



Smith & Loveless Inc.

Protecting Water. Protecting People.™

Model R **OXIGEST**®

Field-Erected Treatment Plant

***BNR and Water Reuse Solutions
for Flows from 0.1 MGD - 3.0 MGD***



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The Model R OXIGEST[®] field-erected wastewater treatment plant achieves BOD/TSS, bio-nutrient removal [BNR], and water reuse for flows between 0.1 and 3.0 MGD (380 to 11,400 cmd). Its capital and operational cost-saving concentric tank design comprising integral biological treatment zones eliminate expensive sludge pumps and yard piping while minimizing installation expenses, land usage and construction time. Smartly automated and conveniently accessible for simple O&M, and flexible to meet your current and future project effluent requirements, *the Model R OXIGEST[®] is the Right Choice.*

Flexible Processes

Water Reuse and BNR

Smart Automation

Economical Design

Simplified O&M



System Data and Benefits



OXIGEST® Benefits

- Designed for ease of installation and O&M
- Achieve effluent goals for **Water Reuse** and **BNR**
- Flexible process designs to meet effluent requirements
- Adaptable to large capacities and high-strength BOD
- Concentric design reduces footprint and yard piping
- Airlifts minimize use of mechanical pumps and costs
- Design/Build solutions with field erection support
- Proven in hundreds of installations / applications

Flow Capacity

0.1 MGD - 3.0 MGD per tank

380 m³/d - 11,400 m³/d per tank

Multiple tanks can be arranged like what is pictured at left.

Effluent Quality

OXIGEST®

BOD: < 10 mg/l

TSS: < 10 mg/l

TN: < 8 mg/l

NH₃: < 1 mg/l

TP: < 1 mg/l

OXIGEST® MBR

BOD: < 3 mg/l

TSS: < 3 mg/l

TN: < 3 mg/l

NH₃: < 1 mg/l

TP: < 0.05 mg/l

*For the most stringent effluent requirements, external membrane zones and disinfection comprise the **OXIGEST® MBR**.*

Proven Applications

- Small Municipalities
- Private Developments
- Oil/Gas/Refineries
- Federal/Military
- Chemical/Petrochemical
- Food & Beverage
- Wineries / Breweries
- Biofuels
- Polishing
- Groundwater
- Superfunds
- Scalping Plants

OXIGEST® Advantages vs. Built-in-Place Concrete Treatment Plants

Field-erected **OXIGEST®** steel treatment plants by S&L offer significantly less capital and operational costs than fully concrete built-in-place plants of the same capacity. Up front, S&L plants install more quickly and cost-effectively through quality-controlled manufacturing and time-efficient on-site assembly. Because **OXIGEST®** designs offer smaller footprints — eliminating the need for multiple separate concrete tanks and related yard piping and conduit (and thus, the associated long-term maintenance) — life cycle costs (capital + O&M) are less than half compared to conventional concrete plants. Plants come with factory-finished carbon steel or optional stainless steel tankage and components for complete and hybrid steel-concrete arrangements.



