



AEROFERM® BIO FILTER

Waste air treatment procedure for the microbiological decomposition of air components

Process description:

Microorganisms break down harmful substances into harmless compounds such as water and carbon dioxide. The highly durable bio filter material itself acts as a breeding ground for the microorganisms. It is characterised by a high lifetime. The AEROFERM® process can be used to treat streams of waste gasses from agricultural facilities, communal sewage treatment plants and industrial processes, in particular in the food industry both economically and ecologically.

Biological waste air treatment:

The AEROFERM® process utilises the self-cleaning power of nature. The microorganisms needed to break down harmful substances breed on the porous, moistened filter material, where decomposition to the water phase begins.

The filter material plays a very important part in the process:

- High porosity provides the microorganisms with a large natural surface for breeding.
- Choice and conditioning create optimal living requirements for the microorganisms to break down harmful substances.
- Humidifying the waste air guarantees a constant high water content in the filter material.

The organic substrates provided are extremely durable. They contain a wide spectrum of natural microorganisms that adapt to the harmful substances needing to be broken down.



Concept development:

Creating an individual concept is the basic starting point for successful project work with ZECH UMWELT. We achieve this through working closely with our customers. We work together with the customer right from the start to look for possibilities to minimise waste air streams, beginning with the air outlet source of the local or central waste air handling system. Unknown or complex toxic compositions are analysed in our in house laboratory and their main components defined. ZECH UMWELT constructs and operates mobile bio filters as containers to demonstrate how substances are broken down by the microorganisms.

Implementation:

After analyses, the process is specifically tailored to the particular waste air problem.

Technical implementation:

The basic element of the AEROFERM® bio filter consists of:

- Ventilator for extracting waste air
- Humidifier with automatic control
- Container with ventilating base and filter material
- Switch cabinet for controlling and monitoring the equipment

Possible technical enhancements:

- Filter container for small and medium air stream volumes up to 20,000 m³/h. The units can be stacked vertically, saving space.
- Concrete bio filters for larger volumes of waste air streams that can be subdivided into several segments according to use. The filter can thus be changed during operation.
- Large surface filters with easily accessible ventilation bases so that the filter material can be quickly replaced by wheel loader.

- Airtight filter container cover for transferring treated air.
- Using plants so that larger surface filters blend into the natural scenery.
- Controlling remote positioned filter units via long-distance data transmission.

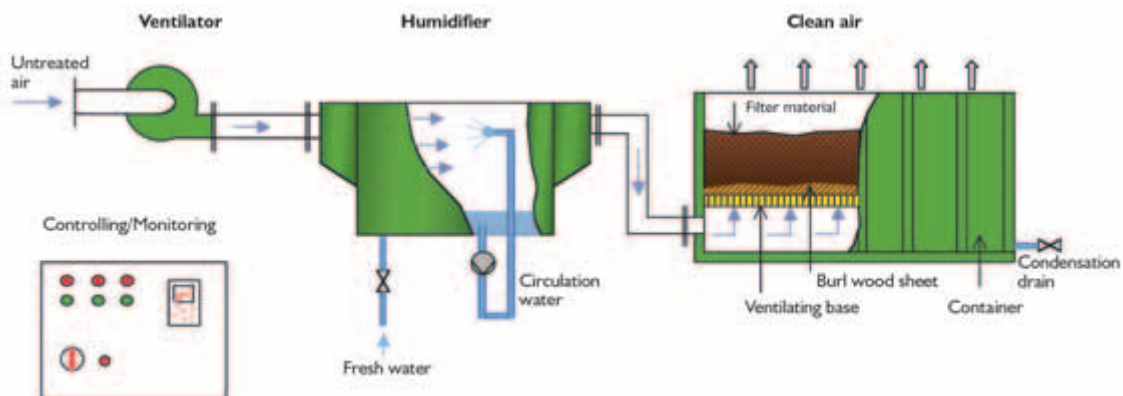
In addition to facility design and the laboratory for microbiology and analysis, ZECH UMWELT provides workshops for plant construction and electrical set up. We offer the whole spectrum from concept design to assembly and installation, up to site operating and monitoring. Our laboratory supplies test filters so that new areas of operation can be developed and the suitability of the process can be confirmed.

Development:

The areas of operation of the AEROFERM® bio filters have constantly expanded over the last years due to the reliable functionality and the efficiency of the process. With over 25 years experience in planning, construction and operation of AEROFERM® bio filters, ZECH UMWELT is your partner for economical and ecological solutions and the development of new concepts.

AEROFERM® bio filter areas of operation:

- In sewage treatment plants, composting plants, breweries.
- In the food industry, e.g. in canteen kitchens, bakeries, slaughter houses.
- For transfer stations of highly odorous substances in waste disposal services, tank farms, pumping stations.
- In agricultural facilities.
- In large factories and production halls.
- For decontamination processes such as ground air extraction, landfill gas extraction, soil treatment plants, water treatment plants.
- For the relief of future treatment processes such as activated carbon filters.



AEROFERM® bio filter operating process

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