

PRODUCT DATA SHEET

SEA500

Reverse Osmosis Desalination System

504.0 m³/day - Seawater (SWRO)

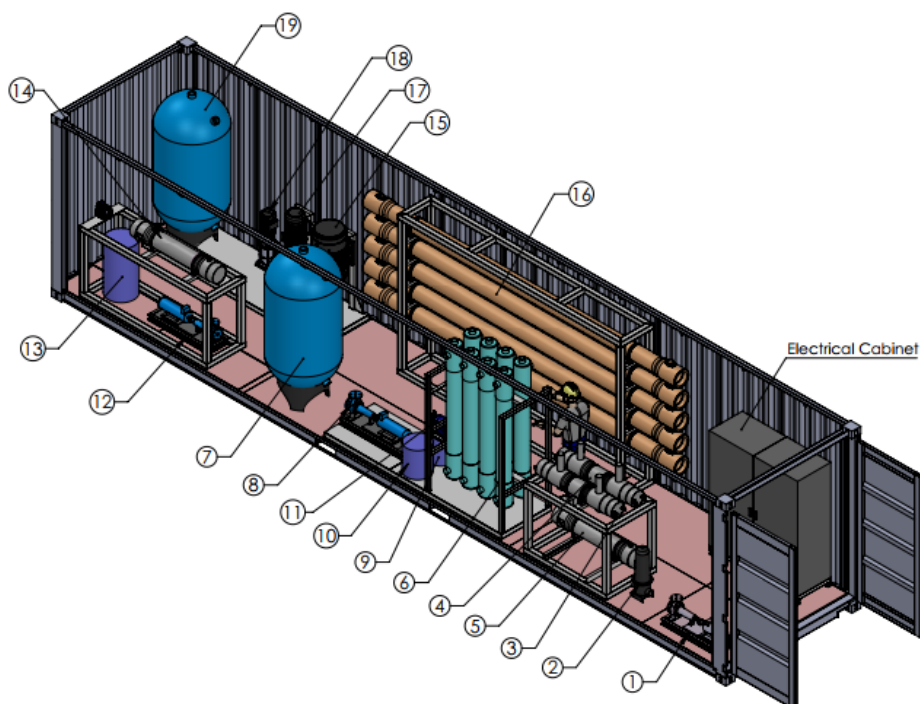
Description

The SEA500 is a seawater reverse osmosis (SWRO) desalination system designed and built according to advanced engineering standards. It produces 504.0 m³/day of high-quality fresh water from seawater, with a specific energy consumption of 1.95 kWh/m³ (among the most efficient in its class).

The system incorporates the Danfoss iSave® energy recovery device, which reduces the net energy requirement to 40.9 kW, saving 47.1 kW compared to a conventional configuration.

The system is fully customizable and can be integrated into a 40-foot ISO container. The containerized configuration ensures transportability by sea, road, or rail, and rapid commissioning with minimal civil works.

POS	DESCRIPTION
1	FEED WATER PUMP (Optional)
2	BASKET FILTER 3000 µm
3	SELF CLEANING FILTER 500 µm
4	SELF CLEANING FILTER 50 µm
5	CARTRIDGE FILTER 50 µm
6	ULTRA FILTRATION UNIT (x8)
7	ULTRA FILTRATION TANK
8	BACKWASH PUMP
9	CHEMICAL TANK (Sodium Hypochlorite)
10	CHEMICAL TANK (Citric Acid)
11	DOSING PUMP
12	RO FEED WATER PUMP
13	CHEMICAL TANK (Antiscalant)
14	CARTRIDGE FILTER 5 µm
15	HP PUMP
16	SWRO SYSTEM (x5)
17	ENERGY RECOVERY DEVICE
18	CLEANING PUMP
19	CLEANING TANK



