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DRAFT

Service Reference

Topic: High Temperature Events

Please read all the instructions listed below carefully to familiarize yourself with the project before attempting to perform any of the work or unpacking any further.

Required Materials

- As required

Required Tools

- Flashlight

High temperature events (arcing, fires, etc) associated with anode cells are reported occasionally. Anode cells are by their nature electrical hardware and are responsible for the transfer of large amounts of power from a DC rectifier into the ED paint bath. By in large, all anode cells share a common design. Each has a metal anode, which is inserted into a non-conductive housing. Instances of 'fires', arcing, scorch marks, etc have so far all been reported on or about the top portion of the anode cell, which extends above the liquid level of the ED bath. In all these cases, the material used for the non-conductive housing was PVC. PVC is available as Type I or Type II. Type II is made into sheets and has better impact resistance than Type I. Either type should be kept below 140 degrees F. PVC is known as 'self extinguishing', namely it will not sustain a fire by itself.

The fire triangle tells us that three things are necessary for a fire to start: fuel, oxygen, and a flame. Since PVC is not a fuel, it is unlikely that a real fire occurs on or near the top of an anode cell. However, there is generally well preserved evidence of heat from the darkened scorch marks left behind and the melted PVC residue.

The most plausible remaining hypotheses is electrical arcing, which is both the 'light' people see as well as the flame necessary for a short duration 'high temperature event'. The reason for the short life is the over current condition (i.e. short circuit). This high current destroys the cable lead, blows a fuse, etc and then stops the flow of current. The PVC material does ignite, but only for a brief period before the flow of current is cut off.

If anolyte is allowed to pass out of the anode cell and reach a nearby ground, then small amounts of current can begin to flow. Over time, this small trickle of current can begin to warm up what ever it touches. As some of the PVC of the anode cell Housing is warmed up, it begins to deform and weaken. In some cases a critical point is reached as a short circuit event occurs and damage is seen on the top end of the anode cell.

1. Inspect the anolyte return line for evidence of small leaks.
2. Inspect the overflow nozzle for evidence of small leaks. Look for salt crystals, which are formed as anolyte solution evaporates.
3. Repair as required to stop small leaks on or near the anode cell.

For more information see the original manual that came with the equipment or call UFSc at the phone number shown above.

Think and act in a safe manner. Always disconnect power and use a lockout before you work on the E-coat system, or any of the related subsystems. Observe any confined space conditions. Use the appropriate safety equipment and clothing for the task.