



Culligan®



WASTEWATER TREATMENT

MBR

MEMBRANE BIOREACTOR

CONTAINERISED MBR SOLUTIONS

Culligan has over **80 years** of experience as a global provider of industrial water treatment solutions.

Increasing pressure from population growth, changing weather patterns, and pollution are all contributing to a growing situation of water scarcity.

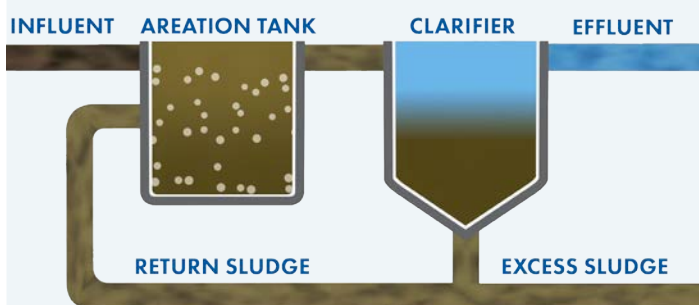
The **Containerised Membrane BioReactor MBR** system from **Culligan** can help you to meet these challenges.

HOW DOES THE MBR PROCESS WORK?

The **MBR** process utilises microporous membranes for solid/liquid separation in lieu of secondary clarifiers.

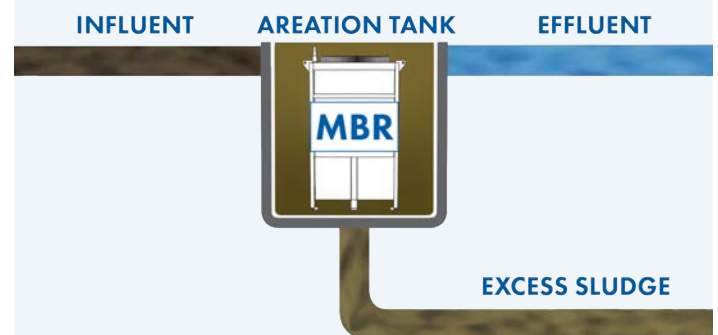
CONVENTIONAL ACTIVATED SLUDGE WASTE WATER TREATMENT

In the Conventional Activated Sludge Method, sludge is separated into solids and liquid in a settling tank. This is called clarification.



MEMBRANE BIOREACTOR SYSTEM

The innovative **MBR technology** combines activated sludge treatment with **solid-liquid separation** by means of micro-porous membranes eliminating the need for secondary clarification tanks.

