Anti-smog electrostatic precipitator

FESP

Description

The FESP electrostatic filter provides exceptionally effective air purification thanks to its two-stage filtration technology. In the first stage, a steel pre-filter traps larger contaminants, protecting the system and minimising the need for servicing. In the second stage, a high-efficiency electrostatic filter uses ionisation (8 kV) and an electrostatic field (4 kV) to capture the finest dust particles, such as ePM1, ePM2.5 and ePM10. Maximum filtration efficiency reaches up to 95%, making it an excellent solution for protection against smog.

The device is designed for home heat recovery systems — it has a compact design, very low flow resistance and minimal energy consumption. Four housing sizes are available to fit most air handling units, depending on their capacity and duct connection diameter. It is virtually maintenance-free: no cartridge replacement is required, and only water is needed for cleaning.

The housing is thermally insulated, allowing the filter to be used on the intake duct. It is equipped with a removable cover and a limit switch that cuts off the power supply when opened. This ensures complete safety of use and a long service life for the entire ventilation system.

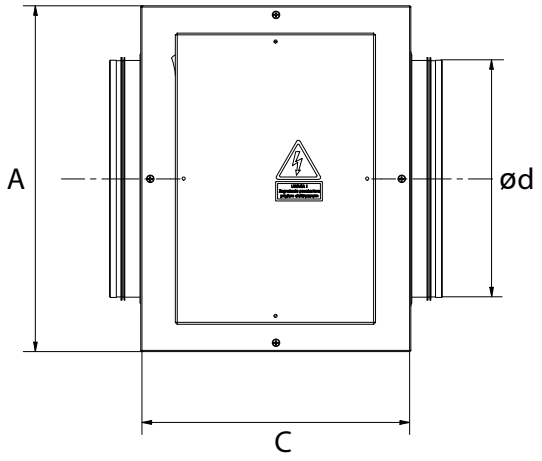
Product code example

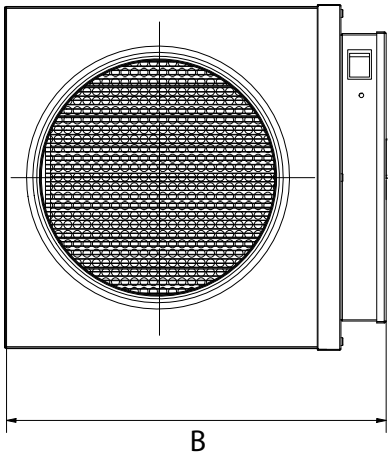
Product code: FESP - 160

type

diameter

Dimensions





code	A [mm]	B [mm]	C [mm]	Ød [mm]
FESP-125	200	330	285	125
FESP-160	240	330	285	160
FESP-200	300	330	285	200
FESP-250	365	400	285	250

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Technical data

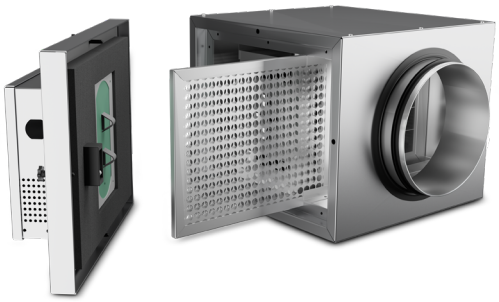
Name	FESP-125	FESP-160	FESP-200	FESP-250
Performance [m³/h]*	30-250	40-300	60-500	120-950
Velocity in the duct [m/s]	0,7-5,6	0,5-4,1	0,5-4,4	0,7-5,30
Diameter of the connection [mm]	125	160	200	250
External dimensions AxBxC [mm]	200x330x285	240x330x285	300x330x285	365x400x285
weight [kg]	6	7,5	9	11,5
Housing	insulated			
Supply voltage	230V AC, 50Hz			
Energy consumption [W]	3	4	5	7
Installation location	on the air intake duct			

* Corresponding to an air velocity of 0.5–4 m/s on the filter cassette

Two-stage filtration system

The use of a two-stage filtration system enables effective retention of both large contaminants and fine dust particles, ensuring high air purity and reliable operation of the ventilation system.

The first stage is a steel mesh filter with negligible flow resistance, designed to trap larger contaminants such as leaves, insects and dust. The filter's task is to protect further elements of the system, in particular the electrostatic section, against solid contaminants that could cause damage (e.g. breaking of ionising wires). The use of a mechanical filter extends the service life of the entire system and reduces the need for maintenance.



1. Preliminary mesh filter

The second stage is an electrostatic filter, in which the air purification process takes place in two stages:
Ionisation section – equipped with ionising wires powered by a constant voltage of 8 kV, causing the ionisation of small particles of pollutants suspended in the air (including ePM10, ePM2.5 and ePM1 dust).
Deposition section – deposition electrodes powered by 4 kV attract ionised particles, effectively removing them from the air flow.

