PureAir BioTech

The PureAir BioTech Inc.

Filtration System

PureAir BioTech

Biofilters for Exhaust Air Treatment

Biofilters for Exhaust Air Treatment are advanced biological systems designed to purify polluted exhaust air by removing volatile organic compounds (VOCs) and unpleasant odors. Biofilters consist of an organic carrier material that hosts beneficial microorganisms. These microorganisms naturally break down VOCs and odors into harmless components, making biofiltration a sustainable and effective method for air purification.

PureAir BioTech's advanced biofilters offer unique benefits over traditional systems: with a proprietary layer design that maximizes VOC reduction, odor neutralization, and CO_2 footprint reduction, our biofilters set a new standard in exhaust air treatment. Unlike conventional systems, PureAir BioTech's biofilters ensure even moisture distribution to prevent clogging and require minimal maintenance, achieving cleaning efficiencies of up to 99%.

This efficient, cost-effective, and environmentally friendly approach to air filtration provides companies with a reliable solution to reduce their environmental impact while addressing stringent air quality regulations. PureAir BioTech's biofilters offer industries an optimal balance between high-performance air purification and sustainable, low-maintenance operation.

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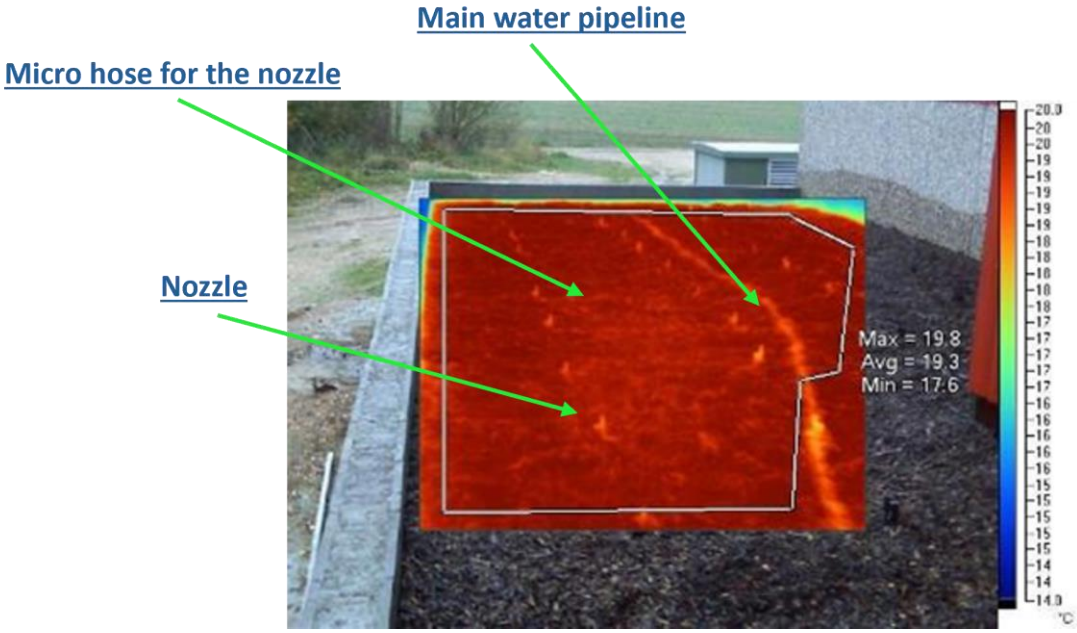
Moisture Control and Irrigation System



The moisture in the biofilter is continuously monitored and controlled in each bioactive layer, ensuring efficient exhaust air treatment. If the predefined parameters in a bioactive layer are exceeded, the control system automatically sends a signal to the corresponding solenoid valve, which then opens. The irrigation system moisturizes the bioactive layer until the predefined parameters are slightly exceeded again. This ensures that the Hartmann Biofilter consistently achieves the optimal moisture level in the bioactive layers. Consequently, a previously installed exhaust gas washer is no longer necessary for effective exhaust air treatment.

The irrigation system consists of numerous small nozzles embedded in the bioactive layer and supplied with water through microtubes. Since both the nozzles and microtubes are placed within the bioactive layer, the irrigation system remains active even at low temperatures and does not need to be shut down, providing continuous and reliable exhaust air treatment.

