

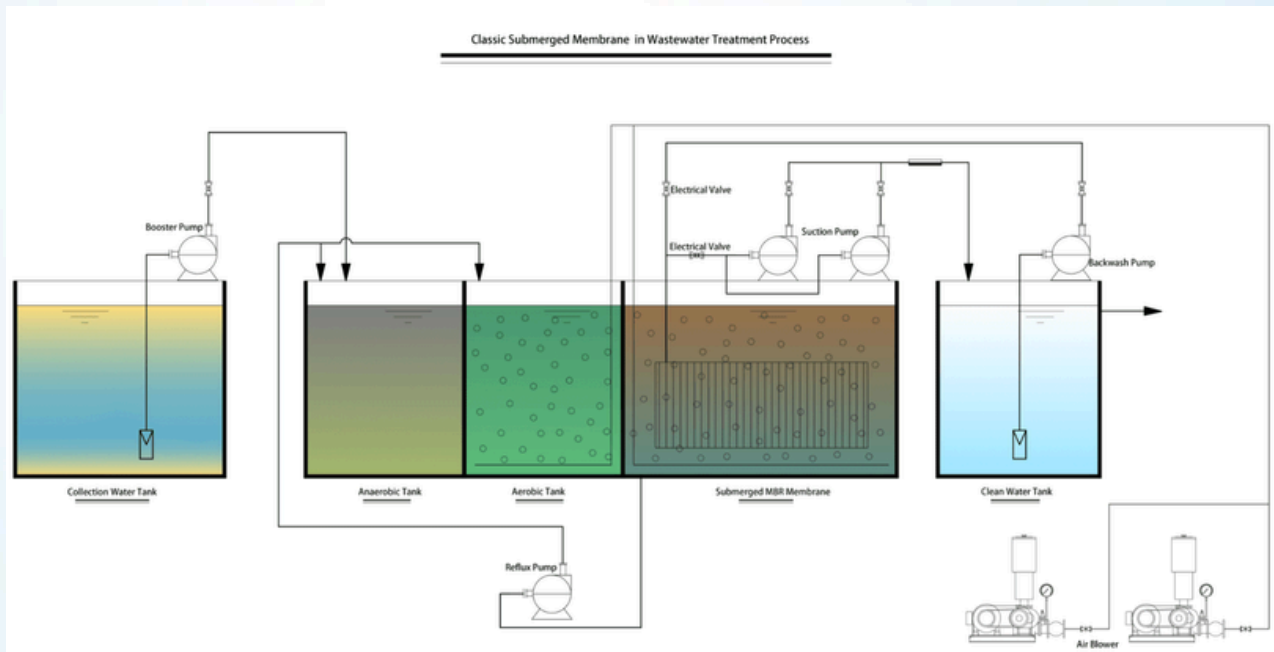


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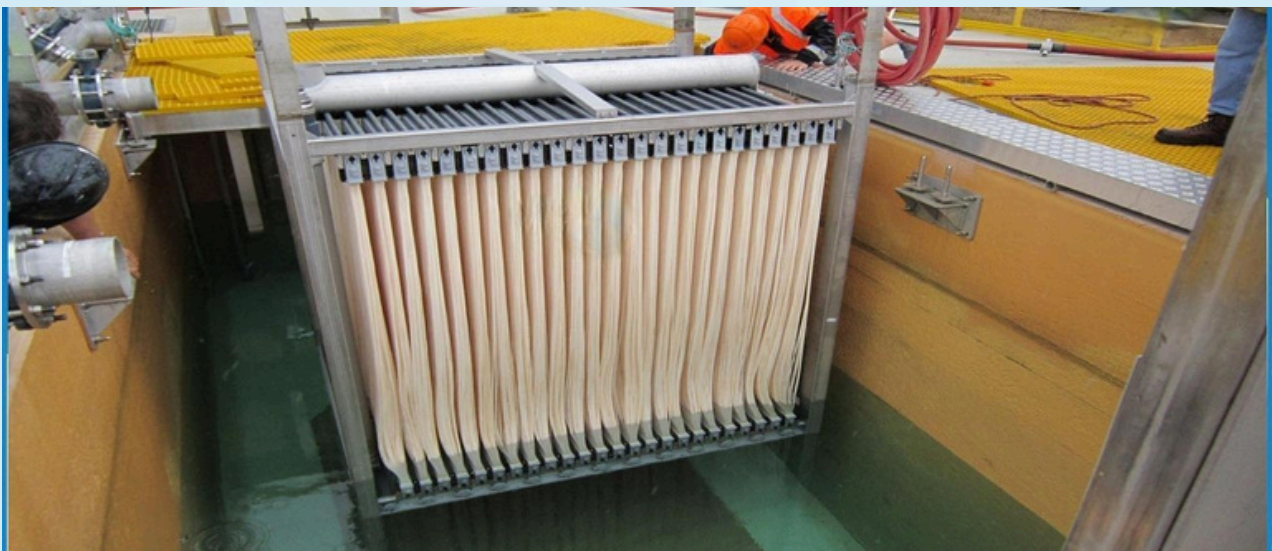
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# Membrane Bioreactor (MBR)



