



Microfiltration  
Ultrafiltration  
Nanofiltration  
Reverse Osmosis  
Desalination

# MEMBRANE SEPARATION

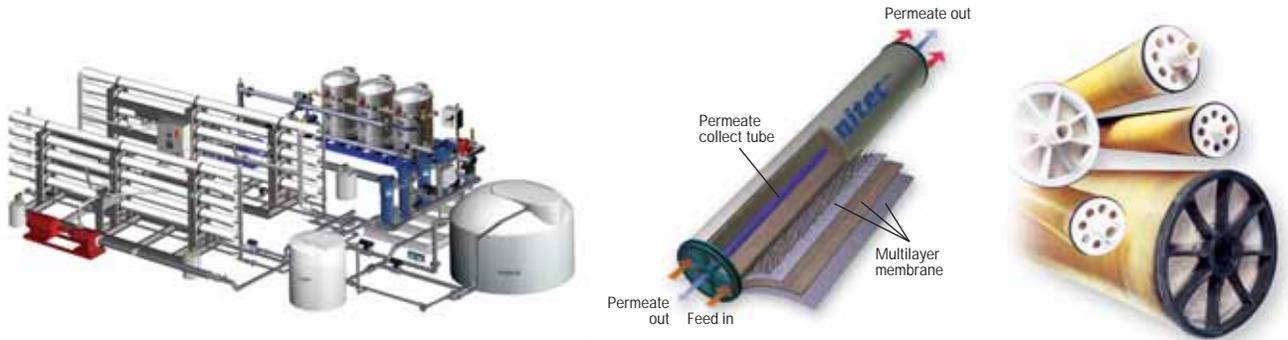


Satisfies Your  
High-Purity  
Water Needs

Municipal  
Commercial and  
Industrial Applications



Water contains a wide variety of suspended and dissolved contaminants such as minerals, fibers, metallic particles, organic compounds, bacteria, viruses, pollen, pyrogens and protein substances (fat, oil, etc.). As the demand for pure water continues to grow at a fast rate, the treatment of wastewater, recovery of processed water, production of pure drinkable water and the concentration of solutions are essential for today's need. The constant pressure to reduce operating and maintenance costs, in an increasingly competitive environment forces the research and development of more advanced technologies to enhance the efficiency of manufacturing processes by reducing waste, maintenance and by upgrading the quality of the finished product.



#### RO VERY SIMPLY

This process removes most dissolved and suspended contaminants from water by forcing them through a semi-permeable membrane. The product water (permeate) transfers through the membrane while dissolved solids, particulates and organic matters are flushed to drain as a concentrate or wastewater.

#### COST-EFFECTIVE, PURE DRINKING WATER

Municipalities now face increasing public concern over water supply. More and more northern hemisphere regions turn to membrane technology to remove a wide range of colloidal matters, pathogens including giardia and cryptosporidium, viruses and bacteria. Turbidity, color and minerals are also removed from freshwater sources (surface or groundwater). **Membrane separation** systems are best suited for this type of application by offering a superior and consistent removal of undesired components. This dramatically reduces the use of pretreatment chemicals.



#### CORRECT MEMBRANE SELECTION IS THE MOST IMPORTANT PART OF A MEMBRANE PROCESS

Membrane separation technology offers a method for separating organic, inorganic and suspended matters, which are often present simultaneously. They can also tolerate oil in water: indeed they can be used to separate an oily mixture.

The demand for pure process water, clean potable water and acceptable wastewater treatment continues to grow. **Microfiltration (MF), ultrafiltration (UF), nanofiltration (NF) and desalination (SW)** processes are widely used for many municipal and industrial applications and replace some existing conventional systems that cannot offer ultrapure water. Membrane separation is also used in regions where freshwater is a precious commodity and where many industrial plants are recovering their own wastewater.

