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Volume 14 Number 2

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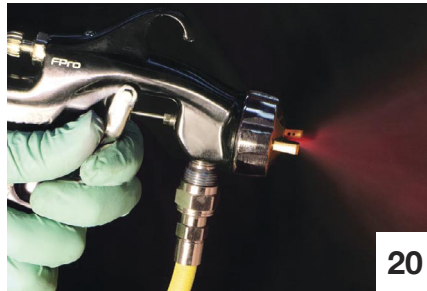
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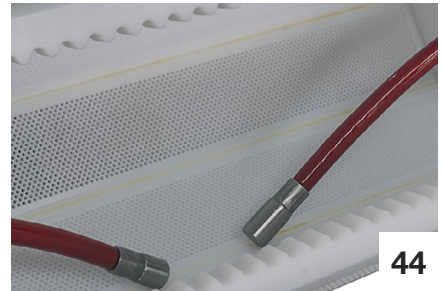
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Narrowing the Age Gap

As a relative newcomer to the paint and coatings industry, I've often been struck by the age, color, and gender of those in the tradeshow and conference rooms. I haven't been able to

access data specific to paint and coatings, but it's no secret that the industry appears overwhelmingly over 50, white and male. That may be the profile of those in management roles –



the primary attendees and targets for these kinds of events – and manufacturing. Nonetheless, new ideas come from a chorus of voices and when the current workforce begins retiring en masse, who will fill the roles? And who will have trained them and shown them all the tricks of the trade that one can only learn after years on the job?

Women seem to be making strides. I've attended quite a few events for women, with the Women in Finishing Forum seemingly quite organized and vocal. It's time for the young people to step up and that is what is happening.

At the recent Powder Coating Week in February in Orlando, a grassroots get-together took place of young professionals – those under 40 only – one evening over drinks. It offered an excellent beginning.

There were many great conversations that evening, so we thought convening a virtual roundtable of sorts to discuss this important issue of an aging industry would help keep the discussion moving. We've looked beyond the event to find a cross section of representatives from the industry. Check it out on page 24 and then let us know your experiences and ideas. We'll print them in an upcoming issue so everyone can benefit.

Theresa Rogers
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Trade Shows and Meetings Postponed as Virus Concerns Spread

CPCA's Board of Directors has postponed the association's annual conference and AGM planned for May 20-21, 2020 at the Fairmont Chateau Laurier in Quebec City. More details related to a possible new date will be made known in the coming weeks.

Previously, the American Coatings Show and Conference 2020 (ACS/ACC) announced that in response to the continuing developments surrounding COVID-19, the ACS/ACC will be postponed to a later date in 2020. The ACS/ACC was scheduled for March 31 through April 2 at the Indiana Convention Center in Indianapolis, IN.

Organizers say they are working to secure dates to reschedule the show at the same venue in Indianapolis later in 2020, with new dates to be announced as soon as possible.

This announcement comes on the heels of an announcement earlier that PaintExpo, which was to take place April 21-24 in Karlsruhe, Germany, was postponed. The fair will now run October 12 to 15. And following reports of COVID-19 in the Houston area, NACE International postponed its annual CORROSION 2020 conference and expo until June 14-18, 2020.

Keep an eye on CFCM's online Calendar for the latest dates as they become available.

www.canpaint.com

<https://american-coatings-show.com>



Gema Postpones Industry Partner Event

Gema says it has made a significant investment in its Indianapolis, IN, facility, incorporating new technologies into a demonstration laboratory. The company had been planning on showcasing its capabilities at an event in May of this year with its industry partners.

"Considering the current business climate related to COVID-19 and travel restrictions, we have chosen to postpone our Industry Partner Event until later this year," the company said in a press release. "We will continue to monitor the situation and inform you of our new event date at the appropriate time. We are excited about our application lab upgrades, as well as demonstrating all the new technology Gema is offering to the market."

www.gemapowdercoating.com

Sherwin-Williams to Build New Global Headquarters in Downtown Cleveland

The Sherwin-Williams Company announced it is finalizing plans to build a new global headquarters in downtown Cleveland and a new R&D center in the Cleveland suburb of Brecksville. The plans follow an extensive competitive site selection process and are contingent upon completion of standard due diligence.

"Our plans to continue investing in Cleveland and Northeast Ohio build on our 154-year legacy as one of the region's top employers and drivers of economic activity," says Sherwin-Williams Chairman and Chief Executive Officer John G. Morikis. "Driven by our continued need to serve our customers at the highest level and retain and attract top talent, we intend to create a next-generation workplace environment that ignites creativity, collaboration and industry-

leading innovation. We currently operate out of a 90-year-old headquarters building that has served us well but is no longer conducive to meeting our future needs. The major planned investment in Cleveland and Northeast Ohio we are announcing reflects our confidence in the continued strength of the region and its people and our public partners' ability to deliver on their commitments."

Preliminary plans call for Sherwin-Williams to invest a minimum of \$600 million to build both facilities, approximately 1,000,000 square-foot in size. The planned new R&D center would serve as the corporate anchor for a new mixed-use development project and would be approximately 500,000 square-feet.

Combined, the two facilities would house more than 3,500 employees with room to accommodate significant future growth. Sherwin-Williams estimates it would add a minimum of 400 jobs at these facilities over time, an increase of 11 percent to the company's current local workforce.

Sherwin-Williams is working with several state and local partners on this project, including the State of Ohio, JobsOhio, Cuyahoga County, Cleveland-Cuyahoga County Port Authority, the City of Cleveland and the City of Brecksville. Approvals of the Company's economic development packages and other matters remain pending and are expected over the next several months.

"The process to date has been an outstanding example of an effective public-private partnership, with particularly strong leadership from Ohio Governor Mike DeWine and Lieutenant Governor Jon Husted," adds Morikis.

The R&D center and global headquarters project continues to be a multi-year process. The transition to the new facilities is not expected to occur until 2023 at the earliest. No announcements have been made regarding construction partners, and no decisions have been made regarding the disposition of the Company's current R&D center and headquarters.

www.sherwin.com

Sirrus and Sartomer Advance Fast-Curing 3D Printing Resins

Sartomer, a pioneer in advanced photocurable resin solutions, and Sirrus, a developer of novel methylene malonate monomers and oligomers, are partnering to create new fast-curing methacrylate 3D printing resins. The technologies were unveiled at RadTech Orlando 2020.

The new 3D printing resins are based on the copolymerization of methylene malonates and methacrylates. “Research has demonstrated that methylene malonate comonomers can significantly enhance the UV-cure rate of some methacrylates,” says Mark Holzer, Sirtus Vice-President of Application Development.

