

PURON PLUS MBR Package Systems

Pre-engineered Standard Systems for Wastewater Treatment

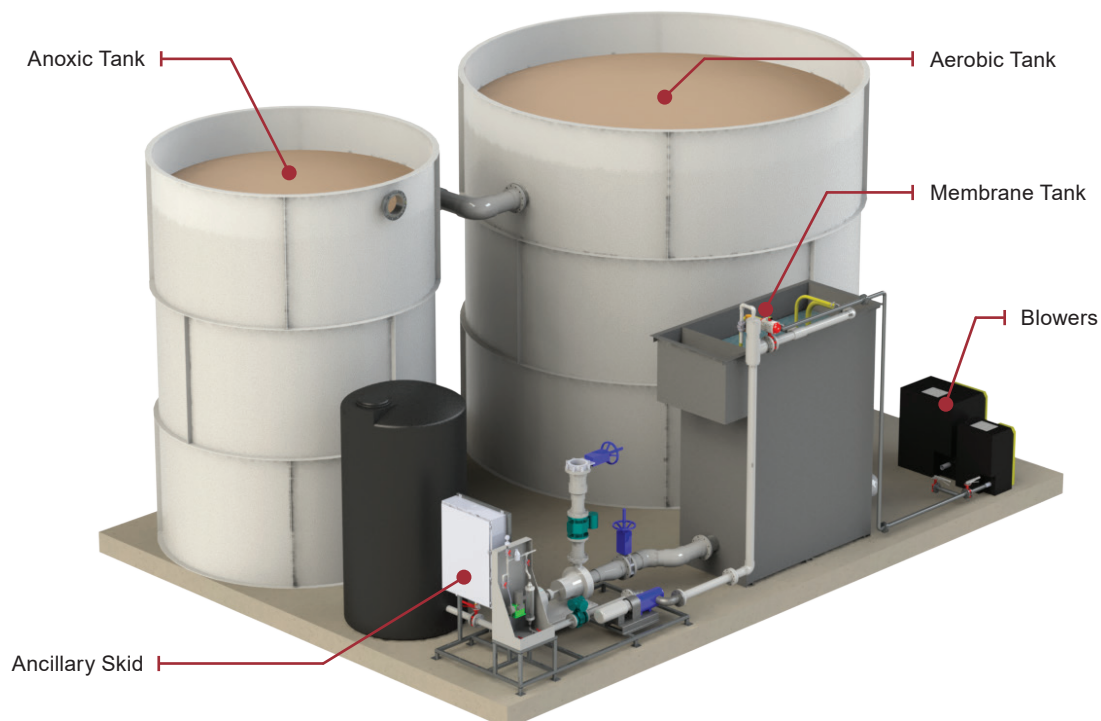
PURON® PLUS MBR systems are pre-engineered membrane bioreactor (MBR) package plants. With capacities ranging up to 260,000 GPD, the PURON PLUS MBR system is designed for both municipal and industrial (*i.e.*: **food, dairy, beverage, leachate, produced water, etc.**) wastewater applications with feed BOD concentrations up to 2,000 mg/L.

Featuring Koch Membrane Systems submerged PULSION® MBR modules, these skid-mounted systems offer customers a complete and cost-effective design. The virtually unbreakable high performance PURON membrane provides consistent high quality effluent with total suspended solids <5 mg/L. Coupled with a comprehensive biological system, the PURON PLUS MBR system can reduce BOD and Nitrogen concentrations down to 5 and 10 mg/L respectively.

BENEFITS

- Small footprint
- Flexible layout
- Turnkey solution
- Fast delivery and installation
- Single source supply
- Optimized design for application
- Simple operation
- Minimal civil works required

