

# BioGill Max 2



## A Complete Biological Wastewater Treatment System

New from BioGill the Max 2 delivers an affordable and compact simplified biological treatment solution for industrial strength wastewater that can easily be operated and installed in smaller plants.

### ABOVE GROUND, ATTACHED GROWTH BIOREACTOR FOR WASTEWATER TREATMENT

The BioGill Max Series is an attached growth bioreactor for secondary/ biological wastewater treatment. The Max 2 packaged system is design to fit tight spaces and is ideal for smaller facilities producing a wide range of wastewater volumes seeking a simple, robust and highly efficient biological treatment system or for adding capacity to existing wastewater treatment systems. BioGill bioreactors are simple to install and easy to operate, with minimal maintenance requirements. Modular in design, BioGill Max Series systems can be easily expanded with additional units to accommodate changing treatment needs.

### EASY TO INSTALL, STRONG AND RESILIENT

At the core of the BioGill Max Series is patented nano-ceramic media, known as Gills. The unique design of the

Gills provides the ideal habitat for microorganisms to grow, multiply and rapidly establish into a robust biomass. BioGill systems can be online and achieving treatment goals within days after start-up or system restart, making the units equally well suited to year-round or seasonal use. BioGill media fosters a biomass that is remarkably tolerant of fluctuations in wastewater flow and Biochemical Oxygen Demand (BOD) and Chemical Oxygen Demand (COD) loadings. This is a key benefit for a wide variety of facilities with variations in wastewater producing activities over the course of the week or throughout the year.

### EASY TO OPERATE AND SIMPLE TO CONTROL

BioGill units can treat a wide range of influent BOD & COD concentrations and tolerate levels of Fat, Oil and Grease (FOG) that challenge or disrupt alternative biological treatment systems. As oxygen enters the Max unit by natural convection currents through vents at the top and bottom of the bioreactor, there is no need for energy intensive blowers or aeration used in traditional technologies. This delivers significant savings in operating costs.

### 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

## Key Features

- Pre-Assembled for quick installation
- Modular & scalable
- Rapid start-up & biomass build-up
- Simple to operate
- Minimal maintenance requirements
- Low energy & operating costs (no blowers or chemicals)
- Low sludge yield
- Patented, non-clog HydroSwirl™ water dispersal system

## Key Benefits

- Simple to operate
- Low energy consumption
- Modular & Scalable
- Tolerance to high organic loading and FOG
- Tolerance to fluctuations in flow & load
- Rapid biological start-up & restart time
- Quick installation
- Easy to operate with minimal operator input
- Simultaneous aerobic & anaerobic treatment
- Low lifecycle costs

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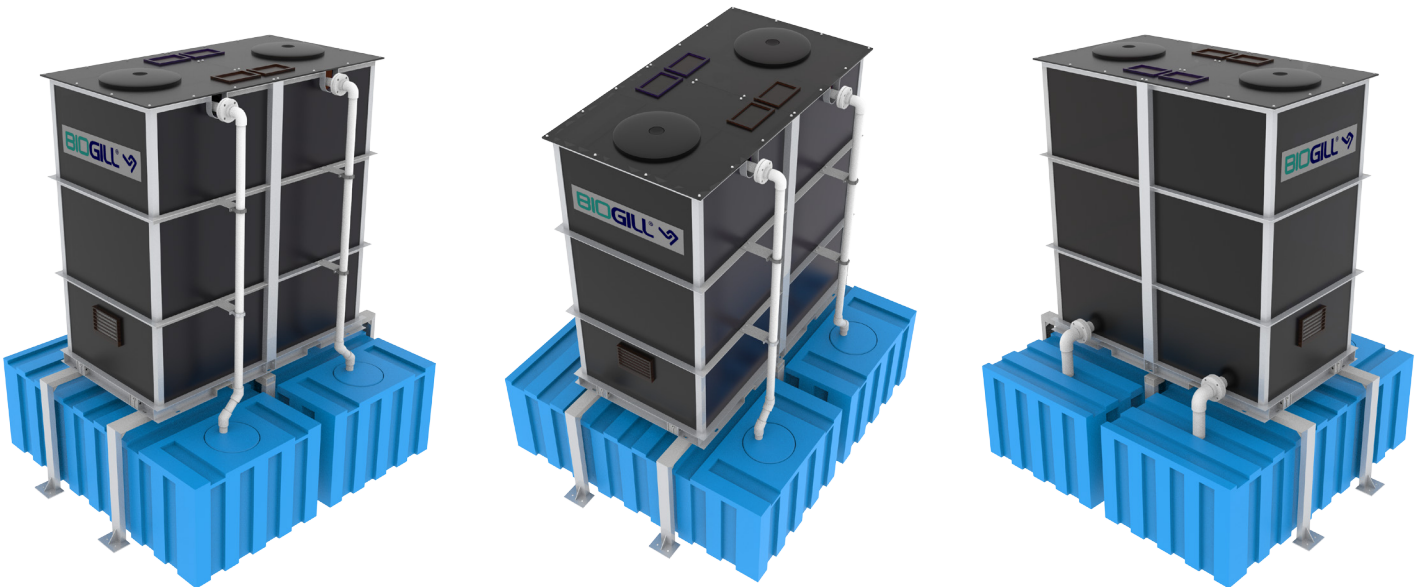
## Configurations