- Disinfection
- Purification
- Desalination
- Demineralization
- Concentration
- Product recovery
- Deionization
- Ion exchange
- Condensate polishing





## DESALINATION OF SEA WATER

Several water-starved regions are converting brackish water and seawater into fresh potable water using membrane technology. Desalination technology has been available for decades but its high costs have prevented widespread utilization worldwide. Nowadays, the cost of seawater desalination has considerably decreased and more southern states are investing in **RO** systems to increase the amount of potable water available to their residents and industries.

Among some other uses for **RO** desalination systems are tourist resorts, hotels and cruise ships. This provides a secure supply of potable water and is more cost effective than other water purification methods. **Membrane separation RO** systems are designed to accommodate varying levels of seawater salinity. Their field-proven performance is ideal for remote installations.



## FOOD & BEVERAGE INDUSTRY

Uniform high quality water improves the appearance, taste and preservation of beverages. It also prevents undesirable side effects such as flavor change and residue in bottles. Membrane technology has a proven track record of success with a variety of beverage manufacturers, dairies and bottle industries worldwide. **Membrane separation** systems provide reliable, high quality products regardless of the local water supply. Membrane technology is widely used in the dairy industry to recover CIP solutions, fractionate or concentrate cheese whey and for milk-fat separation. In juice and wine production, the main application is for clarification or concentration. The recovery of proteins from brine in the fish processing industry is also achieved.



## LABORATORIES AND PHARMACEUTICAL INDUSTRY

USP (United States Pharmacopoeia) Reference Standards are extremely important for many tests and processes such as container rinsing and water for injection. Membrane filtration and **RO** systems are widely used for the removal of contaminants, viruses, and bacteria.



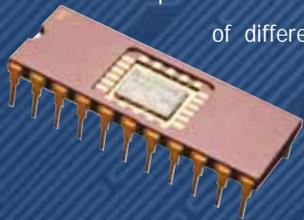
## BOILER FEED AND POWER GENERATION

The requirements for water quality are mainly concerned with scale prevention, corrosion protection and blowdown control. The simplest method to control these problems is reverse osmosis. **Membrane separation RO** system, combined with the proper pre- and post-treatment, is ideal for the production of reliable good quality water for your power generation requirements.

## MICRO-ELECTRONIC INDUSTRY

The semiconductor industry is viewed by most as the trendsetter in terms of water treatment standards. Particles are said to account for high and costly yield losses in the fabrication of microelectronic components. Reducing total particle contribution therefore remains a high priority since water comes in contact with wafers several times during computer chip production.

18-megohm water is required to meet ASTM standards for the fabrication of semiconductors, printed circuit boards, computer chips and peripheral components. Producing high purity water requires the use of a number of different technologies. **Membrane separation** membrane technology is designed to meet the highest standards for ultrapure water production. Its high reliability will reduce plant downtime costs, conserve water and save energy.



## WASTEWATER REUSE

There is often a shortage of high quality water for industrial use which makes it very expensive to acquire. This makes the concept of water reuse even more attractive.



Fresh water is subject to the increasing recovery process in regions where water supply is limited and strongly regulated. In countries and regions where fresh water is a scarce commodity many industrial plants are reusing their own wastewater. Membrane separation processes offer a unique and simple solution and are tools

which simultaneously deliver increased profitability through wastewater minimization, product recovery/recycling and water reuse. Water is then being reused or returned into the environment as clean or cleaner than in its original state. Industrial and municipal wastewaters are recycled and used for process water or for agriculture.

## METAL AND PLATING INDUSTRY



Stronger environmental laws are forcing the metal industries to be concerned with their waste streams which may have been discharged into local sewers. A large portion of the waste streams have emanated from typical processes such as cutting and grinding oil, caustic cleaning solutions, solvent and degreasing baths. All can be reclaimed and sent back to the original process, hence reducing operating and disposal cost. **Sonitec Inc.** has the capacity and the experience to supply the proper system for your particular needs.

## OTHER INDUSTRIAL APPLICATIONS

In the chemical process industry, separation processes are as important as chemical reactions and high-purity water is a necessity. The Textile industry (recovery of dyes), the Pulp & Paper industry (whitewater recovery) and many others all require membrane separation systems for their manufacturing processes.

