

Official Journal of the South African Metal Finishing Association

# S A Metal Finisher

**Issue 27**

Dec 2017

**Water Scarcity - Is the Metal  
Finishing Industry Coping?**

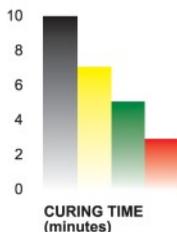
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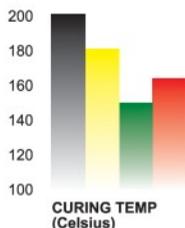
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Cover Picture Credit: Water Crown by Martin Walls - RGB Stock.com

Background graphic on Back Cover Ad: freeimages.com Laboratory- Mandie LeScum

# From the Editor

**Tony van der Spuy**



As usual this column is produced as the very last input into the magazine. That's because until everything has been compiled even the Editor has no idea what the final product will look like, and from where all the materials will be sourced.

The advertisers have a big influence on the visual impact of the publication as they move around to different pages and as some change their copy, so also the whole look of the final product changes.

But finally, it all comes together and I am proud to have been able to produce this 27<sup>th</sup> issue of S A Metal Finisher. I personally believe that it is a good result. I hope you do too!

Since our last issue we have had another of our stalwart members upgrade to our premier Sustaining Member status and so ACT Nordson's logos have now been added to the banner alongside. The company has long been associated with assisting in powder coating training programmes.

As you have noticed, this issue has been given a theme dealing with water scarcity in our industry.

Country-wide water scarcity is a looming threat, but in particular the Western Cape has been worst affected. We all know the reliance that we place on water - without it we are out of business. Unlike electricity, where anyone can buy a generator and start producing one's own, water can only be extracted from various natural sources. If the source dries up, and we cannot replace it from another source, that's the end of the road.

In the Cape we are surrounded by the ocean, but desalination is costly. We are also looking at tapping underground aquifers, but however we solve the problem, water will become much more expensive!

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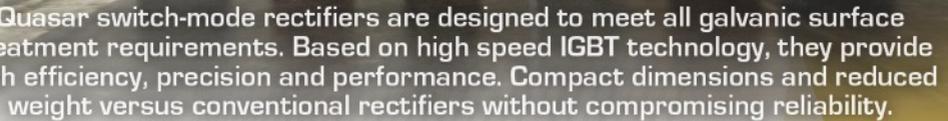


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The customers who upgraded to ColorMax Booths with Nordson Encore HD, all replaced multiple lines with one system. All of these customers have realised the following benefits:

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- Reduced down time for maintenance. HD gun pumps run for up to 4000 hours without requiring maintenance.
- Clean working environment due to the efficient powder extraction, recovery and recycling capabilities of the ColorMax booth.
- Elimination of reworks.
- Improved quality thanks to the consistency of the Encore HD application equipment.

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## NEWS ROUNDUP

Report by Tony van der Spuy

*In each issue we review SAMFA activities in the period between the last publication date and the current issue. Issue 26 of our journal was distributed during April this year. This article is the core of our publication and keeps our members in the loop regarding events that we have engaged in since our last report.*

### OVERVIEW OF SAMFA ACTIVITIES

The SAMFA year is generally comprised of very similar activities based on our constitutional mandate. These may be described as follows:

- SAMFA training programmes such as Electroplating, Powder Coating, Health Safety and Environment.
- Meetings - Regional executive meetings and regional member meetings held twice a year in the three provinces where we are active.
- Projects - Apprenticeship Development - NAMB and DHET
- Special Interest Meetings - Industry Waste Management Forum [Cape]
- Publications - S A Metal Finisher - published bi-annually
- The SAMFA website is our display window and is maintained on a regular basis.

### MEETINGS

During May of this year regional executive meetings were held in all three of our regions - Cape on May 10, Gauteng on May 15 and KZN on May 18. At these meetings the main topic on the agenda is to plan for our regional Annual General Meetings always scheduled for the month of June.

During 2017 these AGMs took place in the Cape on June 8, in Gauteng on June 15, and in KZN on June 27.

We only arrange two meetings a year, and the AGM is the most important of these. The main business of the day is agreeing on the membership subscription for the SAMFA year which runs from July 1 of the year to June 30 of the next, and to vote for members to represent the region on the executive team.

**During 2017 these AGMs took place in the Cape on June 8, in Gauteng on June 15, and in KZN on June 27.**

At these meetings we make an effort to secure one or two presentations from entities that wish to engage our association on topics that directly affect us. Increasingly we are turning our attention to renewable energy resources such as direct solar radiation, wind energy and ocean energy. South Africa is well placed to harness these resources. We also have space for the cultivation of bio-energy feedstock.

In the Cape and in Gauteng we had an enthusiastic presentation by Angelo Buckley, representing the Centre for Renewable and Sustainable Energy Studies in the Department of Mechanical and Mechatronic Engineering at Stellenbosch University. He discussed the potential for solar heating of process solutions.



Find out more about their work at:

<http://www.crses.sun.ac.za/technologies-solar>

It is a very interesting web page. You may contact Angelo via email at this address: [buckley@sun.ac.za](mailto:buckley@sun.ac.za) Tel: 021 808 3605

In addition, at our Cape Meeting we were pleased to have Vanessa Davidson, Deputy CEO, Strategic Projects, from the South African International Maritime Institute, talk to us. She explained that the marine manufacturing skills working group **had identified electroplaters as a scarce skill**, in terms of the



localisation drive in marine manufacturing components. Vanessa believes that it will be useful to link up with the Industrial Development Desk (IDD) at the DTI as the

electroplating process is a key element to finishing a number of components in the marine environment due to corrosion mitigation.