“The collaboration between Sirtus and Sartomer is yielding discoveries that are leading to development of new resins for 3D printing that will open up new regimes of printing and physical properties performance,” says Jeff Klang, Global R&D Director - 3D Printing, Sartomer.

At RadTech 2020, Sirtus presented related research on the UV curing of methylene malonates. Sartomer presented research on a variety of additive manufacturing topics including new N3xtDimension photocurable resins for 3D printing; methods to achieve high heat resistance in 3D printing applications; new high-performance materials for 3D printing; and binder development for the 3D printing of ceramic.
www.sirtuschemistry.com

AkzoNobel Releases Integrated Report 2019

AkzoNobel has launched its digital Report 2019, which highlights the company’s progress during what it refers to as “another successful year of transformation, innovation and investment in the future”.

A dedicated website includes comprehensive coverage of the company’s financial results and key business developments. Several case studies – with related videos – also feature prominently and highlight some of the year’s success stories.

In his CEO statement, Thierry Vanlancker says the company should be proud of its results. “We sent a strong message about our ability to achieve our financial ambition. It was impressive to experience our internal momentum during the course of the year as we intensified our focus on dramatically stepping up our return on sales by the end of 2020.”

The online report features a revised sustainability section, which has been structured around the company’s new “People. Planet. Paint” approach. It offers a detailed review of AkzoNobel’s



sustainability performance and highlights the progress made in areas such as total VOC emissions (down 24 percent) and absolute greenhouse gas emissions (down 16 percent).

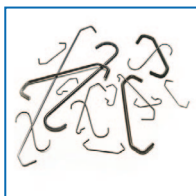
Full of interactive content and infographics, the digital report opens with a home page, while intuitive functionality makes it easy to access information. Visitors can also make use of tools to compare key data and download tables.

Continues Vanlancker: “Right across the organization – from salespeople in Brazil, to operators in France and researchers in China – everyone has been fully focused on delivering for our customers, while helping the company to become the reference in paints and coatings.”
<https://report.akzonobel.com/2019/ar/>



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Ingevity Appoints Cambrian Solutions Distributor for Product Lines in Canada



Ingevity's bio-based tackifier products have broad compatibility with multiple polymers commonly used in rigid packaging, hygiene, tapes, labels and construction adhesives. Cambrian Solutions supplies specialty chemicals and ingredients to the Canadian coatings, adhesives, sealants and elastomers (CASE) markets with a focus on providing differentiated value-added capabilities to customers through technical proficiency and formulation expertise.

"This partnership with Cambrian Solutions strengthens our commitment to providing value-added products and sustainability to our customers," says Kim Meidl, Global Business Manager, Adhesives, at Ingevity. "We believe Cambrian Solutions will play an essential role in continuing to provide a high level of service and support to our Canadian customers."

"We are enthusiastic about partnering with Ingevity in Canada to bring their exceptional technology and leadership to the Canadian CASE market," says Greg McDonnell, Senior Commercial Director, Cambrian Solutions. "Ingevity is recognized as an innovator in the rosin-based resin industry with an extensive history of making specialty products."
www.ingevity.com

Sun Chemical Issues Updated Supply Chain Statement

As the Coronavirus (COVID-19) spreads, Sun Chemical continues to monitor the changing economic landscape and the impact to its global supply chain.

"While some regions in the world continue to improve, other regions are facing unprecedented challenges," says Jeffrey Shaw, Chief Supply Chain Officer.

Sun Chemical says it continues to monitor its global supply chain, proactively manage each of its sites and warehouses, and frequently communicate with supply bases.

"At this time, our manufacturing and warehouse sites continue to operate, raw materials continue to flow, and logistics providers continue to ship materials in a timely manner. With new

governmental regulations enforced and varying restrictions in place around the world, we continue to work with all our stakeholders to make sure the fulfillment process works in an uninterrupted manner," Shaw adds.

"We have a vast global network in place to manage these changes and an integrated supply chain approach. Inventory levels remain in place while we continue to fulfill customer orders. In the event of further changes, we will work with customers to make sure we provide the best level of service."

www.sunchemical.com

Dominion Colour Corporation & LANSKO Colors Changes Name to DCL Corporation

In April 2018, H.I.G. Capital combined two pigment suppliers, Dominion Colour Corporation & LANSKO Colors, to create a global leader in the supply of color pigments and dispersions for the coatings, plastics, and ink industries. The new name, announced in early March, DCL Corporation.



See The Difference We Make

The new company name – DCL – combines letters the company says represent a strong legacy while at the same time starting an exciting new chapter. "The new logo visually demonstrates this by using a modern, geometric pattern made from a rainbow of colors representing our vibrant pigment and dispersion business," DCL says. "DCL will continue its heritage of innovation and will be a world-class supplier to color-consuming industries around the globe. With our tagline we ask you to, 'See the Difference we Make.'"

Chuck Herak, CEO of DCL Corporation says, "With world-class manufacturing, research and technical service labs, and sales offices around the globe, we are poised to rapidly respond to customer needs and make a positive impact. DCL Corporation is large enough to compete on a global stage by servicing multi-national customers while still being responsive to the needs of our small and medium sized customers all over the world."

www.pigments.com

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Walter Surface Technologies Acquires Aerochem

Walter Surface Technologies recently announced its acquisition of Aerochem, a Quebec-based provider of industrial maintenance, repair and operations (MRO) solutions.

Through this acquisition, Walter is expanding its offering of chemical solutions to provide a wider variety of chemical solutions to help its users optimize their industrial operations.

“We are very excited to welcome Aerochem to the Walter family. Their team brings a solid network and expertise that will allow us to continue our mission to help our customers work better,” says Marc-André Aubé, CEO of Walter. “We simply love their products. We see this opportunity as a breeding ground for further R&D innovations in our chemical product offering.”

Michel Caron, President of Aerochem, is equally excited to work with the Walter team: “We saw in this opportunity the perfect alignment of both products and values. Aerochem brings to Walter its industry expertise and experience manufacturing, as well as a wide variety of products to complement Walter’s chemical offering.”

Following this transaction, Aerochem will continue to operate under its own brand. The transaction is effective immediately, and activities for both customers and suppliers remain unchanged.

www.walter.com

PPG Completes Acquisition of Alpha Coating Technologies

PPG recently announced it has completed its acquisition of Alpha Coating Technologies, a manufacturer of powder coatings for light industrial applications and heat sensitive substrates. Financial terms were not disclosed.

Founded in 2000, Alpha focuses on the development, manufacture and sale of powder coatings for light industrial applications; medium density fiberboard and heat sensitive substrates; and toll manufactures powder coatings for metal and light industrial applications. Alpha employs approximately 35 people at its operations in West Chicago, IL.

www.ppg.com

Azelis Joins Together for Sustainability, Global Initiative for Sustainable Supply Chains

Azelis, global distributor of speciality chemicals and food ingredients, has joined Together for

Nouryon Reports Further Growth in Profitability in 2019

Nouryon reported further growth in profitability in its full-year 2019 financial results, despite, it says, challenging conditions in several end markets.

