

PRODUCT BROCHURE

**Compact Electrostatic Precipitator
DELBAG® MultiTron Premium**

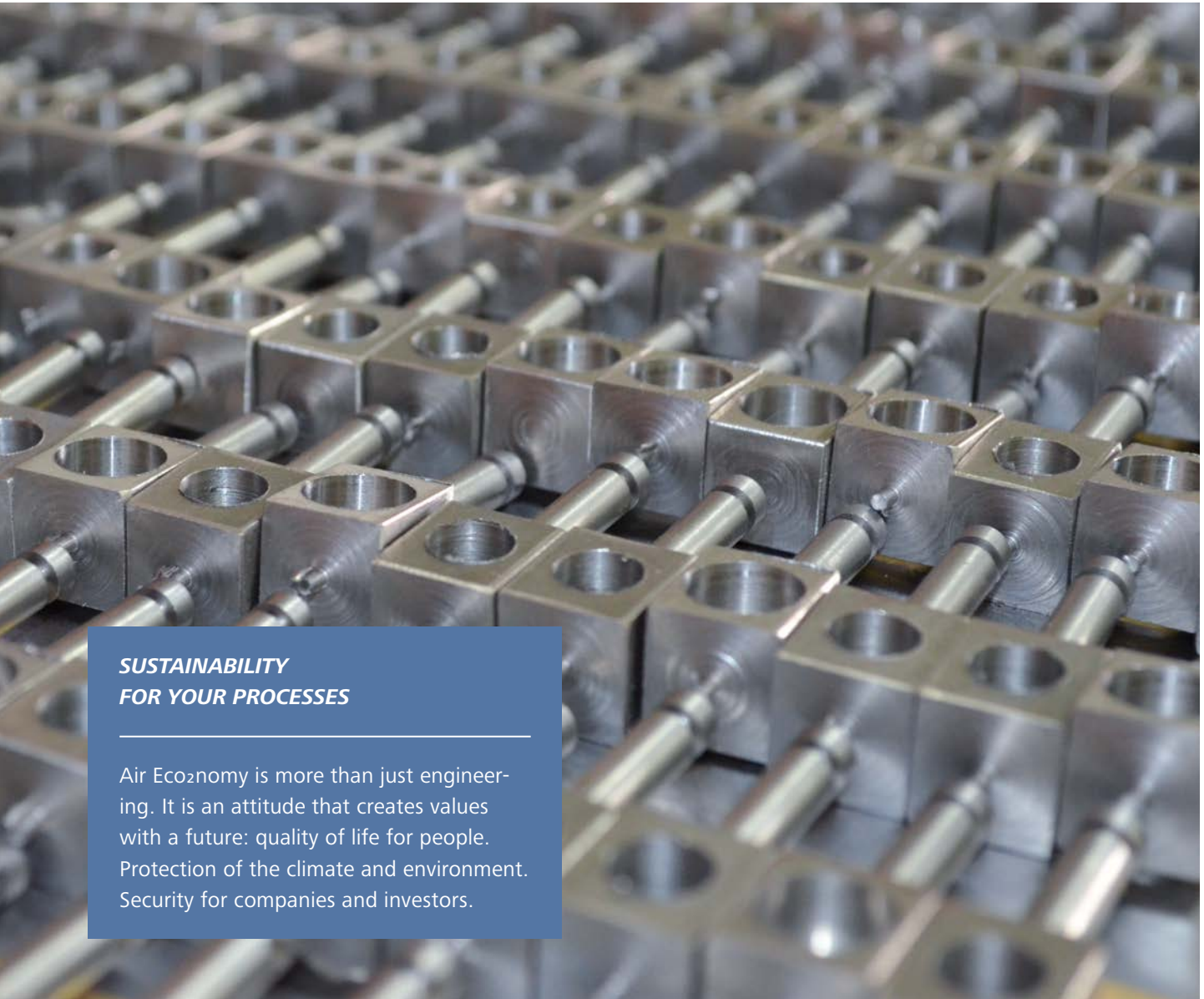
The system solution for aerosol mist and smoke



THE ELECTROSTATIC PRECIPITATOR SYSTEM

DELBAG® MultiTron Premium

**Equally cost effective
and environmentally friendly**



SUSTAINABILITY FOR YOUR PROCESSES

Air Eco2nomy is more than just engineering. It is an attitude that creates values with a future: quality of life for people. Protection of the climate and environment. Security for companies and investors.

