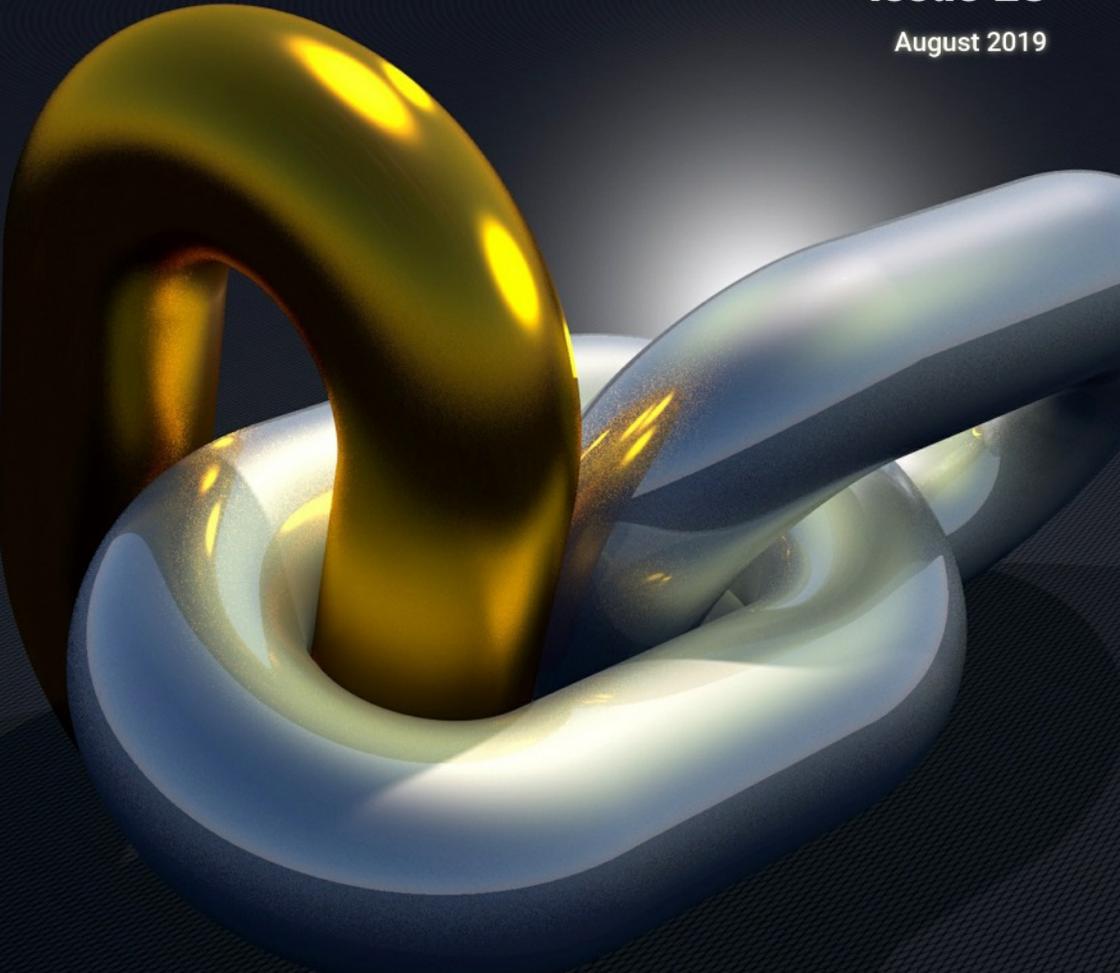


Official Journal of the South African Metal Finishing Association

S A Metal Finisher

Issue 29

August 2019



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Cover Picture Credit: Pixabay.com - Chain Members Knot

From the Editor

Tony van der Spuy



It's getting more difficult to find something positive to say about the prospects of growing and strengthening our industry when we are beset from every quarter with the worst possible news. The leader article in the August 4 edition of the Business Sunday Times titled "Worse news follows bad, and don't look to business or state" makes for a depressing read.

Fitch, the rating agency, downgraded us another notch and the word is that Moody's, the only agency to keep us out of junk status, is now reviewing their position on that. Our unemployment rate has reached 29% with 6.7 million people looking for jobs.

The woes at our State Owned Enterprises continue unabated while private sector whiz kid turnaround specialists walk away from the projects long before we see any apparent impact from their ministrations. When that happens we start to believe that the problems are not solvable.

Eskom poses an enormous threat to the whole economy as the R500 billion debt marker approaches fast. We used to think it was only SOEs but with giant companies in the private sector like Steinhof and Tongaat Hulett displaying similar results one wonders where guidance is going to come from.

Our Powder Coating Survey in this issue reveals that members have seen turnovers shrinking by 10% - 15%. Some businesses, which are presumably fortunately positioned, claim to have seen reasonable growth.

Now is the time for businesses to employ every resource conservation technique in the book. Those who have not harvested basic rewards implementing a resource conservation plan should take a serious look at doing so now.

We know that business moves in cycles. What goes down comes up again. The old Afrikaans saying "Alles sal reg kom, maar wanneer?" seems to describe the situation perfectly.

Anyway, that's it from me. Thanks for your ongoing support. It is much appreciated. I hope that you find the content of this issue of our magazine relevant and informative.

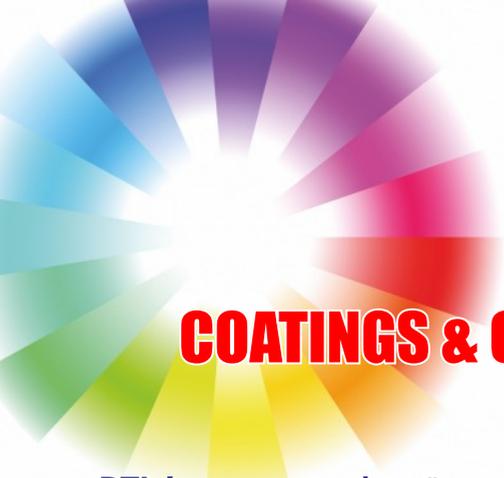
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**Guide to
Process
Instruments**

- Analog Process Controllers
- Black-Stone Dosing Pumps
- Controller and Pump System
- Digital and Analog Transmitters
- Digital Panel Mount Controllers
- Mini Controllers
- PCA Series Analysers
- Wall Mount Controllers



NEWS ROUNDUP

Report by Tony van der Spuy

This report covers the period from the distribution of Issue 28 of this journal up to the present date. It is a very necessary record enabling those who were not able to attend meetings to catch up with events affecting our association.

OUR CHAIRPERSON IN KZN BIDS ADIEU

Towards the end of 2018 the SAMFA year end meetings got under way about a month after Issue 28 of S A Metal Finisher was distributed during October.

