SUMITOMO ELECTRIC

POREFLON®
Membrane Separation Wastewater Treatment System

Ingenious Dynamics

SUMITOMO ELECTRIC GROUP

The applicable effluent standards are stringent

Many man-hours are required to control the sedimentation tank.

The increase in production exceeds the capacity of the existing treatment system.

Treated effluent is unsuitable for reuse.

Do you face one or more of these difficulties?

You want to use the membrane but are concerned about it.

There is not enough space to additional install an wastewater treatmentsystem.

It is difficult to maintain the membrane in good condition

Breakage of membranes

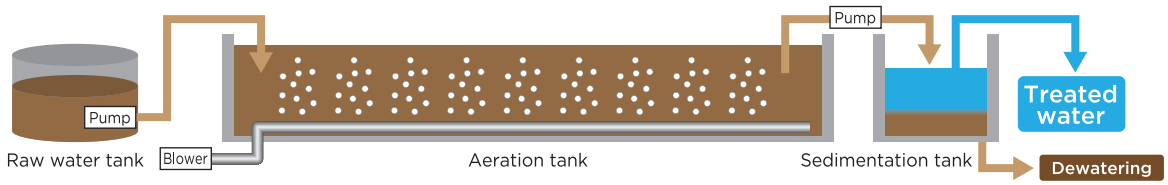
Fouling of membrane

The POREFLON® Membrane Separation Effluent Treatment System Innovates Effluent Treatment Technology. Achieves Unprecedented Performance and Durability!

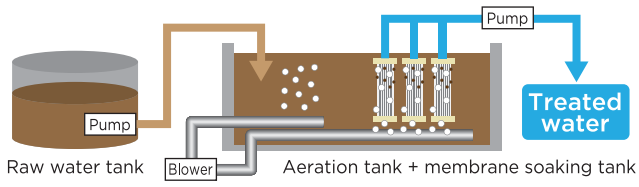
Using its original processing technology, Sumitomo Electric has developed a highly durable and chemical-resistant separation membrane.
Through stable effluent treatment performance, high quality and reliability, excellent durability, and high-quality customer service, Sumitomo Electric is ready to propose wastewater treatment systems that will fully meet various customer needs.

Conventional process and membrane bioreactor

Conventional process (conventional activated sludge process)



Membrane bioreactor (MBR)



Membrane bioreactor (MBR)

An wastewater treatment system that combines biological treatment by activated sludge and physical treatment by membrane separation.
Raw water is not directly filtered. Organic substances in the raw water are degraded by microorganisms, and the activated sludge used for the treatment is separated by a membrane.

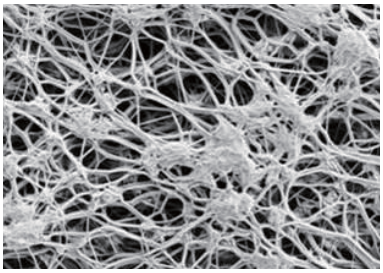
Outstanding Features of the POREFLON® Membrane Separation Wastewater Treatment System

1 Use of a PTFE (polytetrafluoroethylene) membrane with excellent durability and chemical resistance Use of a POREFLON® hollow fiber membrane module

- Long service life
- Treatment at a stable rate
- Chemical resistance
- High Porosity (~80%)
- Thermal Resistance (up to 200°C)

Operates stably over a long period

- The hollow fiber membrane is tough and seldom ruptures.
- The high porosity of the membrane ensures stable operation of the system.
- The membrane can be cleaned with highly-concentrated alkali or acid, ensuring speedy restoration of system operation after membrane cleaning.



