

E-Cell* Electrodeionization Systems

Ultrapure Water for the Power, Semiconductor, Pharmaceutical, and General Industries

E-Cell electrodeionization technology from GE Water & Process Technologies is a chemical-free, environmentally safe, ion exchange process for producing industrial process water of the highest purity. It removes ions by passing an electrical current through conventional ion exchange resin, eliminating the use of regeneration chemicals and the generation of a hazardous waste stream.

E-Cell EDI systems continuously produce 16 Mohm.cm water with less than 20 parts per billion of silica, using RO permeate or the equivalent as feedwater.

Product Description

- E-Cell EDI replaces the mixed bed in industrial water treatment systems.
- EDI uses electricity instead of caustic and acids to regenerate the ion exchange resin.
- Feedwater to the E-cell must be reverse osmosis permeate and meet certain feed specifications.
- Product water is the same, or often better than, mixed bed product water.
- Capital cost is roughly the same as the mixed bed, but by eliminating the chemical regeneration infrastructure, substantial overall capital cost savings are available.
- Operating costs: Electricity replaces the chemicals required for regeneration
- Each individual E-cell stack produces 15 gpm (3.4 m³/hr). Modules go into pre-designed systems, from 1 to 500 m³/hr and up.
- E-Cell Calculation Software is available to assist in design and prediction.

Industry Leader

GE is a technology and application leader in the still rapidly growing field of electrodeionization.

Better Quality Water

- Deionized water of 16 MOhm.cm
- <20 ppb silica typical (depends on feed) and <10 ppb very common
- No risk of cross contamination with other customer resins, such as plating baths (cadmium, mercury, bacteria)
- Less risk of the organic contamination typical of routine ion exchange resins
- More stable resistance. Continuous, not batch operation

Major Cost Reduction

- Eliminates regeneration chemicals
- No hazardous waste stream
- No neutralization system needed
- Regeneration DI tanks have higher ceiling requirement, adding to construction cost
- Cost effective: Eliminates the whole chemical regeneration infrastructure
- Significant space savings: Average 2,000 to 3,000 ft² (186-279 m²) @ construction cost of US\$150 200/ft² (0.093 m²) = US\$300,000. to US\$600,000. cost savings
- E-Cell electrical cost of \$0.02/m³ (265 gal) is very economical

Other Benefits

- 176°F (80°C) sanitizable for pharmaceutical applications
- Pre-engineered, robust systems
- Outstanding local service
- Deep, thorough library of application, operating and maintenance literature