The first of these was the KZN meeting hosted at the Better 'ole Shellhole in Pinetown on November 14. There was a little sad moment as this occasion was to be the one at which our regional chair, Mark Wright, would bid us all adieu. Altogether, he had served as chairperson for more than thirteen years. He had also been active in the Waste Minimisation clubs that preceded the establishment of the regional association. So he was regarded as part of the furniture and when he informed the committee of his plans to leave, he did take us by surprise.



Mark Wright

Regarding employment in England, Mark was fortunate to have met Anthony Poeton, the chairman of Poeton Industries, who visited South Africa for the first time during February 2017. As a direct result of this contact he was able to secure a position as a Compliance Engineer in the quality improvement side at Poeton Industries situated in Gloucester. On January 1, 2019, Poeton Industries signed up as an overseas SAMFA member company. So Mark Wright remains a member of SAMFA even though he has left our shores!



John Danks

His leaving also meant we urgently needed someone to stand in as interim chairperson, something that, due to various commitments, the other members were not in a position to do immediately. A decision was taken to call on the founding chairperson, John Danks, to steady the ship and take on chairperson's role until the next AGM. Fortunately John agreed.



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Our other two regional year end events also took the format of relaxed networking opportunities without any technical presentations. In Gauteng we hired a spit braai specialist to feed us, and he did an outstanding job.

ANNUAL GENERAL MEETINGS

Apart from our year end events, the regional mid-year AGMs are the only other member meetings arranged. During 2019 AGMs were held in the Cape on June 19, in Gauteng on June 20 and in KZN on July 2. In preparation, regional executive meetings always precede the AGMs.

MEMBERSHIP SUBSCRIPTION ADJUSTMENT

With input from our regional committees the following fee structure was recommended for adoption with effect from July 1, 2019:

Standard Membership - R 2 680 per year (ex VAT) up by R 130 from the year before. Essentially an increase of less than R11 per month.

Sustaining Membership - It was decided to peg the sustaining rate at R 5 950 per year (ex VAT) taking into account the trading conditions prevailing and the reliance that SAMFA places on these premium class members.

These adjustments were accepted unanimously by the members in all three regions and implemented from July 1, 2019 as proposed.

REGIONAL MANAGEMENT TEAMS

The second important matter that has to be dealt with at our AGMs is to select willing individuals to serve on the regional executive committees.

KZN

Generally committee members continue to serve and only step down in special circumstances. We have been accustomed to being able to vote serving members back onto their committees “en bloc”.

But in KZN with John Danks standing in as interim chairperson and Dean Schafer advising that he was stepping down from the committee, this region was to have the biggest changes at committee level for some years.

Regional members will recall that Shane Peixoto of Coating Technologies, a SAMFA Sustaining Member company, had accepted a position on the KZN regional executive at the July 2018 AGM. When Mark Wright announced his resignation at the year end event, several members made it clear to Shane that they would welcome him standing as their regional chairperson at the 2019 AGM.



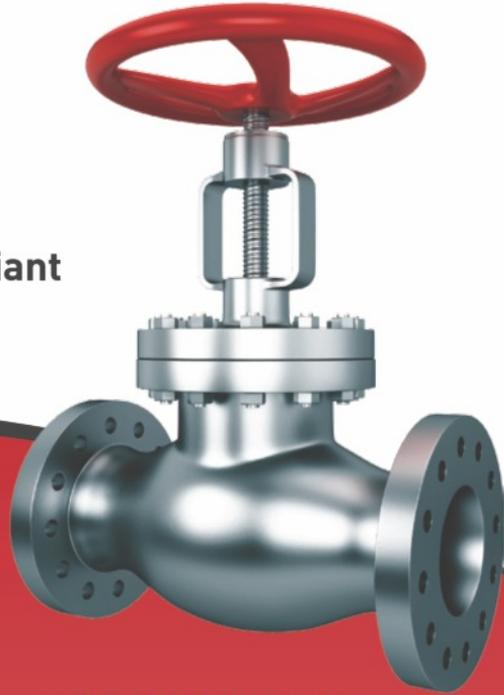
Shane Peixoto



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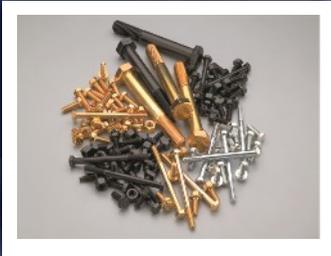
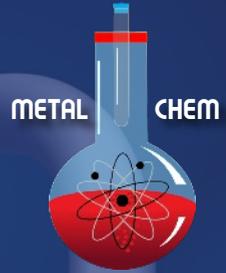
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Shane has been a solid SAMFA supporter and has presented lectures on powder coating at our three day powder coating entry level course in KZN. In addition he has made his factory available for hands-on sessions for these trainees.

John Danks offered to remain as an ordinary member of the executive leaving the committee still one short. To fill this vacancy the incumbents approached Edward Daniel of Ramsay Engineering with an invitation to join them, which he accepted. Edward has a long history in Electroplating. He was a member of the first group of KZN trainees to attend our then brand new Electroplating Theory and Practice course, presented during April 2004. At the time he was employed at Saayman Danks Electroplating.



Edward Daniel

Trudy Kastner, who has served on the KZN committee since the very beginning offered to continue serving. Way back in 2004 Trudy served on the Project Management Group which managed the extension phase of the DANIDA funded Cleaner Production in the Metal Finishing Industry project [CPMFI]. She is a well regarded plating expert.



Trudy Kastner

These changes mean that the individuals proposed and accepted to serve on the KZN committee are as follows:

Shane Peixoto - Coating Technologies - Chairperson;
Trudy Kastner - Nexor 100 - Vice Chair; John Danks - TD Filtration Systems; Edward Daniel - Ramsay Engineering

In the Gauteng and Cape Regions the incumbent committee members all agreed to stand for re-election and were voted back to their original positions as follows:

GAUTENG

Mark Coetzee - Astro Holdings - Chairperson; Darren Fox - Anderbolt Electroplaters - Vice Chair; Greg Tearnan - Synergy Chemicals;
Gary Joseph - Team Plating Works

CAPE REGION

Steve Codd - Orion SCO - Chairperson; Gillian Jangle - Krome Metal Chemicals - Vice Chair; Lizette Eksteen - PlateRite; Jeanre Taljaard - Pro-Galv

SAMFA'S FINANCIAL STATUS

We were pleased to be able to report to our members in attendance that the association is in a relatively strong financial position due to prudent management over the past year.

