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June 2009

Ford turns Fumes to Fuel

Ford's award winning Fumes to Fuel program, Phase One, is running at capacity



The Fumes-to-Fuel structure.

By SANDRA ANDERSON

CFCM sat down with Ford Motor Company's Mark Wherrett, Sr. Environmental Engineer and Ford of Canada's Kerri Stoakley, Communications Manager, to discuss the successful Fumes to Fuel program at the Oakville Assembly Complex (OAC), Oakville, ON.

CLEANER FUELS, CLEANER FUTURE

In a company issued press release in October 2004, Ford announced a \$1 billion investment, part of which included a new research and development facility for the Oakville Assembly Complex (OAC) dubbed as "the first of its kind in Canada." Fumes to Fuel was to be one of its initial projects, in which Ford engineers and researchers, in partnership with Canadian research institutions, would focus on developing a large-scale stationary fuel

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ALSO IN THIS ISSUE

- Automatic Plating Systems
 - Hard Chrome and Alternatives
 - Paint Recycling
 - Air Compressor Selection
 - Liquid Paint Automatic Spray Guns
- And More!

Zinc-Nickel Electroplating

Best suited electrolytes for fastener plating

By DR. BIRGIT SONNTAG, DR BJÖRN DINGWERTH, BRYAN KELLEY, KONSTANTIN THOM

Zinc-nickel alloy coatings are increasingly in demand by the automotive industry due to highly improved corrosion protection over pure zinc and other zinc alloy coatings. Plating by zinc nickel electroplating processes is especially requested for automotive fasteners. Coating morphology, deposit structure, coating composition, thickness distribution of the zinc nickel layer, as well as corrosion protection performance is discussed in detail. Current efficiency as one of the most important properties of an electro-plating process is compared for different zinc nickel electrolytes.

Increased quality requirements along with extended warranty periods call for improved corrosion protection quality in car manufacture. For areas in the vehicle

experiencing thermal stress, like under-hood areas where traditional pure zinc coatings have limited performance, this becomes especially important. Zinc-nickel coatings with a nickel incorporation of 12 - 16 per cent provide superior corrosion protection to red rust, compared to pure zinc coatings due to the deposition of g-phase zinc-nickel alloy. The corrosion protection is stable even when heat is applied. Atotech zinc nickel electrolytes are all created to plate the highest amounts of pure g-phase zinc nickel alloy, thus providing the best corrosion protection. X-ray diffraction (XRD) and transmission electron microscopy (TEM) investigations, as well as focused ion beam (FIB) investigations, have been undertaken to achieve the best possible deposit properties over the complete current density range. As a result, the corrosion protection rates

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IN THE NEWS



Last Chance to be Listed

The print version of our 2009/2010 Buyers Guide will be published in July. Although we have an online version of the Guide available for update all year long, this is your last chance to be listed in our print version of the Buyers Guide, which will be printed in journal size. (8-1/8 x 10-7/8 in.) We need you to go to <http://www.cfcmm Mercury-email.com> and update your listing by June 23, 2009. Even if there are no changes from last year, you must click "update" anyway, so we know that it has been done. Please make changes to all contact information for our records. Please always provide an e-mail address, even if it is for CFCM's

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Good News

So here we are to our June issue—halfway through the year. And as the year progresses, the economic news we are receiving is becoming much less depressing, especially if you live in Canada. From what we have seen, Canadians are generally an optimist bunch. Our media is different. We generally don't bank on the fear of the public to sell newspapers. I personally am a "glass is half full kind of person" and even belong to the local Optimist Club, which focuses on helping community youth.

In keeping with the general optimism, CFCM has decided to start a Good News column to counter all the dismal economic reports we are getting from the US. Also, focusing on some good news may help to alleviate some of the pressure the struggling auto industry has put on the coatings and finishing business in Canada. CFCM is even running a positive story from Ford Canada and its Oakville Assembly Complex with their Fumes to Fuel program, this issue. So instead of harping on reports that everyone has read about, such as GM cutting 245 of its dealers and foreign auto makers like Italy's Fiat and others wanting buy bits of GM, we are doing a Good News column. The month of March this year has been an especially uplifting one in terms of good economic news according to Statistics Canada. I like a recent headline that ran in the Toronto Star... "Less Bad is the New Good"... talk about being optimistic.

Economic Canada really does have its uniqueness. For example one of the biggest surprises, unique to Canada, is that as the economy has slumped, the

number of businesses declaring bankruptcy declined, according to a Canadian Press article published in May. This suggests that the corporate destruction of past recessions won't be a major factor this time around.

This is also our recycling issue, and it is always good news to recycle.

So, let's try to focus on the glass being half full.

Meanwhile, make sure you are in our Buyer's Guide to be published next month.

Go to www.cfm.mercuryemail.com/ or e-mail us for help.



Sandra Anderson, Editor
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www.cfm.ca

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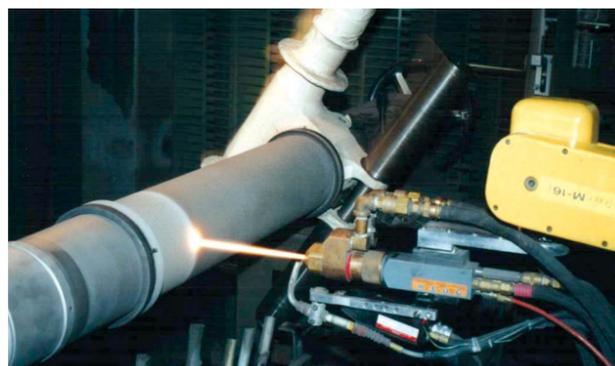
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Volume 3 Number 3 June 2009

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CFCM Canadian Finishing & Coatings Manufacturing is published bi-monthly by Wilkinson Media Canada Inc. Subscriptions are free to qualified Canadian finishers and coatings manufacturers and their suppliers. Subscriptions (six issues): Canada \$60.00 per year plus taxes (GST #858877210 RT0001). United States U.S. \$57.00. Foreign U.S. \$85.00. Single copy \$12.00 Buyers Guide \$40.00 CDN plus taxes.

Postal Information:

Printed in Canada. Publications Mail Agreement PM # 41515012
 Return undeliverable Canadian addresses to CFCM Magazine, 250 The East Mall Suite 1103, Toronto ON M9B 6L3, Copyright 2009.

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The CFCM Buyers Guide is an accurate and up to date listing — in a combined Journal Size Print Magazine and searchable On-line Buyers Guide — of all products and services offered in Canada for Industrial Finishing & Paint and Coating Manufacturing.

The Buyers Guide is printed on Heavy Paper with an Extra Heavy UV Coated Cover for Durability.

Go to www.cfc.mercuryemail.com to place your new listing and/or update your current listing. Web links in the database will be live at no extra charge. After June 23, all the Buyers Guide data will be downloaded for our print version. The Buyers Guide is a "must" for all Suppliers to the Canadian market of:

- Paint and Coatings for Industrial Finishing
- Equipment and Services for Industrial Finishing
- Metal Finishing Supplies for Anodizing, Plating and PVD
- Metal Finishing Equipment
- Paint and Coating Raw Materials, Supplies and Services
- Paint and Coating Manufacturing Equipment
- Custom Coaters and Job Shops
- Education
- Associations and Government.

Association News



Exhibit hall registration opens for WMS

Discount registration is now available for attending the Woodworking Machinery & Supply Expo, Sept. 24-26 at the International Centre, Mississauga, ON.

Woodworking professionals can save \$10 for expo hall admission by registering in advance of Canada's premier woodworking event. The expo will feature machinery and supplies from more than 200 exhibitors, including finishing equipment, spray guns, spray booths and coatings.

In addition, anyone registering by July 1, 2009, will qualify for discounted admission to the conference program that will be announced soon. Among the topics being developed are: The Virtual HR Department; Worker Skills Training; Exporting to New Markets; Lean Manufacturing for the Small Shop; Smart Marketing in Recessionary Times and Developing, Refining & Marketing Sustainable Wood Products.

www.woodworkingexpo.ca

Cost Reduction through Effective Corrosion Protection

Corrosion is a natural process which causes immense damage every year in nearly all industry sectors. This process of change can only be counteracted if its outward manifestations and influence factors are known, and if corresponding measures are implemented on the basis of this knowledge. The COROSAVE international trade fair for corrosion protection, preservation and packaging is dedicated to this subject matter. It will be held concurrent to parts2clean, leading international trade fair for cleaning within the production process and maintenance, at the Stuttgart Exhibition Centre (Germany) from the 20th

through the 22nd of October, 2009.

Almost all metals occur naturally as oxides or other compounds. Technically exploitable metals are produced from these by adding energy. As a result, a higher, unstable level of energy is achieved artificially. However, due to the fact that all materials tend towards the lowest possible energy level, corrosion is fundamentally unavoidable; it can only be delayed — in some cases for several hundred years. This offers significant potential for reducing costs, as well as for increasing the operating safety of products, systems and components for numerous industries. Answers to questions regarding how this potential can be exploited will be provided by COROSAVE exhibitors including, amongst others, Bantleon, W. Bosch, Excor, Henkel and Surtec at the Stuttgart Exhibition Centre, October 20-22, 2009.

parts2clean, the Leading International Trade Fair for Cleaning within the Production Process and Maintenance, will take place concurrent to COROSAVE. This event presents the world's most comprehensive offerings for systems, processes and process media for degreasing, cleaning, deburring and pre-treatment of parts, parts baskets and workpiece carriers, handling and process automation, cleanroom technology, quality assurance, test methods and analysis procedures, media treatment and disposal, job-shop cleaning, research and technical literature.

www.corosave.de and www.parts2clean.de

European Coatings Show 2009 plus Adhesives, Sealants, Construction Chemicals, Expectations clearly exceeded

The European Coatings Show plus Adhesives, Sealants, Construction Chemicals 2009 was the tenth edition of this top international event for the coatings community since 1991. The exhibition took place this year in the Exhibition Centre Nuremberg from March 31-April 2 and the congress from March 30 — April 1. Despite the worldwide problems of key customers such as the building and automotive sectors, both events were a success.

A car paint that "heals" small scratches itself when the sun shines, a coating for the hulls of super tankers that reduces barnacle growth under water and saves huge amounts of fuel, or articles in the medical field with a surface that already possesses an antibacterial effect without additional disinfection agents were all features at the European Coatings Show 2009.

The European Coatings Congress again emphasizes how innovative the international coatings industry is. There were 160 top speakers from all over the world and 461 congress participants.

The 806 exhibitors (2007: 838) from 42 countries (2007: 43) at the European Coatings Show 2009 represented a slight decline in numbers, but this was more than compensated for by the recent growth of six per cent in the net display area (2009: 27,490 m²; 2007: 25,890 m²). The leading exhibiting nations this year after Germany (346 exhibitors) were China (78 exhibitors), Italy and Great Britain (47 exhibitors each), the Netherlands (39 exhibitors), Switzerland (32 exhibitors) and Belgium (31 exhibitors).

The event occupied six halls of the Exhibition Centre Nuremberg for the first time and so presented a bigger event than ever for the 19,756 visitors.

The show will be held in Nürnberg again in

2011. However, the coatings community meets next year in Charlotte, North Carolina / USA, at the American Coatings Show, April 13-15 and the American Coatings Conference from Monday to Wednesday, April 12-14, 2010.

Data Collections to support Risk Management Actions for Chlorinated Paraffins in the Metalworking Industry

On May 13, 2009, a meeting to discuss chlorinated paraffin waste was held in Ontario. Below are highlights from the meeting notes. Participants included Greg Carreau (EC), Etienne Archambault (EC), Jack Soule (ICG), Bob Fensterheim, (CPIA), Andrew Jacques (CPIA), Dave Saucier (Unipex), Jim Bird (Univar), and Tom Kelley (Dover).

Background information on chlorinated paraffins (CPs) was reviewed as well as data that is available and the data gaps that exist.

This meeting is part of a new proposed approach of consultation between Environment Canada (EC) and the Industry Coordination Group (ICG) and other relevant industry contacts to acquire guidance on information requests that will be collected using consultants.

The intent of this approach is to ensure data collection efforts are focused on the appropriate line of questioning and audience to minimize resource requirement to industry.

Because of the nature of the economic situation we are in, stakeholders may not be as available for answering information request coming for the consultant.

Following the final conclusions of toxicity published in August 2008, EC needs to come up with a proposed risk management instrument by August 2010. In order to do so, the drafting of this instrument should start early fall 2009. The data gaps must then be filled as quickly as possible. The consultant survey planned over the next months responds to this time frame.

EC Strategy to fill data gaps

- The consultant survey is part of a wider mandate for which Cheminfo has been retained to. In particular, the consultant will also be undertaking an extensive literature review regarding the metalworking industry to support this work.
- Information gaps regarding the use of CPs in other sectors such as Vinyl, Adhesives, Sealants, Rubber, Paints and Coating will be addressed with a literature review and contacts between Industries, Industry Association (CPIA) and EC (notices, phone calls and meetings).

LoQ analysis and monitoring

- Concerns have been expressed regarding the need to have an analytical method as soon as possible in order to quantify CPs emissions from the use of CPs in Metalworking fluids as well as in minor uses and manufactured goods.
- This concern was noted and future discussions will be planned on the development of analytical methodology to support the implementation of the virtual elimination provisions of the Canadian Environmental Protection Act, 1999. Most of formulators of metal working fluids identified by the consultant are part of ILMA. This association can most probably produce valuable information. A discussion should take place between the consultant and ILMA as a starting point in the interview process.

UK/EU report

- This report was ordered by the Government of UK and written by a contractor.

- This report may contain valuable information regarding use and alternatives to CPs in Metalworking application as well as in other sector of use. Furthermore, nothing indicates that the use pattern of CPs in Metalworking fluids in Canada significantly differs from the EU (or the United States).

Questions should be refocused based on information from the UK/EU report and information gained from ILMA. By focusing the questions using data already known, the consultant will get better data and this will reduce the resource impacts to industry.

When trying to estimate the number of companies using CP-based metalworking fluids in Canada (question #1), formulators should be asked for the number of customers buying products containing CPs.

A more effective means of finding information regarding the emissions of CPs from the Metalworking sector would be to ask about the total emission of fluids and then to approximate the quantity of CPs release rather than asking about CP emissions.

CONCLUSIONS AND next steps include:

- Communicate inputs to Cheminfo, make sure they have access to UK/EU report
- Set up meeting between Cheminfo and ILMA
- Proceed with information gathering interviews by consultant
- Continue regular dialogue with ICG, CPIA and other interested stakeholders.

Company News

Dynamix Moves

Dynamix Inc., Canadian specialists of metal finishing chemistry, have moved to a larger facility. They are now at 91 Esna Park, Unit 7, Markham ON L3R 2S2. Phone numbers have changed to Tel: 905-447-0900, Fax: 905-477-0600, www.dynamix-inc.com.

Northspec and Brilliant

Brilliant Group, LLC and Northspec Chemicals Corp. are pleased to announce the appointment of Northspec Chemicals Corp. as the exclusive distributor of the Brilliant fluorescent product line in Canada.

The company offer a complete line of daylight fluorescent pigments for the graphic arts, paints and coatings, and plastics markets including:

- BGP: Brilliant General Purpose Series for non-polar solvents
- BSR: Brilliant Solvent Resistant Series for more polar solvents
- BMS: Brilliant Microsphere Series, the most inert fluorescents
- BWD: Brilliant Water Dispersions for dust-free use
- BNF: Brilliant Non-Formaldehyde Series for plastic applications

Brilliant Group, LLC is focused on bringing best of breed fluorescent technology to the marketplace. Headquartered in San Francisco, California, Brilliant serves world markets through its network of global distribution partners, www.fluorescentcolor.com.

Northspec and Evonik

Northspec Chemicals Corp. and Evonik Industries are pleased to announce Northspec's appointment as Evonik's sole Canadian Distributor for their VESTOWAX® POLYOIL®, POLYVEST® lines.

