

BIO
MICROBICS®

BioBarrier®

MEMBRANE BIOREACTOR

Advanced Wastewater Treatment
with Ultrafiltration Processes

NSF/ANSI 350 Certified
for Water Reuse

Reliable, Proven, Long-Term
Performance with Low Maintenance



AWARD-WINNING
INTEGRATED WATER
TECHNOLOGY

INDUSTRY LEADING WATER RECYCLING TECHNOLOGY
RESIDENTIAL • COMMERCIAL • COMMUNITY

BETTER WATER. BETTER WORLD.™

www.biomicrobics.com



Established in 1996 to focus on water ecology and technology innovation through three companies, BioMicrobics, SeptiTech, and Scienco/FAST. At the forefront of sustainable design and with more than 80,000 installed systems in over 80 countries, these systems meet the highest performance standards for

treatment of water, greywater, wastewater, stormwater, and more! BioMicrobics has developed a number of innovative products dealing with the treatment of water – where infrastructure and drainage are not available. Our systems are designed and engineered with sustainability and user practicality in mind.

Bio Barrier

Single-Family & Residential Systems

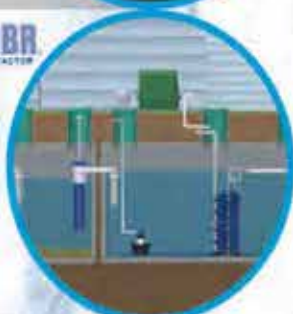
The BioBarrier® MBR is NSF/ANSI Standard 40 (Class 1), 245 for Nitrogen reduction, and 350 for Water Reuse (the first to receive this distinction), as well as EN12586-3 certified to provide new construction and renovation/repair projects in "water-constrained areas" with new opportunities for water recycling.



Bio Barrier HSMBR

Small & Large Commercial Systems

These advanced Membrane BioReactor (MBR) and High-Strength Membrane BioReactor (HSMBR®) systems are designed specifically to treat all the wastewater (blackwater and greywater) generated from small to larger property applications that far exceed effluent requirements.



Bio Barrier HSMBR

Multi-Family & Community Systems

There are a lot of factors, from the type of wastewater generated to the amount of flow expected and geographical terrain situations are taken into consideration. BioBarrier® HSMBR® systems can be applied to large office buildings, wineries and food processing factories, among other enterprises.



Often, BioMicrobics Systems are installed in below ground, locally-sourced tanks.



"We selected the BioBarrier® MBR based on its competitive cost & projected effluent quality, including our particular need to bring total nitrogen to below drinking water standards in the effluent."

-Dr. James Englehardt, UM, Chief Investigator for NET-ZERO Water Dorm

BIO MICROBICS

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www.septitech.com • info@septitech.com

SCENCO/FAST

a subsidiary of BioMicrobics, Inc.

12977 Maurer Indust'l Dr • Sunset Hills, MO 63127 USA
1-800-852-4539 • ph: 1-314-756-9300 • f: 1-314-756-9306
www.sciencofast.com • solutions@sciencofast.com





Bio Barrier

See also -N (higher Total Nitrogen Reduction) versions are available. Consult factory for more information.

NSF/ANSI Standard 40 class 1, 245 (nitrogen reduction), 350 class R (water reuse) certified systems establish material, design, construction and performance requirements wastewater treatment systems:

*Class R Single-family residential dwellings.

*Class C Multi-family units & commercial facilities

EN-12566-3 Packaged wastewater treatment plants for up to 50 people, tested conform the EU Norm by PIA with the percentage reduction of influent pollutants. During the 38-week documented test performance of the following levels were achieved: COD reduction 97.2%, BOD reduction 98.9%, Suspended Solids reduction 99.8%, NH4-N reduction 96.2%, Total coliforms 99.9%.

UNIT MAXIMUM TREATMENT CAPACITY*

UNIT	MAXIMUM TREATMENT CAPACITY*	
	Volume / Module	~People, USA International
NSF	0.5 (-N) 500 GPD (1800 LPD)	1 - 8 1 - 10
NSF	1.0 (-N) 1000 GPD (3400 LPD)	1 - 16 1 - 20
NSF	1.5 (-N) 1500 GPD (5500 LPD)	6 - 24 10-30

Note: MBR module capacities are best rated based on biological oxygen demand (BOD), hydraulic and other project-specific considerations. Actual capacity may vary with local conditions and performance goals.

Bio Barrier Bio Barrier HSMBR

See also -N (higher Total Nitrogen Reduction) versions are available. Consult factory for more information.



UNIT MAXIMUM TREATMENT CAPACITY*

NSF	2.0 (-N) 2000 GPD (7.5 m ³ /D)	Consult Factory
NSF	2.5 (-N) 2500 GPD (9.4 m ³ /D)	Consult Factory
NSF	3.0 (-N) 3000 GPD (11.3 m ³ /D)	Consult Factory
HSMBR	1.5 (-N) 1500 GPD (5.5 m ³ /D)	Consult Factory
HSMBR	3.0 (-N) 3000 GPD (11.3 m ³ /D)	Consult Factory
HSMBR	4.5 (-N) 4500 GPD (17 m ³ /D)	Consult Factory
HSMBR	6.0 (-N) 6000 GPD (22.7 m ³ /D)	Consult Factory
HSMBR	9.0 (-N) 9000 GPD (34 m ³ /D)	Consult Factory

For additional flows larger than 9000 GPD [34 m³/D] or unusual applications requiring other treatment levels, please consult factory.

*Treatment capacity: As a "guideline" for suggested use, the individual MBR module capacities are rated based on biological oxygen demand (BOD), hydraulic load and other project-specific considerations. Only residential domestic strength applications may be designed as total number of people per module. Actual capacity may vary with local requirements, conditions and performance goals.

Electrical Options: Electrical components are available to meet all worldwide electrical specifications (volt/phase/frequency). See product drawing(s) for options and more information.

Bio Barrier SUMMARY OF AVERAGE INFLUENT AND EFFLUENT OF THE MBR BIOBARRIER 0.5 SYSTEM

Parameters	Influent	Effluent
Flow, gpd	455	455
BOD, mg/L	200	<5
TSS, mg/L	180	<2
COD, mg/L	480	16
TKN, mg/L	61	1.4
Total Nitrogen, mg/L	61	5.5
Q-NH ₃ , mg/L	4.2	0.5
Liquid Temperature, °C	7 - 31	8 - 31
No. of days in Operation	375	375

For the initial (start-up) mixed liquor suspended solids (MLSS) concentration of the system was less than 300 mg/L, the MLSS concentration allowed building up to as high as 12,000 mg/L, before the sludge was wasted from the system. It took about eight (8) months before sludge wasting was required.

Nearly 95% of the sludge was wasted; the remaining 5% of solids was used as microbial seed for the biological process.



BioMicrobics wastewater & greywater treatment systems are award-winning "integrated water strategy" for the rural/urban environment. As a popular alternative to onsite septic systems, the technologies are tested and certified by 3rd-party programs. The systems allow long-term operational performance with easy and low-cost maintenance.



Bio Barrier

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	Volume	Flow	USA	International
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Bio Barrier Bio Barrier HSMBR

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HSMBR [®] 1.5 (-N)	1500 GPD (5.5 m ³ /D)	Consult Factory
HSMBR [®] 3.0 (-N)	3000 GPD (11.3 m ³ /D)	Consult Factory
HSMBR [®] 4.5 (-N)	4500 GPD (17 m ³ /D)	Consult Factory
HSMBR [®] 6.0 (-N)	6000 GPD (22.7 m ³ /D)	Consult Factory
HSMBR [®] 9.0 (-N)	9000 GPD (34 m ³ /D)	Consult Factory

For additional flows larger than 9000 GPD [34 m³/D] or unusual applications requiring other treatment levels, please consult factory.

