

Water Treatment



Engineering & Construction

**Reverse Osmosis
RO BWP Mod.**

OVERVIEW

The **RO BWP Mod.** reverse osmosis brackish water desalination unit are used for drinking or irrigation water production. The models from the BWP 2500 to the BWP 25000 have productive capacities that range from 2,5 m³/h to 25 m³/h of produced permeate. The desalination units operate, efficiently, in a continuous way, therefore 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 BWP units are supplied with a sequestrant agent dosage group that prevents the precipitation of incrusting salts on the membranes. According to the complete analysis of the water to be treated, the unit may require an additional pre-treatment section. In order to obtain drinking water from the permeate, a post-treatment must be introduced, made up by a mineral salt dosage unit to re-establish the pH, hardness and alkalinity values, and by a final disinfection. The use of a station for the periodic cleaning of the membranes is always advisable.

DESIGN DATA

➤ Feed water temperature	15	°C
➤ Feed water TDS	3000	mg/l
➤ Pre-feed pressure	3	bar
➤ Permeate back pressure	0.5	bar
➤ Power supply (*)	380/50	V/Hz
➤ Average recovery	70	%

(*) 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 desalination units guarantee the performance indicated in the "Technical Data" table with a TDS value of the permeate < 400 mg/l (electrical conductivity < 700 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 BWP 2500 to BWP 25000

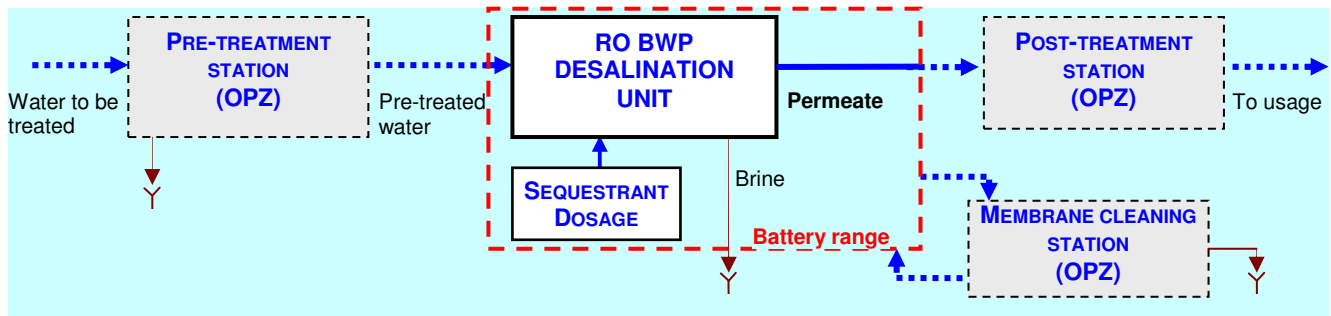
- Cartridge filter, AISI 316 housing, supplied with wire-wound cartridge and 5 micron filtration level.
- Centrifugal pump, vertical multistage type in AISI 316.
- Reverse osmosis rack composed by high production reverse osmosis modules for brackish water. The modules are of the spiral type with polyamide compound film, capable of giving the foreseen performance. The modules are housed in PRFV or AISI 316L containment vessels.
- Hydraulic lines, in AISI 316 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 0-25 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 BWP unit, IP55 protection level, for the supply of the high pressure pump, of the metering pump and the conductivity meter. Supplied with a PLC to manage the high pressure pump and instrumentation on the skid of the BWP unit. 2 remote input terminals (levels for Start-Stop of the BWP unit) and one remote output terminals are managed through the panel, for the management of an eventual pre-feed pump.
- Arrangement for the washing of the membranes, through 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 and the level sensor. The group is not assembled to the osmosis skid. See the related card for technical characteristics.



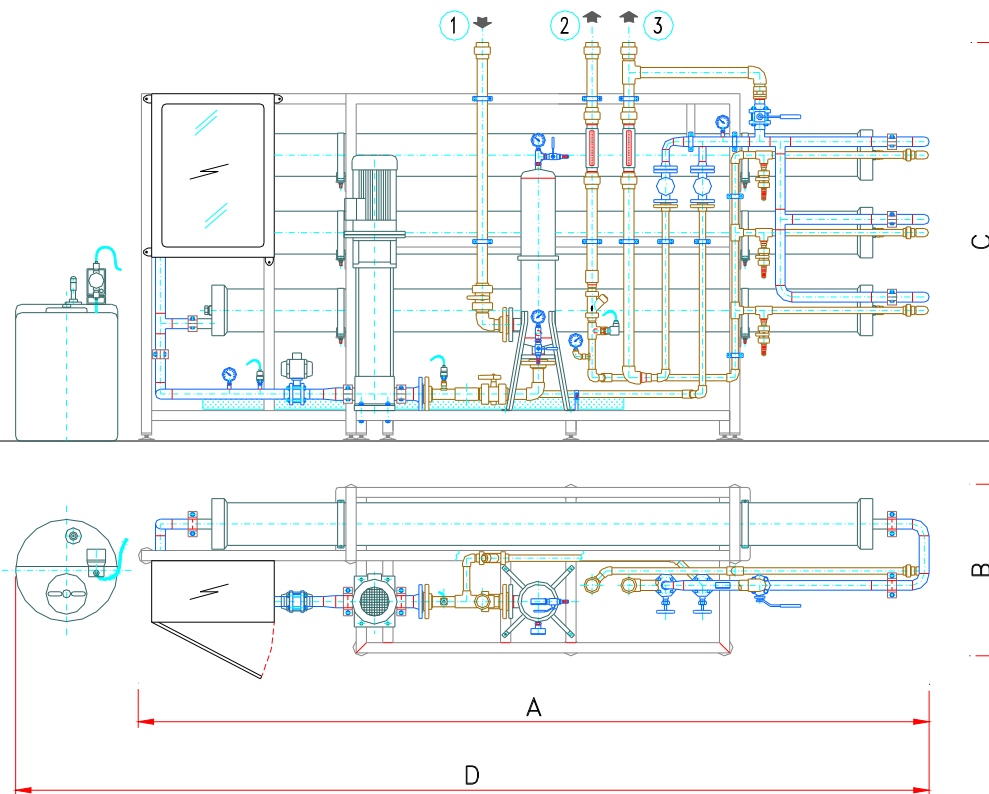
As an option :

- 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.

TYPICAL LAYOUT OF A DESALINIZATION SYSTEM



TYPICAL LAYOUT – Models from BWP 2500 to BWP 25000



CONNECTIONS

- 1 Feed
- 2 Permeate
- 3 Brine

TECHNICAL DATA – Models from BWP 2500 to BWP 25000

Model	Capacities	
	Permeate	Feed
	m ³ /h	m ³ /h
BWP 2500	2.5	3.6
BWP 3500	3.5	5.0
BWP 5000	5	7.1
BWP 7500	7.5	10.7
BWP 10000	10	14.3
BWP 15000	15	21.4
BWP 25000	25	35.7

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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