



Smith & Loveless Inc.

Protecting Water. Protecting People.™

S&L **FAST**®

Fixed Activated Sludge Treatment



*The Premier Fixed-Biofilm Process
with Enhanced Nutrient Removal*

S&L FAST[®]

Fixed Activated Sludge Treatment

The Premier Fixed-Biofilm Process with Enhanced Nutrient Removal

*Proven. Resilient. Simple. These attributes accentuate the patented Fixed Activated Sludge Treatment [FAST[®]] biofilm process by Smith & Loveless. S&L FAST[®] achieves essential BOD/TSS removal along with **Water Reuse** and **Biological Nutrient Removal** for applications containing high levels of nitrogen. S&L integrates process zones and DGF filters for polishing when stringent effluent goals demand it.*

Proven

in thousands of installations ranging from municipal and private development [on-site] applications to industrial and commercial sectors, S&L FAST[®] is ideal for variable flows and seasonal operations.

Resilient

and stable biofilm process. Withstands variable flows and hydraulic shock loads while preventing bacterial washout. Yields a much longer sludge age [SRT] than typical biological systems—all in a smaller footprint.

Simple & Smart

operation & maintenance means no daily operator requirements and very little annual plant maintenance. With QUICKSMART™ PLC touchscreen controls, automation and data monitoring is even easier.





Flow Capacity

5,000 gpd - 1.0 MGD /

24 cmd - 4,000+ m³/d

Effluent Quality

Achieve **Biological Nutrient Removal (BNR)** and **Water Reuse**.

BOD: 10 mg/l

TSS: 10 mg/l

TN: < 8 mg/l

NH₃: < 1 mg/l

TP: < 1 mg/l

S&L FAST[®] Benefits

- Proven process in thousands of applications
- Achieve effluent goals for **Water Reuse & BNR**
- Flexible application and model types
- Higher loading rates = smaller footprint plant
- Lower solids to clarifier improves settling
- Longer sludge age ideal for nutrient removal
- High resistance to shock loads
- No bacterial washouts
- Minimal daily operator attention required
- No biocarrier cog replacements or related clogging

The Smith & Loveless Advantage

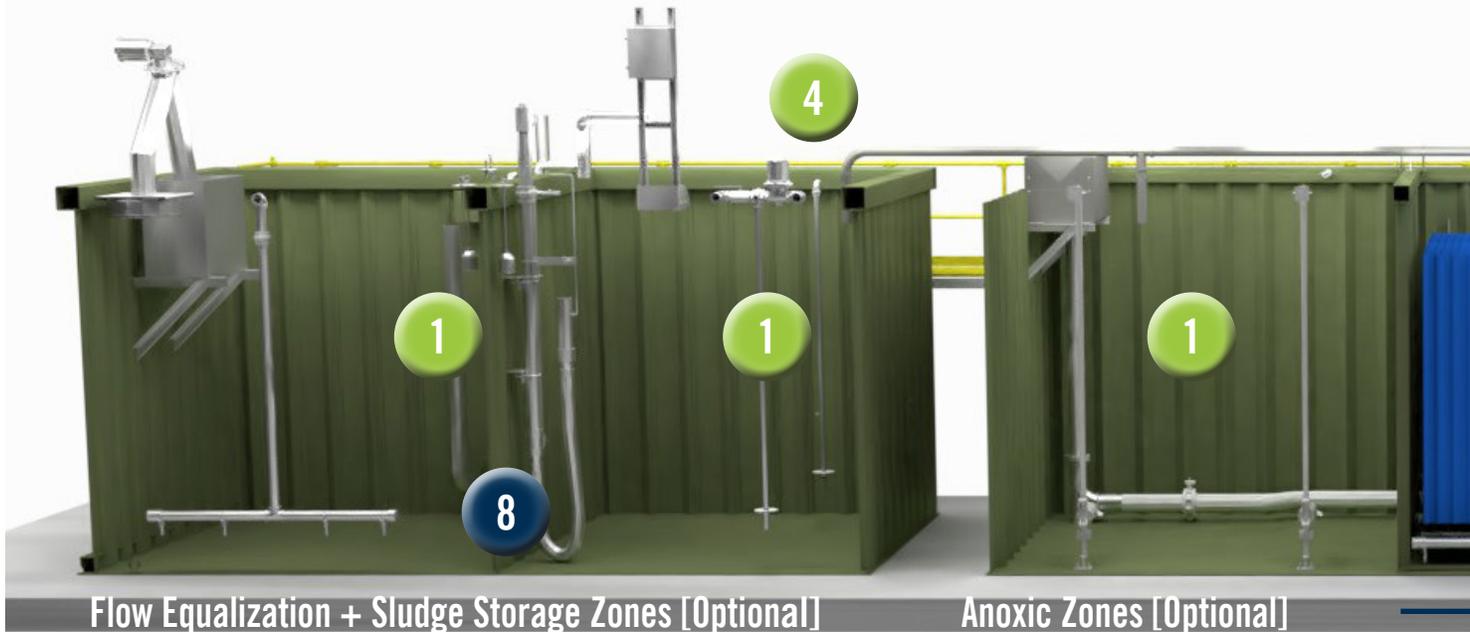
Smith & Loveless offers you a custom treatment system solution designed to meet your unique application. From project design, to fabrication, installation and start-up, to complete aftermarket and field service technical support, S&L is there to serve you each step of the way — as we have done for 75 years.

