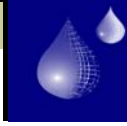


TechBrief

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Dynatec Systems' **"High Rate" MBR** uses external crossflow type, UF membranes, that have over three times the flux as the hollow fiber alternatives (60-90 GFD vs. 20-25 GFD for hollow fibers). Higher flux means less membrane surface area, ultimately saving capital cost on your project. Bio-reactor aeration alternatives include coarse bubble aeration for commercial systems or for higher strength industrial waste, the use of more efficient jet aeration for power savings in deep tanks.



Variety of UF membrane Sizes

8 mm & 14 mm tubular products are selected depending on the application.

"Truly UF" Filtration using 0.03 micron, cross flow, tubular membranes. Others use microfiltration (MF) with pore sizes 0.1- 0.4 micron, allowing more contaminants to make their way across the membrane surface. Dynatec Systems has installed over 400 membrane systems in over 20 years of providing wastewater solutions. Combining sound engineering and process design with state of the art materials, has produced the new **"High Rate" MBR**.

Municipal

- High effluent quality.
- Low space requirements.
- High nitrogen removal efficiency



Industrial

- High strength waste.
- Low space requirements.
- Thermophillic treatment.

Retrofits

- Increase capacity without adding tank volume.
- Add external membranes to existing treatment for higher quality effluent.
- High nitrogen removal efficiency
- Solves settling problems.

Commercial

- Recycle/Reclamation.
- Low space requirements.
- High nitrogen removal efficiency.
- Leach field/soil limitations.
- Decentralized applications.

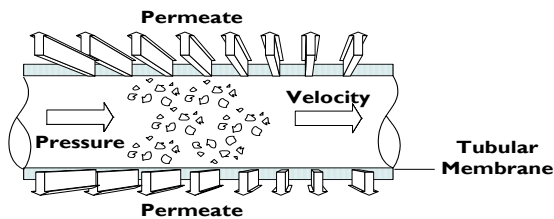
Outsource your wastewater service! Dynatec will design/build/own/operate your wastewater treatment plant allowing you to concentrate on your core business.

“High Rate” MBR - Advantages Over Other Treatment Processes:

- It is a simple controllable operation and requires less operator attention.
- Reliable high quality effluent.
- Smaller footprint - high MLSS levels (8,000 - 12,000 mg/l and higher).
- High rejection efficiency of organic constituents, solids and microorganisms.
- Lower effluent turbidity.
- Excellent nutrient removal capability (<10 mg/l total N).
- Lower sludge yield (0.1 - 0.35 #MLSS/# BOD5).
- Operates at higher sludge concentrations (Less waste sludge to haul at 12,000 mg/l).
- Eliminates filamentous bacteria and sludge bulking problems.
- Handles variable loading due to higher MLSS level.
- Lower chemical requirements.
- Controlled environment around the membrane system.

“High Rate” MBR - Advantages over Immersed Membrane Systems:

- Removing immersed membranes from the process tank is difficult and inefficient. Cleaning is easier for operator.
- Working above aeration tanks with hoist can be dangerous. Maintenance is safer.
- No annual fine bubble diffuser replacement required. Maintenance is less frequent.
- Denitrification and carbon source feed is controlled with ORP controller.
- Less oxygen is recycled to the denitrification zone minimizing carbon addition.
- The liquid recirculation pump for denitrification recycle and membrane scouring replaces:
 - Permeate vacuum pumps, valves and air relief valves.
 - Backwash pump and backwash tank.
 - Denitrification recycle pumps.
 - Hoist system for membrane removal.
 - Soak tank for membrane cleaning.
 - Dedicated blower needed for membrane air scour.
- Lower capital cost than immersed membrane MBRs.
- Lower membrane replacement cost.
- Hollow Fiber failure bypasses solids when potting fails.
- Higher temperature membranes available for thermophilic applications.



CROSSFLOW MEMBRANE

