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## SWRO-200C

### Centrifugal Pump Design

This specification defines the integrated design requirements for the SWRO line of skids for the Industrial, Power and Municipal markets. All necessary equipment required for independent operation is provided given the necessary pretreatment pre-cautions are taken. Design basis includes containerized system with centrifugal feed pump as well as a containerized media filter and cartridge filter system. Optional configurations available based on market needs.

#### Functional Description

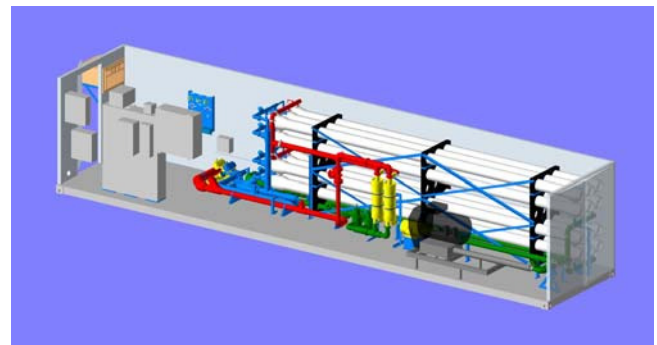
Single pass, single stage, twelve pressure vessels total. Each pressure vessel contains 7 thin film composite elements in series for a total of 84. System produces 1,091 m<sup>3</sup>/day (45 m<sup>3</sup>/hr, 200 gpm) of product water at 40% recovery.

#### Operating Parameters

- TDS..... 37,000-45,000 mg/l (as NaCl)
- SDI15..... < 3.0
- Temperature ..... 25 to 35°C (77 to 95°F)
- Recovery ..... 40 to 36%
- Nominal Rejection ..... >98% **Note:** Required 3 bar (45 psi) minimum customer supplied pressure to HP RO Feed Pump. Temperatures and high salinities will reduce system productivity

#### Standard Components

- Container designed for oversea transportation
- High Pressure Centrifugal RO Feed Pump w/ 380/460V 3 phase 50/60 Hz TEFC motor
- Energy Recovery Device and Booster Pump



- VFD for Booster Pump & Feed Pump
- Valves: Permeate diversion valves, diaphragm valve for ERI reject out, isolation butterfly valves

#### Control Features & Power Requirements

- GE Fanuc Versamax Micro PLC with 6-inch Quickpanel HMI
- Remote start/stop & alarm capabilities
- Zero recovery flush on shutdown
- Power: 380/460V, 3 phase, 50/60 Hz, UL listed components with CE marking

#### Instrumentation

- Conductivity..... Permeate, Final product
- Flow meters ..... Energy recovery feed, Permeate, Booster pump discharge
- Pressure switch..... RO pump
- Pressure gauges..... liquid filled for high and low pressures
- Gauge Panel ..... four low and three high pressure readings available via 5 way ..... valves for pressure monitoring



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## Membranes & Housings

- Multi Ported FRP pressure vessel design,
  - 1000 psi rated
- Spiral wound thin film composite membranes

## Materials of Construction

- Power Distribution Panels .....NEMA 12
- Control Enclosure ..... NEMA 4X
- High pressure piping.....Zeron 100

- Low pressure piping .....PVC Schedule 80
- Low Pressure Tubing..... Polyethylene
- High Pressure Tubing.....Parflex
- PVC Sample Valves on each vessel, feed, per- meate and reject

**Nomenclature:** SWRO    XXXC -

YY - ABCD....

Product Line

Capacity

Feed Pump Selection

Option Selections (Custom)

SWRO-Seawater Reverse Osmosis

Permeate flow rate in gpm  
C: Containerized

CP-Centrifugal Pump

Options chosen from lettered options list shown

## Physical Data

Container Weight:

- SWRO-200C: 16,500lbs (7,500 kg) dry membranes not included
- Membrane Weight: 3,360lbs (1,525 kg)

## Dimensions

**SWRO-200C Container:**

- 480" L x 96" W x 96" H
- 12,192 mm L x 2438 mm W x 2438 mm H

**SWRO-200C Overall:**

- 480" L x 456" W x 96" H
- 12,192 mm L x 11,582 mm W x 2438 mm H

**Power Consumption:**

- ~3.0 kW hr/m<sup>3</sup>

## Example

SWRO-200C-CP-AG

200 gpm standard SWRO container with centrifugal feed pump, pretreatment container, and SBS chemical feed

## Option Package Codes:

- Pretreatment Container with multimedia and cartridge filters 480" L x 96" W x 96" H
- ASME Code stamped pressure vessels
- Post-treatment degasifier
- 380 V, 3 Ph, 50 Hz fuse, A/C, Lighting kit
- pH meter and H<sub>2</sub>SO<sub>4</sub> chemical feed
- NaOCl pretreatment chemical feed
- SBS chemical feed
- Installation and commissioning supervision/services are available

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