Adjusted EBITDA increased by five percent, driven by margin management and cost initiatives. Revenues were slightly up, as a small decline in volumes was more than offset by price and product portfolio mix benefits.

“This is another solid set of results,” says Nouryon Chairman and CEO Charlie Shaver. “Our commercial excellence and operational improvement initiatives along with our cost discipline have shown that we can deliver improvements in profitability even when market conditions are challenging.”

Shaver added that the company continues to invest in capacity expansions and bolt-on acquisitions to support the growth of its customers. Key growth investments in 2019 included organic peroxide expansions in China, Mexico and the U.S., and expansions of colloidal silica and expandable microspheres in Sweden.

Nouryon also completed the acquisition of a leading producer of metal alkyls in China in 2019. The company recently announced two further proposed moves to optimize its portfolio; the acquisition of the carboxymethyl cellulose business of J.M. Huber Corporation, and the divestment of its redispersible polymer powders business to Celanese.

www.nouryon.com



Charlie Shaver

Sustainability (TfS), global initiative for sustainable supply chains. This membership follows on Azelis’ membership to UN Global Compact and Gold rating from EcoVadis, testifying to company’s desire to be a catalyst of change when it comes to sustainable business models and is intended to become a benchmark for the industry. Azelis is now part of the global network of 25 TfS member companies who represent a global turnover in the chemical industry of € 422 billion and a global spend of € 281 billion.

Operating as a unique, member-driven organisation and peer-to-peer network, TfS member companies aim to shape the future of the chemical industry together.

The Azelis Corporate Social Responsibility (CSR) program is built around four pillars: resources and environment, labor and human rights, fair business practices and sustainable procurement, all directly contributing to 10 UN Sustainable Development Goals (SDGs). Azelis holds a Gold rating by EcoVadis, a prerequisite to join the TfS initiative, which places the company in the top one percent of distributors assessed by EcoVadis. This latest membership is in line with Azelis’ strategic course of becoming industry benchmark when it comes to sustain-

able business practices.

TfS, a joint initiative and global network of 25 chemical companies, delivers the de facto global standard for environmental, social and governance performance of chemical supply chains. The TfS program is based on the UN Global Compact and Responsible Care principles. TfS is growing into a global organization with regional representation and strategic partnerships in Asia, North America and South America.

The TfS framework – TfS Assessments and TfS Audits – allows TfS member companies to assess the environmental, labor and human rights, ethical and sustainable procurement performance of their suppliers and drive and deliver tangible, measurable improvements of their suppliers’ as well as their own sustainability performance. TfS introduced this globally applicable framework and tools to create transparency of the sustainability performance of chemical companies and their suppliers and to collaborate to continuously improve performance. Unique to the TfS concept is that the results of TfS Assessments and TfS Audits are shared with all member companies, following the consent of the supplier.

Dr. Hans Joachim Müller, Azelis CEO, says, “Our dedication to CSR and sustainable business

models has been at the core of our business decisions for a while now. That dedication has been recognised twice by EcoVadis' Gold rating so joining TFS was a next logical step for us. The TFS concept benefits both TFS member companies and suppliers, taking away bureaucratic burden from us so that time and energy can be spent on the improvement of sustainability performance. As a global business, with operations across EMEA, the Americas and Asia Pacific, Azelis takes its responsibilities very seriously, always looking for new ways to make a positive impact on society and minimise its footprint, whilst delivering the best possible products and services."

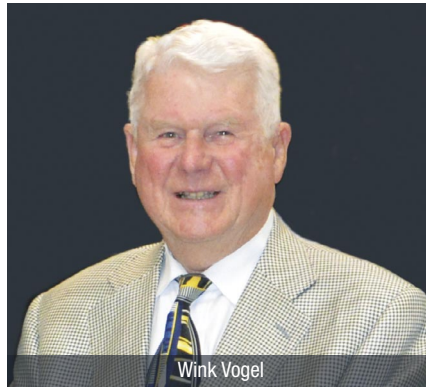
www.azelis.com

People

Cloverdale Paint Mourns Loss of Wink Vogel

The Vogel family has announced that Wink Vogel passed away peacefully on March 14.

He is survived by his wife Noelle, sons Randy and Tim, daughter Tracy, as well as their spouses and families.



Wink Vogel

The company states that Vogel, who most recently held the title of Honorary Chairman, has had a profound impact on Cloverdale Paint, its employees, customers and the paint industry.

Gary LeRoux, President and CEO of the Canadian Paint and Coatings Association (CPCA), says Vogel was an icon and one of very few leaders of a family-owned, privately held coatings company of its size in the world, (currently the tenth-largest in North America). The company was started by Vogel's father on a farm in Surrey, BC.

A great supporter of the industry and the

CPCA, Vogel received its highest honor, the Roy Kennedy award, was a board member of CPCA and Product Care, and was a leading voice for paint recycling programs in Canada.

Details about a celebration of life will be delayed until an appropriate time as a result of the Covid-19 outbreak.

If you wish to send a message of sympathy or offer condolences, email Carmelle Dwyer at cdwyer@cloverdalepaint.com. Messages will be compiled for the family.

Hempel Appoints Katarina Lindström as COO

Katarina Lindström will join Hempel as Executive Vice President & Chief Operating Officer beginning August 1, 2020 and will play a central role in delivering on the company's ambition to double in size, the company says. As Executive Vice President & Chief Operating Officer (COO), Lindström will be a key member of Hempel's Executive Management Board, responsible for driving the company's strategic agenda in terms of operational excellence, innovation and sustainability. "I'm extremely pleased to welcome

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someone of Katarina's calibre to our global team," says Lars Petersson, Group President and CEO of Hempel. "We're an ambitious company on a strong growth curve. Our target is to double Hempel in five years, and we remain on track. We want to lead the industry in market-driven innovation, sustainability and customer focus. As Chief Operating Officer, Katarina will play a significant part in this, and I'm very much looking forward to working with her." As part of its long-term growth strategy, Hempel is making investments in innovation and sustainability, while strengthening its supply chain and manufacturing footprint, particularly in Asia-Pacific. Lindström will be responsible for driving many of these initiatives. Lindström has extensive international business, leadership and manufacturing experience from her time at Volvo Group, where she worked for more than 20 years. In that time, she held a series of global senior executive



Katarina Lindström

positions within both operations and product management. As architect of Volvo Group's industrial presence in Asia, she has proven experience of building a company's manufacturing footprint in the region. In 2018, Lindström became President of Operations at Munters Group AB, a global leader in energy efficient and sustainable air treatment solutions, where she drove a number of important strategic initiatives and improvement projects. "Hempel is a company with strong values and an ambitious growth strategy," Lindström says. "It's investing in customer solutions, innovation and employee development and it has a desire to lead sustainability in the coatings industry. I'm very excited to be part of this journey." www.hempel.com

New Product Manager Appointed for Elcometer Limited



Tracy Salt

Elcometer Limited has announced the appointment of Tracy Salt as Product Manager.

