



ErP Directive

ErP Implementing Regulation 327/2011

The new minimum efficiencies for electrically powered blowers
and the impact on Elektor devices



Background

As part of the Kyoto Protocol, the European Union agreed a package of directives and targets for climate protection and energy, which contains ambitious objectives (frequently referred to as „20-20-20 targets“). These objectives envisage a 20% reduction in CO2 emissions and a 20% increase in energy efficiency across the EU by the year 2020. In addition to this, the total share of renewable energies is set to increase to 20%. In order to achieve these objectives, the Energy-using Products Directive 2005/32/EC was adopted in 2005, which was subsequently renamed the Energy-related Product Directive 2009/125/EC in 2009 – also known as the Ecodesign Directive. Based on binding minimum requirements, the directive specifies the environmentally compatible design of energy-related products, whose compliance must be verified by the CE marking.

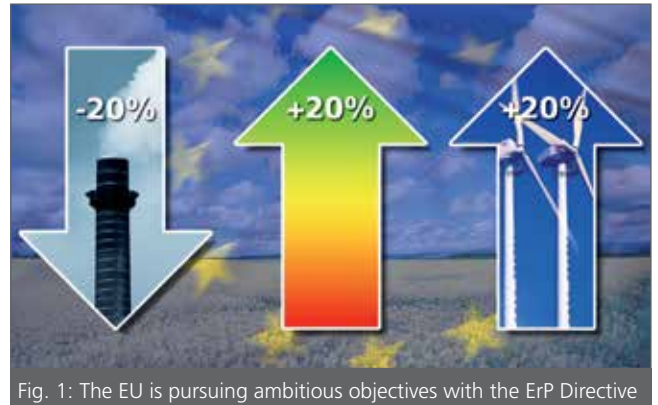


Fig. 1: The EU is pursuing ambitious objectives with the ErP Directive

The requirements pertaining to blowers

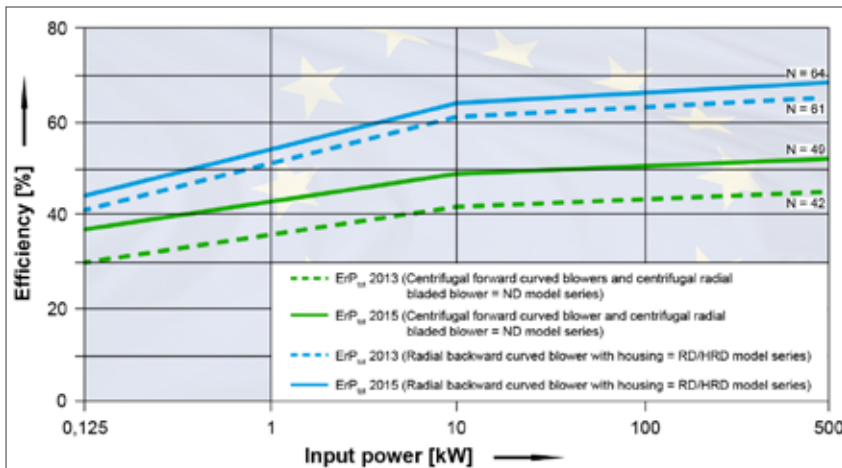


Fig. 2: The minimum requirements from Directive 327/2011 of relevance to Elektror

is irrelevant whether the blower is operated as a standalone unit or as a component of a system. The Directive does not affect side channel blowers.

The new minimum efficiency grades

The EU specifies corresponding formulas that are used to calculate the type-specific minimum efficiency grades. The calculation must take into account different power ranges and the installation situation. In this case, the efficiency N is a constant by which the requirements of 2015 are further increased over those of 2013. The efficiency curves (Fig. 2) are derived with the help of the formulas shown below.

