

Plating NEWS

2010 Highlights

Plating NEWS, Spring 2010

[Advanced Plating Technologies](#) is occasionally asked about part of the opening phrase on our website at smartcatshield.com. It goes something like this:

“Challenges have become ever-present in our daily manufacturing activities. This gives some evidence that our development and growth are strongly based upon man’s uninterrupted improvement and evolution.”

We think about that phrase both in terms of what it meant when the website went up and what it means now. It’s a bit too philosophical for some so applying it to plating and topics listed in our last Newsletter is our aim:

- plating simulation costs and ROI analyses
- harmful emissions in the chrome plating environment
- smart cathode shields
- the “green” aspect of optimized electrolytic processing.

PLATING SIMULATION COSTS

There are far too many electrolytic processors that consider plating simulation costs too high. The costs seem so high and so far out of their budget that serious consideration is minimal to none. This first manifested itself when there was significant interest generated in plating simulation software platforms in the late 1990’s and on into the early 2000s. These costs are much more than monetary costs. There must be some changes in thinking too.

As the 2000 millennium year came upon us, modern 3D computer plating simulations were something very new but being introduced to a very “old” industry much steeped in tradition. It is difficult at best for anything new to gain acceptance and widespread use in plating. A high cost software program that prescribes something useful for the plating floor? No one believed in it at first so the reply was often, “Show me who else is using it!”

It’s unfortunate but most, if not all the time, this couldn’t be disclosed until long after the fact. We don’t intend to see man’s evolution interrupted by a skeptical customer or a vague cost issue but we can surely shed some light on the thinking that’s gone into a reluctance to change.

To this day plating has a kind of stigma attached to it. If you’re a senior level manufacturing manager in a large corporation and you’re being asked to review and approve plating software expenditures, its cost is likely 2X to as much as 10X greater than the most expensive software purchase your company has ever made.

Some would argue plating simulation software is just too expensive. We would argue to the contrary. Is it a big expenditure? Probably yes! The biggest? Maybe. The best? Probably yes again. The problem is that the savings are not immediate and from the viewpoint of the Sr. Manager, not yet tangible enough.

An example: Since 2003 we’ve been tracking the fortunes of a prominent aircraft maintenance and parts manufacturer in terms of what’s its cost this company NOT to use a commercially available (at the time) computer simulation program to optimize their plating set-ups. Using case history data from this and similar plating applications we conservatively calculate this manufacturer has overplated \$7Million (US) in chrome metal alone. Add to this the excess energy used in the overplating process, the added labor and material costs to “machine” the excess deposit and then have to deal with the grinding waste. It’s a huge cost overall.

If you’re interested in a breakdown of cost “to do” something vs. not doing anything, let us know and we can provide some specific information for your particular application.

HARMFUL EMISSIONS IN THE PLATING ENVIRONMENT

Making plating more efficient can reduce harmful emissions. Take chrome plating as an example. Fumes are more voluminous and noxious at higher current densities. Quite often these high current densities come from a set-up that hasn't been optimized, i.e. too much metal going to HCD areas in trying to build minimum specified thickness in an LCD area. Simply put, 2000 amp hours in an optimized set-up could produce better thickness distribution results and with less metal overall than 2500 amp hours in a traditional set-up. As mentioned in previous publications, the keys to using available electrolytic processing solutions are found in computer models and simulations that provide much needed electrochemical intelligence..

SMART CATHODE SHIELDS

There's really no mystery to Smart Cathode Shields. They are nothing more than non-electrolytic, inert barriers that are interposed between an anode and cathode to modify or re-direct current flow. How they are designed and constructed is vital to shielding success. Computer simulations can be quite useful but in some instances they just aren't necessary. Take the example of a large job shop plater that hired a fresh-from-college chemical engineer. His first assignment was to analyze costs. Deposited metal costs seemed particularly high so his first calculations were to figure out square footage plated compared to the specified minimum thickness of the deposit. This calculation yielded a huge disparity. The disparity was so great that his immediate conclusion was that someone must be stealing Ni metal from the company.

Investigation revealed there was no theft, just a lot of overplated metal. Although it took some time to do it manually, a simple model was created using thickness measurements from several racks of plated parts. There were obvious areas of non-uniform distribution and a period of trial and error ensued. Simple shields didn't completely close the gap but they produced results worth the effort.

THE GREEN ASPECT OF OPTIMIZED ELECTROLYTIC PROCESSING

"Green" can be bantered about a bit too much lately but how it refers to plating can, for now, be best described by the above examples. Using less energy to do the same work is considered "green" to many folks. Using fewer resources to accomplish a specified goal is "green" to others. We promise to bring additional "green" references to future issue of Plating NEWS.

OTHER NEWS

We're getting frequent inquiries for purchase of plating simulation software packages. We apologize if this website or some of the published plating simulation papers is misleading but we don't sell software any longer. There may once again be a commercially available package on the market but for now, the best approach is to explore available contract engineering services. In my experience, Elsyca does it best.

THANKS FOR READING

This edition of Plating NEWS has been written and edited by Roger Mouton and Staff at EIMC – Advanced Plating Technologies. We welcome submissions for publication in future issues of Plating NEWS.

EIMC - Advanced Plating Technologies - www.smartcatshield.com

We're a source for electrolytic process optimization

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