

# ELECTROSTATIC FILTER FE SYSTEM

◀ Indoor Air Quality with low energy consumption



BETTER AIR FOR A BETTER QUALITY OF LIFE

SINCE 1981 EXPANSION ELECTRONIC DESIGNS AND MANUFACTURES MACHINES AND SYSTEMS TO TREAT THE AIR WITH ELECTROSTATIC FILTRATION TECHNOLOGY.

RECENTLY THE COMPANY HAS DEVELOPED A NEW FILTER WITH INCORPORATED ELECTRONICS FOR THE INDOOR AIR QUALITY, WHICH WILL IMMEDIATELY FIND A VARIETY OF APPLICATIONS.

THE PATENTED SYSTEM IS NAMED WITH THE INITIALS OF ELECTROSTATIC FILTRATION, INDICATING THE BIRTH OF A NEW STANDARD IN THIS FIELD.

## FE System PATENTED

- ◀ The new generation of electrostatic filters FE System offers filters in classes A, B, C, D (UNI 11254), simple to use either with new and/or preexistent plants without important adaptation costs.
- ◀ The main features:
  - standard dimensions, according to standard sizes of pocket filters 592x592 and 592x287;
  - 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 installed filters;
  - a self-centering system allows to compensate manufacture intolerances up to 3 mm;
  - remote control/signal functioning from external display accessories or directly from a Led in the filter itself.
- ◀ Performances:
  - high efficiency filtration on particles of 0,3-0,4 micron, comparable to class H efficiency according to UNI 1822;
  - excellent solution to fight outside polluted air of PM10, PM2,5 and PM1;
  - high reduction of bacteria 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 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.
- ◀ For its innovative content, the FE system is covered by patent.

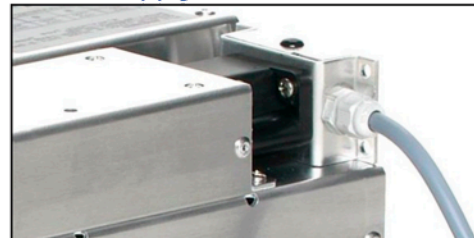


← Assembled filters

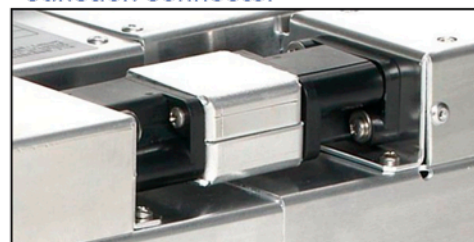
## Easy INSTALLATION

- ◀ The FE system represents an alternative to the common pocket filters and it is conceived to simplify the usage of electrostatic filters.
- ◀ 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 FE electrostatic filters become simple, it is enough to slide in and out the filtering units inside the support filter frame.

CA ▶ Power supply connector



CG ▶ Junction connector



CT ▶ Final cover connector



## APPLICATION Sectors

### AIR CONDITIONING

Installation inside of conditioning units for residential, tertiary and industrial fields.

### HOSPITALS

Control of airborne contamination for bedrooms, cleanrooms, medical settings, waiting rooms and more.

### AGRO-ALIMENTARY

Control of airborne contamination during food processes.

### INDUSTRIAL

#### Manufacturing process:

Filtration of micro dust and fumes in general, with max concentration of 20 mg/m<sup>3</sup>.

#### Welding:

Filtration of welding smokes as ferrous metals, precious metals, control boards, etc.