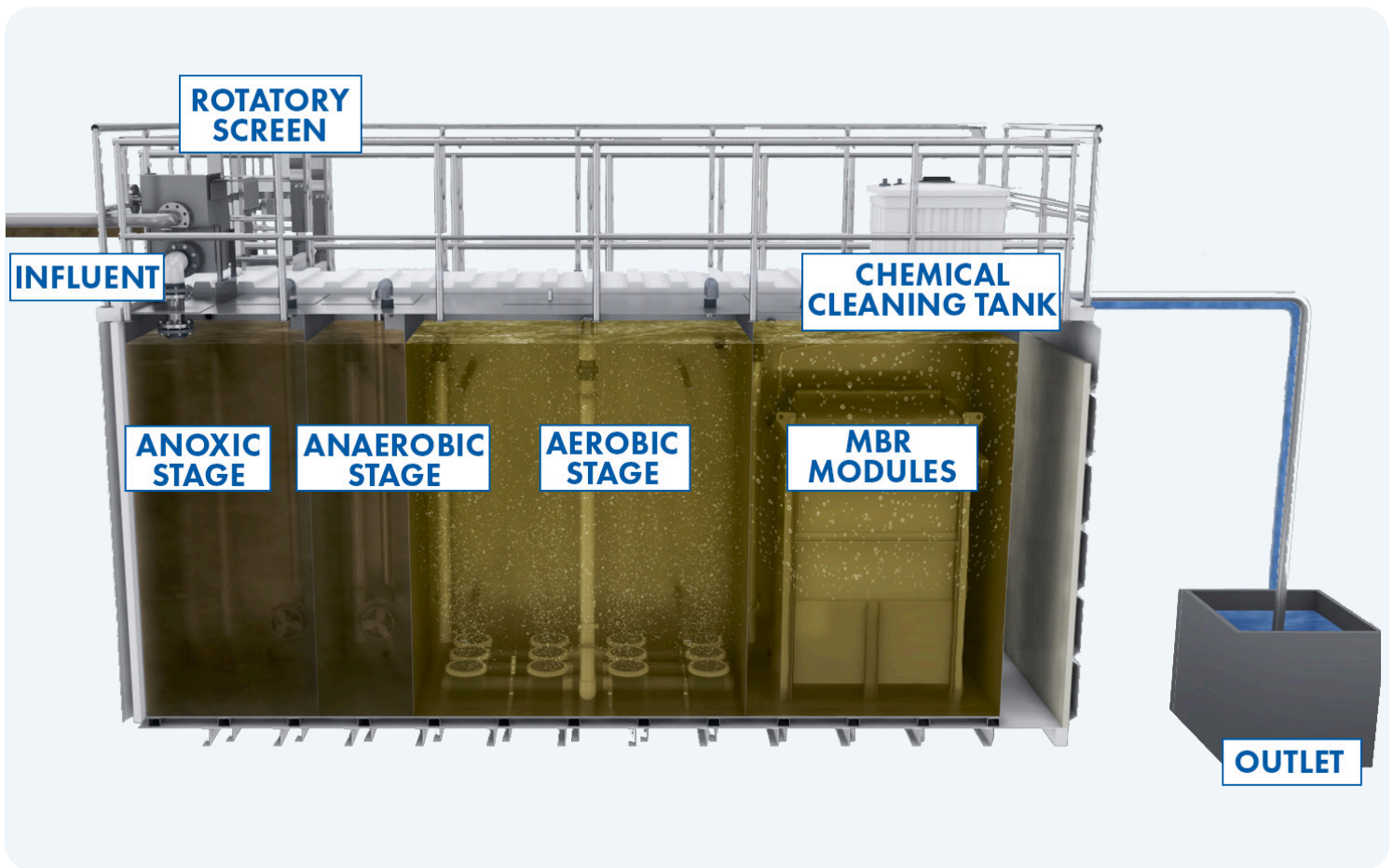


BENEFITS OF MBR VS TRADITIONAL WASTE WATER TREATMENT

The **Membrane BioReactor (MBR)** has a number of **advantages** over Conventional Activated Sludge (CAS) waste water treatment.

- ✓ **Smaller Footprint** – By removing the need for a clarifier and thanks to the higher sludge concentrations possible with MBR, bioreactor tank volumes can be reduced by up to 50% versus CAS systems.
- ✓ **Less Sludge** - The ability to hold higher concentrations of MLSS and having longer sludge residence times allows the MBR to produce less sludge than conventional activated sludge systems.
- ✓ **High Effluent Quality Suitable For Reuse** – the flat sheet membranes used by Culligan have a pore size of just 0.15 µm resulting in clear, highly purified effluent. As a result the effluent can be suitable for reuse or further treatment by other Culligan technologies like reverse osmosis.
- ✓ **Reduced Operator Input** – the simpler process without the clarifier stage reduces the need for operator checks and adjustments.
- ✓ **High Stability** – the MBR process is stable across a range of conditions and can manage high levels of variability.

CULLIGAN CONTAINERISED MBR SOLUTIONS



A typical Culligan Containerised MBR system is made up of the following components:

- Rotator influent screen
- Anoxic, anaerobic and aerobic tanks for biological treatment
- MBR modules and MBR tank
- Air blowers for the aeration process and for membrane scouring
- Pump set for the MBR permeate suction and for sludge recirculation
- Chemical dosing systems
- Cleaning tank for periodic chemical enhanced backwash of the MBR membranes

The **MBR membrane** is the heart of the treatment process. The **flatsheet MBR membrane modules** are fully submerged in the mixed liquor inside the tank for direct outside to inside filtration.

The modules are made of robust reinforced flatsheet membranes with a nominal pore size of just $0.15\mu\text{m}$.

This produces **high quality** effluent suitable for reuse applications.





Culligan's containerised MBR systems are available in two standard models 25m³/hr and 50m³/hr flow rates and are fully installed within standalone 20 or 40 foot containers.

| SYSTEM SPECIFICATIONS | MBR 25 | MBR 50 |
|--------------------------------------|---|--|
| Nominal capacity at water temp. 20°C | 25 m ³ /day (4.5 GPM) | 50 m ³ /day (9 GPM) |
| Population equivalent | 100 | 200 |
| MBR membrane area | 100 m ² (1076 ft ²) | 200 m ² (2152 ft ²) |
| Absorbed power | 11 kW (15 HP) | 18 kW (24 HP) |
| Dimensions | 20 foot container 6058 x 2438 x H2896 mm 20' x 8' x H 9.5' | 40 foot container 12192 x 2438 x H2896 mm 40' x 8' x H 9.5' |

TYPICAL APPLICATIONS

- ✓ Commercial sites, such as shopping malls, hotels/resorts, and sports centers
- ✓ Military and relief aid camps
- ✓ Small municipal communities
- ✓ Food & Beverage, chemical & pharmaceutical industries
- ✓ Sites that require upgrading to meet more stringent discharge quality levels

| Typical MBR Performance | Unit | Influent | Removal efficiency | Effluent |
|----------------------------|------|----------|--------------------|----------|
| Total Suspended Solids TSS | mg/l | <200 | >98% | <3 |
| BOD | mg/l | <250 | >90% | <25 |
| Total Nitrogen T-N | mg/l | <50 | 80%-85% | <10 |
| Total Phosphorus T-P * | mg/l | <8 | 75%-80% | <2 |



Contact your local Culligan representative for more details

Culligan reserves the right to change any technical or design specifications for the models shown in this brochure.

Place your commercial and industrial water treatment needs in the hands of a global leader.

For over 80 years, Culligan has made better water. Our global network, comprised of 900+ dealers and international licensees in over 90 countries, is dedicated to addressing your water-related problems. As a worldwide leader in water treatment, our sales representatives and service technicians are familiar with the local water conditions in your area. Being global and local position us to deliver customized solutions to commercial and industrial water issues that affect your business and your bottom line.