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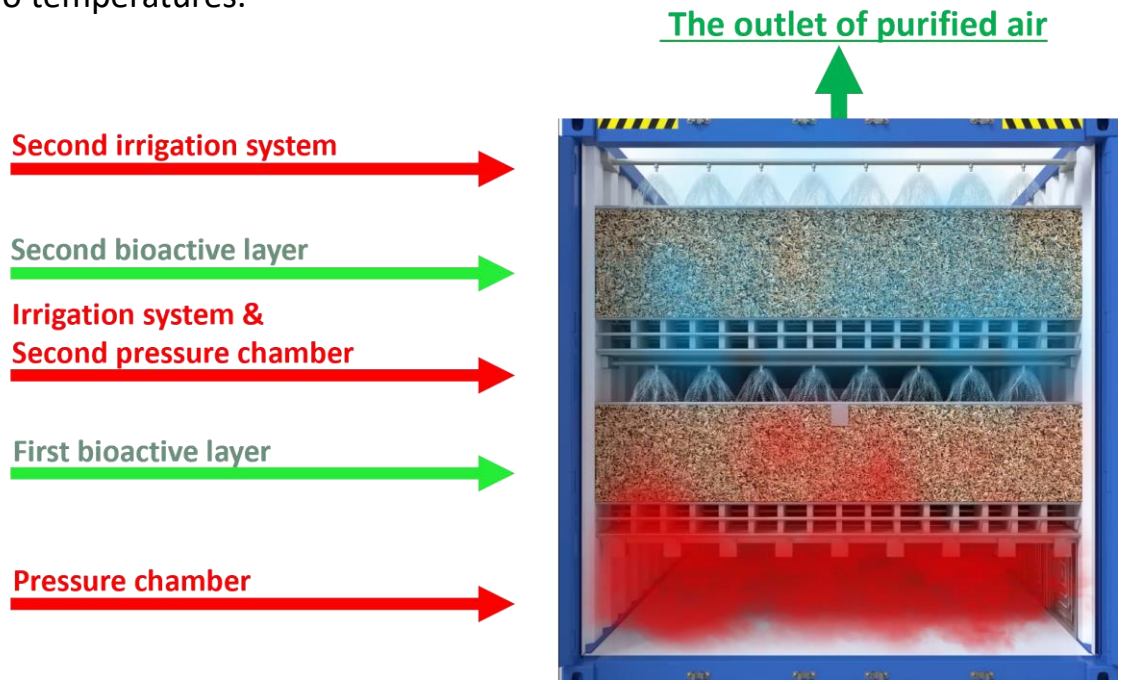
Our filtration system

Our filtration system purifies exhaust air in multiple stages: The contaminated air first enters the lower pressure chamber, where it is evenly distributed. It then passes into the first substructure, which ensures continuous and uniform airflow without clogging, even with dust or tar particles.The air then flows through the first bioactive layer, made of enriched wood chips, where microorganisms biologically degrade pollutants. This layer is monitored by moisture sensors and kept hydrated with a sprinkler system.Next, the air enters the second pressure chamber, where it is evenly distributed again before passing through another substructure. Finally, it moves into a second bioactive layer, which also features sensors and sprinkling systems. Thanks to its protected design, our system operates reliably, even in extreme subzero temperatures.



