

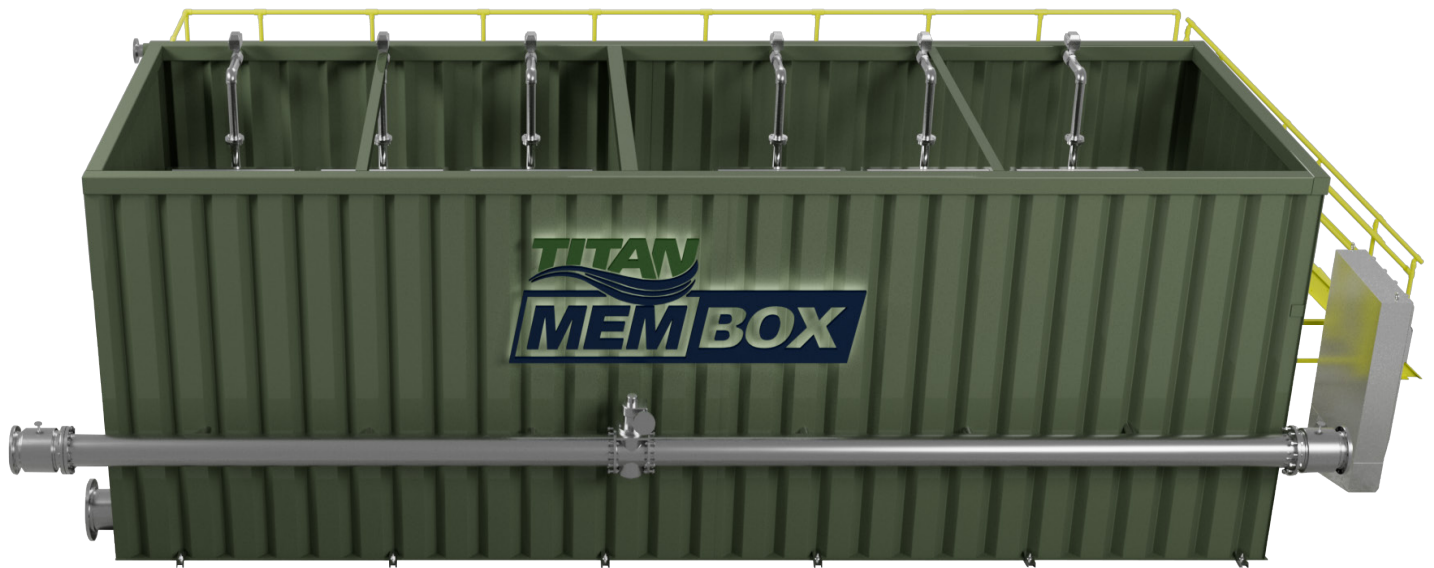


Smith & Loveless Inc.

Protecting Water. Protecting People.™



Go from a Conventional WWTP to Cutting Edge



Introducing the Factory-Built Membrane System Solution that Rapidly Upgrades
Activated Sludge Plants to MBRs — Without Constructing Any New Concrete Tanks



The Factory-Built Membrane System Solution that Rapidly Upgrades Activated Sludge Plants to MBRs — Without Constructing Any New Tanks

Smith & Loveless, the leader in factory-built MBRs, introduces its latest factory-built membrane system innovation, **TITAN MEM-BOX™**, a packaged membrane process zone that transforms activated processes into fully functional MBRs.

Integrating **TITAN MEM-BOX™** elevates conventional wastewater treatment plants to cutting-edge water resource recovery facilities (WRRFs) by (a) improving plant capacity (b) improving effluent quality (c) implementing water reuse to counter water scarcity and (d) meeting population growth and permitting demands. Designed for both existing and newly proposed plants, the **TITAN MEM-BOX™** membrane system eliminates the need for constructing additional treatment basins while streamlining the design process and reducing project time and costs. The factory-built and tested system arrives to the plant site ready to be integrated into the treatment scheme to produce superior effluent and nutrient removal.

