CFCM

CANADIAN FINISHING & COATINGS MANUFACTURING MAGAZINE

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A Great Finish is Only the Beginning

Michael Harrison, President
Yorke Towne Supplies Limited

Louie Forestieri
Multiflex Custom Cabinet & Millwork Solutions

Sam Cesario, Sales Representative
Yorke Towne Supplies Limited

"With the current trend having moved from laminate to paint, accurate and consistent colour matching is more important than ever. Usually, our jobs begin by meeting with interior designers and reviewing the colour palette they've selected for a project. From there, we begin collaborating with our Chemcraft Distributor.

Their colour team works alongside myself and my colour finisher to recommend the substrates, products and finishing techniques that will bring the designer's colour vision to life. Our reputation depends on accurate colour matching, and our Chemcraft Distributor provides the products and support that helps us deliver the results our customers expect. It's a great partnership."

Louie Forestieri
Multiflex Custom Cabinet & Millwork Solutions
Toronto, ON

Founded in 1977, Multiflex Custom Cabinet & Millwork Solutions provides high-quality custom crafted cabinetry and millwork to the corporate, hospitality, retail and high-end custom home markets. Their Chemcraft distributor is Yorke Towne Supplies Limited in Richmond Hill, Ontario.

Visit chemcraft.com to locate your nearest distributor.

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EDITOR
Theresa Rogers
416-201-1975
theresa.rogers@cfcm.ca

SENIOR EDITOR
Edward Mason
edward.mason@cfcm.ca

PUBLISHER, ACCOUNTING, CIRCULATION AND SALES
Pete Wilkinson
705-296-3030
Cell: 416-428-7838
Fax: 705-296-3031
pete.wilkinson@cfcm.ca

ASSOCIATE PUBLISHER & SALES
Gillian Thomas
416-277-1269
gillian.thomas@cfcm.ca

GRAPHIC DESIGN
Allan S. Bates
Green Apple Prepress
allan.s.bates@sympatico.ca

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Frequency **Illusion**

HAVE YOU EVER noticed that once you start to learn more about a topic, the more aware of it you become? It's called "Frequency Illusion" or the Baader-Meinhof effect.

Certainly, paint and coatings are ubiquitous in the world around us. They preserve, protect, and definitely make life more colorful. Even at the gym I find myself thinking of coatings when I look at the kettlebells which are colored according to weight, and then I notice the paint that constantly chips and flakes off, sticking to sweaty hands and making a mess on the floor. There must be a better, more hard-wearing solution for an item that takes abuse multiple times a day, I think. Perhaps one of you knows.

Since starting my job as Editor of CFCM, I've learned a lot about the paint and coatings industry and I know I've barely scratched the surface. (ha ha)

In this issue we've got stories on all of the above. New heavy duty powder coatings that offer increased protection and productivity for the equipment on which they are used. New powder spray equipment that will help make a superior finish easier to attain. New powder coating resins and curing technologies. And accompanying articles on stripping, mixing and dispersion equipment, as well as coating lab testing equipment.

If plating and anodizing is more your specialty, you can read about danglers, anodes and thickness testing.

If you're going to be at the Powder Coating 2019 Conference in Orlando or the CPCA Conference and AGM in Vancouver, please come and find me and Associate Publisher, Gillian. We look forward to meeting you and learning about your business!

And don't forget to follow us on Twitter @CFCMMag! We're here to be a forum for sharing within the industry and want to hear from you. Email, call, direct message – we'd love to hear your ideas, concerns and just chat about the industry!

Theresa Rogers
theresa.rogers@cfcm.ca

Quebec's Largest Woodworking Show Returns in 2020

Canada Woodworking East will be returning to Saint-Hyacinthe, QC, for its fourth edition on October 22-23, 2020.

As Canada's furniture-producing powerhouse, organizers says Quebec is the ideal location to host the show.

Back at the BMO Centre at Espace Saint-Hyacinthe, Canada Woodworking East will again welcome secondary woodworking industry professionals, including cabinet manufacturers, residential and commercial furniture manufacturers, architectural woodworkers, millworkers and custom wood product manufacturers. It is the only bilingual event of its kind in the region.

"We are proud to launch our 2020 edition with the support of Quebec's major machinery and hardware suppliers that have worked hand in hand with Canada Woodworking East to create Quebec's largest woodworking show," says Mike Neeb, Show Manager.

The event will include a seminar series, with expert speakers covering a variety of current issues in the woodworking industry, to help attendees build their knowledge and skillset.

New for 2020 will be an evening social event following the first day of the show, to celebrate the secondary woodworking industry.

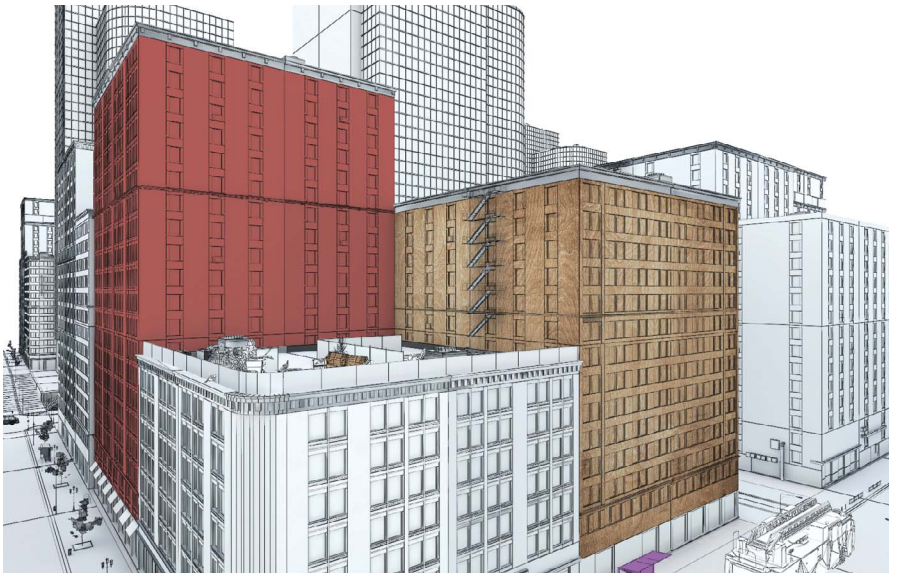
www.canadawoodworkingeast.ca

Building and Construction get a Coatings Sustainability Boost

Clariant announced it will contribute more sustainability, safety, and even brighten up the urban landscape through new solutions to the building and construction industry's challenges.

Clariant says its host of new coatings-related innovations for the segment's applications offer pigment paste producers, coatings formulators, and coatings users themselves, support for creating more sustainable, attractive city environments capable of handling rapid global urbanization. This could mean helping the bold paint of a gigantic construction vehicle to be made more efficiently and with less resource use, keeping brightly painted buildings looking great after just one coat, or enabling architects to safely bring the natural, sustainable merits of wood to inspiring new high-rises and concert halls.

Two solutions from Clariant get to the heart of the matter. With non-halogenated flame retardant Exolit 855, coatings manufacturers gain the opportunity to create truly transparent fire- and (in combination with a transparent top coat) water-resistant intumescent coatings for all kinds of



wood types, which allow the brilliance of both light and dark woods to shine through. Exolit 855 can be used in environments with strict flammability requirements, such as public buildings, buying critical evacuation time for occupants in the event of a fire. It is completely clear and easy to formulate and apply.

For retaining the appearance and quality of exterior woods over the long-term, new Hostavin 3315 DISP adds the benefit of sustainable, label-free UVA protection to waterborne clearcoats and paint systems. The UV absorber has excellent photo-permanence and also high resistance to migration which helps keep cladding or fencing, for example, in top condition whatever the weather.

To be launched at the European Coatings Show 2019, Clariant's new Dispersogen PLF 100 is an innovative low-foaming polymer dispersing agent that helps to improve efficiency for paste producers, even when using hard-to-disperse red pigment concentrates. Finished pastes have powerful color strength for "wow" factor bold facade paints that brighten up a city. Plus, its low-foaming qualities carry over to application too. Less microfoam is created during the painting process, rendering painted surfaces smoother. Moreover, the additive helps pigment pastes maintain their original viscosity levels while in storage for up to two years.

Sustainability benefits can be felt behind-the-scenes of construction sites too. Clariant's non-halogenated flame retardant Exolit AP 435 for water-based intumescent coatings for steel, ensures that such coatings maintain easy application even in cold environments and after long storage.

The same is true when it comes to ensuring safer and more effective fire protection of fully exposed steel constructions, like airports or cinemas, subject to high-humidity climates. New non-halogenated flame retardant Exolit AP 468

Univar Completes Acquisition of Nexeo Solutions, Creating Univar Solutions

Univar announced has completed the acquisition of Nexeo Solutions, creating a global chemical and ingredients solutions provider. The combined company will conduct business as Univar Solutions, reflecting a commitment to combining the "best of the best" from each legacy organization.

"Univar Solutions is uniquely positioned to drive growth and deliver significant value for shareholders, customers, suppliers and employees," says David Jukes, Univar Solutions President and CEO. "Together, we have the ability to redefine chemical and ingredients distribution, to deliver superior growth for our partners, people and shareholders."

Univar Solutions combines the scale, broad product portfolio, technical expertise, relationship know-how and specialized services of Univar with the extensive product knowledge, market expertise and scalable technology platform of Nexeo Solutions.

"Today is the beginning of an exciting journey, bringing together two great companies to create Univar Solutions, a company with the vision to redefine distribution and be the most valued chemical and ingredient distributor on the planet. Our new brand name reflects our commitment to combine the best qualities of each legacy company to create an innovative industry leader," says Jukes. "Together, we will be a committed ally for our wide range of customers and suppliers, with the broad array of capabilities and deep know-how to help their businesses run smoothly, and the expertise to help them anticipate, navigate and leverage meaningful growth opportunities."

Univar Solutions will provide customers with easy access to a broad selection of products from leading suppliers. Through a growing portfolio of value-added services, Univar Solutions will go beyond distribution to help accelerate innovation and efficiency in operations. Backed by industry-leading digital tools and a global network of 17 "Solution Centres", the company will help create novel formulations and recipes that distinguish brands in the marketplace.

www.univarsolutions.com

(TP) for intumescent solvent-based coatings used in demanding conditions reduces the possibility for the coating's fire resistance performance to be affected by the formation of water-related blisters.

Clariant says its next-generation pigments not only pack a punch in terms of high color brilliance, they can simplify the process of co-dispersing even further in a high speed dissolver making bead milling potentially obsolete. This improves eco-efficiency and flexibility when creating, for example, intense opaque yellow shades for mass volume paints. Production time is cut by 85%, energy consumption reduced by up to 90%, significantly less polluted wastewater is created, less cleaning is required, and a potential of 30% in cost savings is feasible.

Achim Hennemann, Segment Manager Coatings, Flame Retardants, Clariant says: "While the impact of every innovation for building and construction-related applications is not always apparent at the consumer level, providing our coatings industry customers with easy-to-use ingredients that boost efficiency, lower resource use and enable them to introduce more environmentally-compatible, effective and safer products, benefits everyone in the long-term creation of more sustainable, beautiful cities."

www.clariant.com/ecs

Nouryon to Invest in New U.S. Plant for Expandable Microspheres

Nouryon (formerly AkzoNobel Specialty Chemicals) has selected a location in the U.S. for a new polymerization plant for its Expancel expandable microspheres. The project will significantly strengthen the company's leadership position in expandable microspheres, which are used to make customers' end products such as coatings, lighter and reduce costs.

Advanced engineering is underway and long delivery item procurement has started. The project is scheduled for completion in late 2020, subject to final board approval.

"This investment is an important step to meet the fast-growing demand for this product," says Sylvia Winkel Pettersson, Director Expancel at Nouryon. "The planned facility will enable us to better serve our customers in the U.S. and globally."

Expancel microspheres are used as a lightweight filler and a blowing agent to make end products lighter, obtain different surface effects, and reduce costs by requiring less raw material. "It is a versatile product used in a multitude of applications and markets," Winkel Pettersson says. "It offers benefits such as lower density and better insulation – some of the key applications include automotive and construction."

Nouryon is the leading producer of expandable microspheres worldwide. The planned U.S. investment follows a recently completed capacity increase at Sundsvall, Sweden, scheduled to be fully online in the second quarter.

"These projects reflect Nouryon's commitment to be a trusted partner for our customers, who rely on us to support the growth of their business," says Niek Stapel, Managing Director Pulp and Performance Chemicals. "We will take our growth ambitions to the next level by making strategic investments with attractive returns tailored to the needs of our customers."

www.nouryon.com

Buckman Introduces New Paint/ Coatings Distributor in Canada

Buckman, a global company specializing in innovative chemical and smart solutions, announced a new business association with Canadian-based EMCO-Inortech to distribute its paint and coatings products in Canada.

EMCO-Inortech is a leading Canadian full line specialty chemical distributor and a regional leader in CASE (coatings, adhesives, sealants and elastomers). Their headquarters is located in Terrebonne, QC, with regional associates and warehousing throughout Canada.

"We believe this new relationship will continue our focus on serving our customers' specific needs using excellent technical and service support," says Ron Anger, Buckman's Manager of Performance Chemicals for North America. "We appreciate and value our Canadian customers and believe this change will further our commitment to provide quality products and an excellent customer experience."

www.buckman.com www.emcochem.com

Azelis Strengthens its Presence in Canada Through the Acquisition of Chemroy

Azelis, distributor of specialty chemicals and food ingredients, has acquired Chemroy, a Canadian distributor of specialty chemicals and food ingredients.

The transaction sees Azelis acquire 100 percent of Chemroy Canada Holdings Inc. Chemroy was founded in 1967 and has 59 employees. Headquartered in Brampton, ON, Chemroy offers warehousing across
Canada and has further offices in Laval, QC and Vancouver, BC.

Commenting on the announcement, Frank Bergonzi, CEO and President Azelis Americas, says: "This transaction is an important milestone for Azelis in the Americas. Chemroy is a leading distributor of specialty chemicals and food ingredients in Canada, with an excellent reputation. We share similar values and culture, and this combination will ensure a more robust product portfolio to our customers."

Hans Joachim Müller, Group CEO Azelis, adds: "With the acquisition of Chemroy, we establish a strong footprint in Canada. This is an excellent strategic fit and we are excited by the opportunity for further growth, in both Canada and the US. Chemroy's activities in the food and nutraceutical markets will allow us to expand this segment, by leveraging our relationships with global partners."