Typical Project Cost Differential

The Smith & Loveless Advantage

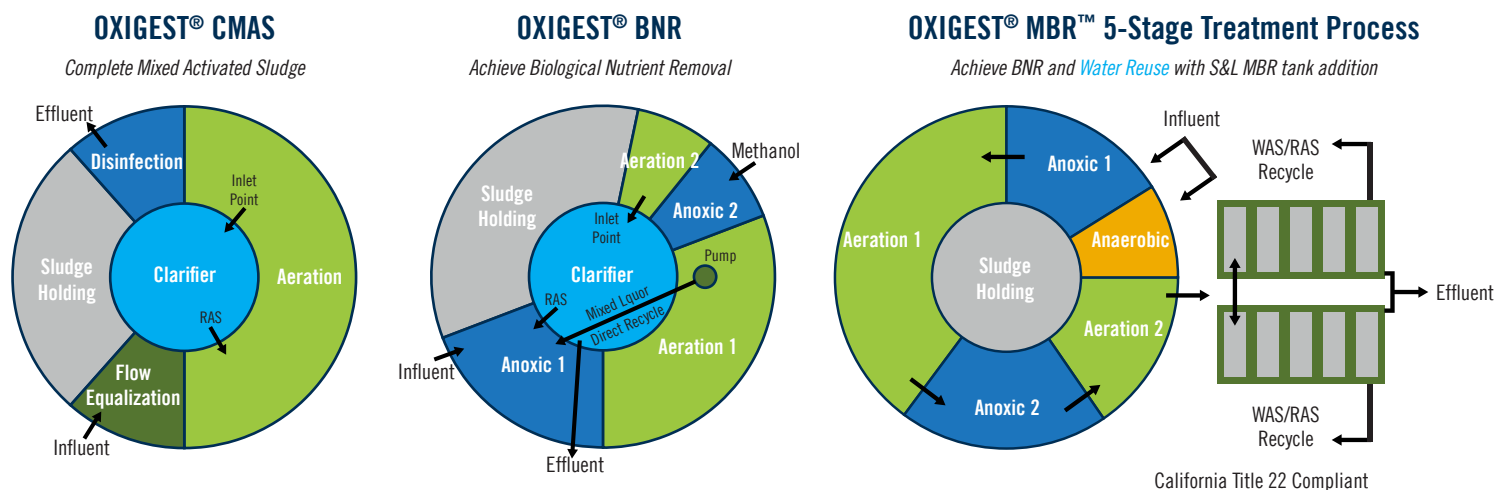
Smith & Loveless offers you a custom treatment system solution designed to meet your unique application. From in-house process-mechanical-electrical design, to fabrication, installation and start-up, to complete aftermarket and field service technical support, S&L is there to serve you each step of the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