Where exhaust-air problems arise as a result of aerosol mist and smoke, DELBAG® Air Filtration has the perfect solution: the MultiTron Premium, together with Air Eco2nomy, assures clean air at the workplace.

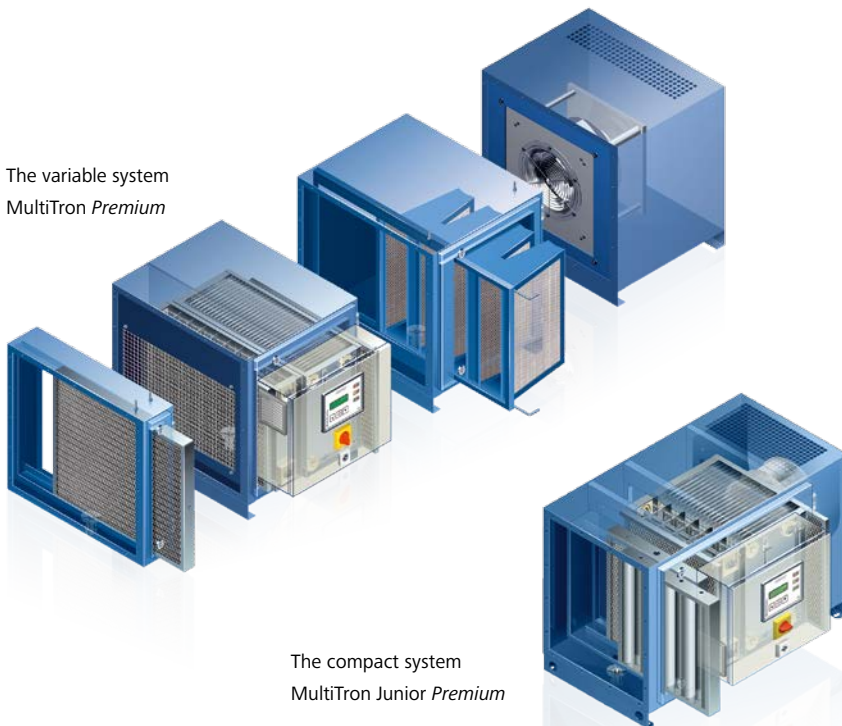
DELBAG® Air Filtration stands for competence and experience from more than 100 years of market leadership in air-filter technology. Under the motto Air Eco2nomy, we offer you comprehensively oriented solutions that set economic and ecological standards. Our MultiTron *Premium* compact electrostatic precipitator is one of the best examples here.

The newly developed system has a modular structure where individual modules can be easily customized to particular requirements. In addition to separation of toxic emissions from metalworking processes, together with cooling lubricants, especially oil, also emissions like texturing mists, ultra-fine dust, smoke, and oxides will reliably eliminates. The polluted air is so thoroughly cleaned with a minimum of energy consumption that the filter system can operate in recirculating air mode. Owing to its very small dimensions, this compact electrostatic precipitator system requires only small space and can be easily installed.

Continuously improved encapsulation means that advanced CNC machine tools often have reduced air extraction volumes. At the same time, however, this development has meant that increasingly greater filtration efficiency is required for such systems. In order to satisfy these new requirements, the smaller and especially cost-effective version MultiTron Junior *Premium* has been developed for air flows up to 1,200 m³/h. The functionalities and innovative features of this model are the same as with the large version.