John Graham, President at Chemroy, concludes: "We are confident in the success of this acquisition, which is an exciting opportunity for our employees to join forces with an established global player in Azelis. We share similar strategies and culture and I am confident that Chemroy will continue to thrive under its new ownership."

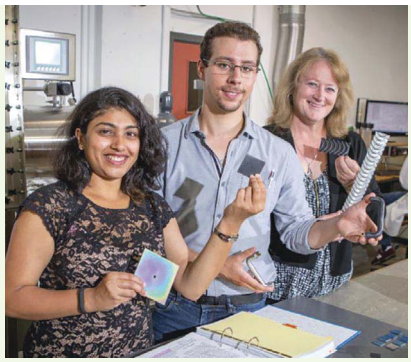
The acquisition of Chemroy illustrates the support provided by EQT since the initial acquisition of Azelis. EQT is confident that the expanded range of services and global reach provided by this acquisition will continue to bring benefits to customers and principals of the combined group.
www.azelis.com

Axalta Opens its Largest Refinish Training Centre in India

In February, Axalta opened its largest and most advanced Refinish Training Centre, spread over 20,000 square-feet in India. The training facility was inaugurated by Mr. Sobers Sethi, President, Emerging Markets, Axalta. Axalta now has four dedicated training facilities in India.

"The opening of this new training facility today demonstrates the confidence we have in the opportunities for growth in India," says Sethi. "The coatings industry, especially waterborne coatings, in India has been growing at a rapid pace. The new refinish training facility will provide our customers with the most advanced painting techniques to help them be more efficient, productive, and profitable. And, we are helping our customers drive these improvements while being mindful of the environment with

Shape-changing Molecule Holds Key to Anti-bacterial Coating



L to R: University of Canterbury PhD students Rukmini Gorthy and Johann Land and research lead Mechanical and Materials Engineering Professor Susan Krumdieck are co-authors on a paper about a new anti-microbial coating breakthrough.

A New Zeeland research team at the University of Canterbury is another step closer to developing germ-proof surface coatings for environments such as hospitals, after an unexpected development in the lab.

Once commercially available, an anti-microbial coating applied to high-traffic surfaces, such as door handles, will help minimise infections that spread within hospitals.

Research lead UC Professor Susan Krumdieck had been working with titanium oxide (TiO_2), a well-known ceramic compound, for over a decade when the element suddenly changed form.

"TiO_2 is famously bright white or transparent, but one day the coating came out all black," she says.

"We set it aside because we really didn't know what had happened. But then some undergraduate project students tested it for the self-cleaning performance, and it was so photocatalytically active without any UV radiation that we knew we had discovered something new."

TiO_2 is used in sunscreens because it has the ability to absorb radiation. This action creates energy, which is expressed as oxygen ions and oxygen ions are deadly to bacteria. TiO_2 is therefore ideal for use on surfaces such as door handles in environments where sterility is a priority, such as hospitals.

Professor Krumdieck pioneered the innovative coating technology during her PhD at the University of Colorado in Boulder, United States, and continued her research in New Zealand at UC, winning a Marsden Fund grant to explore pulsed-pressure vacuum processing, which had not been used before in research or in industry. This was followed by a competitive funding grant with colleague Professor Mark Jermy to collaborate with a top university in Taiwan.

However, Professor Krumdieck and her team of 14 interdisciplinary UC researchers still had two challenges to overcome – how to fix a TiO_2 coating onto something like a door handle, and how to activate it without UV radiation. The new black TiO_2 held the key to both. Research collaborator Tim Kimmett at Callaghan Innovation helped to solve the puzzle.

"We spent a fun science day playing with the scanning electron microscope and x-ray diffractometer and really marvelling at how different this material was. We knew had had a new material due to the strange nanostructures we were seeing, and of course the striking black color," Professor Krumdieck says.

A few months later Professor Krumdieck was awarded a visiting researcher fellowship at Université Grenoble Alpes in France and took a few of the black coating samples with her. Researchers at the SiMAP Institute were intrigued that the material could be the same as white TiO_2 according to analysis, but instead of the typical smooth pyramid crystals of TiO_2, the French team, led by Professor Raphaël Boichot, found that the crystals were nanostructured in ways previously only possible by hydrothermal growth of individual nanoparticles.

With no need for radiation to energize the new form of TiO_2 and an altered nanostructure that enables the compound to be fixed in coatings, the conditions are right for the multi-disciplinary team to move ahead to developing commercial applications.

The UC researchers have successfully deposited the black coating onto a door handle, and are now working with several companies to complete the engineering development science needed for designing and upscaling for advanced manufacture. Interested international companies are watching progress and hoping the black TiO_2 will soon be warding off germs on hospital bed rails and door handles around the world. www.canterbury.ac.nz

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Phone: (905) 405-6288

Axalta India Refinish Training Centre

sustainable techniques and products. Our customers' success is our success and we are proud to be the Refinish leader in India and around the world."

Axalta expects to train approximately 1,000 technicians at the new center this year. Customers will use the company's latest coating technologies, as well as industry-leading training techniques and advanced digital tools. Axalta will also demonstrate what it calls the most advanced spraying application systems that use less energy and reduce waste, have fast-drying finishes, and use superior color matching technologies. Through this center, customers in India can stay on the cutting-edge of coating technologies and techniques that are designed to deliver benefits to their businesses immediately and for the long-term.

The training center is also equipped with an advanced Virtual Reality (VR) Training Room, digital color matching tool, and an online training facility for customers that cannot be physically present. The VR training duplicates the paint spraying activity and experience and enables customers to gain the benefits of the training without actually using the paint material.

"Axalta is committed to consistently investing in enhancing our capabilities, facilities, and training to help customers grow their businesses," says Vinay Rajadhyaksha, Managing Director, Axalta India. "We are excited about our new training capabilities in the region. This new facility creates a significant opportunity for us to be closer to our customers and support their success in a way that is truly unique in our industry. The training opportunities offered at the centre combined with our leading products and technologies, such as our waterborne coatings including Cromax Pro and Standoblue, position Axalta well to grow in India and serve our customers at the highest levels."

In addition to this new training facility, Axalta has three other training centers in India, one manufacturing plant, a color lab, and two offices.

www.axalta.com

DCC LANSCO Expands its Organic Manufacturing Capacity

DCC LANSCO, a manufacturer and supplier of colored pigments, is installing a new production line for the manufacture of organic pigments in order to meet increasing market demand for DCC LANSCO's products, which will increase capacity by more than 50 percent.

DCC LANSCO's Benzimidazolone, Metal Salt Azo and Hansa yellow pigments, have been further developed to better meet the increased technical demands of the coatings and plastics markets. These products have been engineered for

excellence in performance and creating additional value in use for the customer, the company says.

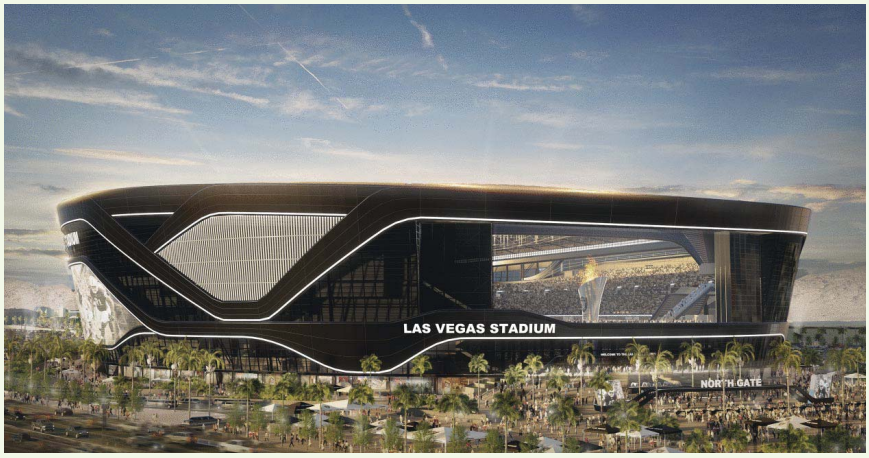
DCC LANSCO says the expansion will be completed by summer 2019.

Chemetall Receives Airbus Award for Fifth Consecutive Year

Chemetall receives Airbus SQIP award for the fifth consecutive year.
Photo Credit: C. Sadonnet/ Airbus S.A.S.

The Surface Treatment global business unit of BASF's Coatings division, operating under the Chemetall brand, has again been awarded the highest supplier award in the Airbus Supply Chain & Quality Improvement Program called SQIP. For the fifth consecutive year, Chemetall achieved the "Accredited Supplier" status.
The award acknowledges Chemetall's sustained performance, strong continuous improvement and customer-oriented approach in line with Airbus targets and expectations. Chemetall supplies Airbus with high-quality Naftoseal aircraft sealants and Ardrox corrosion protection products which meet the stringent requirements of the international aerospace industry. "This is a great honor to receive this award for the fifth consecutive year, and it makes us extremely proud.
It reflects our trustful cooperation with Airbus, and acknowledges the passion and dedication of the entire Chemetall team to support the Airbus growth strategy," says Hendrik Becker, Chemetall's Global Aerospace Manager. Airbus says the aim of its program is to advance the major strategic Airbus suppliers toward the goal of industrial excellence with regard to product quality and delivery reliability. Every year, the performance of each participating supplier is reviewed and either confirmed or – in case of non-conformity with the requested quality standards – downgraded or even rejected.
www.basf-coatings.com

PPG Announces Paint Partnership With NFL's Raiders



PPG has reached a multiyear, corporate marketing agreement with the team currently known as the Oakland Raiders. The agreement will make PPG paint brands the official paint of the NFL's Las Vegas Raiders.

"PPG is excited to grow our relationship with the Raiders organization and their loyal fan base, which includes a number of do-it-yourself consumers and paint professionals," says Bryan Iams, PPG Vice President, Corporate and Government Affairs. "PPG's paints and coatings will help provide an exceptional experience for countless fans and will beautify the Raiders stadium for years to come."

In conjunction with the marketing agreement, protective and decorative coatings from PPG's industrial, refinish, protective and marine, and architectural coatings businesses will be featured in the new, state-of-the-art Raiders stadium in Las Vegas, expected to be completed in 2020.

"We are honored that PPG has extended its commitment to the Raiders organization as we work toward building a new stadium that embodies the spirit and excitement of Las Vegas," says Tom Blanda, Raiders Senior Vice President, Stadium Development and Operations. "PPG's expertise and ability to provide coatings that offer long-term protection with striking aesthetics made them an ideal partner for this project."

www.ppg.com

Calendar of Industry Events

April 1-4, 2019: Powder Coating 2019 conference and tabletop exhibition. Renaissance Orlando, Seaworld, Orlando, FL
www.powdercoating.org

April 8-10, 2019: American Coatings Association Coatings Tech Conference, at the Westin Cleveland Downtown Hotel, Cleveland, OH
www.paint.org

May 22-23, 2019: CPCA Annual Conference and AGM, at the Sutton Place Hotel, Vancouver, BC
www.canpaint.com

June 3-5, 2019: Sur/Fin 2019, Rosemont, IL
www.nasfsurfin.com

June 19-20, 2019: Biobased Coatings Europe 2019, Dusseldorf, Germany
www.wplgroup.com/aci/event/biobased-coatings-europe

October 1-3, 2019: AAC Aluminum Anodizers Council Conference, at the Houston Royal Sonesta in Houston, TX
www.anodizing.org

October 2-3, 2019: Canada Woodworking West, at Tradex, Abbotsford, BC
www.canadawoodworkingwest.ca

October 31-November 2, 2019: WMS Woodworking Machinery & Supply Conference and Expo, at the International Centre, Mississauga, ON
www.woodworkingnetwork.com

November 11-14, 2019: Fabtech 2019, in Chicago, IL
www.fabtechexpo.com

November 13, 2019: Canadian Association for Surface Finishing Conference
www.casf.ca

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With the acquisition of Chemroy, we proudly take our place as the #1 Canadian distributor of specialty chemicals and food ingredients.

Azelis Canada has been a market leader, founded on technical and marketing excellence in the Personal Care, Pharmaceutical, CASE, and Essential Chemicals segments. We are pleased to build on that foundation by adding the products, capabilities and expertise of Chemroy; including our three application labs (CASE, Pharma and Food). We will now be able to provide more solutions and product selection for our customers in the CASE, Food, Pharma, Lubes, and Nutraceutical industries.

Put the expanded power of Azelis Canada to work for you.

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Issues Management

More VOC Reductions in Architectural Coatings?

The federal government is considering further VOC emissions reductions from architectural coatings regulations that were introduced in 2009. It should be noted that the federal government's own assessment of how the coatings industry has done since 2009 passed with flying colors! It showed that the coatings industry reduced VOC emissions by 42 kilotonnes in that time, the equivalent of taking 380,000 average-size cars of the road. That said, the current VOC limits are strict, and were based on California VOC regulations, even though Canada has a very different climate and presents unique challenges for coatings products. VOC concentration limits for products such as paints, stains, varnishes, lacquers and other types of coatings applied to a wide variety of stationary structures in residential, commercial, institutional and industrial settings. The regulations also include timelines regarding manufacture and import, sale and offer for sale of coatings. These regulations apply to manufacturers, importers and sellers of architectural coatings, as well as to users of traffic marking coatings. As such, increasing those VOC limits may be difficult to achieve in Canada and in certain product categories. If increased there, it will impact many paint companies manufacturing or importing products into Canada

As part of the ongoing work to reduce VOC emissions and improve the effectiveness of architectural coatings regulations, the federal government wants to identify potential additional emission reductions that could be achieved as well as evaluate the costs associated with such potential improvements. A consulting group has been engaged to do the following: 1) collect a wide range of data on the Canadian paint and coating industry such as revenues generated, import and export volumes, value, company size and location, etc. 2) compare Canada's alignment on VOC concentrations in architectural coatings with other North American jurisdictions, market concentration, SME involvement, variables that might impact production, markets and competitiveness, etc. and, 3) provide estimations of VOC emissions and cost-benefit analysis including unit cost production, reformulation and importation costs, annualized cost to reduce VOCs, etc.

This study will be an important undertaking that will impact all companies doing business in the coatings industry, both manufacturing and suppliers/distributors. As such, there must be a concerted effort to ensure this is done based on the reality of the situation and most importantly to ensure it does not negatively impact Canada's competitiveness and that there is alignment with our largest trading partner, the United States.

