Position on the VHK discussion document from 21 November 2014
Preparatory study on the review of the Fans regulation 327/2011 (Lot ENER 11)

February 2015

General comments

Our first comment concerns the **general timing of the study**. Launched in April 2014, the final report is expected by March 2015, with a legislative proposal in the month to follow. We wonder if this gives sufficient time for industry to collect data, consultants to carry out an in depth analysis of the existing legislation's areas of improvements, and the Commission to make a legislative proposal. For the upcoming review of other regulations', we urge the Commission to foresee sufficient time to ensure an ambitious, robust and well-documented review proposal.

The existing regulation 327/2011 includes **fans integrated into other products**. This important provision needs to be maintained. Fans integrated into other products represent a large share of the fans' market and their related energy consumption. Furthermore, when a fan is ready to be shipped from the factory, it is impossible to tell if it is going to be sold as a stand-alone fan or be sold to an original equipment manufacturer and later integrated into a larger product. All products benefit anyway from having better integrated fans; there are no technical or economical disadvantages. Some argue that this creates double regulation for energy related products already regulated under the Ecodesign Directive, however this would only be the case if the manufacturer of the fan is the same as the manufacturer of the product in which the fan is incorporated.

We would like the study team to investigate the possibility and interest of setting a label on fans, especially for smaller equipment as it could be a good orientation for non-specialist buyers. Labelling fans does not necessarily need to translate into affixing an A-G scale. It could use another form of ranking and display (more tailored to professional purchasers and specific products – e.g. international classification of motors, IE2-IE3-IE4). **Savings related to the setting of an energy label** should at least be assessed.

We believe that the study should give more attention to the resource efficiency aspects, as detailed in the final part of our comments.

Amendments to the discussion document

These comments refer to the 21 November 2014 version of the discussion document on the review of the fans regulation 327/2011 (link).

- *Article 1, Subject matter and scope, paragraph 1: ~~The regulation~~ The fan energy efficiency requirements in Table 1 shall not apply to fans integrated in:*

  (i) products with a sole electric motor of 3 kW or less where the fan is fixed on the same shaft used for driving the main functionality;

(ii) laundry and washer dryers ≤ 3 kW maximum electrical input power;
(iii) kitchen hoods < 280 W total maximum electrical input power attributable to the fan(s).

Justification: This way, all other requirements will apply to the whole product group.

- *Article 1, Subject matter and scope, paragraph 1: 1. This Regulation establishes ecodesign requirements for the placing on the market or putting into service of fans with an end-use as component or as sub-assembly integrated into other products.*
Justification: Fans integrated into other products should be in the scope and provide all necessary information.

- *Article 1, 2: ~~This Regulation~~ The fan energy efficiency requirements in Table 1 shall not apply for fans which are specified to operate exclusively:*
Justification: This way, all other requirements will apply to the whole product group.

- *Article 2, 1: 'Fan' means a configuration of impeller, stator, electric motor, transmission or direct drive and possibly a variable speed drive, intended for the continuous displacement of gas with at its bep at an electric input power between ~~125~~ 30 W and 500 kW (≥ ~~125~~ 30 W and ≤ 500 kW), a pressure-increase ratio lower than 1.1 and an output air velocity lower than 51,5 m/s, and which is an axial fan, centrifugal fan, cross flow fan, mixed flow fan or jet fan.*

Justification: The proposed 125 W lower limit excludes millions of smaller fans that are either sold as stand-alone products (in exhaust fans in toilets, kitchen, etc.) or integrated into other products. They are usually purchased by users who do not have the technical background to assess their efficiency. A large share of these small fans (and their motors) has annual operating hours of 4000 and more; this means that an increased efficiency would be highly profitable. Small fans are usually powered today by AC shaded pole motors with efficiencies well below 20%. The simple introduction in the next tier of AC capacitor motors will increase their efficiency by 40%. The added cost of this initial improvement is negligible, with a payback time of around 1 year according to ECOS calculations.

➔ The purpose of a preparatory study being to establish a solid evidence base enabling political decisions, **savings related to the extension of the scope to smaller fans** should at least be assessed.

Note: In the proposal, the calculation and measurement basis for fans is the electric input (W) into the motor that drives the fan. This is not consistent with other Ecodesign regulations, as the product output is usually the reference.

- Annex I, 2: Fan energy efficiency requirements

- We support the decrease of the number of fan types from 6 to 4 (and 3 types at a later stage). This is a clear objective of the review, as defined by regulation 327/2011:

> Article 7: *"The review shall in particular assess the feasibility of reducing the number of fan types in order to reinforce competition on grounds of energy efficiency for fans which can fulfil a comparable function."*
>
> Recital: *"The review should in particular assess the setting of technology independent requirements, the potential of the use of variable speed drives (VSD) and the necessity of the number and scope of exemptions as well as the inclusion of fans below 125 W electric input power."*

Ideally, no differentiated geometric requirements should be given, but only one high efficiency development path. Newly developed fans have a wide choice of options for their geometrical design

without limiting their freedom of choosing cost effective and energy efficient solutions. The proposed type of centrifugal fans will eliminate forward curved fans. This is a good example for technological development, since manufacturers capable of producing forward (less efficient) fans are also able to produce backward curved fans (with higher efficiencies).

