

## Electrodeionization

Electrodeionization (EDI) is a water treatment technology that has gone from an unproven and unknown commodity to one that has revolutionized the industry in the past 20 years.

The technology was first introduced to the market in 1987 by Ionpure Technologies.

EDI is used in small and large applications. Laboratories use EDI in systems as low as 360 gallons per day (gpd), while power plants, semiconductor industries or other industrial systems may use EDI systems as large as 13,500 gallons per minute (gpm). The available products are well-suited for all flows in-between.

EDI takes the place of chemically regenerated mixed beds, both on-site

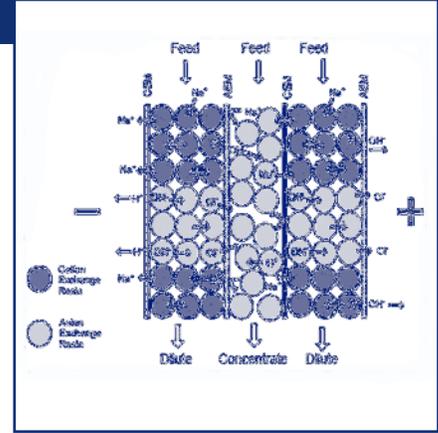
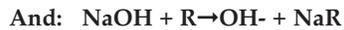
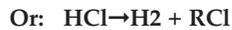
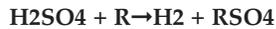
and off-site regenerated. EDI uses electrical power to split water molecules which regenerate resin rather than acid and caustic hazardous chemicals.

Under DC electrical current:



The hydrogen ( $\text{H}^+$ ) ions and hydroxyl ( $\text{OH}^-$ ) ions continuously regenerate the mixed resin in the EDI module.

Water splitting replaces the chemical regeneration process. For illustrative purposes, where R is impurity trapped on the mixed bed resin, the chemical regeneration process is:



In traditional ion exchange units, after the contaminants are trapped onto the resin sites, the resin continues to exhaust and lose capacity. In EDI, the contaminants are continuously removed as they are attracted to one of the two electrical charges, and then migrate through the resin bed, through ion exchange membranes and into the concentrate stream where they are removed from the device.

EDI is a polishing technology and requires reverse osmosis (RO) as pre-

treatment. The combination of RO-EDI provides the customer with a continuous, chemical-free system.

EDI replaces on-site regenerated mixed-bed resin where end users do not wish to store, handle and neutralize chemicals. EDI also replaces service deionization (SDI) or off-site regenerated mixed beds, as EDI is more reliable, cost effective and requires little maintenance.

Under environmental pressure, companies are turning away from their traditional regeneration facilities and electing instead to provide a service contract and lease EDI systems. □

*Information provided by Agape Water Solutions, Inc. More information on the company is available at: [www.agapewater.com](http://www.agapewater.com).*

## EDI SYSTEMS AND SUPPORT



**Agape Water Solutions, Inc.** is the leader in electrodeionization (EDI) systems and technical support services. We are the Ionpure Certified Solutions Provider for North America.

Agape Water Solutions offers a program of training, auditing existing systems, troubleshooting, and recommending improvements.

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### ELECTRODEIONIZATION

Agape Water Solutions, Inc. is a Ionpure Certified Service Provider (CSP) and an E-Cell System Integrator. Agape Water Solutions, Inc. offers unmatched EDI knowledge and experience. We support OEMs by supplying modules at OEM prices and end users with technical support services.

**Contact us at:**  
Agape Water Solutions, Inc.  
PO Box 430 Hatfield, PA 19440  
Phone: 215-631-7035  
Email: [info@agapewater.com](mailto:info@agapewater.com)  
Website: [www.agapewater.com](http://www.agapewater.com)

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