Membrane BioReactor (MBR) for communal wastewater treatment

Realization: 2002

EnviCare® Engineering GmbH

Ingenieurbüro für Verfahrenstechnik

A-8042 Graz
Eisteichgasse 20/9. Stock/Tür 36

Tel. +43 / 316 / 38 10 38-0, Fax: -9
office@envicare.at

www.envicare.at

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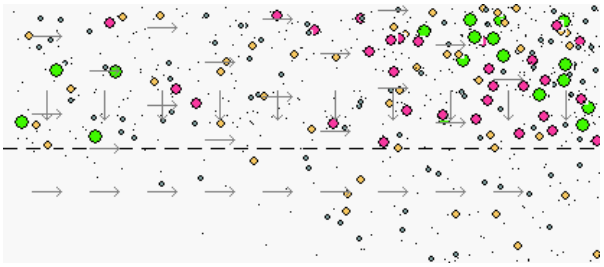
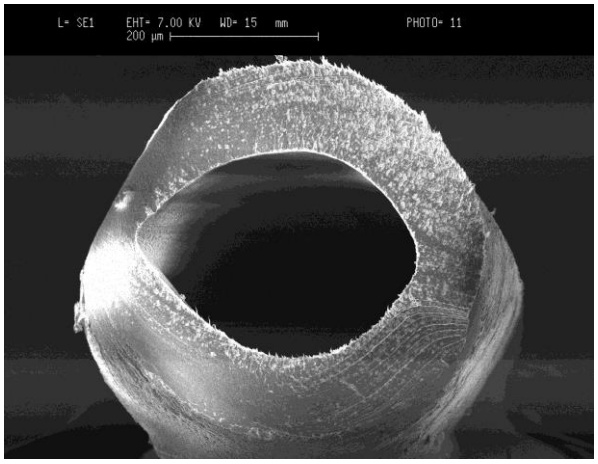
Membrane Filtration

To produce wastewater in a quality superior to the minimum effluent standards the application of membrane modules is the state of art. Membrane technology belongs to the pressure driven filtration processes. In wastewater plants nanofiltration, ultrafiltration, microfiltration and reverse osmosis technologies are used.



Membrane modules



(Cross-section of a hollow fibre membrane, electron microscope scan)

Several types of modules (hollow fibre, flat e.g.) and different types of materials (e.g. ceramic, plastic) are used in membrane filtration technology. This assures an optimal solution for any purification task.

Membrane Bioreactor (MBR)

A Membrane bioreactor is a combination of conventional purification technology (bio-reactor) with a filtration unit, they are used both in industrial and communal wastewater treatment.

Compared to a conventional WWTP (wastewater treatment plant), the advantages are:

- Higher purification capacity
- Savings in space and construction work
- Modular design
- Lower investment costs
- Better water quality
- No pathogenic bacteria and germs
- Effluent is free of suspended solids

In addition to that the produced pure water fulfils both default and stipulated values of the EC guideline on bathing water quality in which highest quality criteria in respect to pathogenic bacteria and germs (e.g. salmonellae, streptococcus) are requested (compared to conventional chemical/physical limits for waste water treatment in national regulations). As a result, the clean water fulfils highest purification needs.

EnviCare® is able to offer years of knowledge in development, design, installation and operational practice of purification plants equipped with membrane technology.

We take care of your environment.

Communal wastewater

Austria´s first membrane purification plant in operation:

St. Peter ob Judenburg 1.500 PE

Membrane technology is becoming increasingly important for municipal systems, due to improved membranes and therefore decreased investment and operation costs.

In wastewater treatment, membranes are both used for the filtration of the discharge of conventional wastewater plants and directly in the activated sludge tank as a submerged membrane.

The municipal membrane plant in *St. Peter ob Judenburg* has a population equivalent of 1,500 and is equipped with hollow fibre membrane modules. The original wastewater treatment plant was built in 1989 as a ventilated pond purification plant, but the stipulated values could not be guaranteed. Therefore EnviCare® was entrusted to redesign the plant to find an innovative and efficient alternative.

The MBR process unites three membrane modules at a time, with single hollow fibre membranes oscillating in the wastewater. The motion is strengthened by a coarse-bubble ventilation situated below the module. The operation mode is intermittent, which allows back flushing with permeate. In addition to three standard types, modules can be adapted to customer needs.

- Low cost expansion of an existing plant
- Modular design
- All year guaranteed water quality
- Adaptable to customer needs

Drinking water production

An increasing shortage on high quality drinking water is expected in the forthcoming century, this leads to intensive research on new water resources. One way of providing these resources is the use of innovative membrane systems in the field of communal wastewater treatment.

Different kinds of membrane technology are suitable, in this case nanofiltration modules were used.

The chemical and microbiological values of the so produced pure water were validated by an officially approved laboratory.

It fulfils both default and stipulated values of the EC guideline on drinking and bathing water quality.

Taking the rapid technological progress into account it can be expected that membrane processes will become more important in the market of drinking and wastewater production.

- Innovative variable technology
- Barrier against pathogenic bacteria and germs
- Drinking water out of domestic wastewater
- Modular design
- Guaranteed highest water quality
- Adaptable to customer needs

EnviCare® supports you in

- process concept design
- authority proceedings
- order placing
- contraction
- construction supervision and
- installation of plants.

We take care of your environment.