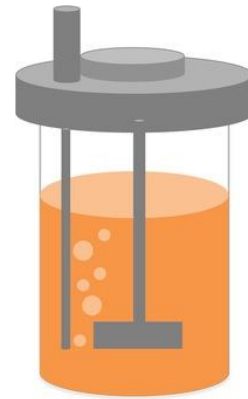


What is a Membrane Bio-Reactor?

A Membrane bioreactor (MBR) is an advanced wastewater treatment technology that combines a **biological process** (typically activated sludge) with **membrane filtration**.



What is the role of the membrane?

The membrane separates treated water from the mixed liquor, allowing for higher quality effluent, which can be reused or safely discharged.

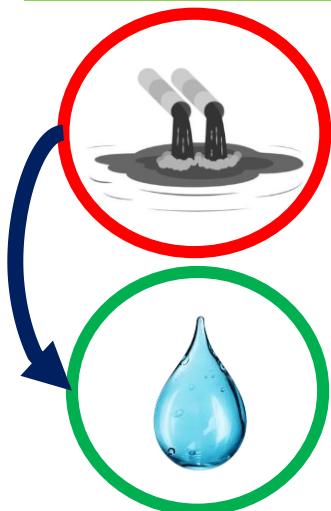


Pros

- Reduced footprint compared to conventional WWTP
- High-quality Effluent
- High Biomass Concentration
- Reduced Sludge Production

Cons

- Low oxygen transfer efficiency
- Membrane maintenance
- High capital and operational costs
- Precise Kinetic Control



- ### Applications
- Municipal & Industrial Wastewater Treatment
 - Greywater Recycling
 - Water Reclamation and Reuse
 - Decentralized and On-Site Treatment

Membrane Aerated Bioreactor



What is a Membrane aerated Bio-Reactor?

A Membrane aerated Bioreactor (MABR) works with same principles as MBR. However, it uses a **membrane to deliver oxygen** directly to the microbial community that breaks down organic pollutants and nutrients. This setup enhances the efficiency of the biological process and improves overall treatment performance.



Grade 0-2; Worst 0 – Best 2

Space Requirement	1-2	Membrane Fouling	1-2
Treatment Efficiency	2-1	Sludge Production	1-2
Flexibility	1-2	Oxygen Transfer Efficiency	0-2
Operational Complexity	2-1	Energy Consumption	0-2
Capital Cost	1-2	Footprint	1-2

For further information visit the ARC NiCE hub Website: www.nicehub.org

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