Decision Delayed on Hazard Classification for TiO_2

CPCA has been working in concert with American Coatings Association (ACA), several EU-based national paint associations and other World Coatings Association members, to communicate to EU officials its concerns on broader trade implications, especially in view of the fact that TiO_2 is scheduled for chemical assessment in Canada in 2020 under the Chemicals Management Plan (CMP). Further, it is critical for the industry given that 60 percent of the global production of TiO_2 is used in paint and coatings. CPCA was pleased to have the support of the Canadian government representatives at the WTO Technical Barriers to Trade Committee on this issue. For the first time, efforts to advance regulations under REACH (Registration, Evaluation and Authorization of Chemicals) have been held up by EU member states. A serious and responsible debate took place on the sense and purpose of this classification following more than 500 submissions raising concerns and pointing out the fact that the Classification, Labeling and Packaging Regulation or CLP, is not the right mechanism to address TiO_2. EU officials have scheduled a meeting for March to consider further options. If no qualified majority is reached and no official action emerges, then a new European Commission will be convened in the fall. Industry groups have long emphasized the nature of any potential hazard for paint (poorly soluble, low toxicity, occupational dust exposure) and a host of consequences associated with formulated products, where no exposure or risk is evident.

New Initiatives on Microplastics in Paint

The latest development on initiatives related to microplastics, including in paint, was sparked by the recent EU study related to microplastics in various consumer and commercial products. A recent EU regulatory proposal narrowed the focus of intentionally added microplastic restrictions seeking to eliminate "polymer" use or associated pollution coming from consumer and professional

products. This was based on a definition of "microplastic" that is wide, covering small, typically microscopic (less than 5mm), synthetic polymer particles that resist (bio)degradation. It will be important for industry to follow this new investigation of microplastics and ensure sufficient data is provided for government to arrive at credible decisions, which will not negatively impact the paint and coatings sector.

Biocides in Paint: Post-Market Pesticide Re-Evaluation

PMRA's (Pest Management Regulatory Agency) review based on recent consultations, which included CPCA, summarized important stakeholder comments. CPCA's interest was to seek program improvements for the re-evaluation of biocides used as in-can and film preservation for paint. Phase 2 of this consultation will end in April with proposed recommendations, which will be of significant importance to manufacturers and suppliers of critical biocide ingredients for the paint and coatings industry. This will include new insight on engagement, prioritization, assessment and use of an alternative model regarding surveillance, socio-economic impacts, etc. PMRA will continue to gather information and develop recommendations en route to the improvement of a sustainable post-market review program, one that CPCA hopes will be efficient and streamlined from an industry perspective.

World Coatings Council: Global Reach

The WCC currently represents four paint associations in the Americas (including CPCA); four associations in the EU with one of those (CEPE) representing 28 EU states; and six associations in the Africa/Asia/Pacific/Australia, one of which is the Asian Paint Industry Council (APIC) representing all Asian countries for paint and coatings, including Australia. The WCC represents all members to address and monitor key international issues such as: biocides, microplastics, mica mining and other global supply chain issues, classification of TiO_2, lead, endocrine disruptors, antifouling coatings, and other UN priorities; to promote product stewardship and environmental responsibility; to provide technical expertise; and, to develop policies and formal positions for the coatings industry. WCC has formal standing at key international organizations to represent the interests of the global coatings industry, such as the UN, OECD, SAICM, IMO, etc. This new name is to reflect the rapid pace of change, which can impact industry innovation and corporate responses to the increasing social and environmental challenges of our times. The WCC will continue to feature data obtained from surveys of leading companies and subject matter experts around the world. The WCC

also supports the five-year Global Market Analysis completed and updated by Chemquest and hosts the bi-annual Coatings Summit featuring the top corporate leaders in the industry.

New Substances Risk Assessment Summaries

New risk chemical risk assessment summaries were recently made available and are now being reviewed by CPCA and its respective technical committees. Once that review is complete, CPCA may submit comments based on any feedback provided by members in the industry. CPCA will help address any data gaps or discrepancies that might exist to further inform future government actions. In an effort to increase the transparency of the program and, as mentioned in the follow-up report to the Standing Committee on the Canadian Environmental Protection Act, ECCC and Health Canada are publishing summaries of new substances risk assessment reports. They include the most complete notifications for chemicals and polymers to date. Members can access those on the CoatingsHUB as well as any work or further consultation being done by CPCA.

Alternatives Assessment for Chemicals

The federal government is now exploring opportunities to renew and modernize the CMP regarding informed substitutions and alternatives assessment. Recent post-2020 CMP stakeholder consultations as well as Parliamentary review of CEPA 1999 have identified "informed substitution" and "alternatives assessment" as priority areas for consideration in future chemicals management policy development. The goal of informed substitution is "to minimize the likelihood of unintended consequences, which can result from a precautionary shift away from a hazardous chemical without fully understanding the profile of potential alternatives, and to enable a course of action based on the best information that is available or can be estimated."

Meanwhile, alternatives assessment is defined as a "process for identifying and comparing potential chemical and non-chemical alternatives that could replace chemicals of concern on the basis of their hazards, performance, and economic viability." Recent policy and program research for the European Union and Canada on international substitution and alternatives assessment efforts identified five key themes to guide government actions. Based on this research, Canada's new vision for "Beyond 2020" would not just focus on assessing and managing "bad actors" but also encouraging and facilitating the development, adoption, and "use of chemicals and chemical products that are safer and more sustainable and promoting the goals of green chemistry." ■

NEW HEAVY DUTY COATINGS SOLUTIONS OFFER INCREASED

Protection and Productivity

PPG Envirocron Extreme Protection Edge coatings use a patent-pending, advanced powder coating technology that delivers edge corrosion protection in one coat. They're specially formulated to cover sharp edges created during metal fabrication.

FOR ALL KINDS OF APPLICATIONS that involve building, growing and moving, the heavy duty equipment and trucks that perform these duties can take some real punishment.

Coatings-maker Hempel, says its customers demand excellent color consistency and a durable finish that will meet even the most demanding performance specifications for longer product lifetimes and lower maintenance costs.

"These products are formulated to be able to service a wide range of colors required by OEMs while maintaining performance, high gloss and robust application," says Michael Bredfeldt, Head of Industrial Group Product Management at Hempel.

Hempel supplies coatings for almost any type of manufactured product – from heavy duty equipment and heavy duty trucks to general consumer products and specialized machinery. The company will also work with customers to design solutions fit right to the product or production environment.

"Hempel has the unique ability to tailor-make products from resin development to finished goods that offer greater value to customers linking product and process requirements serviced locally and rapidly," says Bredfeldt.

The company recently launched two new coating solutions for heavy duty equipment and trucks called Hempaprime Shield 700 HS and Hempatop Finish 850 HS. The company says when used together they improve productivity and quality for original equipment manufacturers (OEMs) by reducing production times and maximizing service life. The combination delivers long-term corrosion resistance and color and gloss retention.

Specifically designed to optimize production, Hempaprime Shield 700 HS is a high-solids epoxy primer that delivers long-term corrosion resistance in the harshest environments. It exhibits adhesion to ferrous metals and substrates, is fast drying and has short minimum overcoat

intervals without compromising the high-volume solids content. The coating provides improved crack and wrinkle resistance even at a high dry film thickness (DFT) and dries to a smooth finish without the need for sanding.

Hempatop Finish 850 HS is a durable topcoat designed to be applied in conjunction with the Hempaprime Shield 700 HS primer. It delivers exceptional color and gloss retention with excellent resistance to chemicals for a consistent, long lasting, high-quality look. An environmentally friendly coating with high solids content, low VOC, HAPs free, tin free, and it is ready to spray from the container without thinning. Easy to apply using standard spray equipment, Hempatop Finish 850 HS is touch-dry in just two hours and can be recoated after three without sanding, and also has an extended pot life.

When used together in wet-on-wet applications, this coating system dries rapidly and results in a strong, durable and high-performance finish. Hempaprime Shield 700 HS is the ideal primer for use with Hempatop Finish 850 HS for OEMs, including heavy duty equipment such as forklifts, excavators, harvesters, earth moving equipment, as well as trucks, trailers, commercial vehicles and military tanks.

Both coatings are now available in North America.

Brand new from PPG are the Envirocron Extreme Protection Edge powder coatings for corrosion protection. PPG says this is a first-of-its-kind technology offering one-coat edge protection for metal parts subjected to extreme environments.

The Envirocron coatings use a patent-pending, advanced powder coatings technology that delivers edge corrosion protection in one coat. Specially formulated to cover sharp edges created during metal fabrication, PPG says the technology provides coverage that "far surpasses standard one-coat and two-coat powder systems."

"PPG Envirocron Extreme Protection Edge powder coatings mark a significant technical advancement in edge coverage, offering applicators a competitive advantage in protecting the most vulnerable areas of metal exposed to corrosive conditions," PPG says. "The direct-to-metal coatings are fully reclaimable and deliver significant savings in material, labor, utilities, and time."

These powder coatings require no primer, and applicators do not need to modify their existing coatings lines or add equipment to use this new solution. Applicators also can save capital costs by avoiding the need to finish edges with mechanical edge rounding or blasting equipment. Longer term, PPG says the new coatings have the potential

The Vitracoat single layer system offers corrosion resistance and UV protection.

to reduce warranty claims and improve resale value by extending the product lifecycle.

"Combining uniform edge coverage and exceptional corrosion protection in a primerless, one-coat system is a challenge that coatings manufacturers have been facing for many years," says Shelley Verdun, PPG Global Product Manager, Powder Coatings. "PPG Envirocron Extreme Protection Edge powder coatings are the first one-coat product to successfully unite these characteristics, offering customers a range of benefits and benchmark performance that cannot be replicated by any other coating on the market."

PPG is hoping its Envirocron Extreme Protection Edge powder coatings add industry-changing performance to the company's existing polyester powder coatings technology, which it says has provided decades of field-proven environmental and corrosion resistance. The new coatings are available in a full range of standard and custom-matched colors, including mica and metallics, and can be applied using manual and automatic powder coating systems.

For years, Vitracoat says, a dual-coat system has been the answer to achieving both high corrosion-resistance and exceptional UV protection. The dual coat system consists of a primer designed to provide corrosion protection, and a top-coat polyester system to extend UV protection for color stability and gloss retention. Although this is a great combination, it can be a very costly option that also slows productivity. So, what if you could combine both properties into one film, the company asks?

Vitracoat says though this seemed to be impossible, the

PPG's Envirocron Extreme Protection Edge direct-to-metal coatings are fully reclaimable and deliver savings in material, labor, utilities, and time.

company invested many lab hours over the past few years and has achieved a one-coat system that performs like a two-layer powder coat system. The Vitracoat SDCR (super durable corrosion resistance) technology, launched last year, has the ability to achieve exceptional corrosion resistance and outstanding UV protection in one step.

This new SDCR technology has the properties built into a one-layer system that provides the excellent adhesion characteristics and edge protection needed for enhanced corrosion-resistance. Additionally, it allows users to reach outdoor durability that can exceed AAMA 2604 weathering performance.

"We have seen this one-step process when applied over an excellent, chemically pretreated surface go more than 3,000 hours in salt spray," says Steve Houston, Director of Sales and Marketing. "With a mechanical pretreatment in conjunction with a chemical conversion coating, we have seen salt spray results even higher."

Houston says this is one example of finding a market need and building a solution around that need. He encourages leaders in the powder coatings marketplace to continue to strive to create innovative ideas that build and expand the use of powder coatings.

It's an ever-changing market with lots of opportunity, the companies agree.

"Heavy Duty OEMs are constantly reviewing improvements in the coatings available," says Bredfeldt. "Hempel has an ongoing R&D program to develop the next generation of coatings to address the changing needs of the market including environmental, productivity, high performance, and total cost solutions." ■

Powder Spray Equipment MAKES STRIDES

An OptiSpray unit from Gema.

SPRAYING WITH POWDER is a well-established technology today, but one that still presents challenges. All powders tend to "bridge" in narrow passageways, creating blockages and interfering with the spray-flow.

Equipment designers therefore have to ensure that airflow is sufficient, and sufficiently regulated, to keep spray systems clear. They also need to use materials in their spray systems that do not wear easily, so that they create snags for powder to be caught within.

Spray system suppliers have therefore increasingly concentrated on producing digitally controlled equipment that can be relied on to operate snag-free over extended periods of time, and that also offers the possibility of quick changeovers. They have also been designing multi-outlet designs that can put powder into awkward corners on unusually configured parts.

Gema's OptiSpray system has been on the market for around four years, and is combined with an OptiCenter feed station. Jeff Hale, Gema USA's Director of Marketing, says this combination offers efficient powder management.

"We have integrated the pump and the hopper into a system that automatically cleans the powder path," he says. "We also offer a smaller version for people who want to upgrade incrementally."

Powder in the OptiSpray is stored in the main fluidizing hopper. The system features automated purging, and cleaning, Hale says, is very easy and quiet. Large models of OptiSpray feature a sealed hopper, allowing automatic purging.

"The pump is an innovation in the dense phase powder delivery process," Hale adds. "It uses the airflow to pull and push the powder through. You have air to pull, and air to push.

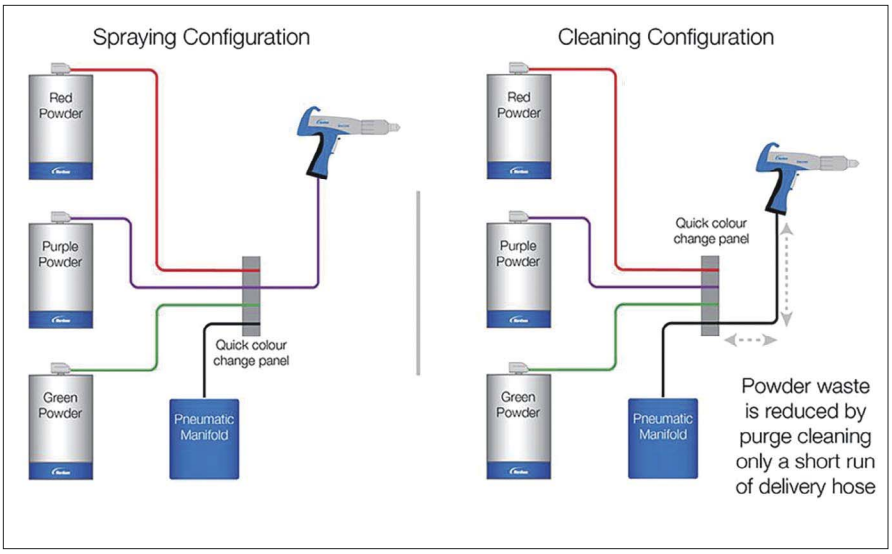
"You just have to cycle the pinch-valves, and flow-through occurs in one-third of a second. If needed, the pump can be right next to the hopper."

