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Dear Sir,

My attention has been drawn to proposals for improvements in the energy efficiency of fans, to be incorporated in forthcoming editions of ErP directives and for which you are acting as consultants.

The increases in energy efficiency being proposed are I believe unachievable at this late stage in the product's development. We are not just starting out on the design of efficient fans. The first recorded instance of a Centrifugal fan is in Georgius Agricola's book 'de Re Metallica' of the 16th Century which described units employed for ventilation of metal mines in present day Germany. Improvements in design and construction have been continuous ever since such that fans may now be described as a very 'mature' product. Increases in efficiency were substantial in the earlier years but inevitably became less as the product improved and our knowledge increased.

The last major improvement in Centrifugal fans was the introduction of the backward aerofoil bladed unit in 1938 whilst commercially available high efficiency axial flow fans had to await the introduction of high strength easily castable aluminum alloys. These had firstly been produced for the aircraft industry in the 2nd World War.

We have now reached the asymptotic part of the development curve where even a small improvement in efficiency of one or two percent can only be achieved by a great effort. This will require research and technology beyond the reach of the large number of small and medium sized companies which make up the bulk of the fan industry. Your present proposals would undoubtedly lead to the demise of many such employers.

The definition of the fan efficiency to be used also needs to be more precise. Is it impeller efficiency, the shaft efficiency (ie including bearing frictional losses), the unit efficiency (including electric motor losses) or system efficiency (including control gear and line losses)? Not all of these additions are necessarily supplied by the fan manufacturer but inevitably lead to substantial reductions in his disclosed efficiency. I believe that VHK members need to read ISO 5801 and ISO 12759 both of which are recognized by CEN under the Vienna agreement and give lots of relevant information in their annexes.

You may well ask what my qualifications for making these assertions. I joined the fan industry in 1952. After successive promotions I became Technical Director of a very large fan company

in 1979 and continued in that post until retirement in 1999. Since then I have run a small independent consultancy unconnected to any particular manufacturer. I have chaired the ISO committee TC117 Fans for many years until the end of 2014. I also act as a consultant to FETA/FMA. My book – Fans & Ventilation – was published by Elsevier in 2005 and is considered by many as the standard text. It needs to be updated to take account of this proposed and present legislation!

Over the last 12 months I have been seconded (via the Ministry of Overseas Development) to assist CSIRO/ESCOM in South Africa. I had to demonstrate and train local engineers in the measurement of fan performance on site and how this could be improved. Frequently, present poor results were the result of poor advice and selection by unqualified consultants, rather than poor fan design.

I do hope you find these comments of use and would be happy to assist in any way.

Yours sincerely,

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