



Smith & Loveless Inc.

Above All Others.™

FAST®
Fixed Activated Sludge Treatment



Stabilizing Your Variable Flows



FAST Benefits

- Proven in Thousands of Installations
- Flexible Application
- No Moving Internal Parts
- Higher Loading Rates = Smaller Footprint
- Lower Solids to Clarifier Improves Settling
- Longer Sludge Age Ideal for Nutrient Removal
- High Resistance to Shock Loads
- Minimal Operator Attention Required
- S&L Experience and Support

Proven. Reliable. Simple. That's what characterizes the patented Fixed Activated Sludge Treatment [FAST®] Process by Smith & Loveless. Proven in thousands of installations ranging from municipal and private development [on-site] applications to industrial and commercial sectors to specialized use in marine systems. Reliable because its stable process withstands hydraulic shock loads and prevents bacterial washouts. Simple operation & maintenance means no daily operator requirements and very little annual plant maintenance.

FAST® achieves nutrient removal for applications containing high levels of nitrogen. S&L designs integral process zones or supplies **EFFLOW™** & **DGF** filters for polishing when stringent effluent goals demand it.

FAST® Systems arrive at the job site as complete, factory-built units or as large components for easy field-assembly. FAST® can also retrofit into existing aeration tankage to boost capacity and/or performance without expanding the plant. Best of all, each system is backed by Smith & Loveless and its 60 years of experience.

Media Savvy

Wastewater streams circulate vigorously and evenly through the FAST® System's fully submerged, fixed media (manufactured by S&L). FAST® media provides a higher surface area-to-volume ratio, which protects it against hydraulic shock loads and bacterial washout. After plant start-up, no reseeded or RAS is required—even for variable flow conditions.

FAST® System Design Basics

Flow Capacities: 2,000 GPD+ (7.57 CMD+)
Tankage: Steel, Concrete or Fiberglass
Integral Process Options: Flow Equalization
 Aerobic Digestion
 Clarification & Filtration
 Anoxic Zones [Denitrification]



Thousands of FAST® Systems operate globally in various applications.

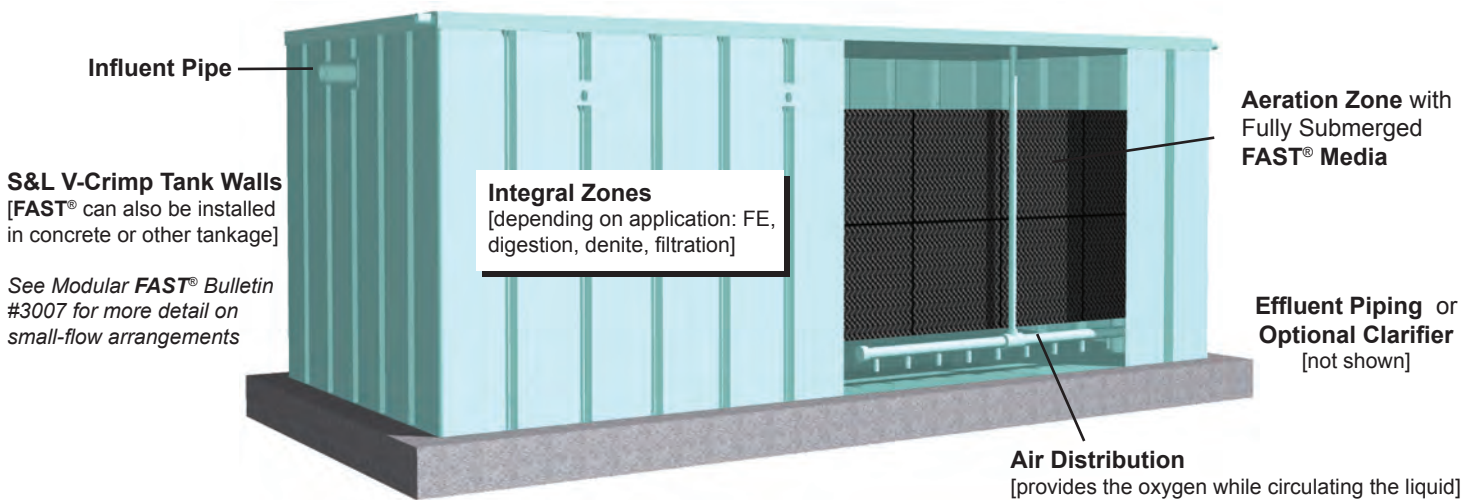
How the Process Works **FAST**®

The FAST® System's submerged media provides a high surface area-to-volume ratio, which translates into a significant increase in bacterial concentration for bio-degradation. Unlike conventional suspended growth systems, bacteria grow rapidly on the media while the liquid that evenly circulates through the media is essentially clear with low solids levels. As the bacteria grow and increase in thickness, the film strength of the bacterial growth weakens and a sloughing of surface solids occurs. The microbes' anaerobic action results in continuing reduction in cell mass and a reduced biological sludge accumulation, which lessens the required area for tankage and associated equipment.

Solids removed by the sloughing action are not overly gelatinous but tend to be large and settle rapidly. In larger systems, these solids can easily be removed by a clarifier.

The effective sludge age for this system is quite long, generally 40 to 100 days or more, depending upon loading rates. This longer period enables the system to be responsive to colder climates and variable flow conditions—experienced in applications like schools and campgrounds—and even allow for periods of up to two weeks without flow. The effective mixed liquid suspended solids levels are in the range of 6000-10,000 mg/L.

Typical Factory-Built Model



There are no moving parts inside the FAST® system, which distinguishes it from other kinds of fixed-film systems [like RBCs, BAFs and trickling filters].

FAST® Applications

Municipal & Private Development

Ideal for Variable Flow Conditions & Nutrient Removal [Denitrification]



- Regional or Central WWTP [Small to Large Flows]
- On-Site Treatment [Developments & Clusters]
- Schools & University Facilities
- Restaurants/Shopping Centers/Commercial Parks
- Resorts/Hotels/Campgrounds/Parks

Industrial

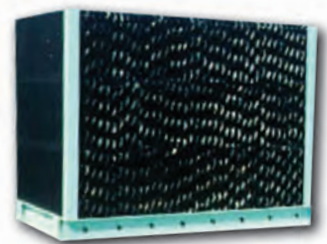
Ideal for Sanitary & High-Strength Wastes for Pretreatment & Reuse



- Food & Beverage/Wineries
- Groundwater Cleanup
- Chemical/Petrochemical/Pulp & Paper
- Commercial Facilities

Retrofits

Expand Existing WWTP Capacity & Performance



With FAST® Media inserts, a retrofit upgrade is as simple as 1-2-3!

FAST[®]

Fixed Activated Sludge Treatment



*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 the **FAST**[®] process, you receive the finest in system innovation backed by the value-added experience of Smith & Loveless.*

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