

Helios-Position on “Box Fans and Roof Fans”

Background

In the course of the regulation EU 327/2011 revision process certain stakeholders have indicated a preference to include box fans and roof fans in the scope of the revised regulation.

Position

We share the position already stated by EVIA to support the inclusion of box fans and roof fans in the scope of the revised fan regulation EU 327/2011.

We are convinced that the inclusion of fans designed as box and roof fans would appropriately reflect their sole function - which is movement of air. Furthermore we see an important benefit that these fans would be regulated in a single regulation independently of their later use. This ensures an effective regulation and surveillance of these products without complicating the regulation structure and closes a currently existing loophole regarding box fans used for non-ventilation applications.

Reasoning

Box fans are designed to permit easy installation in a duct system. They incorporate forward curved, backward curved, bladed axial or mixed flow impellers and an electric motor within a casing having inlet and outlet connections, usually circular but sometimes rectangular. They are installed decentralized and inline and connected to an inlet and outlet duct.

On the other hand roof fans are designed to be easily mounted on the roof of a building by the provision of a curb for a flat roof or a purling for a sloping roof, and with an inlet flange to be connected to the exhaust duct system. All types of impeller may be incorporated according to duty e.g. axial flow, mixed flow or backward bladed centrifugal. There are many types of cowl fitted to give a low contour, whilst bird guards, soaker sheets, acoustic linings, back draught shutters and other features are frequently included.

The performance of such fans is affected by the connections made to its inlet and outlet duct connections. Ducting not only has a pressure loss, but can act as impedance, modifying the flow into or out of the fan casing. In extreme cases it can prevent the development of a full velocity profile. Ideally the flow velocity vectors should be symmetrical and axially aligned (free from yaw) and without swirl or spin (pre or contra) if the box fan is to develop its design duty. For this reason the performance of the integrated motorized impeller or fan can be affected significantly by the extra fan casing and a separate compliance testing of the integrated fan wouldn't be meaningful.

In consequence the performance of box fans and roof fans must be evaluated in accordance with ISO 5801 which is exactly in line with the testing procedure of fans covered by the current fan regulation EU 327/2011. The evaluation scheme set out in the fan regulation can be applied easily.

Both fan types are designed as standard build-up for moving air in various applications like e.g. ventilation, cooling, heating etc. No other air treatment like filtration, heating, cooling etc. is included. For this reason it's possible and reasonable to regulate these products independently from the intended later application in a single regulation.

The upcoming Ecodesign regulation for ventilation units (Lot6) covers box fans and roof fans used for ventilation purposes only. Used in other applications they are not regulated, which opens up a loophole for dubious players. By including box fans and roof fans in the scope of the fan regulation this loophole is closed and the consistency of the product range covered by the ventilation unit regulation (Lot6) is improved at the same time, because ventilation units are generally understood as products including at least some kind of air treatment. So far box fans and roof fans are the only products in Lot 6 without air treatment feature.

Proposal

Box and Roof fans should be included in the revised fan regulation as a separate category. As minimum efficiency requirements we propose to use exactly the fan efficiency η_{VU} required in regulation EU 1253/2014 for tier 2 (2018).

Summary:

The inclusion of box fans and roof fans in the scope of the revised fan regulation EU 327/2011 provides the following benefits:

- Ecodesign requirements for box fans and roof fans are set independently of the later application in a single regulation.
- The existing loophole regarding non-ventilation applications is closed.
- The conformity assessment is simplified both for manufacturers and market surveillance authorities, since these fans are tested in accordance with ISO5801 and rated as a whole. The integrated motorized impeller or fan doesn't need to be removed and to undergo a separate compliance testing.
- By assigning box fans and roof fans to the "fan family" regulated in Lot11 the entire Ecodesign regulation structure becomes more consistent, since all devices moving air only are regulated in the same regulation. Other products moving air but providing extra air treatment features are regulated within other Lots and regulations.



In this context the scope of the ventilation unit regulation (Lot6) is cleared up. The simplified Ecodesign regulation of box fans and roof fans has not at all a negative effect on the energy efficiency of these products. Quite the contrary further savings of carbon emissions will be achieved.

- It gives consistency with special application as dual-use box fans and roof fans designed for both ventilation under normal conditions and emergency use at short-time duty with regard to fire safety requirements as set out in Construction Products Regulation 305/2011 will be regulated according to the fan regulation with an allowance level as already fans have.

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