

Product Group 'Air filters', Position Paper, PP – 2015-02-09

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Eurovent position on the draft Green Public Procurement Criteria for the design, construction and management of Office Buildings

Background

In December 2014, the European Commission's JRC-IPTS has released the [draft proposal on 'Green Public Procurement Criteria for the design, construction and management of Office buildings'](#) (hereinafter 'GPP Office Buildings'), in which it recognises the importance of GPP criteria in the construction sector. To Eurovent and its members, this marks an **effective tool to achieve the energy saving potentials of the European buildings stock throughout their entire life cycle** while ensuring the development of European policies on sustainable buildings.

Eurovent welcomes the reference to the impact on indoor air quality of outdoor air pollution infiltrating into buildings in combination with emissions of harmful substances from building materials as a core criteria for ventilation and indoor air quality. The report highlights the role of ventilation system design to ensure healthy air and minimise the intake of external air pollution – an issue of ever-increasing global importance in which **Europe should be the forerunner**. It refers to the EN13779 Standard for ventilation system design and air filters selection in section B7.3.

The report furthermore emphasises that the most significant environmental impact of buildings relates to energy use during their occupation, with major contributors constituting lighting, heating, cooling and ventilation. That said, Eurovent sees **further improvement and efficiency potentials**.

Position

In order to ensure the right balance between the needed air filtration performance and the control of the energy use during the filters' life span, Eurovent and its members hold that the selection of air filters should be made according to EN13779 regarding the filtration levels. Yet,

the energy efficiency classification of air filters should be according to the [Eurovent RS 4/C/001-2015 RATING STANDARD for the CERTIFICATION of AIR FILTERS](#) (replacing the former EUROVENT 4/11 specification), as this marks the most widely acknowledged and efficiency-driven rating method within the industry and can be regarded as a global benchmark.

In order to support public procurement in selecting the most energy efficient filtration solutions, Eurovent has released a [RECOMMENDATION concerning PUBLIC ENQUIRIES for AIR FILTERS \(Eurovent Recommendation 4/19\)](#). For the update of the final version of the GPP Office Building,

Eurovent and its members strongly encourage the European Commission to consider the energy performance classification of air filters as a criteria for GPP of air filters for ventilation systems

We hold that this addition would effectively reduce the energy use of filtration systems as an outcome of the design phase. Air filter maintenance is important over time and filter changes occur several times a year. The **potential energy savings** made as a result of the selection by facility managers and maintenance operators in choosing the most energy efficient filters would **significantly increase building energy savings** while enabling a healthier working environment for employees during the building service life.

Additional information

Case study: Air filter and energy consumption

Air filters are commonly related to the high consumption of energy by the fans in 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. Air filter manufacturers make use of the EN13779 standard to recommend air filter classes and quality for indoor air related to the outdoor air. The air filters relate to EN779 and EN1822. The calculation below is estimated by knowledge about how many air filters are being sold in Sweden per year and then relate to the European volume by the investigation of energy consumed by ventilation fans in Europe (see below, Fraunhofer-Institut ISI). The Swedish case acts as an example. Calculations can be applied to other EU countries as well.

Energy consumption of ventilation fans in Europe

Country	GWh/year
Tyskland	43.217
Frankrike	32.861
England	28.628
Italien	24.259
Spanien	15.634
Sverige	12.279
Nederländerna	8.730
Finland	8.279
Belgien	6.729
Österrike	4.722
Grekland	3.546
Portugal	3.240
Danmark	2.872
Irland	1.563
Luxemburg	529
Total	197.087



Source: Fraunhofer-Institut ISI

Estimated air volume in Sweden

Taken the approximate number of air filters sold in the Swedish market, one is able to estimate the total amount of air going through ventilations systems in Sweden. As it is difficult to predict the number of fans running in the same market places and their energy consumption, the following point acts as a calculation basis: When there is a filter, there must be a fan.

Air filter deliveries of one year spread of pieces and air volume:

- Bag filters: based on face velocity of 2,5m/s (the most common type).
- Other filters: based on 50-80% of nominal air flow depending of type.
- This relates to approximately 1.052.000 m³/s of air pushed by fans through Swedish ventilation systems.

Energy consumption of ventilation fans in Sweden

Basic conditions

Air volume	1.052.000 m ³ /s
Total pressure drop of system	800 Pa
Running time	4.380 h
Total efficiency of fan*	$\eta = 0,33$

$$800 \times 1.052.000 \times 4380 / 0,33 \times 1.000 = \underline{11.170.327.273 \text{ kWh}}$$

*Average values

Fans for ventilation systems where air filters are used consume approximately 11 TWh/year
(Compare to the Fraunhofer-Institut ISI figure of 12,3 TWh/year)

Energy consumption and CO₂ emissions

Total energy consumption in Sweden 2008	146 TWh
All TV, lightning, etc.	20 TWh
Estimated consumption of all ventilation fans	11 TWh

Basic calculation conditions

CO ₂ /kWh (aver. Europe)	600g
Total pressure drop of system/air filter, average	800 Pa / 130 Pa (16%)

Calculation

Energy consumption of fans due to air filters	1,8 TWh
10% reduced pressure drop leads to	180 MWh

Conclusion

Reducing the pressure drop over the air filter by 10%, with retained filtration efficiency, is possible to achieve for the European industry.

Taking the above-mentioned calculation, CO₂ emissions could be reduced by 108.000 tons. This is equal to the emission of 35.000 cars in Sweden.

About Eurovent

Eurovent, the European Committee of HVAC&R Manufacturers, is the representative of Europe's major national associations in the industry of heating, ventilation, air conditioning and refrigeration. Based on objective and verifiable data, its 24 members from 18 European states represent more than 1000 companies, the majority small and medium-sized. In 2013, these accounted for a combined annual turnover of around 25bn euros and employed more than 120.000 people – making Eurovent one of the largest industry committees of its kind.

Eurovent's roots date back to 1958. Over the years, the Brussels-based umbrella association has become a well-respected and known stakeholder that builds bridges between companies it represents, legislators and standardisation bodies on a EU and international level. The association favours a level-playing field for the entire industry and strongly supports energy-efficient and environmental-friendly solutions. Eurovent holds in-depth relations with partner associations around the globe. It is a founding member of the ICARHMA network, supporter of REHVA and contributor to the EU's BUILD UP initiative.

Eurovent possesses two subunits. With Eurovent Certita Certification (ECC), it majority owns an independent certification company, which holds the ISO 45011 (17065) accreditation – fulfilling highest independency, reliability and integrity standards. Open to any company, it is known for its globally-recognised brand 'Eurovent Certified Performance'. Activities are complemented by Eurovent Market Intelligence (EMI), the association's second independent unit. Its Europe-wide data sets are frequently being used to support the development of EU regulation.

Members of Eurovent

Europe's major, national HVAC&R associations and their more than 1000 manufacturers



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Corresponding Members

Manufacturers in European countries with no national HVAC&R association representing them



Independent Subunits

Organisations with own structures that guarantee a full independency from the Eurovent association



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