TECHNICAL REFERENCE

TOPIC: TECTRON T-5 SUPERTUBE VERSUS BOX OR SEMI-CIRCULAR DESIGNS

Box Cells, semi-circular Cells and tubular Cells are all used in automotive E-coat paint lines. Of these, the tubular TECTRON SuperTube ("T-5") is the best choice to meet the needs of automotive and large industrial e-coaters. As proof, consider the following design and performance issues with the competitors products:

Weight and size: An overhead crane is required to install or remove box and semi-circular Cells, creating maintenance, downtime and manpower costs.

Membrane-to-Anode Ratio: Box Cells have a 1:1 ratio; for every square foot of anode area there is one square foot of membrane area. Semi-circular Cells range from 1.06:1 to 1.3:1. The lower membrane-to-anode ratio causes higher membrane current density and shorter life spans than the "T-5" at 1.45:1.

Leaking Cells: Box and semi-circular Cells use rubber gaskets in their construction. Because the bolted design makes it virtually impossible to create a permanent seal, leaks are a constant concern of the e-coat operator.

Geometry: Box Cells are constructed of large, flat electrodes inside of large, flat fiberglass and membrane housings. Semi-circular Cells are constructed of large slightly-bent electrodes inside large slightly-bent housings. Each design's expansive areas create opportunities for inconsistent flow patterns. Insufficient acid removal, hot spots and premature electrode wear may be the end result.

Rebuilds: Rebuilding Box and semi-circular Cells can be messy, time-consuming and costly with no guarantee the re-built product will perform.

UFS Corporation's TECTRON Tubular ME cells are available in several diameters. The "T-5" is a 1:1 replacement for the semi-circular Cell. The smaller diameter 3", 2" and 1-1/2" ME Cells are well suited for general industrial, parts, agricultural and appliance applications.

Conversion to the TECTRON Cell is easy as illustrated in Installation Reference #993164 *Retrofitting Box Cells with TECTRON ME Cells*. Bulletin #991116 *Box Cell Retrofit Specification Guide* offers several design considerations.

Please refer to the chart on the reverse side for a complete comparison between the TECTRON T-5 SuperTube ME Cell and box and semi-circular designs.

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T-5 SuperTube vs. Box and Semi-Circular Cells

	TUBULAR TECTRON T-5 SuperTube	BOX Cells	SEMI-CIRCULAR Cells
ELECTRODE			
Material	316L, 5.563 inch Sch. 10, pipe.	Flat 316 plate, 10 gauge or more.	Slightly bent 316 plate, 10 gauge or more.
Weight	13– 28 kg. (36 –75 lbs.)	57-77 kg (125-170 lbs.)	17-34 kg. (38-74 lbs.)
Inspection	Pull from top by one person.	Remove box from tank. Crane is needed.	Pull out from top. Crane may be needed.
ANOLYTE			
Anolyte Flow	Uniform. Optimal flow completely around Electrode; no dead spots.	Uneven. Poor circulation in the corners, where bacteria can thrive and corrosion can occur.	Uneven. Poor circulation in the corners, where bacteria can thrive and corrosion can occur.
Individual Anolyte Flow Indicators	Yes	Yes	Yes
MEMBRANE			
Types	PTAR™ Membrane verified with QA.	Common variety. Chance of uneven characteristics.	Common variety. Chance of uneven characteristics.
Membrane Area vs. Electrode Area	1.45:1	1:1	1.06:1 to 1.3:1
Replacement	Can replace shell (and/or electrode). Also can repair small tears and cuts in existing membrane shell.	Yes	Yes
HOUSING			
Construction	One piece PVC and PP, therefore no joints or holes that can leak.	Made from stock bar and sheet PVC with gasket and as many as 50 bolts.	FRP with a gasket and up to 40 bolts.
Weight	5– 9 kg. (14-23 lbs.)	Up to 68 kg. (150 lbs.).	Up to 23 kg. (50 lbs.).
MISCELLANEOUS			
Membrane Guard	Close Fitting Guard available	Heavy grill "blinds" the membrane.	1: x 1" openings. Size is large enough to expose membrane to cuts from falling parts and maintenance removal tools.
Number of Connections	Same as semi-circular Cell	Few	Relatively few.
Location Flexibility	Can move Cells as needed during installation to avoid obstructions.	Must know locations before ED tank is designed.	Should know locations before ED tank is designed.
Dirt Creation	Paint solids flow completely around the Cell. No dirt created.	Paint solids settle out on horizontal surfaces of box causing dirt.	Paint solids fall out of solution in hollow area behind cell causing dirt.
Rebuild	No need to. Membrane Shell and Electrode can be individually replaced with new spares.	Yes	Yes