

DESIRE TO IMPROVE

WE ADVANCE ACCORDING TO THE **ErP 2015** DIRECTIVE IN
CREATING MORE ECO-EFFICIENT FANS



2015 ErP

2013 ErP





ErP DIRECTIVE

MORE ECO-EFFICIENT FANS

What does the new “ERP” directive mean?

The ErP Ecodesign directive 2009/2015/CE is going to encourage sustainable and economic use of the available energy resources. Its main goals are encouraging ecological design and fighting against climate change by reducing CO₂ emissions to the atmosphere.

In coming years, applying this directive will affect all energy receptor and consumer products in a way that is respectful to the environment.

- In effect until the year 2020, the EU is attempting to comply with the KYOTO treaty by increasing the use of renewable energies by 20% rather than those coming from minerals.
- This can be achieved by controlling and improving the quality of the performance of electronic devices with more efficient new designs.

For this reason, specific norms are being developed for each co-marketed product in the EU: Electric motors, water pumps, fans for residential and industrial environments, transformers, etc... And for this goal, a series of studies is being carried out for the different categories of apparatuses ranked by LOT, from which the first regulations are appearing, including those for fans.

How is the ErP directive going to affect fans?

The first regulation from the (EU) Committee 327/2011 has already been published, as a fruit of the study for the “LOT 11” category, which is going to regulate non-residential fans with absorbed electric power between 125W and 500 KW.

The regulation establishes two phases for its complete implementation:

- 1st phase: Starting in January 2013, the first level of requiring efficiency in fans will be applied.
- 2nd phase: Starting in January 2015 is when these levels of requirements will be increased.

These two phases are related with those already applied by the 2009/640/EC Directive on standard electric motors, which began last year in June 2011. Since then, Sodeca has been applying IE2 efficient motors in all of its fans.

In the second phase after January 2015, all electric motors used must comply with an IE3 efficiency. IE2+ Inverter motors and EC motors will be utilize as the only alternatives.

The efficiency of fans will be greatly improved through the use of more efficient motors. Improvements will also be introduced through the use of more appropriate configurations of turbine propellers or through new, more optimal designs.

After each phase, products not complying with the aforesaid requirement will not be able to be marketed in the European market.

Are there exceptions on the affected fans?

Yes, at least with the corresponding fans included in the LOT11 category, and apart from products that are regulated in the future by other categories that have not yet been finalized. The current (EU) 327/2011 regulation in effect corresponding to LOT11 contains exceptions, such as:

- Fans for ATEX explosive atmospheres.
- Fans exclusively for emergency use (400°C/2h, 300°C/1h, etc...)
- Fans specifically for working in environments greater than 65°C, or to bring gases to more than 100°C.
- Fans specifically for working in environments or temperatures of gases brought lower than -40°C.
- Fans with motors of special voltages Vac>1000V or Vcc>1500V.
- Fans for toxic, highly corrosive or inflammable environments.
- Fans used to transport non-gaseous (solid) substances, in industrial processes.

There is also the possibility of marketing fans that do not comply with 327/2011, until January 1, 2015, if they are destined to replace fans integrated in products marketed before January 1, 2013.

And with products exported to other countries outside the EU?

Compliance with this directive will only be required within the EU.

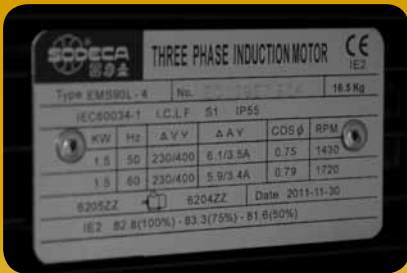
Will the efficient fans be specially marked?

Yes, CE labels will be prohibited on products that fail to comply with this directive. It should also be well specified which products comply, both in the catalogs and selection programs that are utilized.

Will these fans be more expensive?

Many Sodeca fans already comply with the requirements of the directive. But in cases where acquisition is significantly higher, the energy savings will make up for the investment. And as a result, they will be much more profitable over the long term. Sodeca is incorporating new, state of the art technologies with IE2, IE3 and EC system high efficiency motors, which will also provide other advantages of regulation, communication and interaction with other equipment.

