



ErP 2009/125/EC - Energy Related Products

Standards

The EcoDesign Directive 2005/32/EC, introduced on 6th July 2005 as the “Energy Using Product” Directive (EuP), aims at providing a general standard framework for establishing the requirements for the eco-compatible design of products with no negative impacts on health, safety or product functionality. Initially applied only to products using and producing energy, it has now been substituted by the 2009/125/EC Directive that extends its field of application to all energy related products (ErP) as a result of the “20-20-20” strategic plan with which the European Union has fixed the reduction targets at 20% of greenhouse gas emissions, a 20% increase in energy savings in the end uses and a 20% increase in the consumption of energy from renewable sources by the year 2020. It is important to underline how the ErP Directive and relevant European Regulation no. 327/2011, taking a whole fan assembly in consideration, from powering the inverter (when included in the objective efficiency calculation) to the motor and rotor. In this case, it is irrelevant if the fan is working as a single unit or as a component part of another assembly or production process.

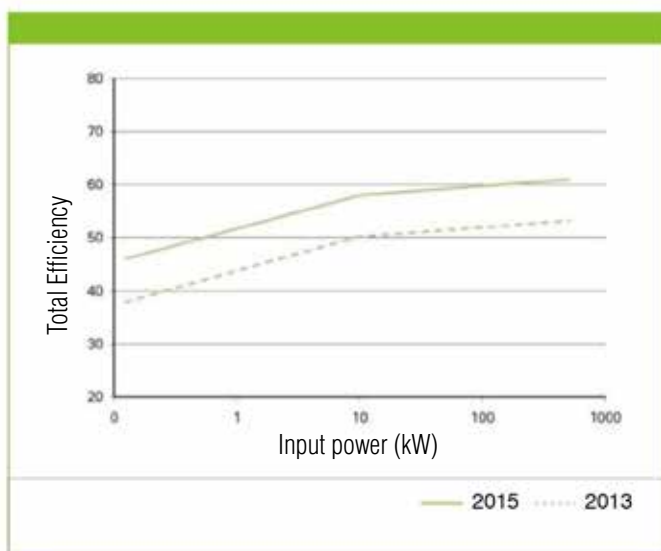
The Regulation explains how this Directive has to be applied as regards to fans with input powers ranging between 125W and 500W and foresees that, starting on:

1st January 2013, fans cannot have an energy efficiency below that defined in Annex I, section 2, Table 1

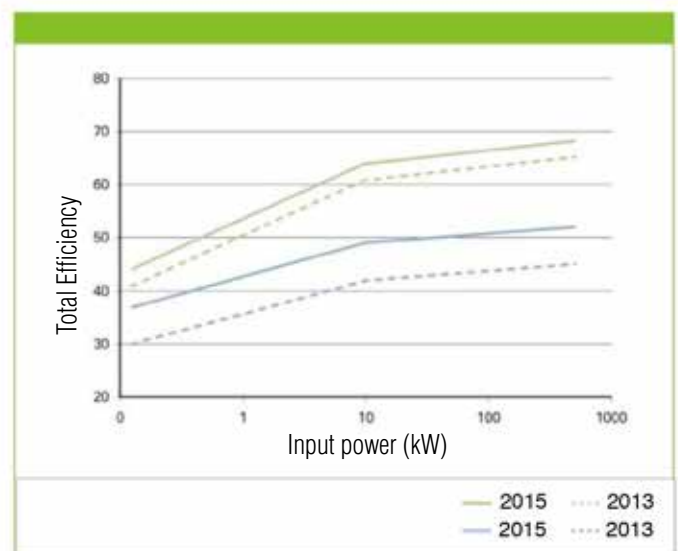
1st January 2015, fans cannot have an energy efficiency below that defined in Annex I, section 2, Table 2

The European Regulation defines the formulas to use to calculate minimum efficiency (target) for each fan. This procedure takes different power ranges into consideration for each fan type. Efficiency degree "N" is a constant in calculating objective efficiency the value of which will be increasing as from the year 2015 with respect to that defined for the year 2013. As a result, all European fan manufacturers and importers will no longer be able to put fans on the European market that do not reach the objective efficiency level established by the European Regulation no. 327/2011.

Below are the objective energy efficiency curves and the formulas they are calculated with, both clearly defined by European legislature.



Axial Fan

Centrifugal fan with reverse curved blades
Centrifugal fan with forward curved blades

FAN TYPE	MEASURING CATEGORY	EFFICIENCY CATEGORY	POWER INTERVAL P in kW	OBJECTIVE ENERGY EFFICIENCY	EFFICIENCY DEGREE "N" 1st PHASE 01.2013	EFFICIENCY DEGREE "N" 2nd PHASE 01.2015
AXIAL FAN	B	TOTAL	$0,125 \leq P \leq 10$	$\eta_{\text{target}} = 2,74 \cdot \ln(P) - 6,33 + N$	50	58
			$10 \leq P \leq 500$	$\eta_{\text{target}} = 0,78 \cdot \ln(P) - 1,88 + N$		
CENTRIFUGAL FAN WITH FORWARD CURVED BLADES	B	TOTAL	$0,125 \leq P \leq 10$	$\eta_{\text{target}} = 2,74 \cdot \ln(P) - 6,33 + N$	42	49
			$10 \leq P \leq 500$	$\eta_{\text{target}} = 0,78 \cdot \ln(P) - 1,88 + N$		
CENTRIFUGAL FAN WITH REVERSE CURVED BLADES	B	TOTAL	$0,125 \leq P \leq 10$	$\eta_{\text{target}} = 4,56 \cdot \ln(P) - 10,5 + N$	61	64
			$10 \leq P \leq 500$	$\eta_{\text{target}} = 1,1 \cdot \ln(P) - 2,6 + N$		

Exceptions to the standard

The European Regulation no. 327/2011 is not applied to fans designed to work:

In potentially explosive atmospheres (ref. Dir. 94/9/EC)

With working temperatures of circulating gas higher than 100 °C

With ambient working temperatures of the motor, if located outside the gas flow, higher than 65 °C

With annual mean temperatures of the circulating gas and/or ambient working temperatures of the motor, lower than -40 °C

Only in emergencies, for short periods of time (ref. Dir. 89/106/EC)

With a supply voltage > 1000 Vac or > 1500 Vdc

In toxic, highly corrosive or flammable environments or environments with abrasive substances

The energy efficiency specifications are not applied either to fans designed to work:

With an optimum energy efficiency of 8000 rpm or more

In applications where the "specific ratio" is greater than 1,11

For transporting non gaseous substances in industrial applications



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