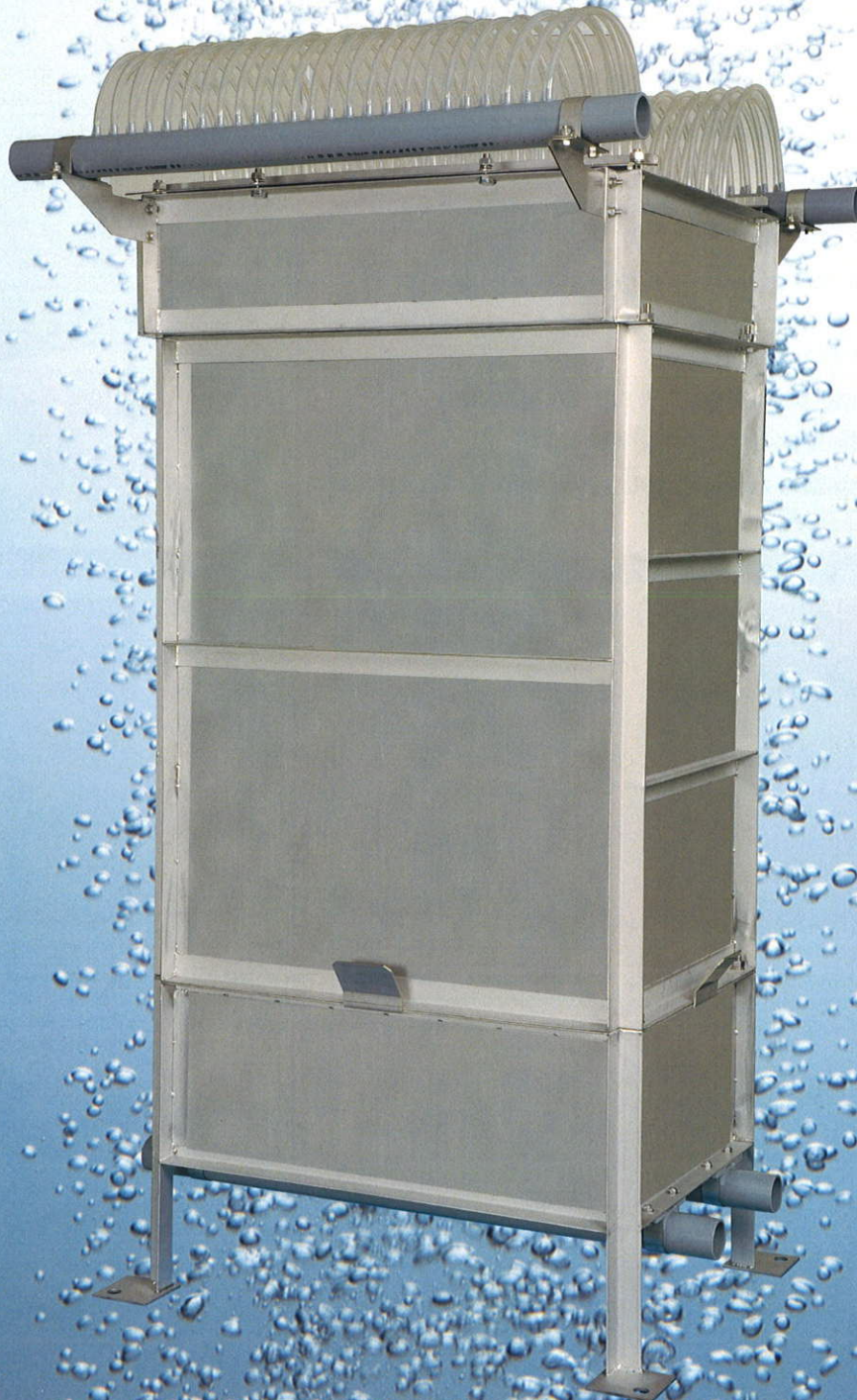


Environmentally Friendly Wastewater Treatment

Submerged Membrane Bioreactor

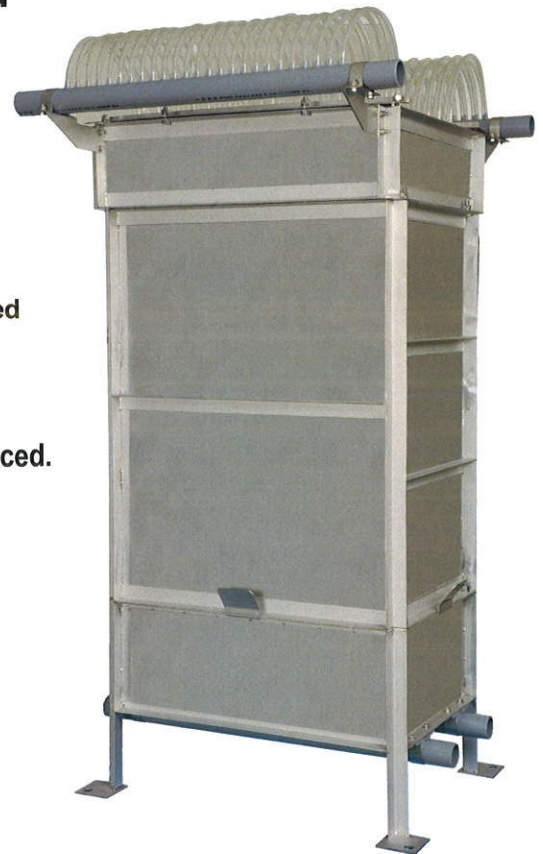


Achieve environmentally friendly wastewater treatment with submerged of the solid-liquid separation using microporous membranes

Solid-liquid separation is physically carried out to the contaminated components and clean water, this makes the treatment reliable. Sophisticated treatment can be performed due to the easy and compact system. Lower cost and energy saving can be achieved as a result of its simple structure. Easy maintenance. We cover various fields such as; septic tank, excreta disposal, rural community sewerage facility. small-scale sewage treatment, and in addition, recycled wastewater, Sludge treatment and more.

Separation Process

- Unnecessary sedimentation tank and total tank capacities can be reduced.
- The entire facility is simple, which allow low-cost and short period constructions.