The trade is in fact a priority of the Presidential project **Operation Phakisa**, which translates to “hurry up”. Thanks to her input, and an introductory letter to the IDD, we will be attempting to use this leverage to help us to gain funding for the establishment of an electroplating training facility within an FET college as well as trade test centre.

In Gauteng, Project Consultant Hazvinei Munjoma updated the members on the progress of the Electroplating Qualification which has been a work in progress for an extended period of time. Slowly but surely things are coming together from various angles.

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At our KZN AGM we had a most interesting presentation by Frans Wilbrink, with whom the regional membership has had a longstanding relationship.

Anyone who has been in business for any length of time knows that disputes can arise, sometimes in the most unexpected of circumstances. Frans is now a member of the Arbitration Foundation of South Africa. [AFSA]. Arbitration is a modern approach to dispute resolution which is often an option that can save on costly legal expenses and deliver a win-win outcome. Frans provided some real life examples of how the process has worked for his clients.



### **YEAR END MEETINGS**

The year end meetings were fixed for November 16 in the Cape, November 23 in Gauteng and November 30 in Durban. This year there was a general consensus that these would be low budget get-togethers in keeping with the general subdued economic climate.

There would be no specialist speakers - members and guests would go back to the old way of doing things - chatting about shared problems - even laughing about them!

In Johannesburg, industry sponsors donated the funds to enable us to have the services of corporate magician and showman Colin Underwood to entertain us. Special thanks to Darren Fox of Anderbolt Electroplaters, Andrew Philippides of MetalChem and Morne Cloete of PPG Coatings for your contributions.

And it must be reported that Colin really did contribute to a wonderful relaxed atmosphere as he performed his zany magic for groups at different tables.

### **SAMFA TRAINING PROGRAMMES**

Electroplating Training - 5 Day Course - Gauteng - Started June 1 and ended on July 19 [4 Trainees]

Electroplating Training - 5 Day Course - KZN - Started June 20 and ended on August 5 [4 Trainees]

Electroplating Training - 5 Day Course - Cape - Started Sept 7 and ended on November 2 [6 Trainees]



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Powder Training - 3 Day Course - Cape - Started Sept 14 and ended on October 12. [5 Trainees]

Powder Training - 3 Day Course - Gauteng - Started July 6 and ended on August 2. [5 Trainees]

In all a total of 24 trainees benefitted this year. This reflects the economic climate pretty accurately when noting that last year there were 57 candidates. However, we are constitutionally bound to continue delivering training, and we will continue to do so as long as we can afford to.

## **ELECTROPLATING APPRENTICESHIP - TRADE TEST DEVELOPMENT**

**Their brief was to achieve exactly what SAMFA had always wanted - a recognised qualification**

Particular effort was directed at this project during the course of 2017. It has been the objective of the original regional metal finishing associations going back to the year 2000 before amalgamation into SAMFA to develop a recognised electroplating qualification. After a false start and then the abandoning of the much vaunted learnerships, the Quality Council for Trades and Occupations came into being. Their brief was to achieve exactly what SAMFA

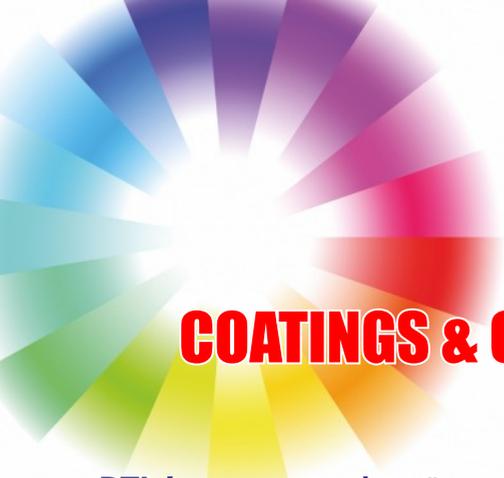
had always wanted - a recognised qualification that successful candidates and the industry in general could take pride in.

Meetings at Indlela, the Dept of Higher Education and Training's Olifantsfontein based trade test centre, took place on the following dates:

May 16 & 17; July 4 & 5, July 31 & August 1; September 4 & 5; October 2 & 3; October 31 & November 1

The logo for PTL Products, featuring the letters 'PTL' in a stylized, hand-drawn blue font with a horizontal line underneath.

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At these meetings the delegates continued to develop the structure and content of both the theoretical and practical components of the trade tests. SAMFA is represented by industry consultants Tony van der Spuy, John Danks and Hazvinei Munjoma. The fourth industry delegate is Collin Naidoo of SAA Technical. The rest of the team is made of employees from the DHET/NAMB led by Gerrie van Staden, Acting Deputy Director, Quality Assurance System Development, National Artisan Moderation Body(NAMB).

At our October 31 meeting we had a representative of the National Skills Fund at the table to explain how necessary funding for this project could be procured.

It became clear that we would need to work with a TVET college to even be considered for funding and to this end consultant Hazvinei Munjoma is talking to Ekurhuleni West College.

**It became clear that we would need to work with a TVET college to be considered for funding**

We have come a long way. The actual content of the course, both theoretical and practical, is close to complete. But the next hurdle may well be the biggest.

