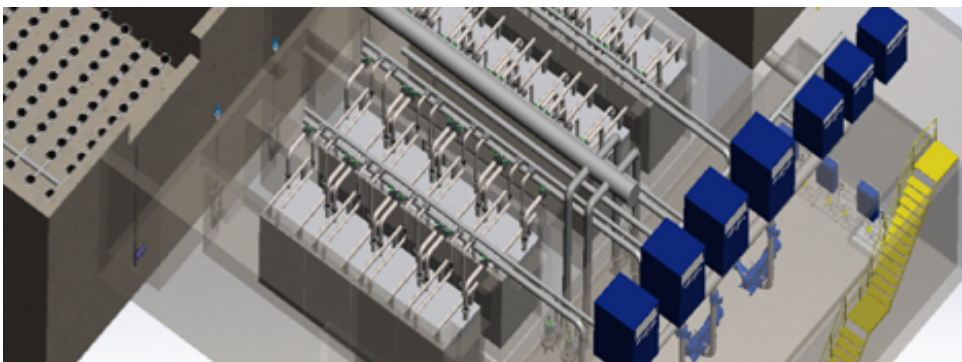




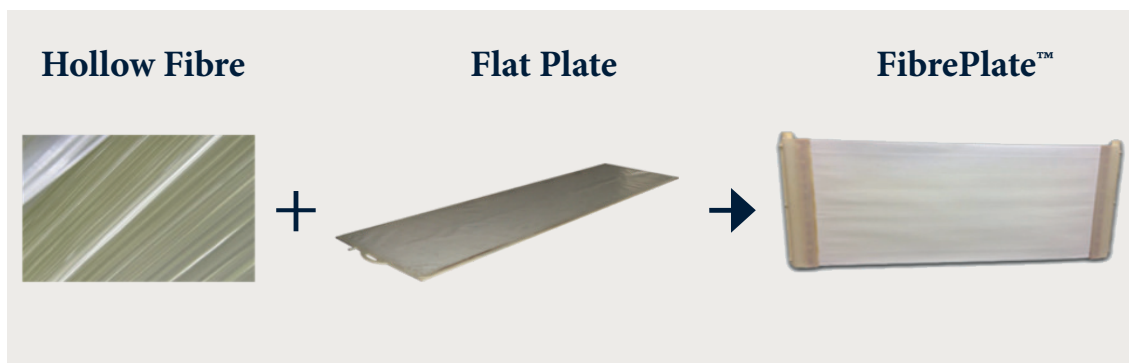
MEMBRANE bioreactors

Free of Bacteria
Liquid-Solid
Separation

Membrane Bioreactors are an excellent alternative to the traditional conventional activated sludge (CAS) technology, since they perform the **separation of the sludge and the water**, arriving to an ultrafiltration grade. This means that not only the liquid-solid separation is achieved, but also that the effluent is free of bacteria and therefore a disinfection is carried out.



The MBR membranes supplied by Panta Rei are a special hybrid type, which combines the best features of the **hollow fiber and flat sheet technologies**. Starting from PET sheets, through an innovative and patented modelling process followed by a casting stage with a PVDF thin film, these hybrid membranes are geometrically equal to the hollow fiber type but more robust.



The membranes are constantly cleaned through a system consisting of extraction pumps and cleaning blowers. The main advantages of the MBR technology offered by Panta Rei are:

- **More than 30% total space savings**, due to the fact that the clarifier is no longer needed and that the biomass concentration in the biological reactor can be doubled.
- **Excellent outlet water characteristics**: no suspended solids, no bacteria, COD values lower than 100 mg/L and BOD less than 5 mg/L.
- Possibility to feed the water from the MBR outlet directly into a **reverse osmosis**, for a water recovery process, without any previous filtration or ultrafiltration processes.
- Significantly **lower operational costs**, due to the optimization of the backwash and cleaning procedures.

***Less space, better water quality.
The first step of the path towards water recovery.***

