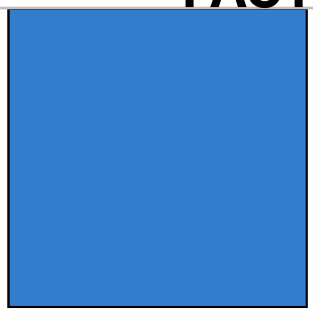
FACT SHEET



Thinking about going THIN?

The cost savings is in doing your homework

A new vendor to the E-coat marketplace has introduced a narrow box anode cell called the LD8. It is 10-1/4" wide and has a membrane width of 8-1/2". UFS compared the new cell to its TECTRON 2 Tubular ME Cells to verify initial performance claims. This Fact Sheet is meant to shine a light at these claims and examine each of them in depth.

'LD48 –48 equivalent to 2 x 48" - 2" tubular Cells.'

The LD48 has 0.71 SF per vertical foot of height. Thus, the 48" tall box cell has 2.84 SF of anode surface. 2 x TECTRON T2 - 48" ME Cells have 4.98 SF of anode surface area, or 75% more than 1 x LD8 –48. Although no evidence or third party testing is mentioned, our research indicated that Ford Motor tested tubular and box cells in 1988 and they concluded that for the same amount of anode area, tubular cells deliver 8 to 12% MORE electric current than box cells.

'Best throw power for front and side flux generation'

Because no explanation or testing is provided, we can only examine history. Box anode cells were the first commercialized type of anode cell used in E-coat. Since the introduction of the TECTRON Cell almost 20 years ago, the box cell has all but disappeared from industrial E-coat systems. Tubular ME cells currently have over 90% of the market. In automotive E-coat systems, the box cell has been replaced by both crescent-shaped & tubular Cells.

During field and laboratory testing of all anode geometry shapes for a 1996 paper presented at E-coat '96, DuPont revealed the following: 'tube cell appears to have the broadest electrical field...which infers more coating time…'.

Such research, along with the 1988 Ford study, verify that lower electrical resistance of the tubular Cells can result in better performance over other cell geometries.

'1/2 the flow meters of tubular cells'

This can only be valid if the LD8-48" box cell's 2.48 SF of anode surface area is the same as 4.98 SF of 2 x TECRTON T2 - 48", which is not true.

'1/3 the installation time of tubular cells'

Each LD8 is secured with 2 bolts. Identically, each TECTRON T2 Cell is with secured with 2 bolts. So no advantage since about 2 x LD8 Cells have the same anode area as 2 x TECTRON T2 ME Cells

'No maintenance required'

The LD8 has no serviceable parts. The anode cannot be inspected, nor can the membrane be replaced. No maintenance is required because it is not possible. To discern how much of the LD8 anode is remaining, the operator must weigh the mass of the entire LD8 every 6 months or so. In doing so, the two bolts that secure the LD8 to the horizontal strut channels require removing and replacing. The TECTRON Electrode can quickly be lifted for weighting or inspection.

'Uses less voltage for the same amps as tubular Cells, saving you 10%'

Again, no third party data is supplied to support this claim.

'Higher current density than tubular cells. Maybe 8 amps/SF'

Due to the decrease in anode surface area of the LD8, anode current density will be higher. This is correct and likely to occur.

You may want to think again

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'Long life 3 - 5+ years without worry or maintenance'

Because the LD8 has been around less than one year and no research data is provided, we will use historical data from traditional box cells. Built in the shape of a picture frame, box cells have the same amount of anode and ion-exchange membrane area.

Tubular Cells, due to their geometry, have as much as 40% more ion-exchange membrane than anode surface area . UFS typically estimates the service life of its tubular ME products in the 2 to 5 year range as long the current density is no more than 5 amps/SF.

Since the LD8 will operate at 8 amps/SF and it has so little ion-exchange membrane, it is unlikely to last as long as a TECTRON Cell.

Thincell pays for itself with energy and labor savings compared to TECTRON Cells'

Our third party research indicates that ACR's power savings claims are unsubstantiated. As mentioned earlier, no installation advantage is evident. Further, as part of preventive maintenance practices and for budgetary concerns, many customers want to evaluate cell performance and wear for future planning. The LD8 anode is not designed to be inspected for useful life remaining. Because the TECTRON cell is specifically designed to be maintenance-friendly, it is difficult to conclude this type of savings in a comparison.

Do you still think THIN is IN?

Here are some facts to consider:

LD8 Cell - surface area basis
Anode = 0.71 SF/foot of height
Membrane = 0.71 SF/foot of height

TECTRON T2 ME Cell - surface area basis
Anode = 0.62 SF/foot of height
Membrane = 0.79 SF/foot of height

Thus while the TECTRON T2 has only13% less anode surface area than the LD8, the TECTRON T2 has ***11% MORE*** membrane area. MORE membrane means less electrical resistance and longer service life.

Why is the amount of membrane surface area so important? The ion-exchange membrane is the single most costly item in any anode cell. As the membrane wears, its electrical resistance increases. This affects ME Cell performance. Having more area to begin with only increases the life of the cell.

What actually happens by replacing
2 TECTRON T2 Cells with 21LD8?
Take a look:
32 x TECTRON T2 Cells, 48" long:
T2 anode area = 79.4 SF
T2 membrane area = 101.1 SF
Replaced with:
LD8 anode area = 45.4 SF **(42% LESS!)**
LD8 membrane area = 45.4 SF **(55% LESS!)**

Are you to expect to save 10% in energy charges and get 3-5 years of cell life using this scenario?

UFS CORPORATION
Electrocoating Equipment

UFS understands today's competitive e-coat market. That's why in addition to quality, high-performance products, we strive to provide complete, accurate information to our customers.