VESTOWAX® are synthetic waxes (polyethylene, Fischer-Tropsch, EVA copolymer and modified polypropylene waxes) used mainly as an additive in plastics processing, printing inks, coatings, and technical emulsions, and also finds application in hot melts. VESTOWAX® increases abrasion resistance in printing inks and scratch resistance in coatings. In hot melts the product reduces viscosity and improves heat resistance. In plastics processing, VESTOWAX® can improve profile extrusion resulting in less out of spec. profiles. VESTOWAX® will also help disperse pigments for color master-batches.

POLYOIL® products are liquid polybutadiene products used in a wide variety of adhesives, inks, sealants, coatings & rubber products while POLYVEST® are maleic modified polybutadiene liquid resins used for rubber compounding, sales@northspec.com.

BASF contracts Canadian distributor for urethane-based Coatings, Adhesives, Sealants, and Elastomer (CASE) products

BASF, a market leader in polyurethanes, has signed Northspec Chemicals Corporation as its Canadian distribution sales representative for CASE products. BASF's CASE product line consists of a wide selection of Lupranate® MDI, TDI isocyanates and Pluracol® polyether polyols used to produce coatings, adhesives, sealants and elastomers. Supported by a world-scale plant in Geismar, Louisiana, BASF is a major supplier of CASE products in the North America region.

"Northspec understands urethane CASE products and applications," said Kevin Kilkenny, Marketing Manager CASE Products, BASF Corporation. "With their experience in the industry, we are confident they will help us grow our share in the Canadian market and provide access to new customers and industries."

"The addition of Lupranate isocyanates and Pluracol polyol products to our offering is consistent with our strategy to source high-quality products from world-class suppliers, providing superior service, and supply reliability," said John MacLean, Northspec Principal. "These are recognized brands, supported by responsive technical support and extensive formulation experience. Our focus will be helping customers achieve success."

BASF's isocyanates and polyether polyols for CASE applications are produced at two principal facilities in the United States: Geismar, Louisiana and Livonia, Michigan. These products can be formulated to create a variety of coatings, adhesive, sealant and elastomer products, www.basf.com/polyurethanes.

Dupont Industrial Coatings Realigns

DuPont's Industrial CoatingSolutions business in the Americas has been realigned to serve its customers better with a lean and responsive organization representing its total offering of liquid, powder and e-coat products and services. Industrial CoatingSolutions is part of DuPont Performance Coatings, which includes the company's OEM Automotive and Refinish units.

"Our objective is to make it easier to do business with DuPont," said David Lazzeri, — Industrial CoatingSolutions business director for the Americas. "By fully integrating our sales and marketing organization, customers will have easier access to our entire portfolio of products and services. All of our sales team members will have the training

and expertise to assess their customers' needs and recommend the right product and level of support for each application."

The company reports that the slowdown in business activity associated with the recession provided an opportunity for DuPont to study whether the industrial coatings business was properly structured to serve all of its customers, large and small.

Key players in the realigned organization are Wade Robinson, sales and marketing manager for North America, and Alfredo Villalobos, sales and marketing manager for Latin America. Joe Wood has been named market segment leader for the Americas region, and global lead for agricultural, construction equipment and heavy-duty truck market segments. In addition, two product managers have been named to ensure that the Industrial CoatingSolutions offering is accurately matched with customer needs. Jim Jeziorski will manage the portfolio of liquid products and Fabiana Prada will have responsibility for powder coatings.

Fielding Honoured as Friend of the Credit

Fielding Chemical Technologies Inc. has received a Friends of the Credit Conservation Award of Distinction, the highest honour awarded by the Credit Valley Conservation Authority (CVC). Fielding was presented with a plaque "in recognition of their outstanding contribution to Conservation in the Credit River Watershed, by demonstrating environmental leadership within the corporate sector." Fielding was the only corporate winner of this award for 2009.

For over ten years, Fielding has made support of the CVC part of its commitment to environmental and community health protection. Ellen McGregor, President and CEO of Fielding, has been a long time member of the Credit Valley Conservation Foundation, the fundraising body for the CVC. "Protection of the Credit Valley is a cause near and dear to the McGregor family as our ancestors were early settlers in Caledon and Port Credit" said McGregor. "As the first environmental company to establish operations in the watershed, we understand first hand the need to protect this important natural resource. We are deeply honoured to receive an award that recognizes that commitment"

Fielding is a cutting edge Canadian family owned environmental company, www.fieldchem.com.

L.V. Lomas Limited named one of the "Best Places to Work in Canada"

L.V. Lomas, Brampton, ON, has been named one of the "Best Places to Work in Canada" by the Great Place to Work Institute Inc. as reported in The Special National Report in The Globe and Mail, April 6, 2009. L.V. Lomas was ranked in the top 25 workplaces in Canada that were featured in the report.

The Great Place to Work Institute Inc. is a research and management consultancy based in the U.S., with affiliate offices worldwide. The survey instrument used by The Great Place to Work Institute Inc. is the same primary selection criterion used annually to compile similar lists for leading business publications such as Fortune's "100 Best Companies to Work For" in the U.S.

In 1960, L.V. Lomas Limited began to rethink an industry it had just entered. The strategy combined premium quality chemical products and keen mar-

New Car Sales Increase in March

Sales of new motor vehicles in Canada increased by 6.3 per cent in March 2009, the largest such increase since January 2008, according to figures released by Statistics Canada in May.

Stats-Can reports that trucks, including minivans, sport-utility vehicles, light and heavy trucks, vans and buses, account for much of the growth. Sales of trucks were up 11 per cent compared to February figures, when sales were down 5.7 per cent.

Sales of new vehicles were up in all provinces, particularly Quebec, which posted a 10.4 per cent increase.

Sales in Ontario were up 5.8 per cent. March was the third consecutive month Ontario recorded an increase in sales.

General Motors, CAW Reach Deal to Ensure Future

The Canadian Auto Workers and General Motors reached an agreement mid-May that will ensure GM's future in Canada. They plan to reduce labour costs to a level competitive with non-union Toyota plants — while protecting workers' base pay, pensions and jobs.

Even though the deal freezes wages and pensions until 2015 and cuts benefit costs by more than \$8,000 a worker, it also maintains GM's Canadian manufacturing presence and forces the company to begin fully funding its pension plan.

There are no pension benefit cuts and the company will act to pay down a massive shortfall in the pension plan.

Retail sales rise for third-straight month

Retail sales increased yet again in March, the third month in a row, which economists say indicates a stabilizing Canadian economy.

The actual retail sales pickup of 0.3 per cent in March, to \$33.9 billion, was smaller than some economists had hoped, but at least it shows that Canadians are buying again.

Leading economic indicators reverse decline

The rate of decline in the leading economic indicators' five-month average slowed to 1.1 per cent in April from 1.5 per cent in March.

Statistics Canada reports that as the money supply expanded steadily, the stock market turned up in March. Stats Can says the index rose 0.5 in March from February.

The drop in the housing index eased to 1.2 per cent, the smallest decline in seven months, as existing home sales solidified.

Export demand benefited from a slower contraction of the U.S. economy. The leading indicator for the United States eased to a 0.3 per cent drop, its smallest loss in six months.

Monthly Trade Surplus Widens to \$1.1B

Canadians got another morsel of encouraging economic news recently as the country's monthly trade surplus increased to \$1.1 billion.

Business bankruptcies were down from a year ago, but growing numbers of individuals were overwhelmed by their debts.

The \$1.1-billion surplus in Canada's merchandise trade with the world was quadruple the upwardly revised \$262-million surplus in February, which had followed deficits in December and January — the only months since the mid-1970s when imports outweighed exports.

The March surplus was more than double the \$500 million expected by economists.

ket intelligence with a service ethic premised on going far beyond the call. This quickly earned L.V. Lomas preferred-supplier ranking with name-brand consumer and commercial goods manufacturers internationally. For this, they credit a simple but proven hiring philosophy: To be the best in the industry, hire the best people in the industry.

CCS Earns SSPC QP2 Certification

The Society for Protective Coatings (SSPC) has granted Certified Coating Specialists Inc. (CCS), based in BC, QP2 certification. This is an assertion that CCS is qualified to meet industry expectations in level of service, safety and quality in the lead and zinc abatement field. There are only four other Canadian companies who hold this certification, along with approximately thirteen companies in the northwestern United States.

QP2 certification is supplemental to QP1. QP1 certifies a contractor to a predetermined standard for surface preparation and application on complex steel structures while QP2 certifies to a standard for safely removing and handling hazardous waste, generally lead-based coatings.

The certification has been divided into two categories, depending on the levels of containment and ventilation required:

Category A: Negative air pressure as specified is required within containment.

Category B: No air pressure or air movement specified within containment.

Four areas of an operation are examined and graded in each category:

1. Management of Hazardous Coating Removal
2. Technical Capabilities
3. Qualification of Personnel
4. Safety and Health and Environmental Compliance

Annual internal audits are required, as well as follow up or snap audits performed by SSPC, to ensure compliance and to maintain certification.

C.C.S. excels in lead abatement, and in industrial and marine coating. The company is SSPC QP1 and QP2, and COR certified, the first BC company to achieve this status, a direct result of a commitment to exceed customer expectations.

www.ccscoatings.ca

International Paint Protective Coatings, Devoe High Performance Coatings Integrate

AkzoNobel's International Paint Protective Coatings and Devoe High Performance Coatings have launched a two-year integration effort designed to expand its position for its protective coatings brands and strengthen its customer service throughout North America. The decision to integrate International Paint Protective Coatings and Devoe High Performance Coatings came in December 2008. Now formally launched, the integration process will roll out over the next two-years.

ITW Gema Strengthens

Customer Support

Today's marketplace continues to demand excellent customer service. As a result, ITW Gema has made changes to consolidate the customer and technical services group to improve responsiveness and strengthen technical support.

The company is introducing a new technical services group that is structured to streamline communications and business transactions with its distributors and customers. They believe this new group will further improve how they respond to customer and technical service issues.

With over 100 years of combined experience in the powder coating industry, this group is well suited to answer any technical or application question customers may have, as well as providing necessary customer support.

Primary contacts during the transition will be James Jones, Mike Smith, Dave Swartz and Cory Wagoner.

ITW Gema, a business unit of the Illinois Tool Works Corporation, with North American

Headquarters located Indianapolis, Indiana, provides application and recovery solutions for the powder coating market.

DuPont Hot Hues™ Strikes a Chord with New Metallic Finishes for Guitars

Paul Reed Smith (PRS) Guitars is once again teaming up with DuPont and the Hot Hues™ palette of colors to present brilliant new metallic guitar offerings. "Neptune's Jewel," "Catalina Dream," and "Sinful Cinnamon" make up the roster of new color options.

PRS Guitars has been using DuPont paints for

more than 10 years and has been using Hot Hues™ paint since its inception. The most recent application of the Hot Hues™ line will appear on some of PRS' newest guitar models: the Mira and the Starla.

People On the Move Sales Team Stronger at Certified Coating Specialists Inc

In order to "get the message out about what CCS can do for industry" and enhance response time to customer needs, CCS has added an assistant sales manager to the management team. Janet Nacario is a welcomed addition who shall assume responsibility for marketing and direct sales development.

Her Langara College education in business administration and communications and work experience is well-matched for her focus at CCS. Janet has been a team member in expanding the business of a manufacturer of custom teak products into the North American market, expanding an American software company into Canada, the coordination of a million dollar heavy equipment retro-fit project, with her last position as a coordinator of a national sales force for a contractor supply company.

Janet's strengths lie in the administrative and web-based aspects of marketing and sales. With a mandate to develop effective marketing programs for CCS services and coordinating direct sales efforts for the management team, Janet is expected to make a significant contribution to the realization of corporate positioning and revenue goals.

Association News

TOSCOT Looks to the Future

The Toronto Society for Coatings Technology (TOSCOT) held their Annual General Meeting (AGM) May 25, 2009, at the Airport Hilton to review financials and elect their board of directors. David Saucier, Unipex, is on for a 1 year term; Christina Pross, Industrial Colours and Chemicals, a two year term, and Jake Jevric, L.V. Lomas, a two year term and Jason Young, Dempsey Corp., also two year term.

TOSCOT has been affiliated with the US-based Federation for Coating Technology (FSCT) for many years, but the 2008 merger of the FSCT into the National Paint and Coating Association, (NPCA) and declining membership has prompted TOSCOT to explore its future options.

Dave Saucier TOSCOT President in his address during the AGM said, "We have three options at the present time, merge with Oil Colour Chemist Association (OCCA) or merge with CPCA or do nothing and continue as we have been doing." (At the April meeting, the OCCA made a presentation on the benefits of merging with them.)

The AGM gave a mandate to the TOSCOT Board to explore mergers and the future of TOSCOT and to make recommendations to the membership in the fall.

Jim Quick, the President of the Canadian Paint and Coatings Association (CPCA) addressed the membership about the benefits of TOSCOT becoming a committee under the CPCA umbrella. TOSCOT would have the same powers as other CPCA Committees, would maintain its educational mandate, all current individual members would be accepted as CPCA members and TOSCOT would be able to maintain its current affiliations.

Quick said the CPCA committee structure reflects the priorities and realities of the sector and allows members to shape policy, regulation and legislation by access to government. He said TOSCOT is well placed to react to "The New Chemical World Order" and explore a CPCA initiative to develop a Centre of Excellence for Paint and Coatings. In the event of a merger, current TOSCOT members will benefit from the same programs and services, and TOSCOT funds and investments will be used solely for program upgrades.

CPCA membership would include improved communications and expanded training and education including on-line discussion groups, a technical library, technical forums, and enhanced technical seminar opportunities.

Photos and Story by Pete Wilkinson



Above: Jim Quick, CPCA President explains the CPCA Committee structure and the benefits of TOSCOT merging with them.



Left: Dave Saucier TOSCOT President presents The Presidents Report to the Annual General Meeting.



Below: The 2009 TOSCOT Board: Christina Pross, Jason Young, Jake Jevric, Dave Saucier and Gerry Gomez Sr.

