

GWT^(R) Series

Sea Water Desalination Systems

Presentation



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GWT Series Sea Water Desalination Systems

What is the Sea Water Desalination Process?

Sea Water Desalination is a process of molecular separation via membrane technology to reduce the dissolved salt and mineral content of sea water to a suitable level for human and animal consumption, industrial and irrigation uses.

The Seawater Desalination Process involves three water streams.

- * Sea water intake source
- * Product / Permeate water of low salt content
- * Concentrate water of high salt content



Market Segments

- **Industrial**
- **Commercial**
- **Municipal**



GWT Sea Water Desalination System Applications

- Oil & Gas Facilities / Oil Platforms
 - Power Plants
 - Cities/ Coastal Villages
 - Hotels / Resorts
- Cruise Ships / Military Ships
- Commercial/ Residential Coastal Developments
- Fishing Vessels
- Fish Processing Facilities
- Etc...



Sea Water Desalination Process

There are five basic stages to the sea water desalination process

- Open Intake ocean Water / Coast or Beach Well Feed Water
- Pre-Treatment – Filtration/ Anti-scalant Dosage (Intake Basin, Backwash Filters, Cartridge)
- Reverse Osmosis Process
- Post Treatment – Calcite pH Adjustment / Chlorine Disinfection
- Storage/ Distribution
- Reverse Osmosis Brine Discharge To Sea



GWT Sea Water Desalination System Advantages

Advantages / Benefits

- GWT sea water desalination systems are designed, engineered and custom built based on a specific water analysis provided by the client to meet their specific water needs.
- GWT series commercial/industrial sea water desalination systems utilize advanced energy recovery devices, nano-composite membranes, and our unique DLP series nano fiber cartridge filtration to optimize permeate water quality, and provide higher water production while reducing operational costs and system footprint.
- Lower capital outlay, operating and maintenance costs
- GWT sea water desalination systems are capable of performing effectively in multiple applications and with varying salt water feed TDS levels from 10,000 ppm up to 42-45,000ppm
- Solid System Warranty and Technical Support
- Technical Support / System Consumables Agreements Available



GWT Sea Water RO Systems

High Permeate Water Quality

- Essential for High TDS Sea Water Conditions
- Typical TDS Level After Treatment < 500ppm TDS
- Treatment process is very effective in the removal of colloidal particles, viruses, dissolved organic ions and inorganic particles.



GWT Sea Water RO System System Projections Sea Water – Open Intake

Permeate flow rate per RO train	92.5 gpm (500 m ³ /day)	Average Flux	9.25 GFD	Temperature	25 C
Feed flow rate	206 gpm	Water Source	Seawater – Open Intake	Average NDP	151.80
Concentrate flow rate	113 gpm	Feed TDS	36000ppm	Specific Energy	3.24 kWh/1000gal
Recovery Rate	45.0 %	Osmotic Pressure Feed	381.41 psi	Feed Pressure	744.47 psi
Number of Elements	36	Osmotic Pressure Concentrate:	691.84 psi	Permeate TDS	240.33 ppm
ERD Device	Turbo/Turbine	Pump Efficiency	100%	Fouling Factor	1.0

