ELECTRODIALYSIS EQUIPMENT

Function:
Electrodialysis is electrically driven ion-exchange utilizing alternating sequences of cation membranes and anion membranes to effect the separation and concentration of dissolved salts from various solutions.

Application:
- Desalination of closed-loop process water.
- Recovery of metal salts.
- Potable water production.

Benefits:
- Maintenance of high-quality process water.
- Recovery of valuable resources.
- Reduced waste treatment and waste disposal.
- No regeneration required.

Principles of Operation
Electrodialysis is electrically driven ion-exchange utilizing alternating sequences of cation membranes and anion membranes. Conventional ion-exchange techniques involve the “adsorptive exchange” of an ion in a solution with an ion attached to the functional group of the resin bead. Typical “adsorptive exchange” involves a metal cation exchanging with a hydrogen or sodium ion. The phenomenon of membrane ion-exchange is perm-selectivity, the selective permeability of an ion-exchange membrane to specific kinds of ions. Selectively permeable ions are transported from one side of a membrane, through the membrane, to the other side of the membrane. Unlike “absorptive ion-exchange” there is no depletion of exchanging ions and therefore never a need for the cumbersome, waste producing resin regeneration sequence.

With the proper selection and configuration of permselective membranes between a positively charged, inert anode and a negatively charged cathode, electric deionization is accomplished. Such a configuration of membranes, hydraulic spacers, and electrodes is termed on electrodialysis stack.
The standard electrodialysis system is a modular unit consisting of a 25 cell pair stack, solution feed pumps, recovered salt solution holding tank, filter, and integrated accessories. Recovery rates of 0.1 lbs-0.25 lbs/hr. are normal but will vary dependent upon solution concentrations and matrices.

**Technical Service**

Field service engineers are available for on-site start-up assistance, operator training, and technical consultation. Staff engineers are available for consultation at the time.

**Electrodialysis System Membrane Stack**

CATION MEMBRANE

ANION MEMBRANE

DESLINATED SOLUTION

DESLINATED SOLUTION

M+ → X-

M+ → X-

DISULVED SOLIDS

DISULVED SOLIDS

RECOVERED SALTS

**Warranty**

Zero Discharge Technologies, Inc. warrants against defective materials or workmanship for 6 months from the date of the original purchase.

Parts covered under this warranty will be replaced without charge, except for shipping and handling, upon receipt and inspection of the defective part at our factory.

This Limited Warranty covers all defects incurred in normal use of the equipment and does not apply in the event of loss or damage of the equipment due to abuse, mishandling, accident or failure to follow operating instructions. This warranty does not cover conditions caused by lack of reasonable and proper maintenance, or other conditions caused by lack of reasonable and proper maintenance, or other conditions beyond the control of the sellers.

No implied warranty, including merchantability, applies.