WATEX | Technological solutions and Equipment for Water treatment

Reverse osmosis systems for drinking and process water

Consultancy

Design

Construction

Installation

Service

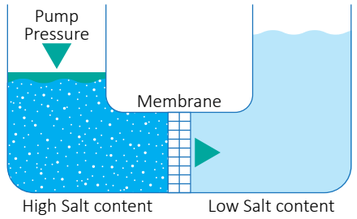
Renovation

WATEX
Pure Water Systems

Reverse Osmosis (RO) systems

WATEX engineering team has a great experience in developing RO units which are continuously implemented in our drinking and process water treatment plant projects.

Reverse osmosis (RO) is the water treatment technology applied for water demineralisation and desalination. Due to the high pressure of raw water input, water molecules pass through semi-permeable membrane from a more concen-trated solution to a less con-centrated one. The salts, heavy metals, organic compounds and microorganisms, dissolved in water are not capable to penetrate through a membrane and are drained as concentrate. Reverse osmosis technol-ogy allows to remove 80-99.7% of all dissolved salts, depending on water composition, used type of membranes and the scheme of plant.



WATEX (RO) systems for Commercial & Industrial applications

Using the high efficiency membrane technology, user friendly control systems combined with reliable designs, WATEX can provide you with a RO system that is fast to ship and easy to install right after delivery.

Benefits with WATEX RO water system:

- Essential operating cost savings vs ion exchange systems
- Enhanced energy efficiency – RO water injected into a gas turbine can improve energy efficiency and increase energy output by >10%
- Tested and produced following highest quality standards
- Trouble free operation
- Perfect taste and clarity
- Customized solutions

Most common RO Water applications:

- Pre-treatment for high-purity water systems
- Cooling Tower Pre-treatment
- Boiler Feed Water Treatment
- Power Generation
- Steam Production & Humidification
- Food & Beverage Production pro-cess water
- Bio-pharmaceutical Manufacturing

Reverse osmosis (RO) is a method for obtaining demineralized water. Reverse osmosis units purify water from 99% of salts, pyro-genic substances and microorganisms. Reverse osmosis process requires no chemicals.

Industrial applications

Reverse osmosis units are used to obtain process water, cooling water, boiler water, rinse water, laboratory water and water for district heating and humidification.

Best solution

To select the most appropriate unit, the following characteristics must be known: water quality, water consumption and application. We'll be happy to find the best possible solution meeting your requirements.

Capacities up to 100 m³/h

SIA WATEX offers reverse osmosis units with capacities up to 45 m³/h. The capacities depend on operating pres-sure, salt content, and temperature. To obtain higher productivity, pressure and temperature must be increased and salt content decreased. Every situation is specific and requires correct selection of pump, membrane type, instrumentation, and unit construction.

Reliable and continuous operation

To ensure trouble-free and long-lasting operation of the RO unit, proper inlet water pre-treatment is required. Inlet water pre-treatment is necessary to purify water from hardness minerals, precipi-tations, suspended solids that clog the membranes and free chlorine. Hardness minerals can be removed from the inlet water in two ways: through softener or by using antiscalants that dissolve the minerals. Suspended solids are removed by means of a filter with density of 1 µ and free chlorine by means of activated carbon filter.

Cleaning system (CIP)

Calcium salts and bio-fouling clog the membranes, so they must be cleaned time by time. To clean the membranes of reverse osmosis unit, a separate cleaning unit is used. For easy and convenient on-site cleaning of membranes RO unit is equipped with special connections.

Water quality

The obtained conductivity of the water treated by reverse osmosis unit is typically under 15 µS/cm. To obtain water with a conductivity under 5 µS/cm, two units known as double-pass reverse osmo-sis connected in a line are used. If it is necessary to obtain ultra-pure water with conductivity under 0.06 µS/cm, post-treatment of the water is required. For post-treatment, both a mixed-bed ion exchange unit and an electro-deion-ization (EDI) unit may be applied. In EDI process no chemicals is used and it runs continuously. Since CO_2 passes through the membrane, dosing or membrane degassing can be applied to reduce the CO_2 content.