- We support the proposal of having higher efficiencies for smaller fans and flat efficiencies for the bigger ones. The lack of data on the performance of products provided by the industry cannot be used as an excuse not to agree on technical progress and regular efficiency improvements. We see the use of efficiency data taken from ventilation units and compressor as a valid method to describe the boundary conditions that products can achieve.

- We agree with the advanced efficiencies proposed for N2020. However, we suggest to remove the N2018 tier, as the time between 2018 and 2020 is too short to have a separate tier. This will give industry sufficient time (5 years) to adapt their products.

- Cross flow fans should be banned by N2020. Indeed, this technology will barely be able to reach 20% efficiency. The applications they are used in (kitchen hoods, etc.) can move to more efficient miniature fan types.

- We accept special provisions for both jet-fans and fans in cooling towers. Jet fans need a special air flow to operate. Their system is not directly comparable to regular air flow in fans. As for fans in cooling towers, they do not operate in regular "dry" air but are part of evaporative cooling systems. It makes sense to single out these two technologies, applying special measurement methods and efficiency requirements.

- Annex I, 3: Product information requirements of fans,

1. The information on fans set out in points 2(1) to 2(14) shall be visibly displayed on:

(a) the technical documentation of fans;

(b) free access websites of manufacturers of fans.

(c) the rating plate of the fan; it shall include on the lower right bottom a QR-code that links directly to the respective technical documents on the manufacturer's website.

(d) the rating plate of the motor; it shall include on the lower right bottom a QR-code that links directly to the respective technical documents on the manufacturer's website.

Please refer to the EC motor regulation N° 640/2009 and IEC 60034-1.

2. "(5) whether the calculation of fan efficiency assumed use of a VSD and if so, whether the VSD is integrated within the fan or the VSD must be installed with the fan;"

Comment: We do not support giving a calculation bonus to VSD-operated fans due to potential loophole and the lack of measurement standards.

- Annex formulas

"As regards synchronization with the ambition level and shape of the minimum efficiency curve, this is included in the graphs hereafter as the 'Motors 2020 (IE3)' level (from 4-pole motors)."

Comment: We have seen that efficiencies of 2-, 4-, 6-, and 8-pole motors vary; 4-poles are the most often used and have the highest efficiency. However, 2-pole motors with higher basic rotational speed are also often used to avoid higher transmission ratios with and gears. We believe this issue needs to be addressed and made transparent.

Resource efficiency

The discussion paper currently states: *"For recycling, special design options for the recuperation of rare earth materials from permanent magnet (EC) motors may have become worthwhile. At the moment, following consultations with recyclers, the interest is still low. Recovery of power electronics (variable speed drives) could be regulated in a future WEEE in the new category ' other' (to be defined in 2019). If that does not happen (currently researched by BIOIS for DG ENV) or stipulations are not stringent enough then there could be a role for Ecodesign."*

The WEEE Directive on waste electrical and electronic equipment (2012/19/EU) clearly states in its recital (11) and its Article 4 on Product design that it needs to be enforced through Ecodesign implementing measures: "Ecodesign requirements facilitating the re-use, dismantling and recovery of WEEE should be laid down in the framework of measures implementing Directive 2009/125/EC. In order to optimise re-use and recovery through product design, the whole life cycle of the product should be taken into account." These WEEE provisions pointing towards Ecodesign clearly illustrate that dealing with resource use aspects and end of life stages within the Ecodesign policy is not a case of double regulation, but a call by the European legislator to use the Ecodesign instrument as one essential vector to capture the potentials of product design stage for moving towards a resource efficient, circular economy that is to become pivotal for the future European economy and industry.

Therefore, we invite the study team to take a further look at the specific case of Rare Earth material used in Permanent Magnet motors. Permanent Magnet motors can contain rare earth elements which have been identified as critical materials in the medium-term based on supply risk, demand growth and recycling restrictions. Devices with rare earth magnets are quite hard to identify as such without having very specific technical know-how or without conducting quite intensive testing/dismantling of devices. Thus, a mandatory and standardised marking of products containing rare earth magnets above a certain minimum weight can significantly facilitate future recycling practices. We believe that a marking giving information on the presence of rare earth magnets as well as information on the applied type (e.g. SmCo, FeNdB) can positively influence the establishment of a European circular economy for rare earth elements.

- ➔ Introduce an information requirement containing the Bill of Materials and a product description such as an exploded view of the product, enabling to identify the content and localization of rare earths containing magnets, as well as their extraction process allowing safe and cost-effective recycling.
- ➔ Consider specific requirements for how these permanent magnets motors can be integrated in the fan to maximise cost effectiveness of reuse and recovery process (e.g no glue and no welding hampering the extraction/recovery of rare earths elements; or maximum amount of non-destructive disassembly time to foster the reuse of the magnets rather than the mere recovery of rare earths)

Finally, we also invite the study team to make proposals on how to improve the durability of fans. Many different test standards exist for fans (link) and manufacturers state to have their own cyclic or long term durability testing in place (link). A mapping of existing durability standards/tests and suggestions on their possible uses would be a first step.

END

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