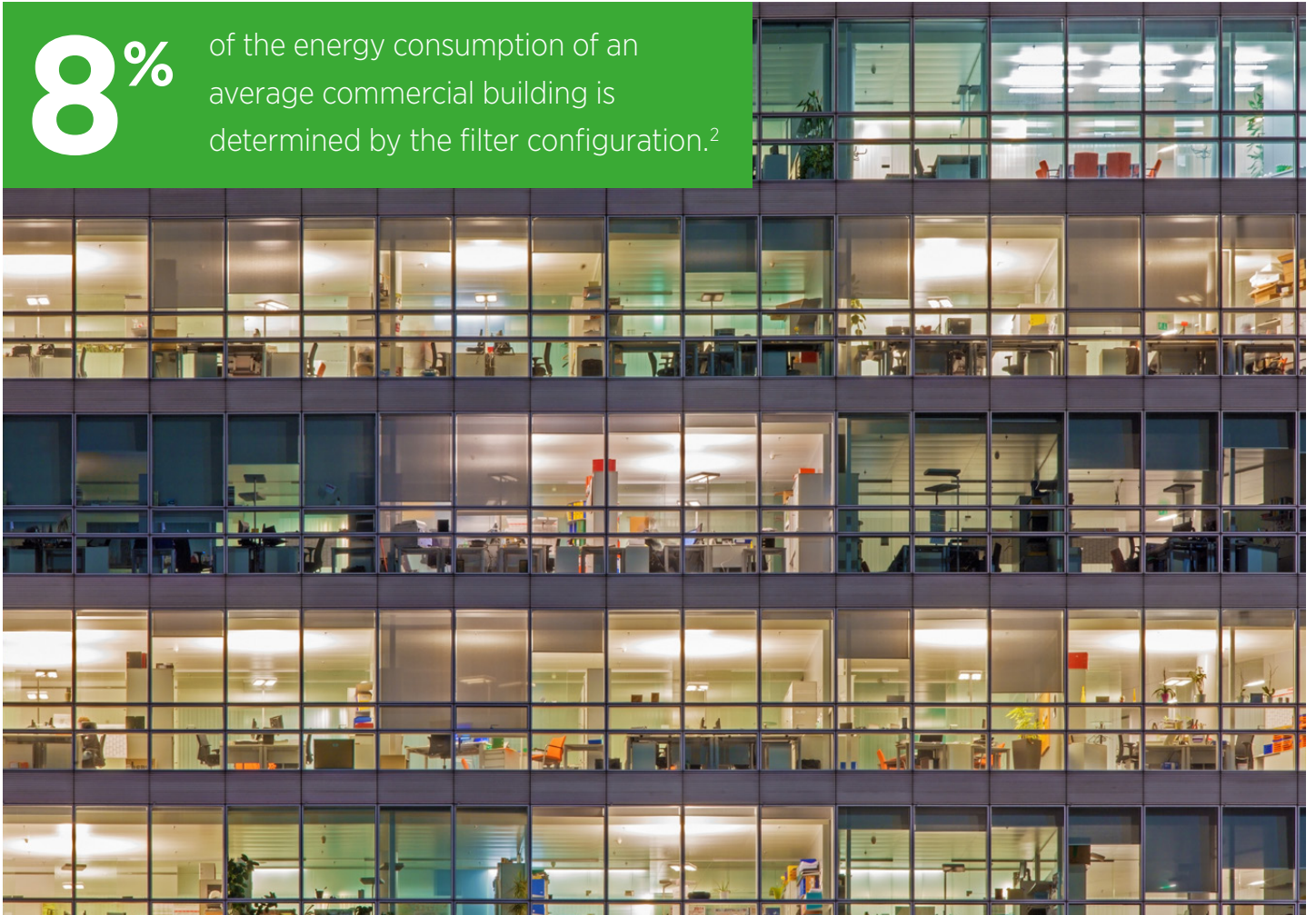


Energy efficient air
filtration
A simple and
effective way to
cut energy use

Energy efficient HVAC air filtration

8%

of the energy consumption of an average commercial building is determined by the filter configuration.²



EASY AND EFFECTIVE: A QUICK-WIN IN YOUR MISSION TO CUT ENERGY USE

With rising energy costs, companies everywhere are re-evaluating their energy usage. You may have already identified your HVAC system as a key consumer of energy, but you may not be aware just how significant it is.

