

**From:** Geoff Lockwood <Geoff.Lockwood@uk.ebmpapst.com>  
**Sent:** 19 November 2014 16:14  
**To:** Roy van den Boorn  
**Cc:** René Kemna; Uwe Sigloch  
**Subject:** RE: Data fans with power <125W

Dear Roy,

We see there is an easy opportunity to reduce Carbon emissions and reduce energy consumption by extending the fan regulation scope down to 30 W. A European Commission study identified a savings potential of 21.4 PJ/year by 2030. We see this can be achieved without the cost of an expensive separate study. It can be achieved by simply extending down the scope of the current fan regulation 327/2011. We acknowledge it would be too severe an impact on the industry to simply extend the current limits down to 30W, it would cause more damage than gain. However incremental increases from a lower point over a longer period to eventually align with the >125 W slopes would allow industry to invest in the change and receive a return on that investment.

### **Energy saving**

In 2011 we responded to the then Study on Amended Working Plan under the Ecodesign Directive. The version 14<sup>th</sup> July 2011 of draft report task 1, 2, & 3 estimated that some 11 million fans in the range 30 W to 125 W are made and stay within the EU. Our response questioned those figures as we alone manufacture some 50 million units. With the final Report Task 3 version 16<sup>th</sup> December 2011 our figures were noted. The overall market sized was not changed in the final report.

At the same time we made comment to the savings potential and the Final Report identified a savings potential of 21.4 PJ/year by 2030.

The report discusses a change from a shaded pole motor to a EC-Motor (electronically commutated AC to DC motor) and comes to a conclusion that this would reduce the energy consumption by 50%. We would state that this figure should be larger with a change to EC-Motor. A 50% reduction can be achieved with a simpler change from AC shaded pole to AC capacitor motor. Our reasoning is explained below.

Taking a fan in the median position of the power input range 30 to 125 W, one with 75 W input. Taking typical values for a shaded pole motor efficiency of 20% and impeller efficiency of 40% then the air power out of the fan would be 6W. Changing to an AC capacitor motor of typically 40%, for the same air power out the input power reduces to 38W, a 50% saving. A change to EC would be even greater savings.

### **Fan market**

The question of course is how large is the market. The Study on Amended Working Plan under the Ecodesign Directive notes that 'the fan market, due to its ubiquitous properties, is notoriously difficult to quantify'. Using alternative accounting methods it can be shown that it is larger than the estimate 21 million units.

The European Ventilation Industry Association (EVIA) estimates the Ventilation industry is €7 billion with 60% of the industry consisting of fan manufacturing; €4.2 billion fan industry. That would put ebm-papst with 20% share of that sector.

ebm-papst manufactures and places within European Union 5.24 million units in the range 30 W to 125 W. Based on 20% share that would put the fan market manufactured within Europe at 26.2 million units, more than the 11 million units stated in the Study on Amended Working Plan. This would indicate the estimated saving is out by a factor of 2.

Further the study includes products that we see as outside of the scope of ecodesign so reducing its estimates, for example fans in cars are outside the scope but included in the Study on Amended Working Plan.



The EVIA estimates would also not include fans in PC's. ebm-papst is the only European based manufacturer of such fans and they have not been considered when estimating ebm-papst market share of 20%.

The 5.24 million units placed on the market by ebm-papst do not include fans for use in PC's. Further it does not include fans used as combustion fans as the EVIA market estimate would not and also we see that the majority of such fans already use EC-motor technology and high efficient impellers; the efficiency requirements of the boiler requires that only the most efficient fan can be used.

We would also question the stock of small kitchen hoods in the report, see 4.6.2 of Final Report Task 3. This is a group where simple gains can be made changing from shaded pole motors to capacitor motors. The report states 11%, 34 million units, of the 1,271 million units are in small kitchen hoods. Based on an average 5 year life it indicates 7 million units are placed on the market each year. However the draft report ventilation 2008, tren\_dl\_40=2008\_lot10-S07.56006, states 12 million stay within the EU each year.

This indicates that the potential savings are being under estimated.

We see a change to a capacitor motor is easy, where the motor is integrated in the impeller, such as an external rotor motor then they are physically the same. If the motor is separate then the impeller is on a shaft and is relatively easy to change. There is a requirement for a capacitor that would create some difficulties to locate in some applications. If the industry is given sufficient notice then we see that this could be accommodated.

Changes to the impeller are a little more difficult and would incur investment in new tools and take longer, but could be considered in a future uplift of the limit.

A change to EC-motor is more complex and could impact impeller designs and tools and so could be considered as a longer term second uplift.

We conclude that the scope of the current fan regulations could easily be extended down to 30W and propose an initial limit of N27 for axial fans and forward curved fans and N37 for backward curved fans, based on static efficiency as total is not relevant in this size of product and intended application.

This would be a step toward at least a 21 PJ/year saving and setting a path to achieve that saving in future years.

regards

**Geoff Lockwood**  
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**From:** Roy van den Boorn [mailto:r.van.den.boorn@vhk.nl]  
**Sent:** 09 October 2014 14:02  
**To:** Geoff Lockwood  
**Cc:** René Kemna  
**Subject:** Data fans with power <125W



Dear Geoff,

During the first stakeholder meeting for the fan review study, 1<sup>st</sup> of October, you mentioned that Ebm-Papst provided data concerning fans with a power <125W for the second working plan study. Is it possible to send those data to us so we can analyse them and incorporate them in the discussion document for the next stakeholder meeting?

Kind regards,

Roy

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