TITAN MEM-BOX™ Benefits

- Achieve effluent goals for **BNR** and **Water Reuse**
- Easily **add capacity** and greatly **improve effluent** quality
- Drastically **reduce project timelines and costs** for new and existing plants
- **Factory-built and tested** membrane system delivers straight to plant site
- Standard **stainless steel piping and valves**
- Robust **hollow fiber membranes and instrumentation**
- S&L offers significant **MBR experience & system integration** project support

Flows Up to 2+ MGD [90 L/s]

Smith & Loveless' experienced technical staff assists you every step of the way with your project, from the pre-design phase to field installation and beyond with complete and reliable lifetime after market support as proven during S&L's 75-plus years.

Applications

TITAN MEM-BOX™ provides multiple process options to meet your particular effluent goals. Three different examples are shown below.

Industrial Wastewater [Process + Sanitary]



Add Water Reuse

Increase Sustainability

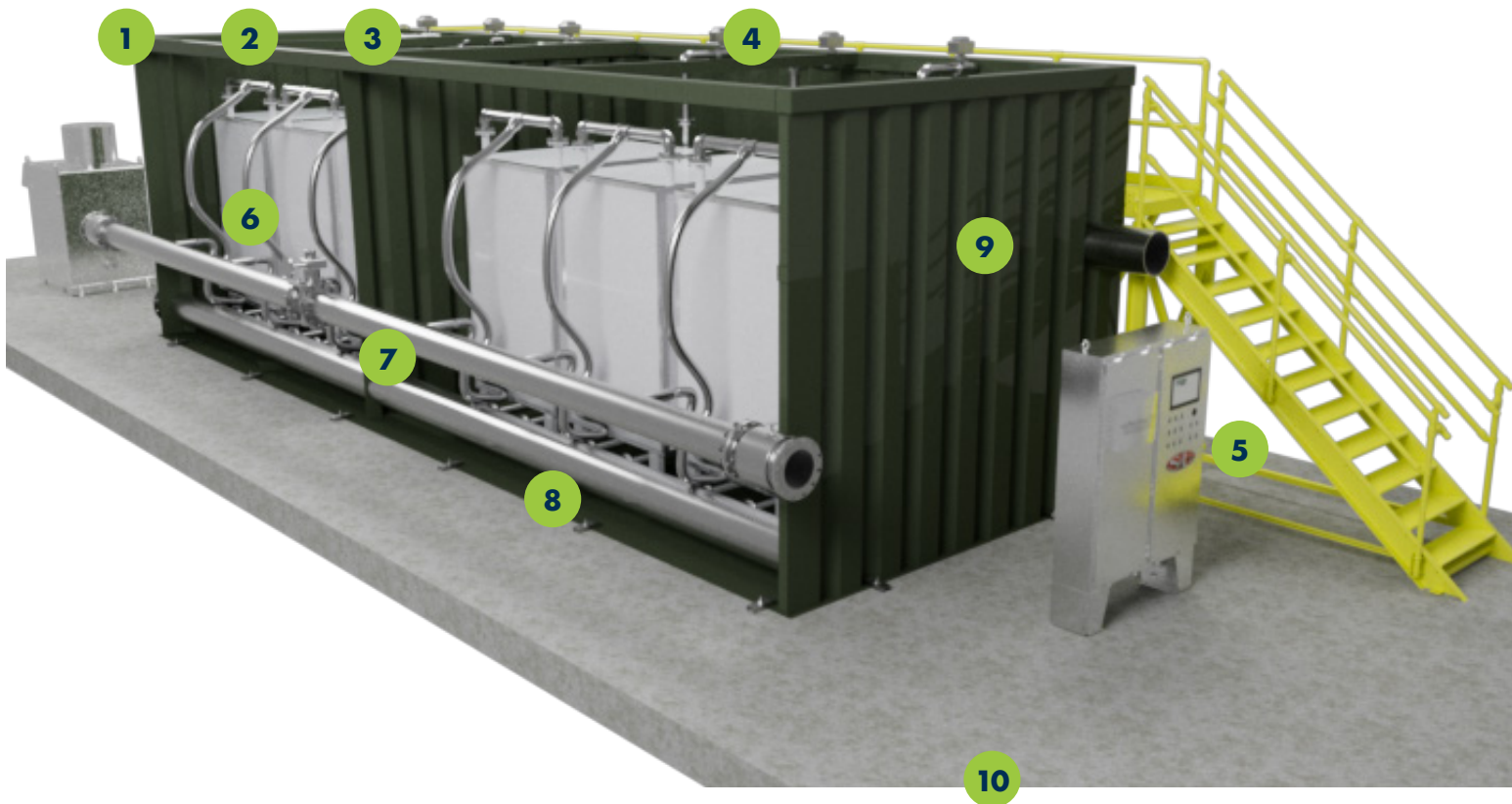


Municipal Activated Sludge Plants



Add Capacity to Existing and New Plants

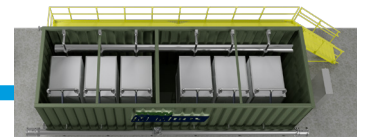
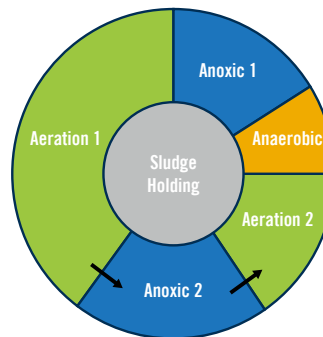
Meet New Effluent Requirements



System Diagram

- | | | | | |
|---|---|--|--|--|
| 1 Factory-Built + Factory-Tested System | 2 Air Header Integrated into the Tank Structure | 3 Smart Factory-Wiring Simplifies Installation | 4 High-Quality Instrumentation | 5 QUICKSMART™ PLC Touchscreen Controls |
| 6 Robust Hollow Fiber Membrane Modules | 7 Permeate + CIP Header | 8 MLSS Recycle | 9 Stainless Steel or Painted Carbon Steel Tank | 10 Permeate Pumping Skid (when applicable - not shown) |

OXIGEST MBR™ — New MBR Plants Up to 2+ MGD



TITAN
MEMBOX™