- A high-efficiency filter system for separation of aerosols and smoke
- Effective recirculated-air filtration mode with reliable compliance with specified MAK and TRK limit values
- Modular technology for horizontal installation onto industrial processing machines
- Powerful fans (230 and 400 V, 50 and 60 Hz)
- Minimal energy costs made possible by the lowest-feasible pressure drop
- Long intervals between maintenance and cleaning, as a result of self-cleaning effects
- No costs or disposal problems with replacement media, as a result of electrostatic filter cells that are subject to practically no wear

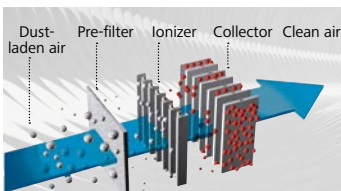
The variable system
MultiTron *Premium*



The compact system
MultiTron Junior *Premium*

99.9% pollutant separation – fully automatically controlled

- Patented electrostatic filter cells with optimal air-flow profile
- Separated ionization and collector section for enhanced handling
- High-voltage insulators made of high-quality KER 221 ceramic, with the self-cleaning lotus effect
- Process-controlled high-voltage unit with high-frequency technology
- Patented MultiTronic filter control system
- Disposal fittings provided as standard for each filter stage
- Fast replacement of plug-in seals made of nitrile butadiene rubber (NBR) with stainless-steel cores



Electrostatic precipitator
schematic diagram



A wave-shaped ionizer

When oil is used as cooling lubricant, submicron aerosols are produced in high concentrations. An efficient filtration system must be capable of reliably capturing these aerosols and of removing the separated oil from the flow of extracted air, before the oil can evaporate and re-enter the extracted air in a gaseous phase. Electrostatic precipitators from DELBAG® Air Filtration offer the ideal solution here. Pre-filters capture coarse particles, and the ionizer electrostatically loads the tiny aerosol particles. These particles are then safely and reliably separated by a collector, in which they quickly and smoothly flow away.

Thanks to its compact structural design, the MultiTron Premium has a very small footprint. It puts its powerful features into play, though, when it comes to efficiency, cost effectiveness, safety, reliability, and handling

The latest in patented technologies makes the development to a new standard for electrostatic precipitators. An additional plus is its modular configuration. The system modules can be exactly tailored to their operational situations. Depending on the individual design, pre-filters, electrostatic filter, afterfilters and fan assembly are arranged as required.

The system separates solid and liquid particles with diameter sizes of $\geq 0.01 \mu\text{m}$. In case of extreme pollutant concentrations, two electrostatic precipitators can be configured in series. Efficiencies of $> 99.9\%$ are possible especially in combination with pre-filter and universal-filter units.

The patented wave-shaped ionizer with its optimized ionization appreciably enhances the filtration efficiency. As alternative, operations are possible with greater air flow, with the same incoming cross-section.

The systems are delivered in pre-assembled mode, which significantly shortens the final assembly time on site. Module units and electronic controls are installed ready for operation, and are tested to ensure flawless function.

LoTex® Filter pads – Technology for low energy consumption

DELBAG® Air Filtration has developed LoTex as a brand new filter media based on lotus effect. It is used primarily for separating of liquid droplets from the air stream, as the unique media treatment allows for a significantly reduced wettability. Water, oils, and emulsions easily pearl off, instead of evaporating in the filter and resinifying there. These characteristics mean that relatively large amounts of liquids can be separated and – if desired – can be effectively reused. A further benefit: since the pressure drops with DELBAG® Air Filtration LoTex filters are appreciably less than those experienced in conventional demisters (droplet separators), power consumption for air filtration is cut in half. The advantages are double: cost reduction and protection of the environment

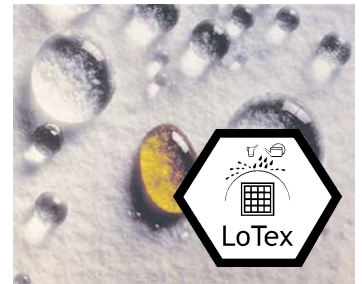
The MultiTronic comfort control

The patented MultiTronic control system continuously matches the high voltage to fluctuating operating conditions, and keeps the voltage at the optimum level without interruption. The air flow can be controlled on a continuously adjustable basis, and can be monitored and maintained at a constant level. It is also possible to pre-select 2 different air flow levels, which can be selected during the machining process.