SOLUTIONS THAT SODECA OFFERS AS ALTERNATIVES THAT ARE DETERMINED BY EACH CASE:



Directly using three-phase, synchronized IE2 and IE3 motors. Solution especially indicated for power greater than 1 CV (750W).



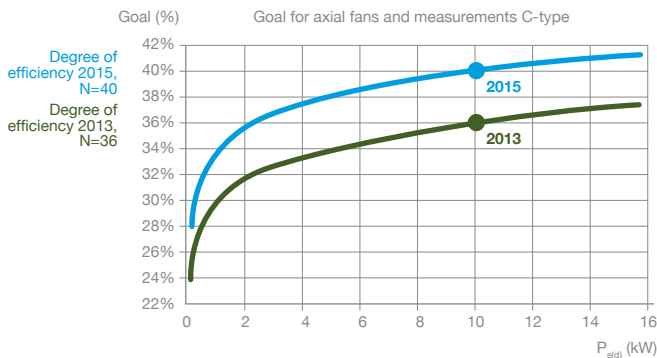
The same IE2 synchronized motors combined with marketed frequency regulators in the installation of the equipment, or through compact systems with the electronics already included in the motor or fan and assembled in the factory. This combination will facilitate adapting to 50Hz or 60Hz networks, with different voltages and including single-phase networks if the equipment's power allows for it.



Or also through BRUSHLESS, permanent magnet EC motors. Motors that permit obtaining very high efficiencies with speed and constant pairing independent from the charge. In comparison with normal induction motors, they can achieve equivalent powers but with much greater efficiency and reduced size. In this case, electronics are incorporated and therefore control and regulation functions will be incorporated.

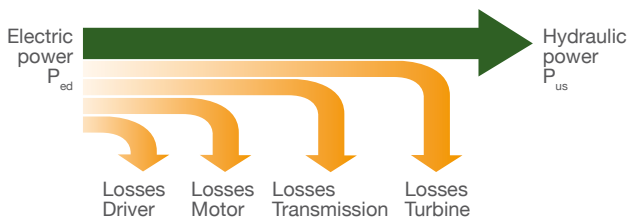
How is the goal of efficiency calculated?

The CE Regulation n° 327/2011 has assigned minimum requirements of efficiency in two phases, the first is applicable in 2013 and the second, which is more strict, in 2015. The goals of efficiency are determined according to the type of fan, the electric power consumed in the point of maximum efficiency of the fan and the type of aerodynamic test used. The degree of efficiency (N) is the value that the required efficiency provides for incoming electric power of 10 kW. N is different according to the type of test used and increases when passing from the first to the second phase of application. For example, in axial fans tested with C tests, the N value required for 2013 is 36% and for 2015 is 40%, as shown in the following image.



How is the efficiency of the fan calculated?

Fan performance is calculated at the point of maximum efficiency. This should be equal to or greater than the required goal. The calculation method is different according to the elements that the fan incorporates and whether or not it is in its final assembly.



IF THE FAN IS COMPLETELY SUPPLIED

a. If it does not have a speed driver:

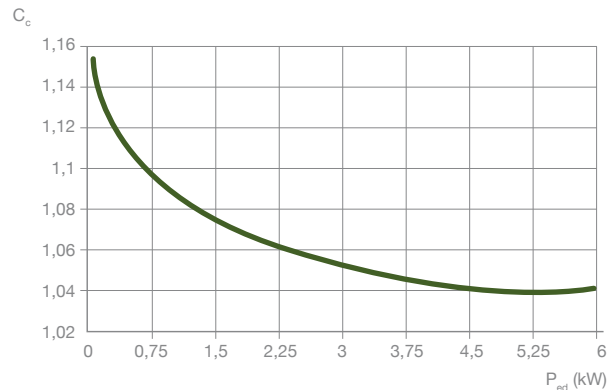
$$\eta_e = \frac{P_{u(s)}}{P_e}$$

b. If it does have a speed driver:

$$\eta_e = \frac{P_{u(s)}}{P_{ed}} \cdot C_c$$

Where, for the optimum point of efficiency:

- η_e is the global efficiency.
- $P_{u(s)}$ is the gas power of the fan.
- P_e is the incoming electric power for the motor supply.
- P_{ed} is the incoming electric power for the speed driver supply.
- C_c is the compensation factor of the partial charge.
For P_{ed} greater than 5 kW, it is 1.04. For powers less than 5 kW, the factor is greater. See the image attached.