The question that will be asked of us is, “How many potential trainees does the metal finishing industry calculate will enroll in this training?”

It has always been considered that there are hundreds of employees physically doing electroplating operations, and probably turning out very good work. Such employees would no doubt love to take a step up the ladder and gain a genuine artisan certificate. For them the entry is via the RPL route - i.e Recognition of Prior Learning.

The real question is, “Will they fulfill the entry level requirements?” There will be an evaluation to see if such trainees can negotiate knowledge-based and practical tests that they will be set. Basic education is a must. Those that fail to meet the entry level standard will be given the opportunity of attending special classes that address these shortfalls in their necessary knowledge. Once they have met the basic requirements, they may reapply to write a trade test.

However the fundamental idea behind TVET colleges is to encourage young school leavers into learning a relevant trade rather than assuming that only a university degree will help them to secure gainful employment. A good artisan is much in demand, and many artisans earn a very good living.

## INDUSTRY WASTE MANAGEMENT FORUM - CAPE REGION

In our Cape Region SAMFA has ensured that we are represented on the Industry Waste Management Forum. It is important for us to be there even though many of the projects and new ideas are not useful to metal finishers. For instance the Western Cape Industrial Symbiosis programme is a free facilitation service which connects one company with others so that they can identify and realise the business opportunities enabled by exchanging/using unused or residual resources. (materials, energy, water, assets, logistics, expertise).

# WISP

Western Cape Industrial  
Symbiosis Programme

Whilst it is true that a metal finisher can end up with a batch of raw material no longer required by the business, and finding another potential user would be a great advantage, this is unlikely to be a major drawback.

The WISP describes its function as making business more efficient and diverting waste from landfill without compromising profitability. A perfect example of useful waste is sawdust that comes from sawmills and wood working companies. Sawdust is a useful by product in many areas and for a big joinery to find an end user for sawdust will be much easier than finding a use for waste products from the electroplating industry in particular.

The kind of things that metal finishers discard, such as wires used in jigging and old jig frames for instance, already have a market in the existing scrap metal collection system.



However, it is vital that we understand the thinking of government on waste generation and abatement. There is a lot going on and we must be aware of the National Waste Information Regulations and to what extent such regulations apply to waste generated by metal finishers. After all, we do generate sludge that ends up going to landfill. It is for this reason that we consider it vitally important

for us to attend forums such as this one. The bottom line is that if you do generate waste that can be categorised as hazardous, then in terms of the act you have to report it.

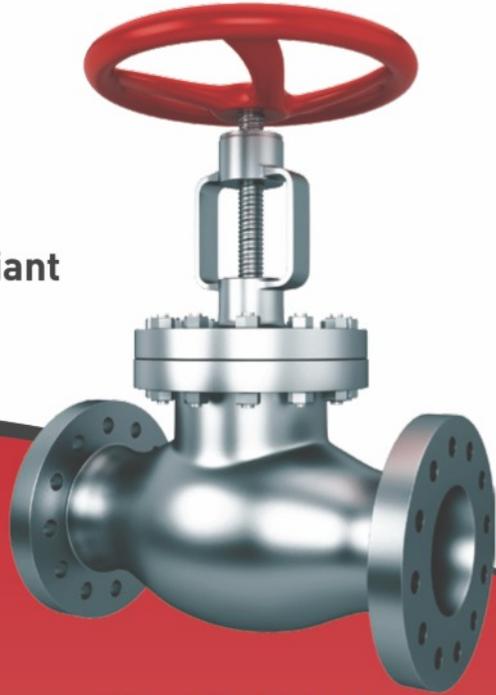
Another project discussed at this forum was the sustainable management of secondary metals. A pilot testing phase was planned to take place between June and October 2017.



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## Background to this Study

- Recycling metals such as aluminium, copper and gold found in waste is a rapidly growing economic activity world-wide.
- In developing and emerging economies recycling is mainly done through the informal sector (e.g. in India this sector recycles more than 90 % of all generated e-waste).
- Uncontrolled metals recovery activities release pollutants into the air, soil and water, which, combined with poor working conditions and poor health and safety practices, create significant negative impacts on workers, communities and the environment
- Competition on waste streams is emerging between the informal and formal sectors. More and more waste is flowing from the informal sector to formal recyclers.
- However, this does not happen in a structured and organized way due to a lack of guidance and authoritative supporting frameworks.



This programme seeks to provide the guidance and supporting frameworks in the pilot test phase.

### City of Cape Town's Integrated Waste Management Bylaw



CITY OF CAPE TOWN  
ISIXEKO SASEKAPA  
STAD KAAPSTAD

This Bylaw was promulgated in 2009, amended in 2010 and 2016. Its purpose is to:

- regulate and control waste within the City of Cape Town to ensure a safe, healthy and sustainable environment
- regulate all waste service providers through accreditation and ensure they abide by the City's and National legislation.
- regulate all waste service providers through accreditation and ensure they abide by the City's and National legislation
- reduce the generation and environmental impact

### PUBLICATION - S A METAL FINISHER

S A Metal Finisher is without doubt our most visible output. It is through our journal that many individuals and businesses across South Africa have become acquainted with the association, and what we do.



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It fulfils a vital part of our duties as described in the SAMFA constitution.

Clause 2.6 reads that one of our objectives is:

*to assist in public relations, marketing and advertising exercises designed to bring the activities of the member associations or organisations to the attention of target groups*

As an NPO we have to continuously scrutinise our founding document to ensure that we deliver on our stated objectives.

