Membrane Bioreactor

If you aim for the most efficient water treatment system

Many conventional wastewater systems do not comply entirely with current regulations. This is why Triqua provides high quality MBR solutions that comply with even the most stringent of environmental regulations. Many years of extensive experience has established our name in the field of MBR technology. This technology is a prerequisite in water reuse.

Process

Membrane Bioreactors (MBR) are based on the combination of biological treatment and a membrane filtration unit. The sludge retention in a compact system such as the MBR is independent of the sludge characteristics. In this system sludge and water is separated through membrane filtration. This makes the system very robust and flexible.
The membrane has an average pore diameter of about 0,1 – 1 µm for micro filtration (MF) and about 0,01 – 0,1 µm by ultrafiltration (UF). The membranes are concatenated in the form of modules: sets of tubes, hollow fibers or plates.

We offer two versions of the MBR, our cross-flow system, the MemTriq® and our submerged system, the SubTriq®

Cross-flow Membrane Bioreactor
MemTriq® for the treatment of concentrated and complex wastewater flows

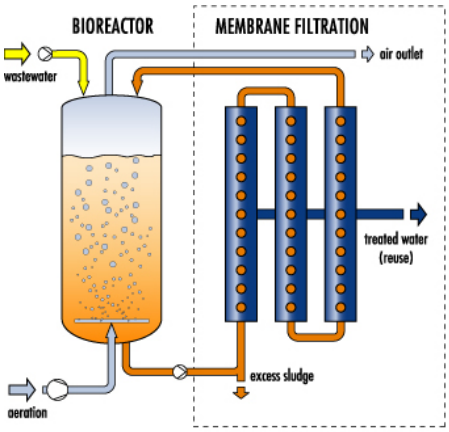

Figure 1 Schematic cross-flow MBR

Prerequisites for the application of cross-flow Membrane Bioreactors:

- Concentrated wastewater
- Waste water that is not easily biodegradable
- Small pore sizes
- Lower flows (< 20m^3/h)

Submerged Membrane Bioreactor
SubTriq® for the treatment of household and well degradable wastewater.

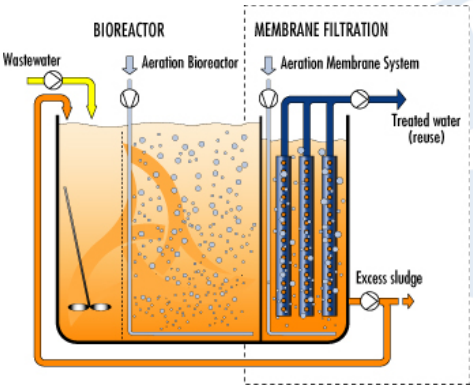

Figure 2 Schematic submerged MBR

Prerequisites for the application of submerged Membrane Bioreactors:

- Wastewater should not be highly concentrated (i.e. household wastewater)
- Wastewater that is well biodegradable
- Higher flows (> 20m^3/h)

One of the distinct advantages of submerged Membrane Bioreactors is their low energy consumption.

Selection criteria

Influent
Also treatment possible with high salt concentrations, thermopile applications, difficult degradable components, lots of chemicals.

Effluent
High removal percentage of COD, BOD5, Total N. TSS < 30 mg/l

Benefits

- High quality of effluent
- Low production of sludge
- Highly stable process
- Very compact design
- Options for water reuse

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DELTA Triqua

Case studies

Purification of wastewater and rainwater for vegetable processing plant

Client: Oerlemans Foods

Oerlemans Foods is grower, manufacturer and supplier specializing in frozen vegetables, fruit- and potato products. Oerlemans was looking for a solution for the purification of waste water released during the production process and the rainwater. Following Triqua's design a membrane bioreactor with immersed membranes was realized (SubTriq) for the treatment of the streams. The purification efficiency of the installation which was launched in 2008 is above 99%. The capacity is 240 m3 p / d.

Water reuse for the Australian market

Client: Southern Cross Tower Commercial Building (Application for Australian Post HQ)

In cooperation with B.K.B. Filter Safe Pty Ltd.

Due to water scarcity in Australia Australian Post Melbourne opted for a very high quality and sustainable sanitation concept for the treatment of black domestic sewage. The target for reaching the Class A standards is largely achieved with this system. The treated water can be reused for flushing toilets. Thanks to the submerged Membrane Bioreactor (SubTriq) is 5 star green rating possible. The SubTriq is based on low power. The installation was put into operation in early 2010.

Purification of bilge water of Navy ships and submarines pressure water

Client: Dutch Royal Navy

The Dutch Royal Navy has opted for an environmental approach to treat the bilge water of Navy ships and submarines pressure water. To purify wastewater they have chosen the best available technology: membrane filtration. This has resulted in the realization of a membrane bioreactor (MemTriq). The bilge- and pressure water has a high concentration of free oil and is further concentrated (200-300 times) using ultra filtration membranes. The oily concentrate is removed for incineration and the permeate is treated in a membrane bioreactor. The effluent from the MBR is then discharged into the harbour. The installation has been operating since 2001 and is still working satisfactorily.

Treatment of total wastewater flow on the offshore hotel vessels in the Caspian Sea

Client: various, including: Agip KCO-BP, Rossetti, Mc-Dermott

In the Caspian Sea, where very stringent discharge requirements have to be met, Triqua has realized many successful projects for various clients. The MBR (MemTriq) of Triqua is an excellent application to meet the stringent legislation. Triqua treats the black and grey wastewater flows aboard the hotel ships. Besides the MBR there is pre- and after treatment. The treated effluent is suitable for reuse (think of toilet flushing water). The installations are built and transported in containers. As after-sales service the RTA system (Remote Technology Assistance) is used. Besides technological assistance spare parts can be ordered through RTA.

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