

RWO

SRO

Seawater Reverse Osmosis



 **VEOLIA**
WATER

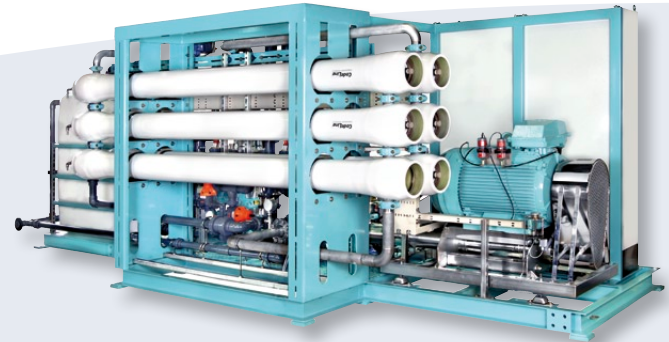
Solutions & Technologies



Seawater filtration

SRO – Seawater Reverse Osmosis

RWO reverse osmosis seawater desalination systems for independent and reliable fresh water supply onboard ships and offshore facilities. The reverse osmosis process is ideal for fresh water generation – being easy to operate, economical and producing excellent water quality. RWO's SRO product line covers a wide range of capacities and accessories to meet the needs of passenger, merchant and navy vessels as well as the requirements of offshore applications.

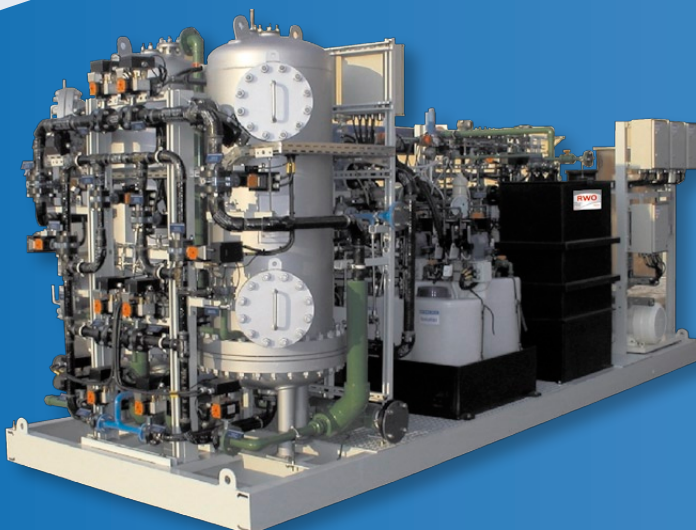


SRO 300 m³/d, installed on a cruise liner



The system comes as a complete package, skid mounted with all necessary accessories and controls and providing the following benefits:

- ⦿ all required capacities
- ⦿ perfect water quality
- ⦿ compact design
- ⦿ easy to install and easy to operate
- ⦿ design accredited to European or American standards
- ⦿ class certificates available



SRO 50 m³/d offshore plant

The standard RWO Reverse Osmosis units feature:

- Ⓢ automatic backwash filter
- Ⓢ injection system for scale inhibitor
- Ⓢ fine filter
- Ⓢ high pressure pump
- Ⓢ high performance reverse osmosis elements and pressure vessels
- Ⓢ salinity control
- Ⓢ control panels with PLC for automatic operation
- Ⓢ automatic concentrate displacement device
- Ⓢ CIP-built-in cleaning and rinsing device

Optional scope of supply:

- Ⓢ booster pumps and strainers
- Ⓢ UV disinfection system
- Ⓢ injection system for chlorine disinfection
- Ⓢ chlorine control
- Ⓢ mineralising unit
- Ⓢ dechlorination unit
- Ⓢ flow controlled injection for chemicals
- Ⓢ demineralisation by reverse osmosis or ion-exchange

RWO's SRO plants are designed for automatic operation. They will run unattended for long periods of time and require little or no maintenance during operation. All RWO reverse osmosis systems are skid-mounted, completely pre-assembled on a frame for the least amount of onboard installation work. They are pre-tested in our workshop testing facilities, both electrically and hydraulically. A work certificate documents all of the performance data from the test and gives our customers the confidence of having a well-functioning unit that usually does not require RWO specialists for start-up and commissioning.

