



EPECO.USA



**High Brackish Water
Reverse Osmosis Desalination Plants**

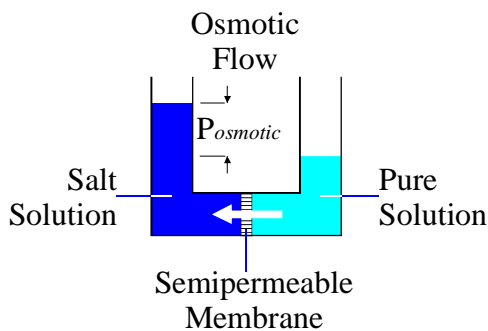
EP.RO.B *h*
series 2000

***Modular Skid/Frame Mounted
up to 2000 m³/day per Skid***

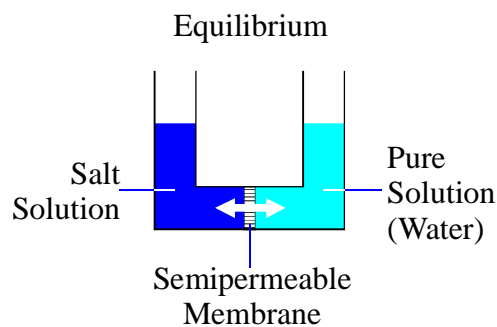
EP.RO.Bh

The design and construction of the **EP.RO.Bh** brackish water desalination systems are primarily designed to treat highly brackish water. In general, ground or surface water with an increased salt content (up to 10'000 mg/l) is referred to as brackish water. **EP.RO.Bh** can control the substances in the raw water and produce drinking water or process water for industry.

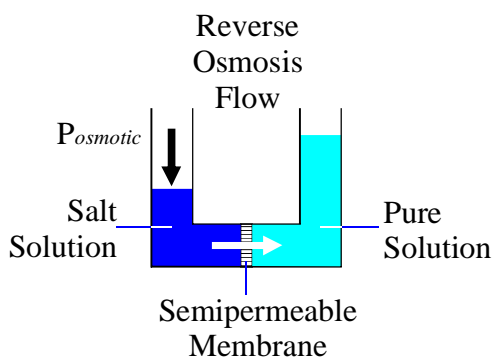
Reverse Osmosis How it works?



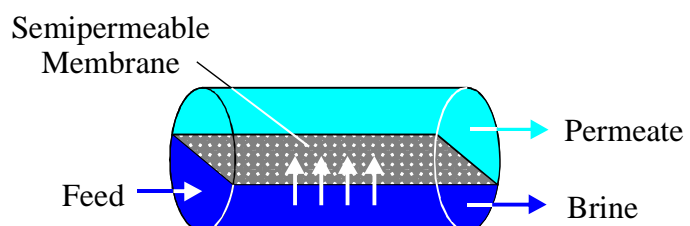
In nature, salt and pure solutions; separated with semi permeable membrane will try to reach equilibrium-equal concentrations of material at both sides of the membrane. The only way to achieve equilibrium is to allow pure water to pass through the semi-permeable membrane to dilute the salt solution. This phase of "attempting to reach equilibrium" is called osmosis process. The osmosis process continues till the pressure in the salt solution side is built up to a certain value then the flow stops. This pressure is called "osmotic pressure".



The osmosis process is reversible. By applying osmotic pressure on salt solution side, water can pass through semi-permeable membrane to the pure water side leaving salts behind. This is called reverse osmosis RO process. The RO process is widely used in water desalination.



In practice, the RO devices are cross flow filtration where the feed stream is split into permeate(pure) and brine (concentrate/reject) streams. The cross flow configuration allows for continuous duty process as the concentrate sweeps away the membrane 's rejected salts and discharge them to the brine stream.



EP.RO.Bh ...series 2000.....The Product

EP.RO.Bh ...series 2000 product range comprises medium-sized units for the production of drinking water. **EP.RO.Bh ...series 2000** are designed to desalinate brackish water with a salinity of up to 8,000 mg/l.

Minerals and many other unwanted substances, such as chemicals, bacteria, viruses and heavy metals, are also removed from the water. In addition to drinking water abstraction, the systems can also be used to desalinate potable water to create pure water.



EP.RO.Bh ...series 2000 product range comprises pre-configured systems of various sizes. Several units can be adapted at no extra cost according to the individual capacity needs and requirements of users.

EP.RO.Bh ...series 2000 product are available in basic four standard sizes:

- 500 m³/day
- 1000 m³/day
- 1500 m³/day
- 2000 m³/day



EP.RO.Bh ...series 2000.....The Configuration

.....High Capacity Technology

EP.RO.Bh ...series 2000 plants are used to reject bacteria, sugars, proteins, particles, dyes, and other constituents that have a molecular weight of greater than 150-250 daltons from brackish water. **EP.RO.Bh ...series 2000** plants is also capable of purifying water and remove salts and other impurities. **EP.RO.Bh ...series 2000** plants comes as standard with fine filters, chemical and antiscalant dosing, high pressure pump, RO membranes & vessels a control pannel, all built on a skid or frame. **EP.RO.Bh ...series 2000** plants can be customized to fit individual customer and water application needs.



