



LOW-ENERGY, LOW SLUDGE ONSITE TREATMENT

Above ground BioGill bioreactors turbo charge nutrient removal from sewage.

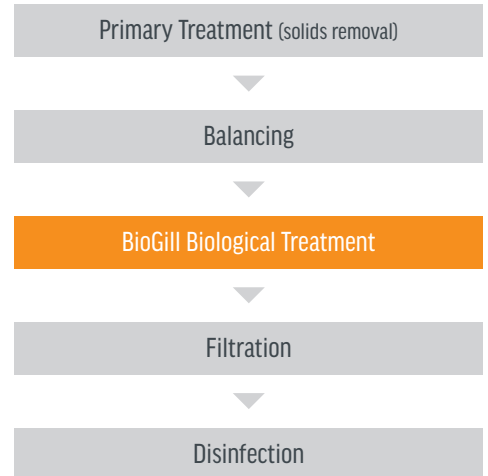


WATER SCIENCE NATURE

BioGill bioreactors are the perfect technology to supplement under-performing systems or as a complete substitute for the biological stage in decentralized and municipal sewage systems. The technology can easily increase the efficiency and durability of a sewage treatment process, at low cost and low energy.

Ideal for treating sewage from residential and commercial buildings, restaurant centres, resorts and small communities, BioGill technology is based on a key premise of concentrating and maximizing microbiology. The result is a biological treatment process for sewage treatment that is highly effective at reducing BOD, COD and nitrogen, with minimal operational requirements.

Compact and modular in design, BioGill units can fit tight spaces and are easy to scale when volumes increase. With primary treatment upstream to remove solids, BioGill bioreactors provide the biological secondary stage of the sewage treatment train.



BIOGILL BENEFITS



Effective treatment of high soluble BOD/ COD



Boost performance of existing plants



Easy to maintain



Low sludge output



Reduce odor



Low energy & operating costs



Natural and eco friendly

HOW BIOGILL WORKS

Biological water treatment relies on microorganisms to consume nutrients in the wastewater. Like all living things, microorganisms need the right habitat to flourish. BioGill above ground bioreactors provide an ideal, oxygen rich habitat for microorganisms.

Patented nano ceramic media, known as “gills”, provide the ultimate air and liquid interface for the microorganisms to grow, multiply, and thrive. Arranged in suspended vertical loops, each gill is folded over a support, creating two distinct environments on either side: one in contact with the wastewater and the other in contact with the air.

This unique design provides an ideal habitat for microbes to perform at their best. Protected in the biofilm, a robust and resilient microbial community develops rapidly and removes pollutants from wastewater effectively and reliably. BioGill solves many of the shortfalls of other technologies by delivering effective treatment of waste streams high in BOD and fats, oils, and grease (FOG), as well as reducing odor, in a package that is quick to install, simple to operate and easy to maintain.

STEP 1	Wastewater is pumped to the top of the BioGill bioreactor.
STEP 2	The wastewater is then dispersed over the looped gills and gravity fed down through the unit.
STEP 3	Biomass self-optimizes, growing the most suitable microbes to feed on a given wastewater. The result is a robust biomass that is more resilient to shock loads, FOG and high organic wastewaters.
STEP 4	Natural air convection, resulting from the heat generated by the biomass, increases the supply of oxygen.
STEP 5	Treated wastewater exits the BioGill system with reduced levels of BOD, TOC, Nitrogen and FOG.



BioGill Towers were added to an ageing, small-scale sewage treatment plant to boost performance to meet local regulations.

RESULTS

BioGill bioreactors are ideal for the biological stage of treating sewage. The technology is successfully treating sewage at a number of sites including:

Reduced energy at existing STP PHILIPPINES <i>Reduction in energy demand by 80.25%. Up to 89% BOD reduction</i>	89%
Decentralized sewage + resort commercial kitchen FIJI <i>Up to 96% BOD reduction in 24 hours</i>	96%
Retrofit to existing STP MEXICO <i>Up to 95% BOD reduction in 24 hours</i>	95%
Retrofit to existing STP AUSTRALIA <i>Up to 98% BOD reduction in 12 hours</i>	98%

Note: Typical batch times range between ½ to 1 day.

Fig. 1 Gill Structure

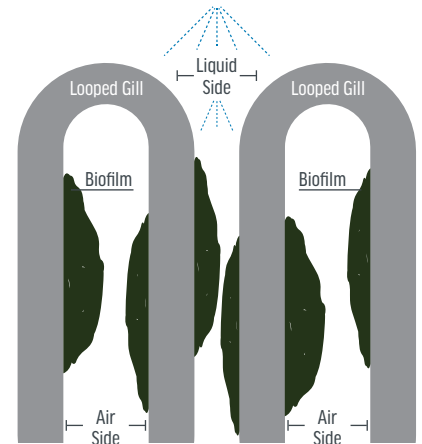
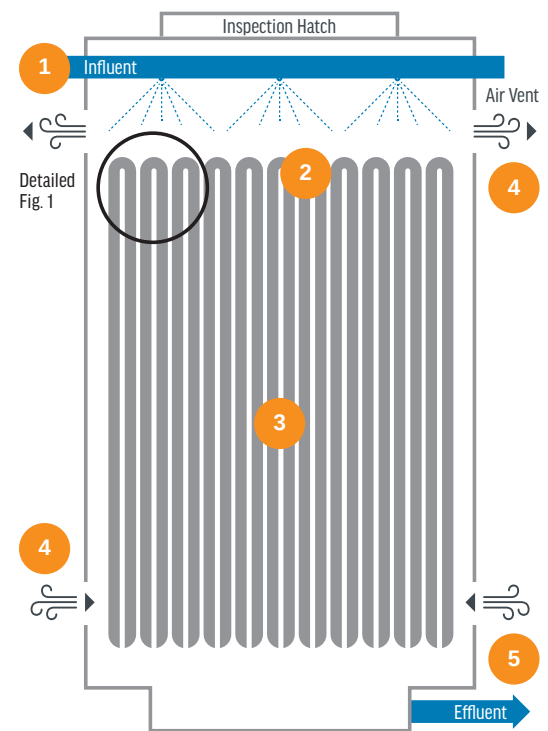


Fig 2. BioGill Tower Process Flow



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Case studies and technical reports are available at biogill.com