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BIO

MICROBICS®

BioRobic

Submerged Aeration System

LIXOR

Submerged Aeration System

Reliable, Proven Performance
with Low Maintenance



Delivers Highly Effective
Levels of Dissolved Oxygen



Non-Clogging for Complete
Mixed Activated Treatment



AWARD-WINNING
INTEGRATED WATER
TECHNOLOGY

SUPPLEMENTAL AERATION • EXTENDED AERATION
AERATION MANAGEMENT SYSTEMS

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performance standards for treatment of water, wastewater, storm water, and more! BioMicrobics has developed a number of innovative products dealing with the treatment of water where infrastructure and drainage are not available. Our systems are designed and engineered with sustainability and user practicality in mind.

LIXOR
Submerged Aeration System

BioRobic
Submerged Aeration System

WHY USE SUPPLEMENTAL AERATION SYSTEMS?

Mixing is required to dampen the fluctuations of both hydraulic and BOD loadings, to maintain uniform dispersion of the microorganisms, and to maintain uniform dissolved oxygen concentration in the contents of the aeration basin. Failure to provide proper mixing can result in the failure of the biological system. The efficiency of oxygen transfer is reflected in both initial and operating costs. The more efficient the aerator is, the lower the total power required to operate it, and, generally, the lower the initial equipment cost and operating cost.

Installed in new or existing tanks, these submerged aeration systems provide the right environment for aerobic bacteria and other microorganisms to quickly biodegrade and digest incoming organic matter as a standalone "Activated Sludge" system (see RollsAIR) or in various pre- or post- phases of a wastewater treatment system to help achieve desired treatment goals.



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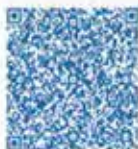
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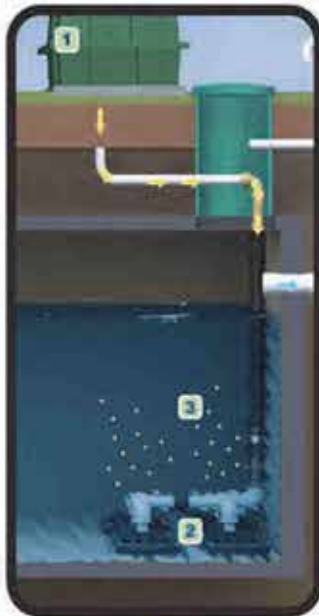


COST & ROBUST

BioRobic

Submerged Aeration System

Ideal for high strength wastewater treatment applications, such as wineries, the BioRobic™ is a submerged aeration system that provides optimal levels of Dissolved Oxygen (DO) for pretreatment. Dissolved oxygen enables aerobic bacteria and other microorganisms to quickly biodegrade and digest incoming organic matter. for both types. Whether installed in new or existing tanks, multiple BioRobic's may be used to help achieve desired treatment goals.



BioRobic™ 4.0 Shown



How Does it Work?

- 1 Equipped with an above-ground, regenerative blower - the system's only moving part, a continuous large volume of air is piped down to the submerged BioRobic™ device(s).
- 2 The air stream from the blower travels through the orifices of the BioRobic™. The results in the breaking of the incoming air stream into smaller size bubbles.
- 3 The result is a turbulent plume of water and bubbles that travel up through the water, transferring oxygen for biological activity and creating horizontal and vertical mixing patterns.

BioRobic
Submerged Aeration System



BioRobic™ Specifications

Model	Minimum Water Depth	Maximum Water Depth	Maximum Air Release Depth	BoD Load
BioRobic™ 1.5	5 ft. (152 cm)	8 ft. (244 cm)	8 ft. (244 cm)	7.5 lbs
BioRobic™ 3.0	5 ft. (152 cm)	8 ft. (244 cm)	8 ft. (244 cm)	15.0 lbs
BioRobic™ 4.5	5 ft. (152 cm)	8 ft. (244 cm)	8 ft. (244 cm)	22.5 lbs
BioRobic™ 6.0	5 ft. (152 cm)	8 ft. (244 cm)	8 ft. (244 cm)	33.0 lbs
BioRobic™ 8.0	5 ft. (152 cm)	8 ft. (244 cm)	8 ft. (244 cm)	49.5 lbs

In the interest of technological progress, all BioRobic™ Submerged Aeration Devices are subject to design and/or materials change without notice.

**See Product Drawings and/or Manual(s)
for further details & Technical Specifications**

For a distributor/approved tank manufacturers in your area or more information,
please contact sales@biomicrobics.com.

SIMPLE FLOW

LIXOR[®] Submerged Aeration System

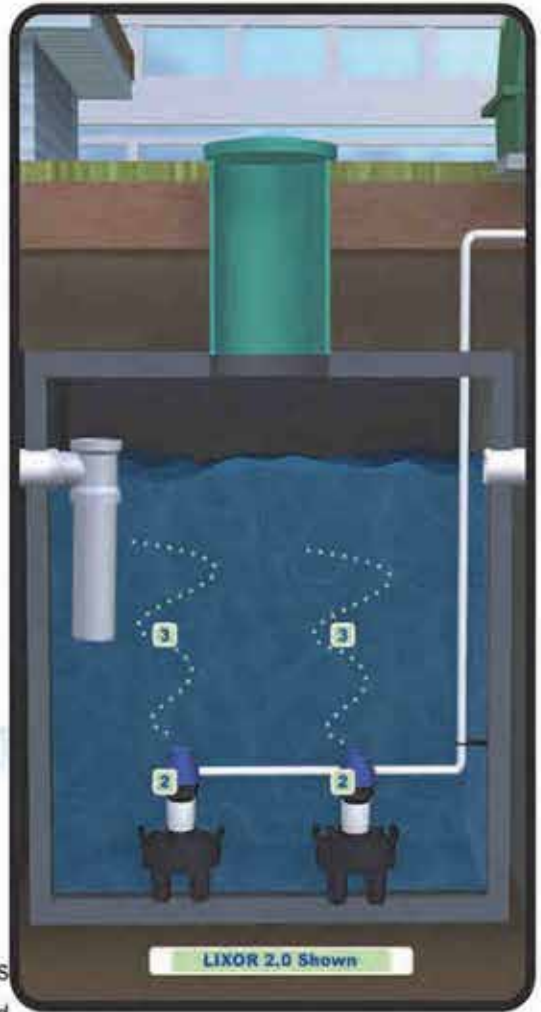
LIXOR is a remarkably effective submerged aeration and mixing system. Extremely low-maintenance and surprisingly efficient,

The LIXOR's non-clogging, Venturi-style chamber creates the environment for high levels of oxygen transfer efficiency with proper mixing to promote aerobic bacteria and other microorganisms that quickly biodegrade and digest incoming organic matter.

Installed in new or existing tanks, multiple Lixor's may be used to help achieve desired treatment goals.

How Does it Work?

- 1 Equipped with an above-ground, regenerative blower - the system's only moving part, a continuous large volume of air is piped down to the submerged LIXOR[®] device(s).
- 2 The velocity of air and water increase substantially inside the LIXOR's venturi chamber creating a vacuum that pulls in surrounding liquid and breaks the incoming air stream into smaller size bubbles.
- 3 The result is a turbulent plume of water and bubbles that travel up through the water, transferring oxygen for biological activity and creating horizontal and vertical mixing patterns.