ENERGY

SAVINGS

COMPLETELY

REGENERABLE

ANTIBACTERIAL

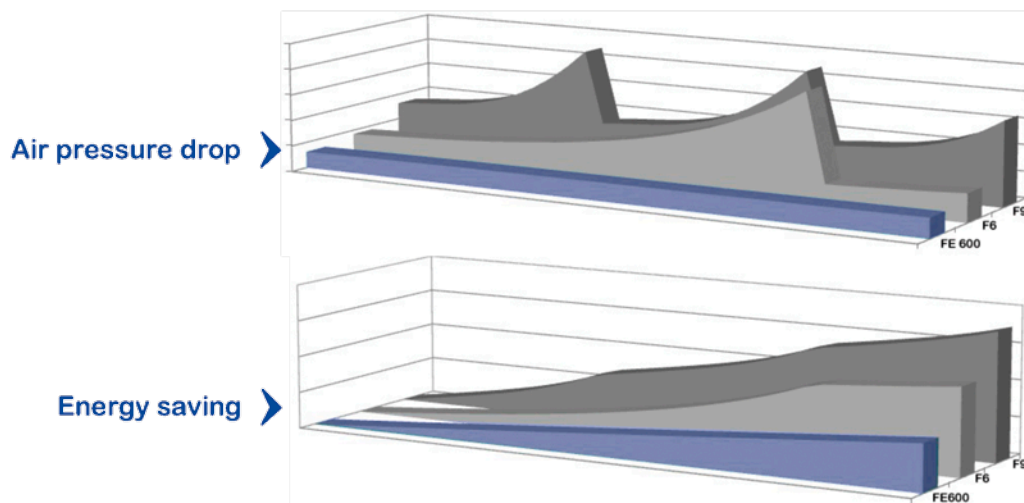
EFFECT

INCORPORATED

ELECTRONIC

## ENERGY Savings

- ◀ In the electrostatic filter the initial pressure drop increases only a small part while the filter gets dirty. This characteristic, combined to an extraordinary capacity of pollutants accumulation, allows the filter to have a long duration of use between a maintenance and the other.
- ◀ In a traditional rigid pocket filter the initial loss of pressure is higher than in an electrostatic FE filter, and it increases considerably during its clogging. The bag must be replaced when it has reached the maximum pressure of 450 Pa.
- ◀ Comparing the FE filter 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 FE filter has a pressure drop that grows very slowly, while in a F6 filter it reaches the max pressure drop of 450 Pa before the filter is saturated. It means that maintenance is required to replace the filter F6. Even more evident is the durability of a filter F9 that need to nearly three substitutions in the same period of operation than a filter FE.
- ◀ A higher flow restriction means merely higher energy consumption for the pocket filters. Compared with an electrostatic filter FE, we can estimate a double energy consumption using an F6 and three times more using an F9.



## Completely REGENERABLE

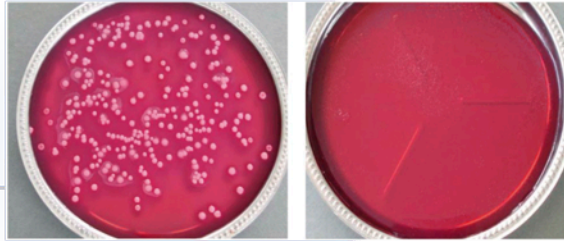
- ◀ The filter is embedded with a rigid rugged aluminum frame which gets dirty by attracting and holding airborne particles of pollutants which remain accumulated on collector plates. When the filter is saturated, it can be easily washed with flushing water and detergent to remove dirtiness and put it back as new.
- ◀ If the washing operations are done properly and carefully the filter can last for many years.



- ◀ Bacterial colonies growing on a plate exposed to the air.