The **TITAN MEM-BOX™** integrates with S&L's large-flow Model R **OXIGEST®** treatment system to form the **OXIGEST MBR™**, offering a complete MBR treatment solution for flows of 200,000 gpd and larger up to 2+ MGD per train [9 - 90 L/s].



Go from a Conventional WWTP to Cutting Edge

Capacity + Effluent

Add capacity to your and/or improve effluent quality to your existing treatment process

Reduce Project Costs

Eliminates need to construct new concrete tanks, drastically reducing time and costs

Factory-Built + Tested

Systems are pre-assembled in quality-controlled facilities and shipped to the job-site

System Integration

Our experienced technical staff assists you from pre-design to installation and beyond

Effluent Quality

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

| | |
|-------------------|--------------|
| BOD: | < 3 mg/l |
| TSS: | < 3 mg/l |
| Turbidity | < 1 NTU |
| TN: | < 3 mg/l* |
| NH ₃ : | < 1 mg/l* |
| TP: | < 0.05 mg/l* |

**Achievable with optional process selections*



Featured Options

- Covers and odor control
- Enhanced process instrumentation
- Blower pressure and air flow monitoring
- Stainless steel tankage, piping, and components
- Select aluminum or 316 SST cable trays
- Permeate pump skid
- Remote monitoring
- Smart plant: Automatic operation and instrumentation packages

S&L Membranes

California Title 22 Approved for **Water Reuse**.

| | |
|-----------|---|
| Type: | Submerged Hollow Fiber or Flat-Plate [depending on application] |
| Material: | PVDF |

S&L's intuitive **QUICKSMART™** PLC controls and plant automation, including automatic membrane cleaning, **TITAN MEM-BOX™** makes operation and maintenance the easiest of any membrane system. S&L offers **RemoteView™**, which allows end-users to monitor and troubleshoot system operation from remote locations.