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Automatic PLATING Lines

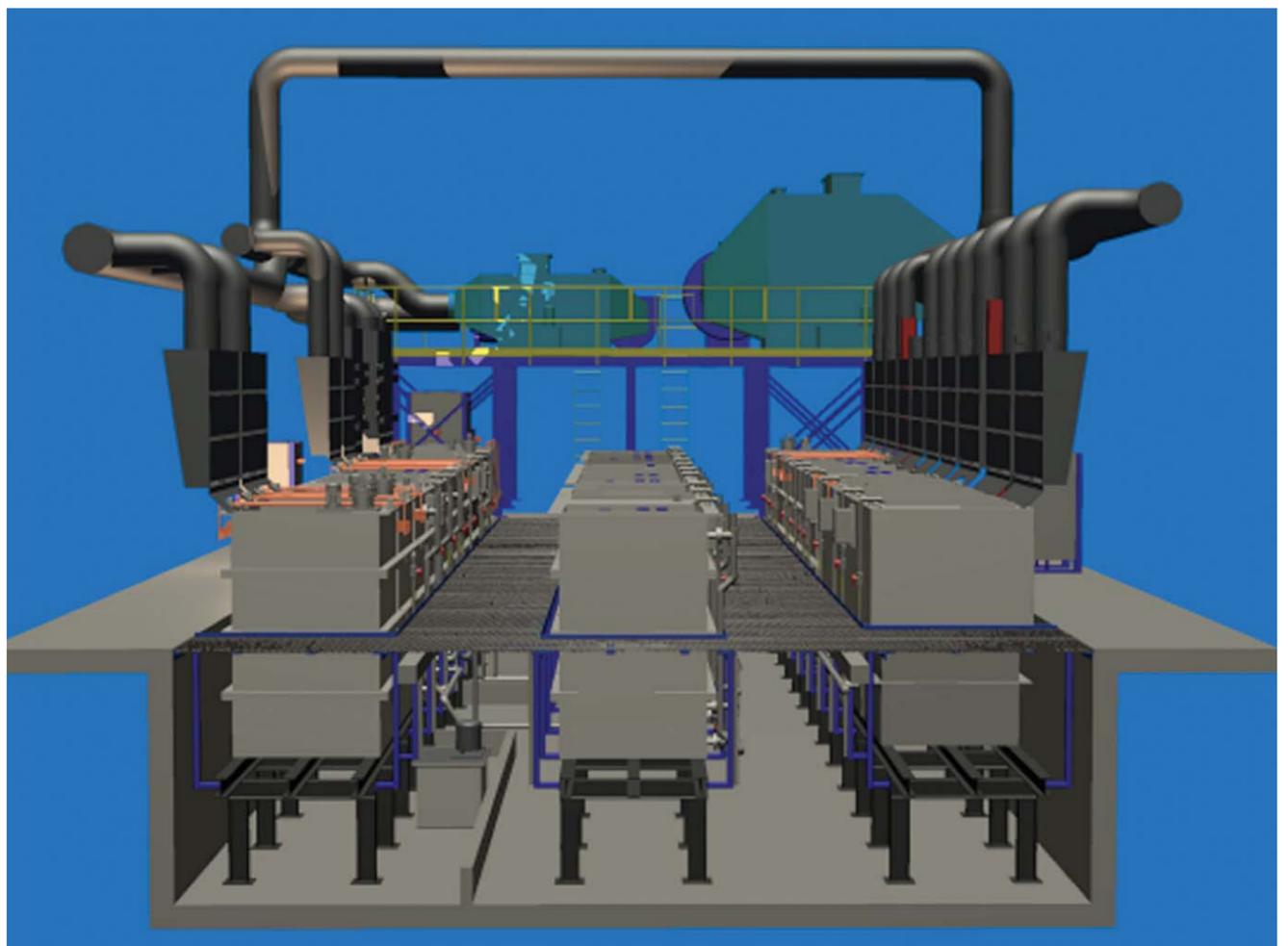
Electroplating is hard work. Lifting the pounds and pounds of work along with the rack or barrel can be back breaking. Enter the hoist, followed years later by the computer. By combining these tools, we have today's automatic plating line.

Manufacturers of automatic plating lines offer a wide range of hoists from traditional to exotic systems for both rack and barrel applications. Surveying the field we can see small hoists with a load capacity starting at about 100 lbs all the way up to machines capable of handling in excess of 4,000 lbs per load. Typical uses for this hoist equipment are electroplating, anodizing, phosphating and electropolishing. And as we all know, size doesn't matter. Automatic lines are used to finish everything from tiny electronic IC clips to complete aircraft wings.

There are several different basic designs for hoists. Sidearm hoists are designed so that throughout the plating process, only the work and control arm travel over the process tanks. This significantly reduces the potential of bath contamination. Sidearm hoists use gear drives, which yield greater control, dependability and smooth movement. Look for vertical transports that use a roller chain/sprocket operation, this eliminates the need for cables that can stretch over time. The stretching cable diminishes the systems accuracy and dependability. Sidearm hoists are an ideal choice for retrofits/upgrades of existing lines.

Overhead hoists are designed for plating tanks having long front-to-back dimensions. (If the arm gets too long on a sidearm unit weight is a problem.) These hoists are typically capable of handling rack or barrel loads of around 4,000 pounds. When equipped with variable speed AC motors and smooth gear drives, these overhead hoist systems provide smooth, dependable acceleration and deceleration of the load/flight bar.

Today's electronics start with a simple PLC (programmable logic controller) and run to a full blown computerized system. Basic auto-



mated hoist systems use a monochrome touch screen with PLC that controls the hoist and all the safeguards associated with the hoist. The PLC follows a fixed timeway

procedure through a series of travel, lift and drop commands. The time-way is a fixed sequence of moves that time after time will carry a flight bar through the

process stations. There can be other peripheral control of hoist functions such as top sprays to rinse parts, mechanical agitation that starts and stops when the

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PLC FEATURES:

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Online help via modem/internet connection (A great tool to quickly trouble-shoot PLC problems)

The computerized systems can use MPS (Multiple Process Scheduling). MPS eliminates the need to write inflexible timeways. Using MPS you can custom design a process to meet JIT (just in time) production by "programming" any process cycle that meets the needs of the parts. Other advantages of using a computer is the ability to use SPC (Statistical Process Control - Analyze data to improve product and process quality) and Networking Capability to retrieve information from the process and send to an offline database for independent analysis and reporting functions.

For the purpose of this article, CFCM interviewed Joe Brinkman, Sales for JBC Limited, an electrofinishing engineering/design and fabrication company located in Chatham, ON, who tells us what's new in automatic plating machines.

"The first major improvement is in design," says Brinkman. "The drawing programs have made it possible to "see" the line and the interaction of the parts. Good design is based on an understanding of your wet processes, your chemistry." He says the second greatest improvement, in his opin-



ion is in the reliability and flexibility of the electronics. "Followed by the ease of programming the new controllers allow," he adds.

He elaborates, "The old standard for our industry was AutoCAD, version whatever, 2D, which resulted in 'pretty good drawings' that were used to fabricate the hoist."

Brinkman explains that the new AutoCAD (Inventor) is 3D and allows drawings to be made in the finest detail, as well as allowing the drawing to be "put in motion", to allow interface with all the items the hoist will see during its travel and lift functions.

"All the issues that can present problems are made evident, before one piece of steel is cut."

While discussing industries that are served today and the largest

growing segment, Brinkman says, "We are currently seeing a very large surge in business from the Aerospace industry, new manufacture, as well as service," He adds, "The energy field has also seen a spike in orders. It's interesting to note that both of these industries want engineering coatings, rather than decorative coatings."

Multiple Process Scheduling has changed the process.

The days of card readers, or tape readers, did allow the industry to be more flexible in motion control, however, the advent of very smart PLC's, as well as PC control systems, allow the imagination of the programmer to run free. Also, the use of Variable Frequency Drives, allows the controller to implement speed control, along with motion control.

"The most exciting thing I have seen in recent years, is a programmer, that has no idea of what his limitations might be, and so runs amuck with ideas, most of which seem to turn out well, simply because the options of control parameters available, says Brinkman. "Random motion, which was a complicated phenomenon, is now becoming rather common, to everyone's delight."

Some older lines have suffered from "rack swing", but this has been minimized with the combination of absolute encoders, VFD motor speed control, and very bright PLC's, allow for many parameters to be brought into play, to solve various problems, rack sway being one of them.

Brinkman says automatic lines improve quality.

"Absolute repetition, can be guaranteed, to the second, if need be, for time and motion.

Add to that control of solution temperature, concentration, solution homogeneity, and filtration allows for the black art of electroplating to be remade into a clear science."

DATA LOGGING

The data collected is stored in relational database format to be used by the customer to generate reports. The customer can use off the shelf software packages such as Microsoft Access, FoxPro or DBASE to review and manipulate the data.

Again bright PLC's, in combination with PC's, have enormous memories, so large in fact, that every parameter, including alarms, can be recorded, and logged to a file. That file can relate to a part, a flight bar, and can be electronically stored for years on a hard drive. In the aerospace industry, this is a must, and used to be done by hand, but now, with the data on hand, this electronic file can be stored, and retrieved, in the event it may be required.

IMPROVING SAFETY

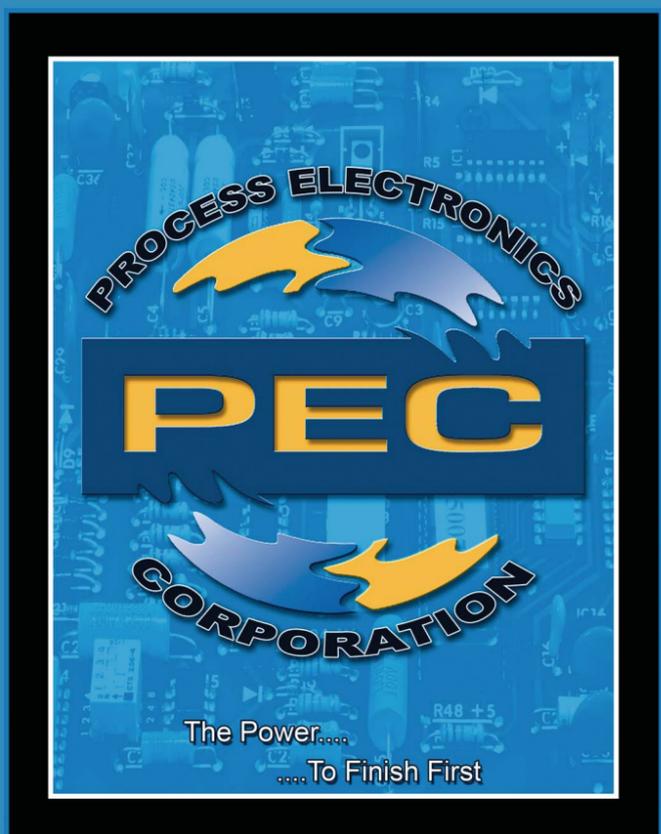
If a machine is properly designed, no one is required to be on the plating/chemical deck, as in the "old days". Chemical adds are now made electronically, in conjunction with anticipated use, "based on throughput", thus removing the job of chemical adds, never a pleasant chore.

Third, the hoist lines, and controls, can be fitted with "safety relay systems", to monitor out of control situations, and shut down equipment automatically.

Machines do not have accidents, people do. ■

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Engineering Hard Chrome Plating Alternatives

BY KEITH O. LEGG

INTRODUCTION

Hard chrome plating is one of the simplest and most widely used coatings for wear resistance and for rebuilding worn or damaged industrial equipment. However, concern over Cr6+ emissions from the process is leading more and more companies to look for better (and better-performing) alternatives. The US Defense Department has recently issued a memo seeking to reduce Cr6+ processes, including hard chrome plating.

HARD CHROME USAGE

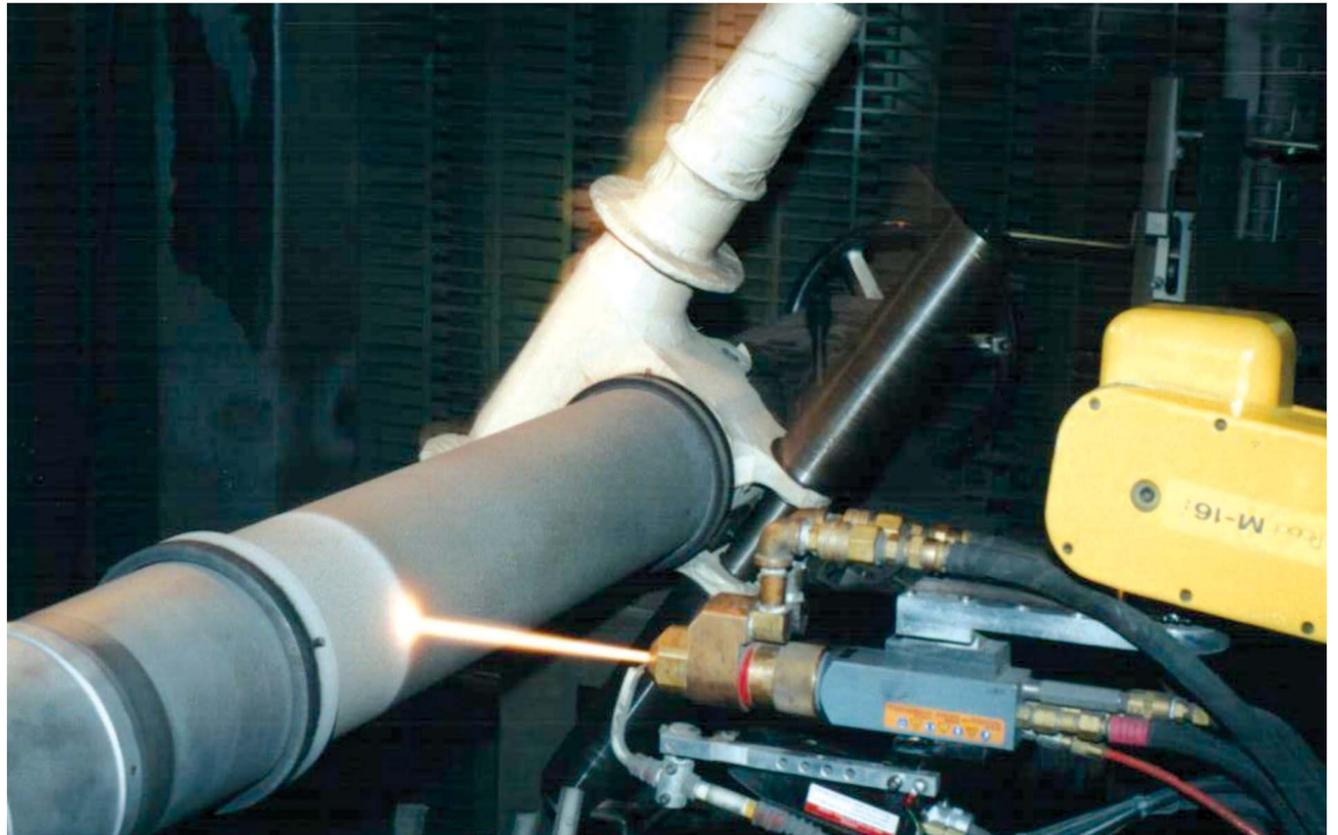
Hard chrome plating (as against decorative chrome) is used for two primary purposes - to provide a hard, wear-resistant surface to items subject to wear, and to rebuild worn or damaged parts.

While chrome plating is often used in components requiring corrosion resistance (construction equipment hydraulic actuators, for example), it has poor corrosion resistance because it is micro-cracked, and typically requires a Ni underlayer for adequate corrosion.

Hard chrome is used in almost every industry, such as rolls, dies and moulds used in manufacturing, hydraulic rods used in construction, mining, forestry, heavy vehicles and off-road vehicles, and actuators and landing gear in aerospace.

There is a tendency in the coating community to regard any hard coating as a hard chrome replacement. Chrome does not live by hardness alone, however; any alternative must meet a broad set of requirements to achieve wide use:

- It must fit industrial usage in a variety of captive OEM and independent small shops
- It must be suitable for rebuilding:
 - thickness to at least 0.6mm with- out excessive stress, often on large articles or internal walls
 - deposit to final spec or grind to the final size and finish
 - strip for subsequent repair and overhaul
 - compatible with non-destructive inspection (NDI)
- For most aerospace use deposition temperatures cannot exceed



190°C.

- It must not cause hydrogen embrittlement, stress corrosion cracking or excessive fatigue.

A coating that cannot meet all of these requirements can still be a niche product, but most users require a single, universal solution.

THERMAL SPRAY

High Velocity Oxy-Fuel (HVOF) coatings have gained significant traction as EHC replacements, particularly in the aircraft industry. Almost all new aircraft landing gear programs in Canada (where most of the world's commercial landing gear is made) now use HVOF WC-CoCr in place of EHC on landing gear cylinders and pins. (WC-CoCr is similar to the material used to make carbide tools.) Most existing landing gear designs still use hard chrome, partly because of the cost of making a change, and partly because there is not enough industrial capacity in Canada to carry out wholesale replacement with HVOF, despite capacity growth over the past few years. There remains a chicken-and-egg situation in which a change cannot be made because there is insufficient capacity, but new shops are not opening because of insufficient business.