### **SAMFA WEBSITE**

And then finally, the SAMFA website also falls under clause 2.6 as well as under 2.7.1 which talks about:

*promoting the interests of the Metal Finishing Industry*

This is the second visible output and has been viewed by more than 6000 visitors in the year to date. As previously reported, this site is in the process of being converted to a mobile-friendly version to encourage our traffic growth and to comply with modern search engine requirements. This is an ongoing effort.



An overview such as this is important as it assists with recalling activities that have been completed, and which are so easily forgotten in the maelstrom of day to day business. It is thanks to our faithful members and supporters that we are able to continue to operate our busy schedule and meet the expectations laid out in our founding document. ↻

***At SAMFA we hope that all our members, supporters and advertisers have a lovely holiday season filled with joy and meaning.***

***Thank you for your wonderful support throughout the year. Take care, get some well earned rest and let's return, invigorated and refreshed to a new year filled with promise and opportunity.***

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### PRODUCT DESCRIPTION

- ▶ Liquid alkaline cleaners that replaces traditional high temperature (50-70 C) cleaners
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- ▶ Applied at low temperature conditions (30-40 C)

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# Water Scarcity - Is the Metal Finishing Industry Coping?

An analysis of a dire situation - by Tony van der Spuy

Human beings are not very good at looking into the future, and even when they are presented with a solid prediction based on fact, most people adopt a “wait and see” attitude. Perhaps the predicted calamity will not happen, so why waste time and effort before it’s really needed?

We have the opposite of a Noah’s ark scenario today. Noah was trying to convince people that there was going to be so much water coming along that unless they climbed on the boat he was building, they would perish by drowning. The story goes that nobody believed him and they all thought he was mad. Then the water he promised did come in massive volume, a great non-stop deluge, and at the last minute when the door of the ark was closed and the rising water level starting bouying the vessel up and floating it away, the non-believers started desperately trying to board, hammering at the doors with their last strength and pleading for help. Alas, too late, they all perished.



Now in the City of Cape Town for a long time the Noah’s were warning that we were heading for a great drought such as had never been seen for maybe a century. They exhorted us to cut back on water usage, to alter our production methods and to come up with innovative ways of achieving what we needed to accomplish using a fraction of the water we were so used to.

Initially very few people heeded the call. Everyone was relying on the bet that when human beings are really, really faced with a crisis, they will come up with innovative ways to deal with it. **“They” would solve it.**

People were warning that the needed rain may not fall when expected and that we should preserve what was in the dam.

# KROME

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But no, our city and its people only sprung into frenzied action when photographs of empty dams started appearing in the media. Then they started believing the calculations and the figures proved that if we continued to operate as we were the dreaded Day Zero, when there would be no more water available, would be upon us within the very foreseeable future, perhaps just in a couple of months.



It's true there is nothing like a crisis to focus the mind. Metal Finishers and particularly electroplaters start getting very stressed when the reality dawns that serious water scarcity will put them out of business.

So what is likely to happen?

There is a saying that one has to cut one's coat according to the cloth. The online Free Dictionary interprets that to mean "to plan one's aims and activities in line with one's resources and circumstances". Exactly! There is no other option.

### **Western Cape Water Restrictions [update courtesy of Mark Dittke]\***

GN 1056 of 28 September 2017 applies to all water user associations and local authorities supplied with water from the Western Cape Water Supply System (WCWSS). Various water restrictions were imposed.

The taking of water by all users has been limited as follows:

- At least a 40% curtailment on all domestic and industrial water use
- At least a 50% curtailment on all agricultural water use
- Measured against the water demand of the users as per the five year average from 2010/11-2014/15.

The limitation applies from 1 October 2017 and may be lifted should the WCWSS recover to above 85% before the next decision date.

Recently SAMFA along with the University of Stellenbosch engaged in a two year research project styled as NATSURV 2 for the Water Research Commission. Now the WRC is the Noah in our story.

Reading from the WRC mandate on the About Us page on their website they describe their task as follows:

\*Mark Dittke - Specialist Environmental Health & Safety Attorney - Cape Town

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**Water would be one of South Africa's most limiting factors in the 21<sup>st</sup> Century**

The WRC was established in terms of the Water Research Act (Act No 34 of 1971), following a period of serious water shortage. It was deemed to be of national importance to generate new knowledge and to promote the country's water research purposefully, owing to the view held that **water would be one of South Africa's most limiting factors in the 21st century.** [*emphasis ours*]

In 1971 when the WRC was founded, water research and development (R&D) in South Africa was limited to a few institutions and the funding level inadequate. There was no research co-ordination and an apparent neglect of some key research fields. In addition, there was little strategic direction or leadership that would provide for the identification of priority areas or appropriate technology transfer. It was to address these issues, that the WRC was established.

The purpose of the NATSURV 2 study was to establish how much the metal finishing industry had changed since the prior study in 1987. The document is available as a free PDF download from the WRC site.

The research team did note that there were some new clean technologies taking over and that there had been a reduction in the amount of water consumed by the industry, but the overall impression was that there was room for a lot more improvement. Dual and counter-flow triple rinses were not as common as they should have been and many operators did not bother to recycle drag-out.

Now if there really was a very limited supply of water, then most certainly these things would change. And now in the Cape, there is!

**There is no magic bullet!**

A large new source of water is not going to suddenly be made available for rinses in the plating shop.