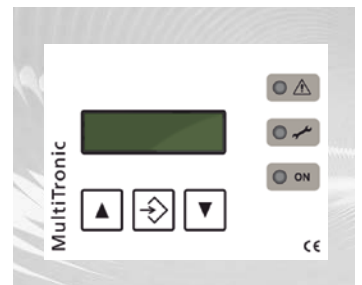
The high-voltage modules are monitored, pressure drops are digitally displayed, and service requirements are signaled. Several floating outputs are provided for remote display of the operating states. As an option, a remote control can be connected.

Lotus insulators – nanotechnology for clean surfaces

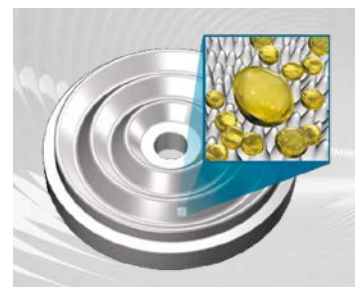
Once insulators in filter systems become dirty, the voltage – and, in turn, the filtration efficiency of electrostatic precipitators – must be reduced to ensure uninterrupted production operations. Our Lotus insulator solves this problem, by a technology copied from nature: the lotus effect of the new surface structures ensures that dirt merely forms beads and rolls off.



LoTex Filter pads



The MultiTronic filter control system



A Lotus insulator

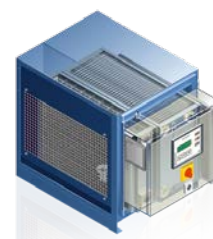
Technical Data



Pre-filter unit V






Pre-filter unit V_w



Electrostatic filter unit E

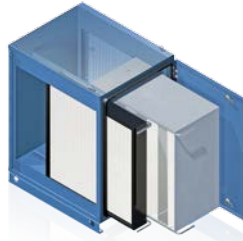
Size		KEF 1 / 1	KEF 2 / 1	KEF 2 / 2
Max. air flow	m ³ /h	2,500	3,200	6,400
Width	mm	618	618	1,200
Height (+ 60 mm for base)	mm	578	740	740
Max. operating temperature	°C	40	40	40
Relative humidity	%	20–90	20–90	20–90

Filter modules		  	KEF 1 / 1	KEF 2 / 1	KEF 2 / 2
Pre-filter unit V					
Length	mm		136	136	136
Weight (without filter insert)	kg		14	17	30
Number of filter stages			2	2	2
Pre-filter unit V_w					
Length	mm		223	223	223
Weight (without filter insert)	kg		16	19	34
Number of filter stages			2	2	2
Electrostatic filter unit E					
Length	mm		500	500	500
Weight	kg		64	73	110
Number of filter stages			1	1	1
Rated voltage	VAC 50 Hz ¹		230/(400)	230/(400)	230/(400)
Power consumption	VA		60/120	60/120	120
Amperage I _N	mA		5/10	5/10	10

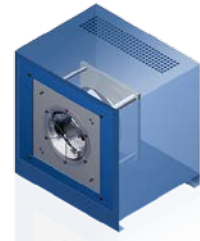
¹ Also available with 60 Hz





Universal filter unit U




Afterfilter unit N



Fan unit F_{ec}

Fan modules		 	KEF 1/1	KEF 2/1	KEF 2/2
Universal filter unit U					
Length	mm		500	500	500
Weight (without filter insert)	kg		33	38	69
Number of filter stages			1	1	1
Afterfilter unit N					
Length	mm		500	500	500
Weight (without filter insert)	kg		33	38	69
Number of filter stages			2	2	2

