

## *Technology For Chrome Plating*

### **It's Time To Save Energy**

Plating shops are large consumers of energy, especially electricity. Hard chrome operations in particular have very high electric bills which represents a major portion of their total overhead. Most of this demand comes from the rectifiers and the large motors used for ventilation. Many shops are taking serious steps to reduce their electrical consumption. Saving electricity lowers the overhead and thusly improves profits. Any reduction in electrical demand pays rewards for years to come as the KWH rate continues its upward spiral.

Several approaches to saving electricity are outlined on page #2. Plating shop owners should be taking a serious look at how these apply to their business. Today's managers are concerned with being as efficient as possible and, therefore, becoming more competitive.

### **Chemical Costs Continue Their Climb**

The energy sector affects the cost of most items we buy and consume. The ever escalating oil market is having a huge impact on today's chemical and commodity prices. As an example, Dow Chemical Company raised their prices by 45% in June & July alone. That's 270% on an annual basis which is unprecedented in a slow economy. Yet these increases are expected to continue. Wise shop owners are reviewing their overhead, their income generation points and their chemical costs. They need to know these things so they are in a better position when increasing selling prices in order to maintain their profit margins.

### **Chromic Acid Supply**

The chromic acid market remains tight with increased demand combined with supply restrictions. Chrome chemicals, like most commodities, are experiencing large price increases. As indicated before, it's a good idea to plan ahead and stock-up on chromic acid whenever possible.

Call us if you would like to reserve a supply. We can provide both large And small quantities of the high purity HCP Grade of Chromic Acid.

### Topics

**Saving Energy**

**New Trends**

**Staying Competitive**

**Insider Tips**

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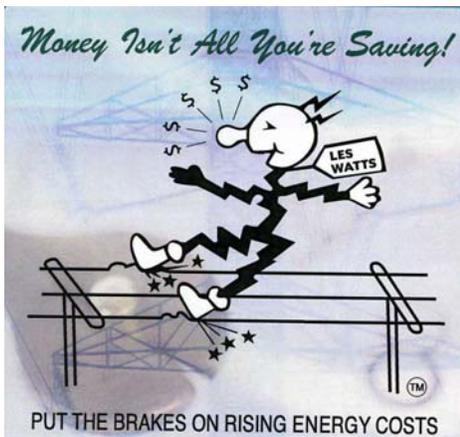
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## New Trends and Staying Competitive

### Saving Energy

Saving energy is critical in today's business environment. The oil and natural gas markets have forced the electric companies to raise their rates. These increases are expected to continue for years to come, regardless of what Congress does regarding our domestic energy supply. Plating shops are large consumers of electricity and it behooves them to look at ways of lowering their costs. Reducing the electrical demand results in significant overhead savings while also improving the shop's efficiency.

Following are three ways of lowering electrical costs; together these can result in energy cost savings exceeding 50%. Taking these steps today will insure a market position & profitability for years to come.



### Plating Booster

Making a one time addition of a Booster to the standard 100:1 bath increases the plating speed by about 50%. You not only get 50% more work done each day, but you also lower the rectifier on-time 33%. This saves electricity and lowers costs across the board while also improving the overall shop efficiency.

There really isn't any downside to using the Booster as it's a non-etch, non-fluoride product that's simple to control. It also provides a much smoother & brighter finish that seems to resist pitting and the effect of impurities much better. And, the Booster pays for itself quickly. A typical shop with a 1,000 gallon tank plating

hydraulic rods was able to increase their monthly sales by over \$42,000 a month while also lowering their rectifier electrical consumption by 33%.

### Impurity Control

Controlling the chrome bath's trivalent, iron and copper levels below a 7.5 index number will save another 30% of the electricity used for plating. Combine this with the 33% saved by using the Booster and you end up with a rectifier electrical demand that's 63% lower which is pretty darned significant.

### KVR Equipment

Installing KVR systems increases the power factor by about 35% on the inductive loads in the shop. This enables you to recycle the electricity you have been billed for but aren't using. The KVR system also protects against power surges of 2,000 joules and 10,000 volts, while extending motor and electrical device life. You won't hear about this from the power company as they don't want you to lower your electricity bills, despite what they claim.

