

PRODUCT BROCHURE

Compact aerosol filter  
**DELBAG® MultiAir Eco**

***The space miracle for your machine tool***



THE DELBAG® AND MULTIAIR ECO

## ***Safety for people and the environment***

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### ***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.

DELBAG® Air Filtration means competence and experience from more than 100 years of market leadership in air filter technology. Under our motto [Air Eco2nomy](#) we offer you comprehensively oriented solutions that set economic and ecological standards. Another example of this is the development of an extremely compact filtering aerosol separator: the DELBAG® MultiAir Eco.

Especially in smaller companies you literally grow with your tasks. Whereas metalworking tasks were carried out yesterday with simple lathes, professionalizing the next steps is an absolute "must" in the growth of the company and its market position today in comparison to its competitors.

The investment in modern CNC machine tools is a logical step that not only places new demands on the workplace and installation site. Always in view: The company's responsibility for its most valuable asset, human performance. "You can't make an omelette without breaking eggs." However, in this case cooling lubricants are released into the breathing air, leading to irritations and hazards in the body at to skin or eye contact. Thus, the expansion of economic competitiveness also leads to the expansion of occupational safety. The workplace concentrations in accordance with TRGS 611, TRSG 900, 910, etc., can be calculated as follows (TRSG = German technical rules of industrial safety) must be observed.

For installation of a CNC machine tool in the working environment of a production hall, the use of a decentralized filter system on site is recommended. With this system, a number of emission sources can be sucked off and cleaned. The cleaned extract air can simply be blown out into the hall as recirculating air (of course the statutory occupational safety regulations for recirculating air operation in the hall must then be observed).

DELBAG® Air Filtration is a competent partner of the industry in all fields of air pollution control. We have found flexible solutions for changing tasks. Here, our engineers had the task of delivering a particularly compact result that was economically advantageous for everyone. The right solution: The very compact MultiAir Eco aerosol separator ensures clean air at the workplace with Air Eco2nomy.

Keep an eye on things: According to the state of the art (DGUV Regulation 109-003) the following concentrations of cooling lubricants in the air must be maintained:

- Water-mixed cooling lubricants for metalworking, glass and ceramic processing, water-miscible and water-mixed forming lubricants 10 mg/m<sup>3</sup>
- Non-water-miscible cooling lubricants with a flash point > 100 °C for metalworking 10 mg/m<sup>3</sup>
- Non-water miscible forming lubricants 40 mg/m<sup>3</sup>
- Non-water-miscible cooling lubricants with a flash point < 100 °C for metalworking 100 mg/m<sup>3</sup>

**DELBAG® MultiAir Eco - small and powerful, portable for your machine and economically sustainable for your company.**



# Quality in the smallest place

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- Safe filter function - no risk of explosion or fire
- Recirculating-air mode through safe compliance with AGW (work station limit value) and TRK (technical guideline concentration) values
- Technology for horizontal or side installation on processing machines
- Oil-tight welded design
- Efficient fans
- Innovative filter control system MechaTronic EC
- Fast replacement of plug-in seals made of nitrile butadiene rubber (NBR) with stainless-steel cores

The MultiAir Eco is the development of a proven DELBAG® family, which is characterized by compact yet flexible construction. This innovative development takes compactness to the top of the line. It is no coincidence that we proudly call the MultiAir *Eco* a "space miracle". However, the flexible combination of different filter levels remains easily possible here as well. The MultiAir *Eco* is particularly easy to operate and particularly easy to handle during maintenance and filter replacement. You can adapt it to its task with just a few simple steps.

Due to its small format, the compact separator requires very little space and is easy to install. Assembly and installation on the machine tool are just as possible as installation next to the machine (we offer a height-adjustable support column as an accessory for this purpose).

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 meet this demand, the MultiAir *Eco* offers volume flow control as standard, which adapts to your requirements. The main functionalities and features correspond to the larger versions of the MultiAir family. Despite its compactness, the MultiAir *Eco* also demonstrates what it can do when it comes to efficiency, economy, safety and handling - but it really shines when it comes to compactness and economy.

