

Reverse osmosis



Membrane treatment including reverse osmosis water treatment.

Membrane units, these days are widely used in the water pre-treatment preparation and are becoming one of the most important technologies in the production of highly pure water. Nevertheless they often face problems with scaling and fouling and are therefore limited by frequent maintenance, downtime and high costs. Our treatment programs are specifically designed for membrane units like reverse osmosis, ultra- and nanofiltration and enable removal or preventive control of scaling and fouling. Our main target is to run these plants under environmentally friendly and beneficial economic conditions. Special attention is given to an efficient utilization of energy as well as saving precious water. Kurita develops an efficient and effective treatment concept achieving an optimal economic operation and a maximum operational reliability of a plant.

Membrane units are used in various sectors of industry:

- Surface technologies (cutting fluids, tooling oils, emulsions, cataphoresis baths, phosphating baths, painting, cleaning baths)
- Sea water desalination
- Wastewater
- Boiler water preparation

- Bio-technologies
- Pharmaceutical industry

What kind of products does Kurita offer?

- **Kuriverter/ Osmotech[®]** and Kurifloat: broad range of cleaners, antiscalants and dispersing agents for membrane treatment
- **Kuriverter IK 110**: Biofilm removal
- **Kuriverter[®] RC**: Rejuvenation concept for damaged membranes
- **Ferrocid[®]**: range of biocides*, compatible with membranes

Why choose Kurita?

Our solutions prevent deposition, reduce the cleaning frequency and downtime and help you save costs. Our strength is our ability to offer you not only the chemicals, but also procedures designed to give you the benefit of more than 65 years of experience.

Do you need support? Our qualified experts will be glad to advise you **personally and individually**.

Antiscalants.

A regular monitoring of the operational plant performance as well as a regular maintenance are basic preconditions for a trouble-free operation. Furthermore, the membranes need to be protected against fouling and scaling in order to maximize their lifetime and avoid unnecessary and undesired stops.

We select the most suitable antiscalant for each specific application and supply water quality. The Kurita antiscalants offer excellent inhibiting effects for:

- Colloids and suspended matter
- Iron and manganese
- Calcium carbonate
- Calcium sulfate
- Strontium sulfate
- Barium sulfate
- Silicate

Our product portfolio includes antiscalants with NSF certification.

Biocides.

Biological, organic and inorganic contaminants present in supply-water deposit on the surface of membranes. The deposition of the contaminants from an

impure supply water on a membrane surface is generally referred to as "fouling". The adsorption of micro-organisms to the surface of membranes is designated as "biofouling". Biofouling is particularly problematic since micro-organisms can reproduce and grow in exponential way over the membrane surface. The consequences: the efficiency of the plant suffers significantly and can produce irrecoverable damage to the membranes.

In order to prevent the process of biofouling effectively, the addition of biocides and biofouling daily control agents are essential and highly recommended. Kurita has developed special biocides* which substantially contribute to the economical operation of reverse osmosis plants. Our technology is characterized by:

- Low dosing rates
- Dispersion of existing biofilms
- Prevention of germ resistance

Pre-Treatment.

The stress-load of a plant should be reduced as much as possible by an effective pre-treatment of the feed water. Depending on the raw-water quality suitable pre-treatments are: coagulation, flocculation, sedimentation, filtration etc.

Kurita has a broad and deep expert-knowledge as well as specifically developed and innovative products for these treatment steps. With various analytical methods, e.g. SDI-measurements, the appropriate products can be selected already in specific lab-tests.

Cleaning.

An effective pre-treatment of water is the basis for a smooth operation of the reverse osmosis plant. However, it cannot completely prevent the membranes from fouling and scaling, which decreases the membrane's performance. This, in turn, increases the energy demand of the plant substantially while the quality of the produced water diminishes. This performance loss results from colloidal and microbiological depositions as well as from deposits of metal hydroxides. Also, deposits of CaCO_3 , CaSO_4 , SiO_2 , BaSO_4 and CaF_2 reduce the yield of permeate. It is therefore necessary to clean the membranes regularly. Specific demands require individual solutions for the proper cleaning procedure. Kurita performs a range of preliminary investigations in order to develop a suitable cleaning procedure. The following aspects are of importance:

- Autopsy of membranes
- Performance tests
- Analyses of water
- Purification tests
- Analyses of deposits

Consultancy and Service.

A thorough understanding of the design and the operation of a RO plant is the basis for a successful treatment concept. According to this principle we perform the following investigations in our scientific research laboratories:

- Analyses of water and deposits
- Autopsy of membranes
- Flat-sheet-tests
- Cleaning tests
- Microscopic investigations
- Surface analyses

Based on these comprehensive preliminary investigations it is possible to select the most suitable biocides, antiscalants and cleaning chemicals, and thus to operate a plant in an economical and environmentally friendly way.

***Attention:** Use biocides safely. Always read the label and product information before use.

Based on our experience and with the help of our experts, we develop tailored solutions to meet your individual requirements. **We gladly provide personal advice.**