

FE SYSTEM PATENTED

The electrostatic filters SAF-FE SYSTEM have been certified according to EN ISO 16890, which determines the new classification of filtration for "air filter for general ventilation". The filter efficiency is determined with regard to the particulate classes ePM₁, ePM_{2,5}, ePM₁₀, and COARSE which are also used as evaluation parameters by the WHO (World Health Organization) and environmental authorities.

The electrostatic filters FE SYSTEM, have also been tested according to UNI 11254 Standard (Italian norms) which determines a specific classification of electrostatic filters based on the efficiency % measured with test dust DEHS on particles of 0,4 µm: A, B, C, D.

The main features:

- standard dimensions, according to standard sizes of pocket filters 592x592 and 592x287 (according to EN 15805);
- incorporated electric circuit, waterproof isolated to be cleaned in the water;
- multipolar connection suitable for the network supply (230V-50/60Hz) as well as for several parallel;
- a self-centering system allows to compensate manufacture intolerances up to 3 mm;
- remote control/signal functioning from external PLC display or directly from the led in the filter.

Performances:

- high efficiency filtration on particles of 0,3-0,4 micron, comparable to class E10, E11 efficiency according to EN 1822:2009, and to filtration classes ePM₁, ePM_{2,5}, ePM₁₀ according to EN ISO 16890;
- excellent solution to fight outside polluted air from PM10, PM2,5 and PM1 particles;
- high reduction of bacteria and virus in the air;
- excellent protection of the heat exchanger and of the air pipes from obstruction of polluting agents.

In relation to the conventional filtration, the SAF-FE SYSTEM allows:

- considerable energy saving due to the low resistance on air-flow and therefore reduced voltage;
- constant efficiency of the filtration up to a 600 g fine particles - load.