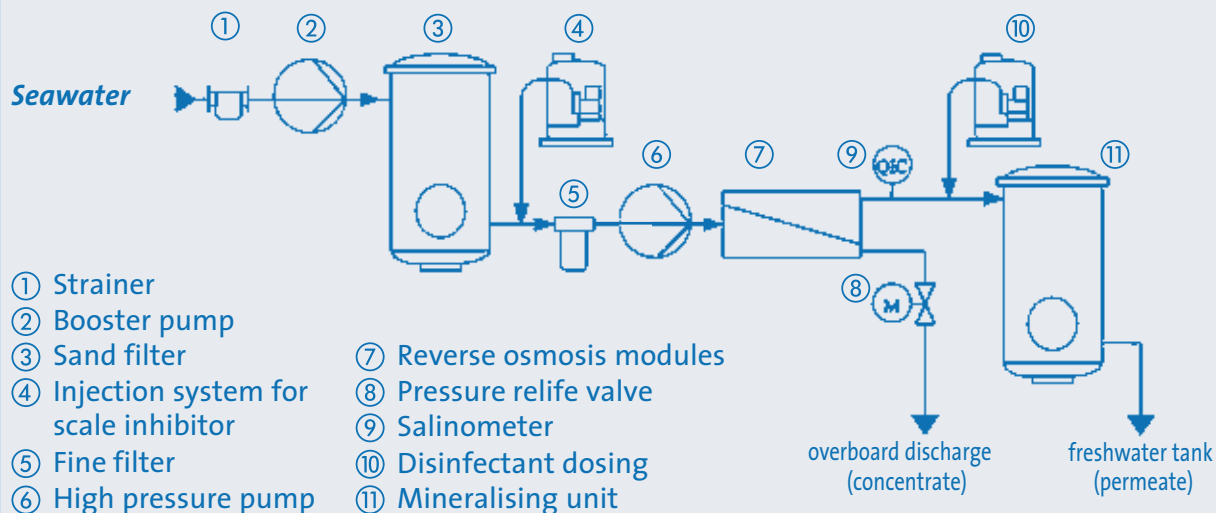
As RWO's objective is to provide reliable and long-lasting equipment, the SRO units come with a built-in concentrate displacement device that will extend the membrane operation cycle. Also, a chemical cleaning device (CIP) is provided with the systems in order to make cleaning of the membranes easier and less time-consuming for the operators. All of these features, together with the selection of first-class electrical and mechanical components, gives our customers the opportunity to have a reliable and longlasting piece of equipment on board.



Container Unit, type SRO 300 m³/d, built in a 30 ft. insulated container incl. heating and ventilation for outdoor installation on a north sea platform.



Process Diagram



The process diagram shows the general configuration of a SRO plant. General a booster pump ② is used to provide an inlet pressure of 2-6 bar. The filter system ① ③ ⑤ protects the membranes from suspended particles in the feed water. The application of a scale inhibitor ④ extends the membrane lifetime to a maximum. After the pre-treatment, the high pressure pump ⑥ feeds the Reverse Osmosis modules ⑦. Permeate, i.e. desalinated water, passes the membranes, while the remaining seawater takes up the rejected salts and leaves the modules as concentrate back to the sea. The post treatment, i.e. chlorination ⑩ and mineralization ⑪, makes it potable and non-corrosive.

The reverse osmosis membranes remove salts and minerals, and also all kind of impurities hazardous to human health, such as viruses, bacteria, legionella – it is a safe method to produce a perfect fresh water. The quality of the water is in accordance with European, International WHO and US Health Standards.



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