Plating NEWS

2014 Highlights

Summary 2014

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Computer Modeling for the Job Shop

One of the consistent responses we've heard about using computer models for plating set-ups or simply for employing smart cathode shields engineered in-house is, **"I'm a job shop and my production requirements change."** We even hear this from production facilities where the product mix isn't nearly as imposing as that of a job shop. It's a really old line so let's look at it differently.

Years of research and experience in rack plating optimization, validated by production data, has demonstrated that over 90% of a job shop's work falls within 7 to 9 different plating set-ups. If each of those set-ups are optimized the plated metal savings are typically 20+%. Interestingly enough, this axiom has pretty much applied to rack plating of all kinds, including electronics, hardware and precious metals plating.

So in doing the math, if you save 20% or more of plated metal cost for 90% of your work is there a benefit worth pursuing? It all depends of course on how much you pay for anodes and how much it costs to make the models and/or devise the 7-9 different set-ups for optimum current density distribution.

Example A: **Bright Nickel Rack Plating**

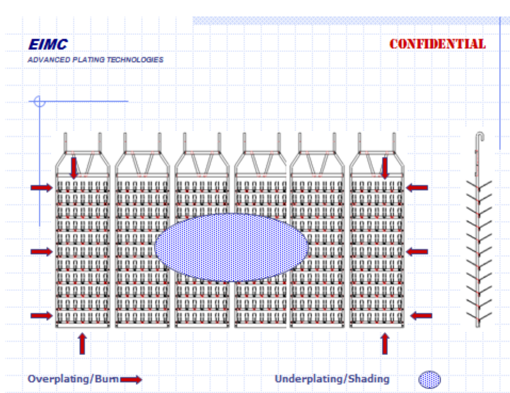
Yearly Anode Cost (90%):	$850,000
Yearly Anode Savings 20%:	$170,000
First Year Cost to Implement:	$ 60,000

Example B: **Bright Acid Copper Plating**

Yearly Anode Cost (90%):	$1,250,000
Yearly Anode Savings 20%:	$ 250,000
First Year Cost to Implement:	$ 90,000

In each of these examples there are substantial annual savings and these are only the plated metal savings. And also consider this: practically all of the first year costs go away in subsequent years. If you factor in the quality improvements and reduction of scrap the savings are even more compelling.

The reason for optimizing plating in each of the above examples was not to save money on anodes. The reason for optimizing set-ups was to overcome a common production plating problem like burning or shading. I don't mind using again this graphic example from a previous edition of Plating NEWS.



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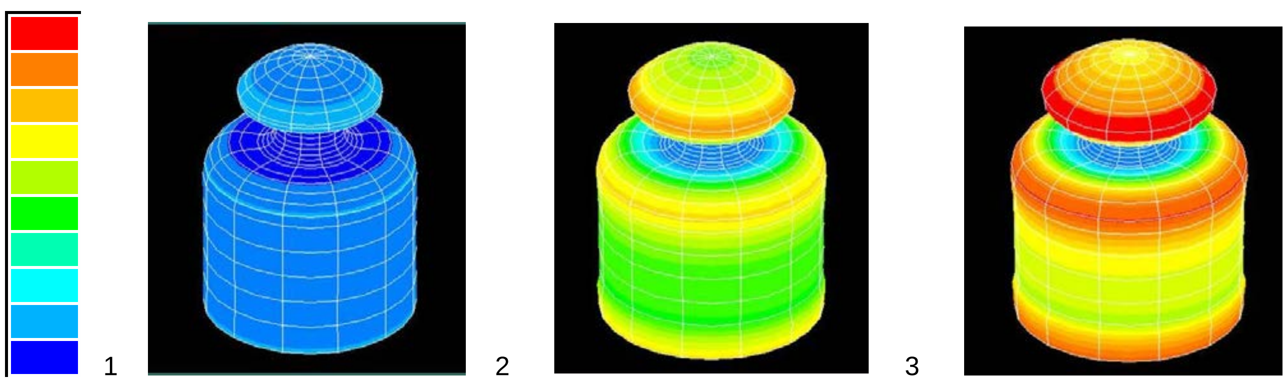
In this rack example there are burns in the HCD areas, there is shading in LCDs and there's a fairly wide variation between the two. Setting up this rack configuration properly will eliminate the burning and shading. There will be plated metal savings but the really big savings can often come from beginning to efficiently produce **better quality products with fewer defects**. These improvements often overshadow the anode savings. So, if you do the simple anode math, how does it work out for your electrolytic process application? If you'd like some input or assistance from us we'd be glad to help with general recommendations or a specific analysis for your electrolytic process application. Just ask us……………

What else does this optimizing of the set-up do? We'll discuss chemistry much more in a future issue of Plating NEWS but for now try asking your plating additive vendor a question like, "How will my plating additive control change if I significantly reduce HCDs and improve current distribution in the LCDs?"

