TROX® TECHNIK
The art of handling air

FUNDAMENTALS OF THE LCC ENERGY FILTER

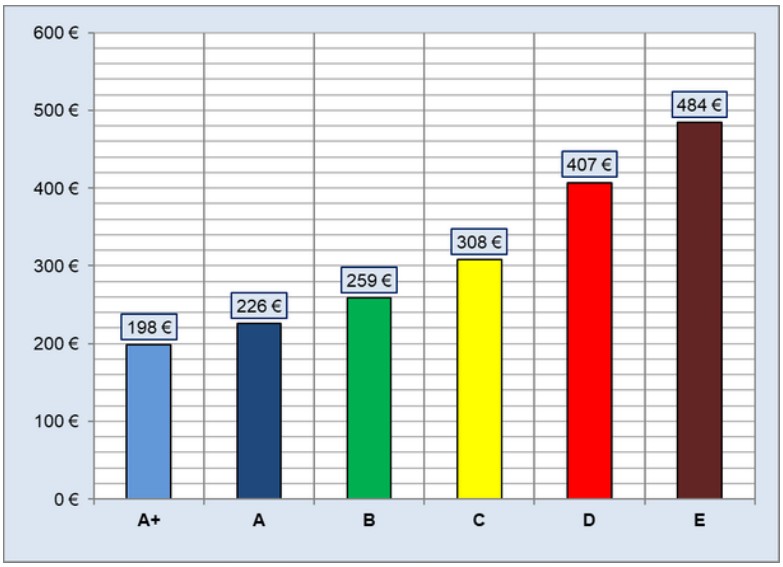
The energy efficiency classification system pursuant to Eurovent 4/21 is enabling users to compare the quality of filters with respect to their energy-related operating behaviour. In addition to assessing a given filter based on its energy efficiency, system operators are naturally also interested in its cost effectiveness. This in turn depends on the application, the prevailing dust concentration and the operating hours.

TROX has developed a Life Cycle Cost (LCC) tool in order to calculate the economic efficiency of fine dust filters. Customers are able to use their individual usage data in order to choose a filter which has the highest economic efficiency compared to other filters in terms of power consumption, services and service life.

The filter energy cost calculation is based exclusively on power consumption. Depending on filter selection, you can have an energy cost saving of over 50%.

Assumptions for the calculation

- The average cost of electricity: EUR 0.22 per kWh (industrial consumers, business electricity) (source de.statista.com)
- Performance (6000 h/year) pursuant to Eurovent 4/21 (calculation method for the energy use related to air filters in general ventilation systems)
- Annual power consumption in kWh/year, assumed average value for the energy efficiency class according to classification pursuant to Eurovent RS 4/C/001-2018 (rating standard for the certification of air filters)



Within a period of one year, one pocket filter of filter class ePM1 75% according to ISO16890, using a volume flow rate of 3.400 m3/h consumes EUR 407 in engery efficiency class D and EUR 198 in engery efficiency class A+. Changing the filters from energy efficiency class D to A+ resukts in an energy costs saving of 51% (EUR 209).

EXAMPLE CALCULATION:

The values listed below show the energy costs for the selected volume flow rate for pocket filters of filter class ePM1 75% according to ISO16890 within a period of one year as an example – using an assumed electricity price of EUR 0.22/kWh and a variety of energy efficiency classes. The annual power consumption is based on the average values of the energy efficiency classification pursuant to Eurovent 4/21.