

SeaPRO Series 60 Hz

Seawater Desalination Machines 35,000 ppm NaCl
20-60 gpm (4.5-13.6 m³/hr)

Basic Features (BAS)

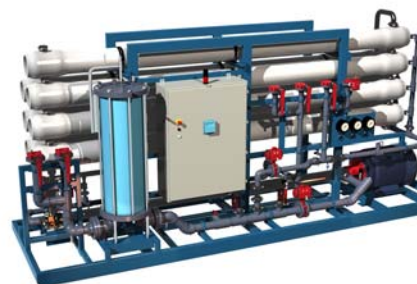
- GE Fanuc Quick Panel 6-inch, 6-inch color display, Primarily text operating screens, Touchscreen controls
- GE Fanuc Micro VersaMax Communication: RS232/DH485, Analog output: 6 points
- 4-20 mA instruments displayed on instrument center
- Variable frequency drive (VFD) for high pressure pump
- Stand alone master control enclosure, skid mounted local control enclosure with terminal strips

Premium Features (PRE)

- GE Fanuc QuickPanel 12-inch, 12-inch color display, Text and pictorial operating screens, Touchscreen controls
- GE Fanuc VersaMax Communication: RS232/DH485/Ethernet, Analog output: 4 points
- 4-20 mA instruments on PanelView
- Primary and final pressure transmitters
- Variable frequency drive (VFD) for high pressure pump
- Automated valves and control for full permeate flush upon shut down
- Stand alone master control enclosure, skid mounted local control enclosure with remote I/O

Instrumentation

Flow Meters..... Permeate, concentrate
 Conductivity..... Permeate
 pH.....Feed
 Pressure..... Pre-filter, post-filter, primary, final, permeate, concentrate, pump discharge (PRE Feature= Primary, Final transmitter)
 Pressure Switch.....Feed, permeate, concentrate
 Instrument center.....Thornton 770 MAX



Options Available

- Allen Bradley control system
- Multi-Media filters
- Clean-in-Place (CIP) units
- Chemical feed systems

Documentation Included

- Operation and maintenance manual
- Control narrative
- Drawings: piping and instrumentation, electrical and general dimensional

Operating Parameters

Recovery 40 - 45%
 Design temp..... 77°F (25°C)
 Design Feed TDS..... 35,000 ppm NaCl
 Operating range..... 35 to 85°F (1.6 to 29.4°C)
 Minimal inlet pressure 30 psi (2 Bar)

Materials of Construction

High-pressure piping Sch. 10, Duplex 2205 Stainless Steel
 Low-pressure piping Sch. 80, PVC
 Frame.....Painted carbon steel
 Local Enclosure..... FRP, NEMA 4X
 Main Enclosure.....Painted carbon steel, NEMA 4
 VFD Enclosure Painted carbon steel, NEMA 4
 Clamps/fittings..... Zinc-plated

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Membrane Elements and Housings

StyleSpiral-wound elements
 Membrane type..... TFC HR (Polyamide)
 Element Area.....400 ft²
 Average membrane flux.....8-10 GFD
 Housing material.....FRP, 80 Bar (1200 psi)
 Housing closure type.....Ring and plate style closure

Cartridge Filtration

Housing material GRP (glass reinforced plastic)
 Cartridge filter 5-micron nominal, ROsave.Z*s

