

Package Membrane BioReactor (MBR)

Modular Sewage Treatment Plant

The Membrane BioReactor (MBR) is a state of the art pre-engineered sewage treatment system utilizing Pure Aqua's water treatment expertise with Toray's submerged membrane technology. The membrane separation process eliminates the conventional sedimentation tank and allows high volumetric loading, resulting in a smaller footprint. The MBR can produce high quality effluent with high BOD5 removal (about 98%), complete nitrification and partial de-nitrification and achieves virtually complete TSS removal.



Submerged Flat Sheet Membrane Technology

The MBR unit uses Toray flat sheet membranes immersed in the process tank in direct contact with the mixed liquor. Air injected from a manifold at the bottom of the membrane assembly help keep the membrane surfaces clean as well as supply oxygen for biological growth. MBR is equipped with a high level of automation, ensuring the plant's simple operation and low maintenance cost.

Higher Efficiency

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

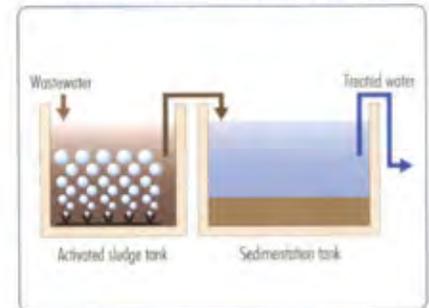
Modular MBR Advantages

The membranes are submerged directly within the bioreactor. It is typically operated in a considerably different range of parameters for the mean cell resident time and substrate utilization rate than conventional activated sludge processes. As a result, the Pure Aqua Modular MBR offers several benefits over the conventional activated sludge process.

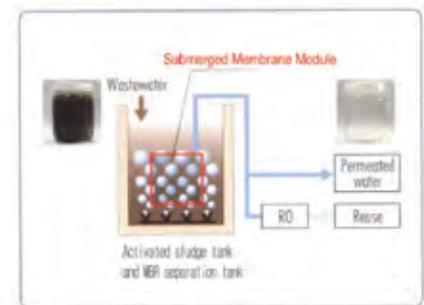
Benefits of MBR

- Reduced space requirements
- Increased solids removal (elimination of bulking)
- Pathogen reduction through removal of Cryptosporidium and Giardia
- Increased volumetric loading
- Production of less sludge due to high sludge age
- High SRT which allows the development of slow-growing microorganisms such as nitrifying bacteria
- Retention of high molecular weight organic compounds that can enhance the biodegrading process.

Conventional Treatment



Modular MBR



The modular concept allow for phased construction of wastewater treatment plants and makes it adaptable to a wide range of sizes and flow rates. COMPACT can be delivered as a containerized unit. This solution has important advantages such as:

- Factory installed and tested
- No construction works on-site
- Short delivery period
- Easy to relocate

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