

# FlexBio

## Exhaust air filter technology

Efficient, environmentally friendly and cost-effective

### Product description

Commercial and industrial exhaust air treatment:  
food and beverage production,  
slaughterhouses, industry & agriculture



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### FLEXIBLE SOLUTIONS

FlexBio exhaust air systems and filter systems work with a combination of chemical-physical adsorption and biological filtration as standard.

The chemical-physical exhaust air purification is carried out using highly effective, pelletised adsorbers based on iron hydroxide, the so-called OXI pellets. Specially selected activated carbons are also used for fine purification of the exhaust air.

Biological exhaust air purification in a biofilter is based on the activity of microorganisms. These oxidise both organic and certain inorganic gaseous components of the exhaust air biochemically and convert them into harmless and odourless substances.

For special applications, tailored filter material is produced according to customer requirements. The quantity, type and, if necessary, the composition of the filter material are designed to optimise the process. In many cases, a combined application of biochemical exhaust air purification and chemical-physical adsorption proves to be particularly effective.

### ADVANTAGES

- Simple operational management
- Reliable cleaning
- Low filter material requirement and long service life
- Low maintenance effort
- Safe undercutting of limit values for pollutants
- Corrosion protection
- Saving on chemical dosing agents
- Reduction of repair, refurbishment and maintenance costs
- High degree of economic efficiency & operational safety
- Analysis and filter material change service
- Maximum flexibility

### APPLICATION AREAS

- Exhaust air purification of industrial process-related emissions (oil mills, textile industry, paper industry, waste processing, etc.)
- Lean gas disposal (landfills)
- Waste emissions
- Emissions from standing and flowing waters
- Emissions from wastewater treatment plants
  - ✓ Sewage treatment plants
  - ✓ Pumping stations
  - ✓ Wastewater transport systems
  - ✓ Septic tanks
  - ✓ Storage basins
  - ✓ Mixing and equalisation basins
  - ✓ Sand traps
  - ✓ Inlet structures
  - ✓ Thickeners
  - ✓ Pumping and expansion shafts

### OUR SERVICES

- Determination of potential and requirements
- Process delivery
- 3D modelling
- Production and approval planning
- Plant construction as general contractor
- Standardised documentation
- Installation and Commissioning

# Clean air from industrial processes and wastewater treatment plants



### GENERAL INFORMATION

#### Function

Chemical-physical binding of pollutants and odours.

#### Procedure

The exhaust air first flows through the cleaning layer or filter layer, which ensures even distribution across the entire filter bed. This effectively retains coarse particles.

The pollutants contained in the exhaust air adsorb physically on the specially developed filter surface, whereby they are removed from the air and concentrated in the adsorbent. The high specific surface area of the filter material ensures that the exhaust air remains in the filter for a long time. This leads to an almost complete reduction of unwanted odours.

#### Properties

Modular filter systems are flexibly scalable and, depending on the size of the exhaust air filter, consist of a round container with one or more filter levels (layered system). The modular design enables precise adaptation to different volume flows and varying odour and pollutant concentrations.

All components in contact with the exhaust air are made of high-quality PEHD or corrosion-resistant stainless steel to ensure maximum durability and resistance to environmental influences.

The adsorbent used, highly effective pelletised OXI pellets based on iron hydroxide, is precisely matched to the respective exhaust air conditions and cleaning targets. If required, several additional layers of filter material can be integrated to further optimise the efficiency of exhaust air purification.

#### Technical documentation

Spare parts list of components, acceptance/test certificates. FlexBio products comply with the requirements of the EC Declaration of Incorporation.