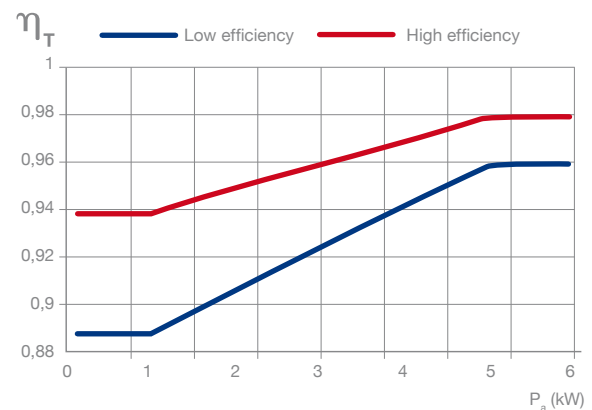
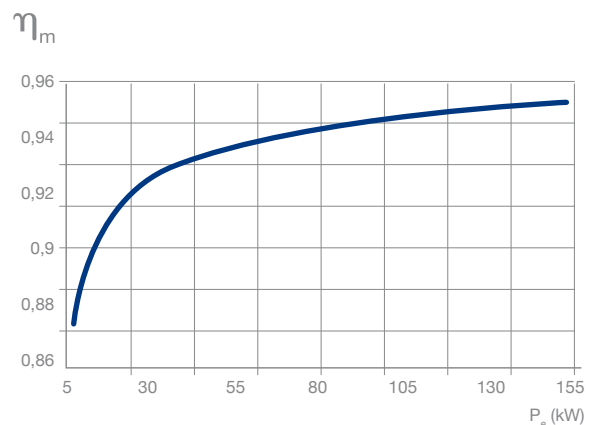
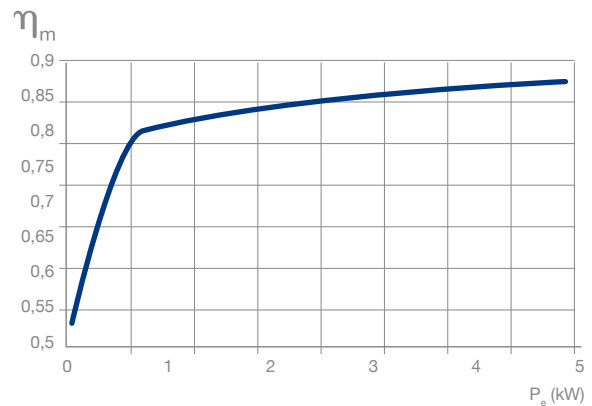


IF THE FAN IS SUPPLIED IN PIECES

$$\eta_e = \eta_r \cdot \eta_m \cdot \eta_T \cdot C_m \cdot C_c$$

Where, for the optimum point of efficiency: $\eta_r = \frac{P_{u(s)}}{P_a}$

- η_e is the global efficiency.
- η_r is the turbine efficiency, according to
Where $P_{u(s)}$ is the gas power and P_a is the mechanical power to the axis of the turbine.
- η_m is the motor efficiency. Motors should be used that comply with the (CE) Regulation n° 640/2009 for motor efficiency.
If the fan is supplied without a motor or the motor is not covered by the regulation of motors, the performance can be estimated according to the incoming electric power recommended (P_e (kW)) for the optimum point of energy efficiency of the fan. These values by default can be observed in the following image.
- η_T is the efficiency of the transmission system. For fans with direct transmission, it is equal to 1. The transmission is considered highly efficient when the belt width is equal to or greater than triple its height. Timing belts and toothed gears are also highly efficient. Its performance can be estimated through the power at the turbine axis (P_a (kW)). P_a values are considered constant that are less than 1 kW and greater than 5 kW. See the image attached.
- C_m is the compensation factor to take into account to adapt to the components. It is 0.9.
- C_c is the compensation factor of the partial charge. If there is no speed regulator, it is 1. If there is a driver, it has the same values as the fan in final assembly.



