

# SIMPLE & EFFECTIVE TREATMENT OF BREWERY WASTEWATER



Scalable, affordable solution to reduce fees and meet discharge requirements.



## WATER SCIENCE NATURE

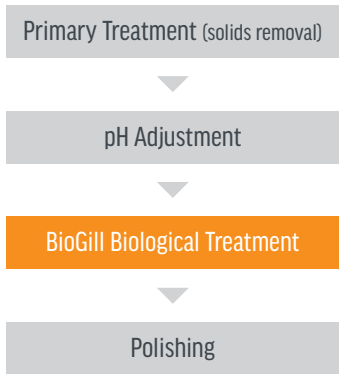
Brewing beer is a water intensive process that generates significant volumes of high strength wastewater with elevated levels of biological oxygen demand (BOD) and total suspended solids (TSS). As a result, many breweries incur costly high strength surcharges from local utilities, pay to truck wastewater offsite, or contend with other onsite challenges related to odors and wastewater storage.

As water authorities around the world enforce stricter regulations, increase surcharge rates and discharge fees, more breweries are seeking onsite treatment solutions.

Microorganisms are nature's best nutrient recyclers and decomposers, providing the biological engine behind many forms of wastewater treatment. BioGill technology creates the perfect oxygen rich environment for microorganisms to perform at their best. BioGill above-ground treatment systems are particularly effective in reducing the soluble BOD found at high levels in brewery wastewater.

BioGill treatment units are modular, so as production and wastewater volumes increase, a brewery can simply add more units. Compact and small in footprint, BioGill units are an ideal solution in space constrained locations or as a retrofit option to boost the capacity of an existing treatment process.

Using BioGill technology, brewers can benefit from significant savings in wastewater discharge or disposal costs, along with improved environmental operations.



## BIOGILL BENEFITS



Meet compliance & discharge limits



Simple to install, easy to operate. Low sludge.



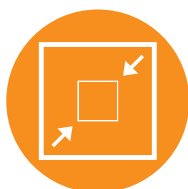
Resistant to shock loads & flow fluctuations



Save on surcharges



Reduce odor



Compact footprint

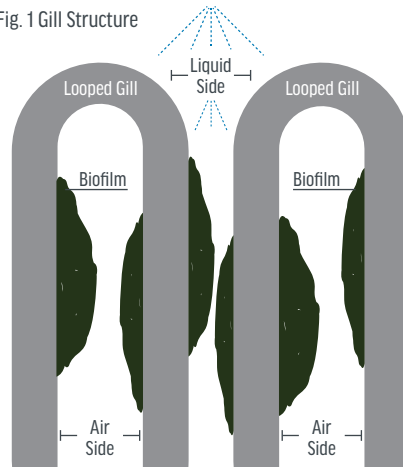
## HOW BIOGILL WORKS

At the technology's core is patented nano ceramic media known as "gills", which provide an ideal environment for the attachment and growth of a healthy treatment biomass. The uniquely designed gills are arranged in multiple suspended vertical loops with wastewater dispersed across the top. One side of each gill is always in contact with the high nutrient wastewater stream, while the other is exposed to an abundant air supply, maximizing microbial growth and metabolic performance.

As the wastewater flows down the surface of the gills, microbes rapidly consume dissolved nutrients. The metabolic activity of the biomass generates a convective air flow that moves upward along the air side between each set of loops, providing oxygen to fuel and sustain the treating biomass, without the use of energy-intensive blowers or aerators.

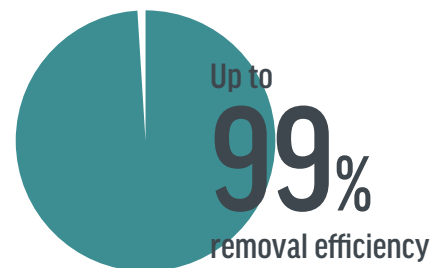
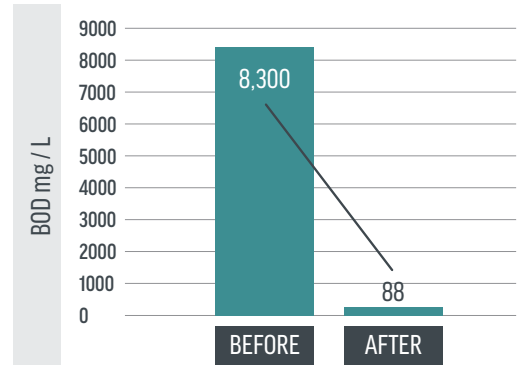
BioGill bioreactors offer efficient removal of soluble organic material in a compact, above-ground package. The robust and reliable performance of the BioGill technology can reduce soluble BOD in brewery wastewater by over 90%.

Fig. 1 Gill Structure



## RESULTS

### BOD REDUCTION, 2-STAGE SYSTEM



Data from a BioGill brewery treatment system.

## TREATMENT SOLUTIONS

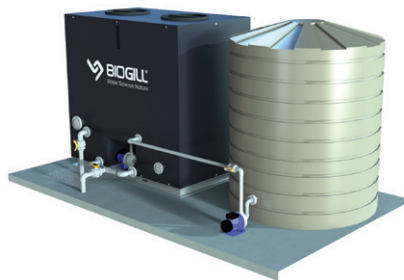
### BIOGILL TOWER PLUS

- Smallest BioGill bioreactor, designed to fit tight spaces.
- Versatile and scalable, can also be added to an existing treatment process to boost performance.
- Comes complete with stand, tank and pumps.



### BIOGILL RAPID

- Single or dual stage treatment in one unit.
- Ideal for smaller breweries with wastewater ≤5,000 gpd.
- "Plug and play" biological treatment solution with built-in piping, recirculation tanks and pumps.



### BIOGILL ULTRA

- Ideal for mid-sized breweries with wastewater ≥5,000 gpd.
- Complete containerized biological treatment system.
- Includes control system and automated self-cleaning function.



### ALL BIOGILL SOLUTIONS

- Modular and scalable, units can be added as production increases.
- Simple to operate and easy to maintain.
- Quick onsite installation and compact footprint.
- Low sludge production.

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Case studies and technical reports are available at [www.biogill.com](http://www.biogill.com)

