ENVIROGEN TECHNOLOGIES

A Lifecycle Performance Company

Biofilters for Odor Control and VOC Treatment

Industry and municipal utilities are faced with challenges as they seek to comply with increasingly stringent air pollution regulations and odor complaints. Envirogen Technologies, Inc.'s biofilters are an ideal solution for the treatment of air pollutants and for the reduction of odors.

- Municipal Wastewater Treatment
- Pulp, Paper and Wood Products
- Pharmaceutical and Chemical
- Petroleum
- Food Production
- Paints, Coating and Printing

Envirogen Technologies' Biofiltration Systems

Cost-Effective and Efficient Odor and VOC Control
Envirogen Technologies' biofilters provide cost-effective odor control solutions with these products:

- Built-in-Place (BIP) Biofilter Systems – for larger air flow rate applications
- Modular Package Biofilters (P-Series and H-Series) – for small air flow rate applications
- Bioscrubber Towers – for space-limited applications

What is a Biofilter?
Biofilters use naturally occurring microorganisms to treat air containing such odorous substances as reduced sulfur compounds and volatile organic compounds (VOCs). Microorganisms reside on the surface of the biofilter media and only require irrigation water and small quantities of nutrient (for some applications). Microorganisms consume these odorous contaminants for energy and, in the process, cleanse the air.

Envirogen Technologies Advantage

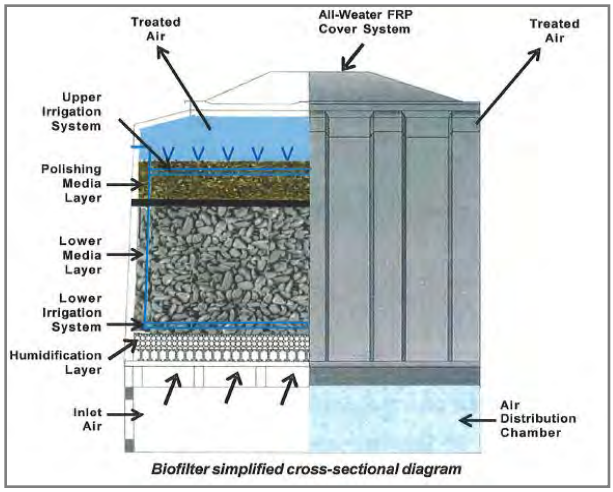
- Cost-effective odor control technology. Our nation-wide staff will ensure the best biofilter product to fit your needs.
- Low operating costs. Long media life and low power consumption reduce costs.
- Media materials to match specific applications. Options include inorganic mineral-based media, foam-based media and an organic media composed of aged bark product.
- Long media life. Our engineered media is designed to maximize media service life.
- Modular construction. Designed for ease of installation, our biofilters use preassembled modular units and/or standardized system components.
- All-weather cover system. Our fiberglass reinforced pipe cover system is designed to minimize corrosion and extend media performance and life.
- No dangerous chemical storage. Minimizes exposure to employees and the public.

Built-in-Place Biofilter Systems
The BIP system is used for mid- to large-flow rate systems. It uses standard designs and system components to reduce costs.

Modular P-Series
Envirogen Technologies' Modular P-Series biofilter is used for lower air rate applications.

Modular H-Series
Our H-Series models are designed for odor and sulfide removal for small air streams.

Biofilter Model	Air Flow Rating per Module (cfm)
H-60	up to 240
H-120	up to 480
P-600	up to 2,400
Bioscrubber Tower	over 1,000
Built-in-Place	over 5,000

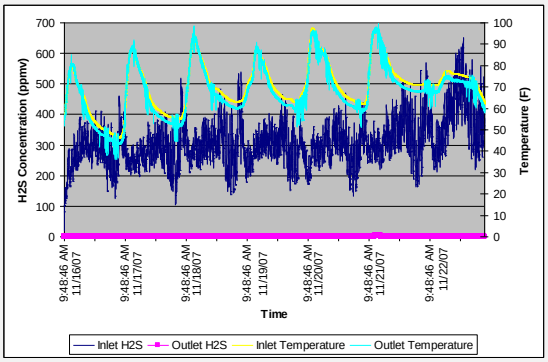


Biofilter simplified cross-sectional diagram

Bioscrubber Towers

The bioscrubber tower is a vertically oriented biofilter filled with an inorganic media. The filter's unique design treats odors in areas where space is at a premium or where VOCs are present.

Contaminated air enters the bioscrubber tower and flows either upward or downward (depending on the design) through the media along with a recirculating water flow. The recirculation water maintained in the bioscrubber tower allows for optimal control of pH, nutrient levels and biofilm thickness. In some applications, an intermittent, single-pass irrigation system can be supplied, eliminating the need for a recirculation pump.



	Odor[1] (d/t)	H_2S (ppmv)	ORS[2] (ppbv)
System Inlet	190,000	310	3,380
System Outlet	8,300	0.13	936
Removal Efficiency	95.63%	99.96%	72.31%

Operation Conditions: Air Flow = 900 cfm, EBRT = 15 sec.

[1]Using European Method EN13725

[2]Organic Sulfur Compounds (ORS) include COS, MM, DMS and DMDS

Envirogen Technologies' bioscrubber tower efficiently removes more than 99.9% of the inlet hydrogen sulfide, 95% of odors and more than 72% or organic sulfer compounds.

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For more information: www.envirogen.com
info@envirogen.com
(877) 312-8950