LIXOR[®] Specifications Max. BOD loading per tank volume: 6.7 ppd/kgal (0.80Kg/d/m³)

Model	Minimum Water Depth	Maximum Water Depth	Maximum Air Release Depth	Max. Tank Volume	Hydraulic Retention Time (in Hours)	Max BOD Loading Pounds per Day (kg/dianit)
Lixor [®] 0.5	4 ft. (122 cm)	5.5 ft. (168 cm)	4.5 ft. (137 cm)	2000 gal. (7.5 m ³)	10	6 (2.7)
Lixor [®] 1.0	5 ft. (152 cm)	7 ft. (213 cm)	6 ft. (183 cm)	3000 gal. (11.3 m ³)	10	14 (6.3)
Lixor [®] 2.0	5 ft. (152 cm)	9 ft. (274 cm)	8 ft. (244 cm)	6000 gal. (22.7 m ³)	10	30 (13.6)
Lixor [®] 3.0	5 ft. (152 cm)	9 ft. (274 cm)	8 ft. (244 cm)	9000 gal. (34 m ³)	10	44 (20)
Lixor [®] 4.0	5 ft. (152 cm)	9 ft. (274 cm)	8 ft. (244 cm)	12000 gal. (45.4 m ³)	10	58 (26.3)
Lixor [®] 4.0XD	5 ft. (152 cm)	12 ft. (366 cm)	11 ft. (335 cm)	12000 gal. (45.4 m ³)	10	58 (26.3)
Lixor [®] 6.0	5 ft. (152 cm)	9 ft. (274 cm)	8 ft. (244 cm)	15000 gal. (56.7 m ³)	10	90 (40.8)
Lixor [®] 6.0XD	5 ft. (152 cm)	12 ft. (366 cm)	11 ft. (335 cm)	15000 gal. (56.7 m ³)	10	90 (40.8)
Lixor [®] 8.0	5 ft. (152 cm)	9 ft. (274 cm)	8 ft. (244 cm)	24000 gal. (90 m ³)	10	120 (54.4)
Lixor [®] 8.0XD	5 ft. (152 cm)	12 ft. (366 cm)	11 ft. (335 cm)	24000 gal. (90 m ³)	10	120 (54.4)

1 pound per day per 1000 gallons = 0.12 kilograms per day per cubic meters.
In the interest of technological progress, all LIXOR[®] submerged aeration systems are subject to design and/or materials change without notice.

BIO

MICROBICS®

MyFAST®

wastewater
treatment
systems

MacroFITT

wastewater
treatment
systems



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INTEGRATED WATER
TECHNOLOGY**

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RetroFAST wastewater treatment systems RetroFITT-ee

Ideal for existing tanks or upgrading the septic system to enhance/renovate a drain field; see our S.O.S. - Save Our Septic! Warranty Program



MicroFAST wastewater treatment systems MicroFITT-ee

Versatile and robust, these systems are designed for individual homes, clustered subdivisions, commercial properties and other domestic-strength flow applications



NitriFAST wastewater treatment systems

For use as a second-stage treatment train with a MicroFAST® system to provide additional nitrification to achieve even higher levels of nitrogen reduction



HighStrengthFAST wastewater treatment systems

Meets the challenges of high-strength applications and properties with higher strength loading and dealing with FOG (grease) issues to provide simple, robust, low-maintenance treatment systems.



MyFAST wastewater treatment systems MacroFITT

Ideal for small communities or large commercial properties to maintain consistent high performance, low maintenance, and sludge management all in one tank.



MarineFAST

For use on inspected vessels and offshore platforms to keep in compliance with total blackwater and greywater treatment and reliable wastewater treatment performance on vessels of all types.



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MyFAST

wastewater
treatment
systems

Consult factory for more information

UNIT	MAXIMUM TREATMENT CAPACITY*		Aeration Management System	BioSolids Management System	For additional Grit Control
	Volume/Module**	~People per Module**	Optional LIXOR® Package	Optional Manifold grid & LIXOR®	MyTEE® w/top & bottom diverters
1.0	10000 GPD (38 m ³ /d)	~200	-	-	-
2.0	20000 GPD (76 m ³ /d)	~400	AMS 2.0/3.0	BMS 2.0/3.0	MyTEE® 2.0/3.0
3.0	30000 GPD (114 m ³ /d)	~500	AMS 2.0/3.0	BMS 2.0/3.0	MyTEE® 2.0/3.0
4.0	40000 GPD (150 m ³ /d)	~600	AMS 4.0	BMS 4.0	MyTEE® 4.0
6.0	60000 GPD (225 m ³ /d)	~900	AMS 6.0	BMS 6.0	MyTEE® 6.0
8.0	80000 GPD (300 m ³ /d)	~1200	AMS 8.0	BMS 8.0	MyTEE® 8.0
12.0	120000 GPD (450 m ³ /d)	~1900	AMS 12.0	BMS 12.0	MyTEE® 12.0
16.0	160000 GPD (600 m ³ /d)	~2500	AMS 16.0	BMS 16.0	MyTEE® 16.0

For more options, multiple FAST® units can be used in parallel/series for additional flow or desired treatment levels.

MacroFIT

wastewater
treatment
systems

Recommended MyTEE®, AMS and BMS Systems for optimal operation. Optional SciCHLOR System available for disinfection.

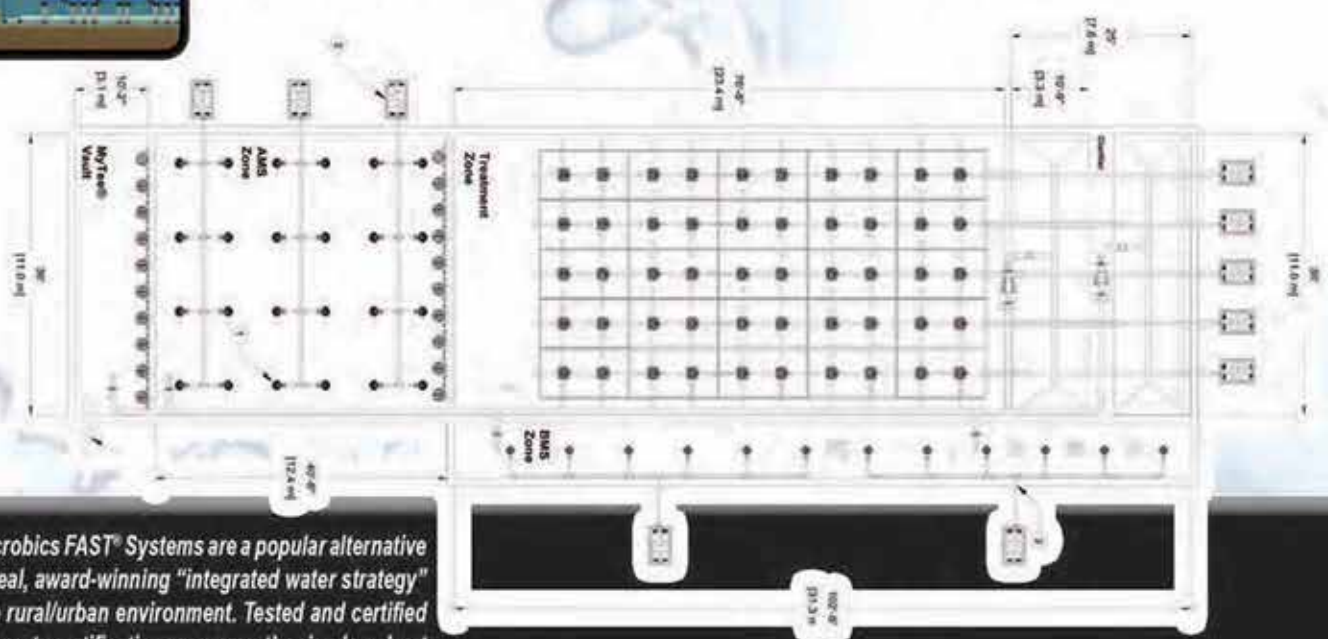


UNIT	MAXIMUM TREATMENT CAPACITY*		Aeration Management System	BioSolids Management System
	Volume/Module**	~People per Module**	Optional LIXOR® Package	Optional Manifold grid & LIXOR®
20.0	200000 GPD (757 m ³ /d)	~3000	AMS 20.0	BMS 20.0
30.0	300000 GPD (1135 m ³ /d)	~4500	AMS 30.0	BMS 30.0
40.0	400000 GPD (1514 m ³ /d)	~6000	AMS 40.0	BMS 40.0
50.0	500000 GPD (1893 m ³ /d)	~7500	AMS 50.0	BMS 50.0
60.0	600000 GPD (2271 m ³ /d)	~9000	AMS 60.0	BMS 60.0
70.0	700000 GPD (2650 m ³ /d)	~10501	AMS 70.0	BMS 70.0
XL 80.0	800000 GPD (3028 m ³ /d)	~12000	AMS 80.0	BMS 80.0
XL 90.0	900000 GPD (3407 m ³ /d)	~13500	AMS 90.0	BMS 90.0
XL 100.0	1000000 GPD (3785 m ³ /d)	~15000	AMS 100.0	BMS 100.0
XL 120.0	1200000 GPD (4542 m ³ /d)	~18000	AMS 120.0	BMS 120.0
XL 140.0	1400000 GPD (5300 m ³ /d)	~21000	AMS 140.0	BMS 140.0
XL 160.0	1600000 GPD (6057 m ³ /d)	~24000	AMS 160.0	BMS 160.0
XL 180.0	1800000 GPD (6814 m ³ /d)	~27000	AMS 180.0	BMS 180.0
XL 200.0	2000000 GPD (7570 m ³ /d)	~30000	AMS 200.0	BMS 200.0

*Treatment capacity: As a "guideline" for suggested use, the individual FAST® module capacities are rated based on biological oxygen demand (BOD), hydraulic and other project-specific considerations. Actual capacity may vary with local conditions and performance goals.