HI-TECH

ELEMENTS

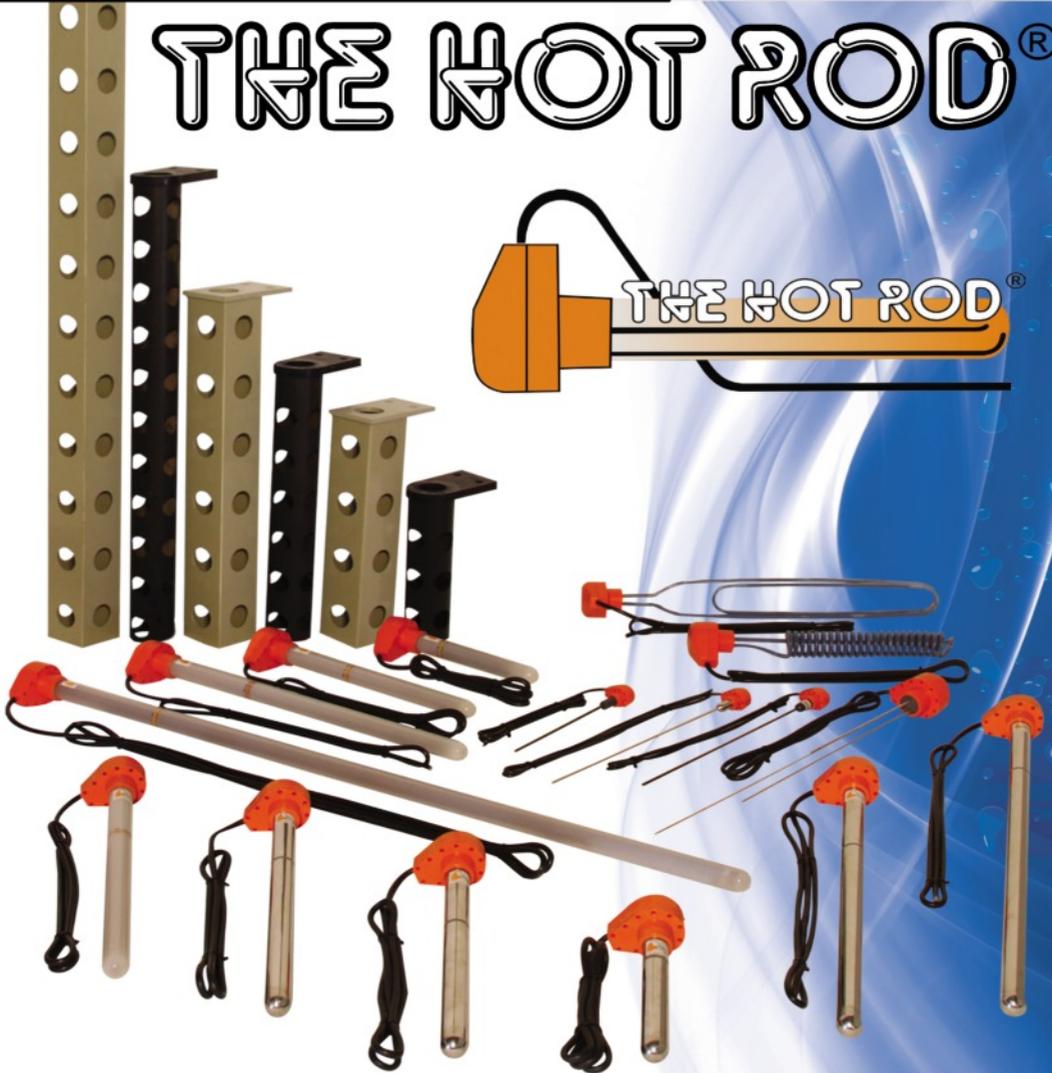
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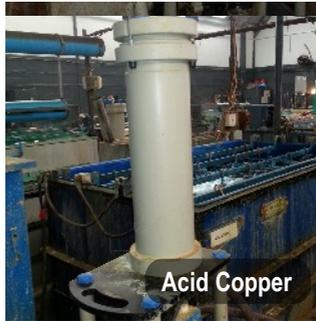
Acid Zinc



Electroless Nickel



Rod Pickling



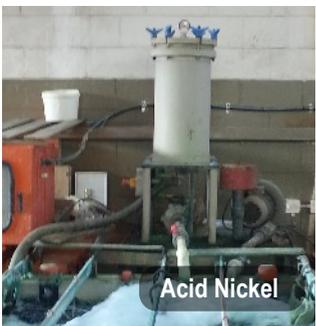
Acid Copper



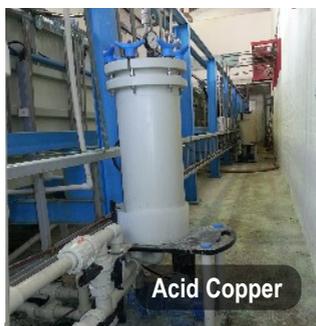
Acid Copper



Plating on Plastics



Acid Nickel



Acid Copper



Cyanide Copper

TECHNICAL PRESENTATIONS AT THE MID YEAR MEETINGS

Government gazette 36784 of August 2013

New rules which kick in during August 2019 prohibit businesses from sending waste to landfill which is not generally capable of being picked up by a shovel and/or has a moisture content of greater than 40%, amongst other things.

John Danks, who is in the effluent treatment business, put in some research and identified an affordable technology that could be employed to create solid sludge bricks. He demonstrated results to our attendees at all AGMs. Members who could not attend are welcome to contact SAMFA head office for details.

SAMFA ACTIVITIES OVER THE PAST YEAR

TRAINING PROGRAMMES

Electroplating Theory and Practice - 5 Day Course

At the time when Issue 28 of this journal was being printed we were in the process of presenting this course to a small group in the KZN region. Since then there has been no further SAMFA training in any region to date.



Left to Right:

Nthuthuko Joel
 Khuzwayo - Nexor 100;
 Nalika Singh - Nexor
 100;
 Phumlani Khumalo -
 Skema;
 Simo Ntshangase -
 Amcor;
 Karl Wortmann -
 Gurtech;
 Tasha Naidoo - Nexor
 100

WHAT ARE THE PLANS FOR TRAINING IN THE NEAR FUTURE?

We are offering both electroplating, powder coating and OHS training in the last quarter of 2019. Promotional literature will be distributed soon. If we can attract sufficient support from a particular region, then that course will be presented. We need a minimum of 8 delegates to make a course viable.

THE ELECTROPLATING APPRENTICESHIP

Through no fault of SAMFA's our collaboration with Ekurhuleni West TVET College has, as yet, not resulted in the establishment of an electroplating faculty and plating shop as they had hoped to deliver. For now the project is on ice. We are in the hands of the authorities, and will keep you posted. 🔄



Krome Metal Chemicals

The future of Metal Treatments

Since the inception of Krome Metal Chemicals in 2010, we have constantly striven to bring new and innovative products to the market. From the outset we have been seized with the challenge of investigating and developing technology that is futuristic, cost effective and of course easy to use in operation.

Over the years we have been privileged to deal with our supportive and loyal customer base expanding to become one of the preferred suppliers to the metal treatment industry in South Africa. Our company is based in the three main regions of South Africa namely Gauteng (Head Office), KwaZulu Natal and Cape.

Krome Metal Chemicals, in overview, was established in 2010 by three brothers Struan Orlik (Gauteng based), Arn Orlik (KwaZulu Natal Based) and Ryszard Orlik (Cape Based). There was subsequently a management buyout of Ryszard Orlik in 2017 and the Cape Region is currently shared between Arn Orlik and Struan Orlik.

