

Smith & Loveless Inc.

Above All Others.™

Modular
FAST®
Fixed Activated Sludge Treatment

Unique.
Proven.
Reliable.



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Fixed Activated Sludge Treatment

Modular FAST® Advantages

Media Savvy

FAST® media provides a high surface-to-volume ratio to maintain good bacterial growth during both low and peak usage. Bacteria become "fixed" or attached to the fully submerged, stationary media, therefore a sufficient population is consistently preserved in the aeration tank to metabolize the waste. Continual bacterial growth ensures a high level of treated effluent. For BOD removal, the system can function adequately with two weeks of no flow.

Low Operation and Maintenance

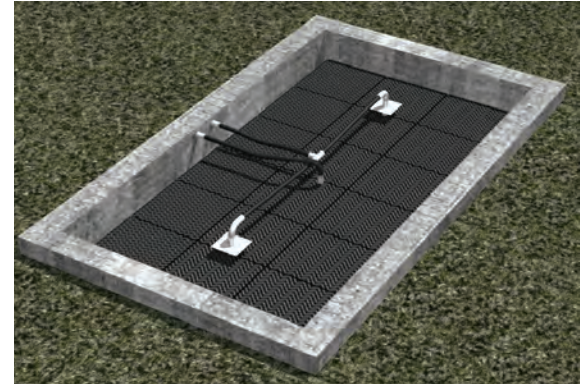
Modular FAST® contains no pumps or filters to clean or replace. It contains only one moving part: the air blower, which is placed above or below the ground in a convenient and remote location. Because the plant is self-regulating, no daily operation and maintenance is necessary. Only occasional air scouring of the media and sludge removal required (1 to 4 times a year depending on the application).

Superior PreTreatment

Whether the application requires pretreatment of sanitary or process wastewater for discharge to a city sewer, leach field, constructed wetlands or aeration pond, Modular FAST® can do the job better than conventional pretreatment systems.

Modular FAST® provides end-users a proven solution to potentially unsightly, noisy and odorous problems associated with some wastewater treatment systems. Using the patented FAST® process (an acronym for Fixed Activated Sludge Treatment), Modular FAST® is a fixed-film, aerated system utilizing the principles of attached and suspended growth with the ability to nitrify/denitrify.

Able to be installed below or above grade, Modular FAST® offers high-quality treated wastewater and preserves the aesthetics of the surrounding environment. The attached growth facilitated by the FAST® media ensures a high level of continuous treatment even with wide variation in flows. Flow capacities for this kind of application are virtually unlimited. The result is clean and odorless effluent.



Top view of system (tank lid removed)

Modular FAST® Design Benefits

High Level of Bacterial Concentration

FAST® media maintains a high level of bacteria in the aeration zone, which provides stable operation, breaks down biodegradable constituents in the wastewater, and prevents bulking conditions and settling problems. Smaller required tank sizes for the same application is a cost-benefit passed on to the user.

Long Sludge Age

With high bacterial concentration, Modular FAST® boasts a significantly longer sludge age than conventional plants. A long sludge age achieves nitrification and denitrification much easier, operates more effectively in cold climates, and less sludge is produced.

High Quality Effluent

Modular FAST® extends leach field life because of the low solids carry-over while minimizing the leach field land area required. Its clear effluent also makes the system ideal for pretreatment to aeration ponds, lagoons and constructed wetlands.

High Resistance to Hydraulic and Organic Shock Loads

Because the bacteria are attached to the FAST® media in the aeration zone, the system prevents washout of bacteria, enabling Modular FAST® to endure peak or spike flow conditions.

Low Energy Requirements

Modular FAST® systems contain only one moving part: the air blower.

