



ELECTROSTATIC FILTER FEL SYSTEM



INDUSTRIAL
SOLUTIONS

DESCRIPTION

Building on the reliability and the success of the FE SYSTEM range, thanks to our experience in the applications of particular food-agricultural processes, we have been able to conceive and develop the FEL SYSTEM range. This is a new range of active electrostatic filters with built-in electronics, for oil and oily vapour applications.

FEL SYSTEM represents a revolutionary development, and a valid alternative to traditional filters. It was conceived to facilitate the use of electrostatic oil filters for specific processes. Its use in the industrial air treatment plants, ensures constant filtration efficiency.

Thanks to high separation and oil accumulation capabilities, because of low load losses, it also provides important energy savings. Its multipole connection system means that several filters can be connected at the same time, depending on the air flow and filtration requirements. In addition, electrostatic filters can be installed and removed by simply sliding them across the equipment filter frame support.

The built-in electronic power input circuit is equipped with LED to notify the user that the filter is working correctly. Also is available a customized range of electrostatic filters for oil and oily vapour applications, without built-in electronics.



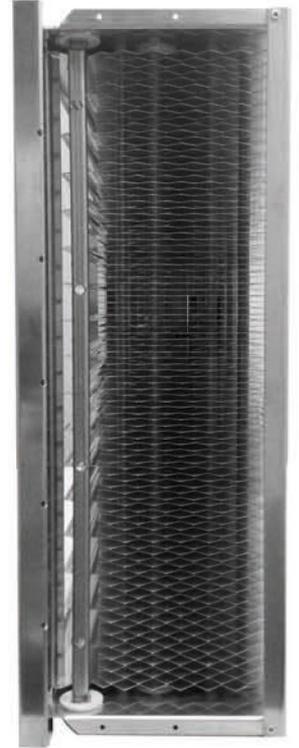
ELECTROSTATIC FILTER FEL SYSTEM

CHARACTERISTICS

FEL SYSTEM electrostatic filters are particularly suited for the abatement of polluting substances such as oily vapours and mists, with and without particulate. The main distinguishing characteristic of this filter is the bottom section of the capture blades, the shape of which has been purposely conceived to enable the dripping of high quantities of oily pollutants, with reduced formation of electric discharges between the plates. In addition, the special mechanical construction ensures, also in the presence of emulsifying oils, that no electric discharges occur on the insulator, therefore providing high reliability in the long term.

The open bottom part makes it possible to collect, in appropriately conceived containers, the condensation formed during the filtration process. The high separation performance together with a high capability of capturing particulate, also makes it possible to obtain compact abatement systems with low load losses virtually consistent across time and with high levels of efficiency. It is therefore possible to obtain a reduction in electric consumption when compared with other systems using mechanical filters.

From an operating point of view, the FEL600 filter is capable of condensing hundreds of grams of oil every day. Furthermore, this filter is certified for the ozone emissions, which are significantly lower than the maximum set by the legislation.



EASY INSTALLATION

The FEL SYSTEM represents an alternative to the common pocket filters and it is conceived to simplify the use of electrostatic filters.

Its adoption within ventilation systems does not imply any variation regarding constructive and dimensional characteristics of the plant.

Thanks to its multipolar connection system, the installation of FEL SYSTEM electrostatic filters become simple, then it's enough to slide in and out the filtering units inside the filter frame support.



PSC - POWER SUPPLY CONNECTOR



JC - JUNCTION CONNECTOR



FCC - FINAL COVER CONNECTOR

APPLICATION SECTOR

INDUSTRIAL: manufacturing process: turning, welding, electroerosion and filtration of oil fumes and vapors, emulsifying oils.

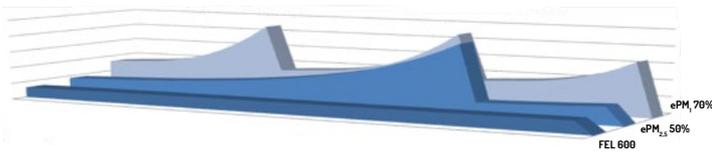
ENERGY SAVING

In the active electrostatic filter FEL 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.

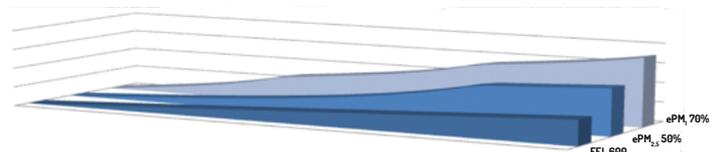
In a traditional pocket filter the initial pressure drop is higher than in a FEL SYSTEM electrostatic filter, and it increases considerably during its clogging. The pocket filter must be replaced when it reaches the maximum pressure drop of 300 Pa.

Comparing the FEL 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 FEL 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 FEL SYSTEM.

A higher flow restriction means merely higher energy consumption for the pocket filters. Compared with a FEL SYSTEM electrostatic filter, we can estimate a double energy consumption using an ePM_{2.5} 50% filter and three times more using an ePM₁ 70% filter.



AIR PRESSURE DROP



ENERGY CONSUMPTION

COMPLETELY REGENERABLE

The FEL SYSTEM electrostatic 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 detergent and high pressure water to remove dirtiness and put it back as new.

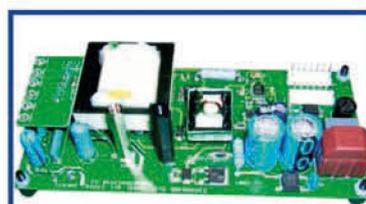
If the washing operations are done properly and carefully the filter can last for almost 15 years.