.....Compactness

EP.RO.Bh ...series 2000 plants are also available in standard 20 or 40 ft marine containers. Air conditioned containers are also available as an option. Capacity up to 2000 m³/day can be built on a single skid, frame and/or container.

.....Versatility

EP.RO.Bh ...series 2000 plants , can be built with standard with media pre-filters, chemical dosing. These systems are usually customized to fit individual customer and water application needs, and is considered to be one of the most compact industrial reverse osmosis systems in the market, it also features state of the art energy saving membranes.



.....Reliability

EP.RO.Bh ...series 2000 plants , incorporate the latest in RO technology to remove dissolved minerals, particles, organics, solids and other contaminants from water. incorporates RO membranes as its core separation technology to reject these contaminants. Most reputable membranes manufacturers such as Dow Filmtec and Hydranautics (USA made) are used.

l.....User Friendly

EP.RO.Bh ...series 2000 plants are designed in user friendly discipline for easy and environmentally conservative operation. Fully automated process control via human-machine-interface technology supported by process logic control PLC framework.

l.....Eco-Friendly

EP.RO.Bh ...series 2000 plants will provide by design maximum recovery with minimum brine disposal, minimum chemicals and minimum specific energy consumption. Very high rejection membranes with low energy membrane configurations will allow for eco-friendly process.

Standard

Steel Frame/Skid, Epoxy coated.
8" TFC Spiral Wound Membranes.
FRP Membrane Housing.
Stainless Steel Multi-Stage High Pressure Pump with TEFC motor.
Fine Filter, 5 micron.
NEMA 12 Control Panel.
PLC Control.
Programable Time Delay and Set Point
HMI Screen.
Star Delta Motor Starter.
Low Pressure Switch.
High Pressure Switch.
Liquid filled Pressure Gauges.
Permeate Conductivity Monitor.
Permeate & concentrate flow meters.
Power Supply 380-400v/3ph/50 hz.

Optional

Filter Feed Pumps.
Media Filters.
Prechlorination Dosing.
Dechlorination Dosing.
Acid Dosing
Antiscalant dosing.
pH Adjustment Dosing
Post Chlorination Dosing
Stainless or Aluminum Skid.
Enclosure.
Stainless Steel Pressure Vessels.
Total Plant Motor Control Center.
Remote Monitoring.
Feed Water Conductivity Monitor.
In Place Membrane System-Skid Mounted.
Automatic Membrane Flushing.
Feed / Permeate Blending.
Product Tank Level Switch.
Feed pH controller with Sensor.
Feed ORP Controller with Sensor
Hour Meters.
Power Supply 220V or 380-415V/3Ph/60.
Export Crating.



EP.RO.Bh ...series 2000.....Technical

model	Product Capacity CMD	Vessels x Membranes	Membranes Dia. x No.	motor Kw	Wt. (Dry) Kg.	LxWxH M
EP.RO.Bh 500	500	4 x 6	8" x 24	18.5	2050	6.2 x 2.5 x 2.5
EP.RO.Bh 750	750	5 x 6	8" x 30	22.0	2200	6.2 x 2.5 x 2.5
EP.RO.Bh 1000	1000	7 x 6	8" x 42	30.0	2350	12.0 x 2.5 x 2.5
EP.RO.Bh 1500	1500	10 x 6	8" x 60	45.0	3400	12.0 x 2.5 x 2.5
EP.RO.Bh 2000	2000	15 x 6	8" x 90	55.0	4200	12.0 x 2.5 x 2.5

- [1] All membranes are 8 inch diameter high rejection spiral wound thin film composite.
- [2] All electric power mains are 380-400v/3ph/50hz. Alternative power mains are available.
- [3] All plants are built on a frame, however skid mounted or enclosure for outdoor or mobile application is available on request.
- [4] All models are built on standard 6 x 2.5 m skid or 12 x 2.5 m containing chemical systems and control panel. Container frames or enclosed containers 6.2 x 2.5 x 2.5 or 12 x 2.5 x 2.5 m.

Operating Data

Temperature feed water (Design): 25 °C
Temperature feed water (Max): 42 °C
Recovery
Required inlet pressure (min/max) :
1.4/5.5 bar
Salinity product water(max.): < 500 mg/l
Efficiency: 50 – 75 %
Maximum operating pressure: 10 – 17
bar
Salt rejection: approx. 98 %
Energy consumption per m³ of product
water: approx. 1.3-2 kW

Feed Water Characteristics

Salinity feed water: up to 8,000 mg/l
Silica Tolerance (max): < 50 mg/l
Iron Tolerance (max): < 0.05 mg/l
pH Tolerance: 3-11
Hydrogen Sulfide Tolerance: Nil
Turbidity Tolerance: Nil