- Complete physical removal of coliform and suspended solids and eliminate the need for sand filtration equipment.
- The treated water can be reused as irrigation water and toilet water.
- Less than 0.1mg/L of phosphorus concentration can be achieved by coagulation treatment.
- Bulking (sludge bulking phenomenon) can be ignored.
- Energy saving operation and easy maintenance.
- Inexpensive flat membrane method and advanced treated water can be obtained.



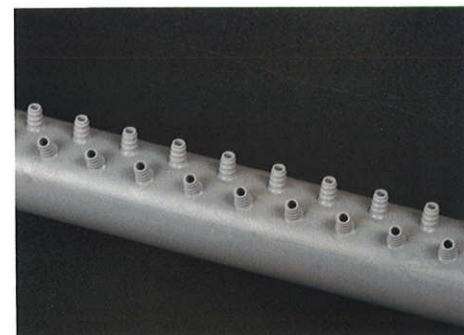
Membrane unit



Membrane casing (all made out of stainless steel)
The structure does not tangle easily with residue etc. due to the advantages of flat membrane method. There are no concerns for cracking, deformation and wear due to it being made out of stainless steel (internal slits included).



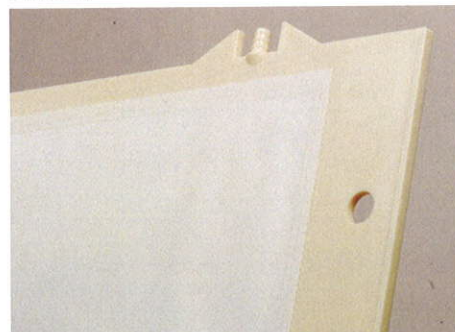
Membrane element (Internal 50-100 sheets)
The membrane sheets are fluororesin, which is strong and has an excellent chemical resistance. The membrane sheets are welded on both sides of the filter plate, and the sludge is physically filtered.