Elektror model series	Blower model	Installation situation	Efficiency	Power range P_1 in kW	Minimum efficiency	Efficiency N 01.01.2013	Efficiency N 01.01.2015
ND	Centrifugal forward curved blower and centrifugal radial bladed blower	B, D	total	$0.125 \leq P_1 \leq 10$	$\eta_{\min} = 2.74 \cdot \ln(P_1) - 6.33 + N$	42	49
				$10 < P_1 \leq 500$	$\eta_{\min} = 0.78 \cdot \ln(P_1) - 1.88 + N$		
RD / HRD	Radial backward curved blower with housing	B, D	total	$0.125 \leq P_1 \leq 10$	$\eta_{\min} = 4.56 \cdot \ln(P_1) - 10.5 + N$	61	64
				$10 < P_1 \leq 500$	$\eta_{\min} = 1.1 \cdot \ln(P_1) - 2.6 + N$		

Fig. 3: Elektror blowers fall within two of the total of six fan types for which the EU provides formulas for calculating the minimum efficiency

EU Commission Regulation 327/2011 does not apply to all blowers and provides for exceptions

There are a range of blowers for which no minimum efficiencies are prescribed because the Commission Regulation does not apply to them or because they are treated as an exception.

The Commission Regulation does not apply to:

- ☺ Blowers operated by motors with an electrical input power of <125 W and >500 kW
- ☺ ATEX blowers
- ☺ Blowers operated for short durations for emergency purposes
- ☺ Fire effluent blowers or blowers for smoke extraction in the event of a fire
- ☺ Blowers which are suitable for gas delivery temperatures above 100 °C or below -40 °C
- ☺ Blowers for which the ambient operating temperature of the drive motor is above 65 °C or below -40 °C
- ☺ Blowers with supply voltages >1,000 V AC or >1,500 V DC
- ☺ Blowers for environments containing abrasive substances
- ☺ Blowers introduced to the market prior to January 01, 2015 as replacements for identical blowers, which were integrated into products that were introduced to the market prior to January 01, 2013

The requirements of the Commission Regulation do not apply to blowers designed to operate

- ☺ with an optimum energy efficiency at 8,000 rpm or higher (e.g. BOOSTED blowers and S-XP blowers);
- ☺ in applications in which the 'specific ratio' is over 1.11 (corresponding to the total pressure increase of 11,150 Pa);
- ☺ as conveying blowers

The time limits

The EU specifies an ambitious two-stage plan to implement the Energy-related Product Directive:



The consequences for Elektror blowers

Thanks to continuous optimization and energy efficiency measures, the majority of our blowers already meet the requirements of the Energy-related Product Directive. We will also be replacing some units with more efficient variants. This results in two categories of Elektror blowers:

- ☺ **ErP-compliant** These units comply with the Energy-related Product Directive.
- ☹ **Non-ErP-compliant** These units will be replaced with ErP-compliant units. (unit dimensions and/or construction and/or drive technology may change as a result)

For more detailed information, refer to the detailed chart overleaf.