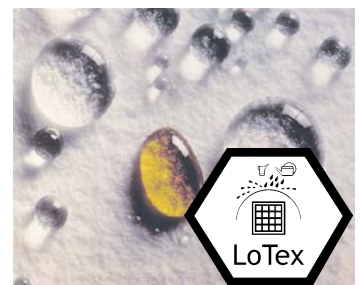


## Innovative filter technology - with experience



### LoTex® filter pads - technology for lower energy consumption

DELBAG® Air Filtration has developed LoTex, a new type of filter material based on the lotus effect. It is used primarily for separating 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 effectively reused, if desired. 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



LoTex filter pads

### FogTex - Large drainage effect with small pressure difference

The filter pads 1902 FogTex are high-quality fleece with a very low pressure difference. They consist of a very open polyester fiber package with compression on the pure-air side. Due to their unique open surface structure, the filter pads have a very efficient drainage property that sustainably protects downstream filter media.



FogTex filter pad

## ***Creating space for some security***

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### ***A DECONTAMINATED ATMOSPHERE - OUR CONTRIBUTION TO YOUR HEALTH***

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Air Eco2nomy means proven filter technology based on many years of experience. So you can always intervene with determination, as your processes require, without endangering your health.

**When it comes to detecting cooling lubricant mist within machine tools, you are looking at a very complex topic. Expert advice is of great advantage here.**

Take a look at a few factors and questions that may arise when dealing with this topic, and that may help you to avoid possible separation errors. Incorrect or inadequate filtering not only leads to a risk to the health of your employees, but can also result in increased operating costs.

First of all, what does "cooling lubricant" actually mean? The mechanical abrasion of workpieces generates a high degree of waste heat, which is why cooling lubricants are used to bind the material erosion and for cooling. The misting of cooling lubricants produces very fine, submicron aerosols in high concentrations. A filter system must

therefore be able to reliably eliminate these aerosols and remove the separated cooling lubricant from the extract-air flow.

A first basic decision is whether to choose a decentralized or a central extraction solution to process the exhaust air flow safely. However, both solutions have one thing in common in their wide range of variants, namely recording within the machine tool.

Here a first principle applies: as much volume flow as necessary, but not as much as possible!

There must always be a vacuum inside the machine tool, and this is sufficient if the air flows from the outside to the inside at all openings and slits in the processing chamber. An air velocity of 0.2 to 0.5 m/s should be planned here.

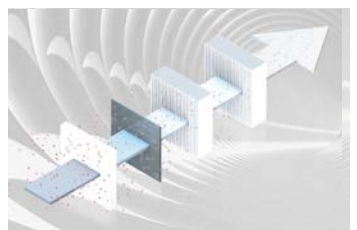
But there must also be a targeted air flow inside the machine tool, otherwise the cooling lubricant aerosols cannot be detected correctly and the dangerous mist "gets stuck" in the machine tool. Remember: If possible, the extraction point should be located in the ceiling or wall area opposite the operating door. No coolant jet should go in the direction of the extraction point and the extraction speed should be less than 4 m/s, otherwise unnecessary quantities of large aerosols are collected and sucked in.

Once the machining process is completed, an increased extraction volume flow must detect the remainder of suspended aerosols in the machine tool so that no "mist" can escape into the hall when the operating door is opened.

Approx. 50 mass percent of the aerosols detected are  $\leq 1 \mu\text{m}$ , i.e. the selected separator must take this into account. The right filter combinations ensure high droplet separation and very rapid collection, in conjunction with the appropriate volume flow. By using different pre-filters and main filters, the aerosol separator can be optimally adapted to the respective application.

If the aerosols remain in the filter element, secondary evaporation occurs. Separated aerosols must be able to drain off quickly. Another principle is therefore: Double filter surface = four times the service life and half the pressure difference! Therefore, do not save on filter area.

When using a DELBAG MultiAir unit such as the MultiAir *Eco* as a decentralized solution, you can be sure that all factors have been implemented as performance features in the development of the unit. The polluted air is reliably cleaned so that it can even be driven in recirculating-air mode. The system reliably prevents any danger of fire or explosion.