We believe in local manufacture and full Research and Development in South Africa. This gives us an advantage over imported products and technology enabling us to maintain global competitiveness on a localised basis. In turn, our customers enjoy the benefits of operational cost effectiveness and competitive export potentials.

Technological Markets that Krome Metal Chemicals Supply

- Electroplating Market (collaboration with Atotech)
- Phosphate and Pretreatment to Powder Coating and Wet Spray
- Anodising and Aluminum Market
- Wire Treatment Market
- New - Pulver Coatings SA Powder Coating Suppliers. Imported products in collaboration with Pulver Kimya in Turkey, which is the second largest supplier in Europe.
- Hendor Pumps from Holland. Specialised Filtration Systems.
- Collaboration with Local Equipment Manufacturer, S.Orlik Pty Ltd

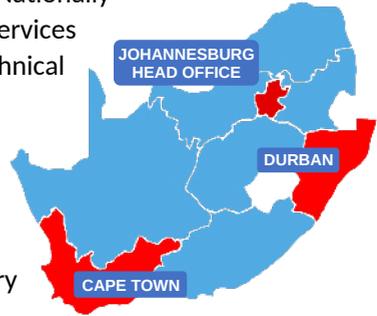


Understanding Krome

Since the commencement of our operation we have maintained a focus on Customer Service, Technology and Cost-Effective System Supplies. In this quest we have been privileged to have established our business with the most competent and supportive personnel available in South Africa.

Johannesburg Team

- Duncan Thompson – Research and Development and Labs Manager
- Dawie Jacobs (Manager) and Ivan van Straten – Technical Support Nationally
- Meryn Orlik – Administration Manager Nationally
- Jane Orlik and Jacqui Baird – Financial Services
- Bennie Vorster and Thulani Zulu – Technical Sales Gauteng and Export Regions
- Caroline Mogoatlhe – Internal Sales
- Sheldon van Straten – Procurement Head Office
- Mandy Harris – Reception Head Office
- Abel Periasamy – Logistics and Factory Supervisor
- Director – Struan Orlik



KwaZulu Team

- Debbie Petzer and Carlene Yegappen – Internal and External Sales/ Administration
- Ashwin Kisundas, Prinesh Bodha and John Houseman - Technical Sales Natal
- Kirusha Naicker – Laboratory Supervisor KwaZulu
- Brandon Govendor- Logistic and Factory Supervisor
- Director – Arn Orlik

Cape Region

- Keith Norscia and Gillian Jangle – Technical Sales and Branch Supervisors
- Liezel Musset – Internal Sales and Administration



- Paulo Cambongue – Laboratory Cape
- Sibabalwe Reshane- Logistic and Factory Supervisor
- Director – Struan Orlik & Arn Orlik

Technology of the Future and Present

Krome has been highly innovative from the date of inception in the realm of improving technologies and upgrading existing offerings.

Latest in offerings for pre paint applications:

Nano Technology

The idea around the design of this product was to reduce coating weights without compromising adhesion and quality standards of alloy phosphates and zinc phosphating, while also aiming to achieve a minimal environmental impact and post waste treatment.

During the years of development, we identified our competitors' shortcomings in formulating such products and have successfully created and implemented the Krome Nano Protect system. It is imperative that customers understand that a good low conductive (low contaminated water) is used in this system as its design is based on extremely small particles that tend to attract any contaminants.

Developing a system that is stable and powder free requires de-ionised or Reverse Osmosis water and filtration. This is the key to the end success. The system does require some capital equipment investment, however, this investment is paid back extremely rapidly if you consider waste treatment and possible sludge downtimes.

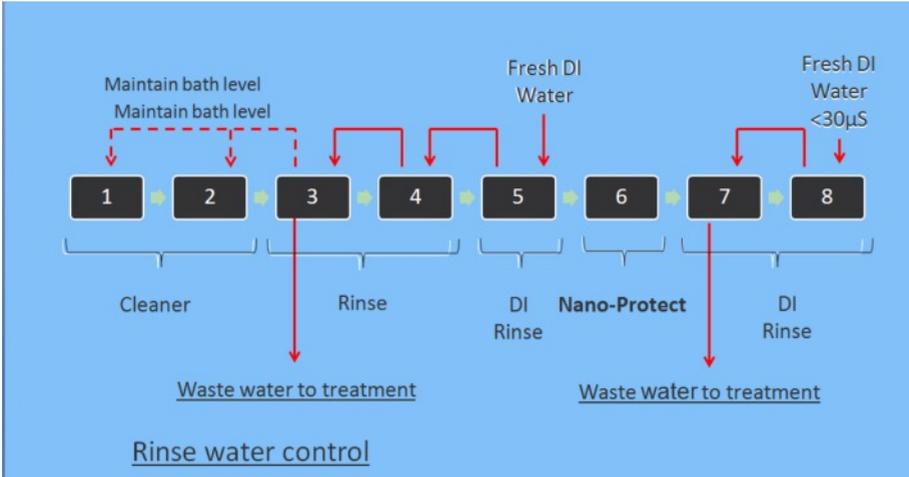
Krome Nano Protect is far more exciting than competitive products for the following reasons:

- Excellent corrosion prevent properties
- Easy to Control
- Single additive addition
- Self-Healing when Scratched
- Excellent Paint attraction in deep recesses
- Easy waste disposal - No phosphates and chelating agents
- Multi Metal Safe and effective
- Cost effective due to layer thickness
- No Porosity
- Golden Deposition colour on Steel but fairly light on Aluminum
- Non-Toxic
- Low Temperature operation



Equipment Needed to Implement

1. Filtration (5µm)
2. Deionised Water less than 40µS or Reverse Osmosis (Water Loss)



The concept of Nano Protect is that it goes everywhere and still attracts the paint. Excellent for extremely smooth e-coat systems and paint applications. The system is already running in automotive approved suppliers plants.

Achieved Hours in Salt Spray

- Steel with Exterior Powder – Above 1000 hours
- Aluminum with Class 1 Powder – Above 2000 hours
- Galvanized surface with Exterior Powder – Above 1000 hours
- Stainless Steel with Exterior Powder – Above 1000 hours



1 200 Hours NSS exposure

For further information and to establish whether you would be a good candidate for the process with your existing infrastructure, please contact our relevant branches and technical representatives.

