

PRESS RELEASE

August 2020

HVAC - ISO 16890 influenced the filtration media market: Controversial or beneficial?



ISO 16890 is revolutionizing the world of HVAC. In this article we summarize the main aspects to stay updated on the topic and we show the most important impacts on the market of filter media.

Industry specialists within the HVAC filtration fields have been revolutionizing the international standard world. At the end of 2016, ISO 16890 standard for air filters in HVAC applications replaced EN 779.

ISO 16890 combined relevant factors from the two common air filter testing standards: EN 779, which is the standard in Europe and ASHRAE 52.2, which is the standard in the United States. Other regions of the world usually follow one of those two standards or even apply both.

Concerns about unrealistic test conditions and test results of EN 779 as well as limited applicability to real-world performance and low transparency for end-users, have been the main arguments to improve testing standards of HVAC filters.

New classification classes

One of the most important changes on ISO 16890 is the replacement of former standard filter classes G1-F9 by a classification system based on particulate groups ISO Coarse, ISO ePM1, ISO ePM2.5 and ISO ePM10. Through the new four reporting groups with 10 classifications per each category of the standard, the customers have the possibility of a better selection for a filter.

International implementation

The United States and other countries outside of Europe are not obligated to adopt this new standard. Especially in the US, there is a low acceptance for the new ISO 16890. This factor brought some controversies into the industry about the influence of different test methods and how the demand for high efficiency filters will increase due to those factors.

Eternal controversy

The discussion is divided into two groups. On the one hand, "Pro-ISO" highlights the benefits of having a global standard that is easier to understand and ensures a fair product comparison. On the other hand, "Anti-ISO" points out that Europe and North America have different HVAC concepts; therefore, it is hardly possible to test under same standard conditions. Another important disagreement is that ISO 16890 requires that all filters must be discharged before testing. The benefits of charged media are not taken into account, which is a major argumentation aspect for the "Anti-ISO" group.

Actual impact on filtration

The two main questions are: what are the impacts of the new ISO 16890 concerning customer demand and how can this standard affect the customer's target filtration market?

Considering both possible situations: ISO 16890 and ASHRAE 52.2 standards could have an equal co-existence or North America is deciding to adopt ISO 16890 for HVAC applications. A common impact in the market is expected by an increase of demand for high efficiency filters.

Standards procedure

Considering the steps to be carried out for the implementation of the new ISO 16890 standard, as an initial step the efficiency of the filter is measured with particles between 0.3 and 10 μm . Afterwards, a conditioning step is carried out in an isopropanol vapor atmosphere to eliminate the electrostatic charge. Then the efficiency of the filter is measure again after the conditioning step. The real efficiency is calculated as an average of the efficiency for the conditioned and unconditioned filter.

This is the critical point where discussion arise. Due to this conditioning step and mode of calculation of the real efficiency, filter types that do not exceed the requirements of a minimum of 50% efficiency for a certain category are downgraded to a lower category.

Implications for the filter demand

Taking into account the new standard procedure, it is possible to estimate the increase in demand for high efficiency filters, considering the greater transparency that the consumer has at the time of choosing a filter. At the same time, there are increasingly stricter environmental and health regulations, followed by customer awareness of indoor air quality, that continue driving the market.

Concerns around electrostatic filters

Electrostatic charged methods came to enhance filtration properties of filter media. Due to the charging applied to the media, it is possible to achieve high initial efficiency filtration and capture small size particles keeping the pressure drop low. Concerns are generate due to performance of electrostatic filters under e.g. high humidity or high temperature conditions, which can lead to a decrease or even eliminate the electrostatic charge of the filter media. The conditioning step that measures the efficiency of the filter is justifying this aspect.

The conditioning step eliminates the effect of the charging process and ensures that the reported real efficiency is independent of side effects such as partial loss or neutralization of the charge. Here it is important to remark that the additional beneficial effect of filter media due to the electrostatic charged method applied is not lost; it is just partially reflected in the reported real efficiency for the filter type.

Currently, some companies choose to load the electrostatically charged filter media as high as possible in order to achieve a higher filter class. This is possible as the filter class is defined as an average of the filter performance in the charged and uncharged states. Therefore, raising the performance of the charged state will increase the average performance and the rating.

Changing the rules of the game

The new ISO 16890 opened up the possibility for filter media manufacturers and filter producers to calculate prices in a more optimal way e.g. for an EPM10 70% instead of an EPM10 50%.

By improving the process or implementing techniques to achieve an optimal composite filter media, it is possible to obtain notable differences in efficiencies that help justify a higher selling price. Considering the possibility of improving the production of filter media to reach higher efficiency levels, it will be automatically reflected in the real efficiency reported by the standard.

This can be translated as an excellent sales tool to justify an increase in the price offered to the customer per higher filter class. Consequently, doing extra efforts to reach better efficiency levels will be directly visible for the customer.

As for the filter media, two viable directions are expected: More uncharged filter media or higher charged levels of the filter media. In both cases, higher filtration classes with better performance can be achieved. The eventual change in filter media choice will be determined by the application of the filter and the preference of the filter manufacturers. However, uncharged media, such as microglass, would allow for much more sustained filter performance, while highly charged synthetic media allow for easier converting and more flexibility in the application.

Schlegel und Partner with more than 25 years' experience in the filtration market and our in-depth understanding of nonwoven filter media industries can help you to develop your strategic plan to move forward into the filtration business regarding the implication of the new ISO 16890. Adapting to the new regulations and focusing on the potential doors opened, you can be able to be prepared for the future of air filtration.

Interested in further information?

Please do not hesitate to contact:

Cecilia Montilla, phone +49 6201 9915 73,

Cecilia.Montilla@SchlegelundPartner.de

© Schlegel und Partner 2020