Customer Satisfaction Pledge

The employees of UFS Corporation are looking forward to serving the needs of your company & customers in a professional and courteous manner. Here is our Mission. . .

- ◊ We ***add value*** to our customer's products
- ◊ We ***listen*** to our customers
- ◊ We ***deliver*** on time
- ◊ We ***act*** in a safe manner
- ◊ We ***recognize*** each person's individuality
- ◊ We ***believe*** the future is important to us
- ◊ We ***build*** our reputation one step at a time

UFS CORPORATION
Electrocoating Equipment

UFS Corporation
330 North 400 East, Valparaiso, IN 46383

Valparaiso, IN 46383
Tel: (219) 464-2027 Fax: (219) 464-8646
www.ufsc.com

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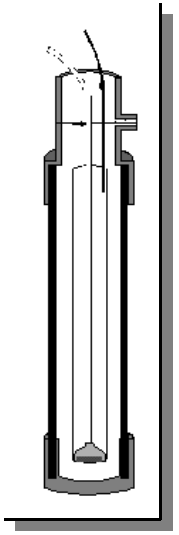
Membrane Electrode Cell XT / XL

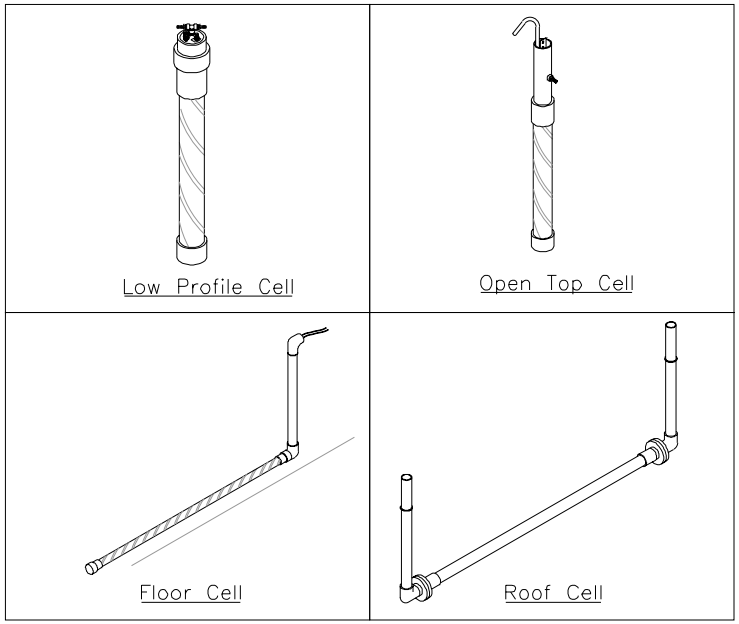
Installation Guide



Membrane Electrode Cells

Mission Statement

UFS Corporation is dedicated to providing quality, innovative solutions to the electrocoating industry. We have over 20 years experience and leadership in finishing system consultation, Membrane Electrode Cell manufacturing, Membrane Electrode System design, on-site service and installation assistance.



COMPANY DIRECTORY

Telephone Number: (219) 464-2027
Fax Number: (219) 464-8646

Accounting	Ext. 10
Autocad	Ext. 14
Customer Service	Ext. 28
International/Marketing	Ext. 27
Manufacturing	Ext. 24
Sales	Ext. 17
Technical Support	Ext. 24

Emergency Assistance After Hours:

Production Manager, Steve Jovanovic, (219) 405-1252
President, Frederick Hess, (219) 405-1106
Sales Engineer, Ed Ross, (219) 405-1102

UFS Corporation
330 North 400 East, Valparaiso, IN 46383

FORMS

Cell Maintenance Log

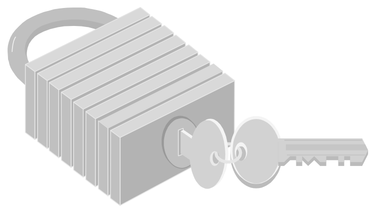
Tank Side:_____

Cell #	Date Inst.	Inspection Date			Comments

Table of Contents

SAFETY

Safety is something that cannot be overlooked!



A safe work environment for our customers (their employees and outside contractors) is of utmost importance to UFS Corporation. All applicable OSHA and owner's safety requirements must be followed when performing any maintenance, inspection, repair, or testing on Electrodes and/or Electrode Systems. This includes, but not limited to, the following safety regulations: Lockout/Tagout (Energy Control); Hazard Communication; Confined Spaces; Personal Protective Equipment; Electrical Safe Work Practice; Ergonomics and Material Handling; Accident Prevention Signs (Danger—Energized Equipment).

Before Installing or working on the DC rectifier, Lockout/Tagout procedures are to be followed.

On-going training of employees on ED equipment and system installation, operation, and maintenance of UFSc components is strongly recommended. MSDS (Material Safety Data Sheets) are provided for UFSc materials. Replacement or missing copies are available upon request from the UFSc Safety Coordinator.

DESCRIPTION AND FUNCTION

The TECTRON™ XL (formerly known as the TECTRON2 X Cell) is a Membrane Electrode that differs only in size from the TECTRON™XT (formerly known as the TECTRON XCell) Membrane Electrode. The TECTRON XL ME Cell is larger than a regular TECTRON XT ME Cell; therefore, fewer cells are required in an e-coat tank. The TECTRON XL Cell is installed and operates in the same way as a regular TECTRON XT ME Cell.

The TECTRON XL/XT ME Cell is a flushable anode Cell used in electrocoating (ED) paint system with most types of paint. It serves as the opposing electrode and simultaneoulsy removes solubilizer, or neutralizer (usually a common organic acid) from the paint to maintain chemical balance. The obvious benefits of the TECTRON XL/XT ME Cell is its tubular, or cylindrical shape and the unique features that result from this profile.