Locating the pump here offers an unusual degree of flexibility for production line layout. The system does automated purging, and cleaning is very easy and quiet.

SAMES-KREMLIN has one of the broadest ranges of powder spray equipment, according to Canadian Vice-President S.T. Rajan. This includes the Auto Mach-Jet sprayer, which is designed for powder coating in general industry applications.

Rajan says it combines high application performance, easy cleaning and simplicity, to allow an increase in productivity, and faster, more efficient color changes. There are various versions, including a robotic one, the Auto Mach-Jet-R/RD.

This is a robotic, electrostatic unit with single (model R) or dual head guns (model RD) for the coating of all kind



The schematic plan for the Howard Marten quick-change system.

of surfaces. It allows automation of the powder-coating process, enabling industrial companies to obtain the benefits of robotics with higher transfer efficiency and a Class-A finish.

The company's Eurotec AG 400 automatic electrostatic powder coating gun ensures, Rajan says, a perfect penetration to areas of complex shaped parts with exceptional first pass efficiency. The system uses a high electrostatic charge to do this.

And the Inobell powder bell sprayer is a further option, featuring a rotating electrostatic powder bell sprayer. This provides a high transfer rate, as well as easy maintenance and integration into a production line.

Gema has also focused a lot of on its quick-change systems for powder. The latest version of this reportedly occupies very little floor space.

"It also encourages users to go with a fixed applicator system, leading to better coverage and greater efficiencies," Rajan says. "Wherever possible, we recommend customers to go with our patented powder bell systems, which offer better coverage, more uniform in their finish, and are very transfer efficient."

For the future, he sees opportunities with the company's auto gun positioning systems, which maintains optimum gun to part distances. This feature helps customers to paint various shapes with ease, he says.

Nordson Industrial Coating Systems' ColorMax 3 is a fast color-change powder coating booth that the company says improves quality, reduces downtime and maximizes production. The booth floor is made of durable Apogee composite material, and is automatically purge-cleaned, which results in no powder accumulation inside the booth.

The booth's air-intake design creates a soft downdraft airflow, for high powder application efficiency and reliable overspray containment. It offers the possibility of changing colors in as little as five minutes.

It features quick-clean, twin cyclones with direct operator access, and a powder feed center, plus an ATEX-certified cartridge after-filter that provides the containment airflow within the booth.

There is minimal powder in process at all times due to the transfer efficiency, while the AirWash system continuously transports over sprayed powder from the patented Apogee booth floor, safely and quickly recycling it back to the powder feed container. There is unrestricted operator access around the product for manual touch-up.

Among other powder spray options, Nordson also offers its Encore HD automatic powder spray gun, which it describes as the third, and most advanced, generation of its dense-phase powder spray guns. Nordson HDLV (for High Density Low Velocity) technology used on the guns delivers a high concentration of powder, but uses very little air. There is easy adjustment of the powder concentration and spray velocity to achieve optimum coating coverage and cured finish quality for every conceivable part type.

The company says that highly uniform powder spray patterns can go from a highly dense-phase spray to a more diluted powder and air mixture, or anywhere in between these extremes. The Encore HD also has the ability to increase or decrease spray velocity when required. A wide range of nozzles is offered to meet any application need, including commonality with the full Encore gun family.

Howard Marten Fluid Technologies, which has exclusive distribution rights for Nordson in Canada, was recently involved in creating a plug-and-spray panel system to be used with a manual set, ideally with multiple hoppers in a "hopper farm". According to Chris Shistowski, Technical Sales Representative with the company's Applied Fluids and Coatings Group, this fits with his company's core philosophy.

"The bottom line is, Howard Marten Fluid Technologies' main objective is for manufacturers to increase production and save money on many different levels," he says.

Each outlet on the panel will have a dedicated color going back to the hopper farm, ready to fill, charge and coat the substrate.

"Once operators are trained by Howard Marten's technical sales representatives, they will be able to improve the dexterity and efficiency of the way they perform this change," Shistowski says. "But the principles will remain the same. You remove the feed hose from one color on

Nordson Encore HD automatic powder spray gun.

the panel, and then insert that feed hose into the purge port on the panel."

The next step is to purge the hose by activating a pneumatic button. The operator then puts the feed hose back in desired color on the panel that he wants to change, along with the atomizing lines.

"Now you are off and spraying a new color, all in less than 30 seconds," Shistowski adds. "I have recorded myself at Nordson, performing this procedure with a timer. Time saved is upwards of 60 percent, and just as impressive, we can save up to 70 percent of powder waste."

The system is now available through Howard Marten.

Wagner's line includes a range of cup guns for powder spray coating. The PEM X-1 CG unit uses a simple, plug-in principle for the cup, and features paint-change times of approximately 15 seconds.

The unit has a funnel beaker with special geometry to make it more flexible in actual use, and the different slope angles ensure constant flow even with difficult powder types. Each gun has an integrated Venturi feeding system.

The gun offers, Wagner says, a very fine and constantly homogeneous dosage dispensing of the powder. Coating parameters are set via the control module, and all such parameters are saved and accessed via a fully electronic control module.

The company also has a range of central systems for

Auto Mach-Jet sprayer from SAMES KREMLIN.

higher throughput situations. The PXE system, Wagner says, provides complete control of all the different components in one central unit: powder center, moving devices, application, booth and filter. It is supplied as either a standard version, or as a modular powder center version with an integrated vibrating and fluidizing unit to feed directly from the powder box.

A seven-inch, all-in-one color touch display allows the whole system to be operated from one central control unit. The system can supply up to 22 guns from the fluidized hopper, or 20 guns directly from the box. The related PXS system can control the whole coating system, as the entire system control is already integrated in the switch cabinet and is operating via the central touchscreen. The compact design enables a space-saving and ergonomic integration into the individual working environment of the customer. The PXS is recommended for challenging coating tasks with various demands.

It offers a fresh powder supply directly from the powder box or a BigBag; vibration and fluidization of the powder for ideal powder preparation; and a change of collector nozzles in only five seconds. An optional ultrasound sieve reduces the entry of dirt, and there is automatic optimization of color change processes as well as integrated powder consumption documentation.

Parker Ionics' powder coating spray guns use the company's proprietary Pulse Power system. Its GX series, such as the manual model GX 132, use a version called Super Pulse Power, a high voltage/low current charging method that minimizes free ions. Handling has been improved ergonomically by adoption of a lightweight design and an easy-to-hold gun grip.

Negative charge is standard in these units, but positive charge is also available. The model GX121C can be fitted with a cup-type powder coating hopper attached to the end of the gun barrel, to accommodate small batch spray tests.

In all powder coating operations, an element of skill is still needed, even on automatic lines, where alignment needs to be carefully planned. But with the range of spraying systems available today, the most awkward part designs can be powder-coated successfully, and superior finish quality is increasingly easier to attain. ■

Stripping Essentials:
EASIER, FASTER and LESS TOXIC

Pyro-Strip with Bridge Crane and Wash Booth.

HAVING A SMOOTH, clean surface is key to successful industrial finishing. In 2019, options that are less harsh and friendlier to the environment are essential to business as shops continually strive to meet and exceed ever-increasing regulation.

One new option comes from Distribution J. Des Serres Inc., which has launched what it calls "an innovative, safer alternative to conventional paint strippers." The product, New Generation Stripper, by Super Remover, is a methylene chloride-free formulation the company says exceeds upcoming standards.

Products containing methylene chloride have gradually been taken off retail shelves in the U.S. and Canada, in response to pressure tactics directed toward distributors. Products containing methylene chloride have been banned in the European Union since 2012.

Until now, methylene chloride was viewed as the most effective chemical in the production of paint removers. Previous alternatives failed to deliver comparable results, the company says.

Even though methylene chloride-based paint strippers have never been recalled by Health Canada or linked to any Canadian deaths, Sébastien Plourde, President of Distribution at J. Des Serres Inc. says he wanted to find a safer product formulation.

"In 2018, we partnered with the Toxics Use Reduction Institute (TURI) at the University of Massachusetts Lowell, which developed a new, safer paint stripper without methylene chloride. Even Health Canada refers to this state-of-the-art research facility when establishing its latest standards for safer chemicals," says Plourde. "I am extremely proud to say that never in 70 years has an alternative to methylene chloride been as effective as it is now."

Distribution J. Des Serres Inc. committed to replacing its regular product line with New Generation Stripper, by Super Remover, by March 31, and will stop all manufacturing of products that are part of the category Benchmark 1 of Green Screen Chemical Hazard Assessment.

Duane Fudge, Senior Director Product, Portfolio &


Pyro-Strip with Tilt Loader

Applications at Chemetall, agrees huge changes are taking place in the industry as various chemicals are regulated or phased out.

"Paint stripping is arguably an area that has seen the most pressure on health and safety," he says. "I am pleased to say that methylene chloride is virtually completely phased out, but now we see pressure to reduce VOC and HAPS (hazardous air pollutants), something Chemetall is very focused on. Developing programs that provide multi-metal compatibility, worker safety and reduced temperatures, while maintaining value is the fundamental goal."

Fudge says reducing HAPS levels while providing long-term solution life is the focus of Chemetall's new developments.

"Paint stripping programs must remove the coatings completely and quickly, without damage to the substrates," he says. "This requires innovative formulations that perform consistently, but also hold up long term in the process, reducing waste and lost production time."

Chemetall's pretreatment customers, Fudge says, benefit from advanced surface treatment programs developed to lock paint to the substrate, providing both adhesion and long-term corrosion resistance. Stripping these coatings requires premium chemistries and robust offerings that not only conform to the strict environmental compliance concerns, but also provide long-term performance. This is the fundamental goal of a sustainable paint stripping program.

Naysayers may still ask whether it's possible to balance environmental concerns with a busy, profitable shop and the answer is yes, now more than ever. Production facilities will always be challenged with the need to balance environmental cautiousness with productivity. In addition to stripping defects, racks and fixtures require routine stripping. Manufacturers can either use outside contract services, facing delays, high costs and the requirement of duplicates sets of racks, or move the stripping program in-house. To be effective in-house, the paint stripping process must be dependable, strip in a reasonable amount of time, and be cost-effective, in addition to being safe and compliant. This requires robust programs that can tolerate high volumes of paint solids in the tanks, and still continue to provide performance.

"Filtration and maintenance helps, but a well-formulated product is a must," Fudge adds. "Value is achieved by the ability to strip more parts faster, with extended tank life."

Tom Grier, CEO of Atlanta, GA-based Paint and Plastic Stripping Solutions, agents for Amiberica fluidized beds, couldn't agree more. He says his customers' biggest issues are the speed of the stripping process, a quick cycle time and little to no post-clean.

Customers need to clean their fixtures on a fairly quick basis, especially for powder coating, and are looking for cycle times that are the shortest they can be. Grier says the burnoff, or pyrolysis ovens, typically take four to six hours to perform their job.

"We take about 40 minutes to process paint hooks… and our process washes the ash off, so it's ash-free."

The technology is called the Pyro-Strip fluidized bed cleaning system. It allows more frequent fixture changes per work shift and greatly increases the efficiency of the painting or powder coating system. The process also strips reject parts, castings, and assemblies from shelving to shopping carts. The energy efficiency of the process is due to the absorption of the thermal energy given off by the combustion of the organic matter or coating that further heats the media as the product is being stripped or cleaned.

J. Des Serres' new paint stripper.

The parts or product to be stripped can be steel, iron or bronze, as well as some aluminum. The parts are loaded into a basket that is then hoisted into the fluidized bed where the fluidized hot media (quartz sand or aluminum oxide) scrubs and gasifies the organic material, vaporizing it without damaging or warping the work pieces. The cleaning cycle takes from 20 to 60 minutes at a temperature of 800 to 850 F. The time cycle is regulated by the mass of the load and amount of organic material to be removed. The basket of cleaned parts is lifted out of the fluidized bed to cool. The work pieces in most cases may be ready to use on the line with little or no post-cleaning. The bubbling action of the media removes most loose ash coating from the surface.

It's a niche market, Grier says, with one other company in Georgia and one in Europe, using this method, but one he feels will catch on because of its environmental-friendliness, quicker cycle time and no post-cleaning.

Grier also touts the programmable logic controls (PLC), which he says "allows us to basically give you precise temperature and take very short steps to get from one part of the process to the other and load the baskets more efficiently." A tilt loader efficiently and quickly loads baskets with a small shop footprint to house the machine, again lowering cycle times.

A secondary afterburner burns the smoke a second time. "If the first pass is 80 percent efficient, the afterburner is 90 percent efficient with the 20 percent that's left," Grier says, "so after two passes you're down to almost zero emissions."

In the final stage of the process, ash and particulate matter is processed out of the exhaust stream using a cyclone. The air goes through the cyclone and the particles drop to the bottom into a collector drum which can then be thrown into the industrial trash dumpster.

Grier says after 20 years, he's seen it all. "We're talking about cleaning paint hooks so it's not something that is all that sexy but with powder coating it's extremely necessary… the more you clean your paint hooks, the fewer problems you have with the process." ■

Powder Coatings Cover the Tough Jobs

Powder coatings enhance the lifespan of exterior parts on agri-equipment such as this John Deere combine harvester.

POWDER COATING'S SUCCESS as a protective process has led to major broadening of the original portfolio of usable materials. Different resins have come into the picture, as have different formulations that can handle new colors and effects. Polyesters, the mainstay of powder coatings, now include polymers with extended properties, to withstand greater wear, abrasion, or exposure to the elements.

One key growth area has been UV-cured powders. The process, introduced about a decade ago, can be used on a wide number of substrates, and is not restricted just to metals.

A key advantage is that UV-cured powders offer very durable coatings. This capability, in turn, facilitates innovative designs and finishing possibilities.

An example of a material often used with UV-cured powders is medium-density fiberboard (MDF). MDF is easy to machine, durable and is employed for a variety of products that include point-of-purchase displays and fixtures, and office furniture.

Numerous plastics can be finished with UV-cured powder coatings. However, the process does require pretreatment, to make an electrostatically conductive surface. To assure adhesion, corona treatment may also be required.