Porous material made of 100% PTFE

Strength comparison between POREFLON® and other hollow fiber membranes

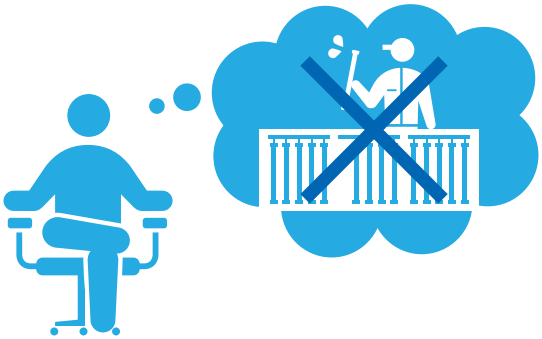
	Tensile strength (N/single fiber)	Membrane thickness (mm)	Membrane outer diameter (mm)	Membrane inner diameter (mm)
POREFLON®	63	0.25	1.3	0.8
Other organic membranes	10	0.25	1.3	0.8

<Comparison of chemical resistance between POREFLON® and other membrane material>

Easy to inspect and maintain

Reduction of workload

- Manpower reduction for plant operation and maintenance

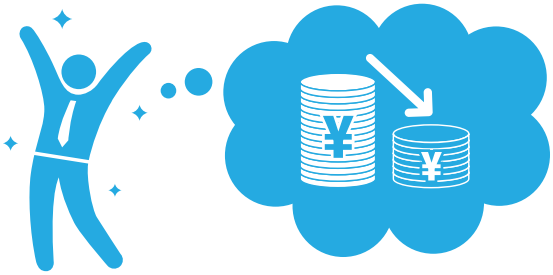


* For standard type systems

Excellent energy-saving performance

Reduction of electricity cost

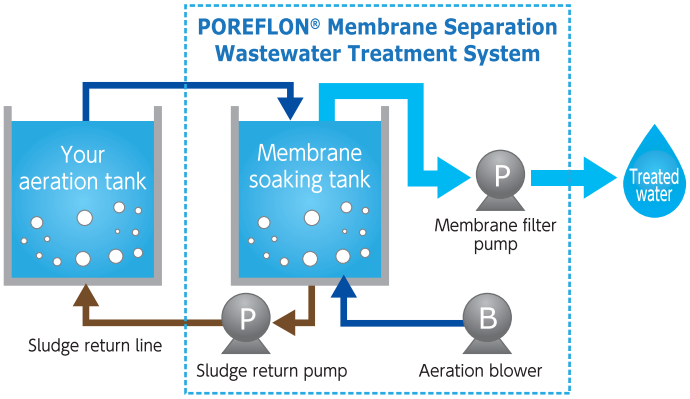
- Sumitomo Electric's original aeration structure ensures high-efficiency physical cleaning of the membrane.



2 Standard package

Connecting a standard package to an aeration tank or other unit in use will meet your need for new construction or upgrade of your existing wastewater treatment system within a short period of time and at low cost without drastic expansion of the system.

Standard flow of the membrane separation wastewater treatment system



3 Wide range of options

Sumitomo Electric meets your specific system design needs by adding a chemical cleaning unit and an aeration tank.

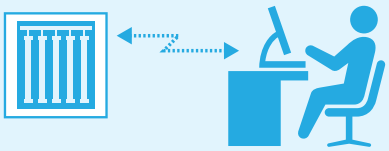
4 Lineup of treatment systems with various specifications

Sumitomo Electric has prepared a lineup of standard wastewater treatment systems with a wide range of treatment capacities, from 50 m³/day to 800 m³/day.

5 Extensive customer service*

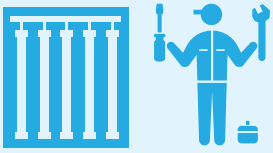
1. Remote monitoring system

An around-the-clock remote monitoring system will monitor the operation of your system.
Based on the monitoring results, Sumitomo Electric will suggest to you the system operation most suitable for your plant.



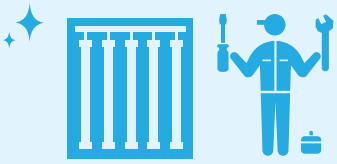
2. Regular inspection

Sumitomo Electric's experts will visit your plant at regular intervals to maintain and inspect your wastewater treatment system, thereby ensuring stable operation of the system.



3. Cleaning/replacement service

Depending on the operating condition of your treatment system, Sumitomo Electric will clean or replace the membrane.



4. Emergency response to abnormality

If your treatment system fails, Sumitomo Electric will quickly take proper corrective measures.

* Fees may apply

Comments of customers

"Membranes made by Sumitomo Electric are very tough and do not tear."

