Advanced submerged membrane wastewater treatment system

Kubota Membrane BioReactor System

Features

About the system

①Space-saving:

There is no need to have final settling tanks or sludge concentration tanks due to high MLSS operations resulting in smaller reaction tank capacity. Installation area can, therefore, be reduced significantly.

②Higher water quality:

The system is capable of removing nitrogen as well as BOD and SS.Other substances that can be removed are phosphor (by adding coagulant) and E. coil with a 0.4 μm max membrane pore size. It enables sophisticated water treatment, and treated water can be reused for toilets, sprinklers, landscaping and RO membrane pretretatment.

③Easy maintenance:

A simple system without a final sludge settling tank has less processes that you need to follow.
The system also enables remote monitoring as the operation status can be identified in the instrumentation data.

■ Sewage plant treatment results (Annual average values)

Item	Raw water	Treated water	Remarks
BOD	98.9	1.0	
COD	75	4.8	
SS	121	Below detection limit	
T-N	35.9	5.8	
T-P	5.3	0.54	Add PAC
Coliform group	—	Below detection limit	

About Kubota Submerged Membrane Unit

①Impurity-resistant flat structure:

Flat sheet membranes reduce the risks of tangling of fibrous residues such as hairs and are suitable for longtime wastewater treatment operations.

②Easy membrane cleaning:

Unit maintenance is easy. (The membrane should be cleaned several times a year.)
It is not necessary to remove membrane units. You just have to pour cleaning solution from the piping to the membrane unit set in the reaction tank.

③Membrane recycling:

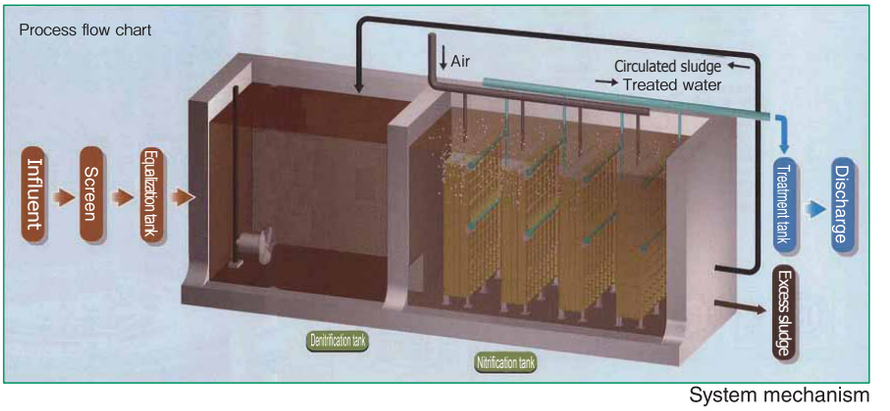
The membrane unit has obtained a regional industrial waste disposal certification. Kubota established a resource recycling system to pick up used membrane cartridges to reuse in various applications.

Overview (Technical principles, actions, etc.)

Wastewater treatment requires high water quality with low cost and small footprint. Satisfying such demanding requirements, Kubota developed a Membrane BioReactor System, a direct solid-liquid separation of activated sludge with a Submerged Membrane Unit. The lower cost ensures a stable quality of treated water in a smaller facility.

Mechanism

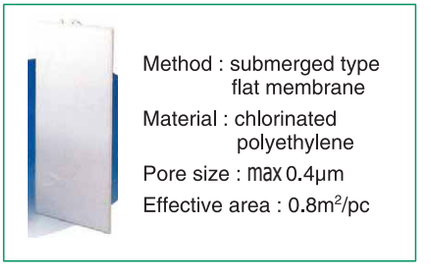
Wastewater removed of large impurities by the screen is supplied to an equalization tank. Circulating the sludge between an anoxic tank and aerobic tank - components of the bio reaction tank unit - reduces nitrogen.
Filtering is conducted by gravity and pump suction through the membrane unit submerged in the aerobic tank.



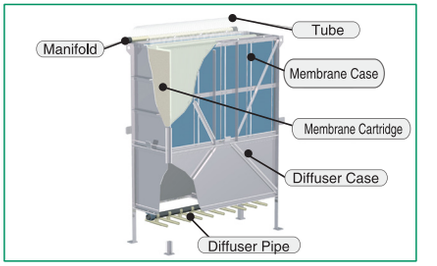
System mechanism

Structure of Membrane Unit

The Submerged Membrane Unit consists of a membrane case and a diffuser case. The membrane case incorporates multiple membrane cartridges - filter plates with membrane sheet on both sides with 0.4μm max pores.The diffuser case has diffuser pipes inside to supply oxygen to activated sludge and clean membrane surface with bubbles and upward flow.



Structure of Membrane Cartridge



Structure of Membrane Unit

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