EVIA Guidance Document

Guidance document for EN 17166 fans procedures and methods to determine the energy efficiency for the electrical input power range of 125W up to 500kW.

This standard provides procedures and methods to evaluate the compliance of the fan efficiency against the minimum efficiency requirements set by Regulation (EU) 327/2011.

This standard includes stand-alone fans and fans that are integrated in other products.

Especially in the definition of “what is a fan” or “not final assembled fans” and “legal aspects for responsibility to the market surveillance authority” the industry has some open questions.

This guidance document is intended to provide a clearer understanding of the fan industry.

1.) A fan can be supplied as component parts e.g. without a significant element like an inlet cone.

To be measured according to the harmonised standard EN ISO 5801:2017 Fans – Performance testing using standardised airways, the fan must consist of at least an impeller, a stator and a motor. It can be placed on the market as separate components or partly assembled without the stator. The term stator is not defined in 327/2011 but some of the varieties of stator are defined in the regulation, e.g. housing, orifice plate, orifice ring. The term Stator including the multitude of types are defined in EN 17166.

Regulation 327/2011 interpreters an impeller to be a fan thus an impeller placed on the market must meet the requirements of the regulation. For a manufacturer to be able to demonstrate compliance they must measure with a motor and a stator to determine the performance to demonstrate compliance.

a) May the original manufacturer make the declaration of conformity and transfer the ErP data on the fan?

Yes, but the original manufacturer must deliver the fan as a component part with the report that describes the significant element(s) used in the fan performance measurement. This documentation must be available for the customer and the market surveillance authority. The customer of the original manufacturer must use the described significant element in the final assembly. If they do not use the same elements, or copies, then they are placing a new fan on the market with a different performance characteristic and have a new obligation to demonstrate compliance to 327/2011.

b) Who is legally responsible to demonstrate compliance?

In all cases where the fan arrangement described by the original manufacturer is not used, the "customer" (person) is the fan manufacturer and is responsible for the declaration of conformity and documentation of the new fan performance measurement. This happens when there are some changes at the significant elements, e.g. due to different height or radius of a cone.

If the person uses the geometrically identical "significant element", they may use the original manufacturer's declaration of conformity. But the person remains responsible for ensuring that the correct parts are used.

If a different significant element is used, or if it is not the same as described by the original manufacturer then a different fan is being placed on the market and the person is now responsible for demonstrating compliance and declaration of conformity. This is confirmed with 1.3 of the Commissions Frequently Ask Document (FAQ)

2.) If a fan which is intended to be used without a "significant element", e.g. inlet cone, must such a fan meet the minimum efficiency requirements due to EU Regulation 327/2011?

A fan without a stator cannot be measured using installation category A, B, C or D of EN ISO 5801. Categories A, B, C & D require a stator to form part of a partition between the positive pressure side and negative pressure side of the fan. The stator can be as simple as an orifice panel as defined in 327/2011 and EN 17166. If an impeller, or impeller and motor, are placed on the market then the manufacturer shall state in the declaration and operating instruction what ancillaries (stator) and/or housing (stator) has been used to determine the performance and efficiency, reference 2.2 of the FAQ.

Installation category E describes a method to measure the free inlet and free outlet performance of a fan without a partition. EN ISO 13350:2015 Fans- Performance testing of Jet Fans describes an installation category E specifically for Jet Fans. Jet Fans according to the FAQ cannot currently be assessed with the methodology defined in EU Regulation 327/2011.

Comfort fans, for example a desk fan or ceiling fan with input power less than 125 W, are regulated within the scope of EU Regulation 206/2012.

Circulating Fans and large Comfort Fans with an input power greater than 125 W may or may not have a stator. They are within the scope of regulations 327/2011, as they are fans driven by motors with an electric input power between 125 W and 500 kW. Like Jet Fans they are within the scope, but as described in the FAQ for Jet Fans the minimum energy efficiency requirements cannot be enforced. The methodology and limits described within the regulation are not appropriate for Circulating and large Comfort Fans and currently there are no suitable methods in European standards. Until the regulation is revised the impeller within Comfort Fans are fans within the scope of 327/2011 and are required to demonstrate compliance.

3.) If a fan is defined for use with a VSD, what is needed in the documentation for the test report to declare the product conformity?

If the VSD is integrated, the efficiency value must be calculated with the compensation factor Cc as defined in the standard (Point 5.6.2.13, Table 5).

If the VSD is a separate item, the manufacturer must declare in the test report how he has determined the relevant efficiency for the fan. This can be done by calculation:

- with the compensation factor Cc by measurement of the power input from the fan and the VSD as a system, or

- by direct Power measurement between the fan motor input and the VSD output lines.

The separate VSD must be clearly identified (e.g. with the model number and the manufacturer of the VSD). Note the requirements of Annex I points 3.2(5), 3.4 and 3.5 of Regulation (EU) 327/2011.

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About EVIA

The European Ventilation Industry Association (EVIA)'s mission is to represent the views and interests of the ventilation industry and serve as a platform between all the relevant European stakeholders involved in the ventilation sector, such as decision-makers at the EU level as well as our partners in EU Member States. Our membership is composed of more than 40 member companies and 6 national associations across Europe, realising an annual turnover of over 7 billion euros and employing more than 45,000 people in Europe.

EVIA aims to promote highly energy efficient ventilation applications across Europe, with high consideration for health and comfort aspects. Fresh and good indoor air quality is a critical element of comfort and contributes to keeping people healthy in buildings.