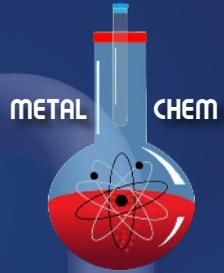
Every time we look at this we come back to resource conservation - employing serious and

**A large new source of water is not going to be made available for rinses in the plating shop.**

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strict cleaner production methodologies to preserve every drop of water.

In this issue we have reprinted the article 20 Ways to Cut Water Usage in Plating Shops. Ted Mooney wrote that article in 1982 at a time when water was particularly scarce in their part of the world in America.

We also have a short article by John Danks describing what he observes in many of the metal finishing shops where he has assisted to solve their effluent treatment headaches. None of the basic techniques are new.

In the article contributed by John Kleyn, "Trends and Developments in the Finishing Industry", which appeared in the past Issue of this journal he reports as follows: **"We cite an example where with only 3 hours of optimising rinse flows we reduced water usage by 65% without any effect on quality"**.

We have more success stories. Recently one of our Cape Town members told me that they had made a concerted effort to bring down their water bill and they had been able to reduce it by roughly 90%. However, some of the mains water was substituted with borehole water.

There are technologies that can be used to get even more use out of water - that is by recycling and using Ion Exchange and Reverse Osmosis to remove the contaminants so that the water is very clean once more. But this type of equipment is still relatively expensive.

International best practice still recommends a properly managed drag-out tank followed by a triple counter-flow rinse. In theory, by implementing a 3 stage counter flow rinse you will reduce your water consumption to the cube root of what a single flow rinse would have required. So if you were using 1000 litres per hour in a single rinse, this would reduce to the cube of 1000 or 10 litres per hour to achieve the same standard. A more than 90% saving. Even if the math was wrong, and you only save half to three quarter of your prior use it would be a dramatic improvement.

Some metal finishers will be fortunate to have clean borehole water available on their premises. As long as it is legal to extract this water for industrial use, then that can be a good solution. Undoubtedly when we are down to the wire such use for industrial purposes will be curtailed or stopped by the authorities.

We will continually be driven back to using the tried and trusted methods.

# HI-TECH

## ELEMENTS

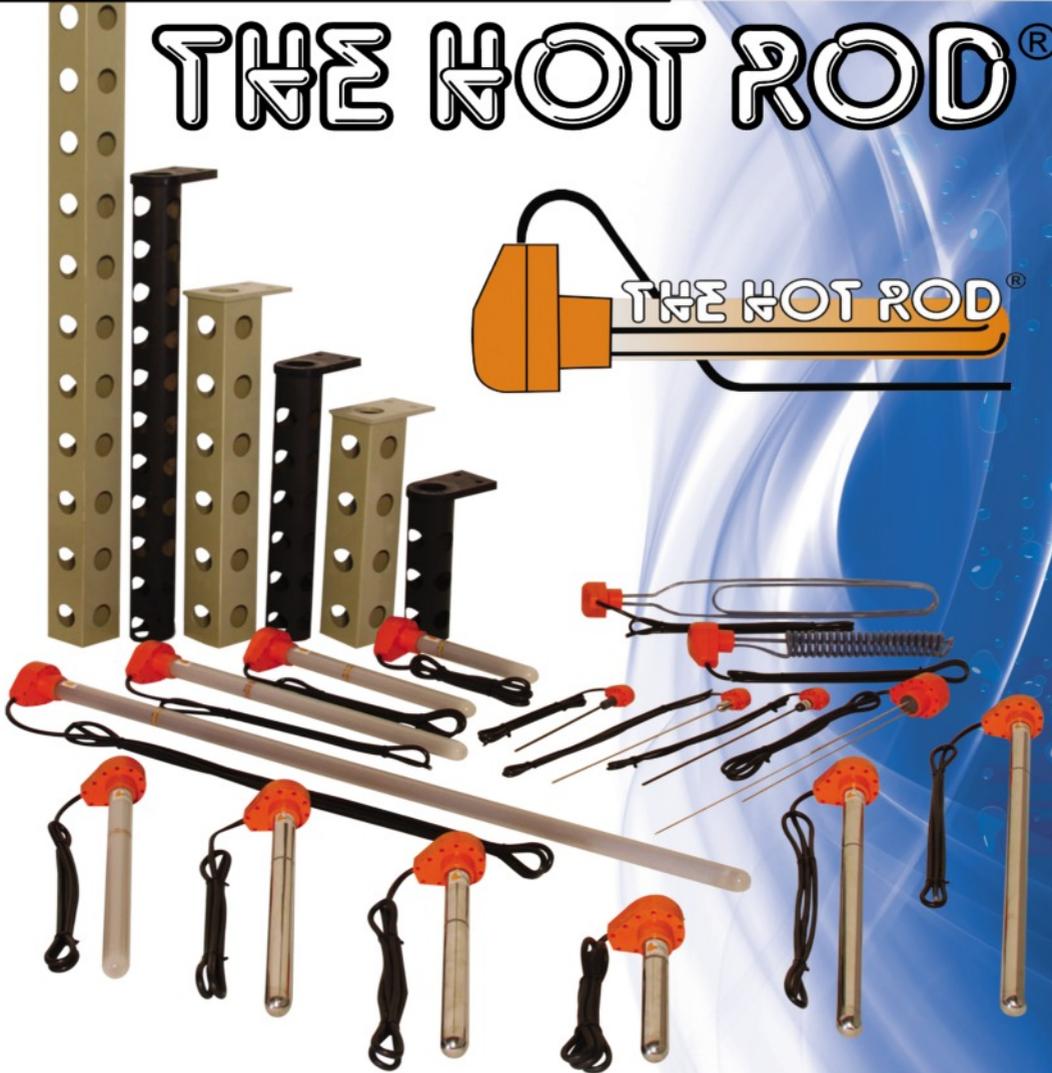
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# Water and Effluent Management in Metal Finishing