BioGill Max 2 units are compact treatment solutions for smaller wastewater flows however if your wastewater treatment requirements increase we can add units as required for multi-unit configuration to meet a wide range of flow, loading, and removal requirements.. The BioGill Max 2 comes complete with a container housing 2 internal treatment cartridges, a structural steel stand, recirculation tanks, recirculation pumps and control panel. The design is both compact and flexible, allowing for a variety of installation configurations.

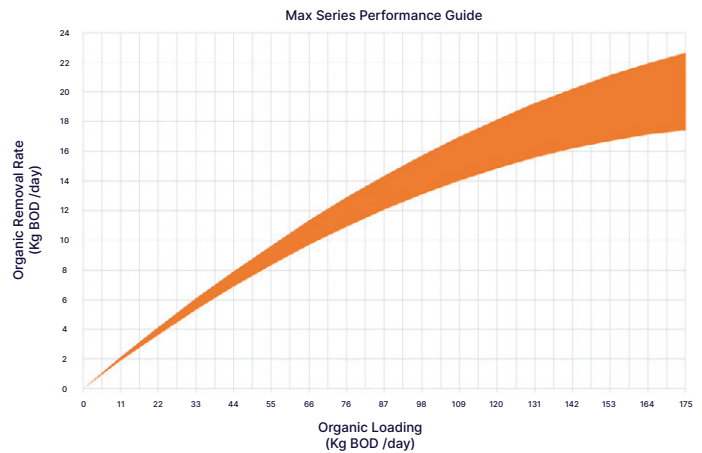
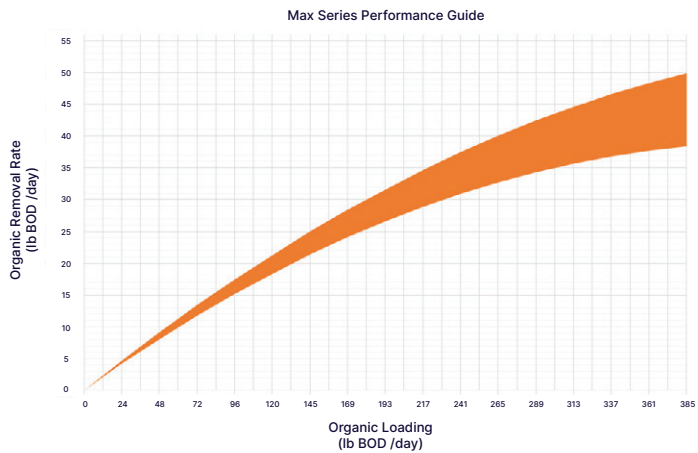
## Inclusions

Each BioGill Max Series includes:

- BioGill Max 2 bioreactor
- Single or two Stage unit design
- Supplied Structural Steel Stand
- Supplied Recirculation tanks
- Submersible recirculation pumps
- Control Panel



## Performance Guide | BioGill Max 2



These performance graphs are to be used as a sizing guide only. Actual performance is determined by site specific factors and may vary. The above information is based on the following; a continuous flow system; brewery wastewater and water temperature at 86°F | 30°C. Removal rates and reductions are based on soluble BOD only. BioGill and its authorized representatives do not guarantee performance unless stated otherwise. For detailed system sizing or for information on projects outside these influent parameters, please contact your authorized BioGill representative.