Keyland Polymer Material sciences has been working on plasma treatments to treat powder coating materials, A paper recently released by the company, co-authored by President Michael Knoblauch with Kevin Otto and Johnny Torres, states the, "use of plasma technology on plastic and composite carbon substrates enables these heat-sensitive materials to be successfully coated with ultraviolet (UV) curable powder coatings. Plasma treatment of a part raises its surface energy and removes contaminants."

The increase in surface energy enhances the level of surface wetting, which correlates to improved coating adhesion. There are various conditions and processing variables that can be manipulated to increase the effectiveness of plasma treatment of a material surface. "Development and use of plastics and composites as replacements for metals to achieve weight reductions, fuel savings, product strength, and design objectives are new and exciting opportunities for the coatings market," says Knoblauch.

Plastics and composite materials are difficult to finish due to their low surface energy, surface contamination, and heat sensitivity, he notes. Using plasma treatment, it is possible to prepare and clean plastic and composite materials, and make them ready for finishing.

"The increase in surface energy from plasma treatment

improves the measure of adhesion and assures the effectiveness of an applied coating," Knoblauch adds. "The results of the study demonstrate that heat sensitive substrates like plastics and composites can be prepared with plasma treatment and successfully coated with UV cured powder without degrading or deforming the integrity of the substrate."

Arkema Coating Resins has specialized in powder for UV curing. The company notes that many of its customers have switched to powder coating for exterior products that need to withstand heavy-duty conditions, particularly in architectural applications.

If there is one area where UV-responsive powders still need to develop, the company adds, it is in crosslinking technology. Triglycidyl isocyanurate (TGIC) has been used since the 1970s as a crosslinker, and there is some concern that it can be toxic if ingested – though not once it is bonded to the polymeric material. But substances that presented fewer potential hazards in the powder production plant would be welcomed by the industry.

Allnex is another supplier that offers a full range of curable powders, including polyesters (including unsaturated polyesters), biodegradable polyanhydrides, and acrylics. It is a significant producer of UV and electron beam (EB) energy-cured coating resins.

Its main product line, however, is its Crylcoat polyester-based materials. These include, the company says, carboxyl and hydroxyl functional resins for hybrid, TGIC, glycidylester, hydroxy alkyl amide, urethane, and glycoluril powder coating systems.

For UV-curable systems, it offers an increasingly broad product ranges, including its Uvecoat unsaturated resins. UV-cured resins are increasingly important, Allnex asserts, as some worthwhile materials are sensitive to heat, and UV curing offers a means to avoid such problems.

"Allnex has products that can be used in low temperature thermoset coatings as well as UV powder coatings," the company says. "These technologies offer cost savings during application by using less energy, and they are the most environmentally friendly coatings on the market. They also expand the reach of powder into temperature-sensitive substrates such as wood, plastic, and paper." The UV portfolio has low-temperature cure offerings across three product lines: Crylcoat polyester resins for thermoset powder coatings, the Uvecoat resins for UV powder coat-

ings, and Additol catalyst masterbatches that can be used to lower the cure time and temperature of thermoset powder coatings.

Sherwin-Williams is one of the companies that has made a significant push into architectural powder coatings. It is also promoting a line of TGIC-free powder for this field. The company says this leads to better transfer efficiencies as well as improved edge and corner coating.

Its regular polyester-TGIC based gloss powder coatings include a wide array of colors, and feature many RAL hues and shades. They hold the Qualicoat Class 1 Certification, the company states, which assures aluminum building specifiers and architects that they are specifying a high quality product that offers long-term value and consistent quality.

Qualicoat testing includes a plant audit where the powder coatings are produced, as well as a stringent battery of tests that include weathering, gloss retention, wet and dry adhesion, acidified corrosion resistance, thickness and impact analysis.

Sherwin-Williams also offers its Powdura 5000 product for architectural coatings. This is formulated using fluoropolymer resin technology and solar reflective pigments.

Fluoropolymer resins are a key component in architectural coatings due to their outstanding UV resistance, and the combination of fluoropolymer resin and solar reflective ceramic pigments defends against solar UV radiation. This enhances thermal stability to combat wear and tear of the coatings, and to prevent costly repairs.

The company has also recently been promoting its Powdura One-Cure for applications where there is a need for increased edge coverage and corrosion resistance. while applying a primer and topcoat with one single cure cycle. Primer and topcoat can use different chemistries, which can cross-link and co-react to form a tight inter coat adhesion bond. This type of technology, Sherwin-Williams says, is especially interesting to coaters of heavy-duty equipment or infrastructure components.

This can be particularly relevant in coating parts that use heavy gauge steel, which takes a relatively long time to achieve the required metal temperature for cure. The lower this curing temperature can be driven, the faster parts can be processed, and the less energy is required to achieve full cure.

Erie Powder Coatings has also made a strong investment in the architectural coatings field.

"For the exterior applications such as siding and windows, the powders used need to have top notch weatherability, along with adhesion," the company says. "For the interior applications such as for I-beams and basement jacks, corrosion resistance and powder adhesion are prime considerations."

Relevant applications, the company adds, can include manufacturing metal doors, aluminum windows, metal siding, and other more structural items such as I-beams, basement jacks, and roof-truss hardware. Such variety of end-uses places a broad range of requirements on the coatings chosen, and of course, architect specifications have to be adhered to closely in terms of color and finish.

Agricultural and construction equipment can pose similar kinds of requirements, having lots of surface area, and usually require durability.

"For the most part, these types of equipment tend to be complicated and expensive and are often used in locations that are very tough on the coatings," Erie states. "Machines and equipment that work in farmers' fields, in rock quarries, or for use in construction will demand every bit of durability that can be had from a coating."

For this reason, coatings sold into this sector are prized for their durability. Their ability to adhere to the metal surface, and their exterior lightfastness, are extremely important.

Most of the time, fully exterior polyesters with excellent adhesion and flexibility are the most used types of powders. Additionally, superdurable polyesters are commonly employed for their outstanding weather resistance.

TCI Powder Coatings also has a major investment in the architectural and construction field. The company describes powders as offering "a greener alternative than other surface finishes, and provide enhanced durability to architectural applications. TCI offers several product series that include a wide array of powder finishes and hundreds of colors are available in a range of gloss and cure responses appropriate for the technology."

The company asserts that all its products have excellent edge coverage, provide superior mar resistance, cure at temperatures of 400 F and below, do not require a primer, and have extremely long-lasting life cycles.

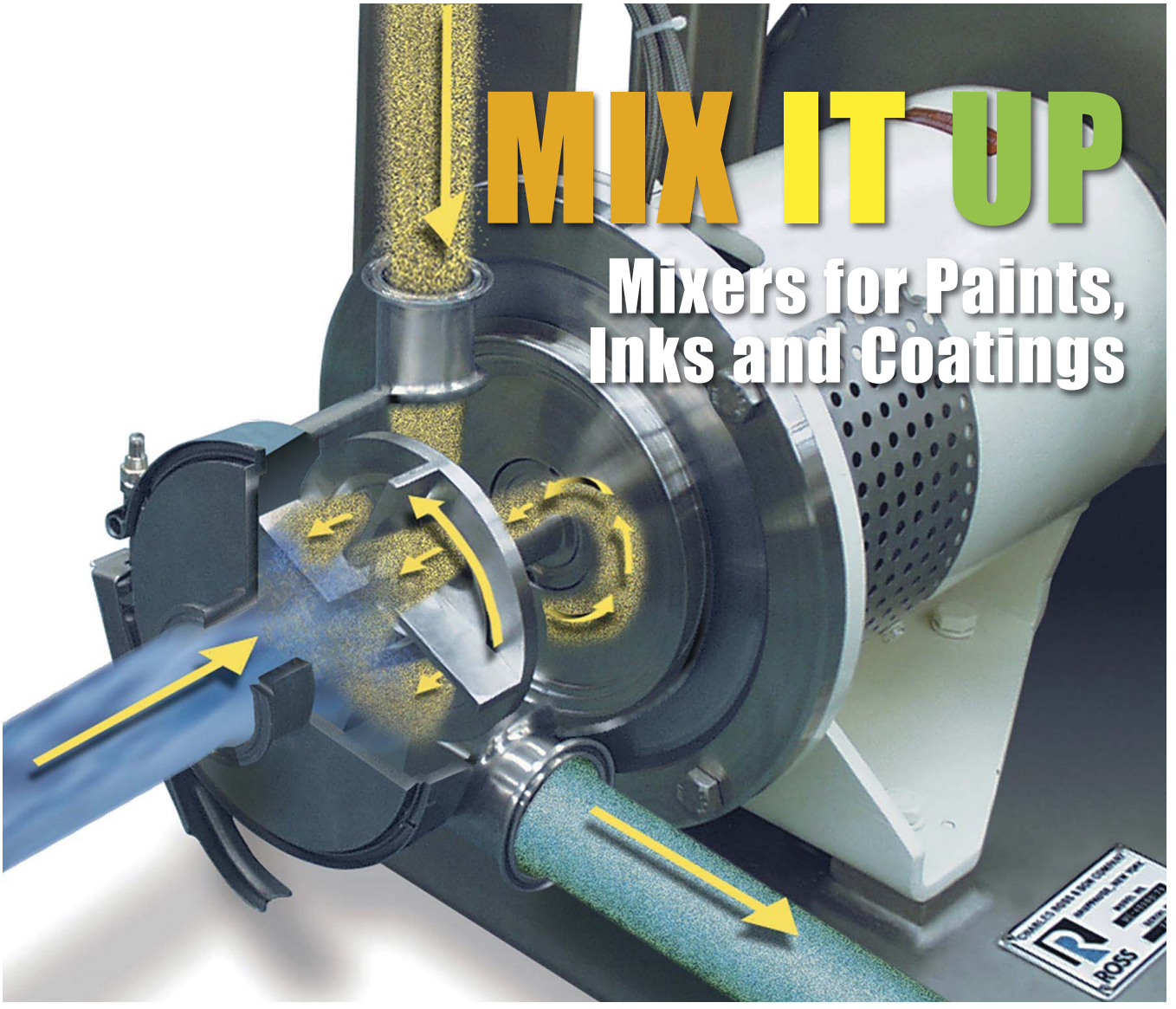
"Additional benefits include LEED credits, application efficiency of 95 percent or higher, and very competitive applied costs," TCI says.

The automotive sector is still a developing one for powder, but TCI lists a wide range of auto parts that can be powder-coated. The list includes bumpers, engine and valve covers, speaker covers, decorative stripping, running boards and frame componentry.

Powder cannot cover all the bases, and there will always be applications where liquid paint still has advantages over powdered, colored resins. But increasingly, as the curing technology improves along with the chemistry of the resins, powder claims an ever-growing proportion of the toucher protective jobs in stressful uses. If the heady growth of powder in previous decades has slowed a little, the variety of end-uses it has entered recently shows it still has potential for an ever-greater market share. ■

MIX IT UP

Mixers for Paints, Inks and Coatings



Ross High Speed Powder Induction with SLIM technology

IN THE PAST FEW DECADES, regulatory requirements have prompted the coatings industry to refine conventional low-solid, solvent-based formulations and develop more waterborne systems, high-solids coatings, energy-curable inks, and other low-VOC technologies. Along with this important environmentally responsible shift, the changing needs of modern businesses and consumers ushered in exciting developments in formulation and functionalities.

Now, says Charles Ross & Son Co., which offers individual or systematic mixing, blending, drying and dispersion equipment, faced with a growing demand for specialty and high value-added coatings, manufacturers are taking a closer look at their processing methods, particularly the mixing and milling steps. Coatings producers are striving in earnest to improve performance and compliance while managing costs.

In a paper for UL, a global independent safety science company, Charles Ross & Son says infused with thermochromic, fluorescent, color-shifting, rust-inhibiting or other novel properties, many modern paints, inks and coatings contain unique combinations of innovative raw materials. But fundamentally, they remain formulations that rely on good mixing. The degree of mixing and dispersion affects a variety of characteristics, such as: color, gloss, conductivity, stability, adhesion properties, curing rate, and weatherability.

It makes good business sense to optimize your operation's mixing procedures. Even traditional products and well-established processes can benefit from a strategic reassessment of the mixing operation. Manufacturers employ various dispersion tools in the production of

paints, inks and coatings and some of these technologies are relatively new solutions to age-old processing issues. Mixer selection is based on a number of factors including viscosity profile, shear requirement, order of addition and throughput.

High Speed Dispersers

The High Speed Disperser, also sometimes called a High Speed Dissolver, is a standard workhorse in the coatings industries. An economical and relatively simple piece of mixing equipment, its primary purpose is to incorporate powders into liquid and break down loose agglomerates to produce an acceptable level of dispersion prior to milling.

Running at tip speeds up to around 5,000 ft/min, the open disc blade of the High Speed Disperser creates vigorous turbulent flow within a low viscosity batch. It also generates a characteristic vortex into which dry ingredients can be added for quick wet-out. As the batch thickens or increases in volume, blade speed is adjusted to maintain the vortex and rate of material turnover.

While many manufacturers still rely on High Speed Dispersers for pre-mix operations, a good number have started to integrate more powerful mixers that go beyond simple powder wet-out. The rationale behind this is if a pre-mixer is able to disperse agglomerates as close as possible to the desired specifications – in other words, mimic the early stages of milling – it can reduce the number of passes through the mill and even allow the use of smaller grinding media for milling finer solids.

High Shear Mixers

These are rotor/stator agitators used for more challenging solid-liquid dispersions and emulsions which High Speed Dispersers cannot adequately process. This type of mixing device typically features a four-blade rotor turning at high speeds within a stationary stator. As the blades rotate, materials are continuously drawn into the mixing head and expelled at high velocity through the openings of the stator. The resulting hydraulic shear promotes fast homogenization, deagglomeration and emulsification. Typical rotor tip speeds are between 3,000 and 4,000 ft/min. High Shear Mixers are available in both batch and inline (continuous) designs.

Ultra-High Shear Mixers

Some new rotor/stator technologies now enable coatings manufacturers to wet out powders while also accomplishing some level of grinding and deagglomeration right in the same mixing vessel.

The Ross PreMax Ultra-High Shear Mixer is a top-entering batch mixer equipped with the patented "Delta" rotor/stator (US Patent No. 6,000,840). Supplied with a wear-resistant Stellite bushing, the rotor turns at tip speeds up to 5,000 ft/min and is uniquely contoured for high pumping capacity.

Steelcraft's disperser with Rota-Pin Hydraulic Lift lets you process between multiple tanks effortlessly.

Product is expelled radially through the stator slots at high velocity while new material is continuously being drawn from above and below the mix chamber. This generates upper and lower vortexes allowing for extremely efficient powder additions and rapid turnover rates.