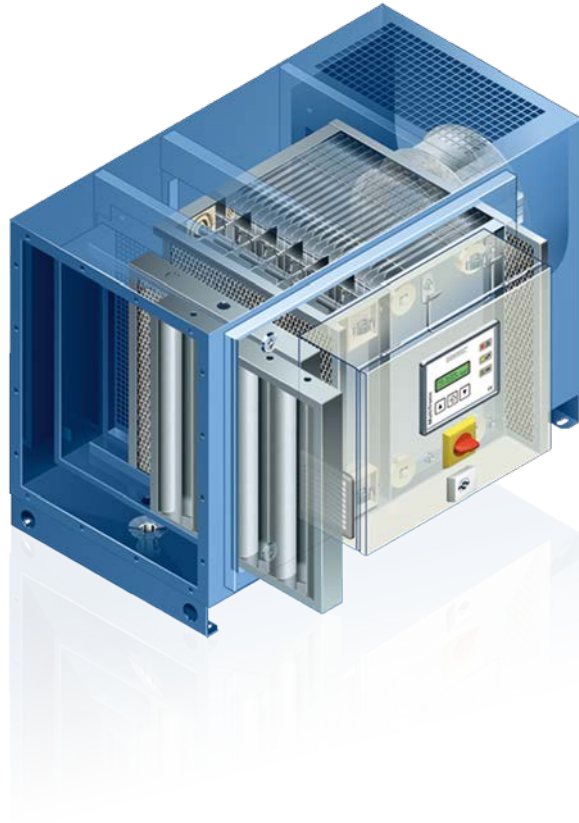
Fan modules			KEF 1/1	KEF 2/1	KEF 2/2
Fan unit F_{ec} (continuously controllable)					
Length	mm		500	500	500
Weight (without filter insert)	kg		41	46	77
Rated voltage	VAC 50/60 Hz		3~380–480 ¹	3~380–480 ¹	3~380–480
Power consumption	kW		0.94	1.66	3.0
Sound pressure level ²	approx. dB (A)		≤ 70	≤ 70	≤ 73




¹ also available with 230-277 VAC

² at a distance of 1 m

The alternative for small air flows

- Single-part steel enclosure with oil-tight welding and with 3 chambers that are sealed off with respect to each other (i. e., no by-passes)
- Available as option: integrated pre-filter chamber and 2 slide-in units for the filter media
- Fan with great degree of efficiency and with minimal energy costs
- Effective recirculated-air filtration mode with reliable compliance with specified MAK and TRK limit values
- Patented MultiTronic filter control system, and self-cleaning insulators (see MultiTron *Premium*)







Size	  	KEF 025/1
Max. air flow	m ³ /h	1,200
Width	mm	464
Height	mm	583
Length	mm	825
Weight	kg	75
Max. operating temperature	°C	40
Relative humidity	%	20–90
Rated voltage	VAC 50 Hz ¹	200–277/(400)
Power consumption high-voltage module	VA	60
Amperage I _N high-voltage module	mA	5
Fan power consumption	kW	0.49 / (0.32)
Sound pressure level ²	db (A)	< 65

¹ also available with 60 Hz, 230 V infinitely variable

² at a distance of 1 m





MultiTron Junior *Premium* with two electrostatic precipitator stages

Size	   	KEF 025/1
Max. air flow	m ³ /h	1,200
Width	mm	580
Height	mm	583
Length	mm	1235
Weight	kg	95
Max. operating temperature	°C	40
Relative humidity	%	20–90
Rated voltage	VAC 50 Hz ¹	200–277 / (400)
Power consumption high-voltage module	VA	60
Amperage I _N high-voltage module	mA	5
Fan power consumption	kW	0.49 / (0.32)
Sound pressure level ²	db (A)	< 65