Compared with the activated sludge treatment system we used previously, the new membrane separation wastewater treatment system ensures more stable treatment of water quality. Therefore the new system is easier to maintain. We were concerned about whether the membrane used in the new system would tear or clog up. However, membranes made by Sumitomo Electric are very tough and do not tear. The membranes rarely become clogged. When one of the membranes became clogged, we were able to clear the clogging by thoroughly cleaning the membrane with a chemical. The membranes are certainly interesting, and we can use them with peace of mind.

(Director of a food manufacturing company in charge of facility management)

"Our membrane separation Wastewater treatment system has been stably operating since we installed it three years ago."

We were able to reduce water and sewage expenses by reusing the effluent from the treatment system.
For three years since we installed the treatment system, it has been stably operating without any trouble, such as tearing or clogging of the membrane.
We are satisfied with using membranes made by Sumitomo Electric.

(Plant manager of a food-processing company)

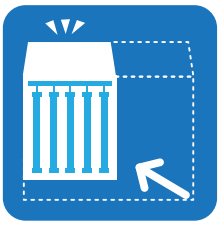
"Because the membranes are very easy to clean, we don't need to adjust the plant operation."

We added a POREFLON membrane unit to a membrane wastewater treatment system that had already been installed. We found the new membrane easier to maintain than conventional membranes.
With conventional membranes, we had to suspend the operation of our plant every year in order to replace a part of the membrane unit with a new one or to remove the sludge from the membrane by cleaning. In contrast, the POREFLON membrane is very easy to clean and eliminates the need to adjust the plant operation. Thus, this membrane contributes to the reduction of total plant operation costs.

(Engineering department manager of a beverage manufacturing company)

The POREFLON® Membrane Separation Wastewater Treatment System Solves Your effluent Problems!

Space-saving



Conventional process

- Cannot respond to increase in the amount of effluent in association with production expansion.
- There is not enough space to additionally install an wastewater treatment system.

The POREFLON® membrane separation Wastewater treatment system

Is more compact than the conventional process due to its capability of using activated sludge of higher concentration.
Does not require sedimentation since activated sludge is removed by the membrane.

Operation and maintenance labor saving

Conventional process

- Controlling the sedimentation tank is labor intensive.
- Requires expertise and experience, so the wastewater treatment system is difficult to control.

The POREFLON® membrane separation Wastewater treatment system

Eliminates the use of the sedimentation tank, thereby freeing the user from its cumbersome control.

Treated water quality enhancement

Conventional process

- Cannot fully conform to the applicable effluent standard.
- Treated effluent is unsuitable for reuse.

The POREFLON® membrane separation Wastewater treatment system

Removes solids, bacteria, and other foreign substances to a high degree, thereby enabling the use of treated water as reclaimed water and service water.

Raw water　Treated water

Examples of actual water quality improvement

- Raw water: effluent from vegetable processing plant

	Raw water	Treated water
SS	255	< 1
BOD	1355	2
Animal/vegetable oil	10	< 1

(Unit: mg/L)

- Raw water: effluent from prepared food processing plant

	Raw water	Treated water
SS	800	< 1
BOD	1100	2
Animal/vegetable oil	300	< 1

(Unit: mg/L)

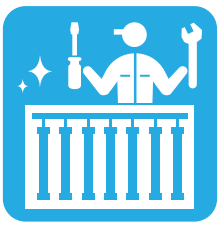
- Raw water: effluent from textile mill

	Raw water	Treated water
SS	150	< 1
BOD	860	1

(Unit: mg/L)

SS: suspended solid　BOD: biochemical oxygen demand

Relieves your concern about membrane separation



Ordinary membrane separation

- Difficult to continuously maintain the performance of the membrane.
- Issues with membrane breakage.
- The membrane becomes clogged.