SeaPRO Models

MODEL	SeaPRO-8	SeaPRO-16	SeaPRO-28
Permeate rate:	28.8k gpd 20 gpm (4.5 m ³ /hr)	57.6k gpd 40 gpm (9.0 m ³ /hr)	86.4k gpd 60 gpm (13.6 m ³ /hr)
Concentrate Rate:	30 gpm (6.8m ³ /hr)	49 gpm (11.1 m ³ /hr)	74 gpm (16.8 m ³ /hr)
Feed Rate:	50 gpm (11.4 m ³ /hr)	89 gpm (20.2 m ³ /hr)	134 gpm (30.4 m ³ /hr)
Pumps and Motors			
Model:	MSS 1540	MSS 2026	MSS 3029
Manufacturer:	Osmonics/FEDCO SM	Osmonics/FEDCO SM	Osmonics/FEDCO SM
Quantity:	1	1	1
Motor HP and type:	40Hp (29.9 kW) TEFC	60Hp (44.7 kW) TEFC	100Hp (74.5 kW) TEFC
Design Flow Rate:	50 gpm (11.4 m ³ /hr)	90 gpm (20.4 m ³ /hr)	135 gpm (30.7 m ³ /hr)
Design boost pressure:	665 psig (45.9 Bar)	670 psig (46.2 Bar)	660 psig (45.5 Bar)
Energy Recovery Booster			
Model:	HPB 20	HPB 20	HPB 30
Manufacturer:	Osmonics/FEDCO SM	Osmonics/FEDCO SM	Osmonics/FEDCO SM
Quantity:	1	1	1
Design boost pressure:	260 psig (17.9 Bar)	255 psig (17.6 Bar)	270 psig (18.6 Bar)
Membrane Elements and Housings			
Membranes quantity:	8	16	28
Memb. housing style:	4 element long, 4 port	4 element long, 4 port	4 element long, 4 port
Banking Arrangement:	1→1	2→2	4→3
Cartridge Filtration			
Cartridge Filter:	ROZs05-40XK	ROZs05-40XK	ROZs05-30XK
Filter Length:	40" (102 cm)	40" (102 cm)	40" (102 cm)
Filter Quantity:	6 per change out	10 per change out	22 per change out
Installation and Utility Requirements			
Inlet:	1.5" flange	2.0" flange	3.0" flange
Permeate:	1.0" flange	1.5" flange	2.0" flange
Concentrate:	1.5" flange	1.5" flange	2.0" flange
Inlet Water Pressure:	30 psig, minimum	30 psig, minimum	30 psig, minimum
Air Pressure:	100 psig, oil-free	100 psig, oil-free	100 psig, oil-free
Drain to be Sized for:	50 gpm (11.4 m ³ /hr)	89 gpm (20.2 m ³ /hr)	134 gpm (30.4 m ³ /hr)
Power:	230/460 VAC, 3-phase, 60Hz	230/460 VAC, 3-phase, 60Hz	230/460 VAC, 3-phase, 60Hz
Control Circuit:	120 VAC, 1-phase, 60Hz	120 VAC, 1-phase, 60Hz	120 VAC, 1-phase, 60Hz
SeaPRO Skid			
Height:	88" (224 cm)	88" (224cm)	88" (224 cm)
Width:	52" (132 cm)	52" (132 cm)	52" (132 cm)
Depth:	199" (506 cm)	199" (506 cm)	199" (506 cm)
Weight Estimate for Shipping Purposes:	3400 lb (1542 kg)	4000 lb (1814 kg)	4500 lb (2041 kg)



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- Stand alone master control enclosure, skid mounted local control enclosure with terminal strips

Premium Features (PRE)

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- Primary and final pressure transmitters
- Variable frequency drive (VFD) for high pressure pump
- Automated valves and control for full permeate flush upon shut down
- Stand alone master control enclosure, skid mounted local control enclosure w/remote I/O

Instrumentation

Flow Meters.....Permeate, concentrate
 Conductivity.....Permeate
 pH Feed
 Pressure..... Pre-filter, post-filter, primary, final,
 permeate, concentrate,pump discharge
 (PRE Feature = Primary, Final transmitter)



Instrumentation (continued)

Pressure Switch.....Feed, permeate, concentrate
 Instrument center Thornton 770 MAX

Options Available

- Allen Bradley control system
- Multi-Media filters
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- Chemical feed systems

Documentation Included

- Operation and maintenance manual
- Control narrative
- Drawings: piping and instrumentation, electrical and general dimensional

Operating Parameters

Recovery.....35%
 Design temp. 77°F (25°C)
 Design Feed TDS..... 45,000 ppm NaCl
 Operating range 35 to 85°F (1.6 to 29.4°C)
 Minimal inlet pressure30 psi (2 Bar)

Materials of Construction

High-pressure piping..... Sch. 10, Duplex 2205
 Stainless Steel
 Low-pressure piping.....Sch. 80, PVC
 Frame.....Painted carbon steel
 Local Enclosure FRP, NEMA 4X

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Materials of Construction (continued)

