

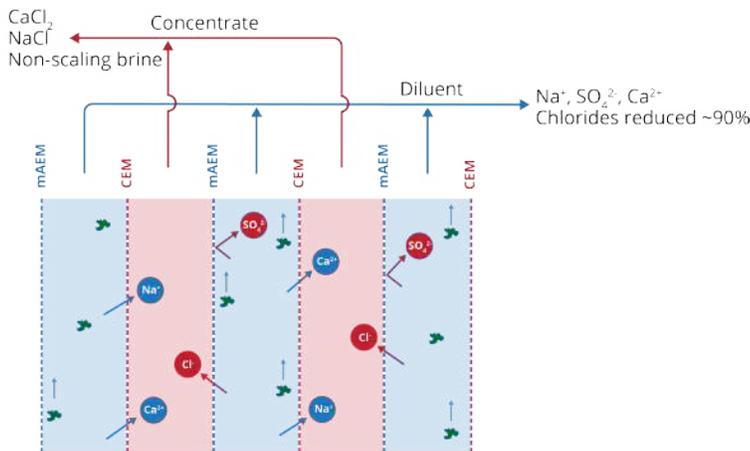
Flex EDR

Advanced Electrodialysis Reversal (EDR)

Ion Exchange Membrane Stack & System:

- Improves on 50 years of EDR technology
- Desalt impaired waters, recover chemicals
- Extreme high recovery operations
- Chemical-free softening, selective ion removal
- Cost-effective, modular, rugged

Multiple Configurations: mED Example



Monovalent Electrodialysis (mED) with FlexEDR Selective
Remove chlorides at high recovery with minimal pre-treatment

- mAEM** Monovalent anion exchange membrane (blocks sulphate, passes chloride)
- CEM** Cation exchange membrane
-  Organics do not transit or foul membranes

Robust Design

Built with highly resilient and ductile IonFlux ion exchange membranes and stacks that can withstand oils, organics, oxidants (bleach), acids (> pH 0), bases (< pH 12) and particulates (< 30 µm).

Selective Ion Removal

Remove monovalent ions, avoid soda ash softening, change scaling chemistry, recover salts of value.

High Concentration & Flexible Operation

Concentrate brines up to 180,000 mg/L. Pair with reverse osmosis for the best of both technologies.

Delivery Methods

Saltworks can deliver complete Flex EDR packages or work with engineering companies and system vendors.

Flex EDR Organix

Desalt organic wastewater or oil & gas produced water

Flex EDR Selective

Remove monovalent ions with game-changing selectivity

Flex EDR Ammonia

Selective ammonia removal where bio-treat may not fit



Saltworks' IonFlux
Ion Exchange Membranes

Modular Configuration

Repeatable stacks and skids for ease of expansion, project integration, and maintenance.

Automation

Intelligent automation maintains peak performance and enables self-cleaning.

Total Support Options

Complete packaged delivery and installation options. Remote monitoring, 24/7/365 expert assistance and predictive maintenance.

E200 Stack Specifications

Operating Requirements

Operating Pressure	34.5 - 310 kPa (5 - 45 PSI)
Hydraulic Flow Rate	100 - 300 m ³ /d (18 - 74 GPM)
pH	0 - 12
Operating Temperature	5 - 60 °C (41 - 140 °F)
Current Density*	5 - 300 A/m ² (0.5 - 27.9 A/ft ²)
DC Current, Absolute	4 - 225 A
DC Voltage, Absolute	10 - 600 V
Inlet TDS	< 80,000 mg/L
Product TDS*	> 500 mg/L
Suspended Solids	Filter to < 20 µm
SDI (5 min)	10
Hydrocarbon Tolerance	< C10
Organic Tolerance	Soluble non-charged
Free Chlorine	0 - 200 ppm

Materials of Construction

Wetted Parts	PVC, PP, PVDF, PET, Ti
Hardware	SS316
Frame Structure	Powder-coated steel
Electrodes	Pt-Ir-Ta coated titanium

Specifications

Total Membrane Area Per Compartment	1.12 m ² (12 ft ²)
Active Membrane Area Per Compartment	0.753 m ² (8.1 ft ²)
Number of Compartments Per Stack	10 - 300
Compartment Thickness*	0.80 - 3.20 mm (0.031 - 0.126 in)
Outside Dimensions	W 603 x D 960 x H 2235 mm (24 x 38 x 88 in)
Pipe Size	1, 2 in

*Project specific & chemistry dependent

Sample Applications

- Selectively remove chlorides to reduce corrosion potential or recycle FGD wastewater.
- Selectively remove & concentrate lithium.
- Tune outlet TDS to any level.
- Desalt EOR produced water to reduce polymer costs & improve hydrocarbon recovery.
- Desalt organic waters with less pre-treatment.

