



# Ion Exchange Systems

*For removal of dissolved solids, alkalinity, metals, other cations and anions*

- Single and Multi-Bed Designs
- Designed for Clean Water and Wastewater Streams
- Pre-packaged Modular Systems
- Variety of Resin Options
- On-site and Off-site Regenerable Systems
- Service Exchange/Regeneration Services – including Metal Laden Waste Stream Resins
- Co-Current and Counter-Current Regeneration
- Proven Results at Hundreds of Sites
- Backed by Envirogen Service and Expertise

## Ion Exchange System Selection

Product Line	Flow Range (GPM)	Co or Counter Current	Advantages
<b>On-Site Regenerable</b>			
SimPack N+3	400 – 1000+	Counter current down flow service	<ul style="list-style-type: none"> <li>✓ Simulated moving packed bed process</li> <li>✓ Modular standard design</li> <li>✓ High efficiency with low waste rates (typically &lt;0.5% of treated flow)</li> </ul>
MinX	35-800	Counter current down flow service	<ul style="list-style-type: none"> <li>✓ Counter-current regen for higher purity requirements</li> <li>✓ Modular standard design</li> <li>✓ High efficiency</li> <li>✓ Low waste rates (typically &lt;1% of treated flow)</li> </ul>
MinFlex	5-200	Co-Flow or Counter Current	<ul style="list-style-type: none"> <li>✓ FRP Vessels With Multiport valve and Fleck controller</li> <li>✓ Low cost</li> <li>✓ Brine regeneration only (hardness, nitrates, or arsenic treatment)</li> </ul>
MinFlex CS	35 – 1000+	Co-Flow or Counter Current	<ul style="list-style-type: none"> <li>✓ Carbon steel vessels for Softening or Deionization (acid, caustic)</li> </ul>
<b>Off-Site Regenerable or Disposable</b>			
FlexSorb	5 - 200	Down Flow Service	<ul style="list-style-type: none"> <li>✓ No chemicals, minimal operator attention</li> <li>✓ No backwashing, no liquid waste handling</li> <li>✓ Vessels easily exchanged</li> <li>✓ Modular, wide flow range, easily expandable</li> <li>✓ Effluent water samples tested on a regular basis</li> <li>✓ Cation, anion, mixed beds, chelating, and other specialty resins</li> </ul>
HyperSorb	35 - 1350	Down Flow Service	<ul style="list-style-type: none"> <li>✓ Uniform flow distribution</li> <li>✓ No chemicals, minimal operator attention</li> <li>✓ No backwashing, no liquid waste handling</li> <li>✓ Easy media exchange – Regen service offered</li> <li>✓ Modular standard design, easily expanded</li> <li>✓ Cation, anion, mixed beds, chelating, and other specialty resins</li> </ul>

## Applications

- Catalyst Recovery
- Closed Loop Cooling Systems
- DI High Purity Water
- Process Water
- Softening
- Oxyanion Treatment (Nitrates, Arsenate, Chromate)
- Wastewater
- Organics removal
- Boiler Make-up Water
- Desalination
- Ground Water Remediation
- Certain Metal Machining Operations e.g. EDM

## Resin Selection

Resin Type	Function
<i>Strong Acid Cation (SAC)</i>	Full demineralization, softening - removes scale-forming calcium (Ca <sup>2+</sup> ) and magnesium (Mg <sup>2+</sup> ) ions, metals and other cations
<i>Weak Acid Cation (WAC)</i>	Dealkalization Brackish water softening Partially remove hardness and alkalinity simultaneously. Some total dissolved solids (TDS) removal, Heavy metals
<i>Strong Base Anion (SBA)</i>	Demineralization of industrial water in combination with WBA Weak acids TOC reduction Nitrate, perchlorate, arsenate, uranium, chromate
<i>Weak Base Anion (WBA)</i>	Partial demineralization Partially deionized water without removal of CO <sub>2</sub> and SiO <sub>2</sub> High molecular weight organics, weakly acidic compounds
<i>Mixed Bed</i>	Demineralization, deionization
<i>Chelating and Specialty Resins</i>	Selective ion removal such as mercury, zinc, copper, lead, chrome, nickel, precious metals, and other specific targets

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