

Economically changes seawater into reliable drinking water and industrial water.

RO Membrane Element for Seawater Desalination

Features

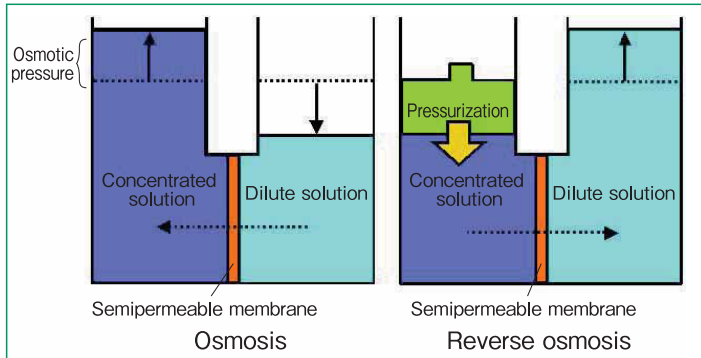
- Removes 99.7% of the salt in seawater.
- Produces freshwater at the minimum rate of 10 m³/day to the maximum rate of 300,000 m³/day.
- Energy-saving seawater desalination that is different from conventional multi-stage distillation that requires thermal energy for seawater evaporation.

Overview

(Technical principles, actions, etc.)

1.Principle

If a concentrated solution and a dilute solution are poured separately into a container partitioned with a semipermeable membrane, the solvent in the dilute solution shifts to the concentrated solution side through the semipermeable membrane so that the both solutions become same in concentration. This phenomenon is called osmosis. Reverse osmosis (RO) is the process of shifting the solvent in the concentrated solution to the dilute solution side through the semipermeable membrane with a pressure higher than the osmotic pressure imposed on the concentrated solution side. An RO membrane element uses the principle of RO for membrane separation.



Mechanism of Reverse Osmosis

2.Summary of RO Membrane Element for Seawater Desalination

An RO membrane is generally used for the separation and condensation of the salt and other ingredients in seawater. With the progress of urbanization backed by industrial development, the construction of seawater desalination plants to produce drinkable water is making progress worldwide in coastal areas that are short in freshwater. Long-life and stable RO membrane elements with a high rejection of the salt and other ingredients in saltwater have been expected for efficient seawater desalination. Nitto Denko provides the world's seawater desalination plants with the RO membrane series SWC5, SWC4+, and SWC5MAX from its Shiga Plant in Japan and through Hydranautics in California, USA.



SWC5 MAX

Introductory Track Record

- Nitto Denko's RO membrane elements for seawater desalination have been producing fresh water at the total rate of 5 million cubic meters per day or over throughout the world since the first product was launched on the market.

Country	Capacity (m ³ /day)
Spain	631,000
Algeria	800,000
UAE	170,000
Australia	832,000
Oman	125,000

Effects

- SWC-series RO membrane elements for seawater desalination consumes less energy per unit production quantity than conventional products. Furthermore, the permeate flux of the RO membranes is stable for a long time.
- SWC-series RO membrane elements maintain excellent chemical resistance, thus making it possible to use chemicals for highly efficient and stable water purification and the performance recovery of the elements for repeated use for a long time.

Applicable field
Seawater desalination plants for drinking water
Seawater desalination plants for industrial water

Water

Energy saving/Energy recovery

ENERGY

Energy storage/Energy creation

New energy

Waste disposal/Recycling/Resource saving

Air

Soil

Other

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*Note: This publication introduces examples of technologies and products believed useful towards solving environmental and energy issues. In no way does it constitute guarantees concerning their transfer or sale.