Membrane bioreactors combine a suspended growth biological treatment technology, such as activated sludge, with membrane filtration equipment, such as reverse osmosis or low-pressure microfiltration (MF) or ultrafiltration (UF) membranes, for wastewater treatment. The membranes are utilized to separate solids from liquids, which is a crucial function. Secondary and tertiary clarifiers, as well as tertiary filtering, have typically been used in activated sludge plants to accomplish this.

The membrane bioreactor (MBR) has developed as a cost-effective and compact wastewater treatment device for municipal and industrial applications.



Membrane Bioreactor (MBR)

In an MBR, the Membrane Zone is the first phase of a biological process in which bacteria break down contaminants, which are subsequently filtered via a succession of submerged membranes (or membrane elements). Individual membranes are contained in units known as modules, cassettes, or racks, and a functional membrane unit is a collection of these modules. Integral diffusers supply air to continuously scour membrane surfaces during filtration, enhance mixing, and, in certain situations, contribute oxygen to the biological process.

### **Advantages:**

- A lower footprint than a similar traditional active sludge facility with secondary clarifiers and medium tertiary filtering, which is typically 30-50 percent smaller.
- Outstanding effluent quality that meets the most demanding water quality regulations;
- A modular design that provides for easy expansion and configuration flexibility.
- A stable and dependable operation with less disinfection requirements downstream.
- Achieves rapid solid separation.
- Higher SRT encourages the growth of slower-growing microorganisms, particularly nitrifiers, resulting in better overall bio-treatment. Because of this, MBRs are particularly successful in biologically removing ammonia.

### **Applications:**

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## **Advantages:**

- Foods and beverages with a high organic content
- Exploration, refining, and petrochemical sectors of the petroleum industry
- Pharmaceutical business — active pharmaceutical ingredients are available (APIS)
- Excessive levels of suspended particles, COD, and BOD in the pulp and paper industries
- Re-biodegradability, toxicity, FOG concentration, and colour of textile industry effluent
- Landfill leachate has a diverse range of organic and inorganic compounds, both dissolved and suspended.
- Regulatory requirements and space constraints for ship effluents

The breakdown of membrane components is one of the major costs associated with MBR. Membrane fouling and membrane channel clogging are the major causes of permeability loss in MBRs. Fouling occurs when dissolved, colloidal, or fine particles clog the membrane pores. Physical and chemical cleaning processes often eliminate it. The aggregation of bulk materials within or at the entry to the membrane channels is referred to as clogging.

Membranes in municipal WWT plants can become blocked with aggregated filamentous matter on occasion (specifically textile fibers such as cotton wool).

The operation and maintenance of MBR units necessitates a somewhat high level of effort. Physical and/or chemical modifications are required on a daily basis for these units.

At COEQUAL INFOTECH PVT LTD, our solutions are designed to meet the needs of homes, offices, and industries, combining maximum efficiency with low energy use. Installing a wastewater treatment plant is not just a necessity—it's a step toward resource conservation and environmental responsibility.



## Turkey Projects:

- Packaged Drinking Water Plant (PDWP)
- Carbonated Soft Drink Plant (CSD)
- Goli Soda Plant
- Sewage Treatment Plant (STP)
- Effluent Treatment Plant (ETP)
- Flavoured Water Plant





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