## Basic Misconceptions and Faults

*John Danks of Turnstone Danks Filtration visits many metal finishing shops who need assistance in managing their water usage and effluent treatment. In this brief summary he highlights some of the most common and persistent mistakes that he comes across regularly, even today!*

### **1. Continued water flow to rinse tanks when plant is idle**

This is one of the most common occurrences, basically “if it’s not in use close the taps”.

### **2. Excessive flow of water to rinse tanks**

Check how much water is really required and adjust the flows.

### **3. Bad placement of water inlets and exits**

The water inlet should not only be to the bottom of tank but as far from the overflow as possible.

### **4. Illegal inlet pipe installation (no siphon breaker)**

If your inlet pipe is under the water level the water will siphon to any lower area when you close the mains. This can cause disastrous consequences and is illegal.

### **5. Misconception that the pH meter on controller is always correct**

This needs to be calibrated, or checked using your spare pH meter and corrected, otherwise you will use a lot of chemicals and your whole system will not work!

### **6. Misconception that pH and ORP meters need to be cleaned only once per month**

If you have probes they will get dirty especially if you have dirty or oily water passing over them.

### **7. Incorrect positioning of pH probe and dosing pump inlets**

This would appear to be common sense but this is one of the most wasteful complications I encounter. The dosing unit should not be either too far away or too close to the probe otherwise it will not be able to read correctly and will under or overdose chemicals.



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## **8. Effluent concentration is erratic (dumping)**

You cannot dump concentrate straight into the system and expect it to cope, unless you have a very large treatment facility. The concentrate needs to be fed in over a long period of time.

## **9. Positioning of rinse waters (Away from process tanks)**

If your rinse tank is a long way from your process tank you will drip chemicals all over the floor or in other tanks in-between.

## **10. Failure to implement waste minimization techniques**

Before you spend money on fancy and expensive end of the pipe solutions, conduct a survey to see what savings can first be made internally.

## **11. Mixing of waste water pollutant streams**

Keep your waste streams separate. Mixing them makes it often more difficult and costly to treat but can also be very dangerous for example cyanide and acid would give a very toxic gas. Chrome 6 cannot be treated effectively in mixed waste streams.

## **12. Inadequate mixing of effluent**

This is by far the most common problem! You cannot get a decent reading on your instruments if you do not have a representative mixture and this can only be accomplished by vigorous mixing.

## **13. Have a pH meter or good paper**

You would be surprised how many metal finishers have neither. If you cannot measure your pH you cannot check your effluent or any of the numerous other processes that require it. In my opinion I do not believe you can run a metal finishing shop without one!

## **14. You must run your effluent plant like any other piece of machinery**

You need to take control and service it regularly. It cannot be installed and then forgotten about. Without attention it can cost you a large fortune in chemicals and fines. Your chemical supplier cannot run your effluent! They cannot be there all the time and you need to check what it is doing and what is going into it on at least a daily basis. It is your responsibility. 

*John Danks is an independent consultant in the metal finishing industry and will gladly help you with your effluent or waste concerns. Call him on 083 326 5741*

We are a support organisation for anyone involved in electroplating, e-coating, anodising or powder coating. If you have an interest in metal finishing then membership of SAMFA will definitely benefit you! Whether you provide metal finishing services to manufacturers or whether you supply the metal finishing industry with equipment or proprietary chemical products, SAMFA works tirelessly for your business!

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# TWENTY WAYS TO CUT WATER USAGE IN PLATING SHOPS

by Ted Mooney of Finishing.com

**This excellent article by Ted Mooney was first published in 1982! Yet it describes the situation that we face right now. What this proves is that the water scarcity that threatens our industry is not new. And that there are many things we can do to preserve the resource.**

The situation has changed: Water supplies are now strained to the limit. When restrictions aren't already in effect they surely soon will be. The economics have changed: Water rates and sewer charges continue to rise. It makes economic sense to employ low-costs methods to reduce water usage.

## **YOU CAN DRAMATICALLY CUT YOUR FLOW RATES WITHOUT SPENDING A LOT OF MONEY**

### **SOLUTION NUMBER 1 - DOUBLE DIPPING**

Sure it's great to add extra rinse tanks if you can. But if you can't, then dip the work twice in the same rinse tank. Much more effective than leaving the work in the tank!

Easy to do on a hand line, and almost as easy with a programmed hoist. If the manufacturer won't/can't adjust your system for double dipping, try an independent consultant.

Double dipping is rated as our number 1 solution for good reason so don't dismiss it!

**Double dipping is rated as our Number 1 solution so don't dismiss it!**

### **SOLUTION NUMBER 2 - DRAG-IN/DRAG-OUT**

Maybe you already have a reclaim or "save" tank (you should, you know). The reclaim tank should be the first stop the work makes after plating, of course.

But it should also be the last stop the work makes before plating! In this way, with no effort on your part, the reclaim tank will stabilize itself at about 50% of the concentration of the plating bath.