HVOF technology has been used for many years for surfacing and rebuilding industrial rolls used in

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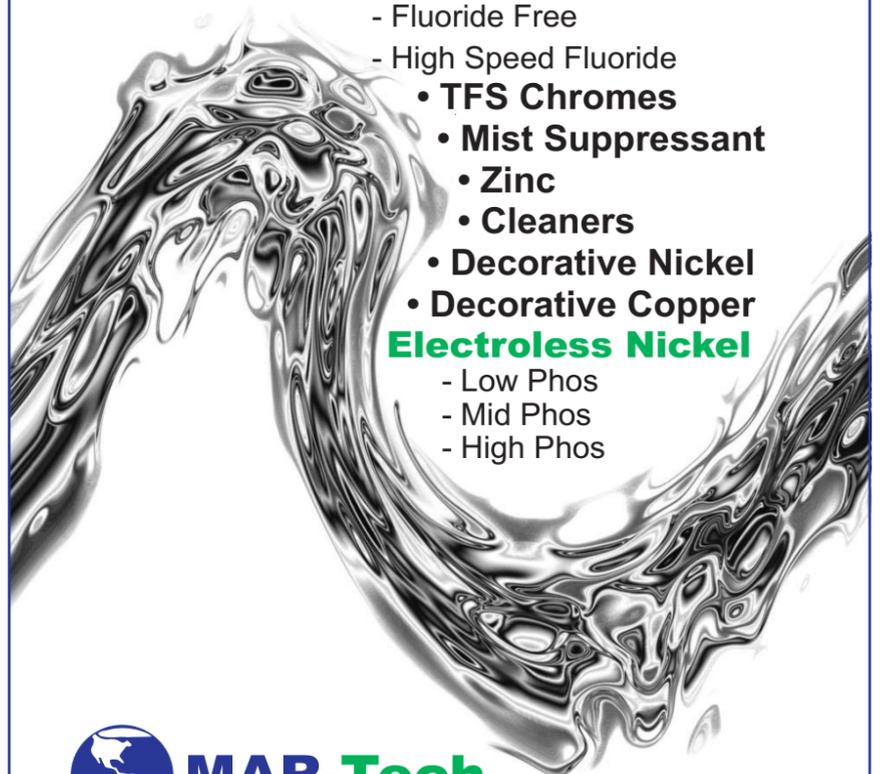
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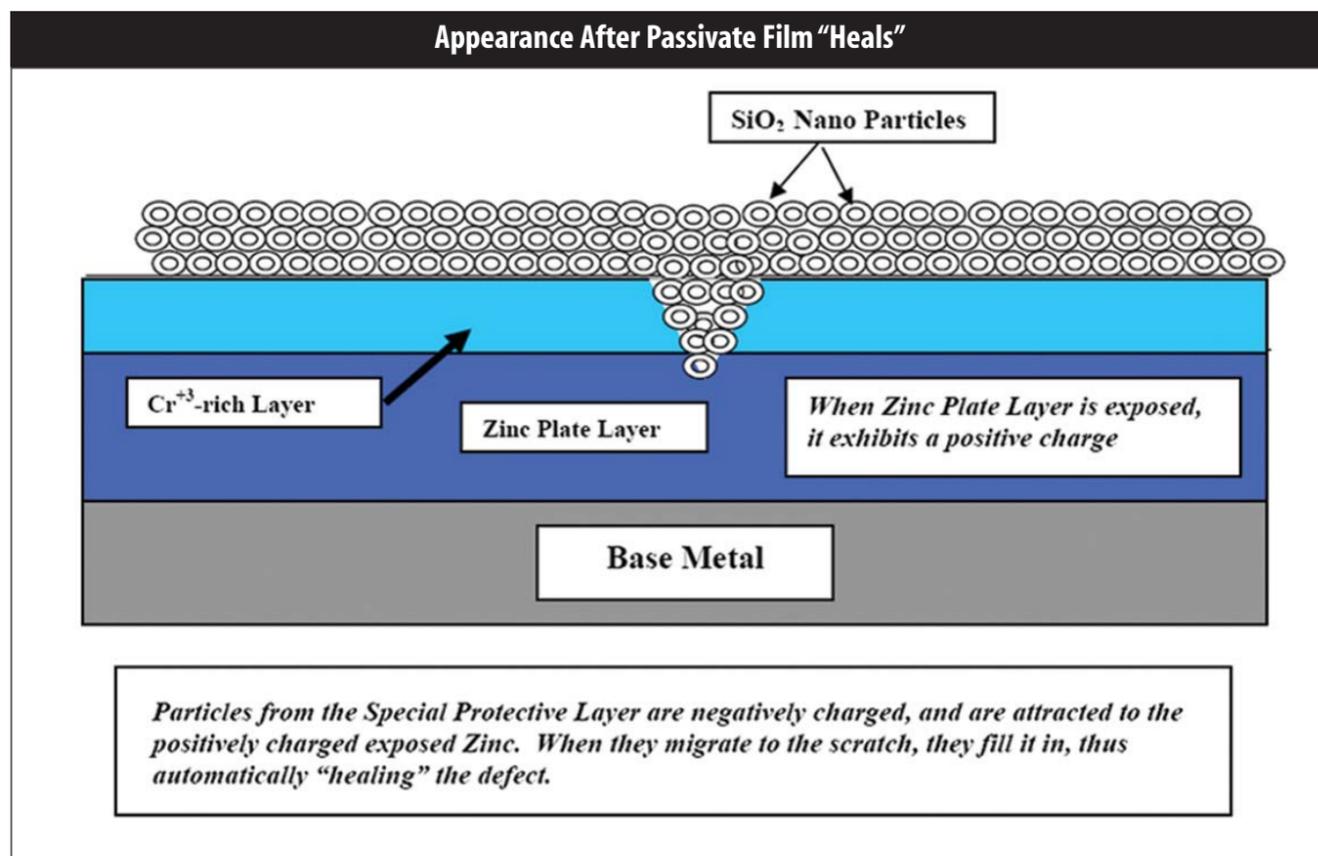
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primary metal manufacture. It is also used in some new aircraft hydraulic actuator rods and for rebuilding aircraft landing gear, flap tracks and other wear items. It is beginning to penetrate the off-road vehicle market (construction and mining), where it is used on some Caterpillar hydraulics, both new and for rebuild, and it is widely used in the oil industry.

HVOF is a very different technology from electroplating. WC-CoCr powder is fed into an oxy-hydrogen or oxy-kerosene torch that heats and accelerates it, while a robot sprays it onto the surface like a paint spray gun. The capital cost is commonly \$0.5-1 million, half of which is for the spray booth. The resulting coating is very hard (1,200-1,500HV, vs 800-1,000 HV for EHC), which makes it highly wear-resistant, but more difficult to grind and finish. It is clearly not a drop-in replacement, so why has it taken over so widely?

Part of the answer, is that its adoption by the aircraft industry was accelerated by a major collaborative effort called the US-Canadian Hard Chrome Alternatives Team that was jointly funded by the US Department of Defense (DoD), the Industry Canada TPC program and the Canadian DND. This effort involved all the Canadian landing gear manufacturers, the major US and Canadian aircraft companies, engine and hydraulic actuator manufacturers. This program developed all the critical performance data and application methodology, specifications, and perhaps most importantly, created an international community of suppliers and users who understood how to use the technology effectively. There are

now several spray shops around Montreal and Toronto.

Other industries, such as off-road vehicles have adopted HVOF for large hydraulics, using less expensive coating materials such as Cr₃C₂-NiCr. This type of highly wear-resistant coating is particularly valuable for rebuilding hydraulic equipment used in extreme environments, such as in Canada's natural resource industries of mining, forestry and oil extraction.

ELECTRO AND ELECTROLESS PLATING

The greatest shortcoming of HVOF technology is its inability to coat internal diameters, for which bath plating technologies still provide the best answer and make ideal hard chrome replacements because the technologies (and therefore the applications) are essentially the same. Electroless Nickel (primarily EN-phosphorus) has long been used for this type of application

since it is hard and can coat even the most complex shapes. Its use has been growing as a replacement for hard chrome for internals. Other coatings have been developed, mostly based on Ni, including various EN composites containing hard particles or PTFE, and alloys such as Ni-W. Composites can be engineered to the right hardness, but are difficult to deposit uniformly.

Integran, a Toronto company, has developed a nanophase cobalt-phosphorus coating based on a pulse electroplating technology as a hard chrome alternative. This coating was Co-based because of the increasing concern over the use of Ni. It is being tested industrially in a pilot plant for hydraulic actuator rod, and is undergoing validation testing at the US Naval aircraft depot in Jacksonville, FL under DoD funding.

None of these competing coatings has yet broken out the way that HVOF has done, and it is uncertain

whether one will become a clear winner or whether a number of competing coatings will occupy different niches in the market.

OTHER ALTERNATIVES

Vacuum coatings deposited by physical vapor deposition (PVD) are often put forward as chrome replacements since they are so successful as tool coatings (gold-coloured drill bits and cutting inserts, for example). These coatings are traditionally nitrides and carbides (TiN, TiAlN, TiC, TiCN etc.), and diamond-like (hard carbon) coatings. They are very thin and extremely hard and durable. However they cannot really be used cost-effectively for depositing coatings thick enough for rebuild, a primary hard chrome market, and the complexity of vacuum equipment makes them primarily suitable for deposition by specialist shops.

They are most widely used as chrome replacements for industrial tooling and for certain niche applications. These coatings are widely used in Ontario, for example, on dies and molds for automotive production. A diamond-like material developed for internals is now offered by Hyperion in Calgary, primarily for aircraft hydraulics.

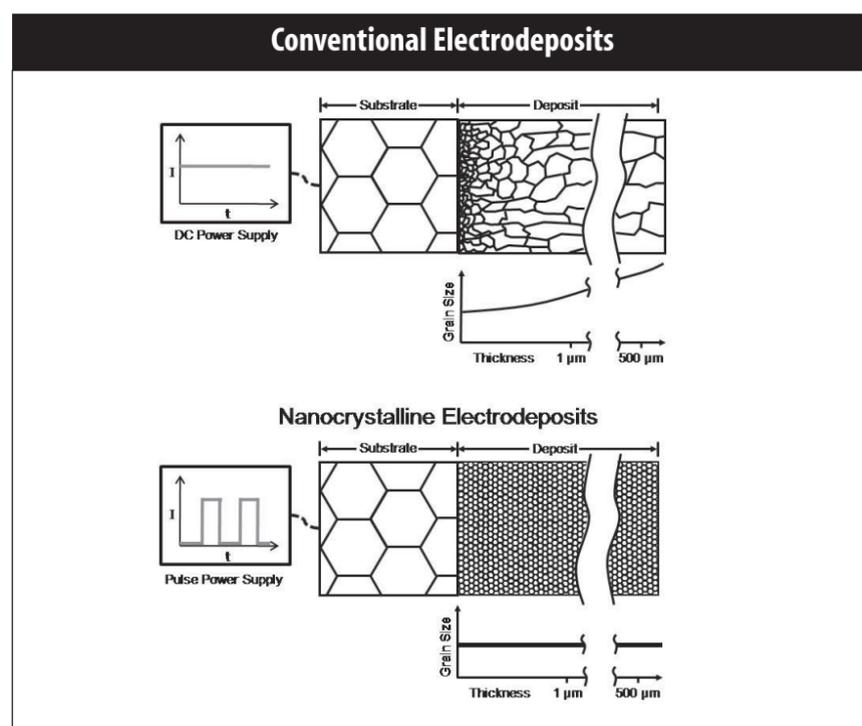
Apart from their thickness and equipment complexity, a major drawback of PVD coatings is their lack of industry specifications, precluding their use in aerospace outside specific niche applications.

Putting alternatives into practice

When looking for an alternative it is important to consider the application and how the coating fits into the manufacturing system, whether it is to be an in-house or a contracted process. Thermal spray and plating processes can be done either way, but it is important to remember that HVOF is a very different process for an organization accustomed to bath technologies. Help is widely available to choose and implement chrome alternative technologies; for example, DoD has formed a new organization called ASETSDefense that is placing information and an engineering database freely available on-line at www.asetdefense.org.

Finally, when replacing hard chrome, it is important to remember that there is no such thing as the perfect alternative. Every option has its own advantages and drawbacks, and every alternative (Ni, Co, WC-CoCr) has its own toxicity and regulatory issues. ■

Keith O. Legg ASETS Defense Program Lead, works for Rowan Technology Group, Libertyville, IL.



achieved in neutral salt spray testing clearly exceed the demands of the automotive industry

ELECTRO-DEPOSITION OF G-PHASE ZINC-NICKEL ALLOY

In order to compare the different corrosion protection performance of zinc and zinc-nickel alloy (14 per cent Ni), a series of 5x5 cm² mild steel panels were plated to achieve a series of incrementally increasing layer thicknesses with a cyanide-free alkaline zinc electrolyte, available under the process name Protolux 3000 and an alkaline zinc-nickel electrolyte available under the process name Reflectalloy ZNA. The coating thickness was determined by x-ray fluorescence (XRF) measurements after plating. The parts were not post-treated with a passivate. They were exposed to the neutral salt spray test according to ISO 9227 (Fig. 1). The red line demonstrates the red rust corrosion of pure zinc coating whereas the green line shows the red rust formation of the zinc nickel coating. It can be seen that with a plating thickness of 8 µm a non-passivated zinc coating can only achieve app. 150 hours. Under the same conditions a g-phase zinc-nickel coating with the same thickness achieves more than 700 hours to the occurrence of first red rust.

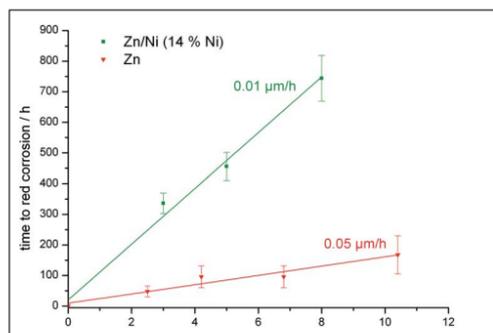


Fig. 1: Neutral salt spray test according to ISO 9227 for panels with increasing coating thickness of pure zinc (Protolux® 3000) and zinc-nickel (Reflectalloy® ZNA) leading in both cases to linear functions.

Further investigations were undertaken to understand the reason for this highly increased corrosion protection. 5 x 5 cm² panels were plated with 5 µm of different zinc-nickel alloy layers, with an increasing amount of nickel in the electrolyte resulting in an increasing amount of nickel incorporated in the coating. The deposited zinc-nickel coatings were investigated by means of X-ray diffraction (XRD) to determine the structure of the coating and were subsequently subjected to the neutral salt spray test according to ISO 9227. Fig. 2 shows the corrosion protection performance according to ISO 9227 related to pure zinc with increasing nickel incorporation (red curve). The green curve

shows a fraction of Ni₂Zn₁₁ g-phase as determined by XRD phase analysis. The highest corrosion protection is achieved at about 15 per cent nickel incorporation. Nearly at the same concentration, the peak maximum concentration of g-phase was found in the alloy (14 per cent). It can be concluded that corrosion protection correlates with the g-phase concentration in the zinc-nickel alloy.

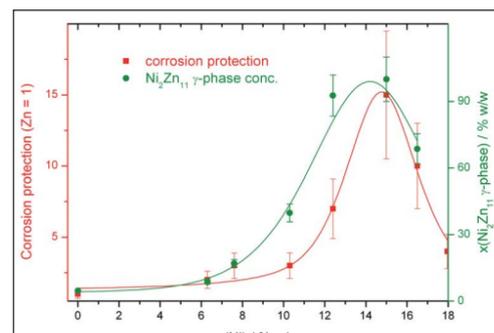


Fig. 2: Corrosion protection of zinc-nickel coatings with increasing nickel incorporation relative to pure zinc coatings (red dots) measured by neutral salt spray test (ISO 9227); Intensity of the (600) peak of the g-phase zinc-nickel alloy with increasing nickel incorporation (green dots) measured by X-ray diffraction

A zinc-nickel sample having 14 per cent nickel incorporation was prepared in the FIB from a coating plated on mild steel and was investigated by means of transmission electron microscopy diffraction in order to confirm the results from XRD analysis concerning the crystal structure of the coating. The texture of the coating also was determined by focused ion beam imaging. A columnar structure was identified. Corrosion protection was tested on fasteners which were plated in a barrel application with Reflectalloy ZNA. There is no significant corrosion visible on the parts after 720 h.