**Volume/People per module: Please note, only residential domestic strength applications may be designed as total number of people per module. Actual capacity may vary with local requirements, conditions and performance goals.

Electrical Options: Electrical components are available to meet all worldwide electrical specifications (volt/phase/frequency). See product drawing(s) for options and more information.



BioMicrobics FAST® Systems are a popular alternative and ideal, award-winning "integrated water strategy" for the rural/urban environment. Tested and certified by 3rd-party certification programs, the simple, robust design allows long-term operational performance with easy and low-cost maintenance.

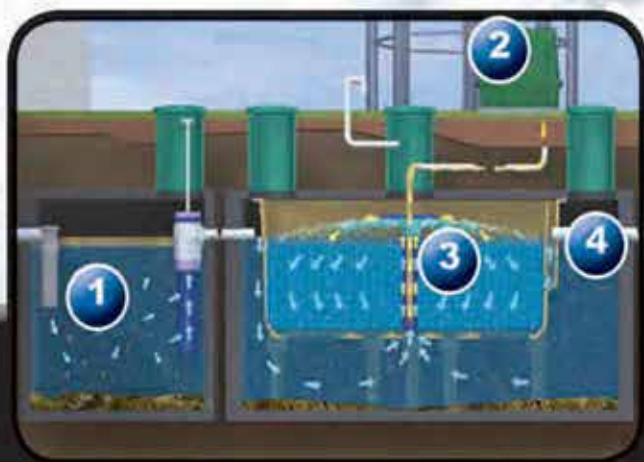
MyFAST wastewater treatment systems

MacroFITT wastewater treatment systems

BioMicrobics FAST® (Fixed Activated Sludge Treatment) is the leading wastewater treatment process with SFR® (sequencing fixed reactor) to provide significant improvement over traditional sewer systems for residential and commercial applications. Produces effluent to meet water quality goals, these scaled up versions enable cost-effective treatment with less oversight and maintenance. The MyFAST® and MacroFITT® "High Strength Sewage Treatment Plant" (HS-STP®) systems can be expected to process from 10,000 GPD [38 m3/D] to 2,000,000 GPD [7400 m3/D] with an expected effluent quality of BOD and TSS averaging less than 30 mg/L with domestic wastewater and consistently reduce Nitrogen levels by 50%, depending on wastewater characteristics. Ideal for:

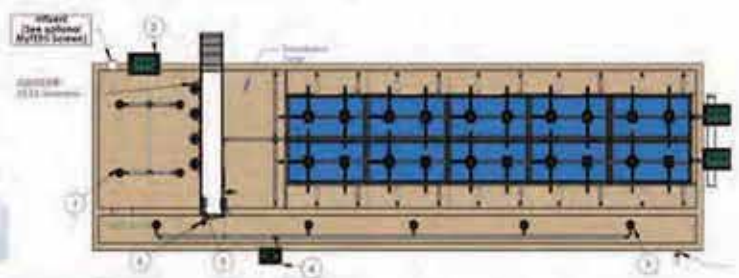
- Larger decentralized commercial/community applications
- Processing 10000 GPD [35 m3/D] to 2MGD [7570 m3/D]
- Retrofit for WWTP or "sewer mining" opportunities

The MyFAST® and MacroFITT® wastewater treatment systems include other components, such as an Aeration Management System (AMS) and BioSolids Management System (BMS) to help the system run at optimal operation, see table for sizes and consult factory for more information.



Install directly in below or above ground locally-sourced, water-tight tanks; the blower can be installed up to 100 ft [30.5m] away!

FITT®-for-the-purpose-intended, our popular FAST® wastewater treatment systems deliver consistent high performance in a simple, pre-engineered, modular design for easy shipment around the globe. The FAST® process is used successfully in municipal, industrial, marine, commercial and residential type applications to achieve better treatment with the most proven, effective process for removing pollutants from wastewater flows with long-term performance!



HOW IT WORKS!

- 1 Settling Zone:** Separation processes occur (multiple SanITEE® effluent screening devices maybe required) to prevent large solids from entering the treatment zone. For certain applications, an optional MyTEE® Grit Vault may be added.
- 2 Aeration:** Above-ground, regenerative blower introduces oxygen into the tank to facilitate a robust circulation through the FAST® treatment media's channelled flow path.
- 3 Treatment Tank:** Water and air thoroughly mixes before splashing against the airift to evenly distribute over the media. Adsorption of organics, nutrients, and pathogens by the abundant, self-regulating healthy aerobic microbes attached to the media then occurs.
- 4 Discharge:** Treated water exits for dispersal or reuse



SCIENCO®

Water Treatment Solutions

SCIENCO/FAST
a subsidiary of Bio-Microbics, Inc.

With over 65 years of history unlike any other, the origins of SCIENCO® & FAST® can be traced back to the 1940's in St. Louis, MO for water and salt management systems.

Providing land/marine water management solutions

Scienco/FAST is a global manufacturer of Water Management Solutions: Agriculture disinfection systems, Commercial Food & Industrial Equipment, Municipal Water Treatment, Hospital/Institutional Equipment, industrial and commercial bulk salt dissolver systems (brinemakers), liquid injection systems, and environmentally-friendly maintenance tablets and cleaners.

In 1985, Scienco/FAST combined to produce internationally recognizable top-quality water, wastewater, and maintenance products with top-notch field services. SCIENCO®'s current commercial product lines combine proven performance with long-term reliability and many low-cost options.



SciCHLOR® Sodium Hypochlorite Generators: A cost effective and reliable method of safely producing liquid chlorine for onsite disinfection.



SciBRINE® Bulk Salt Dissolver & Brinemakers: the ideal complement for industrial water softening systems that require a large amount of daily salt consumption TO produce and store a liquid brine solution that can be used in various applications, such as a food additive, a chemical feed for various chemical processes or an ion exchange/water softening process, etc.

For municipal water product components:
NSF/ANSI Standard 61 (NSF-61) is a set of national standards that relates to water treatment and establishes stringent requirements for the control of equipment that comes in contact with either potable water or products that support the production of potable water



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SeptiTech®

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Simple • Effective • Safe • Economical • Efficient

Maintains effective, reliable disinfection at an affordable cost with a long SciCELL® life and easy maintenance.



Complete Brinemaking Solutions:

- **ELIMINATES BAG DISPOSAL**
- **REDUCES MANUAL FILL LABOR**
- **REDUCES WAREHOUSE SPACE**
- **ECONOMICAL SOLUTION**

For large continuous feed of Brine applications, Scienco® SciBRINE® Brinemakers use advantages of down-flow processes to ensure consistent, near saturated brine with easy maintenance and storage in one tank! The corrosion-free design will allow for on-site truckload delivery of salt that is pneumatically conveyed directly into the watertight tank.

