

General Technical Specification

Seawater Reverse Osmosis (SWRO) Desalination Plant

Scope of Work

The Contractor shall supply, test, deliver, install, commission, and guarantee a complete Seawater Reverse Osmosis (SWRO) desalination plant capable of producing not less than **100 m³/day of potable water** from seawater.

The plant shall be supplied as a factory-assembled skid-mounted system complete with pretreatment, reverse osmosis system, cleaning system, instrumentation, controls, interconnecting piping, electrical components, and all accessories necessary for reliable

General Design Criteria for 100 m³/day SWRO Plant

Parameter	Requirement
Plant Type	Seawater Reverse Osmosis (SWRO) Desalination Plant
Design Capacity	Minimum 100 m ³ /day permeate production
Operating Mode	Continuous automatic operation, 24 hours/day
Feed Water Source	Open sea, Borehole, or equivalent seawater source
Feed Water Temperature	20°C - 35°C
Product Water Quality	Comply with WHO Drinking Water Guidelines and local potable water standards
Product Water TDS	Maximum 500 mg/L
RO Recovery Rate	Optimized by supplier; typically 35% - 45%
Plant Availability	Minimum 95% excluding scheduled maintenance
Pretreatment	Suitable pretreatment system to protect RO membranes and ensure SDI within membrane manufacturer limits



RO Membranes	Seawater RO membranes suitable for high salinity feed water
Post Treatment	pH correction, remineralization, and disinfection as required for potable water production
Automation Level	Fully automatic PLC-based control system
Operator Interface	Local HMI with alarm and operational monitoring
Materials in Contact with Seawater	Duplex SS, Super Duplex SS, SS316L, FRP, HDPE, UPVC, CPVC, or approved equivalent
High Pressure Components	Designed for SWRO operating pressure with appropriate safety factor
Corrosion Protection	Suitable for marine and tropical environments
Ambient Temperature	20°C - 45°C
Electrical Supply	As available at site (typically 415V, 3 Phase, 50Hz)
Protection Systems	High/low pressure protection, dry-run protection, overload protection, emergency shutdown
Cleaning System	Complete CIP (Cleaning-In-Place) system included
Chemical Dosing	Anti-scalant, preservative, pH adjustment, and cleaning chemical dosing as required
Standards	ISO, IEC, ASTM, ASME, AWWA, WHO, and other applicable international standards
Documentation	GA Drawings, O&M Manuals, Electrical Drawings, Spare Parts List, Test Certificates
Testing Requirements	FAT, SAT, commissioning, and performance testing