## Technical Specifications

		Value (Imperial)	Value (Metric)	
<b>OPERATING &amp; DESIGN INFORMATION</b>		Temperature	65-100F	18-37C
		pH Range	6.5-8.5	
		Optimum C:N:P Ratio	100:10:1 to 100:5:0.5	
		Required Pre-treatment**	Influent TSS <300 mg/L   Maximum FOG <100 mg/L	
		Recirculation flow rate per Cartridge	18-44 gpm	4-10m <sup>3</sup> /hr
<b>NOMINAL DIMENSIONS &amp; WEIGHT</b>	<b>BIOREACTOR ONLY (NO HANDRAILS)</b>	Gill Area	4,564ft <sup>2</sup>	424m <sup>2</sup>
		Length	7' 2-1/2"	2,200mm
		Width	4' 11"	1,500mm
		Height	7' 5-1/2"	2,275mm
		Footprint	29ft <sup>2</sup>	2.64m <sup>2</sup>
		Dry Weight	1,985 lbs	900 kg
		Wet Weight (Max Load Approx.)	4,630 lbs	2,100 kg
	<b>COMPLETE PACKAGE (INCLUDING HANDRAILS)</b>	Length	9' 8 1/4"	2,950mm
		Width	7' 10-1/2"	2,400mm
		Height	10' 7-3/4"	3,245mm
		Footprint	77ft <sup>2</sup>	7.08m <sup>2</sup>
		Recirculation Tank Capacity	1,000gals	3,800L
		Dry Weight	2,650 lbs	1,200 kg
		Wet Weight (Max Load Approx.)	15,615 lbs	7,100 kg
<b>MAX SERIES CONNECTIONS</b>		Inlet Connection	2"	DN50
		Outlet Connection	3"	DN80
		Recirculation Pump Connection	2"	DN50
		Inter-Unit Recirculation Connection	2"	DN50
		Drain Connection	2"	DN50

\*Consult your authorized BioGill representative for information about specific applications. \*\*General recommendation - can vary depending on influent composition.

## How BioGill Works

Biological wastewater treatment relies on microorganisms to consume organics in the wastewater. Like all living things, microorganisms need the right habitat to flourish. BioGill above ground bioreactors use patented Nano-ceramic media, known as Gills, to 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 sides: one in contact with the water and the other in contact with the air.

By providing the perfect habitat, the microbes perform at their best, protected in the biofilm and effectively removing pollutants from the wastewater. BioGill solves many of the shortfalls of other technologies by delivering effective treatment of high organic waste streams, Fat, Oil and Grease (FOG), as well as reducing odor.

**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, creates a continuous supply of oxygen.

**Step 5** Treated wastewater exits the BioGill system with reduced levels of BOD, COD and FOG.

Fig 1. Gill structure

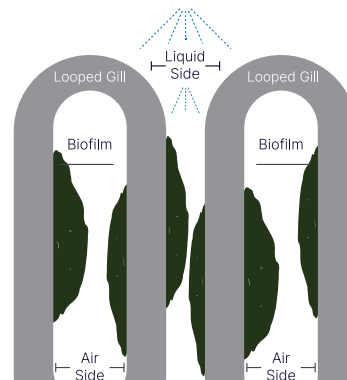
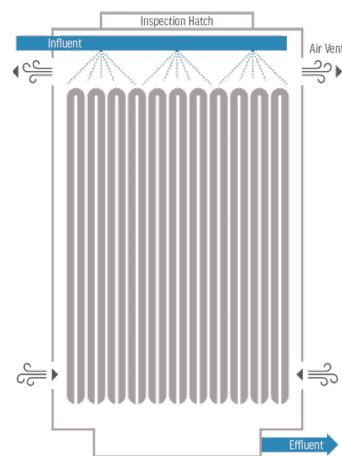


Fig 2. Cartridge structure



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