On average, 50% of the energy usage in a commercial building is down to the HVAC system.¹ But perhaps even more surprising is that 16% of this consumption is down to the filter configuration.² So those air filters that you change periodically could be responsible for around 8% of your total energy spend.

The good news is that air filters can vary significantly in their energy demand. A simple switch from one product to another can have a dramatic effect on your overall energy use. What's more, assuming you are changing like-for-like, switching air filters typically requires no retrofit works or the associated disruption.

That's why opting for energy efficient air filters is one of the easiest, quickest and most effective ways of cutting energy usage in your commercial building.

¹ Optimal HVAC Control as Demand Response with On-Site Energy Storage and Generation System, Young M.Lee, Raya Horesh Leo Liberti 2015

² Klimatkatalysatorn 2021, Svensk Ventilation



Energy efficient air filters can help you find those extra energy reductions – good for your budget, your CSR objectives, and the environment.

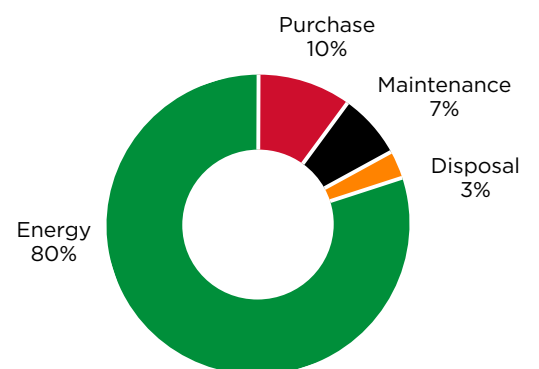
HOW DOES A FILTER 'CONSUME' ENERGY?

It has no power cable or batteries, so it may seem strange to talk of the energy consumption of an air filter. But a filter consumes energy thanks to the resistance that it causes to the air flow in the HVAC system. The higher this resistance – or pressure drop – the harder the fan has to work to shift the same volume of air. If we can lower the pressure drop of the air filters we can reduce the speed of the fan, and save energy and money.

In fact, it has been estimated that every Pascal saved in pressure drop will reduce your energy spend by around 2 to 3 € each year.

WHEN CHEAPER COSTS MORE

Energy consumption is by far and away the highest cost associated with an air filter. Eurovent – the European Association of Air Handling and Refrigerating Equipment Manufacturers – found that 80% of a filter's total cost of ownership comes down to energy consumption. In comparison, the purchase price accounted for just 10%. That's why a filter with a cheaper upfront price may well end up costing much more in the long run.



Typical life cycle costs of an ePM1 air filter

Energy-rated air filters

As easy as A+ to E

EUROVENT ENERGY CLASSIFICATION

Fortunately, choosing an energy-efficient air filter is quite a straightforward task. The Eurovent trade association operates an energy rating scheme for air filters and it follows a similar format to that used with refrigerators, televisions and many other consumer goods.



The top filters go into the highest A+ category, and other filters are distributed into the remaining classes according to their pressure drop performance. Filters are categorized according to their ISO 16890 rating, with the lower filter grades providing greater energy efficiency. For example, a B-rated ePM2.5 55% filter has a lower energy consumption than an A+-rated ePM2.5 90% product.

