Service Reference

TOPIC: Extended Plant Closure & Shut-down period impact on Membrane Electrode Cells.

Two-week summer shutdowns have been used in the automotive industry as a chance to award vacation and to allow for model change-overs. Generally in these cases, manpower has still been available in the plants during this time to check on equipment and report as required.

ME Cell shutdown Best Practices advise to keep the ion-exchange membrane wet and do those things that suppress the growth of biological organisms. In other words, keep the anolyte pump running 24/7 and use approved biocides on a rotating basis so they do not develop immunities.

For the traditional two-week plant shutdown, please see UFS Service Bulletin No 990134 'Medium to Long Term Storage of TECTRON Membrane Shells" for recommendations.

In some cases, plants are being idled or closed down for many weeks or even months. Electric power and a source of DI water may or may not be available during this period. In addition, the only persons who may be looking at the equipment on a regular basis are plant security personnel.

Since the goal is to re-use the E-coat paint system once the plant is re-started, what can or should be done before the plant is idled? This document will consider two scenarios: First, electric power is available as well as DI water; the second scenario is such that there is no electric power or DI water.

Tasks to be done regardless of scenario

Membrane Electrode Cells should be full of DI water. Some water will be lost to evaporation; however, since the exposed surface area (i.e. inside the Neck of the TECTRON Cell) is low compared to its total volume of anolyte, evaporation should be at most 1 or 2 inches per month. An approved biocide should be added (at the upper end of the dosage recommendation range) into the anolyte tank and allowed to mix for 4 hours (minimum) with the make-up DI water valve turned off.

<u>Electric Power & DI Water Available</u>

Keep the anolyte pump running 24/7 in order to suppress the growth of biological organisms.

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At some point, the effectiveness of the biocide may begin to degrade. If this begins to happen, add more biocide (again at the upper limit of the dosage range) and allow to mix. Repeat as often as necessary.

If more than 2 inches of liquid is lost in the anolyte tank, refill with DI water and add an appropriate amount of biocide based upon the lost volume of anolyte since the last addition was made.

Electric Power & DI Water Not Available

If the paint tank is drained, rinse the paint solids off the exterior of the ME Cells with a DI water hose (do not use a power washer as this can damage the fragile ion-exchange membrane). If possible, order poly sleeves from UFS for each of the TECTRON Tubular ME Cells so they are on hand before the E-coat tank is drained. Poly sleeves cover the exterior of the TECTRON Cells and help to retain moisture in the Cell during the time E-coat paint is absent from the paint tank.

When re-starting the system, first call UFS to ask for recommendations. Review the original ME Cell & anolyte circulation manuals since the system will have to be re-started all over again, just as when it was first commissioned.

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