CERTIFICATION

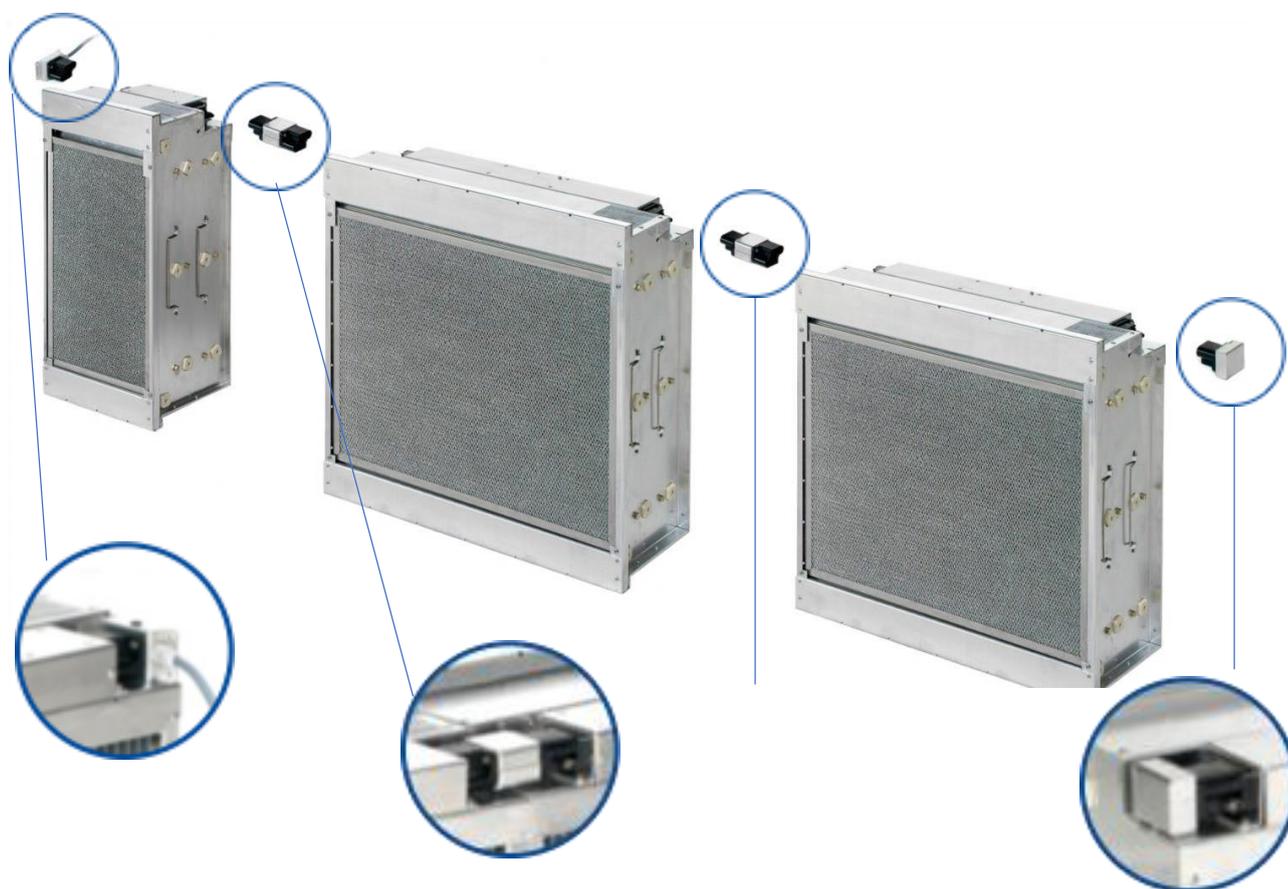


EASY INSTALLATION

The electrostatic filter SAF-FE SYSTEM represents an alternative to the common pocket filters and it is conceived to simplify the usage of electrostatic filters in **AHU** (Air Handling Unit) and **Rooftop**.

Its adoption within ventilation plans in general, and more specifically in the air conditioning plans, does not imply any variation regarding constructive and dimensional characteristics of the plan.

Thanks to its multipolar connection system, assembly and disassembly SAF-FE electrostatic filters become simple, it is enough to slide in and out the filtering units inside the support filter frame.



SAF-BB03900

Power supply connector

SAF-BB03905

Junction connector

SAF-BB03901

Final cover connector

ENERGY SAVING

In the active electrostatic filter SAF-FE SYSTEM, the initial pressure drop increases slowly while the filter gets dirty. This characteristic, combined to an extraordinary capacity of pollutants accumulation, allows the filter to have a long operation time between maintenance and the other one.

In a traditional pocket filter the initial pressure drop is higher than in a SAF-FE SYSTEM, and it increases considerably during its clogging. The pocket filter must be replaced when it reaches the maximum pressure drop of 300 Pa.

Comparing the SAF-FE SYSTEM with two other different filtering systems, operating at the same contaminated indoor air conditions and at the same air flow capacity, we can observe that the SAF-FE SYSTEM has a pressure drop that grows very slowly, while a pocket filter ePM_{2,5} 50% (ex F7) reaches the max pressure drop of 300 Pa before the filter is saturated. Even more evident is the operation time of a pocket filter ePM₁ 70% (ex F9) that needs to be replaced three times in the same period of operation compared to SAF-FE SYSTEM.

A higher flow restriction means merely higher energy consumption for the pocket filters. Compared with an electrostatic filter FE SYSTEM, we can estimate a double energy consumption using an ePM_{2,5} 50% and three times more using an ePM₁ 70%.

ENERGY SAVING

The filter is embedded with a rigid rugged aluminum frame which gets dirty by attracting and holding airborne particles of pollutants which remain accumulated on collector plates. When the filter is saturated, it can be easily washed with flushing water and detergent to remove dirtiness and put it back as new.

If the washing operations are done properly and carefully the filter can last for many years.



ENERGY SAVING

The electrostatic filter has an elevated antibacterial power thanks to its high collection efficiency of submicronic particles, then also because of its strong electric field force. In the Test A it has been measured the concentration of some bacteria commonly present in a given ambient air, before and after the electrostatic filter. The efficiency is between 98 and 99,9%. Test B shows how the concentration of moulds in the air gets reduced when the ambient is equipped with an electrostatic air filter.

Bacterial colonies growing on a plate exposed to the air.



Unfiltered air.

