
EUROVENT
THE EUROPEAN COMMITTEE OF HVAC&R MANUFACTURERS

Eurovent case studies on ‘replacement parts’ and related ErP 2015 requirements

Revision of EU Regulation 327/2011 (‘EU Fans Regulation’)

Background

Art. 1 (3, d) of EU Regulation 327/2011 ('EU Fans Regulation') states that the regulation shall not apply to fans which are…

> **'placed on the market before 1 January 2015 as replacement for identical fans integrated in products which were placed on the market before 1 January 2013.'**

Furthermore, Art. 3 (1, b – emphasis added) defines that

> **from 1 January 2015, all fans shall not have a lower target energy efficiency than as defined in Annex I, Section 2, Table 2.**

Background (cont.)

- This eventually implies that, as of 1 January 2015, fan suppliers and appliers are obliged to use ErP 2015 (Tier II) compliant fans also when replacing fans (stand-alone or integrated in another energy relevant product designed before 2015),
- Additionally, due to common commercial practices, fan suppliers and appliers have to be able to supply functionally identical replacement parts for 10 years (through having the respective documentations available).

Consequences

- Replacement fans that do not comply with ErP 2015 criteria as defined in Regulation 327/2011 cannot be supplied any longer as manufactures would risk not adhering to the law,
- **Yet, as our case studies on ventilation products shows, in many cases this is not feasible and can lead to negative consequences for manufactures, intermediates and consumers!**
- Subsequently…

Position

Eurovent, its members and manufacturers represented through them, recommends VHK, the European Commission and related national decision-making bodies that…

Products sold before 2015 that are not in conformity with ErP 2015 requirements defined in Regulation 327/2011 should be excluded from the Regulation!

Finding a solution to this issue should have a high priority in order to ensure a stable and feasible framework for the industry and their customers.

Case structure (for ventilation products)

Scenarios

- Replacement of AC by AC fans,
- Replacement of AC by EC fans (or any other kind of permanent magnet motors).

Analysed cases

- Design change,
- Performance change,
- Controls,
- Technical declaration, DOC.

→ Leading to an impact assessment for each scenario

Replacement of AC by AC fans

First scenario

AC/AC replacement: **Design**

Estimated impact on…

Suppliers (fan manufacturer):

↓ Low

Appliers (repair service providers and customers):

→ Medium

- In most cases, suppliers can deliver identical replacement fans (with same volume, dimensions, fixing points, electrical connections).
- Yet (e.g.): Not in case of an axial fan with a different nozzle design, or a centrifugal fan with a larger case.

AC/AC replacement: **Performance**

Estimated impact on…

Suppliers:

↓ Low

Appliers:

↑ High

- Some motors may be replaced with faster and more powerful motors.
- Different operational points often increase RPM and airflow, but negatively impact power input and noise.
- Reducing the performance of improved replacement fan to the original duty may reduce the operating efficiency of the new fan below that of the original equipment.
- Difficulties regarding one to one replacement of fans that could not be made compliant without significantly changing the technology (e.g. 8 pole motors).

AC/AC replacement: **Controls**

Estimated impact on…

Suppliers:

↓ Low

Appliers:

→ Medium

- Depends on the motor type and electrical characteristics.
- Change in motor or electrical characteristics, controls and electrical components (e.g. MCB, current or switching device, cable dimensions).
- Overall: impact not only on unit itself, but also design of electrical plant.

AC/AC replacement: **Technical documentation, DOC**

Estimated impact on…

Suppliers:

↓ Low

Appliers:

↓ Low

- Succeeding product has already been certified, money had already been spent.
- Low risk as nothing has changed with regard to EMC specifications.

AC/AC impact assessment

Best case

- Possible to supply fan as replacement part in conformity with ErP 2015 requirements as specified in Regulation 327/2011.

Worst case

- Final costumer will have to buy a new machine if 'illegal situation' were to be avoided,
- Not possible to supply fans to suit designs before entry into force of Regulation 327/2011.

Replacement of AC by EC fans

Second scenario

AC/EC replacement: **Design**

Estimated impact on…

Suppliers:

↓ Low

Appliers:

↑ High

- Design changes same as with regard to AC/AC replacement, but more extensive modifications are necessary, such as…
- Changes to controller (e.g. VSD):
  - Integrated in motor or as external card, which would require additional space in the terminal box or additional point of electromagnetic compatibility,
  - Risk of antenna effect causing different electromagnetic behaviour.

AC/EC replacement: **Performance**

Estimated impact on...

Suppliers:

↓ Low

Appliers:

→ Medium

- Some motors may be replaced with faster and more powerful motors.
- Different operational points often increase RPM and airflow, but negatively impact power input and noise.
- Reducing the performance of improved replacement fan to the original duty is much easier and does not negatively impact the operating efficiency.

