

# Terion®



Plug & Play integrated RO-CEDI unit for deionized water production for power applications

**TERION® standard indoors single-skid unit combines single pass reverse osmosis and continuous electrodeionization.**

- Producing high grade demineralized water adapted to Power market quality specifications
- Low installation and operation costs
- Plug & Play unit offering remote monitoring & control and easy access for maintenance
- High availability unit: Five models available.



Flow rates  
from 5.1 to  
52.7 m³/h



Power



Electronics



Hydrogen



## FEATURES & BENEFITS

- Designed to produce deionized water- up to 18 MΩ-cm - meeting low levels of conductivity, silica, sodium, TOC and potassium
- Salt rejection rate by the high pressure membranes greater than 99.5%
- Nearly continuous production process, no need to stop for regeneration
- Pre-filter to protect RO
- Two chemical injection points only (no dosing set)
- Frequency controlled variable speed pumps to save up to 50% on electrical power (vs conventional systems)
- Ready for manual CIP
- Proven generation of CEDI to enhance performance
- Individual power supplies for each CEDI module to ensure high reliability
- Hubgrade™ enabled
- Control panel HMI /PLC for remote monitoring
- FAT including wet tests
- Plug & Play systems suitable for transport in a container, allow for short lead, installation and start-up times

## HYDREX® CHEMICALS

Hydrex® 4000 water treatment chemicals from Veolia Water Technologies should be used for optimised operation.



## APPLICATIONS

- Boiler feed
- Turbine injection
- Industrial process water production
- Ultrapure water production



## OPTIONS

- CO<sub>2</sub> membrane degasser. Includes a blower for unit from 25 m³/h to 50 m³/h.
- Feed water pH probe
- Automatic valve for RO flushing with permeate
- Witnessed FAT
- Configurable RO membrane selection (standard and premium water outlet quality, surface and well water)

## ASSOCIATED SERVICES

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





### System Operating Parameters

Model	Unit	6200	12500	25000	37500	50000
Permeate Nominal Flowrate <sup>(1)</sup>	m³/h	5.1 - 6.6	10.1 - 13.2	20.9 - 26.4	30.1 - 39.5	45.0 - 52.7
Nominal Feed Flowrate <sup>(1)</sup>	m³/h	7.5 - 9.2	14.9 - 18.5	30.9 - 37.1	44.5 - 55.5	66.7 - 74.0
Typical Design Flux	l/h/m²	Well Water : 28 - Surface Water : 25				
Recovery <sup>(2)</sup>	%	RO: 75-80 CEDI: 90-95				
Installed Power <sup>(2)</sup>	kW	21.00	25.00	53.00	77.00	87.00

<sup>(1)</sup> Typical flow rates mentioned here are based on surface water (for the minimum flow) and well water (for the maximum flow).

<sup>(2)</sup> Flow rates and installed power depend on feed water quality and temperature. RO and CEDI projections to be performed based on project data.

### System Dimensions

Model	Unit	6200	12500	25000	37500	50000
Total Installed Length	m	5.80	5.80	7.45	7.45	7.45
Total Installed Width	m	1.75	1.75	2.15	2.15	2.15
Total Installed Height	m	2.29	2.29	2.42	2.42	2.42
Empty Weight	kg	2048	2019	4884	6295	7673
Operating Weight	kg	2781	3608	6160	7725	9434
Configuration	-	110X3 - VNX28X1	210X4 - VNX55X1	320X5 - VNX55X2	420X6 - VNX55X3	630X6 - VNX55X4

### Pipes Connections

Model	Unit	6200	12500	25000	37500	50000
Feed	DN	40	50	80	100	100
Permeate diversion	DN	40	50	65	80	100
Concentrate	DN	32	32	40	40	65
EDI Product	DN	32	50	65	80	100
EDI Product Divert	DN	32	50	65	80	100
EDI Concentrate	DN	10	15	15	25	25





### Feed Water requirements

Parameter	Unit	Value
Minimum water temperature	°C	5
Maximum water temperature	°C	30
Minimum supply pressure	barg	3
Maximum supply pressure	barg	6
Max Silt Density Index (SDI)	-	< 3
Maximum Inlet Turbidity	NTU	< 1
Maximum Inlet TDS	mg/l	Up to 800 <sup>(3)</sup> Up to 500 <sup>(4)</sup>
Max inlet Total Hardness <sup>(5)</sup>	mg/l CaCO <sub>3</sub>	178 (indicative)
Max inlet CO <sub>2</sub> <sup>(6)</sup>	mg/l	up to 30
Max inlet Silica	mg/l	up to 20
Max inlet TOC	mg/l	< 1 mg O <sub>2</sub> /L as oxidizing to KMnO <sub>4</sub>
Max inlet Free Chlorine Cl <sub>2</sub>	mg/l	< 0.1

<sup>(3)</sup> Standard | <sup>(4)</sup> Premium | <sup>(5)</sup> With Antiscalant |

<sup>(6)</sup> if treated through membrane degasser (option)

### Typical Treated Water Quality

Parameter	Unit	Value
Average Conductivity	µS/cm	< 0.1 <sup>(3)</sup>   < 0.08 <sup>(4)</sup>
Silica as SiO <sub>2</sub>	ppb	< 30 <sup>(3)</sup>   < 5 <sup>(4)</sup>
Sodium + Potassium (Na+K)	ppb	< 10 <sup>(3)</sup>   < 3 <sup>(4)</sup>
Sodium (Na+)	ppb	< 10 <sup>(3)</sup>   < 3 <sup>(4)</sup>
TOC	ppb	< 200 <sup>(3)</sup>   < 200 <sup>(4)</sup>
Product Pressure	barg	w/ degasser: 1.5 w/o degasser: 2.0
Compressed Air Pressure	barg	> 5.5
Compressed Air Flowrate	Nm <sup>3</sup> /h	40 - 48

<sup>(3)</sup> Standard | <sup>(4)</sup> Premium

### Materials of Construction

Skid	Epoxy coated carbon steel frame
Control Cabinet	Mild Steel, RAL7036, IP54
Low pressure Pipework	PVC-U
High pressure Pipework	SS 316

### Environmental conditions

Parameter	Unit	Value
Minimum ambient temperature	°C	5
Maximum ambient temperature <sup>(7)</sup>	°C	35
Maximum humidity	%	90

Indoor Design. Non-corrosive atmosphere.

<sup>(7)</sup> 30°C in case of CO<sub>2</sub> degasser option (for units > 25 000).

### Power Requirements

Parameter	Unit	Value
Voltage	V	380-420
Frequency	Hz	50-60
Phases	-	3Ph + E