FORMS

Cell Ammeter Log

Tank Side:____________________ Ammeter Readings

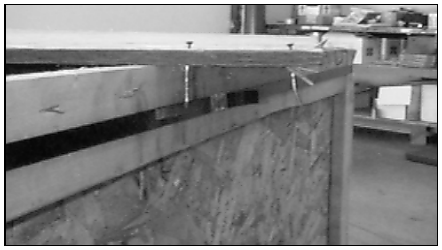
Cell #	Date	Date	Date	Date	Date	Date

ANOLYTE SYSTEM TROUBLESHOOTING

Problem	Possible Cause	Remedies
XIX. Low anolyte tank level	-Evaporation -Open tank drain -See XXI, V, XI -Malfunctioning siphon breaker	-Add more DI water -Close valve
XX. Conductivity controller malfunction	-Blown fuse -Sensor -Relay contacts -General failure	-Check for continuity -Clean & check for alignment with flow -Check for continuity -See manufacturers' manual
XXI. Brown sludge in Cell	-Usually iron oxide-type sludge	-Clean off Electrode and flush Membrane Shell -Also see III
XXII. Low anolyte conductivity	-See XX -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
XXIII. 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 UFSc.
XXIV. Anolyte overflowing rim of anolyte tank	-Blocked overflow/skimmer	-Clear skimmer and piping
XXV. Cell does not hang straight	-Strut channels offset	-Use shims between necks of Cell and strut channel as needed
XXVI. Increased levels of dirt bits in the ED bath	-Failed diode -Loose electrical connection	-Check with diode tester and replace as needed -Tighten as needed

UNPACKING

Unpacking the Crate

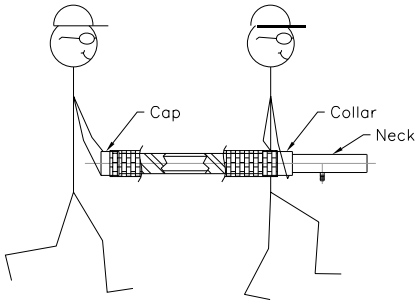


Unpack the Membrane Shells and Electrodes carefully to avoid damage. Remove the lid and any hold-down blocks along with any exposed nails, staples etc. that might puncture the shells. Do not remove the bubble wrap or plastic packing until ME Shells are ready to be installed in the E-coat tank. The bubble wrap or plastic packing will protect the Shell as it is taken from the crate into the ED system. TAKE CARE NOT TO PUNCTURE OR DAMAGE THE MEMBRANE SHELLS. Significant cuts or punctures generally cannot be repaired and render the entire Membrane Shell unusable.

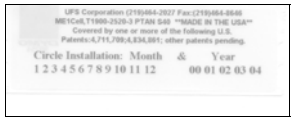
The Membrane Shells should always be supported at the cap and near the collar and neck to avoid damage to the membrane.

Please inspect each Membrane Shell for possible defects and report any defect immediately to UFS Corporation. Cuts or punctures due to improper handling are the responsibility of the owner/installer. ME Cells with manufacturing defects will be repaired/replaced free of charge by UFS Corporation, upon return of the defective item. (Note: Items that are sent back to UFSc for inspection must be sent prepaid and require prior authorization. Please see the warranty section for further details. Pg.15)

The Membrane Shells should always be supported at the Cap and near the Collar and Neck to avoid damage to the membrane.



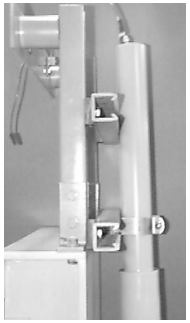
INSTALLATION



Circle the installation month and year on the label located at the tope of the ME Cell. This will assist in knowing when replacement ME Cells will be needed.

Refer to installation layout drawings for proper placement. (Page 20-23)

Mount the Membrane Shell to the horizontal strut channels with two piece clamps. DO NOT OVER TIGHTEN CLAMPS!



Each ME Cell should have a 76.2 mm (3") lateral clearance from any obstruction attached to or protruding through the ED tank wall.

Open Top Cells—Pull the excess supply tubing from inside the Electrode. Remove and discard the yellow sticker.

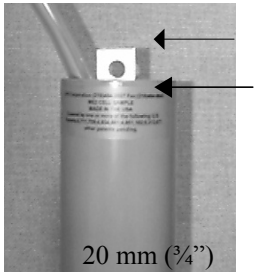
Low Profile Cells—Are pre-assembled at the factory. Take care when handling and support the ME Cell at the cap and near the bulkhead fitting. Always install a fully assembled low profile XT/XL Cell.

Open Top XT/XL Cells Only:

Lower the electrode into the Shell slowly. DO NOT DROP IT IN!

Generally, electrodes project out the top of the neck approximately 20mm (3/4"). If the electrode projects further, it is not properly seated in the bottom of the Membrane Shell. Jiggle and twist the electrode until it slips into place.

Maintain a minimal 25mm (1") air gap between the exposed electrode portion of cable/electrode and possible ground.



