Water Treatment

Engineering & Construction

Reverse Osmosis
RO TWD Mod.

Rev 06/02

REVERSE OSMOSIS RO TWD 3000 – 25000

Tap or low salinity water demineralizing units

OVERVIEW

The **RO TWD Mod.** reverse osmosis tap water demineralizing units are used for demineralized water production for industrial use (heating plants, food, pharmaceutics, electronics industry, etc.).
The models from the TWD 3000 to the TWD 25000 have productive capacities that range from 3 m^3/h to 25 m^3/h of produced permeate. The demineralization units operate, efficiently, in a continuous way, consequently the necessary productive capacity is given from the daily need of permeate divided by the 24 hours that the unit is operating. It is advisable to have an accumulation tank of the produced permeate.
The TWD units are equipped with a sequestrant agent dosage group that prevents the precipitation of incrusting salts on the membranes. Furthermore, the unit may require an additional dosage group or alternatively an active carbon filter to reduce the chlorine present in the water to be treated. Post-treatment made up of a degassing tower can be introduced if it is necessary to eliminate the carbon dioxide present in the permeate and increase the Ph. The use of a station for the periodic washing of the membrane is always advisable.

DESIGN DATA

➢ Feed water temperature	15	°C
➢ Feed water TDS	500	mg/l
➢ Pre-feed pressure	3	bar
➢ Permeate back pressure	0.5	bar
➢ Power supply (*)	380/50	V/Hz
➢ Average recovery	75	%

(*) Versions with single-phase power supply and/or with a frequency of 60 Hz are available on request.

OPERATIONAL LIMITS

In order to guarantee the long lasting performance of the membranes, the intake water of the reverse osmosis unit must respect the following limits:

➢ SDI	< 3	
➢ Iron	< 0,05	mg/l
➢ Manganese	< 0,05	mg/l
➢ Chlorine and oxidant	0,0	mg/l

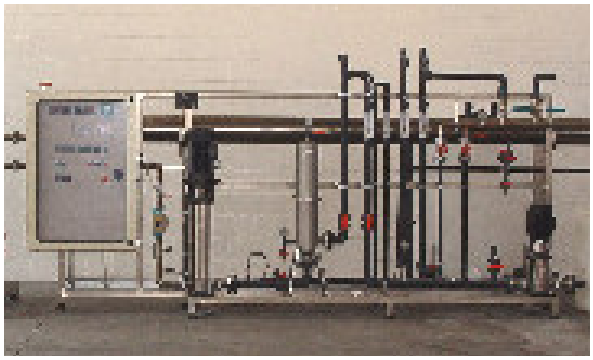
➢ Bacterial and organic substances concentration following the requirements of a drinking water
➢ Absence of oils, sulphides and polluting substances in general

PERFORMANCE

According to the so-called design conditions and in respect of the operational limits, our desalinization units guarantee the performance indicated in the "Technical Data" table with a TDS value of the permeate < 10 mg/l (electrical conductivity < 15 µS/cm).
Please, contact the WTEC technical department, for different salinity or temperature, or for performance needs that are different from those of the design.

CONSTRUCTION

Models from TWD 3000 to TWD 25000



➢ Cartridge filter, AISI 316 housing, supplied with wire-wound cartridge and 5 micron filtration level.
➢ Centrifugal pump, vertical multistage type in AISI 304.
➢ Reverse osmosis rack composed by high production reverse osmosis modules for brackish water. The modules are of the spiral type with polyamide compound film capable of giving the foreseen performance. The modules are housed in PRFV or AISI 316L containment vessels.
➢ Hydraulic lines, in AISI 316L for high pressure, in PVC for low pressure.
➢ Pressure regulator valve in AISI 316
➢ Circulation flow-rate valve in AISI 316 (where requested).
➢ Control instruments:
- 3 pressure gauges in glycerine bath, scale 0-6 bar, stainless steel casing, AISI 316 connectors
- 2 pressure gauges in glycerine bath, scale 0-40 bar, stainless steel casing, AISI 316 connectors
- Flow-rate meter with direct reading for the permeate
- Flow-rate meter with direct reading for the concentrate
- Flow-rate meter with direct reading for the circulation (where requested)
- Minimum feed manostat of the high pressure pump
- Maximum delivery pressure manostat of the high pressure pump
- Conductivity meter.

➢ Electrical command panel and automation of the TWD unit, IP55 protection level, for the supply of the high pressure pump, the metering pump and the conductivity meter. Equipped with a PLC to manage the high pressure pump and the instrumentation on the skid of the TWD unit. 2 remote input terminals (levels for Start-Stop of the TWD unit) and one remote output terminals are managed through the panel, for the management of an eventual pre-feed pump or of solenoid valve in feed to the TWD unit.
➢ Arrangement for the washing of the membranes, with by-pass of the high pressure pump and concentrate dump valve.
➢ Preassembly on skid, in AISI 304.
➢ Hydraulic and electrical connections inside the skid of the permeation group.
➢ Sequestrant dosage station, complete with 100 litres PE tank, the metering pump, the level sensor. The group is not assembled to the osmosis skid. See the related card for technical characteristics.

