

Bioshaft Containerized Systems

Capacity: 52,800 to 316,800 GPD

T-MBBR

Series



BIOSHAF T-MBBR TECHNOLOGY

The Containerized Bioshaft Modules are standard 20ft or 40ft ISO shipping containers designed and manufactured from scratch to be used for the treatment of domestic wastewater and industrial wastewater. These Modules are 'Plumb, Plug & Play' Plants that are delivered within weeks to eliminate the long construction times associated with traditional civil works. Single and multiple Modules are available with capacities of 50 to 1200 m³/day. The compact nature of these Modules and their utilization of the efficient T-MBBR treatment result in a significant capital and operating costs savings for both new wastewater treatment plants and upgrades to existing plants.

The Containerized Bioshaft Modules achieve high BOD, COD, TSS and nutrient reductions that meet local discharge regulations. The treated water can be safely used for irrigation, landscaping or recycled for other uses. The simple and elegant Bioshaft system is easy to operate and does not require any special operator training. It is by far the most superior yet easy to operate biological wastewater treatment system available today.

BIOSHAF T-MBBR TECHNOLOGY

The patented BIOSHAFT Moving Bed Bio Reactor (T-MBBR) technology is a proven biological wastewater treatment that utilizes near 100% attached growth biofilm which maintains a high concentration of biofilm within the structure of biomass carriers that are kept in motion in very low attrition surroundings inside a super aerated chamber.

The stable biofilm accelerates the breakdown of organics which reduces the wastewater retention time, increases tolerance to process upsets and allows a high nutrient reduction capability.

The T-MBBR technology also generates quick-settling colonies of sludge solids which results in a significant reduction in sludge volume.

BIOSHAF ADVANTAGES OVER CONVENTIONAL TREATMENT

- 50% less footprint/ retention time
- 30% less power consumption
- 80% less sludge volume
- 35% lower operation and maintenance cost
- Compact modular containerized designs up to 1.58 Million Gallons per Day (6,000 m³/day).
- Easy upgrades to existing system.
- Superior ammonia removal and far better odor control
- Consistent BOD, TSS, nitrates and phosphorous reductions that meet the most stringent discharge regulations.
- No special operator training required or expensive components to replace every few years.
- No cleaning program or cleaning chemicals required like MBR.
- Suitable for municipalities, remote communities, resorts and labor camps.
- Ideal for private sites like residential compounds, golf courses, parks, and rest stops.
- Proven to address tough wastewater treatment applications at slaughterhouses and food & beverage processing plants.

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STANDARD BIOSHAFT CONTAINERIZED SYSTEM COMPONENTS

- + Anoxic Chamber with 4" inlet and drain connections.
- + Aeration and Reactor Chambers.
- + Set of PVC drop down aeration piping and diffuser assemblies.
- + Set of Fine bubble membrane diffusers.
- + Set of Air lift hood.
- + Set of SS304 wedge wire top & bottom isolation screens.
- + Integrated Clarifier, with settling media.
- + Set of Bottom air scouring assembly.
- + Set of Airlift assembly.
- + Set of Weirs.
- + Surface skimmer.
- + Set of Drain connections.
- + Integrated up-flow automatic media filter.
- + Set of Pneumatically actuated butterfly valves.
- + Set of PVC piping for automatic drain, automatic air scouring, automatic diversion to the chlorine contact tank.
- + Chlorine contact tank with inlet and outlet connections.
- + Set of Isolation valves for air pipes.
- + Set of PVC water piping.
- + Set of Galvanized steel air piping.
- + Set of 304 stainless steel bolts/nuts and fastening hardware.
- + FRP hand rail.
- + FRP Ladder.
- + FRP grating walkway.
- + Integrated equipment room.

EQUIPMENT ROOM COMPLETE WITH THE FOLLOWING INSTALLED AND TESTED EQUIPMENT

- + Duty/Standby regenerative air blower, complete with swing check valve, inlet filter & safety valve;
- + Electrical oil-free air compressor with storage tank;
- + Duty/Standby Chlorine dosing pump;
- + Control panel; All equipment wiring terminated to the control panel;
- + Overhead lighting;
- + Epoxy coated steel supports;
- + Galvanized steel and PVC interconnecting piping.

INSTRUMENTATION

- + Air Compressor pressure switch
- + Air Compressor pressure gauges, 2 1/2" dial size
- + Air Blower pressure gauges, 2 1/2" dial size

VALVES

- + Galvanized steel aeration piping
- + PVC low pressure piping
- + Pneumatically actuated C.I. butterfly valves

ELECTRICAL

- + Siemens PLC based control panel featuring:
 - Power supply: 460V / 3ph / 60Hz
 - Programmable time delays and set points
 - Weintek HMI colored touch screen
 - DOL blower motor control
 - Status indication lamps and switches
 - IP54 enclosure with disconnect and Interlocking rotary handle
- + 120V/60Hz control voltage

AVAILABLE OPTIONS

- + 380-415V/3 Ph/50Hz power supply, 220V control panel
- + Static screen with trash hopper
- + Self cleaning, rotary drum screen
- + Equalization tank level control
- + Equalizing pump(s) with motor controls
- + VFD blower motor control
- + Feed pH controller / sensor
- + Feed ORP controller / sensor
- + Feed TDS / conductivity sensor
- + Custom designed units

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OPERATION SPECIFICATION

- + Influent wastewater:
 - Temperature range 55 to 90°F
 - Pressure 20-40 psi
 - pH range 6.5-9.5
 - BOD ≤ 400 ppm
 - TSS ≤ 350 ppm
 - TKN ≤ 50 ppm
 - TP ≤ 10 ppm
 - TDS ≤ 1,000 ppm
- + No chlorine / other oxidants or toxic agents



SPECIFICATIONS AND DIMENSIONS

Model No.	Total No. of Modules	Max. Capacity		Eq. Pop.	Installed Blower HP	Absorbed Power HP	Approx. Space needed (Ft.)
		M ³ /day	GPD				
CS-0050	1	50	13,200	250	2	1.5	30'L x 18'W x 18'H
CS-0200	1	200	52,800	1,000	5.5	4.9	50'L x 18'W x 18'H
CS-0400	2	400	105,600	2,000	10	9.7	50'L x 31'W x 18'H
CS-0600	3	600	158,400	3,000	15	14.5	50'L x 44'W x 18'H
CS-0800	4	800	211,200	4,000	20	19.1	50'L x 57'W x 18'H
CS-1000	5	1,000	264,000	5,000	2x15	23.5	50'L x 70'W x 18'H
CS-1200	6	1,200	316,800	6,000	2x15	28.1	50'L x 83'W x 18'H

Influent BOD, TSS: 250 & 250. System capacities will decrease if wastewater temperature is lower than 60° F
 Effluent BOD, TSS & TKN: < 10, < 5 & < 5 mg/L, System Capacities will decrease at higher loadings

Containerized Bioshaft Modular Systems specific energy usage 0.6 kwh/m³ are designed for Carbon removal and full nitrification purposes. They can be upgraded to treat wastewaters with higher BOD and customized to reduce space needed.

* Specifications are subject to change without notice

PROPRIETARY AND PATENT NOTICE

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