Plating NEWS

2009 Highlights

Plating NEWS, Spring 2009

Advanced Plating Technologies leaps into Spring with renewed vigor. The worldwide economic downturn has shed new light on tools available for electrolytic processors to meet the challenges of the future.

PROCESS OPTIMIZATION

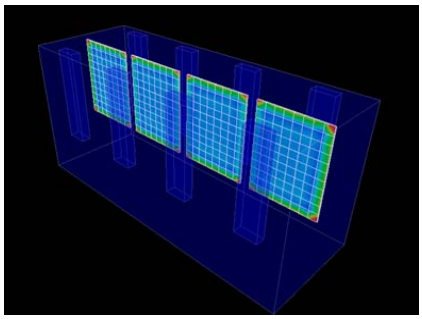
There is more interest now than ever in the improvements afforded by process optimization using computer models and simulation.

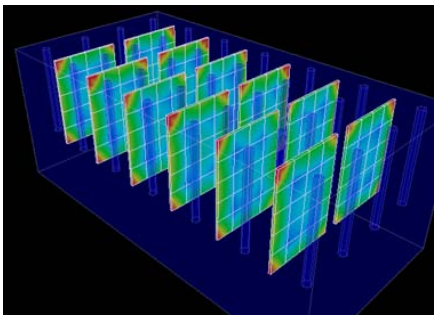
This interest is coming from several unique and different areas of electrolytic processing but still includes manufacturing where traditional electroplating has historically been found. Take engineered metals for example. Quite often these metals are alloys, electrodeposited in such a way as to affect more control over the physical properties of the substrate on which they are deposited. Metal tubing is an example that comes to mind. Tubing strength can be enhanced or even manipulated with selective deposits. Corrosion resistance is another area of importance for engineered deposits. Some of the tin alloy and zinc alloy applications are cases in point.

The list of potential applications is too long for this Newsletter but suffice to say, having control over deposition thickness uniformity is of paramount importance. Most electrolytic processors want or need the deposit thickness to be uniform, especially on a complex part or substrate. As is commonly known, most deposits are NOT of uniform thickness in even the simplest of cases and especially not on complex parts or shapes. When you're plating alloys the composition of that alloy can vary depending on the current density with which it was plated. This can adversely affect deposit thickness uniformity and there is also potential to lose desired physical properties. Plating "out of the box" with alloys just doesn't fly well.

Fortunately, there are available solutions that can be used to solve this common uniformity problem but they are not that many. They often boil down to the use of auxiliary electrolytic devices such as robbers and thieves and/or auxiliary anodes. Non-electrolytic devices or shields are also an option. Shields are simple barriers interposed between the cathode and the anode to redirect current flow within the plating set-up. All 3 solutions could actually be employed simultaneously.

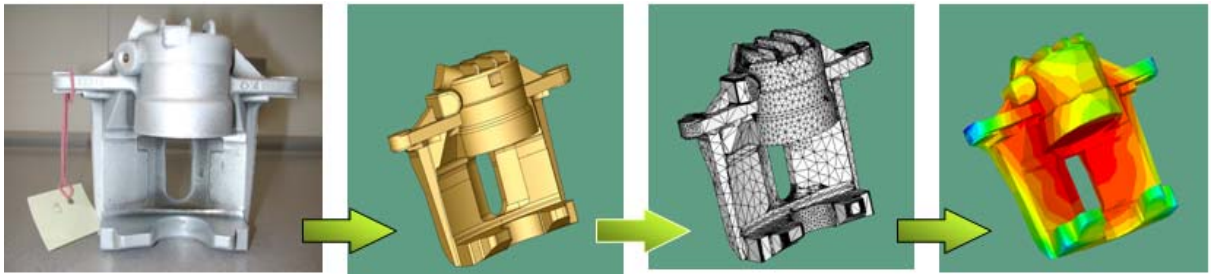
The keys to using available electrolytic processing solutions are found in computer models and simulations. With as much electrolytic processing knowledge as we think we have, even after many long years of experience working with plating set-ups, plating is still not intuitive and set-ups don't always react in logical ways. You've got to "meet" each new situation and devise a customized solution that best suits the set-up and the real object of our interest: the cathode.





The two slides on the preceding page come from computer models that depict acid copper electroplating of a 24 layer, high density circuit board. Each set-up called for identical plating times and current densities yet the plating thickness uniformity varies significantly from one set-up to the other. Often these overplated areas are just tolerated. Many times however, especially in the case of high density interconnect products, they are not. The above examples are simple, flat cathodes.