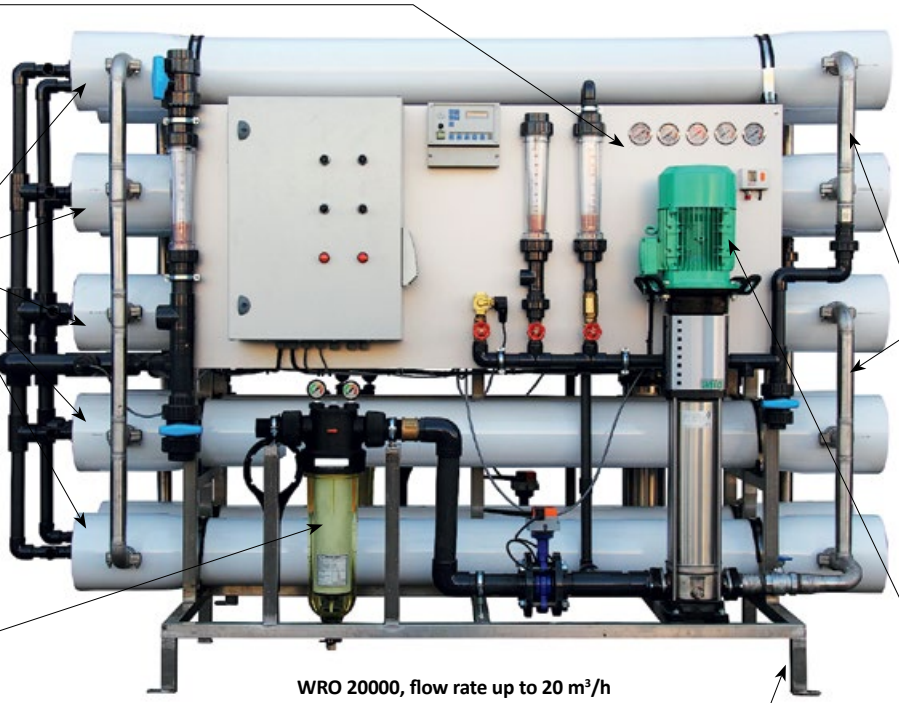
UNIT	Permeate flow		Power consumption	Size (LengthxHeightxWidth)	Connection (in/ out/drain)	Weight
	m³/h	m³/d	kW	mm	mm	kg
WATEX WRO1000	1	24	3	2000x1800x1000	32/25/20	240
WATEX WRO2000	2	48	3	2000x1800x1000	32/25/20	280
WATEX WRO3000	3	72	4	2000x1800x1000	32/25/20	345
WATEX WRO4000	4	96	5,5	3700x1800x1000	32/25/20	695
WATEX WRO5000	5	120	5,5	3700x1800x1000	40/40/25	750
WATEX WRO6000	6	144	5,5	3700x1800x1000	40/40/25	1600
WATEX WRO7000	7	168	7,5	3700x1800x1000	40/40/25	1650
WATEX WRO8000	8	192	11	3700x1800x1000	50/50/32	1720
WATEX WRO9000	9	216	11	3700x1800x1000	50/50/32	1780
WATEX WRO10 000	10	240	11	3700x1800x1000	50/50/32	1850
WATEX WRO12 000	12	288	11	5200x2000x1400	50/50/32	1960
WATEX WRO15 000	15	360	15	5200x2000x1400	65/65/32	2145
WATEX WRO18 000	18	432	15	5200x2000x1400	65/65/32	2300
WATEX WRO20 000	20	480	15	5200x2000x1400	65/65/32	2420
WATEX WRO25 000	25	600	22	6200x2000x1400	80/80/40	2725
WATEX WRO30 000	30	720	22	7200x2000x1400	100/80/40	3030
WATEX WRO35 000	35	840	30	7200x2000x1400	100/80/40	3395
WATEX WRO45 000	45	1080	37	9300x2000x1800	125/100/50	3640

Maximum recovery 80%, Operating pressure ~14 bar, Element size 4" and 8".
Data based on: TDS 500 ppm, Selectivity according NaCl 95-99%, SDI<3, T=10°C

Reliable Monitoring Technology – flow meters and conductivity probes monitor all aspects of the operation. Depending on customer requirements control is managed in fully automatic mode either through a local control panel or a PLC

High Efficiency membranes are used with 99.5% salt rejection to ensure the highest quality water is produced Inlet

Mechanical filtration protection – the RO membranes are protected by 5 micron cartridges contained in a clear plastic housing



Standard pipework is 316 stainless steel on high pressure side and PVC on low pressure side. All pipework complies with food grade standard

High pressure pumps in 316 stainless steel to ensure absolute reliability and corrosion resistance. No need for an extra pump to perform flushing operations.

WRO 20000, flow rate up to 20 m³/h

Frame mounted for ease of transport and simple installation. Stainless steel is used for system framing.

OPTIONAL FEATURES

- CIP station and tank for chemical cleaning of membranes
- Dosing station for chemical pre-treatment
- PLC operating controller
- Process visualisation
- Monitoring of system parameters
- Additional conductivity meter
- Pressure drop switches
- Electromagnetic flow meters
- Temperature switch
- Frequency inverter for pump control

WATEX headquarters and production facilities are located in Riga, Latvia

Watch Our-Online presentation here!

WATEX
Pure Water Systems

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