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



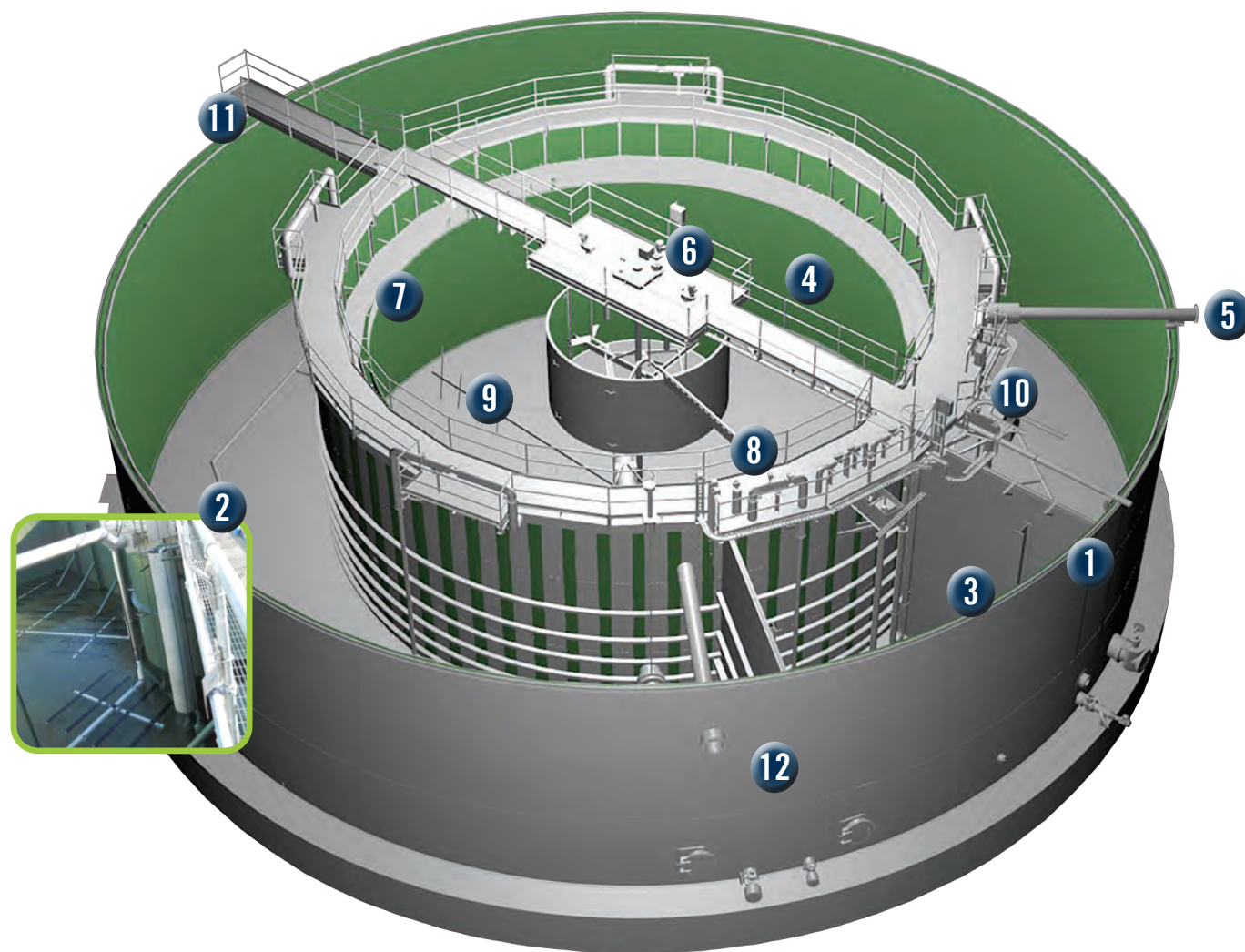
OXIGEST® Process Configurations

OXIGEST® systems offer flexible processes for your project goals and needs, including nutrient removal and water reuse. Custom-built OXIGEST® systems incorporate multiple treatment zones and options, including headworks, flow equalization, clarification, tertiary filtration (including membranes), disinfection, sludge holding, and other zones to meet effluent requirements. *Typical process variations appear below.*



OXIGEST® System Features

Read about component features at right matched below.



OXIGEST® System Features

- 1 Influent Location**
Carries wastewater directly into the **Model R OXIGEST®**
- 2 Air Diffuser**
Fine bubble and coarse bubble diffusers are both available. Diffusers are engineered for maximum efficiency without clogging. Air is supplied by remotely located centrifugal or positive displacement blowers with optional dissolved oxygen [D.O.] control through VFDs.
- 3 Partition Walls**
Create individual process zones in the outer tank allowing for multiple flexible treatment options while eliminating need for multiple tanks and interconnecting piping.
- 4 Clarifier**
Inwardly constructed at the center of the plant to dramatically reduce the footprint. Various options are available for clarifier performance including mixers, tube settlers, feed wells, sludge collection systems, and skimming. In **OXIGEST® MBR** designs, the center clarifier is replaced with a sludge holding zone and external membrane tanks [see example on opposite page at top].
- 5 Air Supply Connection**
Single-source entry for main air supply to the diffusers and airlift pumps. In the design phase, this can be placed virtually at any point around the plant for maximum flexibility of air piping layout.
- 6 Clarifier Drive Unit**
The heavy-duty drive provides more than adequate torque and includes over-torque protection and local/remote torque indication.
- 7 Effluent Launder**
Includes V-Notch effluent weirs and scum baffle with optional materials of construction.
- 8 Skimmer System**
Consists of a skimmer arm, anti-rotation arm, and an air lift removal system. The skimmer arm forms a "V" with the anti-rotation arm, forcing all the surface material toward the airlift removal port.
- 9 Sludge Collection Unit**
Consists of a dual-arm scraper assembly, torque tube and sludge collection well. The scrapers move the sludge toward the center sludge well twice on each rotation of the mechanism.
- 10 WAS/RAS Airlifts and LIQUIDLIFT™ Anoxic Recycle**
The system employs several airlifts to efficiently transfer return and waste activated sludge, sludge decant, and scum, eliminating excessive piping, mechanical pumps and valves. With any BNR process, S&L's **LIQUIDLIFT™** anoxic recycle system transfers MLSS to the anoxic zone; it automatically accommodates lower flow conditions to maintain high levels of nitrification. All airlifts feature long-lasting stainless steel construction, and the WAS/RAS and **LIQUIDLIFT™** airlifts contain weirs for monitoring flow locally and remotely. The end result is significantly less maintenance time and cost. [Only the RAS Airlift is called out here.]
- 11 Stairway, Bridge, & Clarifier Service Walkways**
Designed to provide complete access for visual inspection, process adjustments and access to all operational components for easier, safer, and lower-cost maintenance.
- 12 Effluent Pipe**
In the design phase, this can be placed at any point around the plant.