Thus, instead of carrying water into the plating tank with each load, you carry back a 50% solution. Cuts waste load in half and saves valuable

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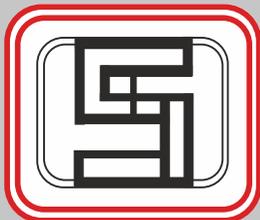
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chemicals. Also solves the problem of room-temperature baths that keep "growing".

Again, this principle is easily implemented on manual and programmed hoist lines. On continuous or fully-automatic lines, a small pump will serve to "common" the rinse after plating with the one before.

### **SOLUTION NUMBER 3 - TOP SPRAYS**

Barrel platers are excused, and may proceed directly to solution number 4. Most rack platers know what a top spray is, but few have taken the time to work out the numbers!

If you handle ten loads per hour, and you spray for ten seconds each time a load is lifted, then water is running for only 100 seconds out of each 3600 seconds.

Thus you can install a powerful 135 litres/minute spraying system while consuming an average of only 3.75 litres/minute. [225 l/h]

Mount a top spray on a rinse tank, and you have a very effective two-stage rinsing system that consumes very little water.

Automated lines can be programmed to spray during lift only; manual lines can be equipped with foot-operated valves or limit switches and timers.

Mount a top  
spray on a  
rinse and you  
have a very  
effective  
system

### **SOLUTION NUMBER 4 - RESTORE BARREL HOLES**

The next time you look at your barrels, look inside. It is the nature of polypropylene to peen over when subjected to the tumbling action of the work. You will probably see that the holes are virtually closed off!

It is not unthinkable to restore the holes to their original size with a hand-held electric drill - lots of shops do it. It's probably less than a day's work, and your 'loader' may even enjoy the opportunity to keep busy between loads by drilling out a spare barrel.

Not only will you greatly reduce dragout and the consequent need for high flow rates in your rinses, but plating speed will improve and you'll have far fewer headaches from barrels "floating".

### **SOLUTION NUMBER 5 - EXTEND DRAIN TIME**

A rather obvious solution, of course; more drain time means less dragout means less need for dilution means lower flow rates. But



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### CUSTOMER BENEFITS



**:: High transfer efficiency**

▶ **Powder savings**

- 15 to 20% efficiency over an automatic gun.



**:: Quality of application**

▶ **Best finish and higher productivity**

- regularity of film build-up,
- a counter electrode to avoid orange peel,
- large and adjustable impact distance



**:: Fast and easy to install**

▶ **Saving time**



**:: Easier maintenance**

▶ **Simple to use and economical**



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**inoBell**  
Powder Bell Technology

High performance powder bell sprayer

superior coating performance

extending your drain times does not necessarily mean that your productivity will suffer!

If your system incorporates two operators or two programmed hoists, then one probably finishes the cycle before the other. Drain time on the faster half of the line can be extended without any loss of production.

Even on single-hoist lines, there are invariably pauses while waiting-out an immersion time, etc. Usually, these pauses can be translated into increased drain time.

**SOLUTION NUMBER 6 - AIR AGITATION**

Air agitation not only keeps the rinse tank stirred, it scrubs the clinging solution off of the work.

**SOLUTION NUMBER 7 - COOLING TOWERS**

If you are using "once-through" water to cool a rectifier or as part of a refrigeration system or whatever, you are wasting a lot of money.

Cooling towers are cheap! They will reduce your water usage in this application by 80-90%.

Cooling towers are cheap. They will reduce your water usage by 80 - 90%

**SOLUTION NUMBER 8 - COUNTERFLOW**

In a multiple-rinse situation, introduce fresh water to the last rinse only; let the overflow from this last rinse be the supply source for the earlier rinse.

Studies and practical experience have proven that this slightly-contaminated overflow from the last rinse is just as effective as clean water. By counter-flowing a two-stage rinse, flow rates can be cut in half.

**SOLUTION NUMBER 9 - BREAK AIR LOCKS**

Sometimes counter-flow rinsing doesn't work too well because the water flows the wrong way (from the dirty rinse to the clean rinse) when a rack or barrel is immersed in the dirty rinse and raises the level in that tank.

One problem might be that you don't have enough elevation difference between the two overflow dams. More likely, the dirty rinse isn't draining right because of an airlock. Fix it for pennies!



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ProMask supplies a variety of **temperature- and chemically-resistant** masking materials designed to **protect holes, axles and flat surfaces** from a variety of surface treatments.

These materials are designed to save time on the production line as well as significantly **reduce the need for rework after coating**. Custom masking solutions are also available.

[www.promask.co.za](http://www.promask.co.za)

### **SOLUTION NUMBER 10 - INSTALL AIR LIFTS**

Suppose you would like to employ counterflow rinsing but have no elevation difference between the overflow dams. Or suppose you would like to re-use the overflow from plating rinses in earlier, less critical rinses.

A simple air-lift can be fabricated from plastic pipe, and will handle this chore without pumps, level controls, or other expensive complications.

### **SOLUTION NUMBER 11 - TIMED WATER ADDITIONS**

It's easy, and relatively inexpensive, to rig up a timer and solenoid valve to deliver a fixed quantity of water to the rinse tank with each load.

The timer can be triggered by a limit switch, or from the hoist programming.

A user reported a water savings of more than 50%, and a payback time of 3 months!

### **SOLUTION NUMBER 12 - CONDUCTIVITY CONTROLS**

A conductivity controller is adjusted to feed additional rinse water only if contaminants exceed an acceptable level.

