

Decentralised Wastewater Treatment HUBER MembraneClearBox®



safe for the environment – biological
future-proof – membrane technology based
cost-effective – user-friendly

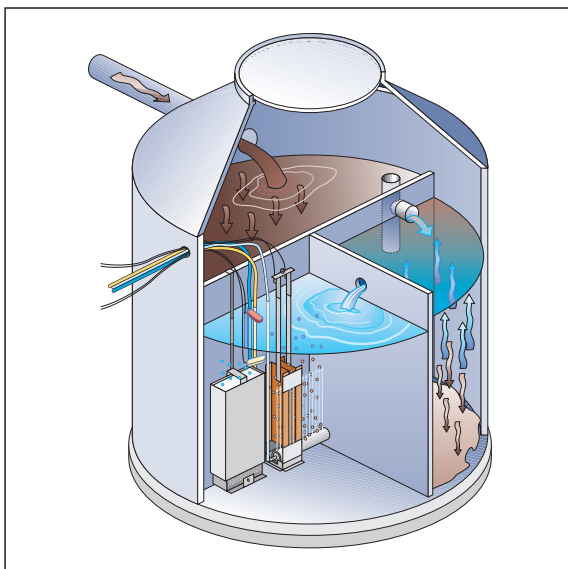
www.membraneclearbox.de



►► The situation

In view of the pollution of surface waters and seas worldwide, combined with the gradual decrease in natural drinking water resources, it has become increasingly vital that we need to be sparing with our water. Discharge of insufficiently treated wastewater seriously disrupts the natural environmental balance as more and more pollutants and new substances become not only a heavy burden for our environment, but a health hazard for everyone via the food chain and water cycle.

The newly introduced European standards all clearly define the quality of wastewater to be infiltrated or introduced into water courses. Membrane systems, which are the most modern state-of-the-art technology presently available for biological wastewater treatment, are able to treat wastewater to such a degree that the water can then even be reused as hygienic service water.



►► The solution: MembraneClearBox®

The HUBER MembraneClearBox® ultrafiltration system represents the best clarification technique presently available in the market today for decentralised wastewater treatment.

All solids, bacteria along with virtually all germs are reliably retained by the unit with the resultant treated high quality wastewater for example being reused as service water for irrigation of gardens, which results in the drinking water consumption of a household being reduced by up to 40%.

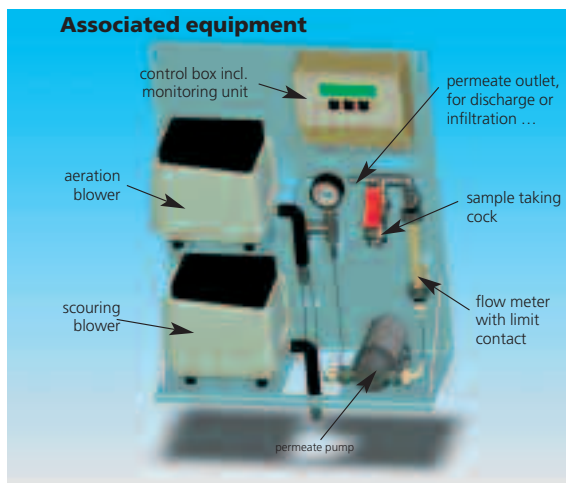
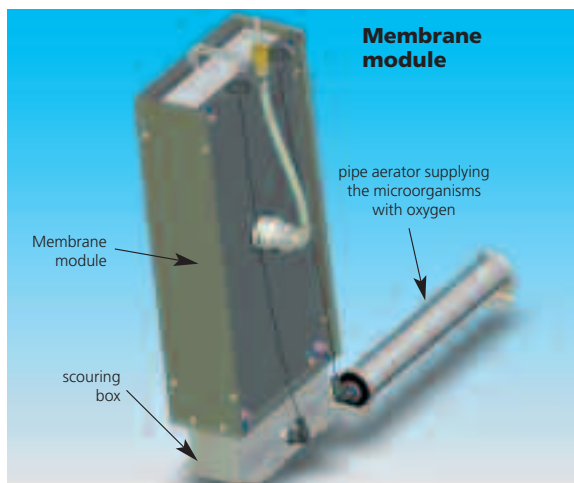
The excellent performance of the HUBER MembraneClearBox® ensures an effluent quality that is significantly below the EU standards minimum

requirement for bathing waters. The MembraneClearBox® therefore gives additional comfort to both existing and possible future users against even tighter regulations which may arise.