Other extremely exciting products that can save money released in the last two years

- K- Soak LT 200 and 100 Low Temperature Cleaners 30°C
 - Electricity savings alone pays for cleaner. Cleans better than hot cleaners.
- K- Soak LC Range Liquid Cleaners
 - Easy to add and dose. Great detergency.
- Lubridraw Natural Fat Pressing Lubricants
 - Safe and easy and washes off with Hot Water
- Trivalent Black Silver Free Passivation Systems
 - Alkaline Zinc Nickel and Zinc Iron High Corrosion Coatings
- Krome Corrosion Preventative Chrome Free Protection Coatings
 - Up to 100 hours on galvanized parts and wire from existing 24 - 48 hours Salt Spray
- Krome Nickel Tablets
 - Saves up to 15 - 20% Zinc usage in galvanizing Plants.
 - Better performance and ash free over competitive products available
- Krome Tri-cat Phosphate and Grain Refiner
 - Lower temperatures and less sludge than competitive products. Pore Free
- Trikoat Local Trivalent Passivates – Thick and Thin Film.
- Phoskro HW24 - Get away from thinners and improve corrosion before Powder Coating



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- Brass - Bright/Satin
- Copper - Bright/Satin
- Gold
- Silver
- Antique Finishes
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PPG debuts PPG ENVIROCRON Extreme Protection Powder Coating System

Exceptional impact, corrosion resistance exceeds industry's most stringent corrosion standards

PPG has recently released the ENVIROCRON® Extreme Protection powder coating system in this country. It is formulated to provide superior chip and corrosion resistance to extend the life of high-tensile automotive coil springs on original equipment manufacturer (OEM) vehicles.

Based on a patent-pending technology using reclaimable materials, PPG *Envirocron* Extreme Protection powder coating system surpasses 150 cycles of testing as prescribed by SAE International's J2334 Laboratory Cyclical Corrosion Test, which is the automotive industry's most stringent performance standard for this type of testing.



Specially formulated without fiberglass, PPG *Envirocron* Extreme Protection powder coating also is easier to reclaim and recycle compared to a similar competitive product. Additional benefits include exceptional application transfer efficiency, consistent film builds on spring surfaces and a wide application window for ease of use.

“PPG *Envirocron* Extreme Protection is a major advance in corrosion- and chip-resistant coatings technologies, serving as the first line of defence in stopping springs from corroding,” said Shelley Verdun, PPG product manager, powder coatings. “The dual-coat process features a sustainable approach and an entirely new impact-absorption mechanism for chip mitigation.”

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Dual-coat powder system



Exceptional chip and corrosion resistance

Based on an entirely new impact-absorption mechanism for chip mitigation, PPG ENVIROCRON® Extreme Protection dual-coat powder system surpasses the automotive industry's most stringent performance standard, SAE J2334, exceeding 130 cycles of corrosion testing.

The two-coat system includes *Envirocron* XDC zinc gray epoxy primer and *Envirocron* XDC black epoxy topcoat, providing exceptional chip and corrosion resistance. Specifically formulated without fiberglass, the *Envirocron* Extreme Protection system enables applicators to easily reclaim and recycle compared to a similar competitive product. The exceptional application transfer efficiency allows applicators to build consistent film on all surfaces, while a wide application window allows for ease of use.

Product Benefits

- Specifically formulated without fiberglass
- 15-year corrosion protection
- Single and multiple cold chip resistance to -94° F (-70° C)
- Low, single pre-heat temperature for all springs
- 60% higher transfer efficiency
- Wide application window due to first-pass transfer efficiency and electrostatic wrap
- Highly reclaimable

Segments

Coil springs

Underbody parts



Cyclic Corrosion, 130 Cycles



Competitor



PPG *Envirocron*
Extreme Protection



Competitor



PPG *Envirocron*
Extreme Protection

Dealing with Specifications

A specification is a description of work to be done or materials to be used. It acts as the interface between the customer (internal or external) and suppliers.

by John Danks of Turnstone Danks Filtration

In the metal finishing Industry, we all work to some sort of specifications whether they are our own or given to us by the customer. In their simplest form for our own internal usage they will usually be verbal to the staff doing the process. If they are external, they will most likely be in written form.

If of course you have a management system like ISO, then they will be all written/documented.

This written form can often just prescribe a coating thickness, type of plating or colour requirements (in case of paint). The customer in this case is relying on you to do the necessary to make sure the product is processed correctly. He assumes you know what to do.

The customer assumes that you know what to do

Where the wheels can fall off is that you have often no idea what the product is going to be used for, or the corrosive conditions it may encounter (this is assuming that you understand these things and can advise) and the customer has not said anything but his normal, e.g. zinc plate.

Of course, if you have a customer who gives you a comprehensive spec and you (a) have a copy (b) understand it and (c) process it accordingly you should have no problems.

One of the most difficult or downright impossible things is to have an up-to-date copy of everybody's specifications.

There are thousands of them out there and a lot of companies will not give them to you anyway if you are not dealing with them directly. The others that are available would have to be purchased (British or American spec's for example). These are not cheap and would need to be updated regularly.

Specifications are not cheap and need to be updated

The onus for supplying the specs needs to be with your customer. This has obvious complications as the customer usually has no experience with finishing specs and will expect you to interpret them correctly. In turn, this can be a difficult task as



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they are often translated from the original or, in worst case scenarios, are still in a foreign language.

Customers will often give you a long string of numbers and letters and ask you what spec that is. This sequence of symbols is frequently quoted incomplete and has important pieces missing, making it difficult to recognise at all.

Once you have the spec make sure that (a) you understand it, (b) you can produce it and (c) can you measure and test it, as there is very little point in working to a specification if you cannot verify the results when completed.

Understanding the specification can be difficult even with a good copy, and sometimes can be interpreted differently by you and the customer. For instance, where will the minimum thickness be measured? The customer may think it should be in a corner where it is impossible to get any coverage or insist that you plate a 6 mm threaded component with a spec that is meant for heavy duty corrosion protection and calls for 20 um of plating So, make sure that everybody is on the same page!

Specifications can be interpreted differently by you and the customer

Remember to speak to the customer about jiggling points as this can cause headaches and is very rarely dealt with in the specification.

There will often be what is known as the significant area on an item for coating. A bumper, for instance, has the front part which is obviously very important and the back which is of lesser concern.

It is always essential to produce samples for approval by customer. If approved for appearance, colour and thickness, etc, make sure that you keep an initialed original.

This has often saved my life, especially if the inspector at the customer's end changes and has a different view of what is acceptable.

Ignoring these details can be very costly and sometimes disastrous, especially when there is a problem or recall in the field and everyone is looking for a place to pin the blame. So make sure that your paper trail is in order and any changes or deviations are documented and signed off.

Make sure that your paper trail is in order

Do not undertake to coat to specification if you do not understand the requirement and are not prepared to buy the test equipment or to keep accurate daily records of your processes. 🔄



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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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- Fast and secure colour change times between 5 and 15 minutes depending on the operator's ability.
- Increase in production due to the higher speed at which the Encore HD guns can coat compared to normal venturi type guns.
- Elimination of shifts due to higher production volumes achieved.
- 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.
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- Improved quality thanks to the consistency of the Encore HD application equipment.