ANOLYTE SYSTEM TROUBLESHOOTING

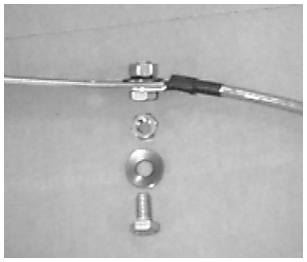
Problem	Possible Cause	Remedies
XIV. Paint/rinse entering top of Cell	-Spray rinse or paint dripping from work	-Use splash guard
XV. Low rectifier current output	-Loose bus bar or Electrode tab connections -Poor grounding contact -Fouled Membrane Shell/ Electrode -Low paint or anolyte conductivity -Rectifier problem -Bad fuse to Cell. Old fuse block	-Tighten as required -Clean/replace contacts. Clean racks. -Clean as required -Investigate -Investigate -Repair/replace as necessary
XVI. Low individual Cell current draw	-Loose connection -Corrosion at Electrode tab -High current density -If Roof or Floor Cell, Cell does not have upward slope -See XV	-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
XVII. Low pump pressure	- Backwards motor rotation -Loose impeller -Blocked suction piping -Lost pump prime -Wide-open by-pass valve	-Change phase connections -Adjust clearances as necessary -Clear -Prime pump -Close valve until about 4 lpm (1 gpm) goes through by-pass piping
VXIII. Low pump flow	-Closed valves -Blocked supply manifold -Supply manifold too small -Pump capacity -See VI	-Adjust -Clear -Increase size -Check specifications of pump against recommended flow/pressure rates
XVIV. High anolyte conductivity	-Sensor malfunction -Set point too high -Controller malfunction -D.I. Water valve malfunction -See XX	-Inspect and clean -Adjust -Test and calibrate or repair. Read controller manufacturers' manual. -Investigate

ANOLYTE SYSTEM TROUBLESHOOTING

Problem	Possible Cause	Remedies
IX. Broken PVC cap at bottom of Cell	-Dropping Electrode into Membrane Shell	-Replace Membrane Shell. Lower Electrode slowly into Membrane Shell. -DO NOT DROP!
X. Low Anolyte Tank Level	-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	-Completely close drain valve -Normal -See VIII Check siphon-breaker -Clear -Check all piping -See XIII
XI. Bacteria/Fungus Growth	-From D.I. Water or other source	-Have sample analyzed -Add UV light to D.I. Water system. -Raise conductivity to 1,800-2,000 µMho/cm. Get paint vendor approval first. -Use biocide -Consult with local water treatment and D.I. Water system vendor.
XII. Paint solids build-up on outside of Membrane Shell	-Reverse current flow in a multi-zone tank -Loss of anolyte flow (cooling) -Loose electrical connection (more resistance)	-Add diodes to Zone 1 Cells and clean Membrane Shells as required -Look for kinking of anolyte tube, etc. clean -Tighten bolted joints, Clean...
XIII. Cell overflowing top (look for rusted metal clamps)	-Blocked overflow nozzle -Vacuum lock in return manifolds -Electrode tab/supply tube blocking overflow nozzle -Too much anolyte flow into cell via supply tubing -Tubing stuck too far into manifold	-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

INSTALLATION

Open Top Cells



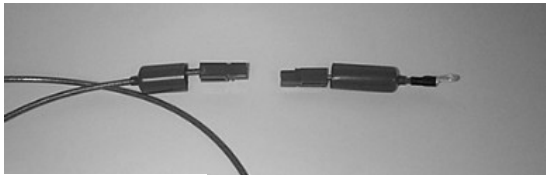
Using the 5/16" stainless steel nut, bolt, and compression washer set provided, connect the lug end of the cable lead to the electrode tab. Attach the other end to the bus bar.

Low Profile Cells

Using the 5/16" stainless steel nut, bolt, and lock washer set provided, attach the lug end of the cable lead to the threaded stud on top of the bulkhead fitting. Attach the other end to the bus bar.

Maintain a minimal 25mm (1") air gap between the exposed electrode portion of cable/ electrode and possible ground.

To reduce the number of connections, UFSc recommends ganging 3-5 cable leads together with a bolt-style copper lug.



Cable Lead

Ganged Cable Lead

INSTALLATION

Open Top / Low Profile ME Cells

Select only clear PVC tubing to use for anolyte supply and return.

Open Top ME Cells

Cut the anolyte supply tube attached to the electrode to the appropriate length, leaving approximately 300mm (12") of slack. Connect the tubing to the corresponding hosebarb on the supply manifold.

Low Profile ME Cells

Connect the tubing to the appropriate hosebarb on the supply manifold and the inlet hosebarb of the bulkhead fitting.

Return Tubing Preparation

Cut a length of anolyte return tubing that will not kink when installed, allowing for 25mm (1") of insertion into the return manifold. Cut one end at a 45° angle, inserting this end into the corresponding hole in the return manifold.

Cut the other end at 90° and lubricate (do not use any lubricant containing silicone) the inside with a little water. For Open Top ME Cells, connect this end of the tubing to the ME Cell overflow nozzle. For Low Profile ME Cells, connect this end of the tubing to the outlet hosebarb of the bulkhead fitting.

ANOLYTE SYSTEM TROUBLESHOOTING

Problem	Possible Cause	Remedies
V. Anolyte return from a Cell	-Cell overflow nozzle blocked -Return tubing kinked -Blocked strainer bag	-Twist Electrode tab one-way or other and move anolyte 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
VI. Anolyte supply pump not operating	-No electrical supply -Lost prime -Blocked suction -Cavitation -Pump/impeller motor failure	-Check controls, connections and fuses -Reprime pump, check anolyte tank level -Clear obstruction -Check suction piping for possible air leaks -Replace failed device
VII. No anolyte supply to Cell	-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 Anolyte Filter -Kinked supply tubing	-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
VIII. Leaking Cell	-Membrane cut from fallen work or from fishing work out of tank -Abrasion from another object in paint tank	-Immediately isolate Cell by closing supply valve and disconnecting cable lead. At first convenience, remove Electrode and rinse both inside and out. Pull ME Shell and rinse inside/out. Do not let dry out. Fill ME Shell with D.I. Water. Place bucket and measure volume of leak for an hour. -Move Cell so that there is at least 150 mm (3") of side to side clearance.