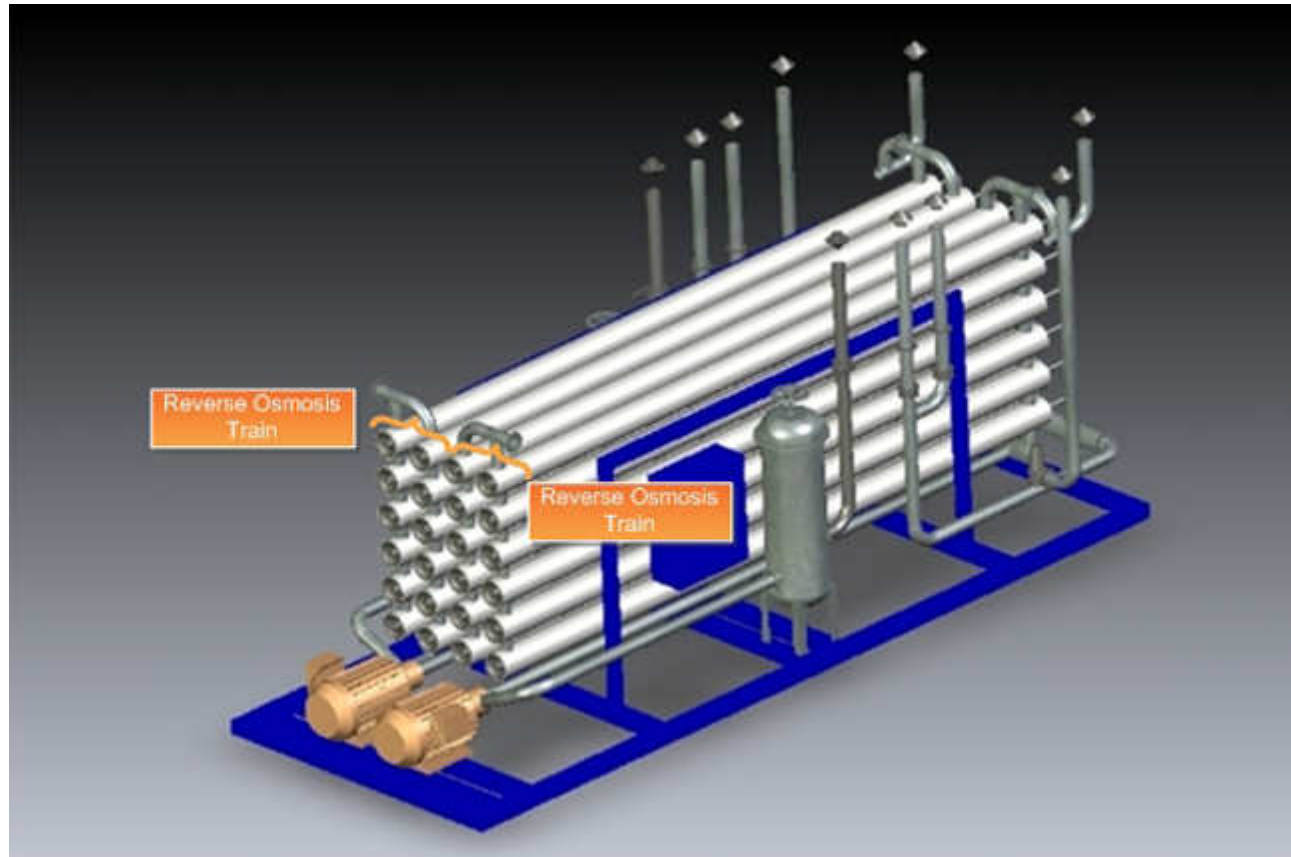
GWT Sea Water RO System System Projections Sea Water – Open Intake

Permeate flow rate per RO train	185 gpm (1000 m3/ day)	Average Flux	7.93 GFD	Temperature	25 C
Feed flow rate	411 gpm	Water Source	Seawater – Open Intake	Average NDP	159.00
Concentrate flow rate	226 gpm	Feed TDS	38000ppm	Specific Energy	3.37 kWh/1000gal
Recovery Rate	45.0 %	Osmotic Pressure Feed	404 psi	Feed Pressure	773 psi
Number of Elements	84	Osmotic Pressure Concentrate:	733 psi	Permeate TDS	287.57 ppm
ERD Device	Turbo/Turbine	Pump Efficiency	100%	Fouling Factor	1.0

GWT Sea Water RO Systems



GWT Sea Water RO Systems



3D Sea Water RO System (Two Trains)

GWT Sea Water Desalination Systems Summary

- GWT sea water desalination systems provide a sustainable, cost effective solution to meet your specific desalination needs.
- GWT series commercial/industrial sea water desalination systems utilize advanced energy recovery devices, nano-composite membranes, and our unique DLP series nano fiber cartridge filtration to optimize permeate water quality, and provide higher water production while reducing operational costs and system footprint.
- Lower capital outlay, operating and maintenance costs
- GWT sea water desalination systems are capable of performing effectively in multiple applications and with varying sea water feed TDS levels up to 42-45,000ppm.





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