An overview of Elektror blowers

	50 Hz			60 Hz		
	ErP status 2015	Replace-ment unit*	Changes will result in the 1 = Unit dimensions 2 = Connecting dimensions 3 = Construction 4 = Drive technology	ErP status 2015	Replace-ment unit*	Changes will result in the 1 = Unit dimensions 2 = Connecting dimensions 3 = Construction 4 = Drive technology
Low pressure blowers						
D 03 / E 03	☺ OK	-	-	☺ OK	-	-
D 04 / E 04	☺ OK	-	-	☺ OK	-	-
D 045 / E 045	☺ OK	-	-	☺ OK	-	-
D 05 / E 05	☺ OK	-	-	☺ OK	-	-
D 052 / E 052	☺ OK	-	-	☺ OK	-	-
D 060 / E 060	☺ OK	-	-	☺ OK	-	-
D 064 / E 064	☺ OK	-	-	☺ OK	-	-
D 066	☺ OK	-	-	☺ OK	-	-
E 066	☺ OK	-	-	⊗ not OK	No	-
D 07	☺ OK	-	-	☺ OK	-	-
D 072	☺ OK	-	-	☺ OK	-	-
D 08	☺ OK	-	-	☺ OK	-	-
D 082	☺ OK	-	-	☺ OK	-	-
D 09	☺ OK	-	-	☺ OK	-	-
D 092	☺ OK	-	-	☺ OK	-	-
2D 04	☺ OK	-	-	☺ OK	-	-
2D 045	☺ OK	-	-	☺ OK	-	-
2D 05	☺ OK	-	-	☺ OK	-	-
2D 052	☺ OK	-	-	☺ OK	-	-
2D 060	☺ OK	-	-	☺ OK	-	-
2D 064	☺ OK	-	-	☺ OK	-	-
2D 066	☺ OK	-	-	☺ OK	-	-
2D 07	☺ OK	-	-	☺ OK	-	-
2D 08	☺ OK	-	-	☺ OK	-	-
Medium pressure blowers						
RD 0	☺ OK	-	-	☺ OK	-	-
RD 10	☺ OK	-	-	☺ OK	-	-
RD 14	☺ OK	-	-	☺ OK	-	-
RD 16	☺ OK	-	-	☺ OK	-	-
RD 2	☺ OK	-	-	⊗ not OK	RD 4	-
RD 4	☺ OK	-	-	☺ OK	-	-
RD 5	☺ OK	-	-	☺ OK	-	-
RD 6	☺ OK	-	-	☺ OK	-	-
RD 62	☺ OK	-	-	☺ OK	-	-
RD 64	☺ OK	-	-	☺ OK	-	-
RD 65	☺ OK	-	-	☺ OK	-	-
RD 7	☺ OK	-	-	☺ OK	-	-
RD 72	☺ OK	-	-	☺ OK	-	-
RD 74	☺ OK	-	-	☺ i.O.	-	-
RD 8	☺ OK	-	-	☺ OK	-	-
RD 82	☺ OK	-	-	☺ OK	-	-
RD 84	☺ OK	-	-	☺ OK	-	-
RD 92	☺ OK	-	-	☺ OK	-	-
RD 94	☺ OK	-	1#	☺ OK	-	-
High pressure blowers						
HRD 1/2 T	☺ OK	-	-	☺ OK	-	-
HRD 1/3 T	☺ OK	-	-	☺ OK	-	-
HRD 1/4 T	☺ OK	-	-	☺ OK	-	-
HRD 1/5 T	☺ OK	-	-	☺ OK	-	-

*For product details of the replacement units, please refer to the current catalogues/data sheets or our website at www.elektor.com.

Due to IE3 - if you have any questions please contact our Product Management.

	50 Hz			60 Hz		
	ErP status 2015	Replacement unit*	Changes will result in the 1 = Unit dimensions 2 = Connecting dimensions 3 = Construction 4 = Drive technology	ErP status 2015	Replacement unit*	Changes will result in the 1 = Unit dimensions 2 = Connecting dimensions 3 = Construction 4 = Drive technology
HRD 14/5 T	☺ OK	-	-	☺ OK	-	-
HRD 2/3 T	☺ OK	-	-	☺ OK	-	-
HRD 2/4 T	☺ OK	-	-	☺ OK	-	-
HRD 2/5 T	☺ OK	-	-	☺ OK	-	-
HRD 60/4	☺ OK	-	-	☺ OK	-	-
HRD 60/5	☺ OK	-	-	☺ OK	-	-
HRD 60/7	☺ OK	-	-	☺ OK	-	-
HRD 65/2	☺ OK	-	-	☺ OK	-	-
HRD 65/4	☺ OK	-	-	☺ OK	-	-
HRD 65/5	☺ OK	-	-	☺ OK	-	-
HRD 65/7	☺ OK	-	-	☺ OK	-	-
HRD 7/12	☺ OK	-	-	☹ not OK	HRD 7 FU-105/11,0	1,3,4
HRD 7/17	☺ OK	-	-	☺ OK	-	-
HRD 7/23	☺ OK	-	1#	☺ OK	-	-