Any tank can be made into a brinemaker (with SciBRINE® kit), however, a filament-wound, reinforced, fiberglass tank is recommended. Most types of salts can be used (granular 99.6% "food grade" sodium chloride preferred), but will affect this sizing of system. With the Levetrol® SR "Smart Relay" controllers to automate salt/water levels, the SciBRINE is an ideal complement for applications that require a large amount of daily brine consumption.

For sizing assistance, please contact factory for guidance, solutions@sciencofast.com.

FOR LARGER BULK SALT DISSOLVING

APPLICATIONS:

See the SciBRINE® Brinemakers (from 3 to 70+ ton capacities per fill!)

Available in HDPE, underground, dome or flat top fiberglass configurations

- 1.) Stainless steel SALT FILL PIPE for maximum resistance to abrasion (small flat tops uses a side fill entrance)
- 2.) VENT PIPE relieves pressure during fill cycle; any airborne particles are captured in DUST COLLECTOR BAG
- 3.) WATER FILL TUBE & BRINE PLENUM located inside tank
- 4.) Remotely located, LEVETROL® SR NEMA 4X CONTROL PANEL automates salt/water levels:
 - Controls water flows through a 30 gal/min flow control valve
 - Eliminates the need for "corrosion-prone" & tank-mounted probes
 - Light illuminates to determine when more salt is needed
 - Telemetry technology can also be added to monitor the system
 - Reduces the chance of channeling salt
- 5.) OPTIONAL: SAFETY CAGE & MOUNTED LADDER
- 6.) For NEW or EXISTING Tank with top (a) &/or side (b) airway
- 7.) OPTIONAL: INSULATION PACKAGE (ES) required.



SCIENCO® SciCHLOR® WITH SciCELL® TECHNOLOGY

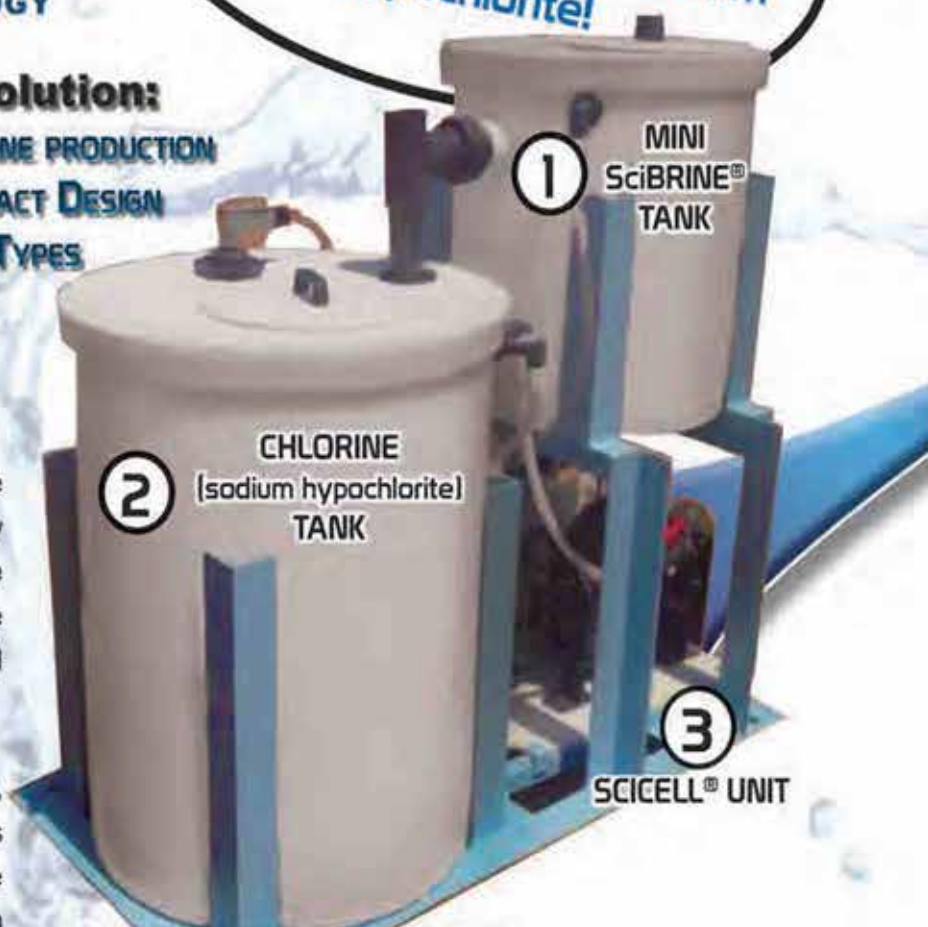
With an onsite generator, you always have an available supply of sodium hypochlorite!

Complete Disinfecting Solution:

- **CONSISTENT ON DEMAND CHLORINE PRODUCTION**
- **AUTOMATIC, INTEGRATED COMPACT DESIGN**
- **COMPATIBLE WITH MANY SALT TYPES**
- **CLEAN-IN-PLACE MAINTENANCE**
- **EASY-TO-REPLACE PARTS**

SCIENCO® SciCHLOR® Sodium Hypochlorite Generator with SciCELL® technology is a fully automated, pre-packaged on-site hypochlorite system designed for economical installation, safe operation and easy maintenance to **SAFELY** and **EFFICIENTLY** make chlorine on demand.

The SciCHLOR® System includes brine tank(s), chlorine storage tank(s), control panel, multi-pass SciCELL® unit, and recirculation pump to allow the system to **AUTOMATICALLY** run at the optimum salinity and increase power efficiency. Using a recirculation method to concentrate a brine solution, the SciCHLOR® system is generated through a balance of brine and is dependent on solution consumption. The system creates 2%-13% salinity - 0.8% optimum hypochlorite [below the hazardous material threshold of 1%]. Systems are shipped completely piped, wired and tested.



HOW THE SciCHLOR® WORKS:

- 1.) Connect to a water source to the brine tank and set the pump to "AUTO". Manually add salt up to the max fill line in the brine tank to create continuous saturated brine. Turn "ON" power switch.
- 2.) Production will begin immediately filling the Chlorine tank with brine and the SciCELL® pulls the solution to convert the brine deposit back into the chlorine tank.
- 3.) The SciCELL® Control Panel uses this automatic, "recirculation" method to provide consistent strength with minimal operator attention. After ~5 hours, the solution will reach optimum concentration of desired strength. As the chlorine is used, the water will automatically refill the brine tank (more salt will eventually need to be added to keep at the fill line). If no solution is used, the system will shut off.

SciCHLOR® Sodium Hypochlorite Generator

Models	Hypochlorite Produced Capacities	Dimensions (in)
SciCHLOR 1.0	10 pounds (4.5 kg) = 150 gallons [565 L] per day	64" [1.6 m] x 26" [0.6 m] x 56" [1.4 m]
SciCHLOR 2.0	20 pounds (9 kg) = 300 gallons [1135 L] per day	64" [1.6 m] x 26" [0.6 m] x 56" [1.4 m]
SciCHLOR 4.0	40 pounds (18 kg) = 600 gallons [2270 L] per day	consult factory
SciCHLOR 6.0	60 pounds (27 kg) = 900 gallons [3400 L] per day	consult factory

MATERIALS:	Non-Corrosive
SALT TYPE:	ALL; granular table salt or 99.6% pure solar salt preferred
CAPACITIES:	10 lb (4.5kg), 20 lb (9kg), 40 lb (18kg), 60 lb (27kg)/day hypochlorite produced
POWER:	220 VAC 50/60Hz 1-Phase & 3-Phase
CHLORINE STRENGTH:	0.8% optimum



SaniTEE
wastewater screens

BIOSTEP
SCREENED PUMPING SYSTEMS

StormTEE
Litter Control Screens

MyTEE
Screen System



Influent & Effluent Screening Devices

BIO **MICROBICS**

BETTER WATER. BETTER WORLD.

With over 60,000 installations in more than 70 countries, our Fixed Integrated Treatment Technologies (FITT™) are the result of decades of experience, research & development, and real world operating history.