# Schematic representation of an absorbent exhaust air filter

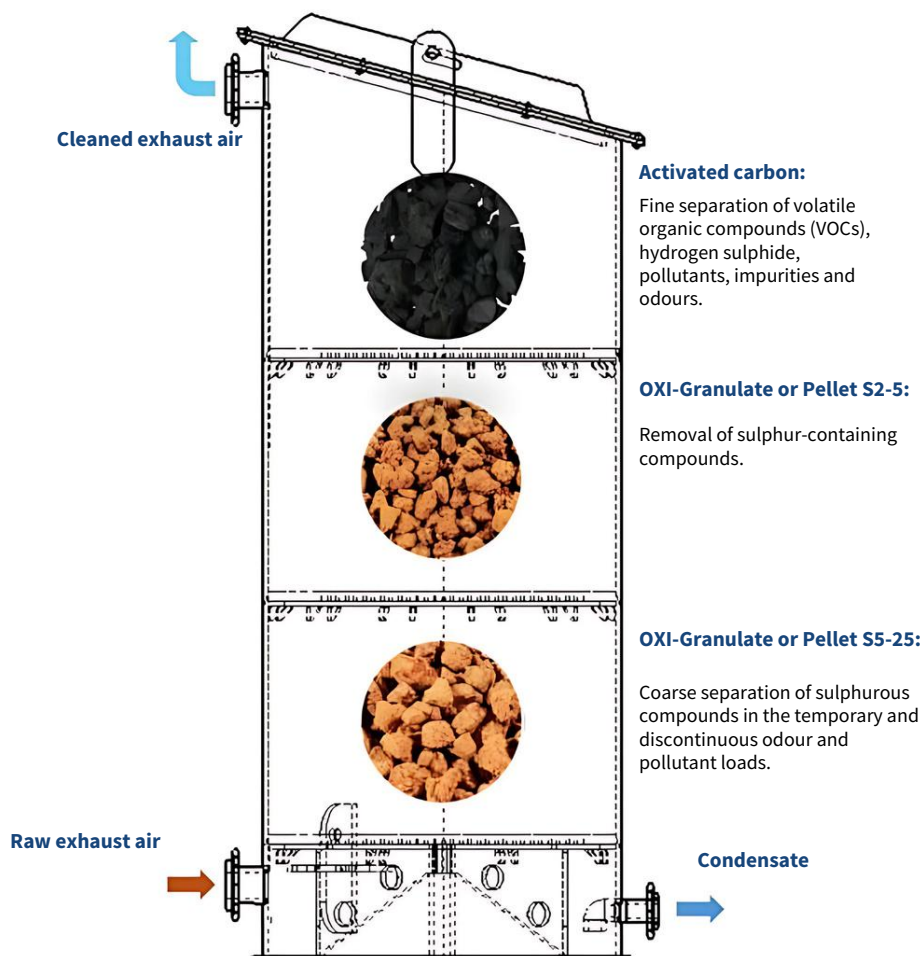


Table: Absorbent exhaust air filter types and characteristics

TYPE	AdsoF-4.PE	AdsoF-30.PE	AdsoF-65.PE	AdsoF-100.PE
Type of construction	HDPE filter container with scum tray			
Material	HDPE / stainless steel			
Useful volume	0.4 m <sup>3</sup>	3.0 m <sup>3</sup>	6.5 m <sup>3</sup>	10 m <sup>3</sup>
Max. flow rate	250 m <sup>3</sup> /h	500 m <sup>3</sup> /h	1,000 m <sup>3</sup> /h	1,500 m <sup>3</sup> /h
Operating pressure	-10 to +20 mbar			
Adsorbent filling quantity	0.4 m <sup>3</sup> / 200 kg	3 m <sup>3</sup> / 1,500 kg	6.5 m <sup>3</sup> / 3,250 kg	10 m <sup>3</sup> / 5,000 kg
Exhaust air connection	DN 200	DN 250	DN 300	DN 350
Transport dimensions W x H x L	1,000 x 1,900	1,500 x 2,400	2,000 x 2,700	2,300 x 3,200
Transport weight (empty)	350 kg	600 kg	1,120 kg	1,550 kg

### GENERAL INFORMATION

#### Function

The microorganisms in the biofilter settle on a solid carrier material on which they absorb pollutants from the exhaust air. These blend into the liquid phase, where they are utilised by the microorganisms as a source of nutrients and energy. Biological oxidation of the pollutants results in efficient degradation, while the microorganisms build up their biomass.

#### Procedure

The exhaust air is channelled through pressure-stable fans into a pressure chamber, which ensures constant pressure and stable flow conditions. Coarse particles settle before the air hits a grid that ensures even distribution and retains other particles. It then flows through the biologically active layer, where pollutants are broken down microbiologically. A sprinkler system regulates the humidity and supports the process. The filter system almost completely eliminates odours and consists of a pressure chamber, special filter material and coordinated sprinkling. The filter material is preconfigured, inoculated with biological culture and can be impregnated with iron hydroxide to adsorb sulphurous compounds.

#### Properties

The modular filter is a round or rectangular container with special fixtures. All materials in contact with the exhaust air are made of PEHD or corrosion-resistant stainless steel for maximum durability.

The filter system contains a pressure chamber and GFRP gratings to stabilise the filter bed. A tear-off edge prevents edge movement and ensures an even flow.

The integrated sprinkler system ensures optimum conditions for biological decomposition. The pressurised chamber is easy to clean via a manhole on the side. The modular filter is supplied ready for use with a complete filter material filling.

#### Technical documentation

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Table: Exhaust air biofilter types and characteristics

TYPE	BioF-30.PE	BioF-65.PE	BioF-C050	BioF-C100
Type of construction	PEHD round container		20ft HC ISO-Container	40ft HC ISO-Container
Material	System parts in contact with exhaust air: HDPE / stainless steel			
Useful volume	3.0 m <sup>3</sup>	6.5 m <sup>3</sup>	30 m <sup>3</sup>	60 m <sup>3</sup>
Max. flow rate	500 m <sup>3</sup> /h	1,000 m <sup>3</sup> /h	5,000 m <sup>3</sup> /h	10,000 m <sup>3</sup> /h
Operating pressure	-10 to +20 mbar			
Filter material - filling quantity	3 m <sup>3</sup> / 1,500 kg	6.5 m <sup>3</sup> / 3,250 kg	20 m <sup>3</sup> / 10,000 kg	40 m <sup>3</sup> / 20,000 kg
Exhaust air connection	DN 250	DN 300	DN 350	DN 400
Transport dim. W x H x L	1,500 x 2,400	2,000 x 2,700	2,500 x 3,200 x 6,500	2,500 x 3,200 x 12,500
Transport weight (empty)	600 kg	1,120 kg	9,550 kg	16,500 kg

**Proven technology as a complete solution incl.  
Machine technology, measurement technology  
and control**



**Modular biofilter container solutions  
-turnkey, flexible, scalable**

Everything from a single source!  
We deliver systems solutions!



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