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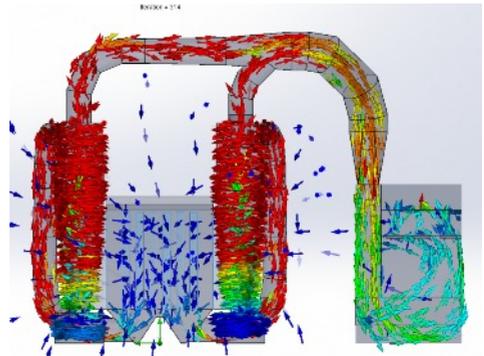
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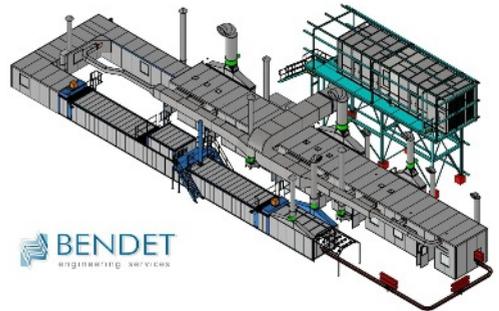


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Plant upgrade at Capewell Springs

Tony van der Spuy visits a founder member to see their upgraded plating line.

Recently the MD of Capewell Springs and Metal Pressings, Emile Coetzee, invited me to visit their factory and have a look at their new automatic zinc-iron electroplating line. I arranged to be there on July 24 and was accompanied by John Kleyn of Accurate Automation who had done the installation.

Capewell Springs and Metal Pressings is a founder member of SAMFA, and this is not the first time that the company has featured in our journal. Readers who have been around for a long time, like Capewell has, will recall that they were profiled in our December 2004 issue, pictured alongside.

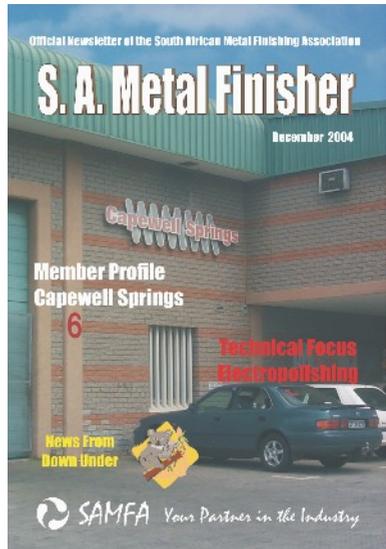
The company, which started out as a locally owned business specialising in the manufacture of springs and related metal pressings, was bought into the Kern-Liebers group of companies in the early 2000's.

Today Kern-Liebers employs 8000 people at its 18 companies in Germany and 51 worldwide, making Capewell part of a large and powerful family.

It is probable that most people never give a thought to the importance of a spring as a commodity. But on a conducted tour around a spring manufacturing plant, a visitor will quickly realise that we depend on basic spring configurations, allied products like spring clips and many components of a springy nature to make machinery work. Springs push things and pull things and secure things and the truth is we cannot live without them. They are used in the manufacture of a wide variety of consumer goods from kitchen appliances to white goods and motor cars to mention only a few.



Emile Coetzee
MD at Capewell Springs



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Very much part of the ethos at Capewell is their commitment to do things right, a primary reason for the business having attracted the attention of an international buyer in the first place. Their attention to detail had secured them a respected space in the manufacturing industry.

Capewell is ISO 9000 certified. To meet standards, it is necessary to have total control over all operations. If metal finishing is one of those important elements, and there is significant volume, then it is preferable to operate an in-house plating facility. So the company has been operating a zinc plating plant for many years.

.. if there is significant volume it is preferable to operate an in-house plating facility

The moment they became aware of the existence of a metal finishing association, which at that stage was still operating as the Cape Metal Finishing Association, they signed up as members. This pre-dated the official switch to the SAMFA umbrella association which was effected in March 2005.

They participated in all the programmes that the association was offering. Originally they invited a CPMFI* “walk-through” evaluation of the plating plant they were operating at the time. Several of the suggestions for improved resource conservation were implemented immediately.

When the sponsored CPMFI project officially ended, DANIDA provided SAMFA with fresh funding to launch a new Occupational Health and Safety awareness programme for the metal finishing industry. Under this initiative the “Seven Minute Plan” manual and DVD was produced. Once again, Capewell was an enthusiastic participant making some changes to their plant that on inspection were highlighted as necessary.

.. the company has an inbuilt culture to do things right and maintain a safe environment

It must be said that there never were any serious issues as the company has an inbuilt culture to do things right and to maintain a safe and clean working environment.

They also participated in a metal finishing industry energy survey which SAMFA arranged. In addition they contributed to research conducted for the Water Research Commission which culminated in production of the report “NAT-SURV 2: Water and Wastewater Management in the Metal Finishing Industry” which is a reference work available from the WRC online library at this link:

<http://www.wrc.org.za/mdocs-posts/tt-644-15/tt-644-15-2/>

*CPMFI - Cleaner Production in the Metal Finishing Industry

Doing virtually everything in-house from tool making to the manufacture of their own spring forming machinery and operating their own electroplating plant helps the company to stay competitive, particularly when customers compare prices of locally manufactured components against those they can import from the East. It also not only about prices, it's about being able to move quickly in responding to a customer's requirement. In the new digital world where responses happen in a flash, people expect everything to work like that.

Between 60 and 70% of the company's products are zinc plated. So there is a heavy reliance on the plating plant. During 2018 it was about 20 years old, and definitely reaching the end of its useful life span. Maintenance costs were on the increase, and the original effluent treatment facility was outdated and not properly designed to cope with the volumes it was expected to handle. A decision on the way forward had to be taken.

.. between 60 and 70% of the company's products are zinc plated so there is a heavy reliance on the plating plant

The options were either to completely overhaul the existing plating plant and the existing effluent treatment facility, or alternatively to install a new plant with a new effluent treatment facility.

However, refurbishing of the existing plant would not create the additional capacity that was needed. Space was limited in the area where it was located.

Around about this time, one of Capewell's clients took the decision to discontinue producing a particular line of products which they had been plating in-house. As a result, they were seeking to dispose of a fully automatic zinc-iron plating plant along with its attendant effluent treatment components which included a sludge filter press and lots of other peripherals.

It also included full extraction and fume scrubbing equipment.

.. the price was about a quarter of what a brand new plant would cost

The price was most certainly right, about a quarter of what a brand new plant would cost. It was fully automatic and programmable offering far greater capacity than existed at Capewell.

It would need to be located in a different section of the factory, and it would be necessary to do all the civil work required prior to installation including laying a new floor.

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However, civil works would have had to be done whether the replacement plant that was purchased was second hand or brand new.

All of this mitigated in favour of purchasing and installing the used plant. That being the case, the company decided to move ahead in acquiring the used plant.

John Kleyn of Accurate Automation & Consulting secured the contract to decommission the plant at its location, remove all the components and equipment and to install whatever would be required at Capewell.



The New Plating Line

At the time of my visit to the plant it had already been up and running for a couple of weeks. Production was moving through at a cracking pace. The quality of the plated work appeared to be outstanding.