Awards, Technology Approvals, and Certifications

- 2017 Top 10 Green Building Products, BuildingGreen, Inc. – d-Rain Joint™ Device
- 2016 LIFT's "Passport to Innovation" WE&RF Leaders Innovation Forum for Technology (LIFT) Scan Program - a growing collection of vetted, innovative technologies that will drastically improve wastewater treatment operations. – BioBarrier® HSMBR™
- 2016 President's "E Star" Award & 2012 President's "E" Award for Excellence in Exports, granted by President of the United States, presented by US Dept of Commerce
- 2015 Ingenuity Award Winner, Ingenuity Central @ K-State Olathe, Ingenuity Central (IC) showcases innovative companies that exemplify the newest thinking driving our community & growing our economy.
- 2015 Innovation in Marine Environmental Technology Offshore Excellence Award, based on environmental impact of marine sanitation devices and technology.
- 2014 "BEST of GreenBuild" Editor's Choice Award, U.S. Builders Review, "Creating Better Water Treatment Solutions for a Better World..." article.
- 2011 Technology Innovation Award (Decentralized Commercial Outlets) – Frost & Sullivan – FAST™ Technology
- 2011 New Product of the Year Award – Recycling Category, Environmental Protection Magazine (EPOnline.com) "The financial, environmental and social benefits of 'recycling' are indisputable." – BioBarrier® MBR Technology
- 2011 Kansas Governor's Exporter of the Year – presented by the Governor of KS, KS Dept. of Commerce
- 2010 North American Technology Innovation Award (Water/Wastewater) – Frost & Sullivan – FAST™ Technology
- 2009 Technology Merit Business Achievement Award, Water/Wastewater – Environmental Business Journal (EBJ) – BioBarrier® MBR Technology
- 2002 U.S. Export Achievement Certificate, US Dept. of Commerce, US & Foreign Commercial Service
- 2000 U.S. EPA Environmental Technology Innovator Award – U.S. EPA, Region 1 – SeptiTech® Technology
- Australian Dept of Transportation & Royal Australian Navy - Technology Approval
- Canadian Great Lakes (CGL) Maritime Certification – Canadian Coast Guard
- CAN/BNQ 3680-600 (B-IV) Onsite Wastewater Technologies - BioBarrier® MBR
- Canadian Standards Association (CSA) International Electrical Certification
- CE – European Electrical Systems (including a "Tropical Certification Rating")
- China Classification Society (CCS) 中国船级社 – FAST™ Technology Approval
- EN 12556-3, Packaged and/or site assembled domestic wastewater treatment plants for up to 50 People, PIA GmbH tested - BioBarrier® MBR 0.5, 1.0, & 1.5 & FITT™ee
- IAPMO (International Association of Plumbing and Mechanical Officials) Research & Testing Inc. – Reclaimed Water Conservation System for Flushing Toilets (Standards CSA B128.1-2006 & CSA B128.2-2006) – Recover® Technology
- IMO (International Maritime Organization) MARPOL Annex IV (2010) – provides guidance for the Navigation and Vessel Inspection Circular (NVIC) No. 1-09, US EPA and other effluent standards as may be required – FAST™ Technology
- Massachusetts Title 5 Innovative/Alternative System - Technologies Listed under "General Use Permit for Nitrogen Reduction", "Provisional Use," & "Remedial Use"
- NSF/ANSI Std 40, class 1 Certified – MicroFAST®, BioBarrier® MBR and SeptiTech® Systems up to 1500 GPD – Recognized in domestic and international trade by regulatory agencies at the local, state/province, and federal levels.
- NSF/ANSI Std 245 (Nitrogen Reduction) Certified – MicroFAST®, BioBarrier®-N MBR, BioBarrier® MBR and SeptiTech® Systems up to 1500 GPD
- NSF/ANSI Std 350 class R (Water Reuse) Certified – BioBarrier® MBR 0.5, 1.0, & 1.5
- Poland – Aprobata Techniczna (Technology Approval) ze Instytut Ochrony Środowiska (Institute of Environmental Protection)
- România – Avizează Favorabil – Consiliul Tehnic Permanent Pentru Construcții – Ministerul Dezvoltării Regionale Si Turismului
- Russia – Technology Approval – Федеральная Служба По Надзору В Сфере Защиты Прав Потребителей И Благополучия Человка (Federal Service of Environmental Protection)
- Russia – CPT Свидетельство о Российских Стандартах (Certification of Russian Standards) – BioSTORM® – All sizes
- Russia – РМРС (Russian Maritime Register of Shipping) МЕЖДУНАРОДНОЕ СВИДЕТЕЛЬСТВО О ПРЕДОТВРАЩЕНИИ ЗАГРЯЗНЕНИЯ СТОЧНЫМИ ВОДАМИ - International Sewage Pollution Prevention Certificate
- SASO (Saudi Arabian Standards Organization) Certified
- ETL (UL) – Listed to US electrical certification requirements
- U.S. Coast Guard – 33CFR159, MEPC.159(55) – FAST™ Technology Approval for Type II MSD (Marine Sanitation Devices)
- U.S. EPA-ETV (Environmental Technology Verification) – validates the performance of technology that may improve the protection of the environment. – RetroFAST®, Report No. 03/08/WOPC-SWP – SeptiTech®, Report No. 02/04/WOPC-SWP

...and MORE!

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Protect or enhance your system(s) performance with an easy to install, simple-to-clean screening device from Bio-Microbics:

SaniTEE® - An easy to install/maintain effluent filter screening device to reduce suspended solids discharged in septic tank by promoting natural sedimentation and excludes gas-lifted particles from entering the outlet pipe.



BioSTEP® - A packaged pump system with the engineered design of our effluent filter to transfer screened liquids for various small-diameter, collection system applications.



MyTEE® - A required screen device prior to the AMS Zone for a MyFAST® system, the MyTEE® screen provides separation of non-biological solids and grit.



StormTEE® - Ideal for the removal of trash, litter, and debris from storm water flows. The patented, clean-in-place deflector screen can be used alone or in conjunction with the BioSTORM® stormwater treatment system.



Mighty Mike

*Mighty Tough
on Cleaning!*

Use Mighty Mike® environmentally-friendly Tablets & Cleaners to effectively clean without damage or leaving residues!

Call 1-866-652-4539 or email solutions@sciencofast.com



BioSTEP

SCREENED PUMPING SYSTEMS

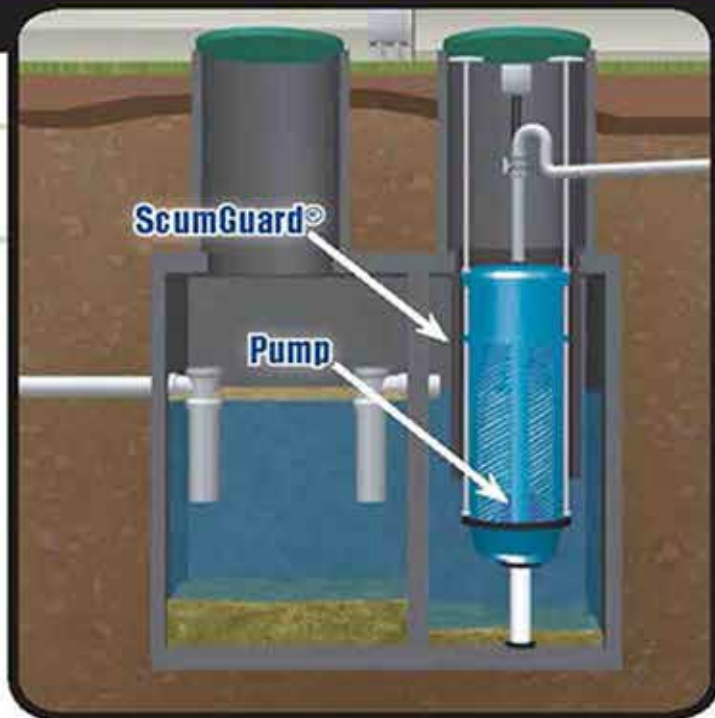
Low-Maintenance Wastewater Transfer Screen with Pump Options

The BioSTEP® screened pumping system uses the patented SaniTEE® screen with a robust, submersible effluent pump to screen and transfer the effluent to the desired location. The system also incorporates easy installation features for both new and existing sites.