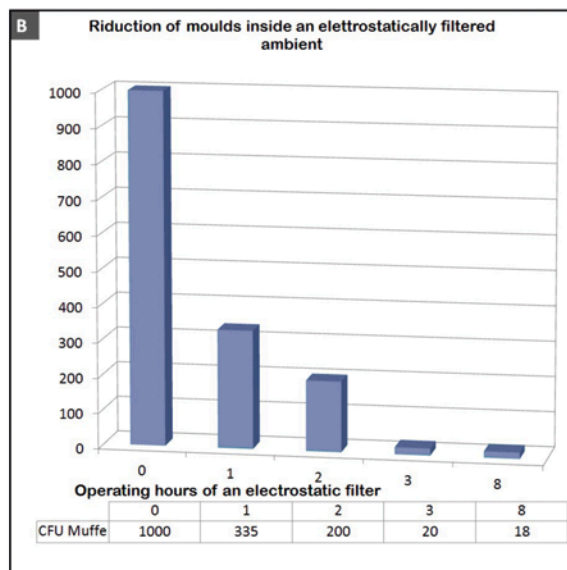
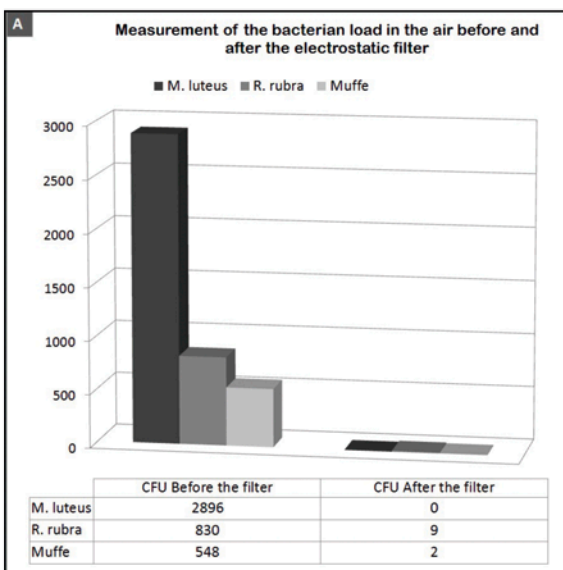
Unfiltered air

Filtered air



## ANTIBACTERIAL Effect

- ◀ 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 A test 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.

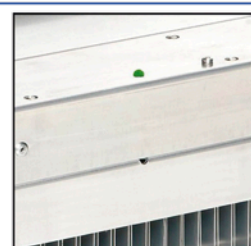


## INCORPORATED Electronic

- ◀ An incorporated electronic circuit permits to generate the necessary voltage of works directly in the filter itself.
- ◀ Through the multipolar connectors CA, CG, CT 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 the electronic box to be bathed with the filter instead of being removed.



◀ Electronic  
Circuit

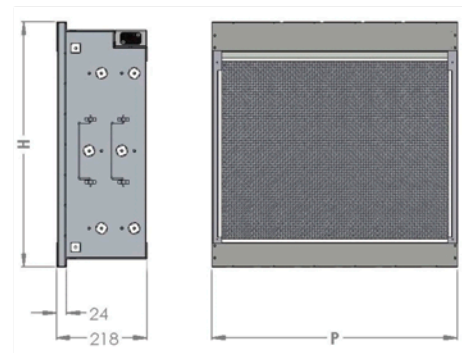


◀ Led

	Dimensions P x H x 218 mm	Weig ht Kg	Electrical Power W	Accumul. Capacity g	Airflow Capacity m <sup>3</sup> /h				
<b>FE250</b>	287 x 490	8	9	216	470	600	750	900	1200
<b>FE300</b>	287 x 592	10	9	282	600	800	1000	1200	1600
<b>FE450</b>	490 x 490	14	16	378	820	1050	1310	1570	2100
<b>FE500</b>	490 x 592	16	16	494	1070	1400	1730	2100	2770
<b>FE550</b>	592 x 490	16	16	460	990	1270	1590	1910	2550
<b>FE600</b>	592 x 592	19	16	600	1300	1700	2100	2550	3360