AC/EC replacement: **Controls**

Estimated impact on…

Suppliers:

↓ Low

Appliers:

↑↑ Very high

- AC/EC controls are completely different:
  - Changing from power control (relay) to signal control (0-10V, PWM, 4-20mA)
- Requiring completely new/additional electronic cards to be integrated either in motor or terminal box.
- Can cause significant complications with Building Management System:
  - Within buildings: additional cables needed for control system in case system not prepared for modifications
- Inrush and leakage current: change of safety device.

AC/EC replacement: **Technical documentation, DOC**

Estimated impact on…

Suppliers:

↓ Low

Appliers:

Uncontrollable!

- Documentation/operation manual has to be compliant with replaced fan.
- Declaration of Conformity:
  - Change in technical file must be controlled and verified (change on site close to impossible).
- Because of complexity, service person requires detailed manual. The latter might not be capable of doing replacement.
- Uncontrollable introduction of EC fan and corresponding cabling may cause EMC issues leading to CE non-conformity.

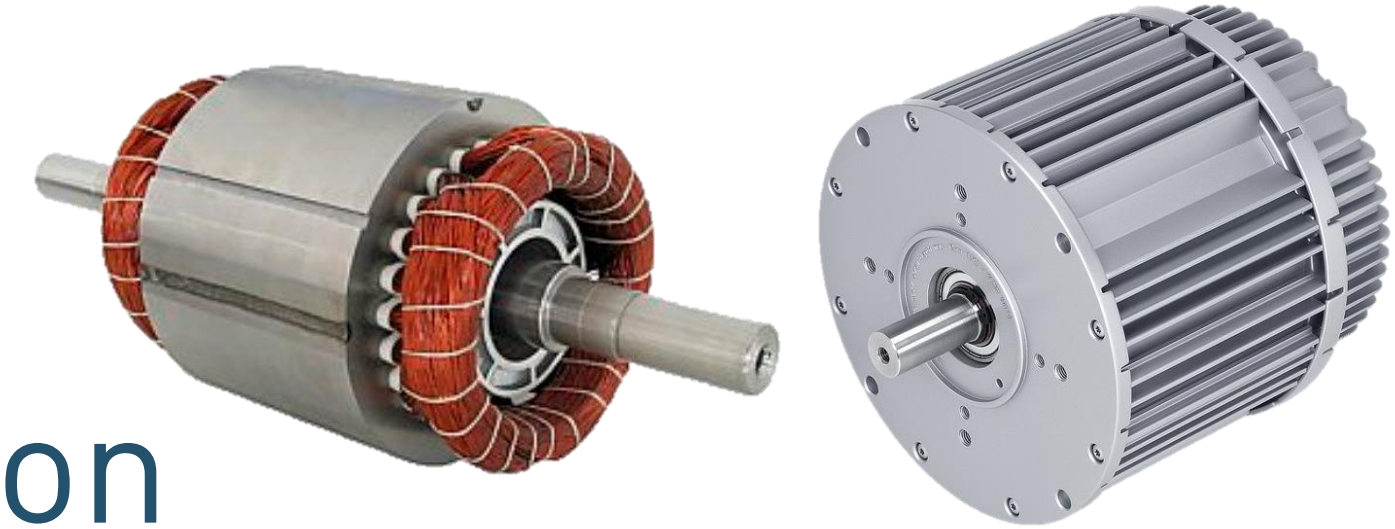
AC/EC impact assessment

Best case?

- Exchange of the entire unit including controls.
- Leading to very high expenses for unit and service costs.
- **Who is going to pay for this?**

Worst case

- No possibility of doing replacement due to mentioned control aspects.
- Replacement of the entire unit and not only the fan with all related consequences for manufacturer, intermediate, consumer and environment.
- Best case = Worst case!



Conclusion

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- Even a 1% replacement rate of fans due to non-compliance with ErP 2015 requirements could lead to significant costs and time investments.
- Certain shift of focus from innovating new products to redesigning old ones in order to comply with Regulation.
- In many cases, replacement of entire product necessary due to non-compatibility.
- In case of a building with a BMS: even to install a new unit including controls proves difficult due to different nature of AC/EC systems.

Loopholes?

Argument of stakeholders in favour of ErP 2015 conformity for 'replacement parts':

With the parallel production of complying (ErP 2015) and non-complying (non-conform replacement parts) fans, it becomes difficult to assess what are replacement parts and what not. Replacement parts could be used even if not aimed for replacement for implementation within products.

Counterargument:

There are, in any case, different production lines for export (outside EU) and non-export (EU Common Market) related fans. This could lead to the same loophole mentioned above.

Possible solution

- Introduction of product declaration and/or labelling that identifies products that are to be sold as replacement parts only and exempted from minimum efficiency requirements.

Refurbishment or replacement?

Eurovent suggests to consider the following definition approach concerning ‘refurbished fans’:

Refurbished fans shall not be considered as new fans placed on the market, as long as the parts which are repaired or replaced are identical to the original ones or provide a same or better efficiency.


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