VALORSABIO

Parque Empresarial de Torres Vedras
Ed. Serviços A1
Paul
2560-383 TORRES VEDRAS
PORTUGAL

VOCLEAN

Biological Advanced Process for Hazardous Volatile Organic Compounds Removal from air.

The use of Bio filters in environmental plants, such as wastewater treatment plants, for odor treatment is a common application.

Biofilters, in general operate with high flowrate steams of air, extracted from buildings and zones were the presence of strong odors may be a cause of concerns. Most of the odors are result from H2S (Hydrogen sulfide) and NH3 (Ammonia), but other molecules can be present, such as (CH3CnH2nSH) mercaptans.

Biofilters are among several technological options, the least expensive inn operation costs. On the other hand, they tend to be slower in terms of startup and achieving a steady state operation, since they rely on microorganisms grow, to fulfil their treatment capabilities.

Biofilters, include internal packing media, organized, or random, but always enclosed in a specific space. Their operation is based on gas flow across the package, here the odor molecules are first transfer into a thin solution layer that covers all packaging material and after metabolized by microorganisms, mostly bacteria, but also fungi. Thus, to operate well, biofilters must have a regular presence of moisture in the surface of the packaging. This is essential for the good performance of the biofilter, as also the temperature and pH, should be keep under specific limits.

Fig 1. Horizontal biofilter installed in a concrete rectangular construction. Picture represented for illustration purposes only.

VALORSABIO

Parque Empresarial de Torres Vedras
Ed. Serviços A1
Paul
2560-383 TORRES VEDRAS
PORTUGAL

VOCLEAN is a biofilter designed for horizontal operation. The VOCCLEAN design takes advantage of standard equipment: the ISO container, with the usual sizes of 20 and 40 foot. The design of the VOCLEAN enters in consideration with inlet parameters such as H2S, NH3 and mercaptans concentrations and the volume of air flowrate to treat.

Inside the VOCLEAN, is used a fixed oriented pack of soft wood strips, arranged in a dense mesh. This pack is the surface for either the odors molecules diffuse to water solution layer present in the whole pack as also the media for microorganisms develop and metabolize the odor molecules.

In the VOCLEAN, there are a permanent water spray on top of the packaging, in a mist way, that keeps the volume of water low, but at same time enough to guarantee the good moisture contents inside the unit.

The water sprayed on top of the packing eventually will flow until reach the bottom of the VOCLEAN container. From there, it is recirculated to the top of the packaging, in a continuous way. A small but regular flow of water charged with debris from the microorganisms as also adsorbed odors is released to the wastewater treatment.

VOCLEAN include internal baffles arranged in a vertical way, to force the whole mass of air in treatment to pass across the whole packaging, is a way *up - down – up*, that enhances the good contact between odors and bio organisms, all along with an extended EBRT time (Empty Bed Residence Time).

VOCLEAN also includes a heat electric resistance that can be switch on when due to air low temperatures, during winter, may compromise the full efficiency of the unit. Thus it's possible to keep the water solution at stable temperature and thus optimize the diffusion coefficients of the odors as also their metabolic conversion yield.

VOCLEAN container is ready to transport and install. The air fan is included in the container space as also the recirculation pump and heat resistance.

VOCLEAN came with full automated control SCADA for remote control, monitoring and operation.

VOCLEAN general dimensions & treatment capacities:

Container Size VOCLEAN model	Feet (m)	EBRT (sec)	Air flow (m3/h) max	H2S range ppm	NH3 range ppm	Mercaptans ppm
VOCLEAN 10	10 (3)	45-60	2500	10-200	2-35	2-150
VOCLEAN 20	20 (6)	45-60	5000	10-200	2-35	2-150
VOCLEAN 40	40 (12)	45-60	10000	10-200	2-35	1-150