Technical Data

TECHNICAL DATA — SEA500

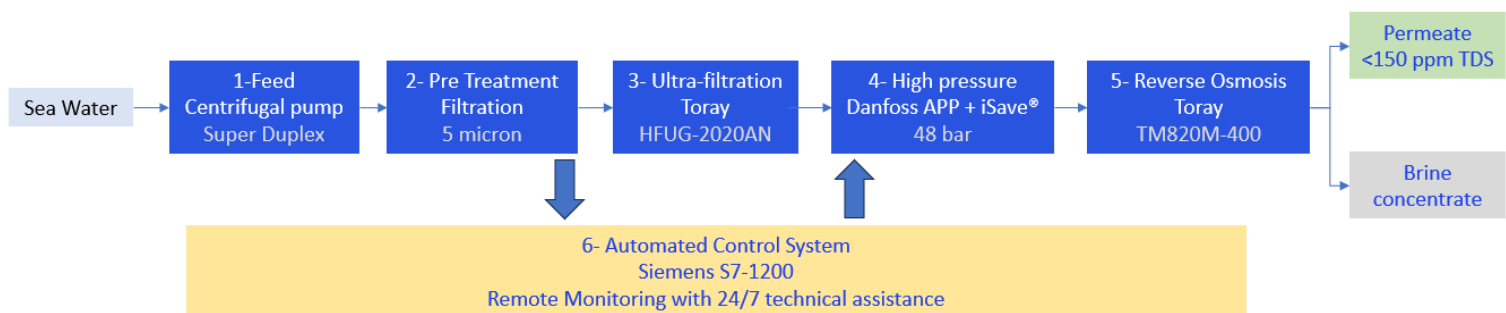
Performance	
Produced water flow rate (permeate)	21.0 m³/h — 504.0 m³/day
Feed water flow rate (seawater)	52.5 m³/h
Recovery rate	40 %
High-pressure pump pressure	52 bar
Permeate quality (TDS)	< 150 ppm
Specific energy consumption	1.95 kWh/m³ (official Danfoss data iSave®)
Installed electrical power (net)	40.9 kW (with iSave® system)

Main Components	
Feed pumps	Centrifugal in Super Duplex
Filtration system	Basket and self-cleaning filters — efficiency up to 5 microns
Ultrafiltration	Membrane Toray HFUG-2020AN
High-pressure pump	Danfoss APP
Energy recovery system	iSave® Danfoss — saving 47.1 kW
Reverse osmosis membranes	Toray TM820M-400
Control system	Siemens S7-1200 — remote monitoring with 24/7 technical assistance

Plant Data	
Plant configuration	Container ISO 40' (12.19 × 2.44 × 2.59 m)
Plant weight	Depending on selected options
Electrical supply	400 Vac / 50 Hz / 3F + N
Seawater inlet connection	DN 4" (flanged)
Permeate outlet connection	DN 4" (flanged)
Feed water	Seawater (SWRO)

Plant configuration

Section / Components	Description
1. Feed <i>Single-stage centrifugal pump</i>	Duplex / Super Duplex material for maximum corrosion resistance in marine environments
2. Pre-treatment <i>Basket filter + 2 self-cleaning filters + 1 cartridge filter</i>	Removal of suspended solids and particulate; final filtration to 5 microns to protect the membranes
3. Ultrafiltration <i>Toray HFUG-2020AN</i>	Hollow-fibre membranes for removal of bacteria, viruses, and colloids upstream of the RO section
4. High Pressure <i>Danfoss APP + iSave®</i>	Danfoss high-pressure pump with integrated iSave® energy recovery — saving 47.1 kW
5. Reverse Osmosis <i>Toray TM820M-400</i>	High-efficiency SWRO membranes for seawater desalination — permeate < 150 ppm TDS
6. Control system <i>Siemens S7-1200</i>	Automated control system for continuous management and monitoring of all process parameters. Remote monitoring with 24/7 technical assistance available.



Key Features

Design Quality

Design compliant with international standards using FEM and CAD methodologies.
P&IDs, IOM and as-built documentation included in the supply.

iSave® Danfoss — Energy Recovery

Integrated iSave® system saving 47.1 kW: specific consumption 1.95 kWh/m³ (official Danfoss data), among the lowest in the SWRO category.

Recovery 40%

Optimized ratio between production and brine discharge, reducing environmental impact and operating costs.

Fully Customizable System

Thanks to SEA's integrated engineering, the system is fully configurable to meet specific requirements (flow rate, filtration level, accessories).

Containerized

Complete system in 40' ISO container: ready for rapid installation, transportable by sea, road, or rail.

Scheduled Maintenance

Structured O&M plan with multi-year contracts, guaranteed spare parts, and dedicated technical support.

Typical Applications

- ▶ Petrochemical industry and refineries
- ▶ Power plants (demineralised water for boilers)
- ▶ Food and beverage industry (process water)
- ▶ Pharmaceutical industry
- ▶ Port terminals and offshore platforms
- ▶ Coastal communities and islands

Why SEA Engineering Solutions

SEA Engineering Solutions designs and builds water treatment systems with a structured and documented engineering approach:

- Design to international standards — the same used in critical industrial environments
- Complete technical documentation: P&IDs, datasheets, Operating Manuals
- Systems custom-designed for the specific needs of each client
- Structured O&M contracts with dedicated technical support and guaranteed spare parts
- Single point of contact from design to commissioning
- 24/7 support

SEA Engineering Solutions

Water Treatment Division

info@seaprogetti.it

www.seaprogetti.org

The data contained in this datasheet are indicative and subject to change without notice. For customized quotations, please contact our technical office.