This is an answer ideally suited to job shops where the amount and type of work processed varies from day to day. No water is wasted regardless of changes in the workload.

### **SOLUTION NUMBER 13 - MASTER SOLENOID PLUS FLOW RESTRICTORS**

Simple but reliable flow restrictors are available at very low cost. Unless you have a conductivity control setup, you simply must have flow restrictors. The payback time is measured in days!

But why waste water during lunch and breaks? Install a solenoid valve in the main, and an on/off switch near the operator station. A relatively small investment will more than cover the cost, and you pocket the savings for every minute the switch is off.

Additionally, you save the labour and headaches associated with constant fiddling with the rinse tank fill valves; simply turn the master switch on or turn it off, and the flow restrictors take over from there.

### **SOLUTION NUMBER 14 - FIBREGLASS HANGER ARMS\***

*[\*Editors Note: This article was originally penned at a time when many barrel units were constructed using cast iron arms clad in plastisol]*

Deteriorating plastisol coatings on barrel hanger arms are a continuing source of nuisance dragout, wasting chemicals and necessitating high flow rates in the rinse tanks.

Most manufacturers now offer fibreglass hanger arms, and others offer titanium or steel-reinforced polypropylene.

Replace those old cast iron arms, and reduce your rinse rates. Also reduce corrosion, stray currents, and high maintenance cost.

We know of dozens of shops who have converted and not a single one would consider reverting to cast iron arms.

### **SOLUTION NUMBER 15 - REPAIR RACK COATINGS**

Your racks may drag out a lot more solution than the work!

Bubbles and pockets in the coating can hold a significant quantity of solution, and you may hopelessly contaminate a plating bath by operating in this fashion.

**Your racks  
may drag out  
more solution  
than the work!**

The more deteriorated the coatings, the more time wasted removing "trees" too. Perhaps a perfect example for the old adage "A stitch in time . . ."

### **SOLUTION NUMBER 16 - RACK PARTS DIAGONALLY**

Studies have shown that, for small parts, only 15% of the drag-out is associated with wetting of the surface. 85% is in the form of a bead or band of water along the bottom edge of the part.

By racking the parts so that the lowest point is a corner rather than an edge, drastic reductions in drag-out result.

Small flat plates (25mm x 50mm) dragged out only one sixth as much solution when racked diagonally.

### **SOLUTION NUMBER 17 - BARREL DOORS UP**

Barrel doors typically are thicker than side panels, have fewer holes, and may even consist of two separate sheets stacked together thus impeding drainage.



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Drag-out reductions (and consequent rinse rate reductions) of 15-20% can be expected when doors face upward during draining.

### **SOLUTION NUMBER 18 - COMMON RINSES FOR CLEANING AND PICKLING**

No question about it. Use separate rinses after cleaning and after pickling if you can. However, if you have but a single rinse after cleaning and a single rinse after pickling, you may be better off designating one as the first rinse after both processes and the other as the final rinse after both processes.

Substantially lower flow rates may be possible with this arrangement than with the original. Need re-programming to accomplish this? Once again, industry experts are available to assist you!

### **SOLUTION NUMBER 19 - TANKS IN PROPER ORDER**

Never drag the work over a final rinse en route to dipping it in a preliminary rinse!

If your tanks are so positioned that a "clean" rinse is between a process tank and a "dirty" rinse, move the tanks. Don't live with this awkward, inefficient, situation.

### **SOLUTION NUMBER 20 - FULL DEPTH SPRAY**

Very viscous solutions (etches, chrome baths, zincates) may be more effectively removed with high pressure sprays than by immersion.

Rather than using all fresh water, install a re-circulating pump. Install an overflow dam near the bottom of the tank, and introduce fresh water through a flow restrictor.

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## **NEW** **SFLOW™** Manual Airless Spray Gun



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## Kremlin Rexson & Sames: return on the merger

As we announced in the last issue of SA Metal Finisher, on the 1<sup>st</sup> February this year Kremlin-Rexson and Sames joined forces to form a single company SAMES KREMLIN.

**The merger of these two major French players in surface treatment is the result of the offensive strategy of the EXEL Industries Group to strengthen their commercial offering and improve the sustainability of the Company.**

A recap of this event, looking back through time:

**Kremlin-Rexson**, based in Stains, in the Paris region, built its reputation in 1924 when it launched the first pneumatic paint gun in Europe. A real industry revolution!

The company which is now called Kremlin, rapidly became the reference point for dispensing equipment and paint spraying equipment.

Commercial successes followed on a regular basis, thanks to the development of innovative products.

These include:

**AIRMIX®** spray technology in 1975, which provides an exceptional quality finish with a high level of productivity,

**FLOWMAX®** pumps, which do not need lubrication cups.

The Company gained new momentum in 2003 thanks to the merger with Rexson, known for its high viscosity product dispensing solutions (glues & sealers).

**Sames**, located in the heart of the Alps since 1947, also made a name for itself in the general industry as well as the automotive industry.

Sames has supplied equipment for the paint line at the Citroën plant in Aulnay, France since 1980.

Faced with various economic changes, Sames focused its engineering on mastering the electrostatic process!

Paint sprayers that come from production workshops include a high voltage generator which exerts an electric charge onto the paint particles, allowing them to be applied evenly to the surface being treated, down to the nearest micron.

### OUR SIX RANGES

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- 4] **Rexson Dispense:** Extruding beyond what is possible, applying with extreme precision.
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