

Eurovent position

Air filtration

Air filters are related to high consumption of energy by the fans in the ventilation systems. There is a potential saving by using the most efficient air filter, in terms of low pressure drop and efficiency according to European filter standards. We have the EN13779:2007 standard to recommend air filter classes and quality for indoor air related to the outdoor air.

The air filters relates to EN779 and EN1822.

The Filter industry has a good knowledge of the air filters sold in the market and is able to estimate the total amount of air going through the ventilations systems in Europe.

Following energy saving potential (indicative) is based on the preparatory study Lot 11: Fans for ventilation in non residential buildings, April 2008 done by the Fraunhofer-Institut, Frankfurt.

- Energy consumption ventilation fans in Europe, total 197,000 GWh/year
- Total pressure drop of system/air filter, average 800 Pa/130 Pa is 16%
- In Europe average 600g CO₂/kWh

As for every fan a filter is placed the total fan energy consumption due to fans is 16% of the total fan consumption of 197,000 GWh/year is 31,500 GWh/year.

Reducing the pressure drop over the air filter by 10% with retained filtration efficiency is achievable. This means a saving potential of 3,150 GWh/year.

Based on 600g CO₂/kWh is this equal to 1,900,000 ton CO₂/year

Conclusion

Filtration systems are important downstream actors in reducing CO₂ emissions in Europe.

The air filter manufacturers have to take in consideration the environment and sustainability when developing new air filter products. A low over time, average pressure drop and the filter efficiency is important. Due to health concerns we are shifting to higher filtration classes which are coming together with higher pressure drops. So it is likely that the energy consumption in general of the filters is becoming higher.

Air filters are the main part that changes over time and the easiest way to influence the energy consumption of fans.

Filtration systems are energy related products in the sense of the ErP Directive

Eurovent therefore recommends the Commission to include filtration systems as an energy related product under the Study on Amended Ecodesign Working Plan 2012-2014 under the Ecodesign Directive (remaining energy-using and new energy-related products).

Duct and duct system

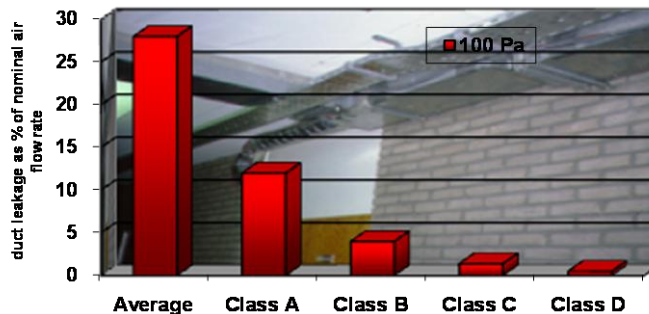
Ducts are defined in the European Norm for Ventilation for buildings - Symbols, terminology and graphical symbols — EN 12792: 2003 as the envelope of a space in which the air is carried. The assembly of the ducts and the other elements of distribution inserted into these ducts forms together the distribution network (or duct system).

A duct system is the conveyer system of treated air from one location to defined destinations in buildings and it is important that all the air arrives at the destination point/outlet.

This means that leakages are unwanted with respect to indoor climate and energy saving. Leakages are generally to measure via pressure loss and the Industry has scientific and historical knowledge in engineering expertise, in calculating the energy impact of such.

The European Standards define different classes of tightness for all kind (structural shape) of ducts typically used, and the duct Industry, are utilizing that as to produce and supply products and installation guidelines, so that final duct systems has the demanded tightness as specified. The tighter the duct and duct system is the lower the energy consumption is.

It is not only the excess of electrical power needed for the transport of the enlarged air volume which is wasted but in additional the unnecessary energy input needed for conditioning (heating, cooling and (de)humidification) this extra amount of air caused by leakiness.



Standards EN 15.242

Following energy saving potential (indicative and related only to the energy demand for the air transport) when ductwork meets class B tightness is based on the preparatory study Lot 11: Fans for ventilation in non residential buildings, April 2008 done by the Fraunhofer-Institut, Frankfurt.

- Calculations and scientific analyses shows an energy loss of 15% in Air-condition and ventilation installations when duct systems are on an average level in comparison to Class B.
- Energy consumption ventilation fans in Europe, total 197,000 GWh/year

Total energy losses for air transport only in Europe by using an average (class B) duct systems is 29,550 GWh/year. Based on 600g CO₂/kWh is this equal to 17,730,000 ton CO₂/year.

Conclusion

Ducts and ductsystems for “Air-condition and Ventilation systems”, are important downstream actors in reducing CO₂ emissions in Europe.

Ducts are energy related products in the sense of the ErP Directive

Eurovent therefore recommends the Commission to include ducts as an energy related product under the Study on Amended Ecodesign Working Plan 2012-2014 under the Ecodesign Directive (remaining energy-using and new energy-related products).

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