHNOLOGY
APPLIED TO EURAPO FAN COIL
UNITS AND DUCTED UNITS

Components

Brushless motor with inverter



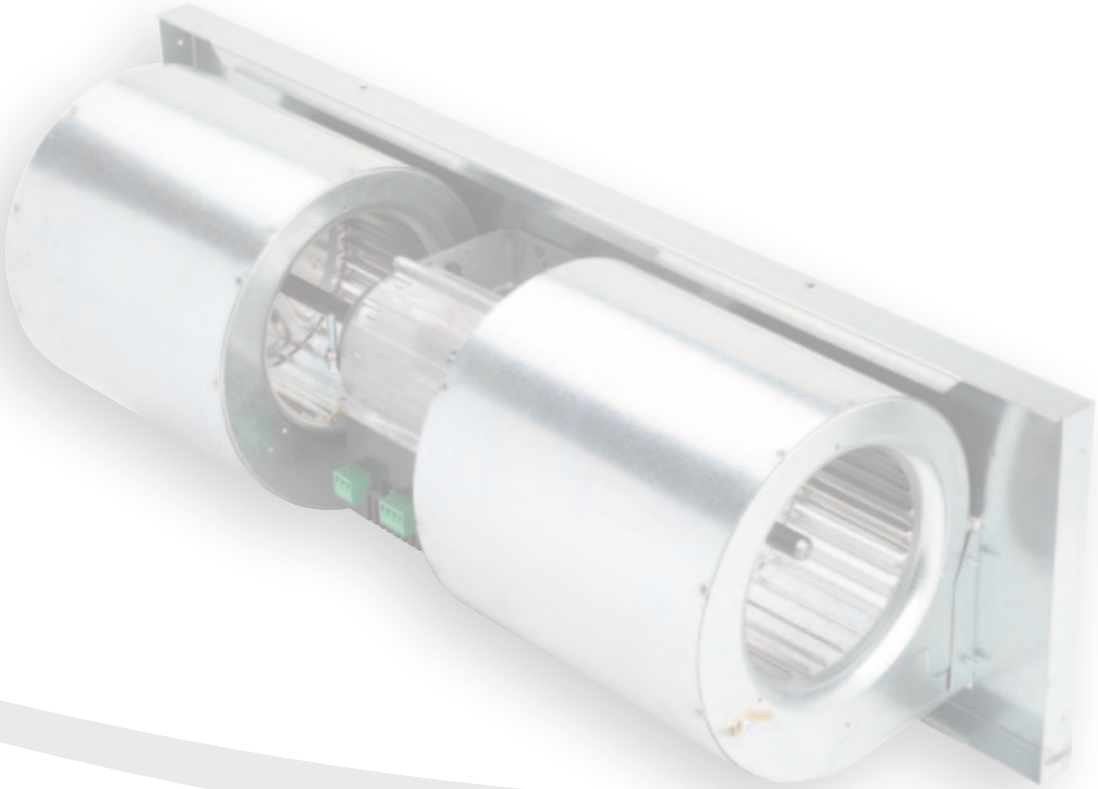
Electronic control with microprocessor

Electronic remote control with microprocessor

OMNIBUS card
for digital regulation

OMNIBUS Analogue Plus Console
for built-in application and remote installation either on wall or concealed on 503 module

OMNIBUS Display Console
for built-in application and remote installation either on wall or concealed on 503 module



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ENERGY SAVING TECHNOLOGY

Features

- Brushless motor with inverter
- 0-10Vdc control signal
- Low mechanical resistance and low overheating
- Wide range of fan speed regulation, especially at the lowest revolutions
- Continuous regulation of the fan speeds (0-100%)
- Specifically designed electronic and digital regulators, also for BMS systems
- Possibility to manually set the desired three fan steps (by using OMNIBUS regulators)
- Available for fancoil units, cassette units and ducted units

Advantages

Compared to the traditional brushed motors, the advantages of the EST technology are:

- Energy saving: electrical absorption reduced up to 70%
- Higher efficiency: possibility to adapt the air volume and the capacities accordingly to the real room loads
- Higher comfort: reduced oscillation of the temperature and relative humidity in the room
- Extremely quiet functioning of the unit, thanks to the operation at low revolutions
- Reduced wearing and higher reliability
- Longer expected lifetime of the motor
- The sole technology on the market that enables to connect more than **25 units** to the same power supply line, with very low values of current dissipation at fully operational functioning.

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