Sewage and Industrial Wastewater Reuse with a Membrane Bioreactor

Membrane bioreactors (MBR) are very effective at treating variable wastewaters containing sewage and industrial effluent, which are typical in India. The resulting filtrate is such a high quality that it can be reused for industrial processes or for irrigation. If a UV unit or chlorination disinfection is added to the BI-MBR, then the filtrate becomes drinkable water.

Membrane Bioreactors combine conventional activated sludge treatment with membrane filtration, in a compact footprint, to produce water to global standards.

BI-MBR systems are designed in Canada and built in India to BI Pure Water standards, in containers or on skids, tested, and delivered ready to install and for quick deployment.

Sludge handling with this system is reduced compared to other MBRs. Dewatered sludge can be spread on fields, recovering nitrogen and phosphorus, or mixed into compost.

The BI-MBR is a high performance membrane bioreactor which allows high biomass concentration (MLS 8000-160000 mg/L), with a small footprint. It is very resilient to changes or source water variability and will operate reliably under these conditions. No backflush or chemical maintenance is required and no entry into tanks is required for maintenance. BI-MBRs can be used for both domestic and industrial wastewater or mixed streams.



Capacity	Population
14 m³/day	47
56 m³/day	187
168 m³/day	560
*Based on 300 L/person/day	
	Capacity 14 m³/day 56 m³/day 168 m³/day _/person/day









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Membrane modules are submerged directly into the wastewater and filtrate (filtered water) is drawn through and out of the membrane by a slight negative pressure. Solids, bacteria, parasites and viruses remain in the bioreactor to be digested by bacteria or settle as sludge. BPW-MBRs eliminate the need for the final stages of conventional wastewater treatment plants, including clarification and filtration.

Minimal Maintenance

- With specially-designed air scouring, the build-up of biofilms is greatly reduced and the need for chemical cleaning is once or twice per year. Membrane life is extended, minimizing maintenance.
- System layout is designed to accommodate and simplify maintenance procedures
- Membranes are easy to load and remove for fast changeouts

Modular Scale-up

BPW-MBR systems can be scaled up to 1 million gallons per day by simply using more membranes. MBR uses much less space than conventional wastewater systems.

BPW-MBR System Advantages

- Chemical-free self-cleaning with backpulse capability for reduced maintenance
- Modular design minimizes space requirements
- Effective barrier against solids, organic pollutants and micro-organisms
- Consistent plate spacing for optimized self-cleaning
- Optimum design of scouring air diffusers provides a 40% oxygen credit (reduction in air requirement) for aeration tank for BPW-MBR as compared to other MBRs
- 60-80% less sludge produced versus conventional activated sludge systems





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