



Development of environment-friendly products

Helping to resolve problems of depleting water resources by purifying water to a high degree using minimal energy



ES Series

Requires 1/2 the Pressure of Conventional Products

Of all the water resources on the planet, only a mere 0.007% is fresh water that is suitable for drinking and industrial use. Not only the Middle East and Southeast Asia, but many places in Japan, too, are suffering from drought. Water for drinking and for agriculture, as well as the ultra-pure water used for industry, is produced from river water and underground sources. One technology used in this effort is a reverse osmosis membrane with micron-order size pores on its surface that filters out impurities such as salt. The reverse osmosis membrane developed by Nitto Denko requires little pressure for filtration. In fact, our ES Series requires only half the pressure of

conventional products. Not only does it require minimal energy to produce clean water, but with a salt trapping rate of 99.7%, it proudly features the world's top level performance.

Development for Use in Semiconductor Manufacturing

Since the ES Series was developed specifically for producing the ultra-pure water essential to semiconductor manufacturing, the membrane is 0.6 μm thick. The surface also has an uncountable number of folds just 0.4 μm in height, which doubles the amount of surface area and makes it possible to produce ultra-pure water at a lower pressure than ever before.

Making Even Seawater Drinkable

The 70SWC used in the desalination of seawater features an incredibly improved desalination rate. In single stage desalination, it can turn seawater (salt concentration of 35,000 ppm) into fresh water of less than 500 ppm, which is suitable for drinking, and it stably maintains that performance for a long period of time. By turning the inexhaustible supply of seawater into drinking water and by processing water to a high degree of efficiency, Nitto Denko is helping to improve everyone's living environment. Today, our membranes are employed by large desalination plants around the world.

- Produced by the Shiga plant and Hydranautics

Our Activity



The incentive of my work was to make the inhabitants of remote islands where water is scarce happy.

Membrane Division Masahiko Hirose

Another company I worked for before used to dump tons of chemicals into the environment everyday. I hated it and decided to change to Nitto Denko where I could do something to protect the environment.

A chance mistake was the key to developing a reverse osmosis membrane of high energy-savings. While making a membrane, impurities mixed in what was meant to be exclusively raw material. The membrane came out with mixed layers, which lead me to think that this "phenomenon could be applied to making folds in the membrane surface." After that followed 6 years of prototypes and repeated evaluation testing. I'll never forget the field test on a remote island off Okinawa. When the islanders tasted the water treated with the membrane, they turned to me and said it tasted "great!"

There are still many places around the world that suffer from water shortages, so I continue my research day and night looking for an even less expensive and easier-to-use product that places like this can use.



Field test system in Okinawa