EUROVENT ENERGY RATING - ANNUAL ENERGY CONSUMPTION IN KWH

ePM1	A+	A	B	C	D	E
50 & 55%	800	900	1050	1400	2000	> 2000
60 & 65%	850	950	1100	1450	2050	> 2050
70 & 75%	950	1100	1250	1550	2150	> 2150
80 & 85%	1050	1250	1450	1800	2400	> 2400
>90%	1200	1400	1550	1900	2500	> 2500

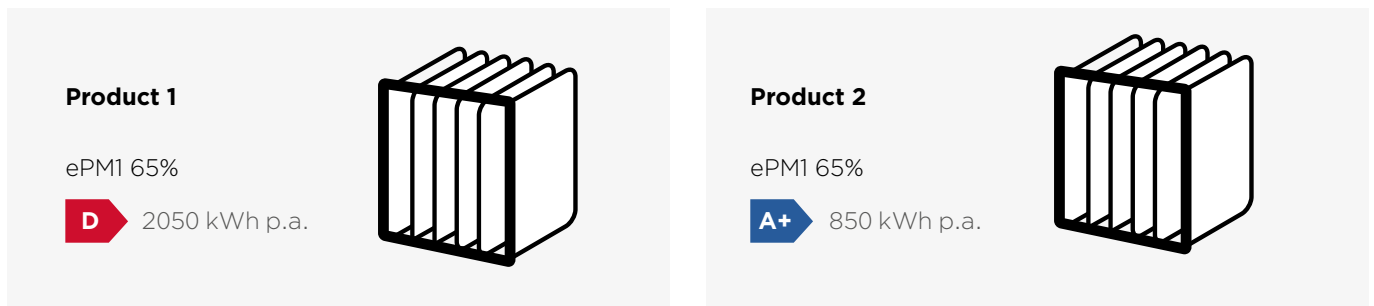
ePM2.5	A+	A	B	C	D	E
50 & 55%	700	800	950	1300	1900	> 1900
60 & 65%	750	850	1000	1350	1950	> 1950
70 & 75%	800	900	1050	1400	2000	> 2000
80 & 85%	900	1000	1200	1500	2100	> 2100
>90%	1000	1100	1300	1600	2200	> 2200

ePM10	A+	A	B	C	D	E
50 & 55%	450	550	650	750	1100	> 1100
60 & 65%	500	600	700	850	1200	> 1200
70 & 75%	600	700	800	900	1300	> 1300
80 & 85%	700	800	900	1000	1400	> 1400
>90%	800	900	1050	1400	1500	> 1500

Energy savings In perspective

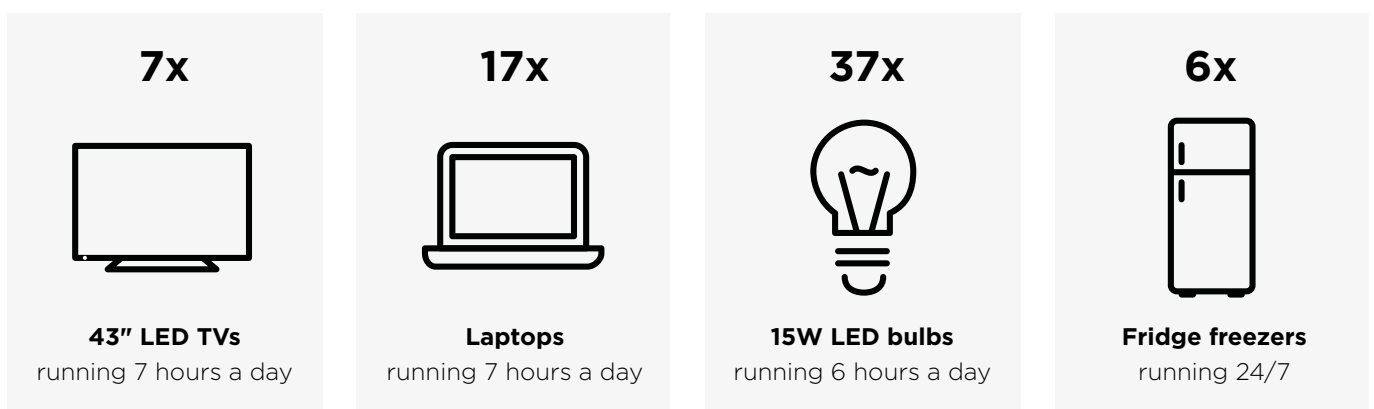
HOW MUCH ENERGY COULD YOU SAVE?

Taking an ePM1 65% filter as an example, here's how much you could save by simply switching from a D-rated air filter to an A+ product.