High pressure blowers – operated by frequency converter

HRD 1T FU/FUK-105/0,75	☺ OK	-	-
HRD 1T FU/FUK-105/1,1	☺ OK	-	-
HRD 14T FU/FUK-105/1,1	☺ OK	-	-
HRD 14T FU/FUK-105/1,5	☺ OK	-	-
HRD 14T FU/FUK-105/2,2	☺ OK	-	-
HRD 16T FU/FUK-105/1,5	☺ OK	-	-
HRD 16T FU/FUK-105/2,2	☺ OK	-	-
HRD 16T FU/FUK-105/3,0	☺ OK	-	-
HRD 2T FU/FUK-95/1,5	☺ OK	-	-
HRD 2T FU/FUK-95/2,2	☺ OK	-	-
HRD 2T FU/FUK-95/3,0	☺ OK	-	-
HRD 2 FU-130/7,5	☺ OK	-	-
HRD 60 FU/FUK-105/4,0	☺ OK	-	-
HRD 60 FU/FUK-105/5,5	☺ OK	-	-
HRD 60 FU/FUK-105/7,5	☺ OK	-	-
HRD 60 FU-135/11,0	☺ OK	-	-
HRD 65 FU/FUK-100/5,5	☺ OK	-	-
HRD 65 FU/FUK-100/7,5	☺ OK	-	-
HRD 7 FU-105/11,0	☺ OK	-	-
HRD 7 FU-105/15,0	☺ OK	-	-
HRD 7 FU-105/20,0	☺ OK	-	-
HRD 7 FU-120/15,0	☺ i.o.	-	-
HRD 7 FU-120/20,0	☺ OK	-	-

Large volume industrial fans

	ErP-Status 2015 50 Hz	ErP-Status 2015 60 Hz
Centrifugal fans		
CFL, CFM, CFH, CFXH, CFLD	☺ i.o.	☺ i.o.
Axial fans		
MAF, HAFC	☺ i.o.	☺ i.o.
Plug fans		
PFL, PFM	☺ i.o.	☺ i.o.
Roof fans		
MAFR	☺ i.o.	☺ i.o.

*For product details of the replacement units, please refer to the current catalogues/data sheets or our website at www.elektor.com.

Due to IE3 - if you have any questions please contact our Product Management.

1. Yet another Directive? How this differs from the changeover to IE2/IE3 motors.

Since June 16, 2011, only blowers equipped with IE2 motors are allowed to be put on the market in the European Economic Area (EEA). This requirement derives from the Energy-related Product Implementing Regulation No. 2009/640/EC of the EU, which only prescribes the efficiency of the electric motor.

In contrast to this, the Energy-related Product Implementing Regulation (EU) No. 327/2011 examines the efficiency of the entire operational „blower“ system, consisting of the control electronics (if available), motor and impeller. In this case, it is irrelevant whether the blower is operated as a standalone unit or as a component in a system.

2. Who is affected?

The Directive will be binding in the 30 EEA states. Since January 01, 2013, only blowers that meet the minimum requirements of Energy-related Product Implementing Regulation 327/2011 may be placed on the market in the EEA. On January 01, these minimum requirements will be tightened again. This regulation affects manufacturers as well as system providers and system operators. The Energy-related Product Regulation covers products manufactured in the EEA as well as imports from third countries. Products for export are exempt from the Commission Regulation; however, it is foreseeable that other countries will address this issue.

3. Which units are affected?

The Energy-related Product Directive deals with all products that consume energy in whatever form. One prominent example of this is the 100 Watt light bulb, now entirely absent from the market for some time now, which was also a measure from the Energy-related Product Directive.

In the area of blowers, all units operated at their most efficient point by motors with an electrical input power of between 125 W and 500 kW must comply with the prescribed minimum efficiency in accordance with the statutory deadlines. If they fail to reach these minimum efficiency requirements, they must be replaced by more efficient blowers. However, the Directive also provides for exceptions; you can find this listed under item 5.

You can find a detailed overview of all Elektror units affected on pages 4 and 5.

4. Are side channel blowers affected by the Energy-related Product Directive?

No, the situation with regard to side channel blowers remains unchanged.

5. Which devices are not affected by the Regulation?

The Commission Regulation does not apply to:

- Blowers operated by motors with an electrical input power of <125 W and >500 kW
- ATEX blowers
- Blowers operated for short durations for emergency purposes
- Fire effluent blowers or blowers for smoke extraction in the event of a fire
- Blowers which are suitable for gas delivery temperatures above 100 °C or below -40 °C
- Blowers for which the ambient operating temperature of the drive motor is above 65 °C or below -40 °C
- Blowers with supply voltages >1,000 V AC or >1,500 V DC
- Blowers for environments containing abrasive substances
- Blowers, which were placed on the market prior to January 01, 2015 as replacements for identical blowers, which were integrated into products which were put on the market prior to January 01, 2013

The requirements of the Commission Regulation do not apply to blowers designed to operate

- with an optimum energy efficiency at 8,000 rpm or higher (e.g. BOOSTED blowers);
- in applications in which the „specific ratio“ is over 1.11 (corresponding to the total pressure increase of 11,150 Pa);
- as conveying blowers.