The PreMax is typically used as a standalone unit and does not require supplemental agitation for products up to 50,000 cP. For more viscous products, it can be used in combination with an anchor sweep or other type of low-speed agitator.

Steelcraft also offers engineered shear mixing and dispersion units. The company has recently centralized its operations for supplying mixing systems, process vessels and storage tanks in Stratford, ON.

Darcy Vanneste is Strategic Business Development Manager, at Steelcraft's Engineered Products Division. He says customers' biggest issues are improving production efficiency while improving worker safety.

The company's new Tank Top Disperser with Rota-Pin Hydraulic Lift lets operators process between multiple tanks effortlessly. It allows convenient adjustment of the blade height in the batch while mixing. Surface fluid velocities and the resulting vortex are dramatically improved for rapid powder incorporation, increasing product yield and quality while reducing cycle time. Custom engineered mechanical and control solutions are available to maximize plant throughput.

For floor mount dispersion systems which pivot between multiple mixing tanks, Vanneste says a large number of coatings manufacturers are relying on operators to manually "pull" their disperser to rotate it to the desired mixing station. "[The new system] allows the user to automatically rotate the mixing head between tank locations without any direct contact," he adds. "This greatly reduces the chances of operator injury as well as prevents product contamination."

Multi-Shaft Mixers

Equipped with two or more independently-driven agitators working in tandem, Ross Multi-Shaft Mixers are

robust systems that deliver both high shear agitation and laminar bulk flow within a wide viscosity range: from water-like to several hundred thousand centipoise.

The simplest design is the Dual-Shaft Mixer which features a low-speed anchor and a high-speed saw-tooth disperser blade. The wings of the anchor agitator usually include adjustable scrapers for wiping the vessel bottom and sidewalls. This allows for tighter temperature control in addition to enhanced product turnover.

Another typical configuration is the Triple-Shaft Mixer which includes an additional rotor/stator assembly. This configuration is popular for formulations wherein the final particle size distribution is critical. As discussed earlier, using a saw-tooth blade to incorporate powders into liquid results in acceptable levels of dispersion, but applying a more shear-intensive mechanism such as rotor/stator mixing typically results in a finer and more uniform particle size distribution.

Planetary Mixers

Specialty paints, inks and coatings that undergo very high viscosity peaks (above 1 million cP) are better prepared in Planetary or Double Planetary Mixers. These machines feature two or more blades which rotate on their respective axes while revolving around the mix vessel. In other words, all agitators continually advance into the batch and contact fresh product all the time.

Combining slow-speed planetary agitation with an orbiting high speed disperser, the Ross PowerMix Planetary Disperser quickly incorporates powder additions into a thick liquid base. Each agitator is independently controlled so flow patterns and shear rates are easily fine-tuned with every change in batch rheology. Since the disperser is constantly moving through product, the PowerMix is able to deliver shear to high viscosity materials with minimal heat build-up.

When it comes to paint and coatings, being able to provide custom-engineered solutions to solve specific client challenges goes a long way in helping both customer and supplier succeed, something both Ross and Steelcraft pride themselves on. "Being able to listen to customer needs allows us to be a true partner, while control of the project from design through manufacturing yields an optimal production system," Vanneste says. ■

With files from Charles Ross & Son Co.

New Lab Equipment Maintains Standards

PRODUCTION OF PAINTS AND COATINGS calls for rigorous testing standards in the plant. Batch testing, regular sampling and, occasionally, finding out how an established process went rogue one afternoon, are essential steps for any company looking to stay in business.

Both the durability and appearance of coatings are key areas to examine. Fischer Technology Inc., for example, has strongly promoted its Fischerscope ST 200 systems for scratch-testing coatings that go on hard substrates. According to Marketing Coordinator Susan Lofgren, cracks and damage frequently occur at the interface between the coating and the base materials.

"The scratch test is a widely used method of simulating in a laboratory the stresses that a coating undergoes in everyday use," she explains. "A diamond indenter with a rounded tip (Rockwell) is pulled across the sample at a constant speed. The resulting scratch on the surface provides information about how the coating will behave in real life."

The Fischerscope ST 200 is the first scratch tester from Fischer, and the instrument offers several different measurement modes. This allows the test force that the indenter exerts on the surface to remain constant or be increased.

A scratch test applied with constant force is typically used to determine the scratch hardness or scratch resistance. More often, the progressive mode is employed. In this case, the force acting on the surface is increased either incrementally or linearly.

"Starting out with an initially very low load," Lofgren says, "the indenter is moved across the coating. As the force increases, it gradually penetrates into the layer. As the penetration depth increases, so does the material stress, until a certain force – the critical load LC – is reached, which is the force that causes material failure: cracks form and the coating chips off."

For the test to be meaningful, the load must be chosen correctly. If it is too low, the coating is hardly stressed at all, but at very high loads, the indenter can penetrate through to the substrate and be damaged. With hard material layers such as titanium nitride or diamond like carbon (DLC), test loads higher than 30 to 50N are often necessary to trigger large-scale chips.

Softer materials like paints, on the other hand, require low test forces, since the coating usually fails much sooner. To cope with such diverse coatings, the ST 200 offers a wide range of possible test loads, from 0.1 to 200 N. That makes it well suited for measurements on hard coatings, while still allowing for the testing of thicker paint layers.

Taber's 550 Shear Scratch unit simulates what coatings undergo in daily use.

Another unit from Fisher, the Fischerscope HM2000 S is a nanoindentation measuring system. and employs the instrumented indentation test method according to the SO 14577 and ASTM E2546 standards. The instrument is suitable for measurements in development, quality assurance, incoming inspection and process control.

Typical fields of application include paint, plastic or hard material coatings such as PVD or CVD, plasma-applied coating systems and also both decorative and functional electroplated coatings.

The unit's measuring head contains the indenter, the test load generating unit, and the position measurement unit for determining the indentation depth, as well as the entire electronic system. It can perform in-situ zero point determination during the measurement, and also handles measurement of dark surfaces without sample pretreatment. It also features an optional dynamic mode for determining visco-elastic material properties, as is needed for testing lacquers and polymers.

Taber Industries' specialty is in testing the physical properties of paint and coatings once they're applied. Its Taber Abraser, now usually called the Taber Abrader, has been in use for around 75 years.

"With the Taber Shear/Scratch Tester you can evaluate resistance to shearing, scratching, gouging, marring, scraping and engraving on a variety of flat, rigid specimens."

"With the Taber Shear/Scratch Tester," the company says, "you can evaluate resistance to shearing, scratching, gouging, marring, scraping and engraving on a variety of flat, rigid specimens. It may also be used to test the relative homogeneity of materials, the adhesive qualities of protective coatings and the effects of age on similar materials."

On this unit, a removable scale beam is mounted on a pivotal shaft projecting from an adjustable gauge block. An adjusting screw permits the height of the pivotal shaft to be raised or lowered, corresponding with the thickness of a test specimen up to 12.7 mm (0.5 in.).

This adjustment allows the scale beam to be maintained in a level position in respect to the specimen and turntable. Designed with an integrated bearing, the scale beam can be tilted in a rest position enabling the operator to mount or remove specimens.

A calibrated sliding weight is mounted on the scale beam. By changing the position of the sliding weight, the load applied by the scratch tip (i.e., the shear tool) can be adjusted between zero and 500 grams.

"A second calibrated weight may be attached to the end of the scale beam," Taber states, "thus increasing the load capacity and changing the scale to 500 to 1000 grams. Engraved graduations are marked on the scale beam representing 10 grams per division."

Operated by an on/off switch, the motorized turntable rotates at a constant speed to ensure greater accuracy in test results. The turntable rotates in a counter-clockwise direction, but with a simple conversion the turntable rotation can be reversed (for more information contact Taber). For materials sensitive to scratching, an optional Scale Beam Modified Weight Set is available that converts the scale by 1/10 to zero to 50-gram range. To increase the testing load from 1000 to 1500g, an optional Scale Beam

The GTI ColorMatcher provides exact evaluation of hue and color.

Fixed Weight is available. To satisfy EN 13310 (Kitchen Sinks - Functional Requirements and Test Methods), an optional weight that provides a 15N load is also offered.

Netzsch's Analyzing and Testing business unit offers its TGA system, which can handle information gathering on the denaturing of proteins, vapor pressure and solvent content of paints. Heated coupling adapters for gas analysis systems such as QMS, FTIR or GC-MS can be added onto various thermobalances.

Additionally, the thermogravimetric analyzers of the 400 series can be equipped with DSC and/or DTA sample carriers at any time in order to form full-fledged TGA-DSC or TGA-DTA instruments. Netzsch thermobalances meet a variety of instrument and applications standards, including ISO 11358, ISO/DIS 9924, ASTM E1131, ASTM D3850, and DIN 51006.

In addition to its laboratory hardware the company has developed a range of software to assist in setting up measurement programs. This software covers measurement of reaction kinetics as well as multicomponent analysis.

R.B. Atlas markets GTI's ColorMatcher line in Canada, which includes a wide range of color matching systems. These products, Atlas says, use multiple light sources to provide visual color match assessment, comparison of color variation, and detection of metamerism.

"These systems," the company states, "are ideal for the inspection and color matching of paints, plastics, coatings, textiles, paper, colorants, cosmetics, packaging materials, fashion, wood, and more. They comply with industry standards, including ASTM D1729, SAE J361, ISO 3668, and BS-950 Part 2."

The systems are supplied with a certificate of product conformance that is NIST-traceable.

The ColorMatcher series includes four standard models, and is available with a variety of storage options and configurations. For desktop viewing, the GTI MiniMatcher series is available in five standard models.

The ColorMatcher range also includes 6500-Kelvin lamps that are manufactured with a proprietary blend of fluorescent phosphors. This, Atlas asserts, "is unequaled by any other 6500 Kelvin lamp in the industry."

The lamps are claimed to produce a true full spectrum white light that renders colors with the highest degree of accuracy and efficiency. When used in GTI color matching systems, the GTI ColorMatcher 6500K lamp produces an actual system CRI rating of B/C based on the CIE (International Commission on Illumination) Standard 15.2, and CIE's Publication 51.

Brookfield Ametek, which now has the former Arizona Instrument product line, offers its Computrac range to produce reliable readings within minutes on solids and ash contents in coatings and paints. Computrac moisture, solids and ash analyzers can be used in ASTM method D7323-06, and can be correlated to other test methods, including D2369, and D5095.

Further, the company says, Computrac is currently the only rapid loss-on-drying analyzer with nitrogen purge capabilities to minimize the risk of product flashing. Companies that use a standard oven, vacuum oven, or Karl Fischer titration process to test products' moisture or solids content, can easily apply them in their plants.

Further, the company states, its approach is up to 100 times faster than standard reference methods. The Computrac MAX 4000XL's rapid cooldown system reportedly increases throughput by 25 percent, compared to other rapid loss-on-drying instruments.

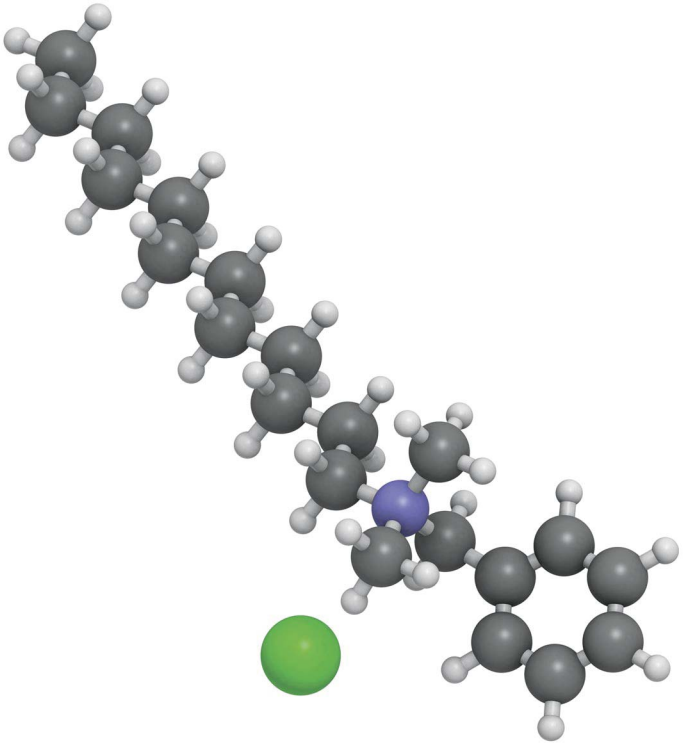
X-Rite's contribution to laboratory color measurement is its Ci series. The Ci7800 benchtop sphere spectrophotometer can be combined with NetProfiler and Color iMatch or Color iQC software to deliver a complete color measurement and management solution. In addition, the company says, by using Pantone digital color references from the Pantone Digital Industrial Libraries with X-Rite Color iQC quality control software, operators can begin production without waiting for physical standards to arrive.

The Ci7800 is designed with standards compliance in mind, including ASTM E3098 and CIE guidelines. Its internal temperature and humidity sensors record conditions each time a sample is measured for complete track and trace.

Optional UV balancing is available for advanced fluorescent and optical brightener control in paper, textiles, plastics and paint & coatings. The unit features a delta E of 0.01, and an inter-instrument agreement of SCI 0.08, ensuring consistent measurements across the supply chain.

Equipping an in-house laboratory is not a cheap proposition, and as is always the case, management needs to do some careful cost-comparison to make the optimum selection of systems. The upside here is that today's instruments have an increasingly broad of capabilities, and therefore offer better value than ever before. ■

Challenging Trends for Canada's Chemical Sector



By Gary LeRoux

AS NOTED BY MANY in the business community, there will be challenges on both sides of the border with respect to manufacturing for a number of reasons beyond the recent negotiations on NAFTA or possibly the new United States Mexico Canada Agreement (USMCA), if and when approved by Congress. The Business Council of Canada represents the largest group of major companies in Canada, representing half the value of the Toronto Stock Exchange, and it has indicated real concerns. The Council just released a report completed by PwC confirming concerns related to the potential impacts of recent U.S. tax reform on Canada's economy. The U.S. corporate tax rate is now two points below Canada's and that is having a bullish effect on foreign investment in the United States.

Meanwhile, Canada's last eight quarters saw stagnation in direct foreign investment. This is largely due to the new U.S. business tax rate, but others have argued it is also due to the nature of increasing regulations in Canada. It may also have to do with the number of large projects in Canada having been stalled for various business and political reasons over the past two years.

