

Service Reference

Topic: Open Top / Low Profile / Roof / Floor

This guide can help identify and solve problems with electrodeposition Electrolyte systems equipped with regular TECTRON Membrane Electrode Cells. If you are experiencing a problem that is not identified here, or that you cannot seem to solve, please call UFS for personalized service.

Problem	Possible Cause	Remedies
I. Cloudy or Paint-Colored Electrolyte from all Cells.	<ul style="list-style-type: none"> - Cut, torn, or ripped Membrane Shell. - Overspray or splash. 	<ul style="list-style-type: none"> - Turn off Electrolyte pump and use flashlight to locate liquid inside the Cell. Cells with a low level should be pulled for further investigation. [Ref: S94-03/27] - See - Install splash guards.
II. Electrolyte Color Change.	<ul style="list-style-type: none"> - Paint contamination. - Dark color (like coffee) usually is from rapid deterioration of stainless steel anodes. <u>Note: Cathodes are not affected by this problem.</u> - D.I. Water solenoid valve is not adding water to the Electrolyte tank. 	<ul style="list-style-type: none"> - See I & VII. - Reduce level of contaminants by dumping Electrolyte tank, lower conductivity set point and have Electrolyte checked for chlorides. [Ref: S94-35] - Check conductivity controller, conductivity sensor, solenoid valve, and D.I. Water supply.
III. Dark Colored Electrolyte Inside Electrode.	<ul style="list-style-type: none"> - Low turnover of Electrolyte inside Electrode 	<ul style="list-style-type: none"> - Create by-pass opening in bottom boot seal with 3 mm [1/8"] diameter hole.

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IV. No Electrolyte Return from a Cell.	<ul style="list-style-type: none"> - No supply. - Blockage at bottom of Cell. - Vacuum lock in return manifold 	<ul style="list-style-type: none"> - See V, VI and VII. - Remove Electrode and check for sludge. Use 1/3 br [5 psi] air line connected to supply tubing to gently clear obstructions. Remove Membrane Shell and flush out with hose, if necessary. - Increase vent opening or add breather stand pipe.
IV. Electrolyte Return from a Cell.	<ul style="list-style-type: none"> - Cell overflow nozzle blocked. - Return Tubing kinked. - Blocked Strainer Bag. 	<ul style="list-style-type: none"> - Twist Electrode Tab one-way or other and move Electrolyte supply tubing away from overflow nozzle. - Either shorten or lengthen as appropriate to correct. Minimum wall thickness for return tubing is 2.4 mm (3/32"). - Clean.
V. Electrolyte Supply Pump not Operating.	<ul style="list-style-type: none"> - No electrical supply. - Lost prime. - Blocked suction. - Cavitation. - Pump/impeller motor failure. 	<ul style="list-style-type: none"> - Check controls, connections and fuses. - Reprime pump, check Electrolyte tank level. - Clear obstruction. - Check suction piping for possible air leaks. - Replace failed device.

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VI. No Electrolyte Supply to a Cell.	<ul style="list-style-type: none"> - See V. - Discharge control valve turned off. - Blocked or broken supply manifold. - Blocked 1/4" individual Cell supply valve. - Rotometer float stuck in "up" position. - Plugged Electrolyte Filter - Kinked supply tubing. 	<ul style="list-style-type: none"> - Open. - Clear obstruction or repair as needed. - Clear obstruction. - Partially close discharge control valve, recheck individual Cell flows and fully open discharge control valve afterwards. Replace rotometer if range is too low. - Replace at 1/3 to 2/3 bar [5 - 10 psi] differential - Replace supply tubing if necessary.
VII. Leaking Cell.	<ul style="list-style-type: none"> - Membrane cut from fallen work or from fishing work out of tank. - Abrasion from another object in paint tank. 	<ul style="list-style-type: none"> - Immediately isolate Cell by closing supply valve and disconnecting Cable lead. At first convenience, remove Electrode and rinse both inside and out. Pull Membrane Shell and rinse inside and out. Do not let dry out. Fill Membrane Shell with D. I. water. Place in bucket and measure volume of leak for one hour (record every 15 minutes). [Ref: S94-03] - Move Cell so that there is at least 150 mm [3"] of side-to-side clearance.
VIII. Broken PVC Cap at Bottom of Cell.	<ul style="list-style-type: none"> - Dropping Electrode into Membrane Shell. 	<ul style="list-style-type: none"> - Replace Membrane Shell. Lower Electrode slowly into Membrane Shell - DO NOT DROP.