Benefits of Small-Diameter Sewer

- Reduce excavation time, material requirements and construction costs
- Provide innovative, sustainable solutions for new development and community redevelopment
- Areas with small lot sizes, poor site conditions or other limitations can overcome these barriers while maintaining a "sewer-like" feel.

BioSTEP®'s standard design package incorporates a superior ¾" solids handling sewage pump and a comprehensive control system. Other pump options are available.



BioSTEP® Specifications

Model Size	BST1618
Screen Diameter	16" (40 cm)
Screening Level	1/8" (0.32 cm)
*Pump Selection for BioSTEP® System ranges from 1/3HP to 2HP	

StormTEE

Litter Control Screens

Low-Maintenance Stormwater Screen

The StormTEE® Litter Control Screens remove trash, litter, and debris associated from storm water flows. Includes Top and Bottom Diverter outlet tees, StormTEE® is perfect for retrofits, easy slip in installation, and easy-to-clean for a variety of storm water applications.



StormTEE® Specifications

Model Sizes	Screen Body Dia.	Screening Level	Max Flow Capacity Cubic Feet per Second (liters)
SMT838	8" (20 cm)	3/8" (.95 cm)	Up to 1.5 CFS (42 LPS)
SMT1638	16" (40 cm)	3/8" (.95 cm)	Up to 5 CFS (142 LPS)

SaniTEE[®]

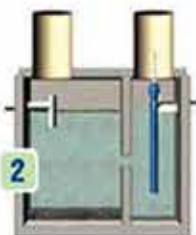
wastewater screens

A SaniTEE[®] screen improves performance and protects the system!

When used for primary screening in residential and commercial applications, a SaniTEE[®] can provide many benefits; i.e. prolonged drain field life and ease of maintenance. Available in 4", 8" and 16" diameters, these screening devices provide consistent retention of solids for a multitude of applications. Suggested installations:



1 Single-Compartment Tank with Gravity Discharge



2 Dual-Compartment Tank with Gravity Discharge



3 Dual-Compartment Tank with an Effluent Pump, also see the BioSTEP[®] system.

SaniTEE[®] Specifications

Model Sizes	Screen Diameter	Screening Level	Flow Range
SNT416	4" (10 cm)	1/16" (.15 cm)	Up to 1000 GPD (3785 LPD)
SNT418	4" (10 cm)	1/8" (.32 cm)	Up to 2000 GPD (7571 LPD)
SNT818	8" (20 cm)	1/8" (.32 cm)	Up to 6000 GPD (23 m ³ /D)
SNT838	8" (20 cm)	3/8" (.95 cm)	Up to 10000 GPD (38 m ³ /D)
SNT1618	16" (40 cm)	1/8" (.32 cm)	Up to 10000 GPD (38 m ³ /D)
SNT1638	16" (40 cm)	3/8" (.95 cm)	Up to 20000 GPD (75 m ³ /D)

MyTEE[®]

Screen System

Please refer to the product drawings for more information, technical specifications, and tank recommendations.

Low-Maintenance Grit Screen

The MyTEE[®] screen provides effective separation of non-biological solids and grit prior to the AMS Zone in the MyFAST[®] System. MyTEE[®] devices come standard with wall mounted top diverters, base supports, and internal/external cleaning swabs for easy maintenance.

MyTEE[®] Specifications

Model Size	MYT1638
Screen Diameter	16" (40 cm)
Screening Level	3/8" (0.95 cm)
Flow Range	min. 10000+ GPD (38 m ³ /D)

Use the MyTEE[®] Screen System for any pre-screening and grit removal large-flow wastewater application.



Use as a standalone filter in a tank or for pre-screening with a complete wastewater treatment system:

Wastewater Treatment Systems

- **RetroFAST**® Septic System Enhancement
- **MicroFAST**® Wastewater Treatment System
- **NitriFAST**® Wastewater Treatment System
- **HighStrengthFAST**® Treatment System
- **MyFAST**® Wastewater Treatment System
- **RollsAIR**® & **RollsAIR**® HS-STP®

Membrane BioReactor Technology

- **BioBarrier**® MBR
- **BioBarrier**® HSMBR®

Horizontal Trickling Filter Technology

- **SeptiTech**® STAAR™ Residential
- **SeptiTech**® STAAR™ Commercial

Greywater Treatment Technology

- **Recover**® Residential
- **BioBarrier**® Residential & Commercial Greywater

Stormwater Treatment Solutions

- **BioSTORM**® Stormwater System

Other Management Solutions

- **Lixor**® Submerged Aeration Systems
- **FOGHog**® Traps & Tablets
- **ABC**®-N Clarifiers & Devices

Other Maintenance Products and

Environmentally-Friendly Cleaning Solutions

- **Mighty Mike**® All-Purpose Cleaner
- **Mighty Mike**® Laundry Detergent
- **Mighty Mike**® U&F-BOOST® Tablets
- **Mighty Mike**® FOGHog® Tablets
- **Mighty Mike**® Industrial Descaler
- **Mighty Mike**® CPT Tablets
- **MightyMike**® Bond-SORB® Odor Eliminator

Effluent filters protect absorption areas from premature clogging and failure due to the release of non-settleable solids and/or non-degradable flushed materials from the septic tank. SaniTEE® effluent filters are available in 4", 8" and 16" sizes and provide consistent retention of wastewater solids.

Installed directly in the outlet tee of the tank, SaniTEE® effluent filter's patented keyhole weirs provide consistency of flow despite surges. The angled slots resist blinding and prevent clogs inside the filter housing better than bar and mesh-type screens to extend the life of your system(s), reduce clogging material, and improve flow conditions.

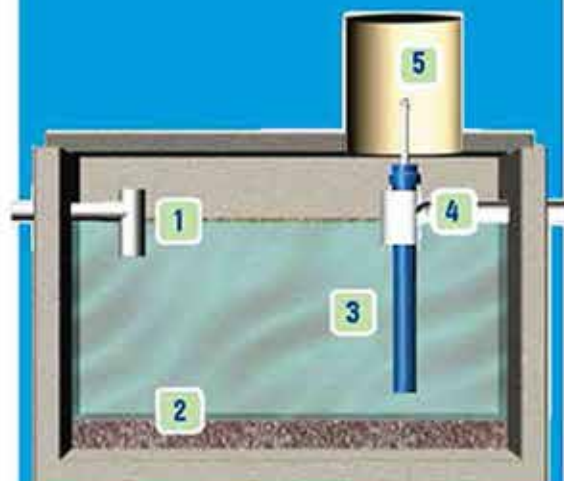
Easy, "slip-in" Installation and come standard with swabbing feature for Clean-in-Place (CIP) maintenance *make it the easiest screening device to maintain on the market!*

Angled Slots resists blinding and prevents clogs inside the filter housing better than mesh-type screens.

Patented **Keyhole Weirs** (on the SaniTEE®) provides consistency of flow despite surges.

How the Screening Devices Work

- 1 As the wastewater enters the tank, light-weight floatables rise to form a scum layer at the water surface;
- 2 Sediment and heavy solids settle to the bottom to form the sludge layer.
- 3 The 'clarified' water enters the screen by passing through angled slots.
- 4 Screened water is discharged for further treatment or dispersal.
- 5 **TO CLEAN:** any solids that become trapped in the angled slots can be easily dislodged with a simple pull of the swab handle(s). *Extension rods can easily be added to handles for a custom fit.*



SeptiTech[®]
a subsidiary of BioMicrobics, Inc.