EP-100 Package System Shown



Features

| | | EP-Series Filtration System | P-Series Filtration System | EP-Series Complete System | P-Series Complete System |
|---------------------|-----------------------------------|-----------------------------|----------------------------|---------------------------|--------------------------|
| Pre-Treatment | Fine Screening | O | O | O | X |
| | Chemical Dosing | | | O | O |
| | Feed Equipment | | | O | O |
| Bioreactor | Bioreactor Tanks | | | X | X |
| | Anoxic Zone and Mixing Equipment | | | X | X |
| | Process Blower | | | X | X |
| | Fine Bubble Diffuser Grid | | | X | X |
| | Bioreactor Valves | | | X | X |
| | Bioreactor Instrumentation | | | X | X |
| Filtration System | Membranes | X | X | X | X |
| | Membrane Tank | X | X | X | X |
| | Membrane Blowers | X | X | X | X |
| | Train Redundancy | | X | | X |
| | Membrane Feed System | X | X | X | X |
| | Feed Pump VFD | | X | | X |
| | Permeate Extraction System | X | X | X | X |
| | Filtration System Valves | X | X | X | X |
| | Filtration System Instrumentation | X | X | X | X |
| | CIP System | O | X | O | X |
| | Upgraded PLC/HMI | O | X | O | X |
| | Effluent Turbidity | O | O | O | O |
| | Ancillary and Post-Treatment | Duty-Standby Blower | O | X | O |
| Drain Pump | | O | O | O | O |
| Shelf Spares | | O | O | O | O |
| Disinfection System | | O | O | O | O |

X: Included, O: Optional

Sizes

| Model | AADF System Capacity | | | | Membrane | | |
|--------|----------------------|----------------------|-----------------|----------------------|------------------------|-----------|-------------|
| | Industrial | | Municipal | | Area (m ²) | Type | # of Trains |
| | 1,000 Gal / Day | m ³ / Day | 1,000 Gal / Day | m ³ / Day | | | |
| EP-50 | 30 | 114 | 65 | 246 | 348 | LE-8 (1) | 1 |
| EP-100 | 60 | 227 | 130 | 491 | 696 | LE-8 (2) | 1 |
| EP-200 | 120 | 454 | 260 | 983 | 1,392 | LE-16 (2) | 1 |
| P-100 | 60 | 227 | 130 | 491 | 696 | LE-8 (2) | 2 |
| P-200 | 120 | 454 | 260 | 983 | 1,392 | LE-16 (2) | 2 |

* Typical municipal daily peaking factor for municipal systems is 2X.** Final system sizing is application dependent and based on various design criteria, including, but not limited to Influent temperature and BOD concentration.

Installation

| System | Footprint | Electrical Power (460V, 60Hz) | Piping Connections | | |
|--------|-----------------------|-------------------------------|--------------------|-----------|------------|
| | | | Feed | WAS | Permeate |
| EP-50 | 20' x 29' / 20m x 9m | 30 HP, 40A | 6" / DN150 | 3" / DN80 | 6" / DN150 |
| EP-100 | 26' x 37' / 8m x 11m | 40 HP, 55A | 6" / DN150 | 3" / DN80 | 6" / DN150 |
| EP-200 | 32' x 37' / 10m x 11m | 50 HP, 65A | 8" / DN200 | 3" / DN80 | 8" / DN200 |
| P-100 | 33' x 49' / 10m x 15m | 75 HP, 100A | 6" / DN150 | 3" / DN80 | 6" / DN150 |
| P-200 | 39' x 49' / 12m x 15m | 85 HP, 110A | 8" / DN200 | 3" / DN80 | 8" / DN200 |

Systems are delivered as pre-assembled skids. Interconnecting piping will be provided to connect skids within manufacturer's scope of supply and designated layout. All skids are pre-wired with local disconnects. System assembly and wiring to be conducted by a qualified contractor. KMS to provide installation support and startup services.

OPEX

| System | Estimated Energy Usage | | Estimated Chemical Usage | |
|--------|------------------------|---------------------|--------------------------|---------------------|
| | \$ / 1k Gal. | \$ / m ³ | \$ / 1k Gal. | \$ / m ³ |
| EP-50 | 0.283 | 0.075 | .005 | .001 |
| EP-100 | 0.234 | 0.062 | .005 | .001 |
| EP-200 | 0.203 | 0.054 | .005 | .001 |
| P-100 | 0.234 | 0.062 | .005 | .001 |
| P-200 | 0.203 | 0.054 | .005 | .005 |

Energy costs are estimates only and will be better defined with final system design. Values are based on a complete municipal system including the bioreactor equipment. * Power based on 13 cents per kwh.



Koch Membrane Systems, Inc.

850 Main Street, Wilmington, MA 01887-3388

Main: +1-978-694-7000 • Fax: +1-978-657-5208 • Toll Free: +1-888-677-5624