**Membrane separation** systems are tailored to each need.



## TYPICAL FEATURES

- Optimal selection of membranes
- Designed for reliability, high-efficiency systems
- Simple operation and easy maintenance (*no costly maintenance contracts*)
- Lower pressure operation for best energy savings
- Corrosion proof fiberglass skid
- Solid (*heavy-duty*) construction
- Low purchase cost, compared to other separation and filtration technologies
- Non-stop, non-monitored operation
- Highest combined flow and rejection available
- Self-cleaning system
- Modular design, easily expandable
- Exceptional warranty on membranes and related equipment

## MEMBRANE SEPARATION

**Sonitec Inc.** is offered in a full range of horizontal pressure systems that will meet all your pure water needs. Membranes are made in a variety of configurations and materials (*cellulose acetate polyamide, thin-film composite with a tubular, spiral or hollow-fiber configuration.*)

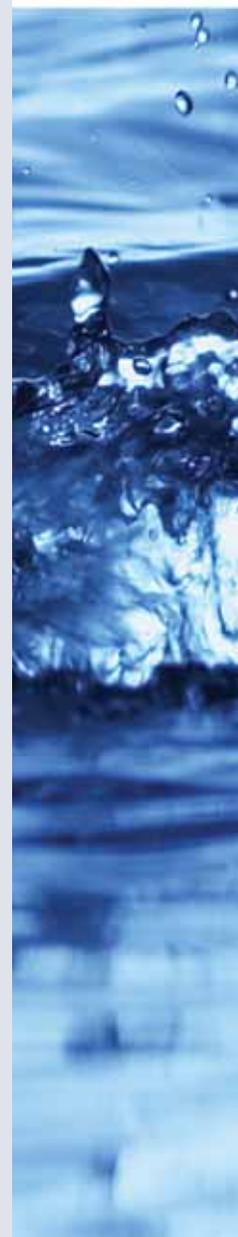
Every **membrane separation** system is subjected to the most rigorous quality control to ensure that it will perform well under actual operating conditions.

**Sonitec Inc.** is provided in both standard and customized designs in system sizes ranging from a few gallons to several hundred gallons per minute. We guarantee that our systems will be fully integrated with upstream and downstream processes. Pretreatment with **Vortisand®** ultra-fine high-efficiency filtration system (*particle removal down to 0.45 micron*) is also available upon request.

### TYPICAL APPLICATIONS:

**Membrane separation** systems are favored for the production of high purity water for a wide variety of industrial applications.

We have a system suitable for your need!



# OUR TEAM

- WE TAKE PRIDE IN DESIGNING AND MANUFACTURING THE RIGHT PRODUCT TO MEET YOUR APPLICATIONS
- WE HAVE THE TOOLS TO BUILD SYSTEMS FOR LARGE INDUSTRIAL APPLICATIONS
- OUR ENGINEERS AND TECHNICIANS WILL DESIGN THE BEST SOLUTION(S) FOR YOUR REQUIREMENTS



**Sonitec Inc.** is a system integrator of separation technology. We design and manufacture membrane systems using a wide range of membrane construction and materials. Our technical team will provide you with a complete solution including the pre- and post-treatment necessary to ensure that customer requirements are met. Our expertise in manufacturing quality products is in accordance with the most stringent regulations. Whether you want to install a new water treatment or upgrade your existing system, **Sonitec Inc.** offers the most viable and cost effective solution for your specific needs.

**Our objective is to fully satisfy your requirements.**



## WE OFFER:

- ✓ Problem identification
- ✓ Evaluation of potential designs by computer simulation
- ✓ Access to a pilot-unit for the on-site testing of the system proposed or assisting you to select optimal equipment
- ✓ Drawings and specifications required for the installation
- ✓ Start-up assistance and training of facility operating personnel
- ✓ Feasibility and cost-efficiency tests are carried out for every new application using samples of the solutions intended for treatment. These tests are specified to ensure your system's optimal performance and output



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