Add some recessed part geometry, as seen below, and/or multiple parts and you see that the challenge of achieving plating thickness uniformity is even greater. In case you were wondering, the colors represented are for thickness as well as CD.



COMPUTER MODELS

ELSYCA NV, in BELGIUM is still the best place to go to get computer models of your particular electrolytic process installation and Elsyca still addresses special needs encountered in most electrolytic process applications. These include plating on plastics (POP), electronics plating applications, reel-to-reel plating, electroforming, hard chrome plating, electrochemical machining (ECM) and automotive parts plating applications, such as wheels and plastic molds. Case study brochures are still available so send brochure requests to: info@smartcatshield.com

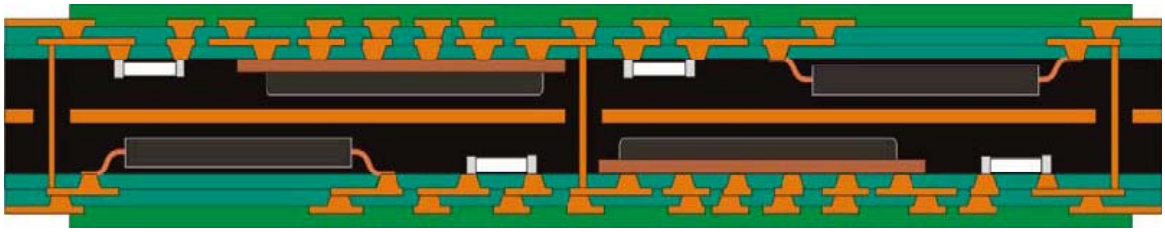
Elsyca has added staff in several areas including Business Manager Jean-Marc DeWilde, located in Belgium. Alan Rose, formerly in the U.K. has relocated to Atlanta. More Elsyca details available at www.elsyca.com

DOWNLOAD PAGE

DOWNLOAD Page "UNDER CONSTRUCTION" That ignominious phrase should be gone from our internet website page www.smartcatshield.com by the time you read this Newsletter. We're sorry we took so long to get the Downloads page filled again. It needed a minor facelift and some new stuff. We may have even figured out a way to display the "Time Lapse Thickness Buildup" presentation that's been such an amusing part of my in-person plating simulation demos at conference meetings. I call it "plating as you see it"or maybe "plating caught on tape". There have been many requests for it and mostly we've filled the individual requests by emailing the entire file. If interested in a copy, let us know: info@smartcatshield.com

As you will also note, all future Newsletters will be published as PDF documents and available on the website page. You will not be receiving Newsletters any longer as integral parts of our email Newsletter announcements. Multiple SPAM filters, individual email restrictions, varying format exchanges and not to mention the outright barrage of email solicitations of all kinds and from all walks of life have pointed a better way to communicating the Plating NEWS. We will send you a short email announcement with an appropriate link that a Newsletter is available and ready for viewing or download. Those that have requested PRINT versions of Plating NEWS will continue to receive the print version unless you direct us otherwise.

Further on the Downloads Page, please note the Verdant White Paper. This isn't a plating related paper although plating is involved in the Occam manufacturing process. It's solid and innovative…….a new way to make interconnects better, faster and cheaper and WITHOUT solder. We thought to include this paper in the Downloads Section because, as in the application of computer modeling to plating, it's new and for the interconnect industry, a big leap forward with an even bigger reward. The graphic below is a cross- sectioned example of an interconnect made with the Verdant Electronics Process….and "Look Ma, NO SOLDER".



ELECTROCHEMICAL INTELLIGENCE

It's what can be imparted to you by engineering the best available solutions for your electrolytic process applications. With greater electrochemical intelligence your costs can be lower and your product quality will be higher. Ask us about potential applications. The kind of information we need to know in order to provide you an evaluation is contained on the Input Data Sheet, once again available as a Download.

OTHER NEWS

We will probably do away with the dedicated FAX number 949 481-5195 at EIMC. What with so many newer communication technologies we simply don't need it any longer. We will, of course, still be able to manually send and receive faxes when necessary. Just ask us.

This Plating NEWS edition 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.
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Future topics will include: plating simulation costs and ROI analyses; harmful emissions in the chrome plating environment; smart cathode shields and more on the "green" aspect of optimized electrolytic processing.

Thanks for Reading.

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We're a North American source for electrolytic process optimization

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