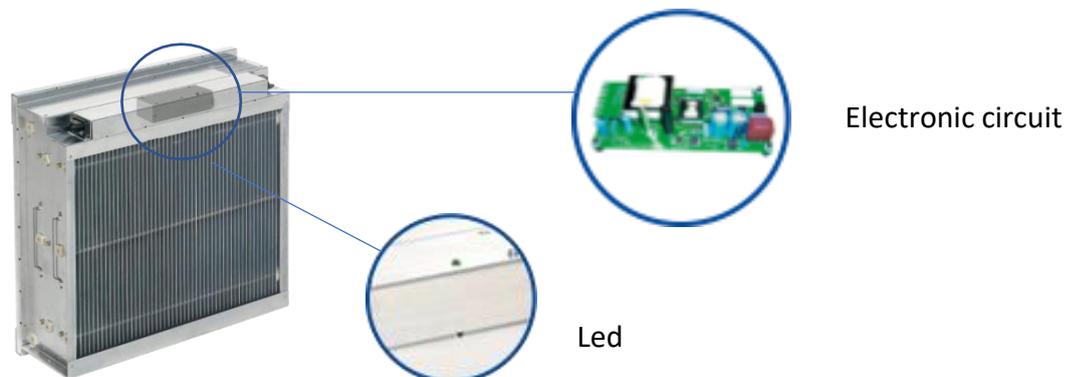
Fitered air

INCORPORATED ELECTRONIC

An incorporated electronic circuit permits to generate the necessary voltage of works directly in the filter itself.

Through the multipolar connectors SAF-BB03900, SAF-BB03905, SAF-BB03901 it is possible to carry the power supply to the filter with power voltages of 230V-50Hz and give out the alarm signal.

Efficient watertight solutions allow to wash the electrostatic filters without removing the electronic circuit box.



TECHNICAL DATAS

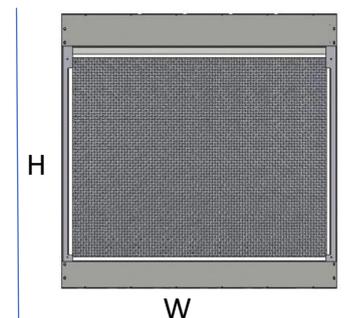
Model	Energy consumption W	Accumulation capacity g	Air flow capacity m3/h					Annual energy consumption (KWh/Y)	
			200	400	550	625	700	150	A+
SAF-FE150RV	9	140	200	400	550	625	700	150	A+
SAF-FE250RV	9	216	470	600	750	900	1200	256	A+
SAF-FE250	9	216	470	600	750	900	1200	256	A+
SAF-FE300RV	9	240	250	500	630	720	1000	213	A+
SAF-FE300	9	280	600	800	1000	1200	1600	341	A+
SAF-FE450	16	378	820	1050	1310	1570	2100	448	A+
SAF-FE500	16	494	1070	1400	1730	2100	2770	590	A+
SAF-FE550	16	460	990	1270	1590	1910	2550	544	A+
SAF-FE600	16	600	1300	1700	2100	2550	3400	702	A+

Filtration Class According To UNI EN ISO 16890	ePM%	ePM 95%	ePM 95%	ePm 90%	ePM 90%	ePm 70%
Filtration class according to UNI 11254	(A,B,C,D)	A	B	C	D	-
Filtration class according to EN 1822	(E10-E11)	E11	E10	-	-	-
Air speed passage on the filter	m/s	1	2	2,5	3	4
Percentual of max flow capacity	%	40%	50%	65%	75%	100%
Pressure drop according to ISO 168890	Pa	10	17	24	37	64

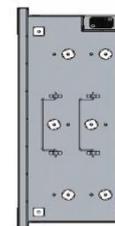
Filtration class according to old EN 779	F7,F8,F9	-	-	F9	F8	F8

DIMENSIONS

Model	Dimensions W x H x D mm	Weight Kg
SAF-FE150RV	287x287x218	4,5
SAF-FE250RV	490x287x218	8
SAF-FE250	287x490x218	8
SAF-FE300RV	592x287x218	9
SAF-FE300	287x592x218	10
SAF-FE450	490x490x218	14
SAF-FE500	490x592x218	16
SAF-FE550	592x490x218	16
SAF-FE600	592x592x218	18