ZINC-NICKEL ELECTROLYTE FOR BARREL APPLICATION

The most important performance parameter for barrel application is the overall current efficiency throughout all current densities occurring in the application process. High current efficiency electrolytes do not only provide faster deposition in the bulk of the layer but also bear improved seeding capabilities in the very beginning of the deposition process. Hydrogen evolution is always a competing process to metal distribution. Good nucleation capabilities lead to faster overall coverage of the base metal, resulting in reduced hydrogen evolution and improved overall plating quality. Good, meaning fast, nucleation becomes especially important on

hardened steel parts, which often bear high carbon concentrations in the steel surface. Carbon facilitates the cathodic generation of hydrogen and interferes with the desired electro-deposition. Often enough hardened steel fasteners need to be plated. Quick and complete coverage is essential for a high quality plating result on such surfaces. At the same time, high current efficiency also improves the throughput of the plating line. Parts can be plated at a much lower plating time. A production-proven process for barrel application is Zinni AL 450. At 1 A/dm² the current efficiency is approx. 10 per cent higher compared to Reflectalloy ZNA. This makes this process especially suitable for barrel application.

Zinni AL 450 can also be operated with membrane anodes to keep the current efficiency constantly on a high level. All state-of-the-art alkaline zinc-nickel alloy processes contain strong complexing agents that are inevitably anodically oxidized during electrolysis. Break down products are formed that reduce the current efficiency.

A new approach is the use of acid zinc-nickel electrolytes in barrel application. It is commonly known that acid electrolytes have a better current efficiency compared to alkaline electrolytes. The current efficiency achieved with Zinni AC AF 210 is approx. 10 per cent higher compared to Zinni AL 450 at 1 A/dm² in barrel application. In addition, there is no break down product built at the anode and therefore the investment of membrane anodes is not needed when using an acid electrolyte.

Nevertheless it is most important to investigate if the zinc-nickel coating deposited from the acid Zinni AC AF 210 electrolyte is identical with the coating deposited from an alkaline zinc-nickel electrolyte, providing also a g-phase zinc-nickel alloy. Therefore, XRD phase analysis on plating deposits from Zinni AC AF 210 on mild steel is conducted. To make sure that the g-phase is deposited not only at the one current density chosen, the analysis was conducted on deposits from three different current densities.

It was clearly demonstrated that the formation of g-phase zinc-nickel in Zinni AC AF 210 is independent from the current density applied, within the range of applied current densities. The nickel incorporation was measured by XRF and found to be 13.7 per cent Ni at 0.5 A/dm², 12.7 per cent Ni at 1.5 A/dm² and

12.8 per cent Ni at 3 A/dm². As a result the nickel incorporation is very stable over a wide current density range. This excellent stability of the nickel incorporation is a feature the new generation's acidic electrolyte shares with alkaline zinc-nickel electrolytes like Reflectalloy ZNA or Zinni AL 450. To further ensure that all those electrolytes deposit the same kind of layer, the deposits were also compared by means of electron microscopic investigation of the surface as well as FIB cross-sectioning and imaging of the layers. Zinc-Nickel deposit surfaces known from alkaline electrolytes are generally characterized as having a globular morphology. A globular morphology of the surface is found with the alkaline electrolytes Zinni AL 450 and Reflectalloy ZNA and also for the acidic electrolyte Zinni AC AF 210.

A globular morphology results in fibre-like crystals of a columnar textured deposit are viewed perpendicular to the surface. A fibre-like columnar texture is confirmed by the FIB investigation for all three coatings. Knowing that g-phase zinc-nickel alloy is present in the coating, very good corrosion protection can be expected from these layers. This has been proven on parts that were plated under barrel production condition at a mean current density of 0.7 A/dm². Corrosion performance was tested and stopped after 1000 hours and only 5 per cent white rust formation was visible on the fasteners. Thickness distribution was investigated in a barrel application on M10x60 bolts plated with Zinni AL 450, Reflectalloy ZNA and Zinni AC AF 210 at a mean current density of 0.7 A/dm². The layer thickness was measured with XRF on three different points A, B and C. The coating thickness on the bolts is comparable with all three processes used.

As a result of all the investigations done on Zinni AC AF 210 we strongly believe that this acid zinc-nickel electrolyte is an alternative to an alkaline zinc-nickel electrolyte operated in a barrel application from a technical point of view. From a plating cost point of view it may also be attractive as more parts can be plated due to the reduced plating time. It is now up to the automotive OEMs to decide to use acid zinc-nickel for fastener applications. Zinc-nickel alloy coatings are increasingly in demand by the automotive industry due to highly improved corrosion protection over pure zinc and other zinc alloy coatings. ■

SUR/FIN 2009 Hits Kentucky

SUR/FIN is the surface finishing industry's premier event held June 15-17, 2009, Kentucky International Convention Center, Louisville, Kentucky, where professionals from around the world share ideas and experiences to solve surface finishing and manufacturing problems while improving productivity.

SUR/FIN 2009, organized by the National Association for Surface Finishing, provides the best venue in which to explore the state-of-the-art technology, gain insight on practical applications for surface finishing as well as evaluate means to improve surface finishing operations.

SCHEDULE AT A GLANCE

Monday, June 15:

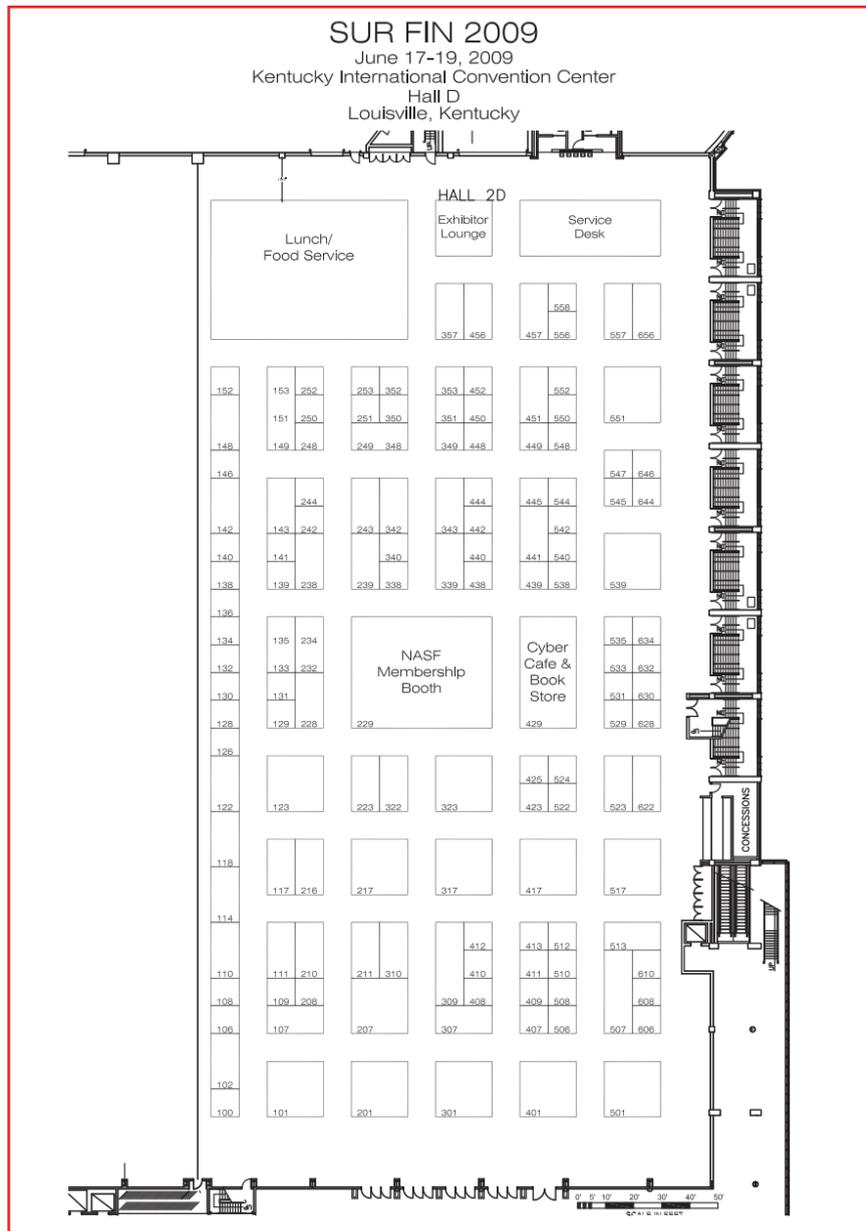
- 10:00 AM – 5:00 PM Registration Open
- 2:00 PM – 5:00 PM Conference Sessions
- Track I: Plenary Session: The Global Outlook on Nickel
- Track II: Surface Finishing Research
- Track III: Surface Preparation
- 5:00 PM – 6:30 PM Conference Reception

Tuesday, June 16:

- 7:30 AM – 6:00 PM Registration Open
- 9:AM – 12:00 PM Conference Sessions
- Track I: Surviving 2009 - Economic Outlook & Advice
- Track II: Light Metals Finishing
- Track III: Decorative Plating
- 10:00 AM – 6:00 PM Exhibits Open
- 2:00 PM – 5:00 PM Conference Sessions
- Track I: Surviving 2009 - Regulatory Outlook & Advice
- Track II: Trivalent Passivates: Are they Hexavalent Cr Free?
- Track III: Functional Plating
- 4:00 PM – 6:00 PM Opening Reception
- 6:30 PM – 10:00 PM Industry Night Event – Kentucky Derby Museum

Wednesday, June 17:

- 9:00 AM – 12:00 PM Conference Sessions
- Track I: Surface Finishing in a Low Carbon World
- Track II: Surface Finishing Research
- Track III: Precious Metals Plating
- 10:00 AM – 4:00 PM Exhibits Open
- 2:00 PM Show Floor Reception
- 2:00 PM – 5:00 PM Conference Sessions
- Track I: Unresolved Issues: The Future of Surface Finishing for Defense Applications
- Track II: Organic Finishing
- Track III: Zinc and Zinc Alloy Surface Finishing



SUR/FIN 2009 EXHIBITORS,

followed by booth number (as of 5/14/09)

ACM Technologies, Inc.	209
Agmet Metals Inc.	449
Aldonex	452
AMD Inc., Fiberglass Grating	513
American Plating Power	317
AMETEK Fluoropolymer Products	448
Anode Products	143
Applied Thermal Technologies /Hydro Miser Division	141
ASC Process Systems	524
Atotech USA Inc.	101
Aucos Elektr. Gerate GmbH	535
Auto Technology	107
Baker Technology Associates, Inc.	517
BASF Corporation	242
Benchmark Products, Inc.	208
Canadian Finishing & Coatings Manufacturing Magazine	106
Canadian Finishing Systems Ltd.	134
CATHO-PIN Products Inc.	408
Corrotec Incorporated	216
Coventya, Inc.	123
Crossair, LLC	239
Crown Solutions Veolia Water	151
CST-SurTec, Inc.	441
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Evonik Degussa Corp.	113
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Finishing Concepts Inc.	153
Finishing Market	309
Fischer Technology Inc.	114
Gilbert & Jones Co., Inc.	253
Global Filtration Systems	131
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Haviland Products Company	129
Heatbath	413
Hubbard-Hall	410
Imperial Zinc Corporation	243
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Jessup Engineering	102
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Kontek Ecology	128
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Lab Synergy	#20
Lanco Corporation	207
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Matrix Metrologies	508
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Met-Pro Corporation	201
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METALAST International	511
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Met-Chem Inc.	107
Metropolitan Alloys Corp.	539
MicroCare Corp.	507
Midwest Air Products Co., Inc.	423
Nanomate Technology, Inc	120
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PerkinElmer, Inc.	544
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PKG Equipment	411
Poly Products	107
Process Electronics Corporation	429
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SERFILCO, Ltd.	307
SETHCO Division, Metro-Pro Corporation	201
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SII NanoTechnology Inc.	547
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Kynar Aquatec® is a registered trademark of Arkema Inc. and coating formulations based on Kynar Aquatec® PVDF emulsion can only be supported by Arkema Licensees.

There are a lot of consumer and environmental demands when it comes to exterior architectural paint. It needs to be beautiful and durable to the point of being unaltered by winters and scorching and humid summers. It needs to be mildew-resistant, UV protected, applied in most any temperature, resist cracking, peeling, and fading, fast drying, non-chalking, and you should be able to clean it up with soap and water.

These requirements naturally lead to products like Kynar.

Superior Finishes Inc., based in Winnipeg, Manitoba, manufactures coatings made with Kynar Aquatec® polyvinylidene fluoride (PVDF) emulsion. This is a newly developed PVDF fluoropolymer technology in a water base.

“There are many claims, guarantees and warranties that manufacturers put on their products,” says Jerry Petershiem, senior business development engineer for technical polymers with Arkema. “There are no coatings currently on the market that will retain 50 percent of their gloss after 5 years of Florida exposure, unless it contains fluoropolymer.”

Superior Finishes Inc. fluoropolymer paints contain 80 percent of Kynar Aquatec® pvdf emulsion, which gives over 10 years of Florida exposure. Kynar Aquatec® is now being specified for Windows and Doors as the

supported by Arkema Licensees. This is just one of the products that manufacturers have created in answer to customer’s needs.

PPG Canada, Inc., Brampton, ON offers high performance coatings specially formulated for the toughest, most demanding industrial and commercial applications. They have a full line of alkyds, water-based paints, epoxies, and urethanes, Pittsburgh Paints supplies architects, engineers and specifiers with proven protection for practically any surface, including those under conditions of



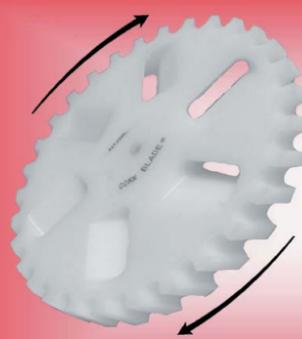
extreme moisture, temperature and chemical exposure. ■

Every effort was made to contact exterior paint manufacturers for this article. If we missed you, please contact us. We would be happy to consider your product information in future issues. sandra.anderson@cfc.ca

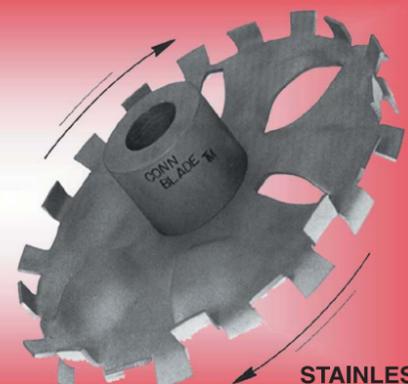
Photos of Quebec City building exteriors by Pete Wilkinson

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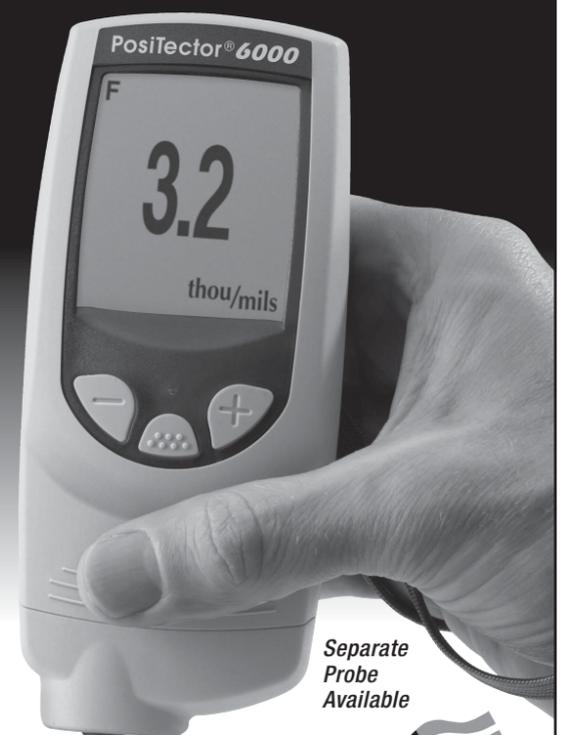
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The Challenges of Good Product Stewardship

BY JIM QUICK, PRESIDENT, CPCA

Over the course of its history the Canadian paint and coatings industry has always taken its stewardship responsibilities seriously. Be it reducing VOC emissions, or creating a sector approach to chemical management, our industry is viewed by many as a leader in the stewardship program.