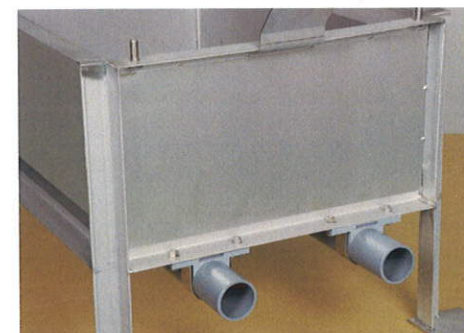
Collecting duct (elastic material nozzle)
The collecting duct nozzle uses an elastic material which has a resistance to cracking. The treated water is filtered at each membrane element, and after passing through tube, it is collected at two sets of collecting ducts.



Tube
Transparent tube with high corrosion resistance is used. When the inner contamination is viewed while the water level is lowered, element of damaged membrane can easily be identified.

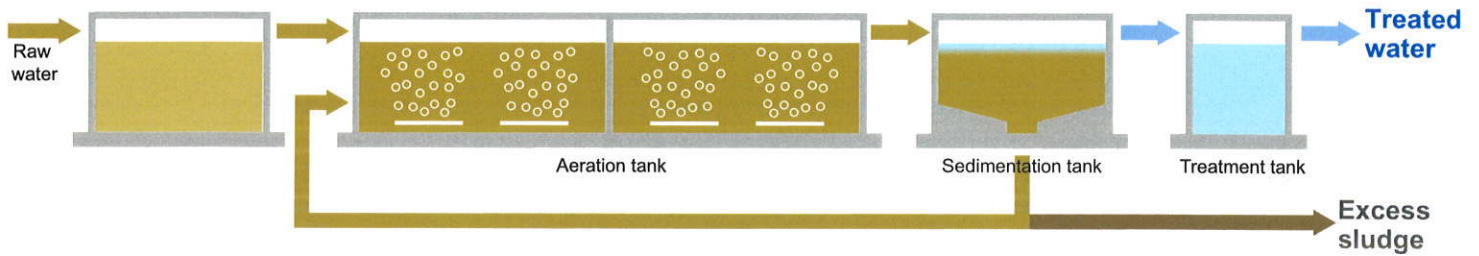


Fixed part of membrane element
The structure is not easily affected by gas-liquid mixed flow. Membrane element is less likely to wear by securing it firmly.



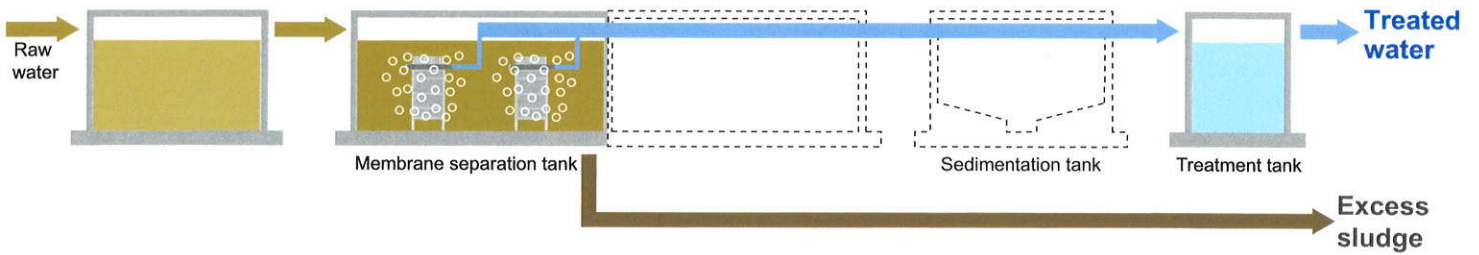
Casing for diffused air (all made out of stainless steel)
Twin aeration tubes made out of PVC are installed. Blockage of the membrane element is prevented by feeding the gas-liquid mixture flow, caused by the aeration, to the membrane casing.