For inquiries visit www.SmithandLoveless.com
or call [800] 898-9122.



System Operation and Features

How it works **FAST**: Wastewater streams circulate vigorously and evenly through the **S&L FAST**® System's fully submerged, fixed media which provides a high surface area-to-volume ratio, translating into a significant increase in bacterial concentration for bio-degradation. Bacteria grow rapidly on the media while the liquid that 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 microbial 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 settle rapidly in a clarifier.



System Process & Construction Features

1 Flexible Process Zones, Configured

S&L FAST® comes configured to meet your effluent goals including for Water Reuse. Optional Flow Equalization, Sludge Storage and multi-stage Biological Nutrient Removal [BNR] process zones can all be incorporated. Optional covers and odor control are available.

2 Efficient & Robust Aeration/Circulation

Stainless steel, medium-bubble aeration lowers operating costs while eliminating fouling and maintenance costs associated with fine bubble diffusers. Provides vigorous circulation through media.

3 Media Air Scouring [Automatic]

Intermittent air scouring underneath the **S&L FAST**® media maintains ideal biofilm thickness for consistent and effective biodegradation of the organic constituents in the flow.

4 Smart Wire Management System

Factory-installed and strategically located instrumentation and cable wireways minimize field-wiring for easier installation. Optional instrumentation covers [not depicted] are available.

5 Clarifier Selection

S&L FAST® plants come with choice of hopper clarifier attached or a separate circular steel tank clarifier.



6

Standard Features & Options

- Stainless Steel Piping Throughout
- S&L V-Crimp Epoxy-Coated Tankage
- Optional Noise Attenuation [Blowers]
- Optional Tank Covers and Odor Control
- Optional Remote Monitoring Services
- Smart Plant: Automation and Instrumentation [Packages]

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FAST® Media Aeration Zone

Clarifier [& Other Separation Options]

Operation & Maintenance Features

6 Safe & Easy O&M Access [Factory-Supplied]

S&L stairway access to walkway for easy O&M. All maintenance tasks can be safely and comfortably accomplished from here—protected by OSHA standard 42" high [106 cm] safety railing.

7 No Plant Reseeding

The attached bacterial growth on the **S&L FAST®** Media protects the system against toxic shocks and variable flows. For seasonal applications like campgrounds, this can eliminate reseeded.

8 Influent Transfer Eliminates Pump O&M

S&L **MINI-JECT™** influent transfer with no moving parts eliminates need for mechanical pumps and associated maintenance & replacement costs. Provides constant flow regardless of flow level.

9 QUICKSMART™ PLC Touchscreen Ease

QUICKSMART™ System Controls provide unparalleled ability to monitor and adjust all of your treatment system functions with a highly intuitive, easy-to-navigate touchscreen PLC interface. [For more, see next page.]

10 RemoteView™ Cloud Remote Monitoring

Cloud-based **RemoteView™** monitoring services are available from Smith & Loveless Inc. We are here to help you! [For more, see next page.]