With the emergence of heightened environmental awareness worldwide, product stewardship has quickly emerged as a focus for governments across Canada. As governments vie to establish sustainability credentials, they have made industry-led stewardship programs a top priority.

Responsible product stewardship is nothing new to the paint and coatings industry. We have been developing and managing stewardship programs since 1994 and now have programs in Ontario, British Columbia, New Brunswick, Alberta, Quebec, Saskatchewan and Nova Scotia. While we have achieved an impressive level of success, we also face some significant challenges in the future.

Industry respects the right of a government to regulate programs and we believe that the design of a program is best left to the experts—in this case, industry. Governments are now becoming very prescriptive in their program design expectations. Canada's paint and coatings industry is very fortunate to have some of the best stewardship program professionals in

the world. These people have shown they can consistently develop cost-effective, consumer-friendly programs. This needs to continue.

Program governance is also becoming a challenge as some provinces insist on appointing representatives to program governing bodies. Industry believes that programs can continue to be effective if their oversight is left to affected industry stewards in consultation with municipalities and other program partners.

Most industry programs use municipal hazardous or special waste programs as the primary collection vehicles. Recently, governments have indicated they want to add institutional, commercial and industrial (IC&I) waste to stewardship programs. Adding this stream to a municipal collection system will no doubt pose collection, as well as transportation and disposal challenges.

The most significant challenge for industry is the emergence of Extended Producer Responsibility (EPR), which will see industry taking full physical and financial control of stewardship programs.

In Ontario, a government discussion paper on potential changes to the Waste Diversion Act recommends going to full EPR. If successful, this policy change will have significant implications for the paint and coatings industry as our Municipal Hazardous or Special Waste (MHSW) program costs could potentially increase from \$12M to approximately \$25M once

phase 2 and 3 of the program are approved (Fall 2009). It would also mean that in the case of the Blue Box program (a curb side collection program that includes empty paint cans) costs to stewards could increase from \$83 million to over \$300 million, an increase of 270 per cent.

Add to these program pressures a backdrop of the deepest economic downturn since the great depression – being a responsible steward in Ontario is about to take on a whole new meaning.

The question then becomes – what do we do about it?

First, all stewards must come together to build strong coalitions on the issues. As a coalition we can present the cumulative impact of waste management programs and other legislative proposals on investment and business decisions in Canada.

Second, we need to be extremely proactive on the advocacy front. In Ontario, MPPs and Ministers need to understand how the 'Ontario approach' would increase the cost and complexities associated with

doing business in Ontario.

Third, stewards need to engage in program development in a responsible way. Simply opposing or putting up road blocks to program development will not cut it. These programs and their guiding legislation will be developed with or without industry. The best way to frame program outcomes is to be at the table finding program solutions that create a balance between public policy objectives and sector sustainability.

The paint and coatings industry has a growing reputation as a sector committed to the development of consumer and environmental friendly products. Let's use that reputation to further position ourselves as a national product stewardship leader. ■

Jim Quick is President of the Canadian Paint and Coatings Association and member of Stewardship Ontario Board of Directors and Chair of the Municipal Hazardous or Special Waste MHSW Committee.

Paint Recycling, a successful niche for Hotz Environmental

With the development of Stewardship Ontario's "Do What You Can" program, Hotz Environmental Services may be one step closer to quenching the international thirst for their recycled paint products.

"We don't have a drop of recycled paint in inventory and at times, we have struggled to meet the demand of our global clientele," says Pamela McAuley, Vice President, Hotz Environmental Services Inc., Hamilton, ON. "Ontario's new program requiring leftover architectural paint to be recycled, is welcome news for us."

Hotz is not new to recycling, the family owned business began in 1922 collecting scrap metal, moving into solid waste and then hazardous waste and paint, and continues to be run by third generation Martin Hotz. From the early collection of

Together...making waves in the pond

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unwanted items to the current broad range of environmental services offered, Hotz Environmental Services Inc. continues to respond to market demands. With the introduction of the hazardous waste regulations, many existing solid waste clients required a full service waste management company. Hotz Environmental Services Inc. was developed to provide clients with a comprehensive range of environmental services in the critical area of hazardous waste management, including: industrial and household hazardous waste collection, transportation and recycling/disposal services, environmental audits, emergency spill response and industrial powerwash cleaning services.

"Part of our success can be attributed to the fact that we are privately operated which allows us to respond quickly to opportunities in the market place," says McAuley. Hotz has evolved with their customer's needs.

Often competing against other waste management companies who offered only disposal options, the company's recycling strategy was more than a decade ahead of the government requirement. Hotz per-

severed the challenges and has developed a strong international client base for their recycled paint products, which is key in the equation. Hotz has worked with various paint manufacturers over the years to fine tune their recycling process and as a result, chose not to sell the recycled paint and compete with them here in their North American market place. So Hotz found their niche in countries where the local paint product was substandard to Canadian paint. Key ingredients such as TiO₂ and other valuable chemicals are missing from the local paints resulting in low quality products that do not stand up to the extreme weather conditions facing these markets.

"Foreign markets including Mexico, Panama, Caribbean, India, China etc. are thrilled with the paint," says McAuley.

In addition to the leftover paint collected through municipal collection programs, Hotz has provided a valuable recycling service to many of the paint manufacturers, who find it expensive to recall products for label changes or rework their own mistakes, overruns, etc.

"Hotz is always excited to work directly with the manufacturers to minimize the paint that is sent for disposal. We believe that there is a true value in the leftover paint. We have developed a realistic market place for the recycled products and we encourage the 3R's hierarchy," explains McAuley.

Hotz recycles both latex and

alkyd paints into eight standard colours, mostly pastel shades in accordance with the market demand. From the eight base colours, one client, a company in Indonesia developed 23 different shades. The key is to find the right partner. Hotz often utilizes the services of the provincial and federal governments to locate a strategic alliance partner. In some cases, it may be the government entity themselves who contract with Hotz for the supply of paint products for schools, hospitals, and other government facilities. Most recently, Hotz Environmental participated in an Ontario Environmental Trade Mission to Shanghai, China and they are confident that this will result in yet another sustainable avenue of their products. In addition to their main operations in Hamilton, ON, Hotz also operates a facility in Mexico facilitating the recycling services for American customers as well as the international market place.

Hotz Environmental Services Inc. is proud to have been recycling the paint collected at the household hazardous waste collection depots throughout Ontario for the last 19 years. "We are very excited to now be recycling the leftover paint that is being collected at the Home Depot stores, under the new provincial program. Hotz is ready to recycle all of the leftover paint generated in Ontario." Expansion plans will offer double the recycling capacity to ensure that the paint will continue to flow through the

program effortlessly.

In addition to their involvement with Stewardship Ontario, Hotz has been an active participant in the development of a nationwide paint recycling strategy underway in the United States. The Product Stewardship Institute in Boston, Mass. contacted Hotz back in 2003 and invited them to become involved in the ambitious project which is in line with their core goals.

McAuley says that with the overwhelming success of Stewardship Ontario's "Do What You Can" program, new facilities are a possibility for the future. Hotz currently recycles the latex and alkyd architectural coatings, but they are not content with just that." McAuley continues, "We have proven that wood stains and other specialty coatings are capable of being recycled as well. In the past, the lower volume of these types of coatings prevented Hotz from developing a viable market for these products." The company's goal will be to recycle the majority of the coatings collected and establish a solid client base to sustain the program.

"Participants who deliver their paint to these diversion programs are so proud to know their paint will change the life of someone half way around the world who will now have a chance to have their home painted," says McAuley. "We will continue to expand to match the growing needs of our fellow residents here in Ontario." ■

PAINT AND COATINGS MANUFACTURING: PAINT CONTAINERS

Paint Containers, Coping with Green

BY SANDRA ANDERSON

With the current emphasis on the environment stronger than ever in the industry, the paint container manufacturers and distributors are not escaping the pressure to go green to accommodate the increase of water-based products and avoid rust.

John Roeleveld of Andicor says, "The paint industry has historically been reluctant to change the basic design of the smaller (ie. 1 U.S. gallon or less) tinplate steel paint containers used in the retail marketplace. These cans have been the workhorse in the industry for many years and will likely remain so, despite the run-up in tinplate steel prices over the last few years." He continues, "However, given the state

of the economy and the relatively low prices for plastic compared to steel, plastic hybrid containers are getting more attention for water-based applications. These cans have essentially the same dimensions as their steel counterparts, but with plastic bodies, while retaining the steel rings and plugs (lids) of the



traditional steel can. Plastic "hybrid" cans are however not as recyclable as 100 per cent steel cans, given that they are made of both steel and plastic that cannot be easily separated."

Andicor represents Bway Packaging and its division ICL Containers, based in the Toronto area, with their traditional tin containers and the newer plastic hybrid containers for water-based coatings.

Mike Steibelt Marketing Manager, Container Products, L.V. Lomas Ltd. explains that their company offers three lines of containers: metal paint cans (with and without linings), plastic pails and steel pails (with and without linings). Crown Metal Packaging is their supplier of tin plated steel cans used extensively in the Canadian Coatings Industry. They also carry Leticia Cor-



poration's plastic containers and Cleveland Steel Container's steel pails.

Tin plated steel cans with and without linings have been the most common container sold to the coatings retail market over the years. These are some of the cans produced by Crown Metal Packaging around the world. ■

Every effort was made to contact manufacturers and distributors of paint containers in Canada. If we missed you, please contact us. We can always include you in future issues and in our New Product section.

Ford turns Fumes to Fuel

cell system that would convert paint shop emissions into a hydrogen-rich fuel to generate electricity. This Fumes-to-Fuel system is expected to significantly reduce emissions, while generating new electricity at OAC.

Then in June 2008 a company issued press release explained that Ford's Fumes-to-Fuel system at the Oakville Assembly Complex is turning emissions into a source of 'green' energy. The fuel cell-powered system is expected to reduce carbon dioxide (CO₂) emissions by 88 per cent and eliminate nitrogen oxide (NO_x) emissions as compared to traditional technology. At full production, the system is expected to produce about 300 kilowatts of renewable energy each hour, which is enough to power approximately 30 homes.

Fumes-to-Fuel was developed as an environmentally responsible technology to remove Volatile Organic Compounds (VOCs) from

the painting operation's exhaust air.

In 2004, Ford launched its Fumes-to-Fuel technology with a pilot installation at the Dearborn Truck Plant. That project used a 5 kilowatt fuel cell and served as a temporary test site for Ford engineers. The following year, Ford installed a new generation of technology at Michigan Truck Plant (MTP) in Wayne, Mich., using a 50 kilowatt Stirling engine to generate electricity. The MTP system continues to operate.

By comparison, the Oakville Assembly Complex system has a 300 kilowatt fuel cell.

The Oakville system takes Ford's Fumes-to-Fuel technology to the next level. Ford is in a great position to use this technology to reduce its impact on the environment by reducing air pollution and producing 'green' energy.

Stoakley says that Ford did not work with a specific paint supplier as they wanted to ensure that the



Outdoor fuel storage tank.

system was able to adapt to any plant used in their facilities.

Fumes-to-Fuel is an eco-friendly, industry leading pollution-control system that converts emissions from the plant's paint shop into electricity to help power the plant.

This installation is the first of its kind in the world to harvest emissions from an automotive facility for use in a fuel cell.

"At Ford we continue to make great strides in reducing the environmental footprint of our manufacturing operations worldwide by improving energy efficiency and increasing the use of renewable resources - Fumes-to-Fuel is certainly a part of that effort," says Stoakley.

Fumes-to-Fuel has the potential to significantly reduce manufacturing's emissions in an environmentally sustainable process.

"Although the power generated by Fumes-to-Fuel is a small percentage of the plant's total power, the future potential for this technology is very exciting," says Wherrett.

Mike Wherrett was one of the

founders of the system and involved in Ford's two similar projects in the US. He explains that while working on the Michigan project he and his team were approached by the Canadian government and OAC about putting a larger system in Oakville.

Wherrett says the Fumes to Fuel system is being installed in two phases and that phase one is complete.

"Phase One is at full capacity where we collect solvent from the air stream and convert into liquid feed. We are holding the liquid in large tanks." He says Phase Two involves installing the fuel cell.

As for installing similar Fumes to Fuel programs in the future, Wherrett says, "We don't have plans for it right now, but we will install as needed."

Stoakley explains that part of reason Oakville was chosen for Fumes to Fuel is because it is a busy plant, and the Canadian government was

continued on page 22



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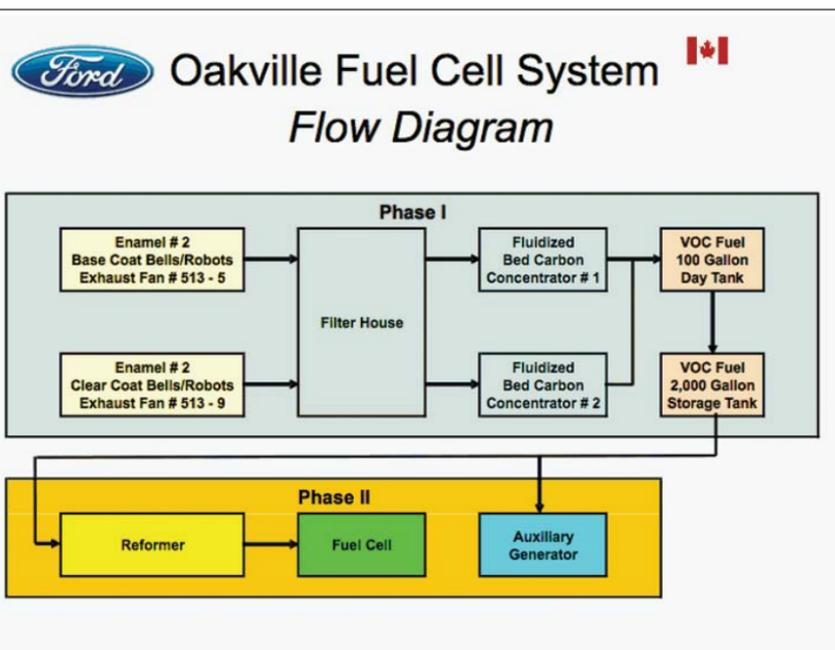
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Choosing the Right Air Compressor



CFCM asked air compressor specialists to explain how to best choose the air compressor that is right for you.

CFCM asked three air compressor specialists to explain how to best choose the air compressor that is right for your business.

Bogdan Markiel, DV SYSTEMS, Barrie, ON: Compressed air has over the years become a utility, very similar to electricity or natural gas and is indispensable in safe operation of today's manufacturer. A typical system will consist of: air compressor, compressed air dryer, compressed air filters, condensate filter and air lines (pipes).

When choosing an air compressor we often make the mistake of defining the need by specifying the compressor's brake horsepower, which is only related to how much energy your compressor will use, not how much air it will deliver. What we should do instead is calculate the air consumption rate of our facility and choose the compressor that will deliver the sufficient amount of air. In North America, air consumption is usually expressed in cubic feet per minute (CFM) at a specific pressure, which for the majority of operations is 100 psi. It is very important that we specify the pressure correctly in order not to over pressurize the system. Compressing air generates heat as there is an additional cost associated with each additional psi, for example: using a 145 psi compressor in a system, which would require only 100 psi, would significantly increase the facility's energy consumption.