ANOLYTE SYSTEM TROUBLESHOOTING

Service Reference

Anolyte System Trouble shooting—TECTRON™ Membrane Electrodes Open Top/ Low Profile / Roof / Floor

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

Problem	Possible Cause	Remedies
I. Cloudy or Paint Colored Anolyte from all Cells	-Cut, torn, or ripped Membrane Shell -Overspray or splash	-Turn off anolyte pump and use flashlight to locate liquid inside the Cell. Cells with low level should be pulled for further investigation. -Install splash guards.
II. Anolyte Color Change	-Paint contamination -Dark color (like coffee) usually is from rapid deterioration of stainless steel electrodes. -D.I. Water solenoid valve is not adding water to the anolyte tank.	-See I & VII -Reduce level of contaminants by dumping anolyte tank, lower conductivity set point and have anolyte checked for chlorides. -Check conductivity controller, conductivity sensor, solenoid valve, and D.I. Water supply.
III. Dark colored anolyte inside Electrode	-Low turnover of anolyte inside Electrode	-Create by-pass opening in bottom boot seal with 3mm (1/8") diameter hole.
IV. No Anolyte Return from a Cell	-No supply -Blockage at bottom of Cell -Vacuum lock in return manifold	-See V, VI and VIII -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.

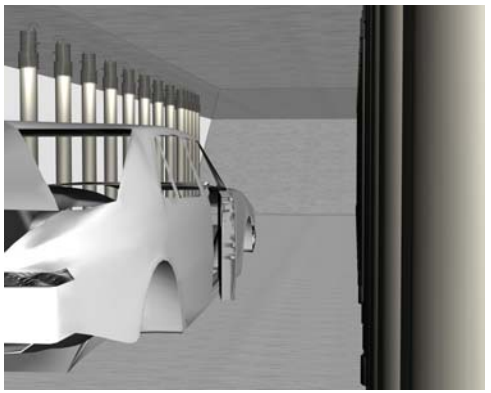
INSTALLATION

Leak Testing Before Start-up

After all ME Cells are installed and the electrolyte piping has been flushed, turn on the Cell Circulation System and adjust the flow rate to each ME Cell for approximately 0.8 lpm/sm (0.2 gpm/sf) of Electrode area no less than 1.5 lpm/cell (1/3 gpm). Check each ME Cell for leaks. The Membrane Shells are warranted against leakage due to materials and workmanship (see warranty pg.15). The Membrane does have a finite water permeability, and it is normal for it to become wet and "sweat" after several minutes. Report any defective Membrane Shells, or shells that have excessive Membrane permeability, immediately to UFS Corporation.

Post Installation Checklist

- Does the Membrane Shell hang plumb?
- Is the compression washer flat?
- Is the Electrode properly seated?
- Is the cable lead connected to the bus bar?
- Are the clamps over tightened?
- Is the supply tubing connected to the flow indicator?
- Is the return tubing connected to the overflow nozzle?



OPERATION

The essentials of normal operating procedures are:

- Establish and maintain proper anolyte flow and conductivity to each ME Cell
- Periodically inspect the anolyte overflow tubing for signs of paint leakage into the anolyte
- Monitor the total current draw and voltage
- Check the color of the anolyte each shift

During the first several weeks of operation, close attention should be paid to the color of the anolyte. Occasionally 316 SS Membrane Electrodes will be attacked by some contamination in the paint bath of the anolyte circuit. If this is occurring, Membrane Electrodes will become pitted and the anolyte will be discolored (brown or black, rather than a normal clear, pale yellow color). .

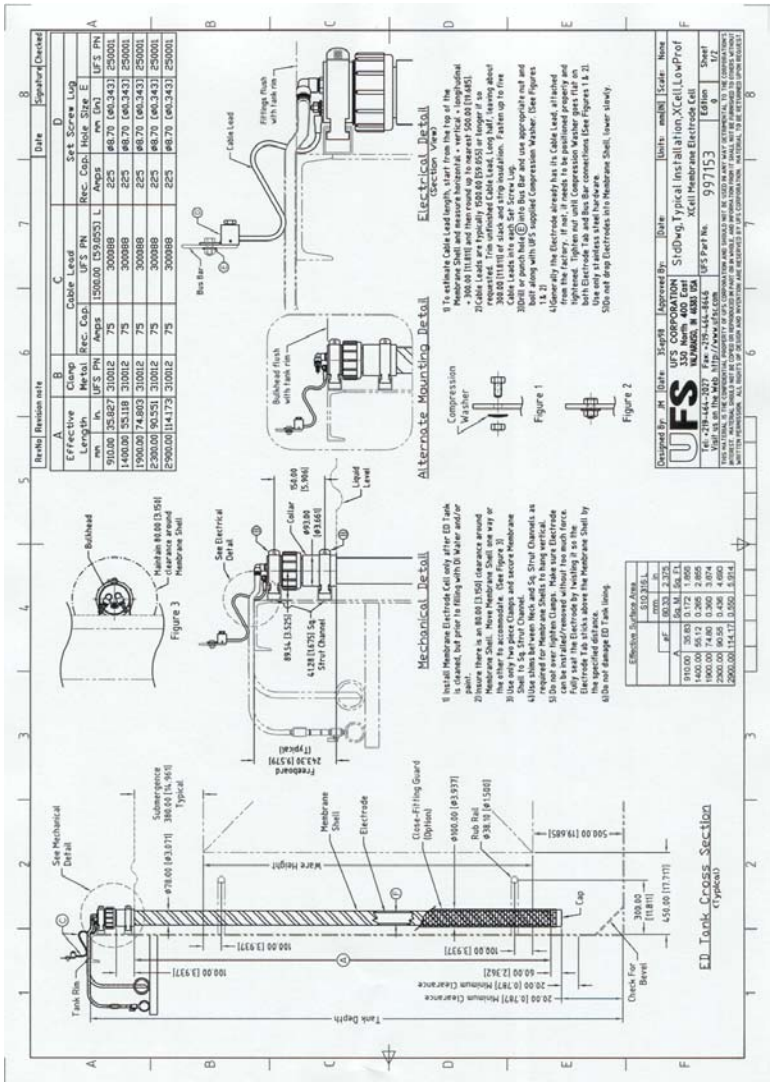
The color chart below ranges from a clear, light yellow color ("normal") to a dark color, similar to coffee. Your anolyte color will be somewhere within this range. Compare your daily anolyte sample to the color chart and record the color on your daily log sheet. The color should always be "normal". The pale yellow color at the left or the slight darker yellow (Stage One) is typical anolyte color. If anolyte begins to turn darker, yellowier, or reddish, that is generally an indication of iron particles in your anolyte system. This is an early warning sign of rapid electrode deterioration. The darker your anolyte, the greater the amount of erosion. If these conditions are observed, it is important that prompt action be taken. Contact UFSc for assistance. UFSc strongly recommends the use of any anti-corrosive additive that your ED paint supplier might suggest.