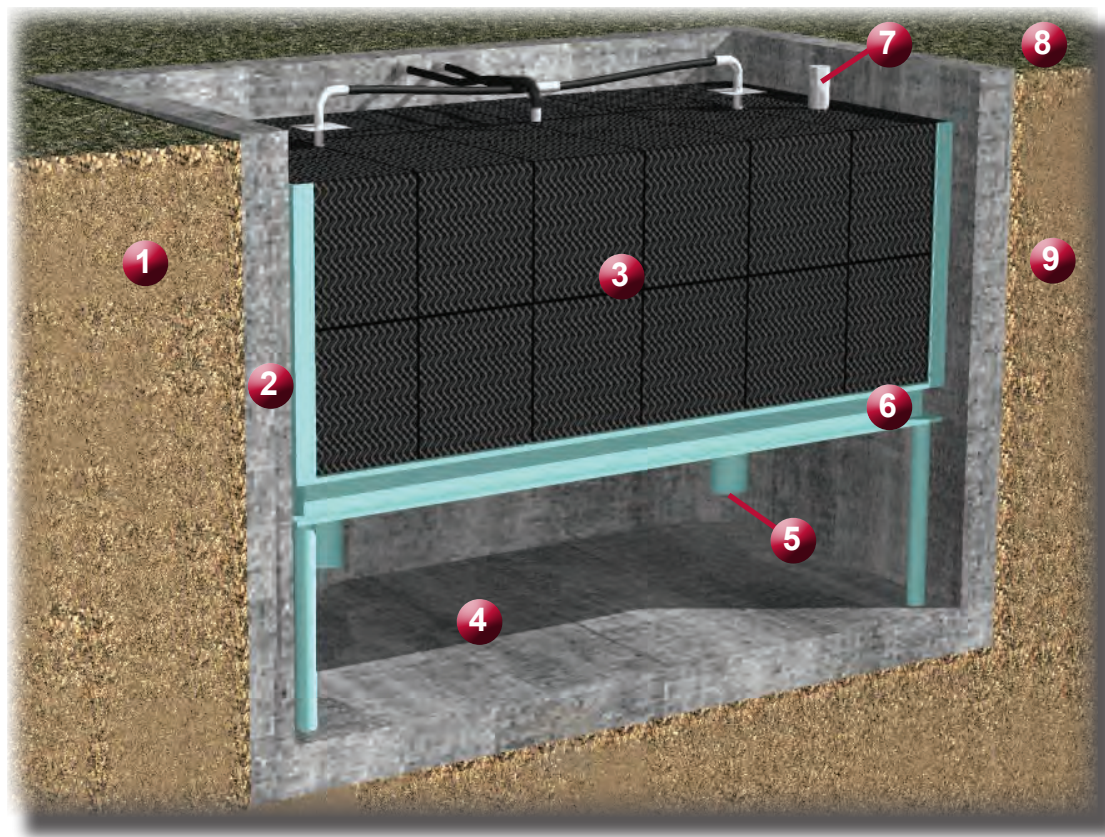
Effluent Data from Modular FAST®

Actual Data <small>Figures Rounded Off</small>	BOD		TSS		Removal %		Nitrogen (% removed)
	IN	OUT	IN	OUT	BOD	TSS	OUT
High School <small>12,000 GPD</small>	186	3	74	12	98	84	.5 NH -N
Conv. Shop <small>2,000 GPD</small>	716	23	900	18	97	98	18 (84%) Total N
Hotel <small>15,000 GPD</small>	622	17	101	19	97	81	6.9 (83%) Total N
Restaurant <small>6,000 GPD</small>	4271	15	4727	106	98	97	36 (71%) Total N

Modular FAST[®] Design Features



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1 Influent Pipe

Carries wastewater directly from the septic tank and into the Modular FAST[®] system. (Not shown)

2 System Tank

Any concrete, steel or fiberglass tank that is suitable for the application. Steel tank can be provided by Smith & Loveless.

3 FAST[®] Media

Provides a fixed site for the bacteria in an environment ideal for rapid bacterial growth (oxygen and food are equally distributed to the bacteria coated on the media). Allows long sludge age and low sludge production. The high surface-to-volume ratio ensures a large number of bacteria are available for metabolizing the waste. Produces a continually high level of treatment.

4 Solids Collection Zone

Keeps sludge away from the media to allow effective circulation of liquid. Anaerobic conditions digest sludge further.