S&L FAST® Applications

Municipal and Private Development

Ideal for Variable Flow Conditions and Biological Nutrient Removal

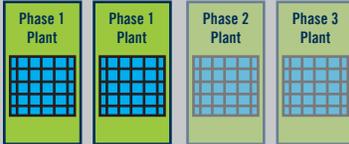
- Decentralized / Onsite applications
- Schools and university facilities
- Restaurants, shopping and commercial centers
- Resorts and hotels
- Campgrounds and parks
- Private developments [including scaled growth]

Industrial and Commercial

Ideal for Sanitary and Process Waste Streams for Industrial Pretreatment

- Food processing and dairy facilities
- Beverage processing, wineries and breweries
- Groundwater cleanup
- Chemical processing, petrochemical refineries
- Power-gen facilities
- Mine and remote man-camp sites

Phased installation offers planning benefits



S&L FAST® System Configurations

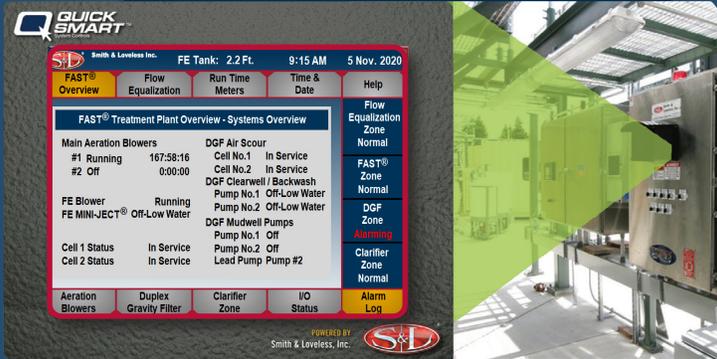
S&L FAST® Systems arrive at the job site as complete, factory-built units or as large components for simple field-assembly.

S&L FAST® media modules can also retrofit into existing aeration tankage to boost capacity and performance without expanding the plant. Multiple plants can be designed for scalable, future growth. S&L FAST® systems are configured with additional process steps to meet stringent and advanced nutrient removal effluent requirements. Best of all, each system is backed by Smith & Loveless' decades of engineering experience.



Above, Factory-built and then shipped complete to the project site. Below, models can be arranged for containerized shipping.





Main Features

- 9.7" (24.6 cm) 65K-Color TFT LCD touch screen HMI
- PLC/Microprocessor-based controller
- NEMA 4X rated
- UL certification
- Protected by Surge Protective Device [SPD] [optional]
- More than 10 different screen selections
- Data, maintenance, and alarm logging
- Complete "Help" menu and support screens

 Superior Graphics  Easy-to-Navigate  Remote Automation

Delivering simplified operation yet powerful FAST® control, QUICKSMART™ System Controls provide unparalleled ability to monitor and adjust all of your treatment system functions, including:

- **Troubleshooting** support comes standard with new I/O Status screen that displays controller digital and analog I/O status.
- **Maintenance Log** - Displays recommended O&M instructions and makes suggestions based on actual system operation.
- **Automated Decanting** - Automatic sludge storage decanting airlift with timer controlled by QUICKSMART™ PLC with HMI operator adjustment. Air to sludge storage zone [when incorporated] is shut down automatically before decanting airlift runs.
- **RAS** adjusts the recycle LIQUIDLIFT™ [when anoxic zones are present] to accommodate lower flow conditions to maintain high levels of nitrification.



RemoteView™ Cloud Services with QUICKSMART™

Gain remote access monitoring and troubleshooting services with RemoteView™ from S&L. We are here to help you make owning and operating S&L FAST® the easiest of any biological treatment system.

Proven

Patented fixed-film process with thousands of factory-built installations

Resilient

S&L FAST[®] is designed to withstand toxic shocks and variable flows and loads

Simple

Self-regulating, the S&L FAST[®] process minimizes daily operator attention

Smart

Intuitive graphical touchscreen **QUICKSMART™** PLC provides easy control

Compare FAST[®] to Conventional Activated Sludge and Other Biofilm Processes

- 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
- Fixed Media Means No Cogs Clogging or Replacement