Normal Stage One Stage Two Stage Three

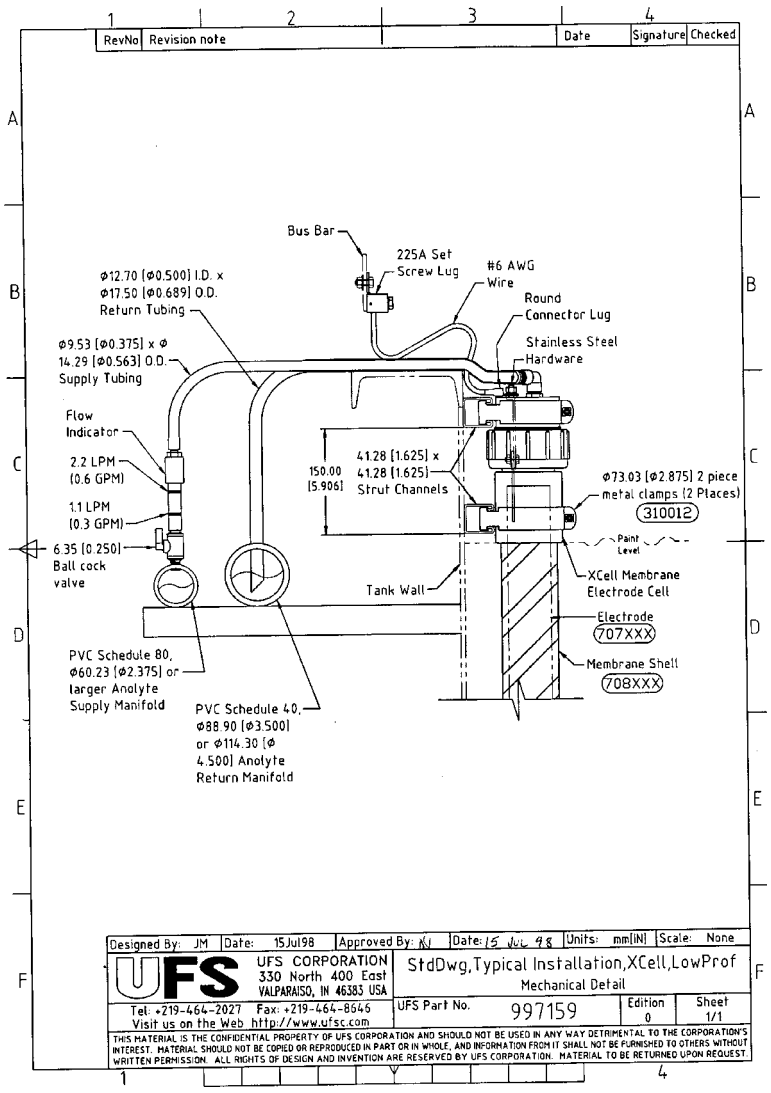
Regular logging of system data is essential to diagnose operating problems and plan the orderly replacement of ME Cells. (See example forms pg. 29-30.) The following key data should be recorded at least once a day:

1. Anolyte Conductivity

GENERAL ARRANGEMENT DRAWINGS



GENERAL ARRANGEMENT DRAWINGS



OPERATION

2. Paint Bath pH and conductivity
3. Total Anolyte Flow (gpm)
4. Rectifier Voltage (each zone)
5. Rectifier Amperage (each zone)
6. Anolyte Color

This data should be taken at the same time each day, with the same work load in the paint bath.

Optional data, useful for more detailed analysis include:

1. Amperage of individual ME Cells or group of ME Cells
2. Acid additions to the bath (gal/wk)
3. Amps-hours of operation (amp-hr/wk)

Maintenance

The routine maintenance required for the ME TECTRON Electrode Cell is minimal. This section will address the maintenance procedures.

Cell Removal

To remove the ME Cell for maintenance, inspection, replacement or long-term storage, do the following:

1. MAKE SURE THE POWER IS TURNED OFF AND LOCKED AT THE MAIN PANEL! Never attempt to remove work on a “live” ME Cell.
2. Turn off the electrolyte supply valve and remove the electrolyte supply and return tubing from the valve.
3. Unplug the quick-disconnect cable lead, if used, or disconnect the cable lead from the ME Electrode. Do not grab the cable lead to remove the ME Electrode. This can cause damage to the cable lead.
4. On open top ME Cells, remove the ME Electrode from the ME Shell. The anolyte solution should be poured down a suitable drain or into the electrolyte tank.
5. Disconnect the ME Shell from the strut channels by loosening and re-

MAINTENANCE/STORAGE

moving the mounting clamps. Pull the ME Cell out of the tank by lifting straight up. Do not allow the ME Shell to rub against any part of the horizontal strut channel or any other tank structure. Pour its electrolyte solution into a suitable drain or into the electrolyte tank. DO NOT ALLOW THE MEMBRANES TO DRY OUT.