Having worked alongside Elcometer's Senior Management team for more than 20 years, the company says Salt not only has an invaluable knowledge of Elcometer's extensive product range, but also a comprehensive understanding on the product development process within Elcometer. In her new position, she becomes responsible for the management and introduction of Elcometer's comprehensive range of products specifically designed for the protective coatings industry.

"As part of our product range has grown significantly in recent years, it is important to focus on individual market sectors, this requires dedicated expertise to ensure our customer's evolving needs are met," Managing Director, Michael Sellers, says. "Tracy has been an invaluable member of our team for many years and her extensive product knowledge is perfect for this new role."

"I look forward to bringing the product knowledge and experience I have gained since working for Elcometer with me to help develop our product portfolio. The company has grown significantly in the last 20 years and I am keen to help Elcometer continue to bring innovative products to market," Salt says.

www.elcometer.com

Kevin Coursin Takes Over as PCI Executive Director

Kevin Coursin has been hired to serve as the Powder Coating Institute's (PCI) next Executive Director. Coursin, a long-time member of the

industrial finishing industry, has vast experience in powder coating and has served in leadership roles over the years with PCI, the Chemical Coaters Association International and the Porcelain Enamel Institute. He most recently served as the Chairman of the PCI Technical Committee.

Coursin replaces Trena Benson who retired at the end of 2019.



Kevin Coursin

He officially took over during PCI's Powder Coating Technical Conference in Orlando in mid-February.

www.powdercoating.org

Joseph McCorry appointed President and COO of FinishMaster, Inc.

Uni-Select Inc., a distributor of automotive refinish and industrial coatings and related products in North America, recently announced that Joseph E. McCorry has been appointed to the position of President and Chief Operating Officer of FinishMaster, Inc., effective March 30, 2020.

McCorry brings more than 25 years of experience in the automotive industry serving global aftermarket customers. He was most recently a board member, General Manager and Vice President, Global Business Unit, leading the OES business and strategic development of ZF AG, a global supplier of systems for passenger cars, commercial vehicles and industrial technology, enabling the next generation of mobility. He previously served as Vice President, Strategic Planning and Vice President, ZF Asia-Pacific, based in Singapore, where he led units from the Middle East, India and Asia Pacific. McCorry holds an MBA from the University of Buffalo and



Joseph McCorry

is an alumnus of Stanford University after completing his SEP (Senior Executive Program).

“We are glad to welcome Joe to our team. We believe his vast experience and global perspective will be key in enabling FinishMaster to drive further organizational and operational efficiencies while leveraging our national footprint and tapping into new growth segments,” says Brent Windom, President and Chief Executive Officer, Uni-Select Inc. “We wish to thank Rob Molenaar who played a pivotal role as Interim President and COO during a year of profound transformation. His guidance has been invaluable to the team in the successful deployment of our Performance Improvement Plan.”

Molenaar will continue to sit on the Board of Directors of Uni-Select.
www.uniselect.com

General Magnaplate Announces New Chief Operating Officer



Ashley Saunders Russo

General Magnaplate, a maker of engineered coatings technology, has announced Ashley Saunders Russo has been appointed as Chief Operating Officer. Russo has been responsible for consolidating Mag-

naplate’s operations through the merging of the Linden, NJ, and Arlington, TX, facilities and will continue to oversee ongoing business operations. Candi Aversenti will retain her position as CEO and Edmund Aversenti will stay on as President.

“Ashley brings an excellent energy to the company,” says Aversenti. “She is no stranger to running a successful business, with numerous accomplishments in the field of journalism and media production for over 20 years. Her ambitious and generous spirit will continue and refine the 70-year-old, three-generation legacy we have built at General Magnaplate as a technology

leader in the field of engineered coatings.”

The consolidation of General Magnaplate’s New Jersey and Texas facility began in July of 2019. The move combined all engineered coating processes under a single roof to maximize efficiency, improving lead times for clients and strengthening focus on customer satisfaction through innovation, performance, product

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quality and experience. Freeing up over 8,500 square-feet, the upgraded Texas facility plans on completing the transition by the end of 2019 under Russo's guidance.

An entrepreneur, Russo has produced content for many national publications, including Women's Day, Prevention Magazine, and Cooks Illustrated. She has also served as a producer for the Weather Channel, NBC's Today Show, and Bloomberg L.P. before building her own company, the Emmy award-winning ASR Media Productions. www.magnaplate.com

Trinh Nguyen Named Technical Market Manager at Orion Engineered Carbons



Trinh Nguyen

Trinh Nguyen has joined Orion Engineered Carbons as Technical Market Manager – Coatings. In this role, she will provide technical support to North American customers, collaborate with them to resolve technical issues, and initiate and direct coatings-related laboratory and manufacturing trials for Orion.

Prior to joining Orion in November, 2019, Nguyen served as technical service chemist at BYK USA Inc. in Wallingford, CT. Previously she was an R&D chemist at Chad Labs Corporation, Milford, CT. Nguyen earned Bachelor's and Master's degrees in chemistry at Southern Connecticut State University, New Haven. www.orioncarbons.com

Calendar of Industry Events

POSTPONED: May 20-21, 2020: Canadian Paint and Coatings Association 107th Annual Conference & AGM, Quebec City, QC. www.canpaint.com

June 14-18, 2020: CORROSION 2020, Houston, TX. www.nace.org

June 15-17, 2020: SUR/FIN, Atlanta, GA. www.nasfsurfin.com

June 16-18, 2020: Fabtech Canada, Toronto, ON. www.canada.fabtechexpo.com

Sept. 15-17, 2020: AAC Aluminum Anodizers Council Conference, Nashville, TN. www.anodizing.org

October 22-23, 2020: Canada Woodworking East, Espace St-Hyacinthe, St-Hyacinthe, QC. www.canadawoodworkingeast.ca

November 18-21, 2020: Fabtech 2020. Las Vegas, NV. www.fabtechexpo.com

April 28-30, 2021: Women in Finishing FORUM, Embassy Suites South Bend at Notre Dame, South Bend, IN. www.ccaiweb.com/page/WiF



Fabtech 2020, Las Vegas.

