



# Highly effective onsite water treatment

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

## Water science nature

Water authorities around the world are enforcing stricter compliance and higher fees for the discharge of industrial wastewaters. BioGill technology offers a solution for Food & Beverage processors by improving onsite treatment and reducing the nutrient load in wastewater, leading to significant savings in discharge fees and improved environmental operations.

A leading edge biological solution for wastewater treatment, BioGill technology is based on a key premise of concentrating and maximizing microbiology. The result is

Primary Treatment (solids removal)

Chemical Balancing

BioGill Biological Treatment

Polishing (filtration, disinfection)

a highly effective biological treatment process for wastewater high in nitrogen, soluble BOD and COD.

With primary treatment upstream to remove solids, BioGill bioreactors are ideal for the biological secondary stage of the wastewater treatment train.

## BioGill Benefits



Meet compliance & discharge limits



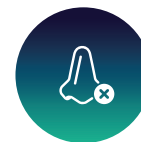
Boost performance of existing plants



Resilient to shock loads & flow fluctuations



Save on surcharges



Reduce odor



Compact footprint modular & scalable

## How BioGill works

At the technology's core is a uniquely designed nano ceramic media, or "gill", that provides the ideal habitat to grow a thick and healthy treating biomass. As the biomass on the gills is attached, with one side receiving the high nutrient waste stream and the other an abundant air supply, growth and metabolic performance is maximized.

The patented media is arranged in multiple, suspended vertical loops with water delivered to the top of each loop. Wastewater flows down the surface of the gills where the metabolic activity of the bacteria generates a convective air flow, moving upward in the air side between each set of loops. No blowers or aerators are used to provide oxygen for the biomass.

## Results

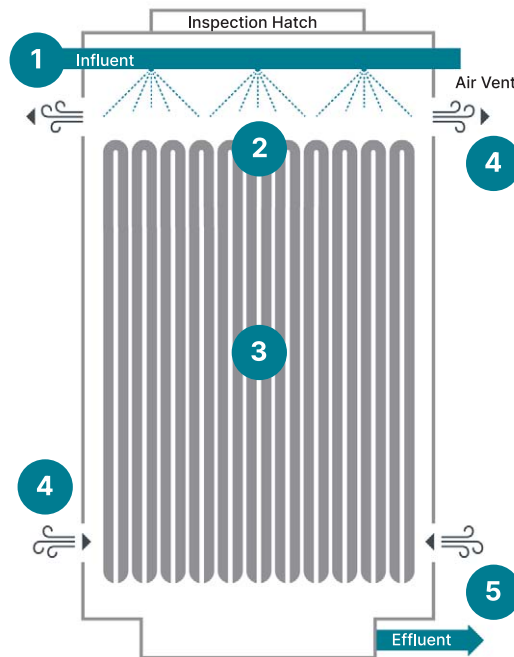
BioGill bioreactors are ideal for the aerobic biological stage of treating wastewaters in Food & Beverage processing. The technology is successfully treating a variety of Food & Beverage wastewaters including:

Brewery wastewater NORTH AMERICA Up to 95% TOC mg/L removed per 24 hour cycle	95%
Fast food / commercial kitchen & grease trap PHILIPPINES Up to 92% COD removed in a 12 hour treatment	92%
High sugar wastewater / confectionery AUSTRALIA Up to 88% COD mg/L removed per cycle batch	88%
Sauce / topping production JAPAN Up to 95% COD removed over a 24 hour cycle	91%
Soda / soft drink AUSTRALIA Up to 85% COD removed over a 24 hour cycle	85%
BREWERY WASTEWATER NORTH NORTH AMERICA Up to 99% BOD removed per cycle batch	99%

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

Fig 1. BioGill Process Flow

- 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 at a glance

- Simple, effective and scalable technology ideally suited to Food & Beverage wastewater.
- Ideal solution for the biological, secondary stage of the wastewater treatment train.
- Proven technology suitable for treating wastewaters from breweries, wineries, commercial kitchens, soda/pop drinks and confectionery producers, meat processors and more.
- BioGill units are installed internationally and operating in 25+ countries.
- Patent protected worldwide.

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