STAAAR[®]

Smart Trickling Anaerobic/Aerobic Recirculating Filter Systems

NSF/ANSI STD 40, Class I and STD 245
(Nitrogen Reduction) certified



Consistently achieves 98% BOD/TSS
reduction & 80-95% Nitrogen Reduction



PLC Controlled System -
Collects & Stores 90 Days of Data



AWARD-WINNING
INTEGRATED WATER
TECHNOLOGY

Advanced Wastewater Treatment Systems
Residential • Community • Commercial

BETTER WATER. BETTER WORLD.™

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SIMPLE & LOW

STAAR[®]

Smart Trickling Anaerobic/Aerobic Recirculating Filter Systems

Advanced Wastewater Treatment Systems

The SeptiTech STAAR[®] (Smart Trickling Anaerobic/Aerobic Recirculating) Filter system is a convenient and cost-effective solution to wastewater problems for many types of applications. These "trickling filter" systems are designed for both residential and commercial properties with minimal operator oversight, while delivering consistently high quality treatment even during peak, low or intermittent flows. The "smart," patented, PLC controlled technology is known in the industry for its design versatility and ability to accommodate non-standard applications such as high strength waste and strict effluent requirements.



RESIDENTIAL

- Single-family homes
- Multi-Family Properties
- Apartment Complexes
- Community/Subdivision
- Small Municipal/Village

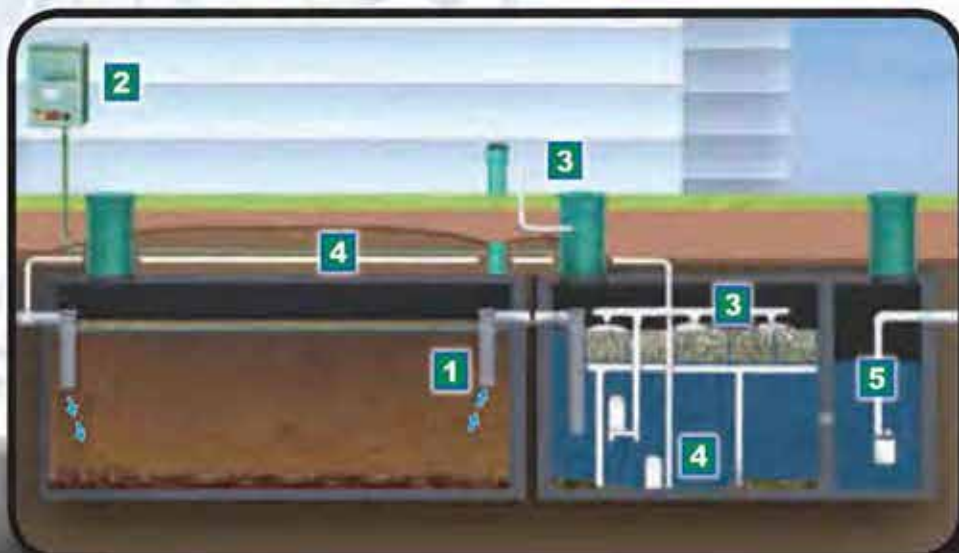
COMMERCIAL

- Schools/Universities
- RV/Mobile Home Parks
- Country Club/Golf Courses
- Restaurants/Cafes/Pubs
- Office/Business Parks
- Resort Areas/Hotels
- Shopping Ctrs/Food Courts
- Military Posts/Army Barracks
- Guard/Police/Fire Stations
- Recreational Facilities
- Highway Rest Areas
- Power Stations
- Laundries
- Wineries/Farmsteads
- Supermarkets/Food Stores
- Food Packaging Plants
- Beverage Facilities

...and more!

HOW IT WORKS!

- 1 Influent from the primary settling zone flows into the bottom of the trickling filter mixing with the treated wastewater.
- 2 The control panel senses "surge flow" and "low flow" activity automatically adjusting the discharge rate as needed; even senses a "no flow" situation to "slow down" or put the system into "Sleep" mode.
- 3 The combination of water and air that is passively drawn in through venturis trickles down through the filter media. **For the Commercial System:** two stages and two types of media are used with multiple returns for optimum treatment.
- 4 Systematically, wastewater is recirculated back to the settling zone to remove sludge from the trickling filter, thus all sludge management is in the settling zone, which also performs denitrification processes.
- 5 After treatment, a pump will send small, frequent time doses to the leachfield to ensure optimal soil absorption.





SeptiTech® STAAR® (Smart Trickling Anaerobic/Aerobic Recirculating) Filter System

UNIT	Maximum Treatment Capacity**	Tank Volume
STAAR® 0.5*	500 GPD (1893 LPD)	1000 Gal (3787 L) Standard Septic Tank
STAAR® 0.75*	750 GPD (2839 LPD)	1250 Gal (4732 L) Standard Septic Tank
STAAR® 1.0*	1000 GPD (3785 LPD)	1500 Gal (5678 L) Standard Septic Tank
STAAR® 1.2*	1200 GPD (4542 LPD)	2000 Gal (7571 L)
STAAR® 1.5*	1500 GPD (5678 LPD)	4000 Gal (15142 L)
STAAR® 3.0	3000 GPD (11 m3/D)	6000 Gal (22.7 m3)
STAAR® 4.5	4500 GPD (17 m3/D)	8000 Gal (30.2 m3)
STAAR® 6.0	6000 GPD (23 m3/D)	(2) 6000 Gal (22.7 m3)
STAAR® 9.0	9000 GPD (34 m3/D)	(2) 8000 Gal (30.2 m3)
STAAR® 12.0	12000 GPD (45 m3/D)	(4) 6000 Gal (22.7 m3)
STAAR® 18.0	18000 GPD (68 m3/D)	(4) 8000 Gal (30.2 m3)
STAAR® 27.0	27000 GPD (102 m3/D)	(6) 8000 Gal (30.2 m3)

NOTE: Systems can be fully assembled prior to shipping or manually assembled on site. Please see Product Drawing for design specifications and recommended exterior tankage sizing. Treatment modules shall be installed inside tanks that are locally approved and manufactured using watertight materials. Electrical Options are available to meet all worldwide electrical specifications.

Denitrification units are available to incorporate a primary septic tank(s) in the nitrogen removal process. Please see product drawings and/or manual for further details.

*NSF/ANSI Standard 40, Class 1 and Standard 245 (Nitrogen Reduction) certified system with passing the USEPA-ETV (Environmental Technology Verification) Program.

**Treatment Capacity/Volume/Hydraulic capacities are rated based on biological loading (BOD), hydraulic and other project specific considerations. Please note that only residential applications or those applications requiring treatment for only sanitary wastewater, may be designed from the volume and number of people per module. Actual capacity may vary with local conditions and performance goals.

ADVANTAGES & PERFORMANCE

The simple, automatic, reliable equalization, and clarification process of the SeptiTech® STAAR® Filter System treats high organic loads while operating with flexibility and control that integrates with other technologies. The relatively low operating cost and low power requirements makes the STAAR a cost-effective and preferred system for a multitude of applications. All below grade components, the "Smart" PLC control panel operates the "dual-purpose" recirculation pump not only to spray the wastewater over treatment media, it also passively

draws in outside air to nitrify the bacteria in the treatment tank. The return pump sends the flocked "activated sludge" to the anoxic, primary tank which denitrifies and produces less sludge compared to other systems. All solid management is done in the septic tank - no pumping required. The discharge pump typically releases the treated effluent in "micro doses" to disposal field(s) 24 times a day and can be adjusted for a variety of environmental site conditions and/or performance goal considerations.



RESIDENTIAL

WATERFRONT

MULTI-FAMILY

COMMERCIAL



Since 1996, SeptiTech, a subsidiary of BioMicrobics, Inc. has continued to manufacture the certified, EPA "Innovator" Technology, (Region 1) award-winning, STAAR® (Smart Trickling Anaerobic/Aerobic Recirculating) Filter Systems. These "biological" trickling filter systems are routinely specified for homes, communities, resorts, schools, shopping centers, restaurants, and more. SeptiTech has designed affordable and sustainable wastewater

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