


TERION™

Plug & Play integrated RO-CEDI unit for demineralised water production for Power applications

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

- > Producing high grade demineralised 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



FEATURES & BENEFITS

- Designed to produce demineralized water- up to 18 Ω-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
- AQUAVISTA™ enabled⁽¹⁾
- Control panel HMI /PLC for remote monitoring and control
- 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 plant operation.



APPLICATIONS

TERION produces demineralised water for:

- Power applications
 - Boiler feed
 - Turbine injection
- Industrial process water
- Industrial utilities for F&B, Microelectronics, P&P, Metals, General Manufacturing, Data centers ...



OPTIONS

- CO₂ 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

(1) AQUAVISTA™ 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.

RELATED SERVICES

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

Subscription to Aquavista™ digital services (asset monitoring, benchmarking, improvement and management, digital training)





System Operating Parameters

| Model | Unit | 6200 | 12500 | 25000 | 37500 | 50000 |
|--------------------------------|--------|--------------------------------------|-----------|-----------|-----------|---------|
| Permeate flowrate @ 12°C* | m³/h | 5.1-6.6 | 10.1-13.2 | 20.9-26.4 | 30.1-39.5 | 45-52.7 |
| Feed water flowrate @ 12°C* | m³/h | 7.5-9.2 | 14.9-18.5 | 30.9-37 | 44.5-55.5 | 66.7-74 |
| Typical Design flux | l/m³/h | Well Water : 28 - Surface Water : 25 | | | | |
| RO Recovery ⁽²⁾ | % | 75-80 | | | | |
| CEDI Recovery ⁽²⁾ | % | 90-95 | | | | |
| Installed power ⁽²⁾ | kW | 21 | 25 | 53 | 77 | 87 |

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

(2): 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 |
|-----------------------|------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Length | mm | 5800 | 7450 | 7450 | 7450 | 7450 |
| Width | mm | 1750 | 1750 | 2150 | 2150 | 2150 |
| Height | mm | 2270 | 2270 | 2420 | 2420 | 2420 |
| Empty weight | kg | 2048 | 2919 | 4884 | 6295 | 7673 |
| Operating Max weight | kg | 2781 | 3608 | 6160 | 7725 | 9434 |
| Configuration RO-CEDI | | 110X3 - VNX28X1 | 210X4 - VNX55X1 | 320X5 - VNX55X2 | 420X6 - VNX55X3 | 630X6 - VNX55X4 |

* These dimensions are given for unit in operation. All units are suitable for transportation in a container

Pipes Connections

| Model | 6200 | 12500 | 25000 | 37500 | 50000 |
|----------------------------------|------|-------|-------|-------|-------|
| Feed water | DN40 | DN50 | DN80 | DN100 | DN100 |
| CEDI Product (outlet and divert) | DN32 | DN50 | DN65 | DN80 | DN100 |
| Product CEDI reject | DN10 | DN15 | DN15 | DN25 | DN25 |
| RO Concentrate | DN32 | DN32 | DN40 | DN40 | DN65 |

Feed Water Specifications

| Feed water parameters | Unit | Basic outlet quality | Premium outlet quality |
|---|-----------------------|--|------------------------|
| Feed water type | - | Well Water or surface water | |
| Feed water Temperature | °C | Min: 5- Max: 30 | |
| Feed Water Pressure | bar | Min: 3- Max: 6 | |
| SDI | - | <3 | |
| Turbidity | NTU | <1 | |
| Total Dissolved Salt -TDS | ppm | Up to 800 | Up to 500 |
| Maximum hardness (with antiscalant) | ppm CaCO ₃ | 178 (indicative value) | |
| TOC | ppm | < 1 mg O ₂ /L as oxidizing to the KMnO ₄ | |
| Silica as SiO ₂ | ppm | up to 20 | |
| Iron and heavy metals, Oil, Suspended solids and colloids | - | Free | |
| Free chlorine | - | < 0.1 ppm (Cl ₂) | |
| CO ₂ | mg/l | up to 30 (if treated through membrane degasser option) | |

Environmental Conditions

| Parameter | Unit | Value |
|-------------------------------|------|-------|
| Min ambient temperature | °C | 5 |
| Max water temperature | °C | 35 |
| Max Humidity (non-condensing) | % | 90 |

Indoor Design. Non-corrosive atmosphere.

*30°C in case of Co₂ degasser option (for units > 25 000).

Materials

| | |
|----------------------|---------------------------------|
| Frame | Epoxy coated carbon steel frame |
| Piping Low pressure | PVC |
| Piping High pressure | SS 316 |

Power Requirements

| | |
|-----------|-------------|
| Voltage | 380 / 420 V |
| Frequency | 50/60 Hz |
| Phases | 3 |

Outlet Water Expected Quality

| Outlet water expected parameters | Unit | Basic outlet quality | Premium outlet quality |
|----------------------------------|-------|---|------------------------|
| Typical conductivity @25°C | µs/cm | <0.1 | <0.08 |
| Silica as SiO ₂ | ppb | <10 | <5 |
| Sodium + Potassium (Na+K) | ppb | <10 | <3 |
| Sodium (Na) | ppb | <10 | <3 |
| Chloride as Cl- | ppb | NA | <3 |
| Sulphate as SO ₄ - | ppb | NA | <3 |
| TOC | ppb | 200 | 200 |
| Outlet Pressure | bar.g | with degasser option : 1.5 without degasser option : 2 | |

*Project specific RO and CEDI projections should be performed to demonstrate that outlet water is in line with expected quality.

Utilities

| Parameter | Unit | Value |
|------------------------------|-------|-------|
| Instrument air requirement | bar.g | >5.5 |
| Compressed air requirement * | Nm³/h | 40-48 |

*for CO₂ degasser option for units 6200 and 12 500 only (air class 1).