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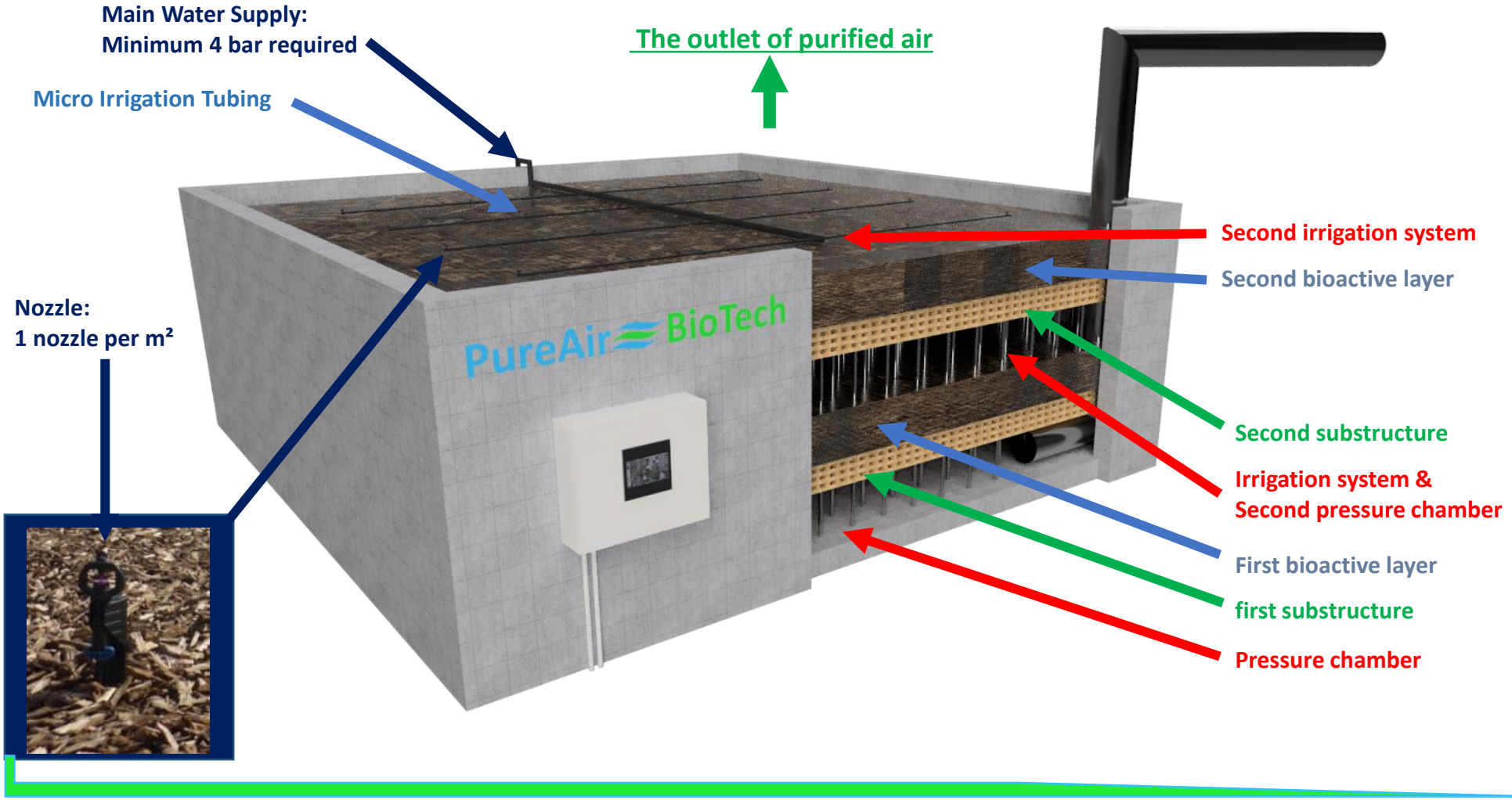
Our filtration system



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Controling System

Our state-of-the-art control system is based on reliable Siemens PLC technology, ensuring maximum precision and efficiency. Relevant operational data is recorded every second, including:

- **Moisture content** of each bioactive layer
- **Pressure** in the pressure chambers
- **Temperature**
- **Water consumption**
- **Wastewater volume**
- **Time and date**

For seamless integration into your operations, we offer the option to link our control system with your **operational management system** – either via **data cable** or **wirelessly**.

Additionally, we offer the option to have the Biofilter monitored by our experienced **technical team**. This allows us to make adjustments as needed to ensure optimal performance.

An **real-time monitoring** of raw and clean gas values is also available as an option, ensuring continuous tracking and documentation of cleaning performance.

With our control system, you have complete oversight of all relevant operational data – for maximum efficiency and full control of your exhaust air treatment system.

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Key Facts about the Biofilter

Parameter	Value
Maximum operating pressure	Up to 200 Pa
Exhaust air temperature	5–60 °C*
Higher temperatures	Available upon request
Water consumption	Approx. 1.3 L/m²**
Wastewater share	Approx. 25% of water consumption
Biological substrate	Enriched wood chips
System lifespan	>15 years with regular maintenance
Monitoring	Real-time monitoring available (optional)
Integration	Operational management system via cable/Wi-Fi
Frost resistance	Down to -20 °C
Notes:	
* Standard values are based on experience. Special solutions are available for higher temperatures.	
** Water consumption is an average value. High humidity significantly reduces water demand.