With space for four barrels in the plating station, the plant has a capability of churning out 50 Kg of plated product every 10 minutes.



The real cherry on the top is to have acquired a properly engineered effluent treatment plant designed specifically for this plating operation. It was virtually a plug and play arrangement.

With this investment, Capewell Springs and Metal Pressings has demonstrated its commitment to growing the local economy in a sustainable manner. It's the kind of dedication that this country needs and it is SAMFA's task to lend support to such member companies in any way that we can. ♻️

Left - A view of the effluent treatment plant showing the main treatment vessel, the settlement tank and the filter press

SAMFA Powder Coating Survey

It's been a while since an article in this publication has been dedicated to the powder coating industry. We thought that our readers would find a survey interesting so we invited a sample of businesses from various arenas including powder coaters, powder manufacturers and suppliers of coating equipment to participate in a mini survey. Ten companies participated, and these are the results. We hope that you will find the responses useful. We leave you to draw your own conclusions.

Question 1:

If you had to guess, how many powder coating jobbing shops do you think are operating in South Africa today?

Responses:

1. Jobbing shops = ± 90
2. I would say that there are a few hundred.
3. In excess of 300
4. 350 - 400
5. Not answered
6. Not answered
7. Around 35 in W.Cape
8. I would estimate around 400 to 500 Jobbers in SA ranging from Micro to Medium type enterprises.(Probably 200 in Gauteng and about 30 in KZN)
9. 500
10. + - 200

Question 2

Could you hazard a guess on how many in-house shops are in operation in RSA?

Responses:

1. Jobbing shops = ± 160
2. Possibly 1.5 times the jobbers but the jobbers do more articles.
3. In excess of 200
4. Not answered
5. Not answered
6. Not answered
7. Around 25 - 30 In W.Cape
8. I would be guessing 200 to 250 in house coaters today.
9. 300
10. 500

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Question 3 - Technologies

Response 1:

3) If you look back 10 years, where would you say the most useful technology improvements have been introduced?

a) In powder paint products? And if so, what have these improvements been?

Not Answered

b) In pre-cleaning technology? And if so, please describe some of these improvements

Not Answered

c) In powder gun technology? And if so, please describe the technology.

Rotary atomiser/powder bell. It has a superior electrostatic charge and its DOI (Distinctness Of Image) and smooth performance levels ensure a consistent film build and perfect smoothness.

d) In other areas like ovens, etc

The infrared electric / gas oven.

Quality, curing time, gas & electrical savings

Response 2:

3) If you look back 10 years, where would you say the most useful technology improvements have been introduced?

a) In powder paint products? And if so, what have these improvements been?

Not Answered

b) In pre-cleaning technology? And if so, please describe some of these improvements

Cleaning at lower temperatures.

Cr free final rinses

Cr free aluminum treatments

Nano tech but where that is not practical, lower sludge phosphates being implemented. To date Nano tech hasn't taken off yet. Only a few plants that I have heard of.

Water savings by the usual tricks such as reverse cascading.



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Response 2 continued:

c) In powder gun technology? And if so, please describe the technology.

Not Answered

d) In other areas like ovens, etc

Not Answered

Response 3:

3) If you look back 10 years, where would you say the most useful technology improvements have been introduced?

a) In powder paint products? And if so, what have these improvements been?

It has replaced most wet paint applications however also impacted on electroplating

Newer metallics and quicker turn around times. Bonded metallics and the new TGIC Free systems that are non hazardous and non toxic

b) In pre-cleaning technology? And if so, please describe some of these improvements

Nano is definitely the future but also use of tricats and specialized alloy coatings

c) In powder gun technology? And if so, please describe the technology.

New guns allow better charge. Technology still the same. Better auto applicators and sensors

d) In other areas like ovens, etc

Not much in this field has changed infra red was a big wave but not really applicable too all. Gas burners are a bit more efficient nowadays.

Response 4:

3) If you look back 10 years, where would you say the most useful technology improvements have been introduced?

a) In powder paint products? And if so, what have these improvements been?

Low temperature cure, Qualicoat standard instead of SABS



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Response 4 continued:**b) In pre-cleaning technology? And if so, please describe some of these improvements**

Not Answered.

c) In powder gun technology? And if so, please describe the technology.

More advanced, application systems are thinking for the operator, adjusting themselves for re-coating, metallics, even cleaning themselves to a certain degree.

d) In other areas like ovens, etc

Not Answered

Response 5:**3) If you look back 10 years, where would you say the most useful technology improvements have been introduced?****a) In powder paint products? And if so, what have these improvements been?**

Specialised powders with better UV resistance and superior corrosion protection. 1000 hrs. is now almost a standard with product capable of curing from 150 °C.

b) In pre-cleaning technology? And if so, please describe some of these improvements

Multi Metal processes allowing various materials through the same plant and process with improved corrosion resistance, lower energy, lower concentrations, less steps and processes whilst being environmentally more friendly.

c) In powder gun technology? And if so, please describe the technology.

Not answered.

d) In other areas like ovens, etc

Modern ovens with constant temperature throughout the oven is critical for the modern standards and specification. This has to be achieved with minimum energy losses and maximum production capacity. The use of proper air curtain design and circulation forms a vital part of a cost effective, productive and reliable oven . The use of infrared preheat zones ensuring constant quality despite product type at optimum curing time leading to increased production, saving of energy and increased production. The use of alternative energy sources is critical to ensure we are



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Response 5 continued:

competitive. Electricity remains one of our major challenges not only as the most expensive energy source but also as a reliable service. Alternatives to electricity are Natural Gas, Paraffin, Diesel and LPG. The choice of the correct energy source and oven type will determine quality and production. Getting this wrong will severely impact on profitability and ultimately sustainability in an increasingly competitive market.

Response 6:

3) If you look back 10 years, where would you say the most useful technology improvements have been introduced?

a) In powder paint products? And if so, what have these improvements been?

In increased colour palette/variety; development of lead free and T.G.I.C. free powders.

b) In pre-cleaning technology? And if so, please describe some of these improvements

Development of chrome free applications for certain pre-treatment processes.

c) In powder gun technology? And if so, please describe the technology.

Rotary atomisers/powder bells for extremely even powder film build which helps to accomplish substantial powder savings. Development of high density powder pumps (dense phase pumping technology) to convey powder to the powder gun, reducing compressed air for powder transportation and improving the powder coating process.

d) In other areas like ovens, etc

Increased use of robotic powder application (overseas - not yet in SA)

Response 7:

3) If you look back 10 years, where would you say the most useful technology improvements have been introduced?

a) In powder paint products? And if so, what have these improvements been?

Colours and Formulations

b) In pre-cleaning technology? And if so, please describe some of these improvements

Not Answered.

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Response 7 continued:**c) In powder gun technology? And if so, please describe the technology.**

Control Of Micro-amp Output Of Gun.

d) In other areas like ovens, etc

Not Answered.