Innovation

Properly applied electrochemical intelligence solves plating problems with significant benefits to several of the departments in a finishing operation. Better efficiency, greater through-put and significant cost reductions are but a part of the overall benefits associated with plating improvements.

One unique benefit which is rarely discussed is **predicting metal deposition by weight**. Think for a minute.



Electrochemical intelligence is so good it's possible to model a rack of parts or an individual part and accurately predict the **<u>total weight of the deposited metal</u>** on that part. Further, a good model will predict where the deposits are going. Talk about good cost analysis and an understanding of where your plating goes.

In the example above we see a Deposit Thickness Scale placed next to 3 computer models that sequentially represent plating thickness build-up during the plating cycle. BLUE represents a thin deposit, RED represents a thick deposit and the various other colors depict non-uniform metal thickness in between the high and low current density areas.

In example No. 1 we see the thickness is beginning to build during the early part of the cycle. Example No. 2 depicts the same part further along in the plating cycle. The different current density areas on this part are now more clearly delineated and we begin to see which areas of the part build thickness more quickly. Example No. 3 is close to the end of the plating cycle.

Having this capability can be used to signal an overplated condition and therefore can alert platers when a plating cycle should be terminated. In each of the 3 examples a mouse pointer can touch any portion of the plated part and read the deposited thickness at that point. Total metal weight costs can also be calculated.

The capability provided by enhanced electrochemical intelligence makes for accurate cost projections and predictable plating cycle times, especially for newer parts or previously un-tested rack set-ups. That's REAL innovation and it is available today!

2014 SURFIN Conference, Cleveland, OH

NASF recently held its annual SURFIN Conference in Cleveland, OH. Computer modeling and plating simulation by Elsyca was again well represented with technical presentations and an exhibit booth on the convention floor. As in 2013 the surface finishing industry exhibited energy and vitality not seen in the most recent years past. 2014 is no different. This is refreshing for a number of reasons:

Most important is that as our plating technology continues to evolve we will see a day when plating historians look back and question **how we ever got along for so many years "giving away" all that plated metal**. One thing's for sure: available resources generally aren't getting more plentiful. We've seen supply and demand cycles continually fluctuate and their negative effect on anode price stability has been enormous at times.

With business prosperity there is usually renewed interest in further exploring the newer available technologies, especially if they show potential to make our processes more efficient. Sometimes we already know the realities inherent in plating thickness distribution problems but we just can't see a way to overcome them. With close to a century of industrial plating history (hanging parts in a plating tank, the walls of which are lined with anodes), many of our electrolytic processors still have found it difficult to change their old ways.

For those that have advanced the state-of-the-art in plating there's one big difference from years past: new plating technologies often saw the light of day and found their way to the industry via trade shows similar to the NASF SUR-FIN Conference. Several of the finishing publications ran positive testimonials and product vendors were more than happy to discuss their advancements, new products and new customers. These things once characterized a new product roll-out it.

Not any longer! While advanced technology in computer modeling of electrolytic processes is widely known the individual users now tend to keep their new-found technology advantages to themselves. Detailed proof sources have typically been a vital part of marketing new products, especially ones that push the technology envelope. Testimonials are now more difficult to come by.

Perhaps it's an isolated example but one potential customer was so enamored of the product advantages and its potential he asked, "What it would cost us for you to keep this product off the market for a year". This of course would be after he acquired had it and launched a one year head start on his competition.

Contrast this with one prospective customer who just couldn't muster funds for even a simple plating project. We said we'd give the software away if we could share just half the yearly anode savings. This customer proposal hasn't "flown" yet but it is thought provoking nonetheless.

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.

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Your source for electrolytic process optimization**………..**