FRAME material: aluminium - PREFILTER material: metal mash



218

Green Toilet Facilities AB

Lefflersgatan 23

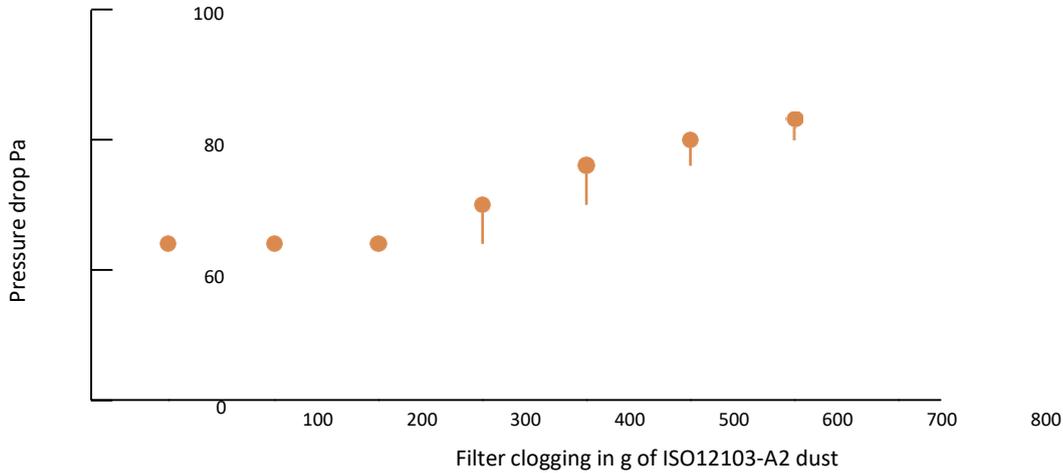
416 71 Göteborg

Sweden

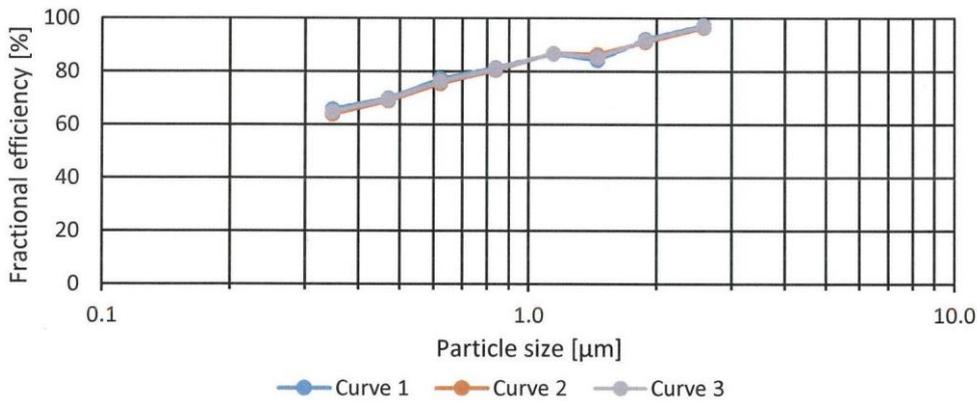
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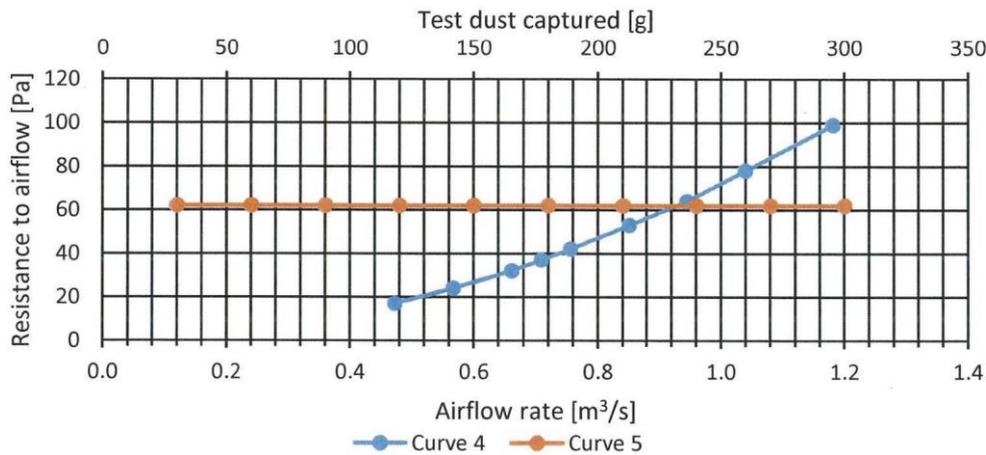
Pressure drop as a function of air flow rate (clean filter)



Test performed at 3400 m³/h - Speed air passage 4m/s



- Curve 1**
Initial fractional efficiency E_i
(ISO 16890-2)
- Curve 2**
Conditioned fractional efficiency $E_{D,i}$
(ISO 16890-4)
- Curve 3**
Average fractional efficiency $E_{A,i}$
(ISO 16890-1)



- Curve 4**
Pressure differential as a function of the airflow rate (Clean filter)
(ISO 16890-2)
- Curve 5**
Pressure differential as a function of the test dust captured
(ISO 16890-3)