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Paint & Coatings Issues in Canada

BY GARY LEROUX

PROBLEM FORMULATION AND INFORMED SUBSTITUTION

CPCA is part of a larger industry group of associations /companies that supported and assisted in the development of a report on informed substitution and problems it presents as they relate to alternative assessments. The report is now finalized and was submitted to federal officials early in the year to help them better appreciate the challenges with problem formulations in the chemical industry before they consider including further mandatory requirements in the chemical assessment process. If informed substitution is made an integral part the assessment process it could be problematic for a number of manufacturing industries. Compelling an industry to substitute alternative substances for certain product formulations, regardless of the costs or the impact on performance, will have a negative impact for a wide range of finished products now in commerce.

AMENDMENTS TO CEPA COMING

While it is fully expected that amendments to the Canadian Environment Protection Act (CEPA 1999) will be considered by the current Government, it is not expected to be taken up by the federal Cabinet until sometime in the Fall of 2020 or in the first part of 2021. The latter is now more likely the timing under current circumstances. However, there is an undefined legislative package expected for all stakeholders to view related to CEPA amendments and that will be available before year-end. An industry group focused on the potential CEPA amendments was formed in January and recently reconsidered the most recent Parliamentary Environment Committee recommendations for amending CEPA.

The industry group, of which CPCA is a member, will prepare formal responses and refine industry positions with respect to those amendments endorsed by the federal government in its June 2018 follow-up report to the Standing Committee on Environment and Sustainable Development. CPCA will continue to discuss specific industry positions developed in concert with its members in 2017 and determine if those positions are still valid or need updating. Once that is completed, advocacy efforts will focus on those recommendations as it relates to this government initiative. Part of that effort will include an all industry position to be submitted to the current govern-

ment strongly recommending maintaining a risk-based approach for chemical assessment under the CMP. It will also include the need to address two major government priorities, namely, “informed substitution” for alternative assessment and “prioritization of chemicals in commerce.” CPCA will continue to solicit member views on both of these matters and refine current positions as needed.

NEW VOC LIMITS ON HORIZON FOR ARCHITECTURAL COATINGS

As part of ongoing federal government actions to reduce VOC emissions in Canada, they are now proposing an amendment to the VOC Concentration Limits for Architectural Coatings Regulations later this year. CPCA provided all architectural paint manufacturer members a copy of a recent report on the current status of VOCs in architectural coatings in Canada and the association is now considering the implications of that report and how the industry should engage with officials going forward. The final report on the state of VOC emissions per the current limits in Canada will inform federal officials on the regulatory development of a revised proposal on VOC limits for 37 architectural paint categories and possibly more.

The national paint survey focused on a comparative analysis of the VOC limits in architectural coatings in Canada and various US jurisdictions such as the estimates of VOC emissions reduction expected from the adoption of both CARB and SCAQMD VOC limits; the adoption of the OTC Phase II limits; and the results of a preliminary “cost impact analysis” specifically related to a conversion to OTC II and CARB 2019. For CARB 2019 being adopted, VOC limits would be more restrictive in 37 of the 66 categories of products having been surveyed compared to 25 categories for OTC II and 40 for SCAQMD. Additionally, there were 14 categories for which ECCC have not considered imposing any limits.

It is suggested in the report that government can achieve very significant VOC emissions reduction by aligning with OTC, CARB or SCAQMD’s VOC content limits in the U.S. (i.e. in the order of 4.4 – 7.7 kilotonnes of VOCs per year or 38-65 percent of current VOCs). It concluded that significantly higher VOC emissions reduction can be achieved from the adoption of CARB 2019, compared to the adoption of OTC Phase II as well as a lesser cost impact, hence largely weighing in favour of CARB 2019.

However, the overall cost-effectiveness is less attractive for establishing new VOC content limits for colorants. Moving forward there will need to be full consideration of the impacts of moving in any direction and the impacts that it would have on both SMEs and large companies operating in Canada and the varying climates across the country.

The ECCC performance assessment of the Canadian Architectural VOC regulations achieved in 2015 (based on 2014 data) estimated the total VOC emissions of architectural paint products on the Canadian market at 16 Kt. The current and more comprehensive 2018-2019 national survey data gathered in the survey suggests the total VOC emissions are in the order of 11.7 kilotonnes. Just over a period of five years, the Canadian architectural sector achieved VOC reductions in the order of 4.3 Kt or 27 percent. Any consideration of new VOC limits should recognize this situation before jumping to the stricter and most punitive CARB 2019 limits for 36 categories of paint products. Why would Canada jump to CARB now, a model that was not adopted by any other US state, while the Canadian paint industry has already made significant reductions under



current regulations? The self-imposed VOC emissions reduction performance achieved by the paint industry shows it continues to actively reduce VOC emissions from its products, independent of any heavy regulatory efforts. Paint manufacturers must also respond to a growing trend



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in the industry with consumer expectations for lower VOC products, which will not abate any time soon.

These and other factors will be a major part of CPCA's advocacy effort as we enter into deliberations with federal officials on the way forward with new limits for architectural coatings. To this end, CPCA has already provided substantial feedback to government officials on all the concerns gleaned in discussions with member companies on this new government initiative.

ONGOING WASTE WOES IN ONTARIO

CPCA continues to advocate for the return of more than \$16 million improperly charged to paint stewards in Ontario, all of which are CPCA members, when the paint recycling program was operated by Stewardship Ontario, before the program was

taken over by Product Care in 2015. However, Stewardship Ontario, supported by the Resource Recovery Authority, has consistently refused to return the money paid by paint manufacturers, which has been held in trust for several years. That trust however has been broken as Stewardship Ontario has said it plans to keep approximately \$10 million to wind up the MHSW program. This is being done despite the fact that they only operate two material categories with 80 percent of the materials having moved to other program operators for a number of years; more than five years in the case of paint and coatings. No reasonable explanation has been provided by Stewardship Ontario or the authority as to what the funds will be used for and why it is so high. The fiduciary responsibility to the industry stewards has been ignored and the responsibility is

rather to an organization that is but a shell, with no staff for the past several years and requiring recently hired consultants and an Executive Director to wind up Stewardship Ontario. The other Industry Steward Organizations (ISO) are run by their own program operators under annual plans approved and monitored by the Oversight Authority.

To make matters worse, this means less of the funds arbitrarily taken from stewards will not be used for the purposes the money was originally intended, waste recovery and recycling. Further, the Minister directed Stewardship Ontario to ensure those funds – in the order of \$53 million in total – would in fact be used for fee reductions for the benefit of consumers. As usual, the waste file in Ontario remains a problem for all concerned, especially industry, which has committed to recycling and the

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paint industry has met and exceeded targets for paint recycling in Ontario since the inception of the program. Other jurisdictions across Canada do not have heavy-handed authorities demanding funds for more staff and more office space, with very little prospect of getting better outcomes for waste reduction as is the case in Ontario. It is an ongoing saga of mountains of red tape and growing costs for industry in the province on the waste file.