Problem	Possible Cause	Remedies
IX. Low Electrolyte Tank Level.	<ul style="list-style-type: none"> - Drain valve open. - Evaporation loss. - Membrane permeability. - Cut membrane. - Malfunction in siphon-breaker (pump has to fill all Cells first). - Return manifold blocked. - Manifold leak. - Cell overflowing out top. 	<ul style="list-style-type: none"> - Completely close drain valve. - Normal. - Normal. - See VII. - Check siphon-breaker. - Clear. - Check all piping. - See XII.
X. Bacteria/Fungus Growth	<ul style="list-style-type: none"> - From D.I. Water or other source. 	<ul style="list-style-type: none"> - Have sample analyzed. - Add UV light to D. I. water system. - Raise conductivity to 1,800 - 2,000 $\mu\text{Mho/cm}$. <i>Get paint vendor approval first.</i> - Use biocide. -Consult with local water treatment and D.I. Water system vendor.
XI Paint Solids Build-up on Outside of Membrane Shell.	<ul style="list-style-type: none"> - Reverse current flow in a multi-zone tank. - Loss of Electrolyte flow (cooling). - Loose electrical connection (more resistance). 	<ul style="list-style-type: none"> - Add diodes to Zone 1 Cells and clean Membrane Shells as required. - Look for kinking of Electrolyte tube, etc. Clean. - Tighten bolted joints. Clean...
XII. Cell Overflowing Top (look for rusted metal clamps.)	<ul style="list-style-type: none"> - Blocked overflow nozzle. - Vacuum lock in return manifold. - Electrode tab/supply tube blocking overflow nozzle. - Too much Electrolyte flow into cell via supply tubing. - Tubing stuck too far into manifold 	<ul style="list-style-type: none"> - Clear obstruction. - Increase vent opening or add breather stand pipe. - Twist tab to one side or other. - Measure flow and adjust individual 1/4" valve as needed. - Cut end at 45-degree angle and stick only 25mm [1"] into return manifold.
XIII. Paint/Rinse Entering Top of Cell.	<ul style="list-style-type: none"> - Spray rinse or paint dripping from work. 	<ul style="list-style-type: none"> - Use splash guard.

Problem	Possible Cause	Remedies
XIV. Low Rectifier Current Output.	<ul style="list-style-type: none"> - Loose bus bar or Electrode tab connections. - Poor grounding contact. - Fouled Membrane Shell/Electrode. - Low paint or Electrolyte conductivity. - Rectifier problem. - Bad fuse to a Cell. Old fuse block. 	<ul style="list-style-type: none"> - Tighten as required. - Clean/replace contacts. Clean racks. - Clean as required. - Investigate. - Investigate. - Repair/replace as necessary.
XV. Low Individual Cell Current Draw.	<ul style="list-style-type: none"> - Loose connection. - Corrosion at Electrode tab. - High current density. - If Roof or Floor Cell, Cell does not have upward slope. -See XIV. 	<ul style="list-style-type: none"> - Compression washer should be flat. - Use only stainless steel hardware. - Replace Membrane Shell. - Confirm proper slope to insure Cell does not fill with oxygen gas bubbles.
XVI. Low Pump Pressure.	<ul style="list-style-type: none"> - Backwards motor rotation. - Loose impeller. - Blocked suction piping. - Lost pump prime. - Wide-open by-pass valve. 	<ul style="list-style-type: none"> - Change phase connections. - Adjust clearances as necessary. - Clear. - Prime pump. - Close valve until about 4 lpm (1 gpm) goes through by-pass piping.
XVII. Low Pump Flow.	<ul style="list-style-type: none"> - Closed valves. - Blocked supply manifold. - Supply manifold too small. - Pump capacity. -See V. 	<ul style="list-style-type: none"> - Adjust. - Clear. - Increase size. - Check specifications of pump against recommended flow/pressure rates.
XVIII. High Electrolyte Conductivity.	<ul style="list-style-type: none"> - Sensor malfunction. - Set point too high. - Controller malfunction. - D. I. water valve malfunction. - See XIX. 	<ul style="list-style-type: none"> - Inspect and clean. - Adjust. - Test and calibrate or repair. Read controller manufacturers' manual. - Investigate.

Problem	Possible Cause	Remedies
XVIV. Low Electrolyte tank level	-Evaporation -Open tank drain -See XXII, IV, XII -Malfunctioning siphon breaker.	-Add more DI water. -Close valve. -Inspect & repair.
XIX. Conductivity Controller Malfunction.	- Blown fuse. - Sensor. - Relay contacts. - General failure.	- Check for continuity. - Clean & check alignment with flow. - Check for continuity. - See manufacturers' manual.
XX. Brown Sludge in Cell.	- Usually iron oxide-type sludge.	- Clean off Electrode and flush Membrane Shell. - Also, see III.
XXI. Low Electrolyte Conductivity	- See XIX. - D.I. water valve stuck open. - Tank has been recently filled with D. I. water.	- Investigate - Add enough acid to raise conductivity to 80% of normal specification.
XXII. Membrane Sweating (Observed with Paint Tank Empty).	- Condensation due to humidity. - Membrane permeability.	- Normal. - If excess, check rate for an hour, measuring every 15 minutes. Contact UFS.
XXIII. Electrolyte Overflowing Rim of Electrolyte Tank	- Blocked overflow/skimmer.	- Clear skimmer and piping.
XXIV. Cell Does Not Hang Straight.	- Strut channels offset.	- Use shims between necks of Cell and strut channel as needed.
XXV. Increased levels of dirt bits or snotters in the ED bath.	- Failed diode - Loose electrical connection	- Check with diode tester and replace as needed - Tighten as needed

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