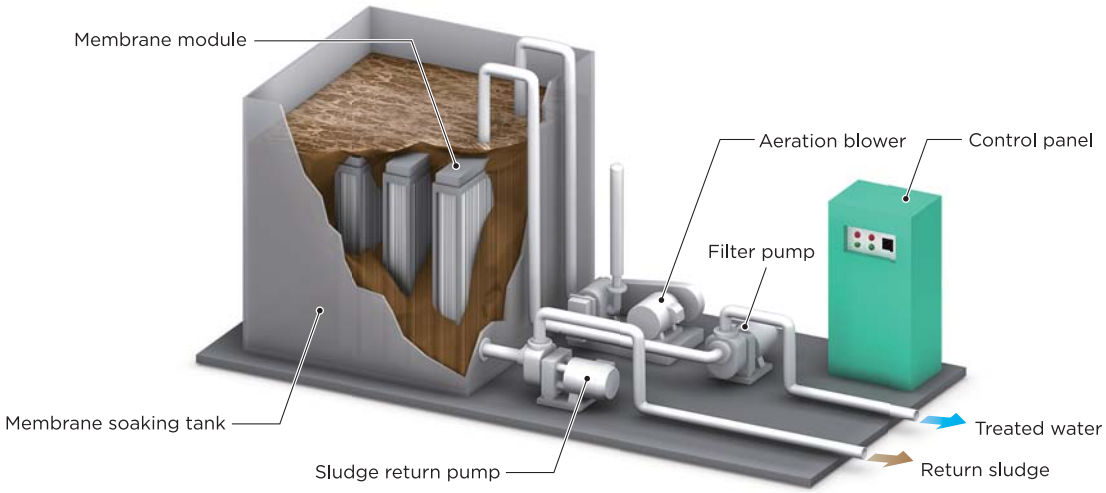
The POREFLON® membrane separation Wastewater treatment system

Use of a membrane with excellent durability and chemical resistance minimizes the possibility of rupture and reduces the user's burden of membrane cleaning and other maintenance.

List of standardized systems

Standard treatment capacity *1		(m^3/day)	50	100	200	400	800
Membrane area *2		(m^2)	228	456	912	1824	3648
Membrane material			PTFE (polytetrafluoroethylene)				
Membrane pore diameter		(μm)	0.1 μm				
Outside dimensions of system *3	Width	(m)	2.2	2.2	2.2	2.2	(Membrane tank) 2.2 / (Equipment/unit) 2.2
	Length	(m)	5.5	6.5	7.0	8.0	(Membrane tank) 11.4 / (Equipment/unit) 8.0
	Height	(m)	2.2	2.2	2.2	2.2	(Membrane tank) 2.2 / (Equipment/unit) 2.2
Power requirement		(kW)	3.3	6.0	9.3	18.7	31.1

*1, *2 These values are for reference and may change depending on the quality of the raw water to be treated.
*3 These dimensions are for outdoor installation. For an wastewater treatment system that will be installed in a container, contact Sumitomo Electric.
These dimensions may vary depending on the location of the system.



Customer service

Item		Customer	Sumitomo Electric	Remarks
Daily checking	Water quality measurement (raw water quality and treated water quality)	✓		You are requested to measure/record/ control the water quality.
	Activated sludge control MLSS/DO/pH measurement Measurement of filtration performance of filter paper Water temperature Aeration state	✓		You are requested to measure/record/ control the water quality. Sumitomo Electric is ready to supply paid-for portable measuring instruments.
	Operating condition monitoring Flow rate, operating pressure, aeration volume		✓	Sumitomo Electric will prepare and install necessary measuring instruments.
Maintenance/ inspection	Water quality checking		✓	Sumitomo Electric will check your system control records.
	Activated sludge condition checking		✓	Sumitomo Electric will check your system control records.
	Operation/adjustment of equipment/devices		✓	
	Maintenance/inspection of equipment and instruments		✓	
	Calibration of measuring devices		✓	
	System overhaul		✓	
	Recording and reporting inspection results		✓	
Replacement	Membrane *Including CIP/OLC cleaning		✓	
	Replacement of consumables/parts		✓	Additional fee may be imposed.
	Replacement of each device due to aged deterioration		✓	Additional fee may be imposed.

* In the case of an abnormality in the system, initially investigate the cause and remove it in accordance with the instruction manual.

SUMITOMO ELECTRIC INDUSTRIES, LTD.

Water processing Division,

4-5-33, Kitahama, Chuo-ku, Osaka 541-0041, Japan TEL (06) 6220-4337 FAX (06) 6220-4524

http://www.sei.co.jp/poreflon
poreflon-sales@info.sei.co.jp

CAT.201608S1.R1