Main Enclosure..... Painted carbon steel, NEMA 4
 VFD Enclosure..... Painted carbon steel, NEMA 4
 Clamps/fittings.....Zinc-plated

Cartridge Filtration

Housing material..... GRP (glass reinforced plastic)
 Cartridge filter..... 5-micron nominal, ROsave.Zs

Membrane Elements and Housings

Style Spiral-wound elements
 Membrane type..... TFC HR (Polyamide)
 Element Area..... 400 ft²
 Average membrane flux.....8-10 GFD
 Housing material..... FRP, 80 Bar (1200 psi)
 Housing closure type ... Ring and plate style closure



SeaPRO Models

MODEL	SeaPRO-8	SeaPRO-16	SeaPRO-28
Permeate rate:	28.8k gpd 20 gpm (4.5 m ³ /hr)	57.6k gpd 40 gpm (9.0 m ³ /hr)	86.4k gpd 60 gpm (13.6 m ³ /hr)
Concentrate Rate:	37 gpm (8.4 m ³ /hr)	74 gpm (16.8 m ³ /hr)	111 gpm (25.2 m ³ /hr)
Feed Rate:	57 gpm (12.9 m ³ /hr)	114 gpm (25.8 m ³ /hr)	171 gpm (38.8 m ³ /hr)
Pumps and Motors			
Model:	MSS 1537	MSS 2030	MSS 3030
Manufacturer:	GE Osmonics/FEDCO [®]	GE Osmonics/FEDCO [®]	GE Osmonics/FEDCO [®]
Quantity:	1	1	1
Motor HP and type:	40Hp (29.9 kW) TEFC	75 Hp (55.9 kW) TEFC	100 Hp (74.6 kW) TEFC
Design Flow Rate:	60 gpm (13.6 m ³ /hr)	115 gpm (26.1 m ³ /hr)	170 gpm (38.6 m ³ /hr)
Design boost pressure:	690 psig (47.6 Bar)	660 psig (45.5 Bar)	620 psig (42.7 Bar)
Energy Recovery Booster			
Model:	HPB 20	HPB 30	HPB 40
Manufacturer:	GE Osmonics/FEDCO [®]	GE Osmonics/FEDCO [®]	GE Osmonics/FEDCO [®]
Quantity:	1	1	1
Design boost pressure:	315 psig (21.7 Bar)	340 psig (23.4 Bar)	380 psig (26.2 Bar)
Membrane Elements and Housings			
Membranes quantity:	8	16	24
Memb. housing style:	4 element long, 4 port	4 element long, 4 port	4 element long, 4 port
Banking Arrangement:	2, parallel	4, parallel	6, parallel
Cartridge Filtration			
Cartridge Filter:	ROZs05-40XK	ROZs05-40XK	ROZs05-40XK
Filter Length:	40" (102 cm)	40" (102 cm)	40" (102 cm)
Filter Quantity:	6 per change out	10 per change out	22 per change out
Installation and Utility Requirements			
Inlet:	2.0" flange	3.0" flange	3.0" flange
Permeate:	1.0" flange	1.5" flange	2.0" flange
Concentrate:	1.5" flange	2.0" flange	3.0" flange
Inlet Water Pressure:	30 psig, minimum	30 psig, minimum	30 psig, minimum
Air Pressure:	100 psig, oil-free	100 psig, oil-free	100 psig, oil-free
Drain to be Sized for:	57 gpm (12.9 m ³ /hr)	114 gpm (25.8 m ³ /hr)	171 gpm (38.8 m ³ /hr)
Power:	230/460 VAC, 3-phase, 60Hz	230/460 VAC, 3-phase, 60Hz	230/460 VAC, 3-phase, 60Hz
Control Circuit:	120 VAC, 1-phase, 60Hz	120 VAC, 1-phase, 60Hz	120 VAC, 1-phase, 60Hz
SeaPRO Skid			
Height:	88" (224 cm)	88" (193 cm)	88" (224 cm)
Width:	52" (132 cm)	52" (117 cm)	52" (132 cm)
Depth:	199" (506 cm)	199" (506 cm)	199" (506 cm)
Weight Estimate for Shipping Purposes:	3400 lb (1542 kg)	4000 lb (1814 kg)	4500 lb (2041 kg)