**Call us for more information on these suggestions. You can lower and control your costs for less than you thought. The savings will be enjoyed for years to come.**

## Insider Tips

### **Deposit Pitting**

Pitting can be a problem when plating hard chrome, especially with thicker deposits. This is almost always related to the condition of the base metal and can be avoided if certain precautionary steps are taken. Abusive preplate grinding leaves tiny metal slivers on the surface which are either imbedded or smoothed over. These need to be removed or they will stand-up during reverse etching leading to pitting. Likewise, polishing and blasting can leave debris behind and is another source of pitting. These slivers and debris need to be effectively removed during the cleaning and preparatory steps. Using the proper grinding, polishing and blasting techniques is important. These should be designed to remove all surface imperfections, including any inclusions and oxides that may be present.

Using a Dura Additive in the bath also helps as this promotes better surface activation. Another trick is to use DuraPrep in a final hand scrubbing step. DuraPrep will effectively remove all traces of microscopic surface debris that's a prime contributor to pitting. Finally, if a fume suppressant is being employed, it's best to use either Cancel St-45 or FS-750 as these don't contribute to pitting.

### **Chrome-On-Chrome**

Plating Cr on Cr has been a problem for some shops. Peeling of the top layer is guaranteed unless the proper steps are used; the following cycle has proven very effective. After first racking & cleaning the part, warm it up for at least 15 minutes in the plating bath with the current off. Then reverse etch it for 30 seconds, at 2 ASI, after the first sign of gassing. The plating is then started at 2 volts and increased in 0.2 volt increments until the full DC power is achieved. Overall, this gradual ramp-up should take at least 30 minutes. Some shops then give it a 2X power surge for 20-30 seconds which seems to promote the best adhesion and throwing power.

### **Bath Control**

The hard chrome bath is pretty forgiving, but this doesn't mean that quality control should be ignored. The best results are obtained when routine analysis is done and the ingredients & impurities are controlled within their recommended limits. A typical single shift 1,000 gallon bath with a 5,000 amp. rectifier should be checked for the chromic acid and sulfate levels once a week. A complete analysis should then be performed once a month to also include the trivalent, iron, copper and chloride levels. Then, once a year the bath should have an Expanded Analysis performed which includes all contaminant metals, the organics and its conductivity.

The methods used for bath sampling are important too. The first step is to replace any water lost from evaporation and let this mix-in for at least 30 minutes. A clean poly. bottle is then used to gather the sample from 5-6 areas in the bath. Let the sample cool to room temperature before having it analyzed.

Most shops perform the weekly analysis in-house and send out samples for the monthly tests and as back-up to check their results. Plating Resources, Inc. provides bath analysis services and is one of the few laboratories that really understands hard chrome and can make specific recommendations. We also test the bath impurity levels and can provide the annual Expanded Analysis.

We discourage using the Baume' test for chromic acid as it's not very accurate when impurities are present, unless correlated with an actual titration. Plating Resources, Inc. can provide the procedures and reagents needed for your testing using the most accurate and practical methods available.

Plating Resources, Inc. offers the following courtesy services to our customers. These unique features are a first in our important industry and shops are encouraged to use them to their fullest benefit.

### **Technical Database**

A special site is available that's devoted strictly to hard chrome plating issues. Included is a vast library of troubleshooting and technical information that becomes a valuable resource for many companies. This database covers virtually every aspect of hard chrome, including many "how-to's" in both the art and the science of our trade. Many shops bookmark this and refer to it often; its updated frequently as new developments are made. We also provide consulting by phone, fax & email as gratis to our valued customers.

### **Website Link**

Linking your website directly from [www.plating.com](http://www.plating.com) can generate new business for your company. Our site gets over 50,000 hits a month and many of these are from companies looking for shops that can plate their parts, frequently in large volumes. This link could become a powerful marketing tool for your company.

*Fantastic Finishes is mailed quarterly and includes topics important to the hard chrome plater. It will also be published on our website at [www.plating.com](http://www.plating.com). Please let us know of any topics you would like to read about in future additions, and the names of others you would like this sent to. Thank you, we enjoy serving your needs.*

FANTASTIC FINISHES



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