5 Draft Tube

Works in concert with air supply to disperse the liquid evenly over the surface of the FAST[®] media, providing continuous circulation of the wastewater. Because the bacteria grow on the media, the liquid is essentially clear and free of suspended solids, which differentiates Modular FAST[®] from conventional activated sludge systems.

6 Module

Packed with bacteria laden media, the base maintains the necessary structural support.

7 Sludge Withdrawal Pipes

Provides convenient access to sludge for periodic testing and removal of settled sludge.

8 Blower

Supplies oxygen for the bacteria to grow and multiply. Can be located up to 100 feet away in a low traffic area. The blower is the only moving mechanical part of the system. (Not shown)

9 Odorless Effluent

Contains very low BOD and TSS levels, discharging into the existing leach field, lagoon, disposal well, constructed wetlands or sewer. (Not shown)

Installation and Operation of the Modular FAST[®]



Step 1 The system easily installs into a small concrete basin.



Step 2 Wastewater circulates through media during start-up.



Step 3 Modular FAST[®] operates out of sight, under the parking lot, discharging to a subsurface leach field.



Modular FAST® Applications

Municipal/P.D. Applications

- Schools and Universities
- Housing Developments
- Office Parks
- Resorts and Hotels
- Botanical Gardens
- Shopping Centers
- Restaurants
- Golf Courses
- Parks/Campgrounds
- Municipalities

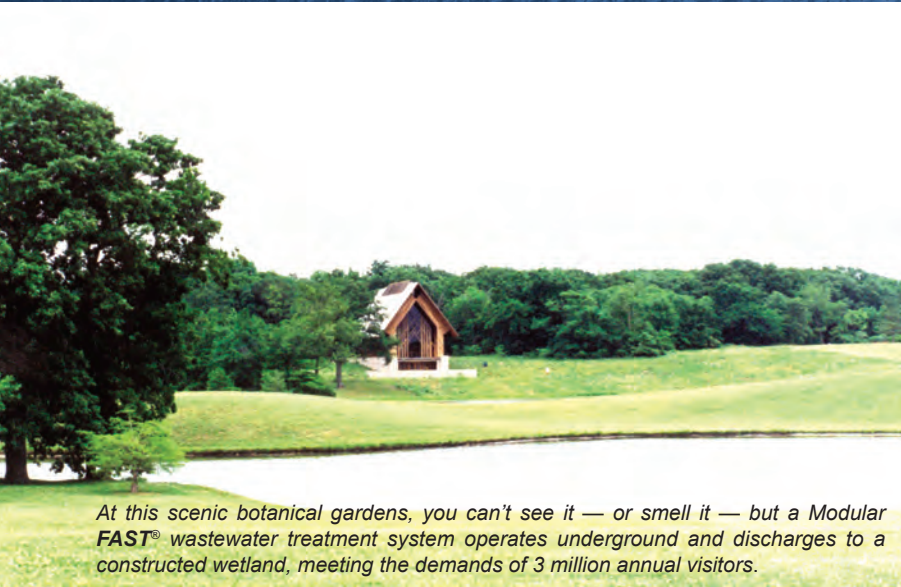
Industrial Applications

- Food and Beverage
- Wineries
- Groundwater Cleanup
- Petrochemical/Chemical
- Aerobic Polishing
- Pharmaceutical

**For industrial applications, pilot testing and leasing programs are available for customers with unique needs.*

Retrofit Applications

- Increased Flow Capacity
- Nitrification/Denitrification
- Combination of Increased Flow Capacity & Nitrification



At this scenic botanical gardens, you can't see it — or smell it — but a Modular FAST® wastewater treatment system operates underground and discharges to a constructed wetland, meeting the demands of 3 million annual visitors.

Smith & Loveless Inc. knows wastewater treatment systems. Backed by 60 years of engineering, manufacturing, erecting and servicing thousands of pre-engineered biological treatment systems, we understand your preferences for performance, minimal operational costs, and long-term durability. We're proud of the knowledge and experience we bring to the table to help solve your wastewater needs. With Modular **FAST**®, you receive the finest in system innovation backed by the value-added experience of Smith & Loveless.

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