¹ also available with 60 Hz, 230V infinitely variable

² at a distance of 1 m

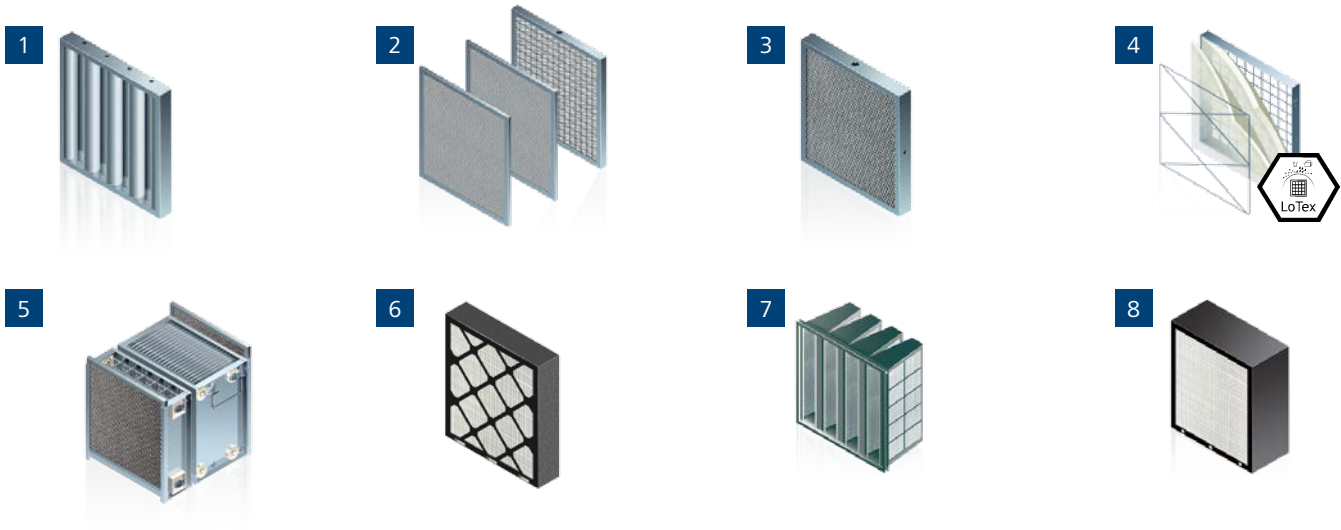
MultiTron Junior *Premium* with afterfilter (H13)

Size	   	KEF 025/1
Max. air flow	m ³ /h	1,200
Width	mm	580
Height	mm	583
Length	mm	1075
Weight	kg	90
Max. operating temperature	°C	40
Relative humidity	%	20–90
Rated voltage	VAC 50 Hz ¹	200–277 / (400)
Power consumption high-voltage module	VA	60
Amperage I _N high-voltage module	mA	5
Fan power consumption	kW	0.49 / (0.32)
Sound pressure level ²	db (A)	< 65