PwC's detailed analysis showed that U.S. tax reform has eliminated one of Canada's main competitive advantages and that "this loss will have a significant negative impact on capital-intensive sectors in Canada. All else being equal, these sectors as a whole would likely face a significant shift in investments from Canada to the U.S. over the next 10 years." PwC notes that capital-intensive sectors most at risk include manufacturing related to chemicals, machinery, plastic, rubber, and transportation. Other sectors would be less impacted by the U.S. tax reform.

For the chemical sector, this new business environment is expected to have a long-term impact with direct and indirect GDP at risk in the order of $10 billion, out of an overall negative GDP impact of $85 billion in total. Also at risk are more than 78,000 direct and indirect jobs.

How this will play out over time will of course be tempered by how the new USMCA trade agreement plays out over time. This will include whether or not Canada responds to U.S. tax reform, how regulatory issues are aligned across the Canada-U.S. border, the impact of new carbon pricing taxes, whether current direct investments in key projects move forward, and if regulatory approval processes are shortened. These are many of the issues CPCA has been addressing for the paint and coatings sector in Canada. This relatively new trend for Canada all hinges on the need to reduce business uncertainty and create a more focused economic growth agenda for Canada.

The paint and coatings industry must be mindful of the challenges and continue to seek greater alignment of regulations where possible. We were encouraged by the renewal of the Canada-U.S. Regulatory Cooperation Council (RCC) last June and remain hopeful that the ongoing work plans of the RCC will lead to positive outcomes for industry. Positive approaches in this respect will ensure that both Canadian and multi-national companies operating in Canada have consistent regulations.

This is most critical for the coatings industry when one considers the fact that 50 percent of the total volume of paint and coatings sold in Canada is now imported from the United States. Much of the product now manufactured here in Canada is done largely by U.S.-based companies. We were also encouraged to learn late in 2018

that the federal government had decided not to amend existing chemical management regulations in its current mandate, as that would create even greater uncertainty for the chemical sector.

CPCA has long been advocating that the federal government must deal with regulations that conform to its own regulatory policy as noted below:

- Protect and advance the public interest in health, safety and security, the quality of the environment, and the social and economic well-being of Canadians, as reflected in legislation
- Promote a fair and competitive market economy that encourages entrepreneurship, investment, and innovation
- Make decisions based on evidence and the best available knowledge and science in Canada and worldwide
- Create accessible, understandable, and responsive regulation through inclusiveness, transparency, accountability, and public scrutiny
- Advance the efficiency and effectiveness of regulation by ascertaining that the benefits of regulation justify the costs, by focusing human and financial resources where they can do the most good, and by demonstrating tangible results for Canadians
- Require timeliness, policy coherence, and minimal duplication throughout the regulatory process by consulting, coordinating, and cooperating across the federal government, with other governments in Canada and abroad, and with businesses and Canadians

(Source: Federal Cabinet Directive on Streamlining Regulation, Treasury Board of Canada)

Given the foregoing, industry has little choice but to remain positive and support what's best for the economy and address the real challenges where we find them. For the coatings industry - and many others sectors - there appears to be much to ponder these days. ■

Gary LeRoux is President and CEO of the Canadian Paint and Coatings Association. www.canpaint.com

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Anodes in Chromium Plating

By Peter J. Paine

IN HARD OR INDUSTRIAL chromium plating, the anode is generally a lead-antimony alloy (with antimony at about four to seven percent by weight).

The desired reaction at the lead anode is for the formation of lead dioxide (PbO2). This is indicated by the formation of a brown to black surface on the anode which shows that the anode is functioning normally.

The formation of lead dioxide is important because this compound will conduct current and thus avoid polarization of the anode.

The lead dioxide will also oxidize trivalent chromium (Cr3+) back to hexavalent chromium (Cr6+). This oxidation is required in order to avoid the build-up of excessive trivalent chromium in the bath. The other reaction at the anode is the formation of oxygen which is released as a gas.

New anode:
Pb0 ——— (e -) ———àPbO2 (black colored anode)
Anode in use:
PbO2 + Cr3+ àPbCrO4 (yellow colored anode)
(In this reaction, trivalent chromium is converted to hexavalent chromium)

Major anode reactions are:
2H2O ——àO2 + 4H+ + 4e-
Cr3+ ——àCr6+ + 3e-
†(In a chromic acid plating solution, Cr3+ is a contaminant).

Lead, however, has been and is now under scrutiny by regulatory agencies in many countries and historically has been seen as a "toxic" metal from its use as a fuel additive, in lead-based solders, household plumbing, and in its historical use in house paints.

In the U.S., health and workplace authorities have been and are insistent in their warnings about lead. Although electroplating companies have decades of experience in working with several "hazardous substances", lead is still seen in an increasingly critical light.

Any company using lead anodes in the U.S. must register with the US EPA TRI (Toxic Release Inventory). If an electroplating company processes only around 29 kg of lead in a year, reporting to the TRI is still required. (In Canada, the equivalent of the US EPA TRI is Environment Canada's NPRI (National Pollutant Release Inventory)).

What are the alternatives to lead anodes? Lead anodes may seem cheap at first glance but they also have several disadvantages:

- They can deform during plating. The metal cannot be equally distributed on the component. The layer thickness varies: Too much chrome is applied to some areas (a waste of resources) and must be mechanically removed.
- Maintenance costs are high. Repeated manual turning of the heavy lead anodes is common. This prevents, for example, short circuits via contact between anode and cathode.
- PbCrO4 also builds up on the anode. If the power supply is interrupted, lead chromate sludge can build up on the anode, and it can crumble when the power is restored.
- Lead chromate sludge poses a health risk and disposing of this sludge is time-consuming and expensive.
- Handling lead chromate sludge is very important from a work safety point of view and requires appropriately high levels of protective measures.

Dimensionally Stable Anodes (Ref 1)

Dimensionally stable anodes are a viable alternative for hard chromium plating with a platinum surface on titanium or niobium as the base substrate. Platinum-plated anodes offer many benefits in hard chromium plating, which include:

- Processes with dimensionally stable anodes are almost completely free of lead and therefore more environmentally friendly. The result: no lead chromate, fewer health risks for workers and no disposal costs.
- Production downtime and exchanges are not required, as with lead systems.
- Pt/Ti and Pt/Nb anodes normally do not change their shape (they are dimensionally stable) within the usual three-year period of use.
- The layer thicknesses on the cathodic component are even. Mechanical reworking is unnecessary.
- The amount of energy required is considerably lower than with lead anodes. In the long term, the voltage difference (e.g. change = around -1V with Pt/Ti anodes) means significantly lower costs. The reason for this is the anodic oxygen surge, which is much higher with lead than with platinum.
- Components such as power supply carriers and frame structures made from CuTi can be reused several times. This means that the time taken for the method to pay off is drastically lower when compared with lead anodes.
- Leftover platinum recovered at the end of the re-coating means that some original precious metal costs are recovered.

To achieve perfect results, anodes can be adapted to the component to be coated. This makes dimensionally stable anodes possible (plates, cylinders, T-shapes and U-shapes), whereas conventional lead anodes are mostly standardized sheets or rods.

Pt/Ti and Pt/Nb anodes don't have a closed surface, but are expanded metal sheets with variable mesh sizes. This leads to good power distribution; the electric field can work in and around the mesh. Further optimization is also possible:

To maximize the separation conditions in the electrolyte, an optimized mesh size is used.

This enables better gas removal as well as stronger electrolyte movement because of turbulent flow in the mesh.

A higher coating flux density is therefore possible with smaller distances between anodes and cathodes. Layers can be applied more quickly and production output increases.

A significant improvement in separation conditions can be achieved using grids with a large effective surface area.

Optimum Physical and Chemical Parameters

By combining platinum and titanium, dimensional stable anodes are possible. Both metals offer optimal parameters for hard chrome plating. Platinum has a very low specific electrical resistance whereas that of lead is almost twice as high. Titanium's corrosion resistance is outstanding but in the presence of halides, this is reduced. Titanium does have disadvantages when it comes to corrosion resistance in strong acids, such as sulphuric, nitric, hydrofluoric, oxalic and methane sulphonic acids. However, titanium is still a good option because of its mechanical workability and price. (Ref 1)

Application of the platinum layer onto the titanium base substrate is carried out electrochemically in molten salt via high-temperature electrolysis (HTE). The HTE process offers precise coating: In a molten bath of 550 C, made with a mixture of potassium and sodium cyanide, with around one to three percent platinum, the precious metal is deposited electrochemically onto the titanium substrate.

The substrate is locked into a closed system with argon, where the salt bath is in a double crucible. Currents between 1 and 5 A/dm2 allow isolation rates between 10 and 50 m per hour at a coating tension of 0.5 to 2 V. (Ref 1)

The anodes that were platinum-plated using the HTE process are superior to those coated in aqueous electrolytes. The purity of the molten salt platinum coating is at least 99.9 percent and therefore significantly higher than the purity of platinum layers deposited from aqueous solutions. Ductility, adhesion and corrosion resistance are significantly improved and inner tensions are minimal. (Ref 1)

When considering the optimum anode construction, optimizing the anode's carrier construction and power supply is important. The best solution is when a titanium sheeting coat is warmed and wrapped around a copper core. Copper is an ideal conductor and only has a specific

electrical resistance of around 9 percent of a Pb/Sn alloy. The CuTi power supply only causes minimal power loss along the anode, so the layer thickness distribution on the cathodic component is equal.

Cost Comparison

Dimensionally stable Pt/Ti or Pt/Nb anodes are more expensive initially than lead anodes. However, when costs are considered in more detail, titanium models with a platinum surface could be a cost-effective alternative for hard chrome plating.

This is shown in a comparison of total costs for conventional lead anodes versus platinum anodes. (Ref 1)

Eight lead alloy anodes made from PbSn7, with a length of 1,700 mm and a diameter of 40 mm, were compared with the appropriately dimensioned Pt/Ti anodes for chromium plating a cylindrical component.

Manufacturing costs for the eight lead anodes came to around 1,400 euros ($1,471 USD). The investment required to develop the necessary Pt/Ti anodes is higher and came to around 7,000 euros for the initial purchase. (The platinum coating is costly). The pure precious metals alone make up 45 percent of this amount. The platinum coating of 2.5 m required 11.3 g of the precious metal for each of the eight anodes. At a price of 35 euros per gram, this was 3,160 euros. (Ref 1)

Minimize Production Downtime

Even though conventional lead anodes seemed the better choice, this view also changed. (Ref 1)

After three years, the total cost for the lead anodes is considerably higher than for the Pt/Ti models. In the conservative example calculation, a typical application flow density of 40 A/dm2 is assumed. In the result, there is a power flow of 6,720 amperes for the given anode surface of 168 dm2 during a running time of 6,700 hours in three years. This corresponds to 10 hours of net operational time on roughly 220 working days per year. The platinum layer thickness decreases slowly because of platinum oxidation going into solution. In the example, this was taken into account as 2 grams per 1 million ampere hours.

There are many reasons behind the cost benefits of Pt/Ti in comparison with lead anodes. Most importantly: the reduced electricity usage, cost savings from lead chromate sludge disposal and lower maintenance downtime.

The total cost for lead anodes over three years came to 14,400 euros ($15,130). For Pt/Ti anodes, the cost was 12,020 euros which included replatinization. Even if the costs for maintenance and production downtime (approximately 1,000 euros for one day per year) weren't accounted for, the break-even point would be reached after three years. From this point, the gap between the two widens in favor of the Pt/Ti anodes.

Many industrial hard chromium plating sectors can take advantage of the various benefits of high-temperature electrolyzed Pt/Ti anodes. Manufacturers in the lighting, semi-conductor and PCB, automotive, hydraulics, plastics, mining and construction machinery industries all rely on hard chromium plating of various components. More applications will surely be developed in the future, as sustainable cost considerations and environmental protection are long-term concerns.

In this way, conventional hard chromium plating from a chromic acid solution (which is considered an environmentally friendly process due to its ease of application, ease of removal and the fact that the substrate metal can be used many times) and with the use of Pt/Ti anodes becomes a "greener process". Conventional lead anodes in hard chromium plating may therefore face more scrutiny if only from a cost benefit standpoint. ■

Reference: www.pfonline.com/articles/titanium-vs-lead-anodes-in-hard-chrome-plating
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Peter J. Paine is President and CEO of P. J. Paine + Associates, Ottawa, ON. He can be reached at (613) 884-9029 or via email at pjpinc@rogers.com.

Maintenance of Danglers

Essential to Plating Operations

EFFICIENT DANGLERS are one of the essentials of a good plating operation. As with any critical component in manufacturing, it pays to take care of them and to carefully source new designs as plant requirements shift or as innovations come on to the market.

In operation, danglers employ very simple principles of physics that were discovered by Michael Faraday two centuries ago. The key to an efficient dangler, or range of danglers, lies in the use of effective insulation, and precise assembly of the unit.

Additionally, plant managers need to remember that, as with any electrical current-bearing component, there will be erosion and wear over time, and a regular program of maintenance is necessary to catch failing components. Failure to do this results in irregular or incomplete finishes.

Indianapolis, IN-based Asterion Inc. calls itself a surface technology company that provides high performance plating processes, pretreatment chemistry, and powder coatings to the surface finishing industry. It likens the criticality of a proper maintenance schedule to the old adage, "Pay me now or pay me later."

Equipment maintenance in a metal finishing shop, Asterion says, is often considered an inconvenient hassle at the bottom of every busy plant manager's "To Do" list. However, with a little bit of proper care and some attention to planning, equipment can operate for longer periods of time without failure and dreaded downtime can be minimized and more easily managed.

In plating and anodizing shops, Asterion adds, the equipment that requires routine maintenance should include filters, plating barrels, plating racks, anode rails, anode baskets/bags, tank saddles, fume scrubbers, steam traps, heat exchangers, chemical feed pumps, pH controllers and conductivity controllers. Within each one of these items, there may be several other related items that need maintenance, including of course, danglers on the plating barrel. The frequency of maintenance will vary depending on the volume of work, but each one of these items should be on the routine maintenance checklist.

A damaged or worn dangler can impede the plating process and add to production costs. While shops must perform routine maintenance, suppliers are always tweaking and improving their products so they are more efficient and long-lasting.

Newact says its dangler design is the only one with a completely vulcanized sleeve. The rubber sleeve is molded directly to the cable, reinforcing the cable jacket to resist cuts and bends. Newact says no significant loss of flexibility occurs with this molded sleeve, as is commonly seen over time with a plastic sleeve. This superior design substantially extends the life of the dangler, reducing maintenance and downtime, lowering operating costs.