6. If the ME Shells are to be removed from the tank for an extended period of time, excess paint should be removed from the outside of the ME Shells by rinsing with an appropriate dilute to the cleaning solution for the ultrafilter cartridge. Dried paint on the outside of the ME Shell can significantly increase the electrical resistance of the Membrane. Keep the ME Shells moist or immediately place into poly sleeve and fully seal both ends.

Long Term Storage

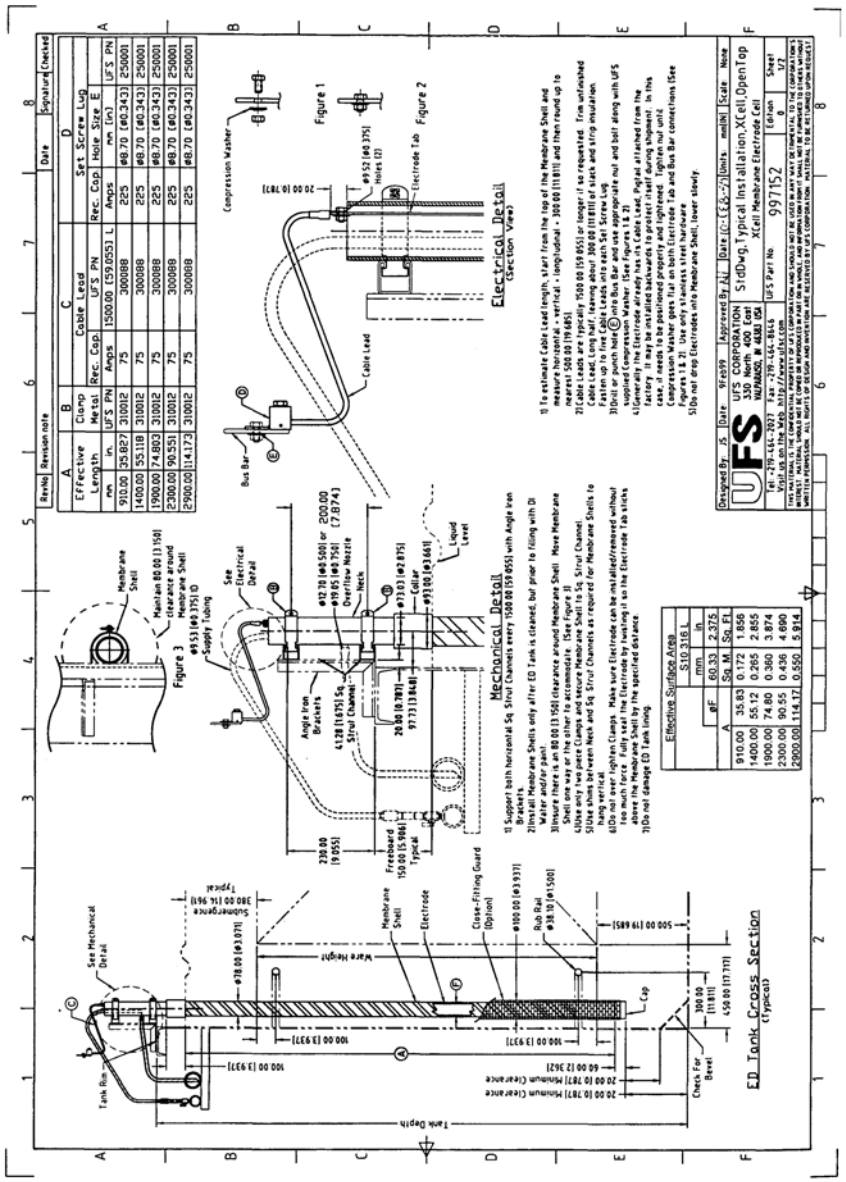
As the e-coat tank level is lowered, spray the outside of the ME Cells with a D.I. water hose to rinse off paint solids. Remove the ME Electrode and store in a clean environment. It is okay to let the ME Electrode dry out. Remove the ME Shell and immediately store in a long poly sleeve (measuring 150mm (6") wide when flat and 0.1 mm (4 mil.) thick) and completely seal both ends to preserve moisture. Do note let the ME Shell dry out. Store ME Shells in the vertical position in order to protect them from being crushed by a heavy object.