Conventional method



Membrane separation process

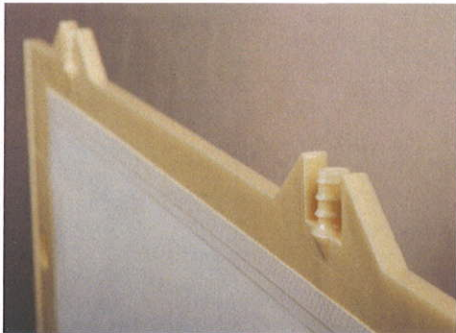
A smaller aeration tank and no sedimentation tank needed.



Membrane element

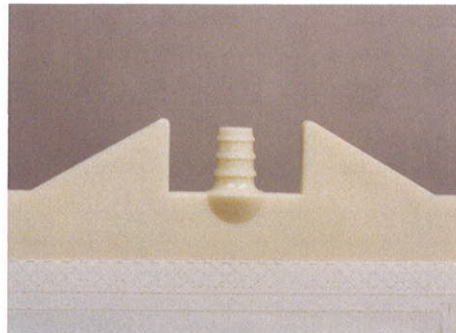
Patent pending design

Other



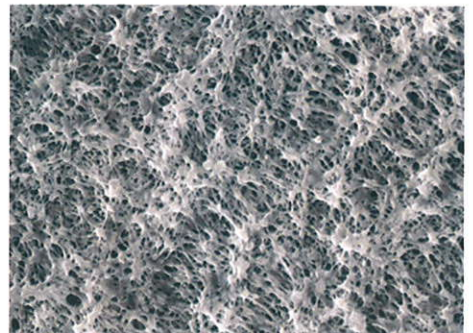
Twin nozzle

Brings out enough filtration ability of the membrane sheets. In order for the tube to not tangle with residue, it is located away from the gas-liquid mixture flow.



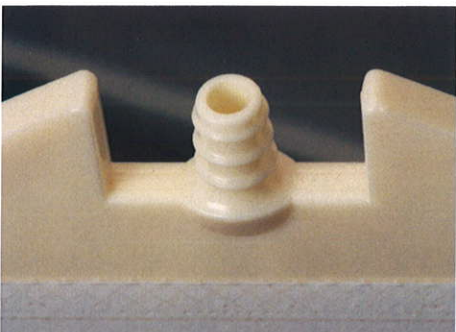
Nozzle guard

Guards the nozzle parts which are easily broken by replacement work. The nozzle will not break even if it is stepped on.



Enlarged membrane surface

Melting equation for fluorine resin membrane sheets (nominal pore size $0.2\mu\text{m}$) The components of contamination (sludge and SS, Escherichia coli etc.) is filtered physically.



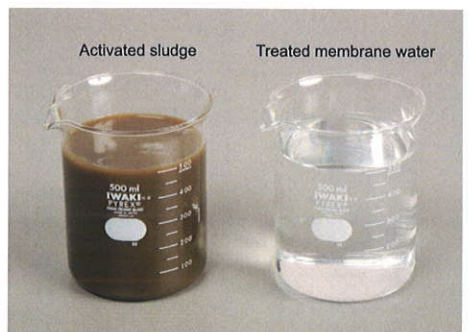
Preventing tubes from coming out

The structure is not easily affected by the gas-liquid mixed flow. In the case of tube deteriorating, the suction time for the tube coming out in the future is reduced.