Switching from Product 1 to Product 2 would save **1200 kWh per year in energy.**

That's the equivalent to turning off...



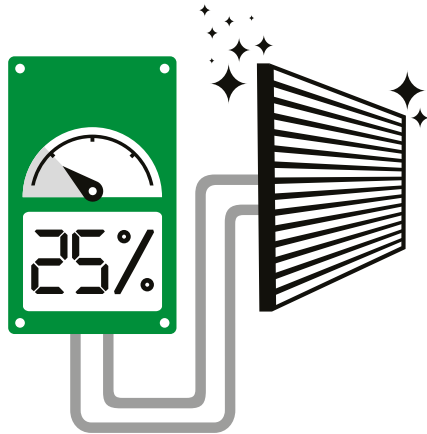
...for each air handling unit - with no drop in air quality.

Filter maintenance

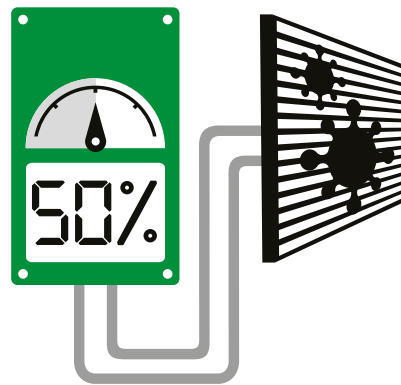
On time, every time

A LATE FILTER CHANGE CAN COST A LOT

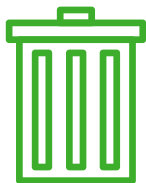
As dirt builds up on a filter it can clog the filter media, causing the pressure drop to rise - often drastically. That's why it's vital to monitor your filtration system and change filters before they cause an issue. It's tempting to try to squeeze as much service life as possible from your filters, but doing so can quickly cause your energy consumption to increase.



A clean filter accounts for 25% of an air-conditioning unit's energy demand



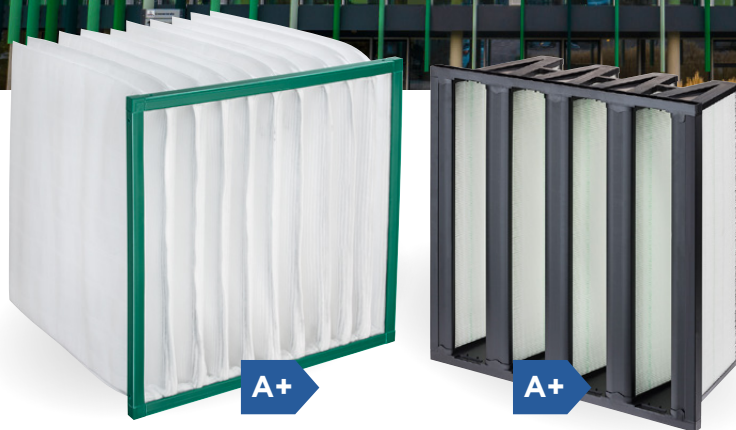
A loaded filter accounts for 50% of an air-conditioning unit's energy demand



ENERGY RECOVERY

Many of our filters use a synthetic filter media and plastic parts, such as frames, separators and air guides. This means that when they have served their purpose and are ready for disposal, these filters can be incinerated for energy recovery - which also keeps less waste from landfill too.

The energy-saving experts MANN+HUMMEL



MANN+HUMMEL has been a filtration specialist for more than 80 years. Leadership in Filtration is what drives us.

ENERGY EFFICIENCY IS ONE OF OUR CORE COMPETENCES

At MANN+HUMMEL, our R&D capability sets us apart when it comes to energy efficiency. While other manufacturers, have a few products that reach the higher energy ratings, we have A+ rated products in more filter classes than anyone else.

This, combined with the tools we have developed to identify the exact filter configuration that will deliver the lowest total cost of ownership for each customer, means we can make the process easy, simple and effective.

With the price of energy rising all the time, can you afford not to switch up to A or A+ rated air filters?

Contact us to discuss our energy-saving product range today.



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