HUBER solutions for MBR applications

Tailored process engineering solutions from one source for perfect wastewater treatment
**HUBER MBR system**

The HUBER MBR system is a combination of biological wastewater treatment and high-efficient solids/liquid separation.

Mechanically pre-screened wastewater is treated biologically and separated from the activated sludge by ultrafiltration plate membranes. We use membranes made of polyether sulphone with very good filtration properties and a nominal pore size of 150 kDa (38 nm = 0.038 μm). The pores are small enough to prevent passage of all solids and bacteria, cells, fats, oils, colloids, macromolecules as well as of most viruses.

Reactor volume of MBR systems and their space requirement is only about 25 - 40 % in comparison with that of conventional activated sludge systems. As a result, the DS concentration in the aeration tank can be increased to about 10 – 12 g/l as conventional secondary clarifiers or additional treatment stages, such as filtration or UV treatment, are not required.

The surplus sludge removed from the filter chambers of the MBR system has a high concentration of approx. 1 – 1.5 % DS (compared to 0.3 – 0.5 % DS achieved by conventional biological systems). This is a surplus sludge reduction of more than 50 %. Significantly reduced investment and operating costs for sludge thickening are therefore another positive aspect.

**Advantages of the MBR system**

- No need for additional treatment steps, such as secondary clarification, sandfiltration, UV disinfection
- Very compact design and minimum space requirements (about 25 – 40 % compared to conventional activated sludge systems)
- Excellent effluent quality (hygienisation)
- Effluent reuse for irrigation or as service water
- Low surplus sludge production
Plant description

1. Mechanical pre-screening with 3 mm perforated plate or 1 mm bar spacing plus grit/grease trap
2. Buffer tank for a regular flow even with hydraulic peaks and varying loads, with simple aeration or with stirrer
3. MBR bio-tank with fine bubble aeration individually calculated for the project
4. Huber VRM® filtration unit, 0.038 µm pore size, retaining bacteria, viruses and germs, wastewater diffusion through pump-generated underpressure
5. HUBER BioMemb® filtration unit installed in a container as a decentralised solution
6. Sludge dewatering for surplus sludge treatment, > 18 % DS

Typical effluent values:
- BOD$_5$ < 5 mg/l
- COD < 30 mg/l
- N$_{tot}$ < 10 mg/l
- P$_{tot}$ < 0.5 mg/l
- SS < 1 mg/l
For our products HUBER smartMBR, HUBER BioMem® and HUBER VRM® we rely on the type of membrane modules which are best suitable for the wastewater market and use therefore plate systems as these are less susceptible to clogging and blocking than hollow fibre membranes.

⇒ Advantages of the HUBER MBR system

⇒ Complete HUBER solution – all machines and process steps from one source
⇒ Little need for maintenance
⇒ Low operation costs
⇒ Low wastewater pre-treatment requirements
⇒ Flat membranes of resistant and durable PES material
⇒ Ultrafiltration membranes with 38 nm (0,038 µm) pore size
⇒ No permeate backwashing required
⇒ No complicated electrical control systems, electric valves, pipelines
⇒ Infrequent chemical cleaning
⇒ Dependable and durable
⇒ All structural elements made of high-quality stainless steel
⇒ Global HUBER service
⇒ Extensive experience in membrane technology gained over more than 10 years
Sizes and applications

The HUBER product portfolio includes a variety of membrane sizes and series to provide for perfect adaptation of our plants to different specific inflow conditions and flow rates.

- HUBER smartMBR 10 – 75 m³/day
- HUBER BioMem® 10 – 300 m³/day
- HUBER VRM® > 300 m³/day

HUBER MBR reference installations worldwide

Benefit from our years of extensive experience with numerous HUBER MBR projects that we have completed all over the world. Our products are installed in both municipal and industrial as well as in centralized and decentralized applications under the most different operating conditions.

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Subject to technical modification

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