As an option :
- F.C.D. (inverter) for the control high pressure pump.
- Valve, with pneumatic command, for the automatic flushing during the start and the stop of the RO unit.

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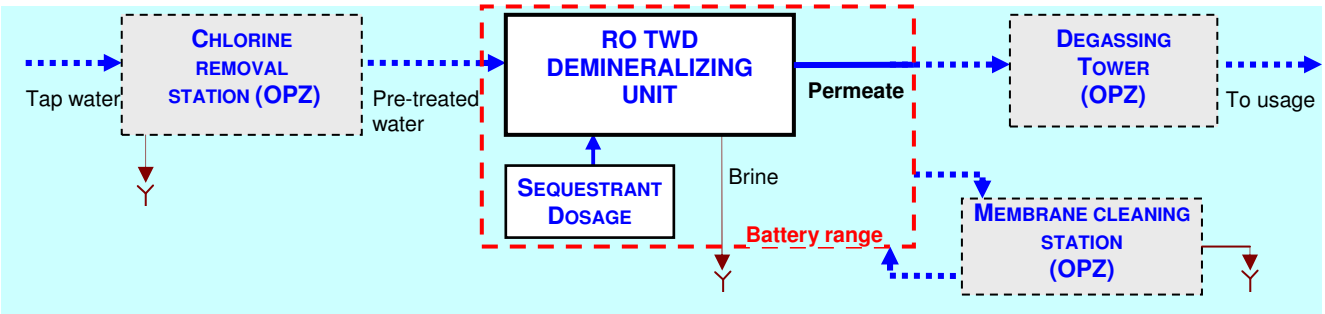
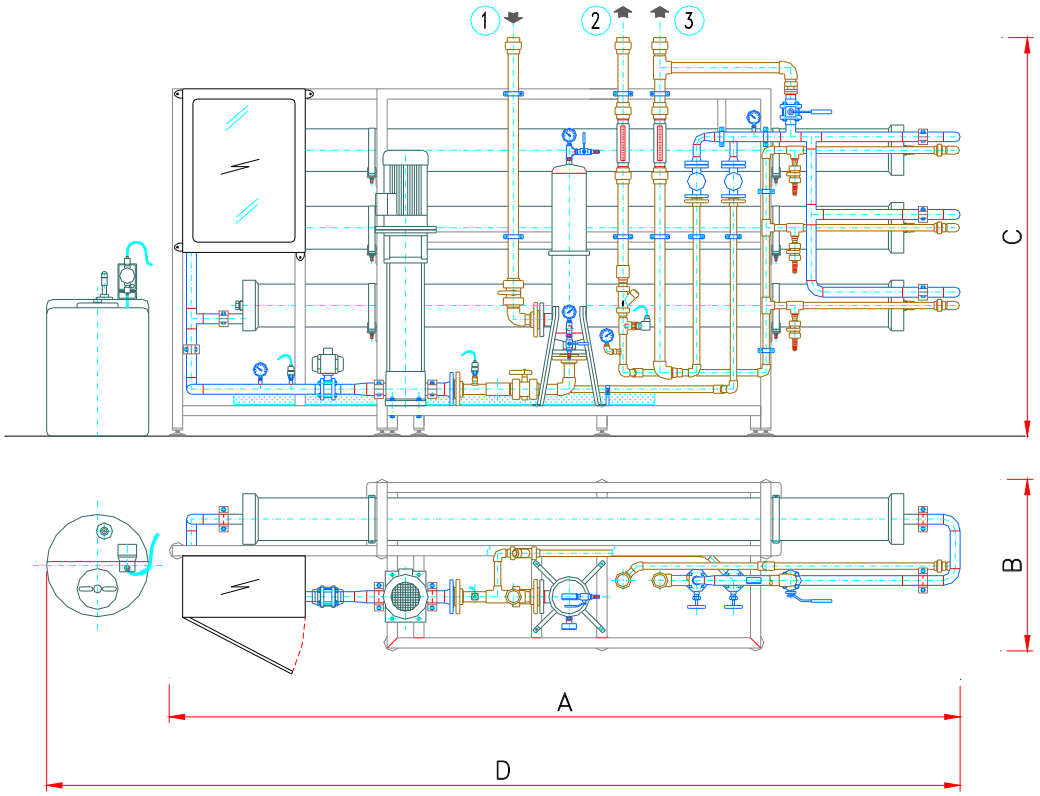
TYPICAL LAYOUT OF A DEMINERALIZING SYSTEM



TYPICAL LAYOUT – Models from TWD 3000 to TWD 25000



CONNECTIONS

1. Feed
2. Permeate
3. Brine

TECHNICAL DATA – Models from TWD 3000 to TWD 25000

Model	Capacity	
	Permeate	Feed
	m^3/h	m^3/h
TWD 3000	3.0	4.00
TWD 4500	4.5	6.00
TWD 6500	6.5	8.67
TWD 8000	8.0	10.67
TWD 10000	10	13.33
TWD 15000	15	20.00
TWD 25000	25	33.33

NB:
- For constructional reasons dimensions and weights are not binding.
- The company holds the right to modify the technical and aesthetic characteristics of each equipment.

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