SIRION™ Pro

Reverse Osmosis for Process Water

SIRION™ Advanced & Pro reverse osmosis system produce high purity water, removing up to 98% of dissolved inorganics and over 99% of large dissolved organics, colloids and particles. Advanced version against Pro equipped with plastic covers granting protection and robust design. Plug & play unit suitable for transportation into a container. All versions available according to European standards.

Flow rates from 100 to 5,000 l/h

- Pharma
- Cosmetics
- Food
- Beverage
- Power
- General Industry

FEATURES & BENEFITS

- VFD for HP pump
- Low energy Membranes result in lower operating pressure; cost savings.
- Feed salinity up to 1000 mg/l TDS (NaCl).
- 1 µm pre-filtration included within the unit for membrane protection.
- Dry run monitor; pump protection.
- Concentrate throttling valve for flow adjustment and concentrate recirculation.
- Instrument allocated in frontal control block part for comfortable accessibility and workability.
- Skid-mounted, standardized systems; short lead times, quick installation and start-up.
- CIP connections forwards installed.
- HMI Touchscreen 7" modern interface user friendly. Fully configurable and simple operation, monitoring of pressure, flow rate, conductivity and temperature values.
- HUBGRADE™ compatible
- Data logging
- Comms via Modbus TCP or HUBGRADE™
- OPC Compliant

HYDREX™ CHEMICALS

Hydrex® 4000 water treatment chemicals from Veolia Water Technologies should be used for optimized plant operation

APPLICATIONS

- Boiler feed water treatment
- Industrial process water production
- Utility water
- Water recycling & reuse
- Hospital water for sterilization
- Analytical water grade 3 production

OPTIONS

- Conductivity/temperature sensor feed water
- PH measurement concentrate
- Acid/caustic dosing station
- Antiscalant dosing station
- Raw water automatic / manual blending
- Additional universal inputs / outputs
- HUBGRADE™(1)
- Front and side covers(2)
- PP version(3)

All options available for Advanced model. Pro model compatible with options 1, 3, 6 and 8.
(1) HUBGRADE™ is a cloud based program that allows you to monitor your system performance, day or night, with secure, real-time data available over any internet or cellular connection.
(2) Option available for SIRION Pro and SIRION Advanced in PVC version.
(3) SIRION Advanced in PP version includes front and side covers.

ASSOCIATED SERVICES

Local after-sales service and support teams offer preventive and corrective maintenance programs to ensure the long-term, efficient operation of the plant.

System Operating Parameters

1000 mg/l configuration[4]	Unit	100	200	300	500	750	1000
Inlet Salinity TDS (NaCl)	mg/l	Up to 1000 mg/l					
Typical Design Flux	l/h/m²	23-31					
Permeate Nominal Flowrate	l/h	100	200	300	500	750	1000
Nominal Feed Flowrate	l/h	150	290	430	715	1070	1430
Recovery	%	70-80					
Installed Power	kW	0.5	0.5	0.5	1.5	1.5	2.2

1000 mg/l configuration[4]	Unit	1500	2000	3000	4000	5000
Inlet Salinity TDS (NaCl)	mg/l	Up to 1000 mg/l				
Typical Design Flux	l/h/m²	23-31				
Permeate Nominal Flowrate	l/h	1500	2000	3000	4000	5000
Nominal Feed Flowrate	l/h	2145	2860	4285	5715	7145
Recovery	%	70-80				
Installed Power	kW	3	3	3	5.5	5.5

Selection of models must be done following RO projections based on project specific inlet water characteristics.
[4] Flow rates and installed power are dependent on feed water quality, those quoted are typical values based on 1000 ppm TDS & SDI <3

System Dimensions

Model	Unit	100	200	300	500	750	1000
Total Installed Length	m	0.800	0.800	0.800	0.800	0.800	0.956
Total Installed Width	m	0.800	0.800	0.800	0.800	0.800	0.800
Total Installed Height	m	1.762	1.762	1.762	1.762	1.762	1.756
Empty Weight	kg	190	195	200	220	230	280
Operating Weight	kg	199	208	220	242	260	322

Model	Unit	1500	2000	3000	4000	5000
Total Installed Length	m	0.96	0.96	1.11	1.60	1.60
Total Installed Width	m	0.80	0.80	0.80	0.80	0.80
Total Installed Height	m	1.756	1.756	1.756	1.761	1.761
Empty Weight	kg	300	320	375	590	600
Operating Weight	kg	359	396	483	765	776

Pipes Connections

Model	Unit	100	200	300	500	750	1000
Feed	DN	22/18	22/18	22/18	22/18	22/18	32.00
Permeate	DN	15/12	15/12	15/12	15/12	15/12	25
Permeate diversion	DN	15/12	15/12	15/12	15/12	15/12	25
Concentrate	DN	15/12	15/12	15/12	15/12	15/12	25
CIP Inlet[5]	DN	15/12	15/12	15/12	15/12	15/12	1 ¼"
CIP concentrate outlet[5]	DN	15/12	15/12	15/12	15/12	15/12	1"
CIP permeate outlet	DN	15/12	15/12	15/12	15	15	15

Pipes Connections (continued)

Model	Unit	1500	2000	3000	4000	5000
Feed	DN	32	32	32	32	32
Permeate	DN	25	25	25	32	32
Permeate diversion	DN	25	25	25	32	32
Concentrate	DN	25	25	25	25	25
CIP Inlet[5]	DN	1 ¼"	1 ¼"	1 ¼"	1 ¼"	1 ¼"
CIP concentrate outlet[5]	DN	1"	1"	1"	1"	1"
CIP permeate outlet	DN	15	15	15	20	20

[5] BSPT (R/Rp) – British Standard Tapered Pipe, for pipes and tapered thread

Materials of Construction

Model	100	200	300	500	750	1000	1500	2000	3000	4000	5000
Skid	Epoxy-polyester coated carbon steel										
Control Cabinet	Mild Steel, RAL 7035, IP55										
Low pressure Pipework	100 - 300: PA piping			500 and 750: PVC-U and PA combination		1000 - 5000: PVC-U					
HIgh pressure Pipework	100 - 300: Combination of AISI 316L and PA			500- 5000: PVC-U							

Feed water Requirements

Parameter	Unit	Value
Minimum water temperature	°C	5
Maximum water temperature	°C	30
Minimum supply pressure	barg	2
Maximum supply pressure	barg	6
Max Silt Density Index (SDI)	-	< 3
Maximum Inlet Turbidity	NTU	< 1
Max inlet Iron Fe^{3+}	mg/l	< 0.05
Max inlet Manganese Mn^{2+}	mg/l	< 0.05
Max inlet Aluminium Al^{3+}	mg/l	< 0.05
Max Oil and Grease	mg/l	0
Max inlet Free Chlorine Cl_2	mg/l	< 0.1

Non corrosive water. For models without VFD option and PVC-U version, it is advisable to have pressure regulation at the plant inlet. Temperature range depending on TDS

Environmental Conditions

Parameter	Unit	Value
Minimum ambient temperature	°C	5
Maximum ambient temperature	°C	40
Maximum humidity	%	90

Indoor Design. Non-corrosive atmosphere

Power Requirements

Voltage	380 / 420 V
Frequency	50Hz
Phases	1 Ph (100-300 model) +N + E / 3Ph + E

Other voltage or frequency available on request.

Typical Treated Water Quality

Parameter	Unit	Value
Typical Salt Rejection	%	96 - 98
Permeate Pressure	barg	Minimum inlet pressure on HP pump = min available permeate pressure considering drop pressure on the cartridge filter