Complete Project Support



We don't supply you just with long-lasting, easy-to-maintain equipment, we provide complete solutions to your wastewater problems, including value-added services and support through out the life of your project and installation, from pre-design to post-installation. Below is a summary of the services we can provide you along with our custom treatment plant systems.



Pre-Contract Phase

- Onsite analysis
- Process selection based on permit requirements
- Budgetary quotes and proposals
- Process design development and plant sizing
- CAD/3D concept drawings
- Project profiles and references
- Process warranties



Deliverables

- Process Flow Diagrams (PFD)
- Piping and Instrumentation Diagrams (P&ID)
- General arrangement drawings
- Full specifications



Prior to manufacturing and construction

- Submittal package
- Structural design and engineering
- Team meetings when necessary



During Manufacturing

- Factory tours for project team personnel
- Review of any relevant equipment testing
- Project timeline management



During Installation / Commissioning

- Field erection services
- Start-up support services (for both process & mechanical installation)
- On-site operations training
- Maintenance manuals

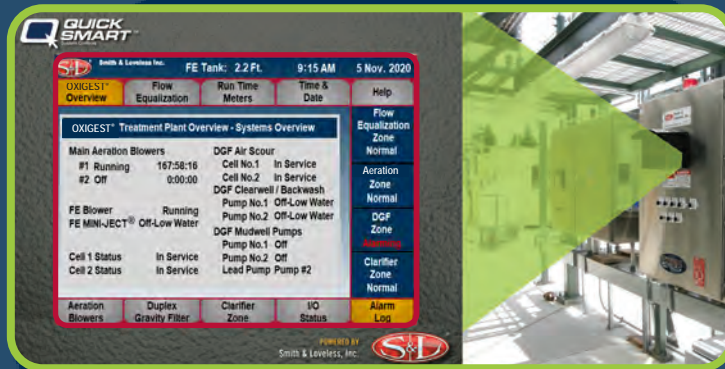


Post-Installation

- Project review
- Remote monitoring and support
- Operations and maintenance support
- Warranty claim processing
- After Market services and support



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Smart Automation




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
- Instrumentation can include sensors for D.O., pH, BOD monitoring, flow rate and level and other parameters
- Complete "Help" menu and support screens



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 OXIGEST® the easiest of any biological treatment system.

 **Superior Graphics**  **Easy-to-Navigate**  **Remote Automation**

Delivering simplified operation yet powerful Model R OXIGEST® 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.



BNR and Water Reuse Solutions for Flows from 0.1 - 3.0 MGD

Flexible Processes

Multiple biotreatment processes including BNR allow you to meet specific effluent limits

Economical Design

Concentric tankage minimizes footprint, yard piping and capital costs

Smart Automation

S&L provides optional PLC controls that provide process automation and monitoring

Simplified O&M

Easily perform maintenance from walkways; minimal daily operation required.



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