Most equipment manufacturers provide us with an average free air consumption rate for each tool or machine. Those rates are normally added for each machine being used and the sum will give

us a general idea how much air is needed. Consider using a compressor that is slightly larger than your actual air needs to compensate for possible additions of air

consuming equipment.

Reciprocating compressors use pistons driven by a crankshaft. They can be either stationary or portable, can be single or multi-staged, and

can be driven by electric motors or internal combustion engines. Reciprocating Piston air compressors are typically used in installations requiring up to 100 CFM at 100 psi, their

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pressure can be normally set up to 175 psi or higher in special “high pressure” models. A good quality piston air compressor will have low RPM (600 – 850), it will be pressure lubricated – oil is delivered to journal bearings under pressure. It will have good quality valves which are easily accessible and it will be covered with a five year warranty – a good quality piston compressor will last many more years if maintained properly. Piston compressors need to be matched with an adequate air receiver (tank), their duty cycle (how long they operate each hour) is usually 70 – 80 per cent for a heavy duty compressor and much less for splash lubricated units. Piston compressors are an excellent choice for installations with intermittent duty use.

Rotary Screw air compressors are considered the new technology. The smaller, under 50 hp models have gained popularity in the last decades, the larger machines have been used for over a century. Screw compressors range in size from small 3 to over 1200 horsepower. A rotary screw compressor is a type of gas compressor, which uses a rotary type positive displacement mechanism. The mechanism for gas compression utilizes either a single screw element or two-counter rotating intermeshed helical screw elements housed within a specially shaped chamber. As the mechanism rotates, the meshing and rotation of the two helical rotors produces a series of volume-reducing cavities. Gas is drawn in through an inlet port in the casing, captured in a cavity, compressed as the cavity reduces in volume, and then discharged through another port in the casing.

The effectiveness of this mechanism is dependent on close fitting clearances between the helical rotors and the chamber for sealing of the compression cavities. In an oil-flooded rotary screw compressor, oil is injected into the compression cavities to aid sealing and provide cooling sink for the gas charge. The oil is separated from the discharge stream, then cooled, filtered and recycled. It is usual for some entrained compressor oil to carry over into the compressed gas stream. These are usually used for continuous operation in commercial and industrial applications and may be either stationary or portable.

Brad Sparkman, Innovative Finishing Solutions, Brampton, ON: Air compressors have been around for well over 100 years and have as many applications as their tools that use the air itself. The main



reason for their popularity is because air as a resource is safe, flexible, clean and convenient. These machines have evolved into highly reliable pieces of equipment that are almost indispensable in most of the applications they serve. Compressors can come in a wide variety of different types and sizes. Ultimately, as with any tool, air tools and the compressors that power them, have to save the user time and money on any given project. Most compressed air tools are more powerful and typically lighter than standard electric tools or battery powered cordless tools. They are used by virtually every industrial sector from woodworking to automobiles and Aerospace Manufacturing. While there are many types and styles of compressors, they all perform the same basic function, which is to increase the pressure and reduce the volume of a given gas, which in this case is air. Pay particular attention to piping systems that provide energy savings and

laminar airflow when considering a piping solution to deliver the air to multiple locations within your facility. You want to choose a system that does not leak air when you are not calling for air. Compressed air is an expensive investment, so ensure that you select an energy efficient solution for your application. You do not want your compressor to be running when your plant is not.

Jonathan Snook, CompreVac Inc., Mississauga, ON: Selecting the correct air compressor for your facility can be a daunting task; the selection process requires a certain amount of guidance. Make sure that you have trustworthy advice. Select potential suppliers based upon local experience and with knowledge of your particular industry. Questions to be considered include: What pressure do you need to have in your main compressed air header system? What compressed air storage equipment do you have and what may be required? What volume of com-

pressed air is required at this time? What productivity growth expectations do you have for your business? What is your compressed air used for and how clean and dry should it be? Do you require oil free compressed air? Is noise reduction an important consideration? Where would you like to locate your air compressor? What environmental factors should be considered? What is the real cost of ownership after parts and maintenance are factored in? You need at least 115 to 125 psi in your airline, closed loop pipe header system. You also must get rid of as much flexible pipe as possible and ensure that you have equal pressure to your entire facility, supplied via a horizontal fixed pipe system. Storage of compressed air is an important consideration if you want all of your spray guns receiving stable pressure. This is calculated by knowing the volume of air required, (CFM per gun plus blow-off and other uses). It will also determine the ideal capacity of the air compressor.

Fish eyes and blemishes can ruin hours of preparation and lose productivity as well as profit. In most cases, an oil free compressor is not essential and the capital cost can be one-third to twice as expensive as an oil lubricated air compressor. Reciprocating air compressors normally produce more oil carry-over than rotary screw or rotary vane air compressors. However, in most cases, a quality air filtration system, including a coalescing and particulate filter can eliminate fish eyes and blemishes ruining the finished work. At 100 psi, approximately 8 cubic feet of air at ambient pressure and temperature is crushed into one cubic foot. Included in that air is the moisture content of the original 8 cubic feet, which on humid days can be considerable. If that water reaches your spray gun, you are in big trouble. Thankfully, most screw compressors are manufactured with on-board dryers eliminating salesperson miscalculations and ensuring that your dryer is perfectly matched to your air compressor. Dryers can ensure that the air reaching your guns is equivalent to a dry day of +3C to -70C, dependant on the finished quality you desire.

Always select an air compressor that is capable of meeting the needs of your business, in terms of volume of air required, as well as the growth potential. Always ensure that the equipment is serviced properly and on time. Do not permit oily condensate to run into the drains and pollute our planet, always install an oil/water separator. ■



The Art of Liquid Spray

CFCM asked manufacturers and distributors about their newest and best automatic spray guns for liquid paint.



Accuspray's 50+ series of Automatic Spray Guns offer high transfer efficiency, and an excellent finish with little overspray. The Accuspray guns keep your cost down and your production running. The 50+ series of guns are available in a number of configurations. Available are bleed and non-bleed versions, dual air and pattern control and Delrin Ultra Light versions for special applications and coatings. For more information call 800-465-2325.

Advantages of the guns:

- Durable and Dependable
- Compatible with waterborne material
- Precision Control; Fluid control
- Environmentally-friendly
- Works Perfectly with all sprayable materials
- Rapid return on investment.



Can-Am offers seven needle and nozzle sizes in all their guns along with four special purpose air caps.

All automatic guns are offered with optional fluid recirculation ports next to the fluid nozzles. All fluid passageways are stainless steel.

#2200 & #2200RC Lightweight Automatic H.V.L.P. Guns plus several Specialty Guns such as #2600 & #2600RC

Featuring off-station fan control (with or without a combination of turbine and compressed air) plus everything the #2100 gun offers.

Contact: Can-Am Engineered Products, Inc. Website: www.canamengineered.com, E-mail: turbo@canamengineered.com.

The automatic version of the **DUX** gun is mounted directly to automated spray equipment.



Its compact design is 25 per cent lighter in weight than other automatic guns, resulting in less component fatigue on reciprocators and robots.

The DUX automatic spray gun can achieve a superior finish, main-

tain production speed, and reduce coatings waste.

The patented DUX Advanced Laminar Airflow Technology reduces booth fog and blowback, the two leading causes of coatings waste. With transfer efficiency gains of 15-40 per cent over HVLP and other spray guns, a DUX Automatic spray gun pays for itself quickly and creates incremental cost savings throughout its lifetime.

Because more material hits the target, less is trapped in booth filters, reducing consumable costs and hazardous waste.

Utilizing DUX patented airflow and atomization technologies, a DUX Automatic spray gun covers surfaces more evenly. The result is a superior finish.

DUX spray guns use lower operating pressures, decreasing booth fog and overspray. Less paint build up on equipment makes clean up easier. Cleaner air creates a healthier work environment, and fewer VOCs are released into the atmosphere.



EXEL North America is pleased to announce that the new line of A29 and A35 Automatic Airspray guns is now available! These new guns replace the existing A19 and A25 Automatic guns and are available in HPA and HTI configurations.

EXEL developed these guns to create a line that is lighter weight to allow increased productivity and reliability on automatic machines.

Key benefits of using the new generation of guns:

- A29 & A35 are lighter than existing guns
 - Increased productivity through faster movement
 - Both guns available in HTI & HPA technology
 - Higher transfer efficiencies are delivered
 - Better finish quality
 - HTI technology offers two aircaps – EP3 & E3 KHVLP
 - HPA technology offers the EN3L aircap for very wide patterns
 - Used with low & high viscosity materials
- For more information, please contact: EXEL North America, Inc. 800-573-5554, www.exel-na.com.

Graco introduces new Merkur™ high-performance spray packages for fine finish applications. These improved spray packages are designed to outlast and outperform

other packages in their class.

“The new features on these spray packages offer greater precision and increase efficiency to achieve consistent, uniform results,” says Graco’s Wendy Hartley, Finishing Marketing Manager. “For the first time, these packages are available with Data-Trak™, the market’s first integrated local monitoring system providing material tracking, system diagnostics and runaway control.”



Both the air motor and lower included in the spray packages are designed for optimal performance. The air motor features smooth and rapid changeovers, resulting in minimal pulsation, precision control and no stalling even at low input pressures; ultimately providing even, consistent finishes. Lowers have an easy-to-flush design that makes color changes quicker and minimizes the volume of solvents for cleaning, also reducing downtime and costs. Stainless steel pump construction provides long life and fewer replacement costs.

With more models and configurations to choose from, Graco’s new Merkur spray packages will meet the needs and required versatility of nearly every finishing spray application. The innovative engineering and design built into the new features ensure high performance and durability of the spray packages.

Graco’s applicators, pumps, packages and plural-component equipment provide finishing solutions for all types of wood, metal and plastic applications. For more information about the Merkur spray packages.

Please visit www.graco.com/merkurinfo, or call a Graco representative at 877-844-7226.



The production-proven, patented **Nordson** RA-20 and RA-20R rotary atomizers deliver painting efficiency and superior finishing quality and operating safety for a wide range of finishing applications. With no minimum sparking distance, they can be positioned close to parts for optimal coverage and min-

imal overspray. The fine atomization and soft spray apply thin, controllable film builds with minimal paint bounceback. With an internal powder supply (IPS), the RA-20R rotary atomizer features lightweight, flexible low-voltage cables that experience less wear in robotic applications, 800-524-1322, www.nordson.com/liquid.



WAGNER electrostatic guns have been developed especially for automated, efficient and economical electrostatic coating in industry. The GA2000EAC is an automatic electrostatic AirCoat gun for processing solvent-based paints. This gun has a detachable nozzle system that comes in both round spray and fan spray packages to match the spray jet to a particular application. The materials that can be processed include 1-K and 2-K solvent-based paints and primers as well as 1-K high solid paints and primers. The GA2000EAC is used in the wood industry, the railway industry, the furniture industry and the construction machinery industry.

The innovative diaphragm drive of the GA3000AC AirCoat automatic guns requires less than 0.3 seconds to open and close and achieves more than 200 switches per minute. With just the removal of four screws the gun body can be easily and quickly removed and replaced for easy maintenance. The AirCap can be rotated to spray vertically or horizontally. When rotated the AirCap hits a stop when turned clockwise or counter clockwise leaving it in the same (either a vertical or horizontal) position every time. Nearly all materials (primers, top coats, corrosion protection, clear coats, stains and textured paints) are processable in both water and solvent-based paints. Furthermore, Wagner has developed a special version for UV paints. ■

Editor's Note: Every effort was made to contact manufacturers and suppliers of liquid paint automatic spray guns for this article. If we missed you please feel free to send us your information, which can be included in our New Products section in a future issue. sandra.anderson@cfcma.com

Advancements in Cathodic Acrylic Electrocoat Technologies

By CULLEN MCDYRE

Acrylic polymers have been used in the electrocoat industry for many years, starting with anodic technologies that delivered low cost finishes with limited performance properties, and evolving into cathodic technologies that delivered respectable durability. However, the promise of cathodic acrylic technology – specifically a single coat finish that delivers full coverage and superior performance properties – has not been fully realized due to the gap in performance between primer / topcoat systems and a single coat finish. Recent advancements in acrylic resin technology as well as formulation technique have narrowed this gap considerably, and have increased the practical utility of this coating option. This presentation will explore these new technologies and formulating techniques, discuss the performance properties that are now attainable, and model the potential cost savings available to finishing operations that could switch to a single coat finish.

Cathodic acrylic electrocoats have typically been utilized in somewhat of a limited role. They are very capable for what they are used for, but handcuffed by performance requirements of other markets. Typical cathodic acrylic applications include:

- Lawn and garden
- Automotive wheels
- Off-road equipment
- Electrical enclosures
- Appliance

Cathodic acrylics have not been able to satisfy a one-coat application for both excellent weathering and corrosion properties. Weather-able cathodic acrylics have had poor corrosion performance and corrosion resistant systems have had only moderate weathering capabilities.

RESIN CHEMISTRY AND FORMULATING TECHNIQUES

This is not a paper about the manufacture of resin for the coatings industry. However, companies basic in resin technologies can benefit from their production experience. Resin synthesis is a long (and therefore expensive) process. Resin manufacturers are continually looking for process improvements to shorten cycle times. Cathodic acrylic electrocoat is no exception. Improved resin processing times lead to impressive savings for the

coatings manufacturer and (hopefully) the end user.

Once the resin hits the lab, the formulating team is continuously looking for ways to maximize the potential of the resin, and all raw materials. Stringent environmental regulations notwithstanding, the lab strives to produce a product that meets customer requirements at the lowest possible cost. Modest gains in the laboratory, though not ground breaking on their own, have a cumulative benefit effect that may be enough for some end users to reconsider the one-coat electrocoat option. As petroleum based commodities costs continue to skyrocket (with no predictable endpoint), the end user must ask himself more and more frequently where he can save on his finishing operation. Is all the performance you are paying for necessary? As you will see, very significant savings are possible if the performance abilities of cathodic acrylic electrocoat will suit your needs.

Formulators have at their disposal advanced resin systems and formulating techniques to deliver a coating that will set the bar higher for cathodic acrylic electrocoat performance expectations. Custom formulating will provide the end user with the proper combination of performance and cost to ensure the most robust and cost effective coating system for their application. Your supplier will be able to review your current operation and, if necessary, customize an electrocoat formula to maximize the potential of your system.

PRETREATMENT OPTIONS

It should be noted that advancements in pretreatment technologies are being widely touted. The actual benefits may vary, but improved corrosion resistance from the latest pretreatment offerings are another benefit to a one-coat electrocoat finish.

COST SAVINGS MODELS

Note: Numerous calculators exist for the coatings industry. These values have been calculated on several to provide accurate estimates. Your electrocoat supplier can provide your operation a custom cost savings analysis.

SCENARIO 1

An appliance manufacturer currently uses a cathodic epoxy electrocoat at a target film build of 0.6

mils. They then apply a hybrid powder at an additional 2.0 mils. Based on the performance requirements of the manufacturer and the performance capabilities of cathodic acrylic one-coat electrocoat, let's investigate the potential for cost savings of switching the operation to the one-coat acrylic at 1.0 mil. See Table 1. To keep things relatively simple, several of the inputs were held constant. See Table 2.

But these are not constant; let's investigate the following to recognize the potential savings.

Energy – We've already eliminated the cost of the powder cure, but cathodic acrylic technologies cure at a much lower temperature than before. A 25° F reduction in oven temperature would save an additional estimated \$28,142; a 60° F reduction would save \$67,542 (see Table 3). These savings may seem trivial when compared to the total operating budget, but they do become significant when you are trying to realize small percentage gains in the operating budget. Also, there are scenarios where the change in cure temperature is even greater which of course would yield a higher savings.

A 25°F reduction in oven temperature has negated one year's worth of waste treatment costs.

SCENARIO 2

An agricultural equipment manufacturer utilizes a cathodic epoxy electrocoat primer targeted at 0.8 mils. Then, they apply an additional 2.5 to 3.0 mils of TGIC powder. Using the same metrics from scenario 1, we can determine the cost per square foot of the current operation and estimated cost for switching to a one-coat cathodic acrylic electrocoat. This customer runs 3 shifts, 5 days per week and coats an additional 10,000,000 square feet per year. See Table 4.

