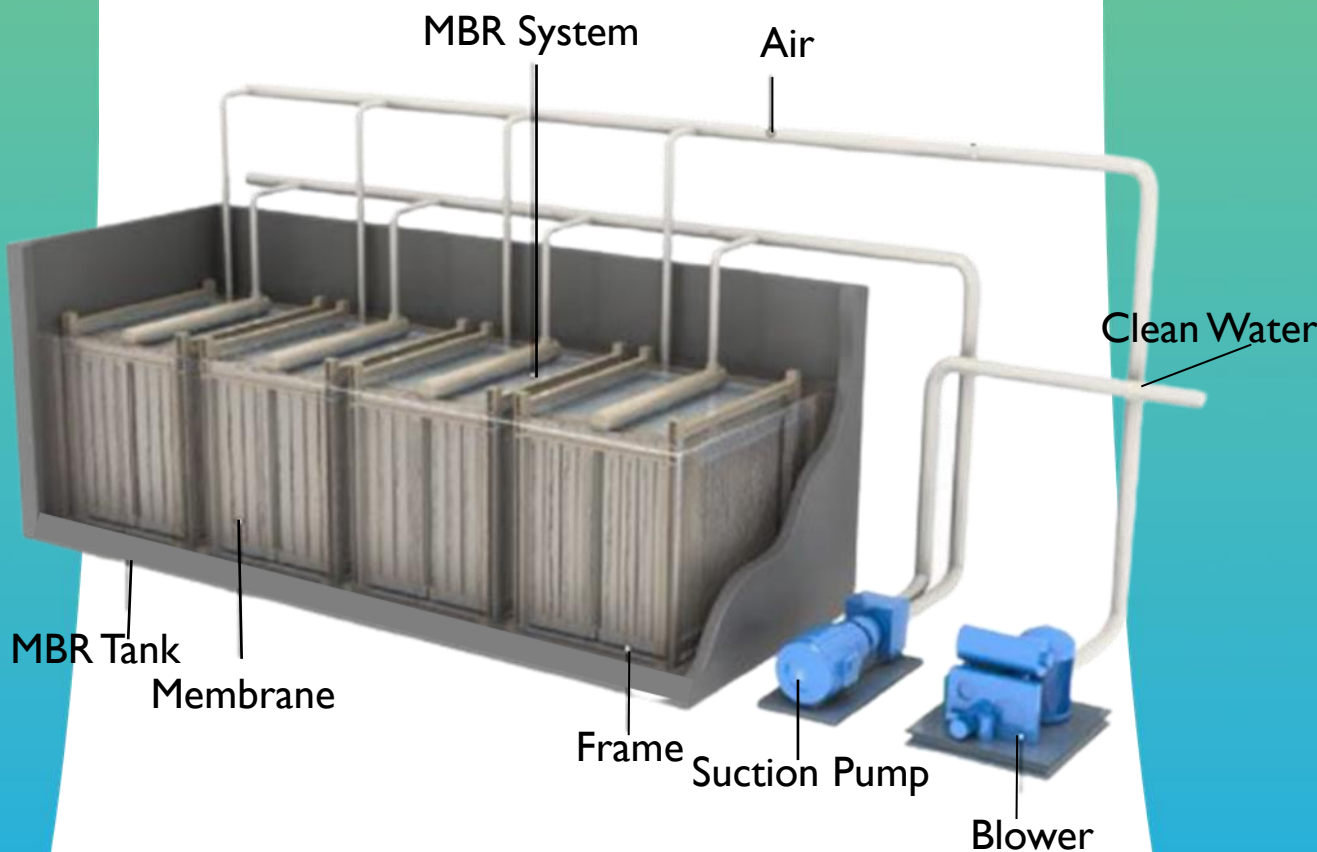


# MEMBRANE BIOREACTOR (MBR)

## PROCESS TECHNOLOGY

MBR is the combination of a membrane process with a biological wastewater treatment process, the activated sludge process. The membranes are used to perform the critical solid-liquid separation function.

- ✓ Combines the physical barrier characteristics of a membrane with biological treatment
- ✓ Secondary and tertiary treatment in one step
- ✓ Replaces conventional clarification, aeration and filtration
- ✓ Always produces high quality effluent



## ADVENTAGES:

- ✓ Small footprint
- ✓ Higher biomass concentrations is allowed than with conventional systems
- ✓ Low energy
- ✓ Exceptional effluent quality: effluent meets reuse standards
- ✓ Good price-performance ratio
- ✓ Simple system operation
- ✓ Modular expandability, configuration flexibility



## EFFLUENT QUALITY:

| Parameter        | Conventional effluents    | MBR effluents  |
|------------------|---------------------------|--|
| TSS (mg/l)       | 20–50                     | < 2  |
| Turbidity (NTU)  | 10–30                     | < 0.2  |
| BOD (mg/l)       | 25–50                     | < 2  |
| TN (mg/l)        | 10–30                     | < 10   |
| TP (mg/l)        | 1–30                      | 0.1–2  |
| Effluent quality | Hygienically questionable | <ul style="list-style-type: none"> <li>• WHO standards for unlimited irrigation</li> <li>• EU Bathing Water Directive</li> <li>• Water reuse standard</li> </ul> |