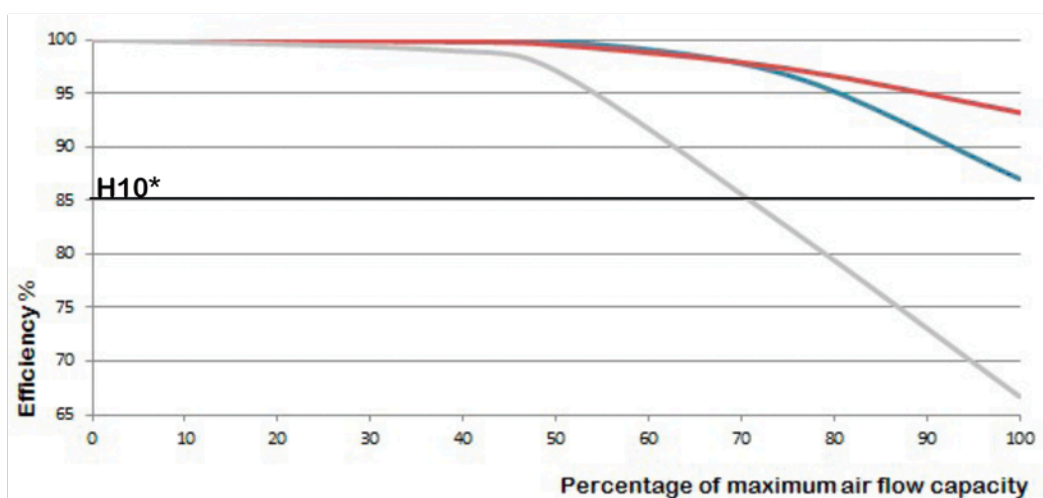
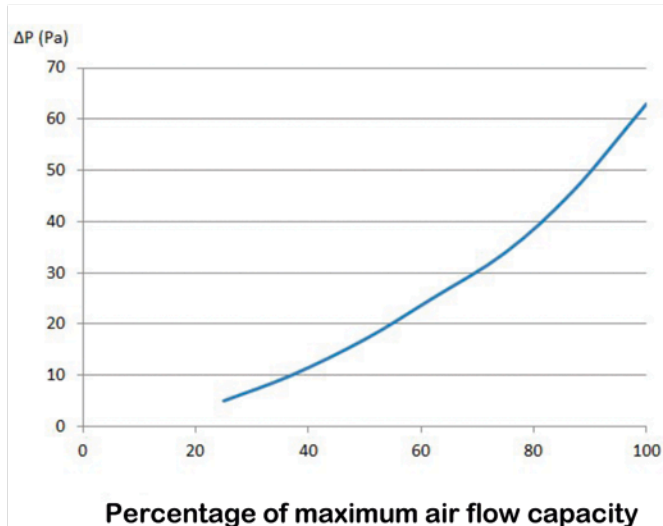
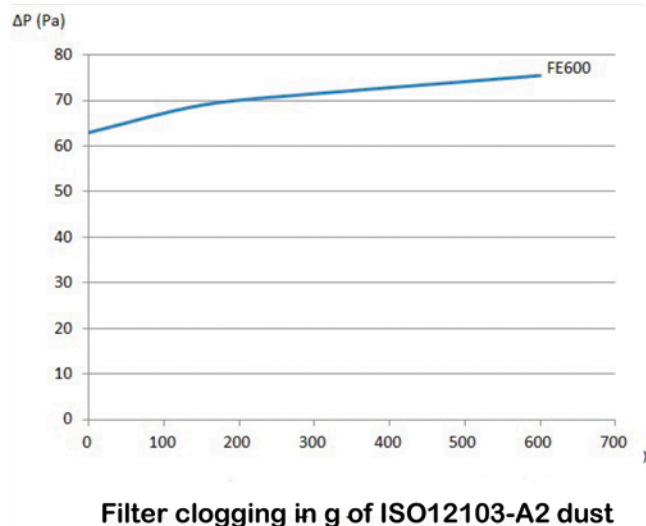
  

Filtration class UNI11254		<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>-</b>
Efficiency on DEHS at 0,4µm		$E_m \geq 99$	$99 \leq E_m < 95$	$95 \leq E_m < 90$	$80 \leq E_m < 90$	-
Efficiency in % on particles > 0,5 µm	%	99,6	99,5	98,4	97,3	93,2
Charge loss	Pa	10	17	25	34	63
Percentage of max air flow capacity	%	39%	50%	63%	76%	100%



Frame : aluminium  
Prefilter : metal mash

## CHARACTERISTICS Curves



- On outside air particles bigger than 0,5µm
- On PM<sub>2,5</sub> of atmosphere
- On DEHS by 0,4µm UNI11254

\*The reference to class H is purely indicative

The filter FE Series have been tested in accordance of the UNI 11254 Standard 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.



