

External Dialysis System

Product Data Sheet

As part of an E-coat paint system, an External Dialysis System (EDS) is meant to remove excess solubilizer from permeate. It performs this task by separating the solubilizer from the permeate by the use of an ion exchange membrane. It is meant to be operated 24/7, as long as it has a supply of fresh permeate to process. Cathodic paints use an anion-selective membrane and anodic paints use a cation-selective membrane. This type of system is also called a Dynolyte System.

The major components of the EDS are: a process (i.e. permeate) tank, electrolyte circulation pump & tank, electrolyte conductivity monitor/controller, Membrane Electrode Cell & opposing electrode, DC rectifier, and isolation cage.

Product Features

- 25 amp/100 V DC Rectifier output with 110 VAC input.
- 170 l (45 gal) poly process tank holds the permeate solution.
- 40 l (11 gal) anolyte tank.
- Conductivity sensor is located in the electrolyte discharge piping.
- Digital conductivity meter display 0 - 20,000 μ Siemens/cm (0 - 20,000 μ Mho/cm); 220/110 V AC 50/60 Hz; housed in NEMA type 12/13 gray enclosure.
- Electric solenoid valve for D.I. water is 110 V AC 50/60 Hz; (220 VAC 50/60 is optional) is used to control the conductivity of the electrolyte tank.
- Low tank level alarm switch for each tank.
- Electrolyte pump is a seal-less, vertical design made of CPVC and has pressure gauge. 1/8 Hp, 1 phase, 110/220 VAC, 60 hertz has a rating of 7.6 lpm @ 0.25 Bar (2 gpm @ 8 ft TDH).
- Electrolyte design flow rate is about 1.9 lpm to 3.8 lpm (0.5 to 1 gpm).
- **One+**TM Box Cell Membrane Electrode Cell has a 316L electrode (precious metal anodes are optional only in cathodic paints) and either anion-selective or cation-selective membrane (customer to specify type). Opposing electrode is also 316L material. Electrode wetted surface area is 0.247 sm (2.66 SF).

- Spare opposing electrode is provided since paint solids will be deposited and it will have to be cleaned off at some regular interval.
- Limited one (1) year warranty for workmanship & materials, except for electrodes.

Design Criteria and Assistance

- At 80% capacity (i.e. 20 amps) the unit will be able to deliver about 1,728,000 Coulombs every day it is operated. At 100% capacity the output is about 2.16 million Coulombs/day.
- Unit should be placed on a mezzanine so the overflow from the process tank can flow back to the E-coat bath by gravity.
- Recommended permeate inlet flow rate is at least 7.5 lpm (2 gpm).
- Incoming D.I. water flow rate (to the electrolyte tank) should be 40% - 60% of electrolyte pump capacity.
- 110 V AC power should be provided to the electrolyte pump (2 amps), conductivity controller (2 amps), solenoid valve (2 amps) and DC rectifier (~33 amps).
- Appropriate drains must be provided to handle overflow from the electrolyte tank.
- Customer must provide secure location to protect from workers touching any part of the process tank, electrolyte tank, wiring, ME Cell or opposing electrode, or DC rectifier outputs.



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