PILLER Blowers & Compressors	**Comments to 2nd Interim Report/Presentation 22 Jan 2015 2nd SH meeting**	Moringen,13.02.2015 Dr. Hermerath

we like to give some comments to the following issues of the report:

Annex I.1 (1) to (5):
Measurement categories “B” and “C” are wrong. Please take the right definitions from the original regulation.

Annex I (19):
Comment industry: The limit for scaling should not be changed from to 0,5 to 1,6 m. Manufacturers of single production need up- and downscaling.

II.1 Discussion
The efficiency grades N2020 on page 66 for centrifugal fans do not match to the formulas and graphics on page 73. The drawn levels and gradients for centrifugal fans are much too high. Here we agree with the ebm-papst discussion and proposal paper, but see an even higher relevance at bigger power > 10 KW. 83 % total efficiency (centrifugal BC, cat. B,D) at high power > 200 KW is benchmark and illusory when using the calculation method and a compensation factor C_m=0,9. The slopes of the curves have to be reduced to the actual level and there is only little scope left for the efficiency grades.
Further on there is need for different fan designs according to flow and fan pressure. Only a matched design can meet optimal efficiency. This is best represented by the specific speed n_q or Laufzahl σ_{opt}, which set flow and fan pressure into ratio and can be seen in the diagrams below . The diagrams show that the possible efficiencies of low flow centrifugal fans are significantly lower than of axial fans at the other end of the diagram. This should be respected by definition of the limits as function of the specific speed.
Alternatively but less preferred, we suppose the definition of another type for low flow centrifugal fans. Otherwise this product line will die and will be substituted by compressors with even worse efficiencies.

Old Annex II, calculation method
The calculation method is necessary for manufacturers with single production. Here a **compensation factor** C_m=0,9 must be used. This factor is much too low for bigger fans direct driven by asynchronous motors. The realistic factor is around 1,0, because the differences of the efficiencies of bigger motors according to regulation 640/2009 at full load or ¾-load are very low and the best efficiency point will be in this range. The compensation factor shall respect that.

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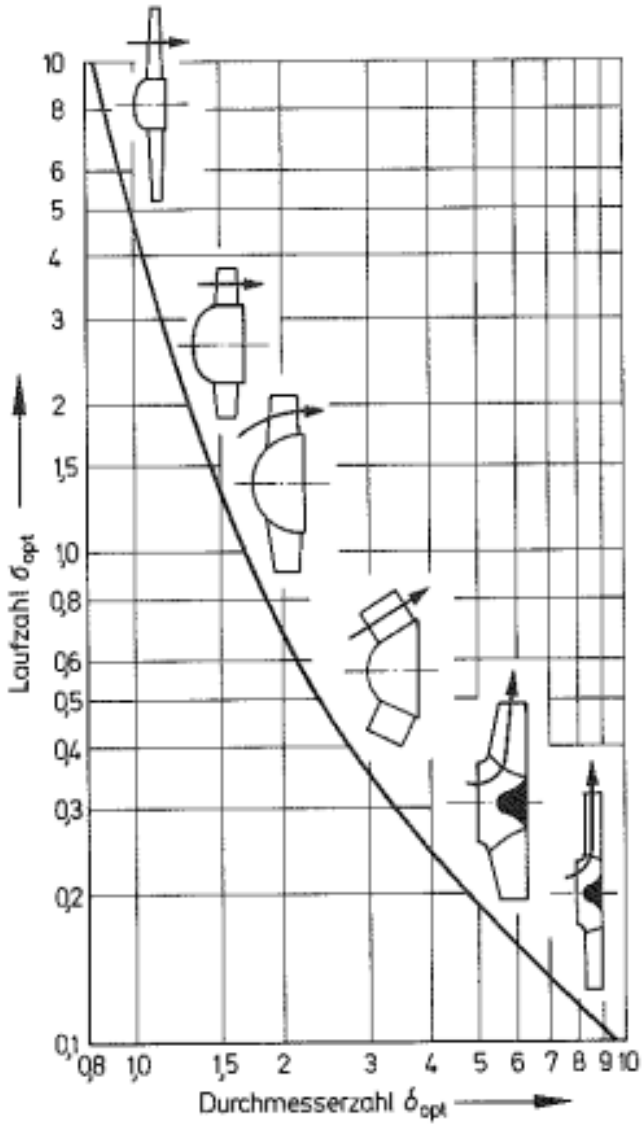

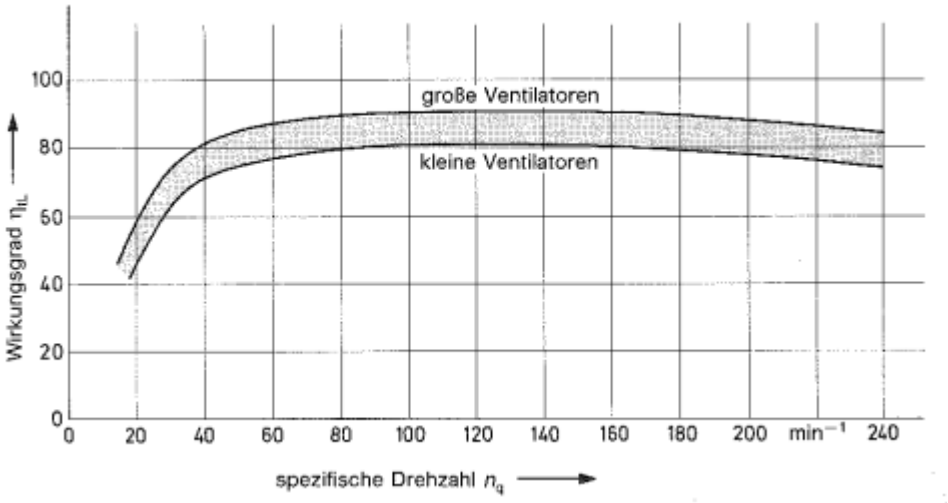

Conversion formula $n_q=157,8*\sigma_{opt}$

Cordier diagram from Willy Bohl: Ventilatoren