# SELECTION Chart

Filtration class UNI11254		<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>-</b>
Efficiency on DEHS at 0,4µm		$E_m \geq 99$	$99 \leq E_m < 95$	$95 \leq E_m < 90$	$80 \leq E_m < 90$	-
Efficiency in % on particles > 0,5 µm	%	99,6	99,5	98,4	97,3	93,2
Charge loss	Pa	10	17	25	34	63

Code	Dimensions P x H mm		FE250	FE300	FE450	FE500	FE550	FE600	CA <sup>(1)</sup>	CT <sup>(2)</sup>	CG <sup>(3)</sup>	Airflow Capacity m³/h				
XFE0010	287	x 592		1					1	1		600	800	1000	1200	1600
XFE1010	287	x 490	1						1	1		470	600	750	900	1200
XFE0011	879	x 592		1				1	1	1	1	1900	2500	3100	3750	4960
XFE0110	777	x 592		1		1			1	1	1	1670	2200	2730	3300	4370
XFE1011	879	x 490	1				1		1	1	1	1460	1870	2340	2810	3750
XFE1210	777	x 490	1		1				1	1	1	1290	1650	2060	2470	3300
XFE0012	1471	x 592		1				2	1	1	2	3200	4200	5200	6300	8320
XFE0210	1267	x 592		1		2			1	1	2	2740	3600	4460	5400	7140
XFE1012	1471	x 490	1				2		1	1	2	2450	3140	3930	4720	6300
XFE1210	1267	x 490	1		2				1	1	2	2110	2700	3370	4040	5400
XFE0013	2063	x 592		1				3	1	1	3	4500	5900	7300	8850	11680
XFE0310	1757	x 592		1		3			1	1	3	3810	5000	6190	7500	9910
XFE1013	2063	x 490	1				3		1	1	3	3440	4410	5520	6630	8850
XFE1310	1757	x 490	1		3				1	1	3	2930	3750	4680	5610	7500
XFE0001	592	x 592						1	1	1		1300	1700	2100	2550	3360
XFE0100	490	x 592				1			1	1		1070	1400	1730	2100	2770
XFE1001	592	x 490					1		1	1		990	1270	1590	1910	2550
XFE1100	490	x 490			1				1	1		820	1050	1310	1570	2100
XFE0002	1184	x 592						2	1	1	1	2600	3400	4200	5100	6720
XFE0200	980	x 592				2			1	1	1	2140	2800	3460	4200	5540
XFE1002	1184	x 490					2		1	1	1	1980	2540	3180	3820	5100
XFE1200	980	x 490			2				1	1	1	1640	2100	2620	3140	4200
XFE0003	1776	x 592						3	1	1	2	3900	5100	6300	7650	10080
XFE0300	1470	x 592				3			1	1	2	3210	4200	5190	6300	8310
XFE1003	1776	x 490					3		1	1	2	2970	3810	4770	5730	7650
XFE1300	1470	x 490			3				1	1	2	2460	3150	3930	4710	6300
XFE0004	2368	x 592						4	1	1	3	5200	6800	8400	10200	13440
XFE0400	1960	x 592				4			1	1	3	4280	5600	6920	8400	11080
XFE1004	2368	x 490					4		1	1	3	3960	5080	6360	7640	10200
XFE1400	1960	x 490			4				1	1	3	3280	4200	5240	6280	8400



Example: Code XFE0012