Separator schematic sketch

## 99.9% pollutant separation – fully automatically controlled

### MechaTronic EC - the comfort control - it saves money and everyone understands it

The MechaTronic EC always keeps the air flow at the optimum level. Not too much, not too little. This in combination with a highly effective EC fan results in minimum electric power consumption and optimum filter media service life.

- **Selectable air flows**

Up to 5 different, freely selectable air flows can be set depending on the process. This guarantees high safety at minimized energy costs

- **Simple display**

The plain text display is easy to understand and can be shown graphically or numerically

- **Wide selection of languages**

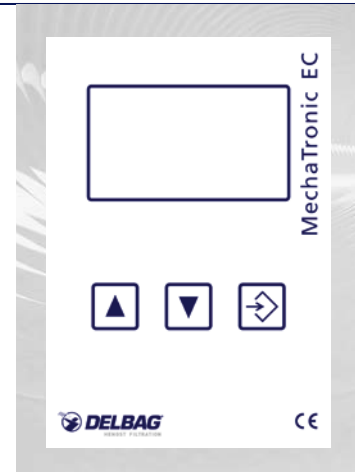
The MechaTronic EC is available in 19 languages. This enables you to operate the control system globally and easily.

- **Potential-free contact**

The floating contact to the machine tool ensures proper operating messages between the MultiAir Eco and your plant.

- **Versatile positioning**

The MechaTronic EC control system can be mounted directly on the unit or the unit column. Integration into a central control system in the control station is also possible.



