

Technical data sheet

BAT- Best Available Technology



Biofilter BF - Gregale

Main characteristics

Type of biofilter: Bottom-loaded (up-flow) opened biofilter installed above ground level with a single-level bed biofilter. In addition, biofilter can be covered, therefore it is possible to realize both up-flow and down flow system.

Kind of covers: pressostatic covers and "hard" covers (realized with modular panels)

Air flow rate: $>500 \text{ Nm}^3/\text{hour}$

Structural material (vessel): realized with modular panels in Al-Mg alloy. Air flow entrances are realized in stainless steel (AISI 304)

Nuts and bolts: stainless steel (UNI EN ISO 3506:2009)

Waterproof sheet (within the vessel): PVC coated polyester (generally, sheet's weight is 650 g/m^2). Standard colour is green, but it can be chosen by the Customer

Type of air distribution system within the biofilter: **PURE GRID** or **CROSS GRID**

Bed humidification system

Humidification of the bed is ensured by means of a sprinkler system. A main pipe delivers the water through a manifold to individual pressure compensated sprinkler heads. Operating parallel, these heads spray water over the entire surface of the bed. Pipes are realized in polypropylene (PP) and can be installed within or out the vessel. In order to provide the desired amount of water to the bed, irrigation system will be equipped with a programmable flow-control device. The flow-control unit allows to set different types of programs depending on the season, atmospheric weather and operating conditions; thus, water consumption can be reduced.



Pressure range to be guaranteed in the bed humidification system: $2.0 \div 5.0 \text{ atm}$

Water consumption and quantity of leachate produced: the amount of water that needs to be supplied to the biofiltration bed (and consequently the amount of leachate produced) depends, for example, on the type and concentration of pollutants in the contaminated air, the climatic characteristics of the installation area, and the type of fill material chosen for making the bed.

Electric Energy consumption: it depends by the biofilters' size, but is approximately the same of the fan/s.

Vessel's service life: $> 20 \text{ years}$

Brief description of biofiltration process

Biofiltration is the removal and decomposition of contaminants in gaseous form through the use of microorganisms. In the biofilter, the removal of pollutants takes place thanks to the simultaneous action of a wide spectrum of microorganisms (such as bacteria, actinomycetes and fungi) that are able to metabolize, through a series of biological reactions (i.e., hydrolysis, reduction and oxidation), both organic (such as acids, alcohols and hydrocarbons) and inorganic compounds (such as H₂S and NH₃).

Biofilters made by A&L do not require the pre-humidification of incoming air flow, simplifying the management of the biofilter and reducing its operating costs.

Performances

The BF-Grecale is the most effective and economic system when high air flow rate has to be treated. It is effective on a wide range of biodegradable and water-soluble molecules, especially: organic molecules (also complex) and molecules with high olfactory impact such as aromatic and aliphatic hydrocarbons, fatty acids, mercaptans, amines, amides, aldehydes, ketones, organic solvents non-chlorinated, hydrogen sulphide, ammonia.

Why buy a BF-GRECALE?

Because BF-GRECALE:

- is **made with high-quality materials**: Al-Mg alloy endures to the corrosive action induced by the presence aggressive compounds in the air stream to be treated, such as hydrogen sulphide.
- is **flexible**: thanks to the modular structure, the BF-Grecale can be easily resized (enlarged or reduced) or repositioned, even after years.
- ensures an optimal distribution of polluted air within the filtering bed**
- is **able to remove high concentration of pollutants**: thanks to the use of **PURE GRID** (that guarantees a uniform air diffusion within the filtering bed) and **PURE BIO** that guarantees the optimal conditions for the life of micro-organisms), the biofilter can reach, on the main target contaminants, a mean removal yield in the order of 90-95%, without pre-treatments!
- is **green and cheap**: mainly for two aspects: 1) energy and water consumptions are low thanks to the optimal diffusion of water and air within the biofiltration bed 2) at the end of its life, biofilter's filtering mass can be disposed of in a compost plant so it can be re-used as soil conditioner/fertilizer.



Maintenance

BF-Grecale does not require excessive maintenance; ordinary maintenance can be carried out by the internal staff of the Company supported by the A&L team.

At least 2-3 years after the commissioning, it is advisable to perform a surface mixing and reintegration of **PURE BIO** (reintegration is necessary in order to compensate the natural settling of the biomass).

A&L offers an annual (or multi-year) maintenance plan called **CARE PLAN**. During the year, our technicians perform tests and appropriate maintenance operations in order to maintain the performance of the biofilter as high as possible; in addition, constant monitoring of the system (e.g., pipes + fans + pre-treatment plan and biofilter) allows the client to plan future interventions (predictive maintenance) and to reduce the shutdown of air treatment plant.

Recommended for ...

BF-Grecale is recommended for public and private companies that have to treat large air flows with medium-low concentrations (in those case biofiltration often represents the most economical way to satisfy statutory regulations) and who want an efficient and long-lasting product. BF-Grecale is the ideal product for companies that want a reliable product, which does not require excessive maintenance and which operates with particular attention to the environment.