FANTASTIC FINISHES

March 2009

Technology For Chrome Plating

Management Memos

BCC Research forecasts an optimistic annual growth rate in the metal finishing industry of 6.6% per year from 2009 through at least 2013, in spite of the recession. This 37.6% increase in five years is welcome news for the shops currently experiencing a decline. One of the driving forces behind this uptrend is the need for improved wear resistance in components, which bodes well for hard chrome. Our industry will be expanding, but will your company participate? Good management practice ensures your business isn't left behind.

Good managers are proactive, forward looking and opportunists. Statistically though, few people can spot an opportunity and even fewer will take advantage of one they see. So how are managers dealing with the current downturn? Over 68% are lowering costs, 48% are improving processes and 74% are increasing marketing. Positive numbers for sure, but shouldn't they be closer to 100%?

This is not rocket science, just good business practice. Here are five things companies should be improving today so they will benefit from the future growth.

- **Plating Processes**
- **Production Efficiency**
- **Cost Reductions**
- **Customer Satisfaction**
- **Marketing**

That sounds like a lot to do, but we can help you pull it together effortlessly and inexpensively. For starters, you can add a booster to your plating baths. This serves many purposes including faster plating speeds, better impurity tolerance, improved deposits and less rework. This one simple item captures four of these goals. We can also show you how to control impurities which lowers your electrical costs and improves the deposits even more. And, we can even help your marketing efforts with a free link to our website. We assisted many companies with these things. They realize there's synergy in forming close bonds with a key technical supplier.

We will help develop and implement an action plan (without cost) that accomplishes these goals. Call us today.

Topics

Management Memos

Process Control & Bath Testing

Insider Tips

Free Technology

Free Marketing Assistance

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Process Control & Bath Testing

Process control is one of the keys to success for any business using chemicals in its operation. Selecting the best process and then controlling it within a fairly narrow range equates to quality improvements, repeatability and profitability. The chrome bath is considered somewhat forgiving relative to other plating processes, but this doesn't mean process control should be thrown out the window. Yet, many shops do just that by avoiding bath testing until problems are encountered.

The goal is to smooth out the peaks and valleys in the bath concentration levels. Ideally, the main bath ingredients (chromic acid, sulfate and catalyst) should be controlled within a 2% window. And, typical contaminants (trivalent, iron and copper) should be maintained below a 7.0 Impurity Index Level. In addition, the chloride level (Cl) should not exceed 20 ppm. This control is needed to obtain high quality repeatable deposits and doing so will go a long way towards lowering rework volume, improving customer satisfaction and increasing profits.

Generally, it's best if only one person is authorized to take bath samples or make chemical additions; that person should use proper sampling techniques. The first step is assuring the bath is at its proper level, which frequently requires a water addition to replace evaporation. Then, this water must be mixed in completely, so the bath is uniform, which may require 20-30 minutes of agitation. The sample is then taken at 3-5 places in the tank and allowed to cool before testing or sending to a laboratory.

Most shops should be equipped to test their own chromic acid and sulfate levels, usually on a weekly basis. Samples should then be sent to a qualified laboratory for back-up testing and to check the impurity levels every 30 to 60 days depending on the amount of work plated. A simple spreadsheet should be maintained for each tank showing the dates it was tested, the analysis results and the additions made.

We can assist you whether you use a hydrometer, Kocour testing kits, or wish to upgrade to more accurate methods. We also offer an analysis service that's second to none in the industry. This service is used by many shops as a back-up and to test impurity levels.

We maintain a State-Of-The-Art laboratory that assists our customers with bath control. Our procedures are traceable to the National Bureau of Standards and we offer over 75 years experience in hard chrome technology.

Our analysis services include bath additions, recommendations and free consulting.

Dr. Chrome

Remember, the chrome bath is the lifeblood of your business; you need to keep it healthy.

Insider Tips

Heavy Deposits

When doing salvage and repair work, deposit thicknesses of 0.005" or even 0.020" are commonplace. And, it's sometimes necessary to rework these heavy build-up jobs (stripping and re-plating) because of pitting or nodulization. This is unfortunate as it cuts into profits because of the extra tank time and labor involved. Here's a better way to process these parts and avoid this problem. First polish to a fine surface finish, clean and then hand scrub with DuraPrep cleaner, warm-up and reverse etch according to the base metal, plate for 2 hours, remove and re-polish, re-plate using the recommended chrome-on-chrome procedure. Repeat this procedure, as many times as required for the final deposit thickness, while only applying up to 5 hours of plating each step.

A reverse etch chart for various base metals is available to customers on our special technology website.

Throwing Power

There are several tricks in obtaining maximum throwing power in hard chrome baths. The most severe cases with deep recesses may require the use of conforming anodes, special stop-off, robbers or shields. Other jobs will benefit from a much simpler approach. Using a 120:1 ratio combined with an additive that chelates impurities and improves throw will go a long way towards improving overall bath performance. A side benefit of this is much faster plating speeds and a smoother deposit. Another tip is proper surface preparation, cleaning with DuraPrep (if necessary) and using a surge current for 30-60 seconds.

Double Ending

Sometimes a large part, like a hydraulic rod, needs to be plated that's longer than the available tank depth. Shops with adequate headroom frequently handle this by double-ending the part, plating half of it and then flipping it to plate the other half. The problem is how to best handle the heavier build-up and discoloration in the "joint area" where the two deposits combine. After-plate grinding is usually needed and sometimes the second deposit will peel. This problem can be handled using special stop-off techniques to rob current after flipping, but this is tricky and problems can still be encountered. A much better way uses bath pumping which simplifies things and provides a "joint" that’s virtually invisible and without the extra build-up. The bath is slowly pumped into a holding tank during the first step which causes a tapered deposit. The pump rate is based on lowering the bath level about 6" during the initial plating time. After flipping, return the bath pumped out back into the tank, and position the part so the first chrome layer is about 1/2" under solution. Use the chrome-on-chrome activation procedure and plate the second deposit while again pumping the bath down 6" using the same pumping rate. The only equipment needed for this is an elevated tank with a drain and a CPVC pump. Remember to follow all safety precautions as double ending large parts can be dangerous. Pay particular attention to proper rigging and supporting techniques.

The following is available as a courtesy to our valued customers.

Free Technology

A technology site devoted strictly to hard chrome plating issues. This vast library covers every aspect of hard chrome, including data on plating difficult parts, how to reduce costs, impurity control, reverse etch times, chrome stripping, anoding, fixturing, stop-off, equipment, troubleshooting, worker safety, and the environment. Refer to it often; it can be a valuable resource for your company.

Free Marketing Assistance

You can now link your website directly from **www.plating.com** and generate new business for your company. Plating.com gets over 50,000 hits a month and many are from companies looking for shops that can hard chrome plate their work. This link can become a powerful marketing tool for your company.

Fantastic Finishes is mailed quarterly and includes topics important to the hard chrome plater. It is also published on our website ***www.plating.com.*** *Please let us know about topics you would like to read about, and other people you want this sent to.* ***Thank you, we enjoy serving your needs.***

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