

# BioSmart Packaged Wastewater Treatment Plants

## Modular Sewage Treatment Plant

**BMBR**  
SERIES

### *The smart way to treat municipal and industrial wastewater*

Conventional activated sludge wastewater treatment plants rely on extended aeration times to reduce the BOD of the wastewater to an acceptable discharge concentration. They also rely on gravity or mechanical clarification to achieve the required TSS discharge concentration.

The BioSmart Packaged Wastewater Treatment Plants utilize state-of-the-art Membrane Biological Reactor (MBR) technology to achieve high treatment efficiencies within a small foot print. At the heart of the process is a hollow fiber microfiltration membrane module with 0.4  $\mu\text{m}$  pore size that builds a high concentration of microorganisms in the aeration tank to reduce the BOD of raw wastewater in a much smaller aeration basin while simultaneously filtering out very clean water with low BOD and TSS.

BioSmart plants come in modular 40-ft High Cube engineered containers that arrive on site ready to treat the wastewater discharge with minimum installation and startup labor, time and cost. These plants are suitable to treat municipal and domestic wastewater with typical BOD and TSS around 250 mg/L each. They can be easily modified to treat industrial wastewater with much higher BOD and TSS from the chemical, textile, food and beverage industries.



### Submerged Hollow Fiber Technology

The MBR unit uses HYDRAsub hollow fiber sheet membranes immersed in the process tank in direct contact with the mixed liquor. Air delivered through diffusers at the bottom of the membrane assembly helps keep the membrane surfaces clean as well as supply oxygen for the “bugs”. The MBR unit is equipped with a high level of automation, ensuring the plant’s simple operation and low maintenance cost.

### BioSmart Benefits:

- Higher capacity in a smaller footprint due to the large treatment surface area of the MBR Modules.
- Higher tolerance to fluctuations in operating parameters.
- Better solids removal and no scum discharge
- The reduction of pathogens like Cryptosporidium and Giardia.
- Smaller and more concentrated sludge volume discharge
- Lower energy consumption
- Low Membrane air scouring and chemical cleaning requirements.
- Reputable North American or European brand name containers, membrane modules, blowers, pumps, dosing pumps, diffusers and controls.

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### High Efficiency

Using membranes to separate sludge ensures higher quality treated water free from suspended solids. Membranes can retain activated sludge at high concentrations (MLSS), resulting in more efficient BOD and nitrogen removal (higher solids retention time). The membrane has an immense number of minuscule pores delivering stable and high water permeability with minimal clogging and higher permeated water quality.



The modular concept allows for phased construction of wastewater treatment plants and makes it adaptable to a wide range of sizes and flow rates. Pure Aqua units can be containerized which has number of advantages:



- 💧 Limited site work
- 💧 Quick installation
- 💧 Easy to relocate

Model #	Flow Rate		Approx. Population (50GPD/Person)	Number of Containers
	GPD	M <sup>3</sup> /D		
BioSmart-180	47,000	180	900	40' x 1
BioSmart-150	40,000	150	750	40' x 1
BioSmart-100	26,000	100	500	40' x 1
BioSmart-50	13,000	50	250	20' x 1

\*Wastewater BOD and TSS: 250 and 250 mg/L  
Treated water BOD and TSS: < 10 and < 5 mg/L

**Packaged Skid-Mounted Systems are available upon request.**

Pure Aqua also supplies: Custom Engineered Solutions, Multimedia Pretreatment, Activated Carbon Pretreatment, Water Conditioning, Chemical Dosing Systems, Ultraviolet (UV) Sterilizers, Ozonation Systems and Water Reuse Systems Using Reverse Osmosis.

 <p><b>Pure Aqua, Inc.</b><sup>®</sup> Water Treatment and Reverse Osmosis Systems sales@pureaqua.com      Tel: +1-714-432-9996 www.pureaqua.com      Fax: +1-714-432-9898</p>	<p>Authorized Dealer:</p>
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