Reinstallation of the Cells

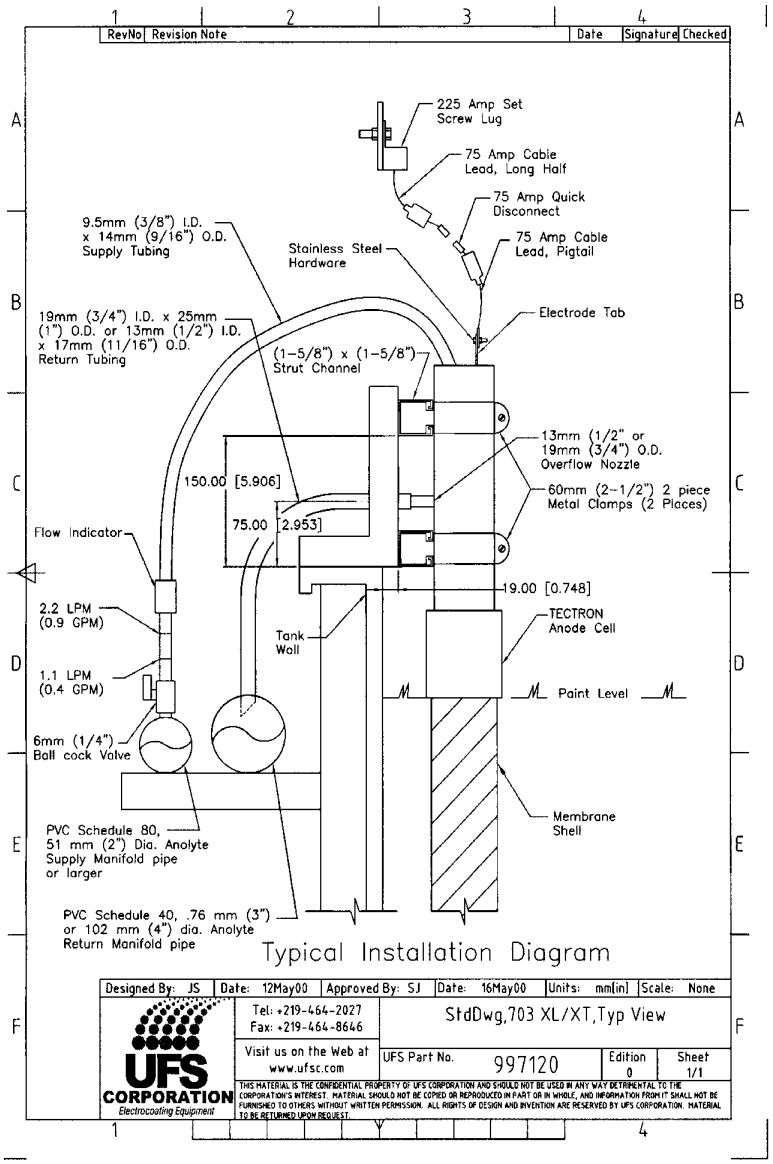
Reverse the sequence for reinstallation. However, it is important to note that the ME Shell will be buoyant and difficult to submerge if it is not filled with D.I. water or the ME Electrode. Fill the ME Shell with D.I. water first to avoid damaging the Shell as it is placed under the liquid level. Remember to lower the ME Electrode slowly into the Shell-DO NOT DROP THE ME ELECTRODE.

Note: If the ME Shell is filled with D.I. water first, the ME Electrode must be lowered slowly into the ME Shell to keep D.I. water from overflowing the top of the ME Shell.

GENERAL ARRANGEMENT DRAWINGS



GENERAL ARRANGEMENT DRAWINGS



SPARE PARTS

Membrane Electrode Inspection and Cell Rotation

ME Cells have a limited life, and it is normal for them to deteriorate over a period of time. The Electrode itself erodes naturally as part of the electrochemical process. The ion-selective membrane also deteriorates: it will slowly lose its acid removal capability, and its electrical resistance will increase. The rates of deterioration of the Membrane and Electrode are functions of current density (amps/sf), paint chemistry, and other operating conditions such as anolyte chemistry and flow rate.

Under normal conditions and proper operating procedures, the ME Cell will last at least one to two years before it has deteriorated to the point that it must be replaced. With a well operated and maintained system and paint chemistry, the ME Cell life normally becomes a function of current density and operating time only. It is normal for ME Cells near the entrance zone of a mono-rail, conveyor-type electrocoat tank to deteriorate more rapidly than ME Cells near the exit end.

It is advisable to follow a program of moving the electrodes forward 6 to 12 positions each year. In addition, twist the Electrode 1/3 turn every three months in an open top ME Cell. By doing this, the wear on the Electrode will be more even, and its life will be prolonged. It is advisable to keep a "Maintenance Scheduling Log Sheet." (See forms pg. 30 for example.)

Spare Parts and Accessories

Membranes do eventually wear out and Electrodes will eventually erode. The usable life will vary with service conditions and maintenance practice. Spare or replacement parts are available from :

UFS Corporation
330 North 400 East
Valparaiso, IN 46383 USA
Tel: (219) 464-2027 Ext. 28 / Fax: (219) 464-8646

We recommend the following spare parts strategy:

SPARE PARTS

Recommended Spare Parts Stock Level

Component Noun Name	Component Part Number	Initial Order Qty.	Recommended Stock Level
Electrode, Stainless Steel	720/707...	See Original Order	5% of total, but no less than 4 units
Membrane Shell	721/708...	See Original Order	10% of total, but no less than 8 units
Clamp	310...	See Original Order	10% of total, but no less than 8 units
Cable Lead	300...	See Original Order	10% of total, but no less than 8 units
Return Tubing	060...	See Original Order	10% of total x 1 meter, but no less than 8 meters
Bulkhead Fitting	095...	See Original Order	5% of total, but no less than 4 units

***For assistance please contact UFS Corporation*

XL ME CELL PRODUCT DATA SHEET

to the work package height or tank depth.

- Membrane Shell is PVC, plastic, and epoxy construction.
- Membrane Shell weighs approximately 2-5 kg (4-11 lbs.), depending on length.
- The standard Electrode has a 60.3 mm (2.375 in.) outside diameter and is made of 316L Schedule 10 stainless steel.
- 316L Electrode weight is 3.97 kg/m (2/66 lbs/ft) per linear foot of electrode material.
- The Electrode has 0.190m^2/m (0.622 ft^2/ft) of surface area per unit of length.
- Current density of 32-54 amp/m^2 (3-5 amps/ft^2) is typical at 200-400 volts.
- Recommended electrolyte flow rate is 8 lpm/sm (2 gpm/10 sft) per Cell at 3.5 bar (50 ft.) of Head.
- Standard membrane guard.
- 2 x two-piece metal clamps.
- Isolation valve with flow indicator.
- 1.5 m (4.93 ft.) of 13.30 mm^2 (AUG #6) cable lead.
- 1.5 m (4.93 ft.) of supply and return tubing.

