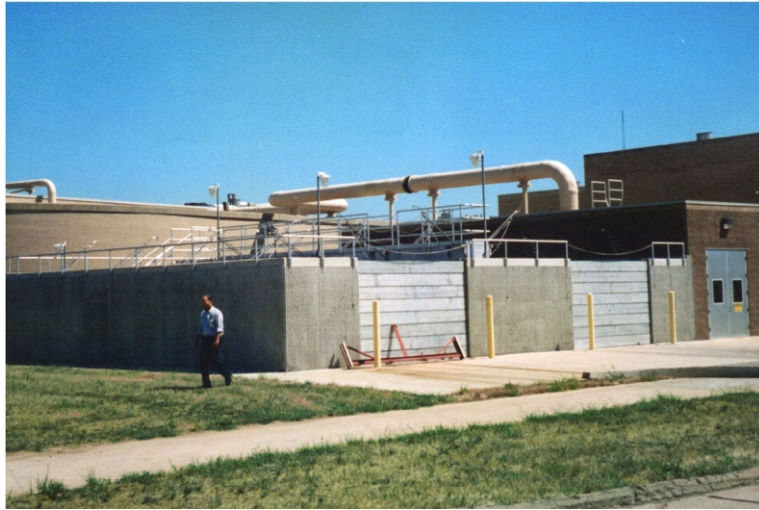


BioScrub™ Biofilter

The cost-efficient and reliable biofilter system



This BioScrub™ biofilter was installed 1997 at the Mill Creek Wastewater Treatment Plant, Cincinnati, Ohio, by the then-licensee of the biofilter technology now exclusively licensed to OSORNO. This installation was included for technical tours as part of the conference “Odor and VOC Control” of the Water Environment Federation in April 2000.

Description

Biofilters are used to destroy noxious compounds in exhaust gases. State-of-the-art biofilters are systems of the third generation, exclusively offered by OSORNO. These systems have previously become known under the trademark BioDigester (until Dec. 31, 1999). The rights to the underlying technology now rest solely with OSORNO.

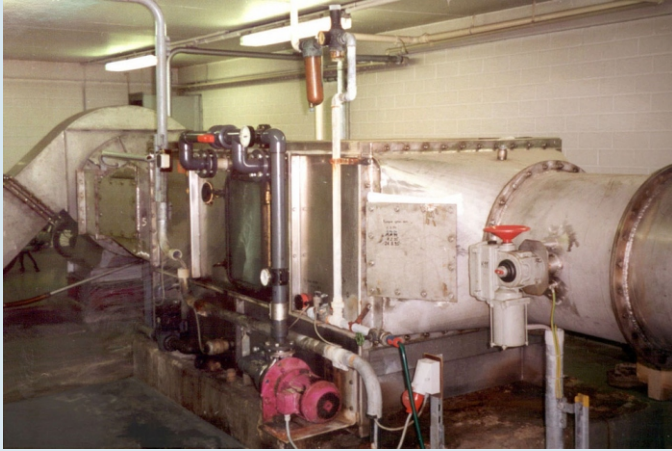
Developed and introduced in Europe by one of the founders of OSORNO in 1988/89 as the first “hot” biofilter, this biofilter system is sometimes dubbed “high tech biofilter”. Through the introduction of advanced electronic controls (adaptive “intelligent controls”), the operating conditions of the biofilter, mainly through influencing its operating temperature and moisture content, have become predictable. Biofilters of the third generation have set a new performance standard, and a new standard for low operating costs. Examples of the new standard are:

The first “hot” biofilter operated successfully and reliably from the end of 1988 through the end of 1995 without substantial maintenance requirements, or human supervision, at temperatures between 50 and 55 °C. It was replaced by a larger system because of increased capacity requirements due to growth of the production plant it served. Performance: better than 99.6% removal.

The first “high load reduction” biofilter was introduced in North America by one of the founders of OSORNO and operated successfully and reliably in 1994 at concentration levels of up to 8,000 ppm of common organic solvents - concentrations that up to that time were unheard of for biofilters. The specified and guaranteed solvent removal was 90%. The actual measured performance ranged between 92% and 96% removal, depending upon the solvents used.

The first “high odour reduction” biofilter was introduced by one of the founders of OSORNO and operates since August 1997 in Cincinnati, Ohio. Its excellent performance at very high hydrogen sulfide concentrations has been reported in literature, as well as its unusually low operating cost. Please ask us for the literature references. This system was built by the then-licensee of the biofilter technology now exclusively licensed to OSORNO.

The ControLogic™ is an “intelligent control” system that provides “hands-off” automatic operation of the biofilter. The BioScrub™ systems are relatively maintenance-free and operate under the ControLogic™ system to allow instantaneous, automatic monitoring of the unit's performance.



This stainless steel conditioning unit of the early design was installed in Mannheim, Germany, in 1989, for the first "hot" biofilter. The above picture was taken 1996, after 7 years of operation.

Unique Features of OSORNO Third Generation Biofilters:

- The ControLogic™ system provides automated monitoring of the operation.
- The aeration and moisture requirements are electronically determined, and thus power consumption depends on the actual load conditions.
- Changing load conditions have little influence on performance.
- Durable polypropylene aeration floor with unsurpassed evenness of air distribution.
- Modular "bay" design allows system expansion.
- High performance results in a much smaller footprint than conventional biofilters.
- Low maintenance expenses.
- Remote performance monitoring through network or the "Internet Ready" feature.

Applications

The BioScrub is the affordable, high performance treatment system of choice for odoriferous gases such as those from wastewater treatment plants, meat or fish processing industries, rendering plants, cocoa or coffee bean roasting, wood processing, surface treatment through painting or coating, adhesives industries, large printing operations, industrial-sized bakeries, and chemical and petrochemical industries.

Performance

The design of BioScrub™ systems does **not** follow the widely accepted German design guidelines set by VDI because the BioScrub™ performance significantly exceeds that assumed for biofilters by the authors of the VDI guideline. The primary cost factor in the operation of a biofilter is the cost of moving air through the biofilter, i.e. the cost operating the compressor. The main head losses are due to

- the humidification system,
- the air distribution system, and
- the biologically active substrate.

The conditioning chambers used by OSORNO have a head loss less than one eighth that of frequently used humidification towers, thus saving more than 80% of the electric energy for the blower otherwise required for the humidification step. The performance in terms of odour and/or VOC removal is typically better than 99.5% for odour removal in wastewater treatment plants, rendering operations, and food processing industries.

Installation

The BioScrub™ biofilter is custom-designed based on pre-engineered groups and modules. OSORNO is prepared to build a BioScrub™ system as a design-build project, as a design-build-own-operate project, or in a close working relationship with the engineering firm and the general contractor selected by the client.

Maintenance

A Maintenance or operation agreement with OSORNO is recommended.

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