INCORPORATED ELECTRONIC

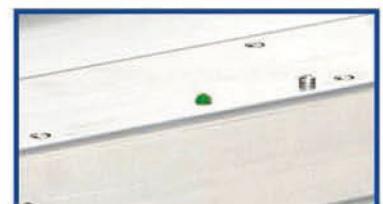
The electronic circuit permits to generate the necessary voltage directly in the filter.

Through the multipolar connectors PSC, JC, FCC, it is possible to carry the power supply to the filter with power voltage of 230V-50Hz, combine multiple filters in a row and give out alarm signal.

Efficient watertight solutions allow the electronic box to be bathed with the filter during the maintenance instead of being removed.



ELECTRONIC CIRCUIT



LED

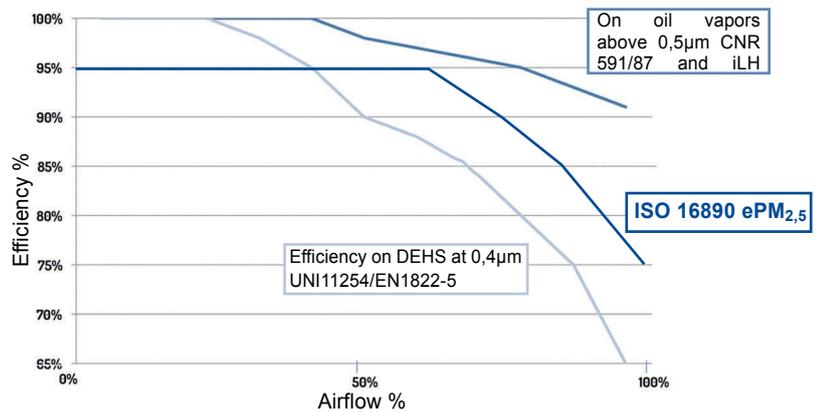
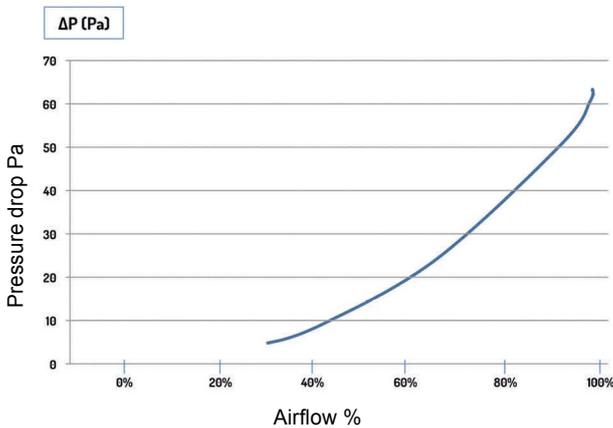
TECHNICAL SPECIFICATIONS

Model	Dimensions	Weight Kg	Electrical Power W	Accumulation Capacity g	Airflow Capacity m ³ /h					Annual energy consumption (KWh/Y)	
					200	400	550	625	700	150	A+
FEL150RV	287x287x218	4,5	9	140	200	400	550	625	700	150	A+
FEL250RV	490x287x218	8	9	216	470	600	750	900	1200	256	A+
FEL250	287x490x218	8	9	216	470	600	750	900	1200	256	A+
FEL300RV	592x287x218	9	9	240	250	500	630	720	1000	213	A+
FEL300	287x592x218	10	9	280	600	800	1000	1200	1600	341	A+
FEL450	490x490x218	14	16	378	820	1050	1310	1570	2100	448	A+
FEL500	490x592x218	16	16	494	1070	1400	1730	2100	2770	590	A+
FEL550	592x490x218	16	16	460	990	1270	1590	1910	2550	544	A+
FEL600	592x592x218	19	16	600	1300	1700	2100	2550	3400	702	A+

FILTRATION CLASS ACCORDING TO UNI EN ISO 16890 STANDARD	ePM%	ePM ₁ 95%	ePM ₁ 95%	ePM ₁ 90%	ePM ₁ 80%	ePM ₁ 70%
Filtration class according to UNI 11254 standard	(A, B, C, D)	A (Em ≥99)	B (95≤Em ≥99)	C (90≤Em ≥95)	C (80≤Em ≥90)	-
Filtration class according to EN 1822 standard	(E10 - E11)	E11	E10	-	-	-
Filtration class according to the old EN 779 standard	(F7 - F8 - F9)	-	-	F9	F8	F8
CNR 591/87 and iLH	%	99	99	98	97	93
Air speed passage	m/s	1	2	2,5	3	4
Percentage of maximum airflow	%	40%	50%	63%	75%	100%
Pressure drop according to ISO 16890	Pa	10	17	24	37	64

STRUCTURE material: aluminium - PREFILTER material: metal mesh

CHARTS



CERTIFICATIONS

ILH BERLIN
INSTITUT FÜR LUFTHYGIENE

BSRIA

CETIAT
ensemble, innover et valider

Consiglio Nazionale delle Ricerche



EXPANSION ELECTRONIC SRL · Via delle Industrie, 18 · 36050 Cartigliano (VI) · ITALY
T. +39 0424 592400 · +39 0424 827058 · +39 0424 827059 · F. +39 0424 827061
www.expansion-electronic.com · info@expansion-electronic.com