CODE OF PRACTICE FOR MEKO

The federal government's recent report on the evaluation of the MEKO Code of Practice concluded that industry failed to meet the requirements under the Code. As a result, it is expected that additional use restrictions related to the anti-skinning agent will soon follow, which may include mandatory regulations as the risk management approach. Overall, the MEKO survey results showed low participation rates, which revealed to the government that the Code was not widely adopted. Based on the limited responses, overall 80-90 percent of MEKO concentrations were largely unchanged compared to five years ago, while the consumer education program part of the Code was poorly implemented and hard to find. Many companies did not have information on their websites on the Code. The Performance Measurement Report for the Code will be made public in the First Quarter of 2020. There are ongoing discussions as to whether Health Canada will opt for a specific MEKO regulation or some other measure to be determined in the coming weeks.

INCREASED SUPPLY CHAIN TRANSPARENCY FOR CHEMICALS

CPCA participated in recent interviews and a workshop on the federal government's efforts to obtain more transparency of chemicals in the supply chain. This initiative has been driven largely by ENGOS who feel

that the existing mechanisms in place to ensure full transparency in the supply chain are not enough in terms of protection for human health and the environment. They want to ensure there is more transparency not only for consumer product labels, but within the entire supply chain from raw material supply, to distribution along the chain, to the manufacturers, down to the consumer. While the objective has not been clearly defined, nor the approaches they

envision in terms of what is needed in addition to existing hazard communications platforms, they want to explore other issues like digitalization, circular economy challenges, competitiveness, etc., that might enhance the transparency for the benefit of all. ■

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

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paint and coatings manufacturing: POWDER COATING RESINS

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POWDER COATING RESINS is a periodic program that provides an in-depth look at the latest developments in the powder coating industry. This issue features a special report on sustainability, which is a major focus for the industry. The report discusses the challenges of developing sustainable powder coating resins and the role of manufacturers in addressing these challenges. It also highlights the latest research and developments in this field.

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Self-Programming Robotics and Aerospace Coating

How Automation Helps Meet the Industry's Unique Standards



With this aerospace part paint process, the robot has been able to create a digital twin part using a 3D visual scanner and subsequently create the fastest, most efficient paint path – without a human programmer – through self-programming technology.

BY FRANCOIS SIMARD

IN THE AEROSPACE INDUSTRY, every part, process and final product faces the highest possible standard for regulatory compliance. Customer expectations never cease to rise, and a combination of media scrutiny and public fascination – as well as demand – for air travel means that aerospace firms can't afford to be anything but the best they can be.

At the same time, it's never been harder to find front-line workers who can keep up with that demand. Those who have tried robotics just haven't found a feasible, sustainable way to deploy it – especially when it comes to high-mix scenarios where constant programming renders

the whole venture useless. However, with the advent of self-programming robots, the cost-benefit calculation they make there has radically shifted for the better.

WHAT IS A SELF-PROGRAMMING ROBOT?

A self-programming robot is a robot that is able to automatically generate a plan for a task based on realtime perception of the environment and knowledge of the process's constraints, all to the extent that it can then execute the task without oversight or human adjustment. The goal we set for a self-programming robot can come in the form of specific instructions (e.g. "paint this surface") or

use of a faces-specific goal from a CAD file.

The AI will take into account the limitations or technical specifications of the robot (e.g. how fast it is allowed to move), as well as the position of the object in front of the robot to create a valid plan for each part in realtime. The same way that a person uses their eyes, a self-programming robot uses 3D visual sensors to perceive every aspect of the object in front of it (e.g. what is the shape, size and relative position of the object to the robot) and relate it back to the task it's been assigned.

Then, using a set of AI-based algorithms, the robot interprets its instructions and figures out the most efficient path to reach the goal we set for it. This can also include situations where the object is in motion, like furniture or similar parts hooked on a continuous conveyor line. This all means that a robot can achieve greater, more consistent and more repeatable output in a variety of circumstances than a human painter or finisher without any additional costs depending on part variation or in high-mix circumstances.

WHY IS THE AEROSPACE SECTOR SO RAPIDLY ADOPTING THE TECHNOLOGY?

Unemployment is at a 50-year record low in the United States, while across North America, more skilled workers are retiring without younger workers ready, willing or truly able to take their place. As this has progressed, more manufacturers have faced greater specialization, increased level of rework and higher rates of non-conformance on human-driven processes – no matter how enthusiastic and motivated their people are about their jobs.

Adding automation has always been a way of engineering “around” problems like these, but for high-mix aerospace manufacturers, this hasn't historically been possible. They have too many different parts and tasks, too many points in their processes where non-conformance can seep in, and too many costs that add up if only one small step in their production process is flawed.

Because of the labor challenges they face, along with the inherently high non-conformance rate that can happen with most human-driven processes, introducing robotics has become more critical than ever. With the consistency, repeatability and reliability that robots provide, the aerospace industry has been pent up with demand with robots – only being held back by the fact that their tasks are so high-mix that they simply couldn't afford the integration costs that usually applied when the number of SKU rises.

HOW AEROSPACE FIRMS BENEFIT FROM SELF-PROGRAMMING ROBOTS

Aerospace coatings are often expensive, highly specialized and require incredibly skilled workers to apply them properly and reliably. With today's demand for air travel and

underlying labor market conditions, the supply of workers who can fill these roles is as short as ever.

In order to achieve the most consistent, reliable output possible, aerospace manufacturers have been looking for robotic and automated solutions to meet demand. However, in the kinds of high-mix scenarios that apply to most manufacturers, the costs associated with these strategies simply aren't practical to remain in business.

While this kind of stress is faced across the industry, no firm is comfortable if they're not able to meet demand. With the introduction of self-programming robots, the cost of automation is reduced to the extent that robots are finally widely usable for a variety of high-mix manufacturing tasks.

In spray process like painting, robot application have a 50 percent lower standard deviation in paint thickness, offering consistency and reliability that can't be met by a human, while this kind of quality also has knock-on effects down the pipeline - for instance, 50 percent faster laser etching time and a higher quality, clearer, more crisp output that customers love.

WHAT PROCESSES ARE COMING NEXT?

Painting isn't the only process that can benefit from self-programming robotics. Paint and powder coating have seen the quickest adoption primarily because they demand a significant amount of skill, but also put the worker in contact with hazardous materials while also being jobs that place a good deal of stress on human joints. Neither of these issues affects robots.