2. Electrostatic filter

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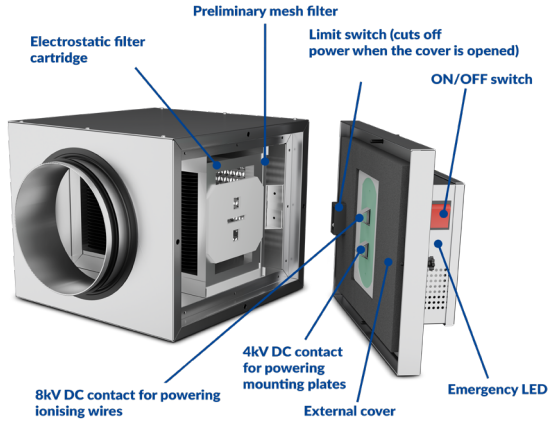
Device construction

The device housing is designed to ensure easy access to filter elements and safe operation. A removable outer cover is used to enable inspection and servicing of internal components. The cover is thermally insulated, which eliminates the risk of thermal bridges and energy losses. To increase operational safety, the housing is equipped with a limit switch that cuts off the power supply to the device when the cover is opened, unless it has been disconnected beforehand using the main power switch.



3. Filter construction

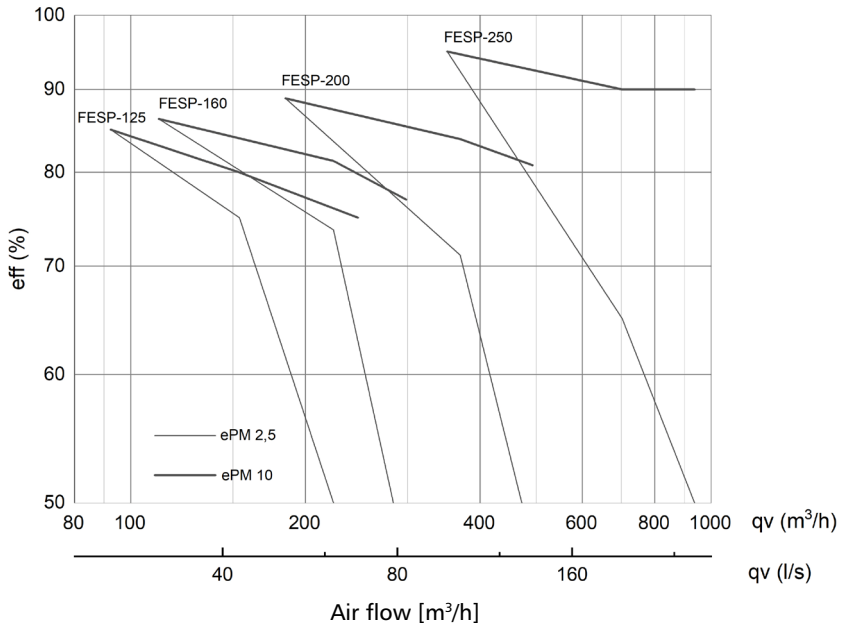
Effectiveness of action

Skuteczność filtracji została określona w oparciu o metodę opisaną w normie PN-EN-ISO-16890, w zakresie w jakim można ją było zastosować do elektrofiltrów.

Filters for the unit

Heat recovery unit	*Flow rate [m³/h]*	*Electrostatic filter*
FlatAIR-80[1]	80	FESP-125
FlatAIR-100[1]	100	FESP-125
FlatAIR-125[1]	125	FESP-125
FlatAIR-120	120	FESP-125
FlatAIR-150[2]	150	FESP-160
FlatAIR-200[2]	200	FESP-160
FlatAIR-225[2]	225	FESP-160
FlatAIR-250[2]	250	FESP-160
BoxAIR-150	150	FESP-160
BoxAIR-200	200	FESP-160
BoxAIR-225	225	FESP-160
SlimAIR-250[3]	250	FESP-200
SlimAIR-300[3]	300	FESP-200
SlimAIR-350	350	FESP-200
SlimAIR-400[4]	400	FESP-250
SlimAIR-500[4]	500	FESP-250
SlimAIR-800	800	FESP-250
SlimAIR-1000	1000	FESP-250
MinistAIR-250[3]	250	FESP-200
MinistAIR-325[3]	325	FESP-200
MinistAIR-350[3]	350	FESP-200
PremAIR-350[3]	350	FESP-200
PremAIR-450[5]	450	FESP-250
PremAIR-500[5]	500	FESP-250

[1] required reduction RPCLF-100-125
[2] required reduction RPCLF-125-160
[3] required reduction RPCLF-160-200
[4] required reduction RPCLF-200-250
[5] required reduction RPCLF-160-200



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Pressure losses