Assumptions made for this model are included in Table 5.

Let's look at the additional savings opportunity of running lower cure cathodic acrylic. In this scenario, we can calculate a 25°F and a 60°F temperature reduction. See Table 6.

Several other opportunities for the manufacturer are available. They include:

- Increased throughput by increasing the line load (rack density).
- Increased line speed allowable by reduced cure acrylic

technology.

- Improved material efficiency of the acrylic versus the epoxy (shrink).
- Reduced cycle time.

ACTUAL CUSTOMER SAVINGS PROFILE:

A customer recently went from a two-coat (cathodic epoxy / powder) system to a one-coat cathodic acrylic system. Significant savings were realized in labor as the manufacturing process required parts be transferred (double handled) between the electrocoat and powder lines. Other savings included the cost of the powder and the operation of the powder oven. The powder oven is only required to be operational for part of one shift for small volume colors and rework of the standard color. The two remaining shifts do not require the use of the powder oven. Highlights of the annual savings are listed in Table 7.

This product was custom formulated to meet unique requirements of the customer. With minimal effort the customer was able to utilize a cathodic acrylic electrocoat as a one-coat finish with significant annual savings.

PERFORMANCE EXPECTATIONS

The gap between one-coat electrocoat and two-coat primer / topcoat is not only defined by performance (see Table 8), but also by cost. End users can drastically shorten that gap if a one-coat electrocoat will satisfy their performance requirements. Earlier, we considered the question relating cost to performance and how it relates to the requirements of the finishing operation. In today's global marketplace, perhaps a better way to ask the question is; "Are you giving away extra performance for free?"

CUSTOM FORMULATING

The supplier's ability to custom formulate the cathodic electrocoat to your specific performance needs is critical to optimizing your finishing dollar. Off the shelf technologies may work, but more often than not, some amount of customization is required to optimize your process. Very often this may eliminate or reduce certain costly raw materials, which will result in a more efficient, less costly coating. Some of the important characteristics of custom formulation include:

- Flexibility
- Impact
- Gloss
- Scratch / Mar resistance
- Throwpower

This list is not exhaustive, just inclusive of customization projects highlighted in recent history.

THE FUTURE OF CATHODIC ACRYLIC ELECTROCOAT

Significant improvements in base resin chemistry and innovative formulating techniques continue to narrow the gap between this technology and other high performance technologies. Enhanced corrosion resistance married with excellent weathering and the capability to produce a class A high gloss finish with excellent distinctness of image (DOI) will continue to open this technology to new markets. End users will continue to enjoy the flexibility of having multiple coating options. Suppliers' ability to custom formulate cathodic acrylic electrocoat to ideally suit the end user's needs make this platform a truly cost effective, value added coating solution. For example, with older cathodic acrylic technologies, intercoat adhesion issues meant the manufacturer could not use powder coating as a method for recoating repairs. For this reason, the manufacturer was limited to liquid topcoat, which is more costly and less environmentally friendly. Again, a custom formulated one-coat electrocoat gives the finishing manager another option for repair.

New advances in cathodic acrylic electrocoat technology give the end user more choices for savings than ever before. Resin chemistry advances and good formulating techniques have improved the performance of cathodic acrylic electrocoat tremendously. Consolidation of two finishing lines to one, and two technologies to one, offer a very dynamic potential savings matrix for manufacturers. Several metrics can be employed to estimate the potential cost savings involved in changing the current manufacturing process. Enhanced performance capabilities coupled with lower operating cost make cathodic acrylic electrocoat technologies worth serious reconsideration to the finishing manager. ■

Cullen McDyre is a member of the Valspar Electrocoat Group, Minneapolis, MN. He has six years of electrocoat experience including: formulating, customer service, and training.

Table 1: Annual Cost Summary (\$)

	Cathodic Epoxy Primer	Hybrid Powder	Total	Cathodic Acrylic
Pretreatment	89,000	0	89,000	89,000
Material Cost	315,789	875,800	1,191,589	1,052,632
Waste Treatment	27,060	0	27,060	27,060
Energy *	196,413	205,467	401,880	196,413
Labor	303,680	440,960	744,640	303,680
Other	188,500	163,892	352,392	188,500
Total Cost	1,120,642	1,686,119	2,806,561	1,857,285
Cost per square foot	0.0560	.0843	0.1403	0.0929
Potential Savings	-	-	-	(949,276)



Table 2: Input Constants

Annual square footage	20,000,000
Operating days per year	260
Operating hours per day	16
Pretreat type	Zinc Phosphate non-chrome seal
Pretreatment cost	Constant
Waste treatment cost	Constant
Employees and pay	Constant
Other - maintenance, etc.	Constant

Table 3: Lower Cure Oven Cost Savings Potential

Exhaust Rate (SCFM)	30,000	30,000
Change in oven temperature °F	25	60
Operating Hours per Day	16	16
Operating Days per Year	260	260
Gas Cost (\$/MBTU)	8.2	8.2
Savings (\$)	28,142	67,542

Table 4: Annual Cost Summary (\$)

	Cathodic Epoxy Primer	TGIC Powder	Total	Cathodic Acrylic
Pretreatment	133,800	0	133,800	133,800
Material Cost	631,579	1,970,700	2,602,279	1,578,947
Waste Treatment	40,590	0	40,590	40,590
Energy *	179,820	308,200	488,020	294,620
Labor	455,520	661,440	1,116,960	455,520
Other	135,505	160,544	296,049	181,021
Total Cost	1,576,814	3,100,884	4,677,698	2,684,498
Cost per square foot	.0526	0.1093	0.1620	0.0895
Potential Savings	-	-	-	(1,993,200)



Table 5: Input Constants

Annual square footage	30,000,000
Operating days per year	260
Operating hours per day	24
Pretreat type	Zinc Phosphate non-chrome seal
Pretreatment cost	Constant
Waste treatment cost	Constant
Employees and pay	Constant
Other - maintenance, etc.	Constant

Table 6: Lower Cure Oven Cost Savings Potential

Exhaust Rate (SCFM)	30,000	30,000
Change in oven temperature °F	25	60
Operating Hours per Day	24	24
Operating Days per Year	260	260
Gas Cost (\$/MBTU)	8.2	8.2
Savings (\$)	42,214	101,313



Table 7: Metric Savings

Labor	\$430,000
Powder	\$180,000
Energy (powder oven)	\$60,000
Total Annual Savings	\$670,000

Table 8: Comparison of Coating Performance and Appearance

Specification	Cat. Epoxy /Hybrid Powder	Cat. Epoxy /TGIC Powder	Cathodic Acrylic
Salt Spray - hours	1500+	1500+	≤ 750
Weathering	Poor	Excellent	Good
Chemical Resistance	Excellent	Very good	Good
Mechanical Properties	Excellent	Good	Very good
Gloss Range (60°)	5 - 90	20 - 95	10 - 90
Color Palette	Wide	Wide	Wide

June 16-17: SUR/FIN 2009 in Louisville, Kentucky.
www.nasf.org

June 16 - 18: MechatroniX, International Trade Fair for Progressive Product Development through Mechatronics, Exhibition Center Augsburg, Germany, Organizer: fairXperts GmbH.
www.mechatronix-expo.de

June 23-25: EuroLITE, International Trade Fair for Lightweight Design, Exhibition Center Salzburg, Austria, Organizer: H & K Messe GmbH & Co. KG, Messezentrum Salzburg.
www.euroLITE-expo.eu

July 15-16: Latin American Coatings Show 2009, World Trade Center, Mexico City.
www.latinamericancoatingsshow.com

September 13-15: Southern Metal Finishing Conference, Charleston, SC, info@southernmetalfinishing.com

September 19-22: CPCA 2009 Annual Convention is in Niagara Falls, www.cdnpaint.org

September 24-26: Woodworking Machinery & Supply Expo, International Centre, Toronto, ON, www.woodworkingexpo.ca

September 30-October 1: Coating East 2009 at Gaylord Opryland in Nashville, TN. The event will target Automotive, Appliance, Heat Sensitive Substrates (wood & plastic) and General Metals.
www.thecoatingshow.com

October 20 - 22: Parts2clean 2009, International Leading Trade Fair for Cleaning within the Production Process, Exhibition Center Stuttgart, Germany, Organizer: fairXperts GmbH, www.parts2clean.com. Running concurrently is Corosave, the international trade fair for corrosion protection, preservation and packaging.
www.corosave.de

October 29 - 30: TOSCAT Technical Symposium, Crowne Plaza Casino Hotel at Niagara Falls - Fallsview.
info@toscat.org

November 3 - 5: DriveIT, International Congress and Exhibition for Automotive Software and Electronics, Exhibition Center Stuttgart, Germany, Organizer: H & K Messe GmbH & Co. KG.
www.drive-it-expo.de

2010

April 13 - 16, 2010: PaintExpo, International Leading Trade Fair for Industrial Coating Technology, Exhibition Center Karlsruhe, Germany, Organizer: FairFair GmbH, www.paintexpo.de

April 12-15, 2010: American Coatings Show and Conference, Charlotte, NC, www.american-coatings-show.com

interested and offered their support of research and development into green technologies.

Wherrett explains that the Fumes to Fuel technology captures the VOCs using tiny poppy seed sized carbon beads, resulting in clean air exhaust. The VOCs are then released from the carbon beads and processed for use in the fuel cell. The fuel cell converts the VOCs into electricity.

"Electricity, once its generated, will go back into the plant grid," says Wherrett. "The energy generated by Fumes to Fuel will not cover all the OAC's needs, but it will certainly help."

Fumes to Fuel is an award winning technology, having received the US EPA Clean Air Excellence award, as well as recognition from the Society of Auto Engineers.

The patent application for Fumes to Fuel is held by three people: Wherrett, as well as Jeff White and Patrick Ryan. Wherrett is quick to say there was also a host of support people involved in the project.

When asked whether the company is going to install more systems within Ford, Wherrett says the com-

Ford **Oakville Fuel Cell System** 
Fluidized Bed Concentrator

Phase I:

Cleaned Air to Atmosphere

Adsorber

Desorber

Cleaned Air

Concentrated VOC Stream

Heat Source for Desorption (Typical)

Carrier Gas (Steam, Nitrogen)

Cooling Water IN

Cooling Water OUT

Air Inlet Blower

Diverted Process Gas from Booster Fan

Fumes-to-Fuel, Phase II
In phase II the VOCs are reformed and will be used to generate electricity with a fuel cell.

pany will install similar systems as opportunities present themselves and as need arises for the technology. "This is our third system and with each they are customized to suit the needs of the plant," says Wherrett.

Fumes-to-Fuel is part of a partnership story with Ford of Canada,

the Ontario Government and the Federal Government. Ford's \$1 billion investment in the Oakville Assembly Complex (which took place in 2004) is an example of how successful partnerships between business and government can encourage research and development in Canada. ■

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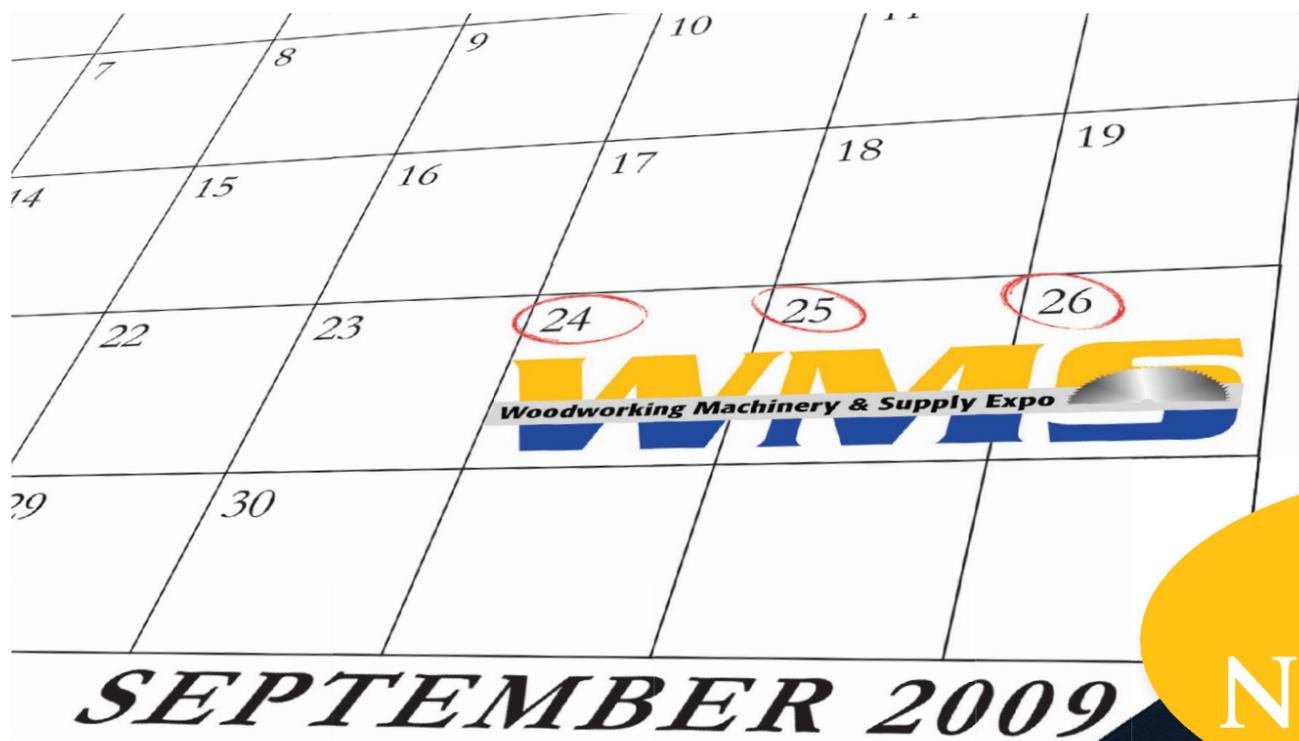


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Next Generation of Coating Solutions

Henkel's Bonderite® NT-1™ and NGC

- Bonderite® NT-1™ and NGC surface pretreatments are conventional powder and wet paint coatings, that can be applied by immersion or spray applications.
- Provides an ultra-thin coating, replacing iron and zinc phosphate, thereby reducing environmental impact and increasing corrosion resistance on painted metal surfaces.
- Specifically formulated for use on steel, zinc and aluminum surfaces.



Aquence™ 925G™ & 930™, TecTalis™, Bonderite® NT-1™ and NGC Coatings

The "smart" coating solution for the automotive industry

Henkel's Aquence™ 925G™

- Next generation coating provides all the performance advantages of autodeposited epoxy-acrylic urethane coatings
- A lighter color base for top coating with powder and liquid paints
- Applications include any ferrous metal part or structure requiring superior cyclic corrosion protection, thermal stability and good topcoat ability
- Lower topcoat paint consumption and better color control



Henkel's Aquence™ 930™

- Enhanced corrosion performance
- For vehicle frames and chassis components
- Has achieved 1000 hours of performance on Neutral Salt Spray (NSS) testing
- Performs similar to zinc phosphate pretreatment and traditional coatings on automotive OEM cyclic corrosion tests
- Epoxy-acrylic urethane coating has excellent thermal stability, topcoat ability and flexibility.

www.aquence930.com

Henkel's Bonderite® TecTalis™

Henkel developed TecTalis™, the automotive industry's first phosphate-free conversion coating. This new paint pretreatment option not only uses less energy, making it better for the environment, but lowers manufacturing costs and improves productivity by eliminating steps in the pretreatment process.

Henkel Corporation received a 2009 Automotive News PACE Award for its new conversion coating process, TecTalis.

- Operates at ambient temperatures
- Contains no regulated heavy metals
- Phosphate-free with no BODs or CODs
- Reduces operating costs

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