With that in mind, however, spray processes could include things like shot peening or sandblasting - processes more common to metal fabrication job shops - but with the right sensors and parameters, contact processes could also be ported to a self-programming solution.

With all of these capabilities in play and all the many processes present in the aerospace industry, self-programming robotics doesn't just offer an opportunity to reduce the time taken up by an individual process, but also the time taken up in transition or preparation between processes.

By incorporating these solutions first in the areas of highest need – painting and other spray finishing processes – aerospace manufacturers can give themselves a leg up on the demand they face while setting the tone for entirely new and more efficient production processes going forward. ■

Francois Simard is the Founder and CEO of Omnibotic, an AI-based self-programming robotics platform provider. With decades of experience in manufacturing, robotics and 3D vision, Francois has visited hundreds of manufacturing plants across a variety of key sectors, always looking for insights on how manufacturers can make work better, easier and more productive.

Manual Spray Guns

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COULD IT BE SAID that the spray gun is a backbone of the paint and coatings industry? Though it's hard to mess with a good thing, with manufacturers changing up models on an infrequent basis, it is definitely one area where there are a staggering number of choices.

In the manual arena, **SATA** says the greatest advances it has made in this product category are with its new SATAjet X 5500 and X-nozzle system. The system offers painters a choice of HVLP or RP technology, as well as two different fan shapes: I and O nozzle.

The SATAjet 5000 B Phaser HVLP is an easy-to-use spray gun developed in co-operation with the Porsche Design Studio. SATA says describes the gun as possessing "exceptional optics, exceptional materials and an exceptional design concept – for exceptional projects."

Combining the custom design with high-quality materials, the Phaser offers a whole new view on spray gun design, the company says.

Technologically, the Phaser HVLP is identical to the SATAjet 5000 B HVLP spray gun – utilizing the same nozzle concept and all the other technical features. Dubbed "the Super Saver", it achieves maximum transfer rates exceeding 65 percent, keeping material consumption to a minimum.

Most importantly, each painter can select a spray gun and nozzle combination set for their individual requirements. SATA says the consistency of the system makes it easy to choose the correct nozzle option to achieve the optimum finish.

SAMES KREMLIN FPro



SAMES KREMLIN'S FPro Airspray Manual Spray Gun is available in conventional, HVLP and LVLP and offers "effortless" spraying.

According to the company, it created airspray technology in 1925 and reinvented it in 2017 with a new way to atomize the paint. A patent-pending restrictor controls and pre-atomizes the paint into smaller droplets. It also slows the paint speed down and allows time for the aircap to atomize the paint at the perfect droplet size to avoid bounceback and increase transfer efficiency. The manufacturer's patent-pending Vortex system spins the paint, allowing high levels of penetration of the paint onto even complex-shaped parts. The path between the nozzle and the part is also longer, again, slowing the paint to avoid bounceback and increasing transfer efficiency.

SAMES KREMLIN says the FPro settings allow the operator to perfectly control and optimize the fan spray pattern for a high-quality result.

The FPro paint gun combined with the Vortex and Restrictor technologies can be used with all air compressors and are recommended to spray varnishes, lacquers, shades, polyurethanes including two components.

The FPro P LP air spray guns are also pneumatic HVLP spray guns with high transfer efficiency. A projector, model HVLP/LVLP can be fitted on the gun for small rates.

For higher rates, the company recommends the use of projectors, model CONV-23 27-Lvb, CONV-23 27-Mvb, CONV-23 27-Srb and CONV-33 40-Srb. The FPro P CONV, with high spraying quality, enables the operator to spray any kind of material (low or high viscosity).

The FPro is available with a large choice of kits with either pressure pots, diaphragm or piston pumps with suction rods or gravity-fed cup including all accessories (filter, regulator).



SATAjet 5000 B Phaser

NORDSON says its electrostatic Trilogy manual spray guns, in conjunction with the IPS power supply, feature Automatic Frequency Control (AFC) which assists users with transfer efficiency. The combination of spray gun current and part distance creates a variable micro-amp draw on the system; the higher the micro-amp draw on the system, the less efficient the system performs. The micro-amp draws on the system increases and decreases depending on two factors: the paint's conductivity level and the distance between the operator and the substrate being painted. With the Trilogy AFC feature, the micro-amp draw is manually set to the maximum allowable level, and the voltage automatically increases and decreases to maintain the micro-amp set point. This allows for a more efficient painting system.

To meet the needs of North America, Asia and Europe, the largest markets for Nordson's Trilogy non-electrostatic spray guns, they are available in two configurations: standard or metric fluid and air fittings allowing customers to adapt to any existing painting operation or install them in a new production line.



Prona R 4303

PRONA'S range of manual spray guns offers something for every type of painter and application. Prona says the R-2003 is suitable for large-area, high-viscosity paint uses in industries such as shoes, furniture and decor while the R-871 is suitable for walls, whether drywall or plaster.

GRACO offers many options in this category for homeowners to professionals to large industrial clients. It says it invented the first portable airless paint sprayer more than 60 years ago, with the systems being designed and built in the U.S.

Its Ultra Handheld line offers corded or cordless options. Graco says these airless handheld sprayers can spray anywhere in seconds with fast and easy setup, cleanup in minutes and achieve a perfect airless finish, even without thinning, and offer speed and reliability.

As the potential backbone of your operation, the best advice is to shop around and to get to know your supplier. They can provide you with all the knowledge and tools needed to make the most of your investment. ■

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SAMES KREMLIN

The Big Waterborne UV Switch

Waterborne UV coatings have come a long way.
Is now the time to start upgrading your operations?

By BASF

THOUGH THEY STARTED OUT on two separate paths, it turns out water-based coatings and ultraviolet curing technology go together like peanut butter and jelly — or in this case, science and sales. Since their introduction over 10 years ago, waterborne UV coatings have been quietly revolutionizing the wood and flooring industry.

Many companies have upgraded their operations to support waterborne UV coating production and meet increasing customer demand. While the terms “water-based” and “UV-curable coatings” might evoke their own respective lists of pros and cons, waterborne UV coatings seem to deliver the best of both worlds. They combine the eco-friendly properties of water-based formulas with the fast curing times offered by UV systems.

Many companies have caught on to the trend, vying to stay competitive as the market continues to evolve, while others are more resistant to the change. James Monroe, Market Segment Manager, Furniture and Floor Coatings at

BASF, believes this hesitation has something to do with a preconceived notion of waterborne formulations.

SHAKY START, BAD RAP

“Waterborne UV [coatings] have had a bad rap starting with their introduction,” says Monroe, adding that people in the industry are used to a certain level of performance, appearance, and pricing. The doubt facing waterborne UV coatings may have something to do with a good, old-fashioned fear of change.

