



MBR.ST-450

Pre-Engineered MBR Sewage Treatment System

The Clear³ MBR.ST-450 is a pre-engineered stand-alone decentralized modular treatment plant capable of treating sewage and waste water from residential, recreational, institutional and commercial developments up to **118,000 gallons per day**. The rugged, self-contained system is housed in four modular building enclosures, built to meet local **weather conditions from extreme heat to extreme cold**. The Clear³ MBR.ST-450 is built on Newterra's years of membrane bioreactor experience and utilizes world class proven ZeeWeed[®] membranes for exceptional permeate quality that meets the **most stringent regulatory requirements** for reuse applications or discharge to sensitive receptors.

Influent & Effluent Limits

Designed for a range of wastewater strengths and the ability to meet the most stringent discharge and reuse requirements.

Flow Parameter	Influent From...	Effluent Limits
Biological Oxygen Demand (BOD ₅)	200 to 400 mg/L	5 mg/L
Total Suspended Solids (TSS)	150 to 350 mg/L	5 mg/L
Total Kjeldhal Nitrogen (TKN)	35 to 70 mg/L	-
Total Ammania Nitrogen (TAN)	25 to 50 mg/L	1 mg/L
Total Nitrogen (TN)	-	5 mg/L *
Total Phosphorous (TP)	5 to 10 mg/L	0.1 mg/L *
Fat, Oil, and Grease (FOG)	Less than 30 mg/L	-
Fecal Coliform	-	2.2 MPN/100 mL**
Water Temperature	10 to 25°C	-
Turbidity	-	0.5 mg/L

*With nutrient reduction option(s) selected
**With disinfection option(s) selected

Efficient Modular Design

- 40' long x 32' wide x 9.5' high
- Fully functional building including, but not limited to insulation, heating, ventilation, lighting, operator work space, and eyewash station
- Optional exterior finishings (color, siding, and/or roofing)



Design Flow Parameters

With robust biology and a broad turn-down capability the Clear³ MBR.ST-450 is designed around the following flow conditions.

Flow Parameter	Up To...
Average Daily Flow (ADF)	118,000 gal/day
Maximum Monthly Flow (MMF)	142,600 gal/day
Maximum Daily Flow (MDF)	237,700 gal/day

“ Newterra is leading the way with decentralized wastewater solutions that help reduce project costs with a sustainable treatment approach ”

Clear³ Design Advantages

- Pre-fabricated modular facilities
- Rapid deployment
- Compact footprint
- Scalable
- Operator-friendly
- High-quality effluent
- No odor
- More discharge options
- Sound attenuation
- Reuse-ready effluent



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Base Unit Features

- Pre-treatment
- Flow equalization
- Aerobic biological treatment
- Membrane filtration with industry leading ZeeWeed® 500S membranes
- Sludge storage and thickening
- Advanced telemetry for remote control, monitoring & diagnostics
- Equipment or treatment train redundancy
- Low power, sludge production, and chemical consumption
- Pre-engineered for fast delivery
- Quality controlled factory assembled and tested
- MET/MET certified

Adders & Options

- Customized process design, tankage and equipment sizing
- Biological nutrient reduction, MLE process for denitrification
- Biological nutrient reduction, 4-stage bardenpho process for denitrification
- Coagulant dosing for phosphorous reduction
- UV disinfection
- Chlorine disinfection
- Critical spare parts package
- Turbidity monitoring
- Sludge dewatering
- Increased chemical storage
- Building exterior finish (selection of colors, siding, roofing)
- Annual newtN™ service agreement

Flexible Tankage

The Clear³ MBR.ST-450 is designed for use with a variety of in-ground tank configurations. This flexibility allows the benefits of a pre-engineered product, while using the best available tank configuration based on project specific site conditions and availability of labour and materials.



Basin	Required Volume
Equalization	51,200 gal
Aerobic	2 x 41,700 gal
Sludge Holding (19 days)	44,100 gal

Fiberglass

- 10' diameter FRP tanks provided by Newterra
- All in-tank components are factory installed prior to delivery
- Minimal mechanical and electrical site-work
- May not be suitable for all flow/loading conditions

Pre-Cast Concrete

- Pre-cast concrete tanks provided by Newterra or supplied locally
- Some mechanical and electrical site work
- All in-tank components are shipped loose for installation at site

Poured Concrete

- Poured in place concrete tanks supplied locally
- Smallest footprint of the tankage options
- More civil engineering and on-site civil, mechanical, and electrical work required
- All in-tank components are shipped loose for installation at site



newtN™ Advanced Remote Monitoring & Control

- Advanced cloud-based data acquisition and control
- Bank level security
- A real-time link to the treatment system familiar HMI screen
- Email/text out upon alarm and a daily system status report
- Operating data is collected and available for download from the customer portal or locally at the HMI
- The customer portal also includes other useful information at your fingertips including manuals, troubleshooting guides, parts lists, etc.