Extended life is one benefit of the sleeve, however, more important is the quality of the plated parts. The sleeve reduces the carryover of chemicals from tank to tank often found in plastic sleeves. Newact danglers are all custom-manufactured to fit customers' individual barrels. Most cable sizes from 4/0 to #8 are available. Special requests for knobs and moldings are considered.

Double crimped knobs give a positive electrical connection and added strength not found in soldered knobs. Two types of knobs are available; standard and crimped-over.

Danglers Inc. is a full-service machine and manufacturing company dedicated to the metal finishing industry and offers danglers of all sizes and designs to outfit the plating barrels of all manufacturers. Common sizes are sold from stock of the highest grade material as well as custom designs that are made to the specific need of each electroplating facility.

Danglers Inc. says it is dedicate to producing quality and consistent product. Its danglers are American-made using the highest tolerance, highest grade of material, and state-of-the-art machine tooling. Most orders are shipped within one to two days, using on-time delivery to help keep customers' production systems online at all times.

Brad Hatcher, of The Dangler Guys, says customers are always concerned with durability. "We have always been asked to supply something that last longer. Though our vulcanized dangler is our premium product, customers have found that going with the most expensive product isn't always the best. As most people know, we offer the widest range of danglers than anyone else. Since we offer so many different products we can find the best product for their situation." ■

Measuring Coating Thickness and SURFACE PROFILE HEIGHT

IN AN IDEAL WORLD, plating and anodizing processes would be so precise that confirming thickness would be superfluous. The reality is always that some variability is inescapable, whether from variable conditions in the plant, plating layer peculiarities, or some unknown factor in the processing. Checking the thickness or consistency of what's been applied to a substrate is still essential for sound manufacturing.

Some measuring technologies still in use employ methods that can be destructive to plating or other types of coatings, but non-destructive types have increasingly moved to the forefront. The capability to downsize measuring units so that they can be handled easily, and their results can be checked swiftly, has transformed in-plant measurement in recent years.

David Barnes, Group Technical Manager at Elcometer says the most important things for customers to consider when looking for a device are the shape and thickness of the substrate and the thickness of the coating being applied. "This will enable the user to make an informed choice as to which probe to select."

When it comes to plating and anodizing, Elcometer offers a variety of chemical-resistant washable probes ideal for that environment. Ferrous probes measure non-magnetic coatings on ferro-magnetic substrates. The Elcometer 456 ferrous gauges accept any ferrous probe. Non-ferrous probes measure non-conductive coatings on non-ferrous metal substrates, and Elcometer 456 non-ferrous gauges accept any non-ferrous probe. Obviously, dual FNF (ferrous, non-ferrous) probes measure both ferrous and non-ferrous application with automatic substrate detection. Elcometer 456 FNF gauges accept all ferrous, non-ferrous and dual FNF probes.

Though Barnes says measuring anodizing thickness using the eddy current principle is an established practice, the products themselves do evolve. This Elcometer 456 line, the company's latest innovation, sets new standards in coating thickness measurements and is even more powerful, rugged and easier to use than ever, the company says. The 456 gauges are chemical-resistant, washable, and ideal for Type II and Type III anodizing environments. A removable probe sleeve makes cleaning anodizing residue from probe fast and easy.

This is a direct response to customers' biggest concerns. "If the anodizing thickness is being measured immediately, the process is complete and the chemicals used in the process are likely to contaminate the probe," Barnes says. "Elcometer has an 'anodizing' probe specifically for this situation, which can be dismantled easily to allow the probe to be cleaned thoroughly to prevent any damage being caused and thus enhancing the lifetime of the probe."

Fischer Isoscope FMP30

Barnes stresses that the other big customer concern, accuracy, is also important: "If the thickness measurement is not accurate then too much or too little material may be applied leading to problems with the coating during the lifetime of the anodized product."

Robert Weber, Director of Product Management for Fischer Technology Inc., agrees that gauge accuracy, measurement precision, ease of use, durability and traceability are the top features customers ask for in a device. "For anodized aluminum thickness measurements, look for

gauges with conductivity and curvature compensation," he adds.

When measuring plated versus anodized products, there are important differences, Weber says. "Many electroplated materials are multi-layer and not suited to magnetic, eddy current test methods. They may also be too thin to measure with magnetic, eddy current gauges. Anodized thicknesses, on the other hand, are easily measured using the eddy current test method."

The Elcometer probes have a maximum operating temperature of 80 C (176 F) with the exception of separate ferrous probes 150 C (300 F) and high-temperature PINIPs 250 C (480 F). The stated temperature is the substrate temperature, and the duty cycle of the probe must be reduced to ensure a minimal temperature build-up within the probe. All Elcometer probes are supplied with a test certificate and a set of calibration foils appropriate to the scale range of the probe.

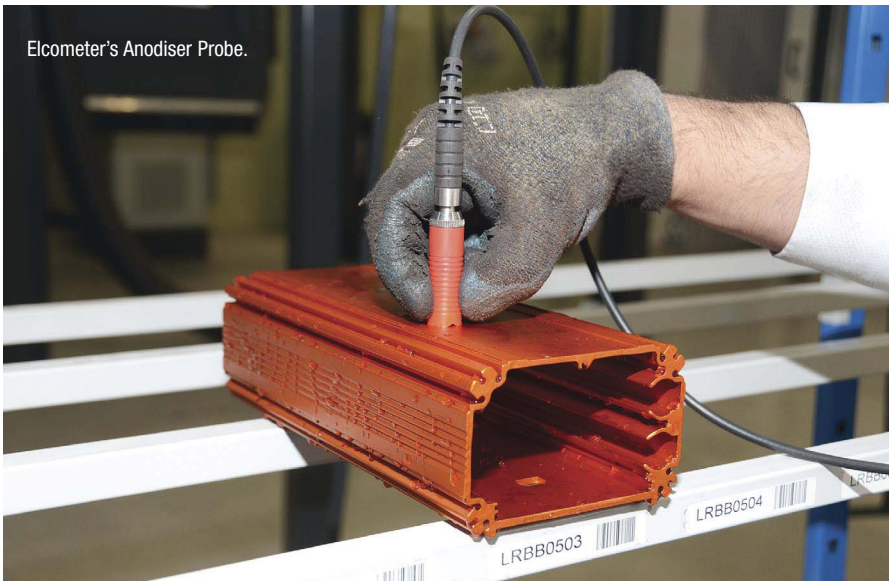
On the Fischer side, the Isoscope MP0R is a pocket instrument with PC interface for convenient, non-destructive and fast coating thickness measurement of almost all non-ferrous metals.

The MP0R can measure paint, varnish or plastic coatings on aluminum, copper or brass, and anodized coatings on aluminum. Various languages can be selected. Fischer touts the unit's reliable measurements, even under rough environmental conditions, due to robust instrument construction; simple operation even in hard-to-reach measuring spots with two independently pivoting and illuminated displays; the ability to measure according to standards with special modes for IMO PSPC and SSPC-PA2; and fast and repeatedly accurate measurement due to the device's compact size and intuitive single-handed operation concept.

"Conductivity and curvature compensation, while not new, are very helpful functions in Fischer Technology's eddy current gauges for measuring coating on aluminum," Weber says. "These features minimize measurement error on different bases."

Fischer also offers the FMP10, FMP20, FMP30, and FMP40 instrument series. These handhelds also measure coating thickness easily, non-destructively and precisely. They deliver precise results and the various measurement techniques available make them highly flexible. Models are available with magnetic inductive measurement (DELTASCOPE), eddy current measurement (ISOSCOPE) or both techniques combined (DUALSCOPE). By attaching different probes to these instruments, customers can quickly create the right solution for virtually any measurement task.

Depending on the instrument, base materials can



Elcometer's Anodiser Probe.

include zinc, chromium, copper coatings on steel, or iron. Paint, varnish or plastic coatings on steel, iron, aluminum, copper, or brass can also be measured. Anodized coatings on aluminum are also measurable.

Changeable probes provide flexibility for a diverse range of measurement tasks. Efficient and structured measurement, with enough memory for several thousand applications, as well as many evaluation and display functions, is flexible to suit the customer's needs. Measurements can be done to IMO PSPC, SSPC-PA2, QUALANOD or QUALICOAT standards.

DeFelsko's PosiTector 6000 line is coating thickness gauges for all metal substrates. The company says the rugged, fully electronic coating thickness gauges use magnetic and eddy current principles to measure coating thickness on both ferrous and non-ferrous metals, accurately and quickly.

Newer to the line is the PosiTector 6000 FNDS probe for duplex coating systems. DeFelsko says it simultaneously measures and displays the individual layer thicknesses of zinc and paint in a duplex coating system with a single reading.

"The PosiTector 6000 FNDS is ideal for measuring the three types of zinc used in duplex coating systems – hot-dip, electro and zinc spray metalizing (thermal spray zinc)," says Julia Lashure, of the marketing department of distributor Gardco (Paul N. Gardner Co.) "When taken out of duplex mode, the instrument can be used as a conventional ferrous/non-ferrous gauge to measure the thickness of coatings on all metal substrates."

PosiTector and PosiTest inspection data can be viewed and reported four ways including via desktop computer, smart device apps, web-based software and instrument-based reporting. They offer USB, wifi and Bluetooth connectivity.

In the end, accuracy of measurement is the number one priority of these instruments. "Why is the customer measuring in the first place?" Weber asks. "Because they have a specification to meet. If the goal is to meet a specification, then you want a gauge that measures correctly. Accurate measurements allow for better process control, reduced costs and less scrap." ■

ASB Automatic Spray Gun with Base

SAMES KREMLIN recently launched its new ASB Automatic Spray Gun with Base. The new ASB automatic Airless spray gun works up to 240 bar (3480 psi).

The company says the gun offers superior atomization whatever the line speed, thanks to the balance between high pressure and high flow rate. It delivers a precise application with the coating applied directly on the target due to fast response time. The Airless applicator is compatible with all types of materials including solvent-based, water-based, and UV curing materials.

SAMES KREMLIN says this gun is the lightest automatic Airless gun on the market with a payload 20 percent lower than competition for reciprocators and/or robotic installations. This allows for increased motion speed and reduces centrifugal force and wear on rotating machines.

The gun offers versatility and compatibility with the existing range of SAMES KREMLIN automatic gun bases.

www.sames-kremlin.com

Chemical-Resistant Canopy Hoods Suited for Paint Kitchens

Canopy Hoods by HEMCO are designed to collect and exhaust corrosive vapors, heat, steam, and odors when mounted over areas with water baths, hot plates or portable equipment. Canopies are available in wall, island and corner canopy models, and in either stainless steel or fiberglass. Manufactured of molded one-piece composite resin, fiberglass canopy hoods are lightweight and can be wall-mounted or suspended from the ceiling over island locations.

The hood's glass smooth surfaces provide superior chemical, corrosion and heat resistance. Optional side panels prevent cross drafts and further improve airflow while providing a way to contain chemical spills.

www.HEMCOcorp.com/canopy.html

AkzoNobel's New Coating Adds Special Touch for Powder Customers

A new powder coating which smooths the way for customers to add coarse texture to surfaces has just been launched by AkzoNobel. Initially being launched in Europe, Interpon Coarse Texture Low-E is said to be good at covering small defects on metal, while also offering greater energy and production efficiency compared with similar products of this type.

It is aimed in particular at industrial producers of shelves, electrical cabinets, gym equipment and office furniture.

"As the world's number one supplier of powder coatings, we're always looking to innovate and take great pride in delivering innovations to our customers," says Mark Reekie, Global Segment Manager, General Industry, for AkzoNobel's Powder Coatings business. "The key to this new coarse texture range is the Low-E label – known as low bake in the industry – which means it can be cured from 150 to 170 deg. C, without losing quality or the properties of the coating. So customers can reduce their energy consumption and increase productivity."

He adds that the polyester-based product is ideal for any interior or exterior application requiring a coarse textured finish. As well as giving a consistent effect in any color, it also offers excellent weather and light resistance.

"Metal usually has to be treated and smoothed before adding a gloss coating, but even then, the slightest imperfection in the surface will show through," says Reekie. "Coarse texture powder coatings give a dimpled finish. They are popular because as well as looking good, they can 'hide' any imperfections and save the time and money involved in preparing and protecting metal."

The new product is available from stock throughout Europe in the top 46 most popular industrial RAL shades.

www.interpon.com

Bead Mill Offers High Throughput and Maximum Process Safety

Bühler has launched a new bead mill, the Visconomic+. A new gap geometry, together with the pin arrangement, ensures maximum flow resistance. This combination avoids premature compacting of the grinding media and overheating of the product. Rotor and stator cooling also ensures optimum temperature control.

The Visconomic+ was developed as a high-performance bead mill specifically for the processing of very viscous and temperature-sensitive products including energy-curing systems such as UV inks which polymerize at high temperatures where efficient cooling very important. Here, the cooling surface, maximized by the rotor and stator cooling and the efficient surface exchange result in a high system cooling capacity. As a result, product temperature during the grinding process can be regulated so that excessive increases are avoided. As the product is well cooled even with a higher power input, better dispersion quality can be achieved. Optimized grinding gap width and aggressive pin arrangement ensure high throughputs and optimum grinding results are achieved even with very viscous products. The grinding media are separated via a dynamic separating gap. Due to the constant shear in the gap, no particles can settle, increasing process reliability.The system is user-friendly, being set at an ideal working height for the operator and where all major components are easily accessible for cleaning and maintenance. A trolley simplifies the dismantling and cleaning of the stator. The bead mill can be integrated into the central plant control system and 'Premium' control systems are IoT ready and enable the development and use of corresponding services.

www.buhlergroup.com

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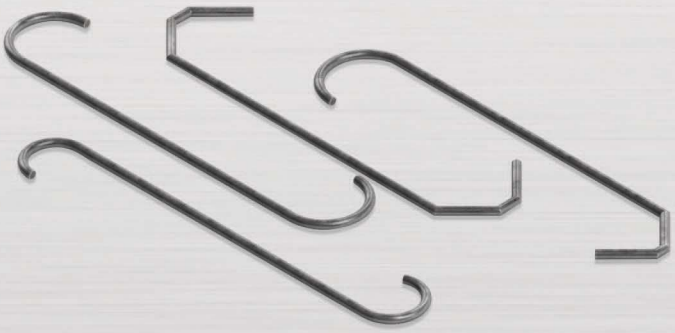

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