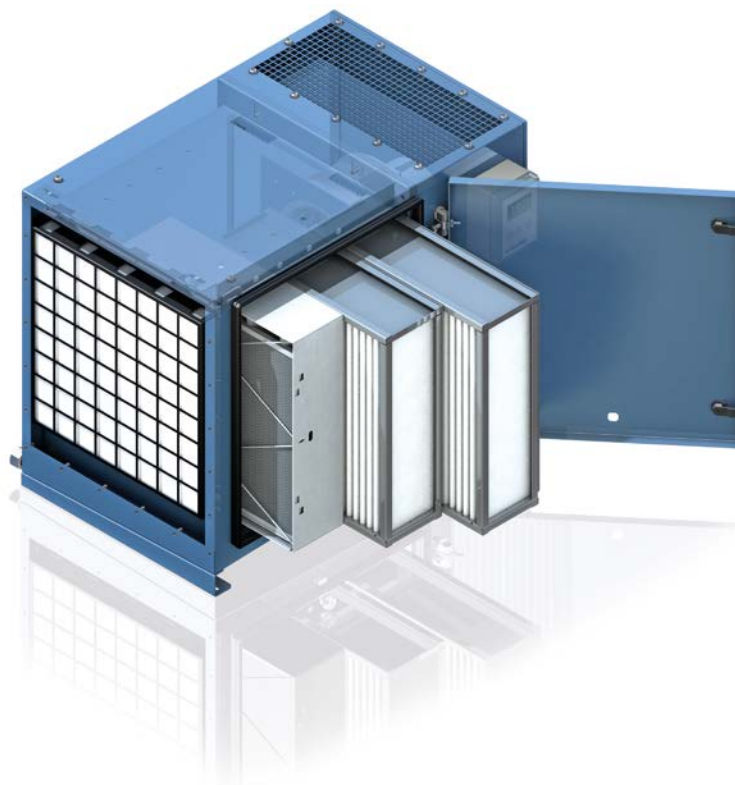
Filter control MechaTronic EC







## TECHNICAL DATA

# The compact unit with high performance

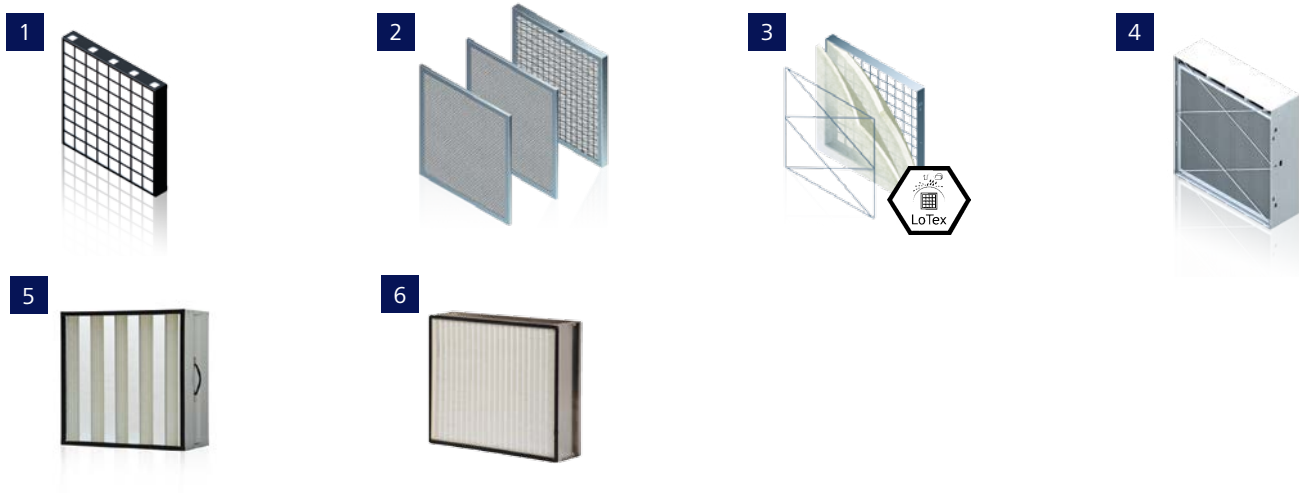
- One-piece, oil-tight welded steel housing with two chambers sealed off from each other (no bypasses)
- Wide selection of filter configurations
- Fan with high efficiency, minimum energy costs
- Adjustable filter clamping device, each filter assembly finds its place
- Low-cost, fully incinerable main filters with plastic edging or metal frame - no swelling of the material as with wooden frames
- Plug-in, quickly replaceable seals made of NBR with stainless steel core



Size	   	MultiAir Eco 2000
Max. air flow	m <sup>3</sup> /h	2000
width	mm	540
Height	mm	685
Length	mm	833
Weight	kg	70
Max. operating temperature	°C	40
Relative humidity	%	100
Rated voltage	VAC 50/60 Hz	400
Fan power consumption	kW	1.18
Sound pressure level 1	db (A)	< 65

<sup>1</sup> at a distance of 1 m

## Filter media



### Pre-filter

- 1 **Coalescer support frame**  
Support frame for washable coalescer pad FogTex, regenerable
- 2 **Metal filter, expanded metal**  
Various metal filter cells, aluminum expanded metal or stainless steel mesh, regenerable
- 3 **MultiCase holding frame**  
Holding frame for filter pad combinations such as filter pads ISO Coarse & LoTex® ePM<sub>10</sub>
- 4 **Holding frame MultiCase W135**  
Holding frame for different filter pad combinations of class ISO Coarse & ePM<sub>10</sub> [ISO 16890], large filter surface with W-shaped arrangement

### Pre-filter and post-filter

- 5 **Filter cells ePM<sub>1</sub> [ISO 16890]**  
Pleated oil and hydrophobic filter material in plastic or metal frames
- 6 **HEPA filter E11, H13**  
Pleated oil and hydrophobic filter material in plastic or metal filter frames, various filter depths



## Extras

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The following accessories are available for MultiAir Eco:

- 1 Installation upright**  
adjustable heights in 100-mm increments from 1.8 to 2.5 m, for installation at high levels
- 2 Diverse air-intake hoods**  
including accessories for connections to the air-extraction point
- 3 Drainage systems**  
maintenance-friendly

***DELBAG® Air Filtration is active worldwide in the fields of air treatment technology - filter technology - air pollution control.***

**Our nearest sales and service teams will be glad to discuss ideas and develop creative and effective solutions with you.**



[www.delbag.com](http://www.delbag.com)

 **DELBAG®**  
HENGST FILTRATION