EFFICIENT WORK

SV/EW



In-line ducts fans, equipped with high efficiency, BRUSHLESS-EC motors controlled electronically.

NEOLINEO/EW



In-line fans for ducts of reduced size with electronically controlled motors DC-BRUSHLESS-EC, for extremely low consumption.

HEP/EW



Wall-mounted axial fans with a plastic propeller, equipped with BRUSHLESS INDUSTRIAL-EC motors and integrated electronics, with the possibility of being regulated by a 10K Ω , power meter, or a 0-10v signal.

HC/EW



Wall-mounted axial fans with a plastic propeller, equipped with IE-2 or IE-3 motors, depending on the model, ready to work with inverters.

HCH/EW



Robust wall-mounted axial fans, with a plastic propeller, PL version or aluminum propeller, AL version, equipped with IE-2 or IE-3 motors, depending on the model, ready to work with inverters.

HCT/EW



Robust long-cased axial fans, with a plastic propeller, PL version or aluminum propeller, AL version, equipped with IE-2 or IE-3 motors, depending on the model, ready to work with inverters.

CBD/EW



Centrifugal double-inlet fans with:

- BRUSHLESS-EC motor and integrated electronics, with the possibility of being regulated by a 10K Ω , power meter, or a 0-10v signal.
- IE-2 motor with electronics in an auxiliary box

CMP-S/EW



Centrifugal medium-pressure small fans, equipped with a INDUSTRIAL BRUSHLESS motor and integrated electronics, with the possibility of being regulated by a 10K Ω , power meter, or a 0-10v signal.

CMP-B/EW



Centrifugal medium-pressure fans, equipped with an IE-2 or IE-3 motor, depending on the model, ready to work with an inverter.

CMR/EW



Robust centrifugal single-inlet, medium-pressure fans equipped with backward-curved impeller, with an IE-2 or IE-3 motor, depending on the model, ready to work with inverters.

CAS/EW



Robust centrifugal single-inlet, high-pressure fans, equipped with backward-curved impeller, with an IE-2 or IE-3 motor, depending on the model, ready to work with an inverter.

HT-S/EW



Roof fans with a plastic fibreglass, equipped with BRUSHLESS INDUSTRIAL-EC motors and integrated electronics, with the possibility of being regulated by 10K Ω power meter, or a 0-10v signal.

HT-B/EW



Roof fans with a plastic fibreglass, equipped with an IE-2 or IE-3 motor, depending on the model, ready to work with an inverter.

CHT/EW



400°C/2h centrifugal roof fans with horizontal outlet air, and equipped with IE-2 or IE-3 motors, depending on the model, ready to work with inverters.

CVT/EW



400°C/2h centrifugal roof fans with vertical outlet air and equipped with an IE-2 or IE-3 motor, depending on the model, ready to work with an inverter.

CHRE/EW



Low noise centrifugal roof fans with a high efficiency, electronically controlled BRUSHLESS-EC motor.

AXIAL FANS
AND ROOF FANS



CENTRIFUGAL FANS
AND IN-LINE DUCT FANS



FANS FOR THE
SMOKE EXTRACTION



FANS FOR ATEX EXPLOSIVE
ATMOSPHERES AND OTHER
APPLICATIONS



NEW SERIES - NEW PRODUCTS

NEW CATALOGUES



NEW BUSINESS OPPORTUNITIES

LOW-PRESSURE
CENTRIFUGAL FANS



HEAT RECOVERY AND
FILTRATION UNITS



AIR CURTAINS FOR
COMMERCIAL AND
INDUSTRIAL APPLICATIONS



VENTILATION SYSTEMS
FOR HOUSES AND FLATS



Request
Information



Crta. de Berga, km 0.7
E-08580 St. Quirze de Besora
BARCELONA (Spain)
Tel. +34 93 852 91 11
Fax.+34 93 852 90 42

comercial@sodeca.com
Export sales: ventilation@sodeca.com
www.sodeca.com