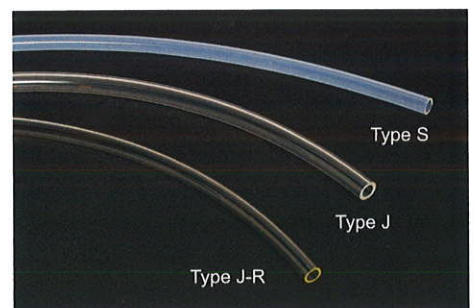
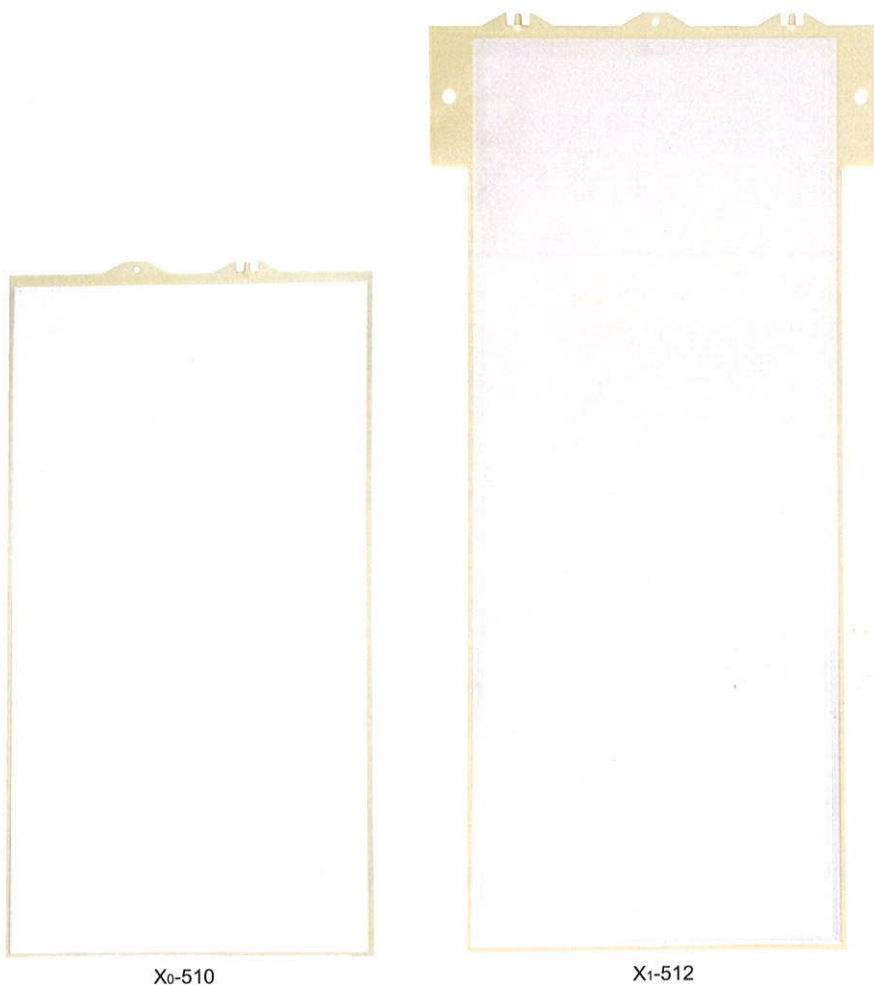
The lower filter plate edge

The vibration and the wear of membrane element are reduced.



Comparison of treated water

Clean treated water not containing SS and coliform can be obtained. Therefore, the treated water can be reused as irrigation water or toilet water.



Membrane Unit Specification

Shape	Dimensions (Width × Height × Depth)	Total membrane effective area (m ²)	Design capacity (m ³ /day)	Remarks
NE50	1082×2025×1040	50	30	Internal X1-512 × 50 sheets
NE100	1082×2025×1790	100	60	Internal X1-512 × 100 sheets

Replacement Membrane Element Specification

Shape	Dimension (Width × Height)	Membrane effective area (m ²)	Design permeance liquor volume (m ³ /m ² day)	Durable years	Remarks
X0-510R	490×1000	0.4	0.25	3-7 years	For general use (inexpensive version)
X0-510	490×1000	0.8	0.5	5-10 years	For general use (for NS)
X1-512	490×1210	1.0	0.6	5-10 years	Exclusive to NE

Replacement tube specification

Shape	Dimension (Inner diameter × Outer diameter × Length)	Color	Main application	Durable years	Remarks
Type J-R	8×11×600 L	Transparent	Septic tank	3-7 years	For general use (inexpensive version)
Type J	8×12×600 L	Transparent	Septic tank	5-10 years	Exclusive to NE
Type S	8×10×600 L	Semitransparent	Industrial drainage treatment	5-10 years	Exclusive to NE

(Production)



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