

Highly effective onsite water treatment

Above ground BioGill bioreactors turbo charge nutrient removal from wastewater.



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 maximising microbiology. The result is 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.

Primary Treatment (solids removal)



Chemical Balancing



BioGill Biological Treatment

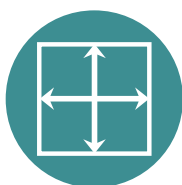


Polishing (filtration, disinfection)

BIOGILL BENEFITS



Effective treatment of high soluble BOD/COD



Compact, onsite treatment



Low sludge output



Effective removal of fats & oils



Low aerosols/ odour



Lower operating costs

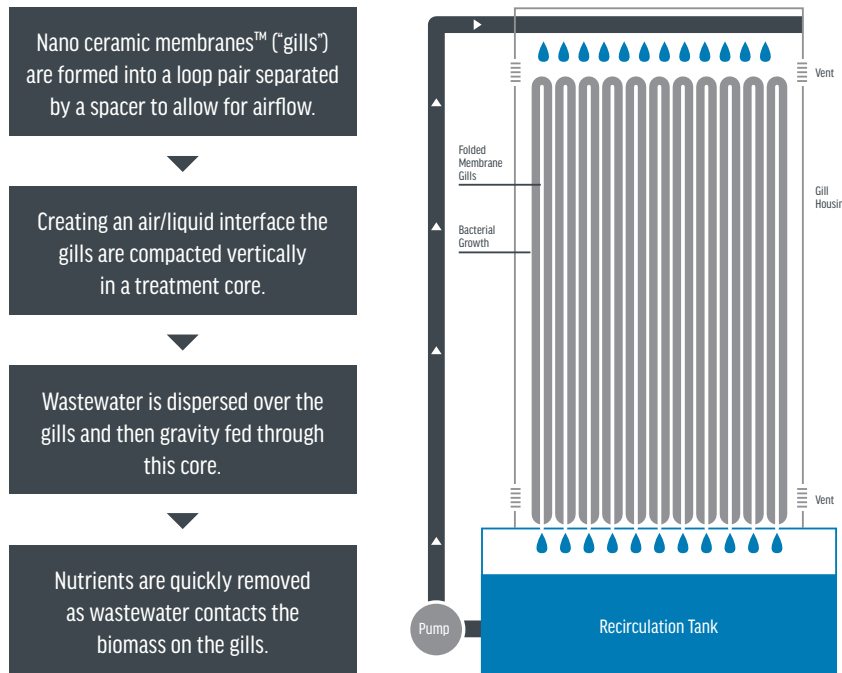
HOW BIOGILL WORKS

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

The patented membranes are 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.

Compared with other aerobic wastewater treatment processes, the BioGill bioreactor offers more efficient, above ground aeration of organic material in the waste stream. BioGill membranes can achieve biomass density as high as 50,000 mg/L or better.

This loading of microorganisms, Nature's best recyclers, turbo charges nutrient removal from wastewaters, leading to optimum soluble BOD/COD reductions.



Nano ceramic membranes™ ("gills") are formed into a loop pair separated by a spacer to allow for airflow.

Creating an air/liquid interface the gills are compacted vertically in a treatment core.

Wastewater is dispersed over the gills and then gravity fed through this core.

Nutrients are quickly removed as wastewater contacts the biomass on the gills.

BETTER BIOLOGICAL TREATMENT

With improved oxygen supply, BioGill technology offers superior biological treatment of Fats, Oils, and Grease (FOG). The structure of the BioGill membranes creates wastewater capillaries allowing the air side biomass to feed on nutrients from the water side. Enzymatic secretions of the biomass growing on the air side can diffuse into the liquid, effectively breaking down the FOG.

This makes BioGill bioreactors ideal for the treatment of wastewaters from commercial kitchens and grease traps.



Suspended biomass vertically supported and surrounded by oxygen – a key feature of the BioGill technology.

Treatment performance include:

- Energy consumption of 1.1kWh/kg BOD removed*
- Treating wastewater with BOD concentration > 7,000 mg/L
- Removal efficiency up to 75gBOD/m2 of membrane over 24 hours.

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%
Grease trap at food court/ retail centre AUSTRALIA Up to 70% FOG removal in a 8 hour treatment	70%
High sugar wastewater/ confectionery AUSTRALIA Up to 80% COD mg/L removed per cycle batch	80%
Sauce/ topping production JAPAN Up to 91% soluble COD removed over a 24 hour cycle	91%
Soda/ soft drink AUSTRALIA Up to 85% COD removed over a 24 hour cycle	85%
Winery wastewater NORTH AMERICA Up to 97% BOD removed per cycle batch	97%

Note: Typical batch times range between ½ to 2 days.

For further information please contact:

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Case studies and technical reports are available.

*Based on a typical 2,500mg BOD/L trade waste & 80% BOD removal.