Response 8:**3) If you look back 10 years, where would you say the most useful technology improvements have been introduced?****a) In powder paint products? And if so, what have these improvements**

Powder manufacturers have placed a lot of focus on costs and cost saving attempts. (Lower curing curves and smaller colour matching batches)

The most significant Improvements that have been made are in the "Durability and Performance over the life" of the coating. These include clever corrosion resistances and UV stability advances looking more into the longevity of the Powders being used. A massive amount of focus though is how to locally compete with China pricing but maintaining a European standard of quality. As World markets have opened up through the years, there are a far greater amount of Powder manufacturers now competing in the market place.

b) In pre-cleaning technology? And if so, please describe some of these improvements

Pre-treatment technologies have probably been the biggest innovators to the industry. Primary focuses have been going into energy saving, environmental impact and cleaner production methods. Corrosion protection has become a big driver. People are getting to understand the importance of correctly prepared materials. Industry drivers remain to be focused on lower process temperatures and minimising waste streams. Green has to be the thought pattern of the future with new technologies making these easily achievable.

c) In powder gun technology? And if so, please describe the technology.

With technological advancements and the speeds at which things have changed, new Gun technologies have also greatly improved. These advancements though are quite expensive and haven't been the easiest to enter/experience if being a small operator. The greatest advantages today are the built in operator safeties on manual machines and the obviously the automatic splurge protections and automated controls now as built in features. Quick change and Self-cleaning equipment with more consistent film thickness control have become highly advantages with lighter and more ergonomic designing.

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Response 8 continued:**d) In other areas like ovens, etc**

We live in the era of advancements. These can mostly be attributed to automation. There has been a massive improvement in plant and machine designs but mainly in process control with help of automated plc type installations. This will most definitely be a driving focus in the Metal Finishing future, not only as these become a little more affordable, but as cost saving and production times become the competitive edge.

Response 9:**3) If you look back 10 years, where would you say the most useful technology improvements have been introduced?****a) In powder paint products? And if so, what have these improvements been?**

Not Answered

b) In pre-cleaning technology? And if so, please describe some of these improvements

Not Answered

c) In powder gun technology? And if so, please describe the technology.

Advancements in electrostatic technology have shortened coating times (lowered number of passes needed to cover the component) and improved coverage in difficult Faraday cage areas. The HD pump with it's no venturi technology, has revolutionised the industry by narrowing the band of coating thicknesses to within 10micron. As the venturi wears in venturi pump systems, the spray pattern is compromised, so regular inspection of this wear part is necessary. The HD gun has assisted with repeatability, consistency and accuracy lowering re-works on aesthetic-sensitive parts. As there is no venturi in this pump, the cost of wear parts is minimised and system can run for 1000 hours for a single pump and 1500 hours for a double pump or more (Electron system) before maintenance needs to be done.

d) In other areas like ovens, etc

Gas Infra-red ovens are more efficient now than before with the move of technology. Efficient cyclone booths and sophisticated part detection have allowed for maximum powder recovery and fewer wear parts needed, reducing costs and also promoting cleaner work environments.

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Response 10:

3) If you look back 10 years, where would you say the most useful technology improvements have been introduced?

a) In powder paint products? And if so, what have these improvements been?

Development in exterior powder coating.

b) In pre-cleaning technology? And if so, please describe some of these improvements

The change from a South African specification to an international specification.

c) In powder gun technology? And if so, please describe the technology.

Not answered.

d) In other areas like ovens, etc

Not answered.

Question 4: The Economic Prospects

Over the last 2 years, would you say that the powder coating industry has grown or contracted? And by how much either way?

Responses:

1. Grown by 15%
2. Definitely contracted. A lot of our electrical enclosure clients have been affected by the downturn in mining. Furniture manufacturers have been hit by imports. Shrinkage of 10% - 15%
3. Grown by at least 10%
4. Contracted 12 - 14% year on year
5. Many small powder coaters have fallen on hard times as powder coating has become not the exception to manufacture but has become the rule. These manufacturers realise it is an affordable process which significantly competes with older wet spray technologies whilst increasing quality and production. In some case studies powder coating has saved clients 80% of their direct input costs whilst reducing their labour, energy and reject rate. Our experience has been that larger in house manufacturers have come on line. Many wet paint lines have closed in favour of powder coating lines. We have noticed more suppliers in the powder market as well as many larger companies increasing powder capacity.

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Question 4 - Responses Continued

6. It has contracted by 10% to 15%
7. Grown by 10%
8. With Manufacturing contracting and the slow-down in the metals industry, a lot of finishers are either closing shop entirely or minimising their process lines. I would be conservative and say that there has been a 10-15% reduction in coater shops.. the hardest hurt sectors being retail and architectural.
9. Contracted by 25%
10. Contracted by 10%

Question 5:

Which industries would you say are the biggest users of powder coated finishes?

Responses:

1. Steel fencing, aluminium profiles, and alloy wheel manufacturers
2. Electrical enclosures and fittings (by volume) and shelving (by surface area)
3. White goods, truck body builders, aluminium industry
4. Electrical systems, kitchen manufacturers, OEM suppliers
5. Consumer Goods and Motor Industry must be the largest currently as we will follow international manufacturing standards. A lot of this will be driven by the banning of solvent based paints, finite material design forcing E-coat as primary layer as in motor and now general engineering design due to multi metal product manufacturing. Extracted from a USA site <https://www.grandviewresearch.com/industry-analysis/powder-coatings-market-analysis>
6. Pipe coating, Appliances,
7. Huge Variety of Manufactured Steel Products.
8. I could say that Automotive and Appliance manufacturers are the biggest powder users
9. Electrical Enclosures, shelving and racking
10. Powder coating jobbing shops use the most powder

General Observations from 5 participants

- Times are tough, industry is in survival mode, less is being spent on upkeep.
- The SA powder coating market has been severely hit by the general economic downturn, with very few exceptions such as some exporters and/or certain suppliers into the automotive industry (which in turn exports).
- Owing to the high cost of powder machines, their spares and labour, and of course re-works, I would spend more on getting a higher level of operator

to do the spraying. This will result in savings down the line. There are many unskilled operators who are very rough with the machines and who do not understand the workings of a powder pump and micro-amp current control. These are the essentials in powder coating. The damage we see on machines coming in for repair due to lack of care and understanding is wide-spread.

- In my opinion - over the past few years a massive drive can be seen in manufacturers self-installing process lines. The main contributor to this is that manufacturers have started to better understand the process and have much easier access to the finishing equipment. This can also be attributed to cost cutting approaches and the obvious better production controls that come with not having to outsource. Negatively though, this has made the job shop environment a lot more cut throat and competitive.
- The biggest potential growth area for powder coating is converting wet spray plants to powder plants. With the move in technology in electrostatics, HD pump technology, energy efficient booths and ovens and fast and environmental conscious pre-treatment solutions, this solution boasts superior corrosion resistance and aesthetic finish. ♻️



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