Available Versions

- Open top version suitable for most monorail type conveyor systems.
- Low Profile version suitable for hoist, or indexing conveyor systems. Includes a Bulkhead Fitting.

XL ME CELL PRODUCT DATA SHEET

TECTRON XL™ Membrane Electrode Cell

The TECTRON XL Membrane Electrode Cell is designed to meet the needs of the general industrial marketplace. Customers with greater demands from a high through-put system will want to consider the higher performing TECTRON HD™ Cell.

The purpose of the ME Cell is to deliver current to the ED bath (so painting work is performed) and to maintain proper ED paint bath pH.

Advantages

- Economical price point.
- Fewer ME Cells required and lower installation costs.

Features

- Lightweight, two-part design requires only one person for installation or removal.
- Cell is comprised of a Membrane Shell and an Electrode, which can be either the anode or the cathode.
- Either anion or cation selective membrane based upon the type of paint used.
- Cylindrical Electrode design has no exposed edges to wear rapidly, develop hot spots, or pinch the membrane.
- Fewer Cells needed to achieve optimum, uniform film build. Fewer installation accessories are needed.
- Cell spacing can be adjusted to balance current draw.
- Anodes are sacrificial making it difficult to forecast anode life. A 2 year life is typical for entry Cells. Anodes in other position will last longer.
- Reduced inspection time with fewer Cells to maintain. Fewer piping and electrical connections are needed.
- White color scheme.

Properties

- The XL Cell's maximum outside diameter of 98.0 mm (3.858 inches).
- Membrane Shell effective length up to 2900 mm (114.2 in) can be sized

WARRANTY

We warrant all equipment manufactured by UFSc to be free from defects in material and manufacture at the time of shipment for a period of one (1) year from the date of shipment. We will furnish without charge, but not install, replacements for such parts as we find to have been defective.

This warranty shall not apply to any equipment which has been subjected to misuse, neglect or accident, or has been altered or tampered with, or if corrective work has been done thereon without our specific written consent. No allowances will be made for such corrective work done without consent. Improper maintenance, deterioration by chemical action, and wear, do not constitute defects.

Equipment manufactured by others, and included in our offering, is not warranted in any way by us but carries only the manufacturer's warranty, if any. All ME Electrodes (and or Cathodes), of any material, are not warranted by us in any way since they by nature are sacrificial and will erode or corrode away with time.

All warranty claims must be submitted within ten (10) days of discovery of defects or shall be deemed waived. All parts returned for inspection must be sent prepaid. No representative of our company has any authority to waive, alter, vary or add to the terms hereof without prior approval in writing. The foregoing is in lieu of all other warranties (including that of merchantability), whether express or implied.

Liability

It is expressly understood that our liability, including that for breachch of contract, negligence, strict liability in term, or otherwise for our products is limited to the furnishing of such replacement parts, and that UFSc will not be liable for any expense, injury, loss or damage, whether direct or consequential, including but not limited to loss of profits, production, increased cost of operation, or spoilage of material, arising in connection with the sale or use of, or inability to use, our equipment of products for any purpose , except as herein provided.

XT ME CELL PRODUCT DATA SHEET

TECTRON XT™ Membrane Electrode Cell

The TECTRON XT Membrane Electrode (ME) Cell is designed to meet the needs of the general industrial market place. Those customers with greater demands from a high through-put system will want to consider the higher performing TECTRON SD Cells.

The purpose of the ME Cell is to deliver current to the ED bath (so painting work is performed) and maintain proper ED paint bath pH.

Advantages

- Economical price point.
- Original Tubular ME Cell design.

Features

- Lightweight, two-part design requires only one person for installation or removal
- Cell is comprised of a Membrane Shell and an Electrode, which can be either the anode or the cathode.
- Either anion or cation selective membrane based upon the type of paint used.
- Cylindrical Electrode design has no exposed edges to wear rapidly, develop hot spots, or pinch the membrane.
- Cell spacing can be adjusted to balance current draw.
- Anodes are sacrificial making it difficult to forecast anode life. A two year life is typical for entry Cells. Anodes in other positions will last longer.
- White color scheme.

Properties

- The XT Cell's maximum outside diameter is 85mm (3.34 inches).
- Membrane Shell effective length up to 2900 mm (114.2 in) can be sized to the work package height or tank depth.
- Membrane Shell is PVC, plastic, and epoxy construction.

XT ME CELL PRODUCT DATA SHEET

- Membrane Shell weighs approximately 1.5-4 kg (3-9 lbs.), depending on length.
- The standard Electrode has a 48.26 mm (1.900 inch) outside diameter and is made of 316L Schedule 10 stainless steel.
- 316L Electrode weight is 3.13 kg/m (2.1 lbs/ft) per linear distance of electrode material.
- The Electrode has 0.150m^2/m (0.497ft^2/ft) of surface area per unit of length.
- Current density of 32-54 amp/m^2 (3-5 amps/ft^2) is typical at 200-400 volts.
- Recommended electrolyte flow rate is 8 lpm/sm (2 gpm/10 sf) per Cell at 1.5 Bar (50 ft) of Head. Not for Low Profile use a 1/2 bar (16 ft) pressure drop across the Cell.
- Standard membrane guard.
- 2 x two-piece metal clamps.
- Isolation valve.
- 1.5 m (4.93 ft.) of 13.30 mm^2 (AWG #6) cable lead.
- 1.5 m (4.93 ft.) of supply and return tubing.

Available Versions

- Open top version suitable for most monorail type conveyor systems.
- Low Profile version suitable for hoist, or indexing conveyor systems. Includes a Bulkhead Fitting.