6. What is the precise schedule for implementing the Commission Regulation?

As of January 01, 2013, only blowers that meet the minimum requirements of the Regulation may be placed on the market in the EEA. The second and final stage, which prescribes even higher efficiency grades, is due to enter force as of January 01, 2015.

7. When will ErP-compliant blowers become available?

A large proportion of the Elektror blowers are already ErP2015-compliant and available subject to the standard delivery times. We will replace non-ErP-compliant units with more efficient variants by January 01, 2015 at the latest. We are hap-

py to suggest an ErP2015-compliant solution for you today – **just get in touch!**

8. When should I make the switch to ErP-compliant blowers?

We recommend that you replace non-ErP-compliant blowers with ErP-compliant variants as soon as possible. For some units, there will be no identical equivalent, which may necessitate changes to the design of your system.

9. Must existing systems be modified?

No, existing systems do not have to be modified. Only blowers introduced onto the market in the EEA after January 01, 2013 are affected.

10. What happens if repairs are required?

In the case of repairs, a transitional period applies. As replacements for units launched on the market before January 01, 2013, identical units may be put on the market up to December 31, 2014. However, these replacement blowers must then be identified accordingly.

As of January 01, 2015, all replacement units released for sale must also be ErP-compliant.

11. What happens with my inventory of blowers?

Blowers that were placed on the market prior to January 01, 2013 within the and were put into storage do not have to be replaced and may be processed without any time restriction.

Blowers held in storage outside of the EEA, which are only placed on the market following their importation into the EEA, must comply with the current requirements of the Energy-related Product Directive at the time that they come onto the market.

12. How can I recognize ErP-compliant Elektror blowers?

ErP-compliant blowers can be identified by the CE marking among other things. As of 2013, only those blowers that comply with the ErP minimum requirements will be issued with this mark.

ErP-compliant Elektror blowers are also identified by an additional ErP rating plate on the blower housing (recognizable from the label „EcoDesign2009/125/EG“).

13. How can I find out now whether the Elektror blowers I am using will be ErP-compliant in the future?

On pages 4 and 5, you'll find a detailed list of all Elektror blowers covered by the Directive. You can also see here which blowers will be ErP-compliant after 2015. For non-ErP2015-compliant units, you will also find a suggested ErP-compliant Elektror replacement unit.

If your blower is not listed and you are unsure, simply contact our Customer Support.

14. The Elektror blower I am using is not ErP-compliant, what must I do?

From January 01, 2015, we can no longer provide you with these blowers. The easiest option is to discuss how to proceed with our Product Management or your responsible Elektror sales representative – together we'll find the right alternative for you!

15. What about the large steel blowers of model series CFL, CFLD CFM, CFH, CFXH, CFMT (centrifugal fans); MAF, HAFC, MAFR (axial fans); PFL, PFM (centrifugal plug fans)?

All of the above model series already meet the requirements of the Commission Regulation. The majority of large-volume industrial steel blowers are designed to be over 80% efficient, which far exceeds the minimum requirements.

16. Where can I find more information and support on the ErP topic?

Your Elektror sales representative and our customer support team are happy to assist you with any questions you may have about ErP.

You can contact our [Product Management](#)

- by phone: +49 711 31973-111
- by fax: +49 711 31973-116
- by E-mail: support@elektror.com



Elektror aircsystems gmbh
Hellmuth-Hirth-Str. 2
D-73760 Ostfildern
Phone: +49 711 31973-0
Fax: +49 711 31973-5000
info@elektror.com
www.elektror.com



Personal and direct!

Scan the code to find the right contact person at Elektror quickly and easily.

Or visit www.sales.elektror.com.

Your air technology partner