The HUBER MembraneClearBox® is suitable for almost all situations:

- **As a retrofit kit for existing tanks:**
Retrofit of existing tanks, whether angular or round, can easily and quickly be accommodated irrespective of the tank shape.
- **For installation into new tanks:**
The equipment is also able to be installed into new tanks or alternatively supplied pre-assembled in a seamless concrete tank.





►► The plant

The MembraneClearBox® is a combination of the activated sludge process and separation of clarified water by means of submerged ultrafiltration membranes, comprising basically three process steps:

- preliminary clarification
- aeration
- membrane filtration

In the preliminary treatment stage the majority of the solids are removed from the raw wastewater by sedimentation. The first compartment of a multi-compartment septic tank, or alternatively the two first compartments, are therefore used as a pre-sedimentation chamber from which the pre-clarified wastewater flows by gravity into the biological membrane plant.

The last compartment is operated as an aeration tank and houses the MembraneClearBox® installation kit and a blower for the oxygen supply. Actual clarification is accomplished by micro organisms which decompose the pollutants and nutrients contained within the wastewater and transform them into biomass.

The membrane module with a 38 nm separation size ensures separation of the treated wastewater from the activated sludge. The membrane itself will reliably retain all solids and bacteria along with virtually all germs as the diameter of the membrane openings themselves are 1,500 times smaller than the diameter of a human hair which again allows for the treated water to be reused.

The associated equipment and electrical controls required can be installed either into the cellar of the house or into a heated adjacent control cabinet positioned adjacent to the septic tank.

The HUBER MembraneClearBox® can also as an optional extra be equipped with a remote control feature that reports any fault immediately by SMS. Due to the combination of on-site and remote control features the plant can be operated with the minimum operator attendance and maximum operating reliability.



►► Effluent quality and plant efficiency

The HUBER MembraneClearBox® is the first ultrafiltration plant granted design approval along with certification in accordance with the latest DIN EN 12566-3.

Parameter	Unit	Limit	Average with MCB
BOD ₅	mg/l	< 15	2.0
COD	mg/l	< 75	23.7
NH ₄ -N	mg/l	< 10	5.4
N _{anorg}	mg/l	< 25	24.2
AFS	mg/l	< 50	2.3
Coliform bacteria	1/100ml	< 100	45.8

Average plant efficiency:

- BOD₅: 99.1 %
- COD: 95.5 %
- NH₄-N: 81.9 %
- AFS: 99.3 %
- Coliform bacteria: 99.9 %

The certification was granted for the new classes C, N, D and +H.

►► Benefits and unique features

- Excellent effluent quality (bacteria-free and virtually germfree) meeting EU standards for bathing water quality
- Future-proof solution due to the excellent effluent quality which gives scope for anticipated tighter legislation
- Retrofit of equipment into existing septic tanks is possible
- Electronic plant recording minimises operator invention.
- Minimum operator attendance due to the optional remote control system with automatic fault indication (by SMS)

- External installation of all ancillary equipment means that there are no electrical or moving components installed within the tank itself.
- The ability to withstand large fluctuations in loading
 - due to level control and intelligent electrical plant control
 - pollution loads due to increased biomass concentration
- Easy representative sampling directly at the control unit
- Compact, space-saving, robust stainless steel design
- Package design suitable for quick and easy installation and start-up

►► Fields of application

- The optimal solution for sensitive discharges such as:
 - Karst areas
 - Water catchment areas
 - Water protection areas
 - Sensitive receiving waters
 - Areas without receiving water bodies or areas with no infiltration capacity
- Irrigation or toilet flushing
- Reuse of clarified wastewater thus saving potable water.



Hans Huber AG

Maschinen- und Anlagenbau
Postfach 63 · D-92332 Berching

Telephone: +49-8462-201-0

Telefax: +49-8462-201-810

e-mail: info@huber.de

Internet: www.huber.de

Subject to technical modification

HUBER
MembraneClearBox®