

The Application of Electrochemical Regenerated Ion Exchange (ERIX™) Technologies To Wastewater Recycle, Mixed Acid Wastes and Plating Bath Rinses

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Abstract

Electrochemically regenerated ion exchange (ERIX™) concentrates chemical waste and recovers water for reuse. ERIX incorporates proven electrodeionization (EDI) technology, ion exchange and electrodialysis in a single cell. EDI and ion exchange are used commercially to produce ultra-pure water. In EDI cells, the mixed-bed ion exchange deionizes the solution as it passes through. The electro-dialytic components move the ions from the resin to a concentrate stream, thereby achieving a continuous ion exchange process without the need for periodic regeneration of the cell or addition of regenerant chemicals. ERIX can be used for the removal of both cations and anions.

This paper describes ERIX applications for acid waste and copper rinse wastewater treatment. Wet cleaning benches frequently discharge dilute acidic water to an acid waste neutralization plant (AWN). Anion ERIX can recover the deionized water from this waste stream reducing the hazardous waste volume. Electroplating is used to deposit copper in semiconductor chip and packaging applications. This procedure generates a dilute acidic copper rinse waste. Copper can be removed from wastewater with cation ERIX to meet metal discharge limits for standard AWN treatment systems.