¹ also available with 60 Hz, 230V infinitely variable

² at a distance of 1 m

Filter media



Pre-filter

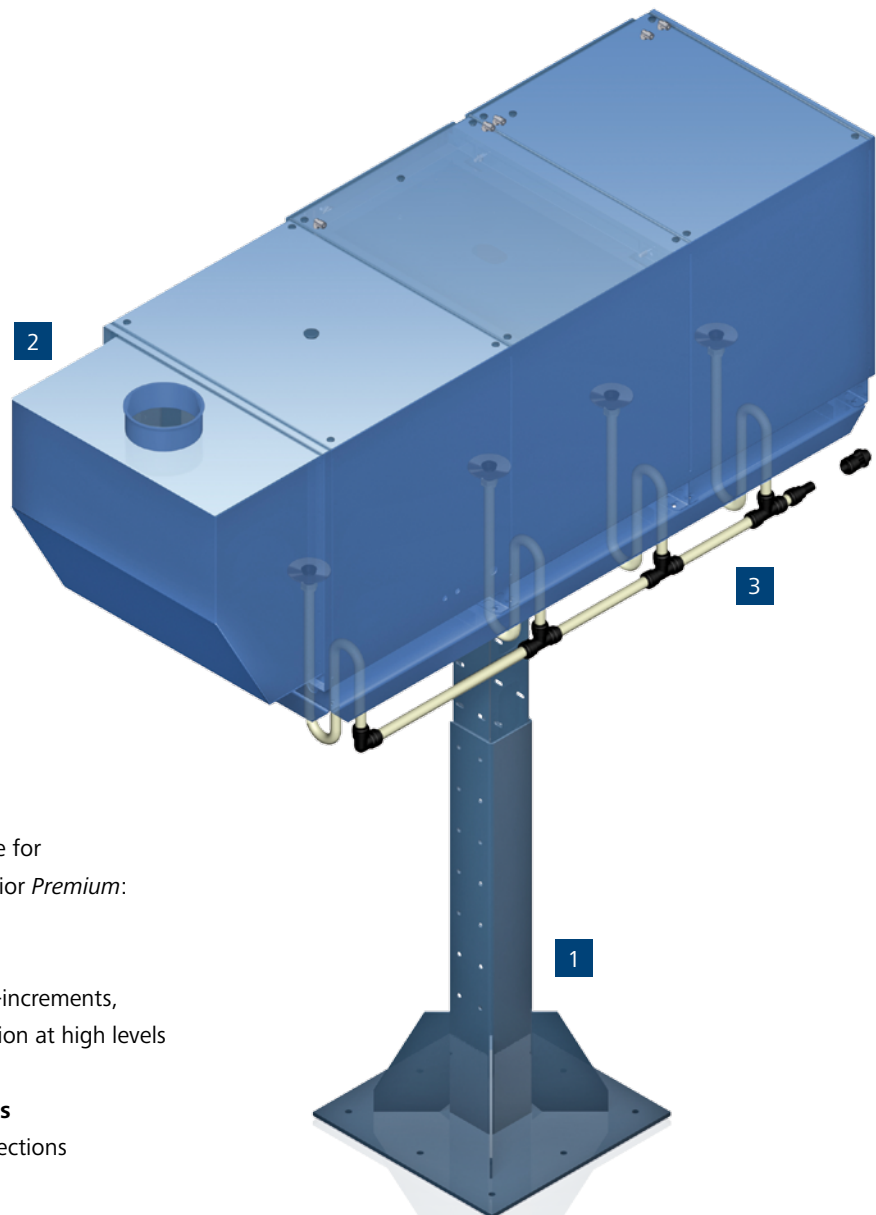
- 1 **Droplet separator**
Offset arranged stainless steel profiles, regenerable
- 2 **Metal filters, expanded metal mesh**
Multi-layer, expanded-mesh aluminum layers; robust U-profile frame; regenerable
- 3 **Metal filters, woven mix**
Woven metal made of aluminum or stainless steel, in a robust U-profile frame; regenerable
- 2 **Metal filters, woven mix**
High-quality woven mixture in a robust U-profile frame; regenerable
- 4 **Filter pads LoTex® ePM10**
Synthetic-fiber fleece with progressive depth structure; not regenerable

Main and afterfilter

- 5 **Electrostatic filter cells**
Consist of ionizer and collector, as well as two metal filters
- 6 **Filter cell ePM1**
Pleated micro-glass-fiber fleece, oleo- and hydrophobic, in plastic frame; not regenerable
- 7 **Filter element ePM1**
Pleated micro-glass-fiber fleece, oleo- and hydrophobic, in re-usable metal frame; not regenerable
- 8 **E11, H13 HEPA filters**
Pleated micro-glass-fiber fleece, in metal frames; not regenerable



Accessory



The following accessories are available for MultiTron *Premium* and MultiTron Junior *Premium*:

- 1 Installation uprights**
adjustable heights in 100-mm-increments, from 1.8 to 2.5 m, for installation at high levels
- 2 Various connection adapters**
including accessories for connections to the air-extraction point
- 3 Individual siphons or siphon systems**
maintenance-friendly, made of semi-transparent polyethylene (PE)

***DELBAG® Air Filtration is a dynamic globally active company
within air treatment - filter technology - air quality.***

Our local consultant and service teams gladly take their time to develop ideas and solutions together with our clients – creatively and professionally.