Waterborne UV may have earned another part of its shaky reputation from non-UV water-based formulas, which were not able to deliver consistent quality and performance when they were introduced over 20 years ago. Despite their false start, water-based formulations have undergone drastic improvements since their first appearance. Many of them have come to match the durability and appearance of traditional finishes.



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NO EASY SWITCH

Another source of hesitation could stem from the hefty capital investment, as well as the time and knowledge needed to equip a facility for waterborne UV curing. “You need to have some knowledge of the coatings and materials,” says Monroe. While normal waterborne systems may not require much technical expertise, he explains, a switch to UV coatings involves a look at plant safety, assessments of the facilities, and more. Operations will need to shell out time and money for new equipment, employee training, and assessments to ensure facilities are conditioned for air movement, humidity, and other environmental factors. None of that can be done in a day, nor is it inexpensive.

Yet in spite of the shaky start and the challenges of making the switch, Monroe believes the wood and flooring industry has mostly embraced the change to waterborne UV. “Industry market reports support that [waterborne UV coatings] ... make up the largest growth area from a coating standpoint,” he says. Case studies have reported great benefits to companies making the switch, following a few months to a year of re-equipping facilities, training employees, and developing new formulations.

Before one can see the big-picture utility of waterborne UV coatings within the wood and flooring industry, it helps to understand them on a smaller scale. At their core, waterborne UV curable resins consist of microscopic polymer particles dispersed in water. The molecular mixture polymerizes almost instantly following exposure to a UV light source. The result? Thanks to the marriage of water-based compounds with UV curing, one can expect a formulation with little to no VOC content and rapid curing times.

Those who invested in a switch to waterborne UV coatings can now take advantage of high performance, strong chemical resistance, and exceptional productivity.

“The biggest benefit is manufacturing output and reduction in time,” Monroe says, reflecting on his personal experience working at an architectural wood product manufacturer. “In general, the finishing process was a three day process, and when we switched to waterborne UV it became a three hour process.”

In Monroe’s view, the superior speed offered by waterborne UV coatings outweigh many of the downsides, including the increased cost. He believes that when manufacturers are debating the changeover, they should “really place value on the increase in production.”

THE COST OF PROCRASTINATION

Anyone still hesitating to make a change should keep in mind that procrastination could cost more than the changeover itself. Following heightened public awareness of environmental and health issues, governments continue to place stricter regulations on manufacturers and the products they produce. A change to waterborne UV can head off

any problems relating to toxicity and volatile organic compound (VOC) levels while allowing one to stay competitive in the face of unpredictable market dynamics.

Monroe recommends making the changeover process as simple as possible, stressing that the words “UV curable” may seem less intimidating when the change is made one step at a time. “I would definitely recommend outside training for employees,” he adds, noting that the input and oversight he received from an outside third party was valuable to his experience during the implementation process. He also points to equipment suppliers and coating manufacturers with their technology advances that can make the process much easier than it was 10 years ago.

Monroe believes waterborne UV coatings have been “revolutionary in terms of the manufacturing cycle.” As their popularity continues to rise in the wood and flooring industry, companies that maintain a respect for speed and simplicity may enjoy a better experience while switching over to waterborne UV.

No matter what methods, business models, or mantras a company chooses to follow, it’s clear that more manufacturers are embracing waterborne UV coatings. As the industry catches up to its innovations, other companies may want to take a closer look at bringing their operations up to date – or risk being left in the dust. ■

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Next in **Line**

BY THERESA ROGERS

AS CANADA'S population is aging, so is its workforce. In 1996, there were 2.7 workers aged 25 to 34 for every worker aged 55 and older. By 2018, the ratio had declined to 1.0. The aging of the workforce is mostly the result of the large cohort of baby boomers who are entering their retirement years.

This gap is apparent in some industries more than others, including manufacturing. Closing the industry age gap is vital for hiring in the future. Attracting a younger generation to a career in any aspect of the manufacturing, paints, and/or coatings sector is set to be a big challenge for businesses of all sizes.

At the recent Powder Coating Week 2020 show in February in Orlando, a grassroots get-together took place of young professionals – those under 40 only – one evening over drinks. It made a promising start.

There were many great conversations that evening, so we thought convening a virtual roundtable of sorts to discuss this important issue of an aging industry would help keep the discussion moving. We've looked beyond the event to find a cross section of representatives from the industry. Here are some of the players and what they had to say.

THE YOUNG PROFESSIONAL

JOSH GILMORE

AGE 33

REGIONAL MANAGER

SAMES KREMLIN



Tell readers how you got the idea for the Young Professionals group and how it is coming to fruition.

At a PCI Annual Meeting, I was in the Membership Committee meeting and we were talking about getting members involved. I wanted to promote participation amongst young professionals in the industry as it seemed that it was primarily individuals nearing retirement who were being active.

What are your goals pertaining to this group?

To get young people active in the industry and most importantly, keep the powder coating industry growing and improving.

Where will this industry be in five or 10 years if measures are not taken now to get more young people into the industry and mentored by those currently working?

I think the industry will be in a lot of hurt. There are plenty of individuals in the industry now with lots and lots of knowledge that need to be sharing this with the younger generations to help keep ideas fresh and the industry evolving.

What do you think are the best ways to get more young people into the industry? What can both companies and individuals do?

This is a struggle and I know most of the companies in the industry are fighting this battle every day. With most of the emphasis on high school students to go to college and earn a degree, all aspects of manufacturing are basically ostracized as options to go into. I know that PCI and CCAI have begun initiatives to introduce high school students to the industry and the many careers in it that are looking for bright, young minds.

How did you feel about the first event that took place recently in Orlando?

The initial social gathering of young professionals was great. I was impressed with how many folks we had show up and seem genuinely interested in getting together to improve our industry.

It initially struck me that the invite was extended to those 40 and under. I would think of a “young professionals” group as including people in the 20s and 30s age range. That tells me that there are very few in this range.

Would you agree?

I definitely agree! When I first started thinking of the group itself, I was going to limit it to 20-30 as you see most “young professionals” groups. Then I started realizing, wait! I’m on the outs of this group myself, and started reflecting on my career in finishing. I never in a million years saw myself in this industry as I was working my way through high school as well as college. I earned my degree in architecture; I wanted to design multi-million-dollar houses in the ski resort towns of Colorado. When the economy went south while I was in college, I expanded my career options by picking up a minor in business hoping to make myself more marketable. Needless to say, I didn’t fall into this industry until I was 27 years old. It then took me another three years before I actually got comfortable enough in it to become involved. Since then, I have sat on various committees, sharing ideas, chaired the Membership Committee for a brief time, spoken at conferences and continue to be involved.

THE MENTOR

BECKY BROWN

AGE 55

MANAGER

COLUMBIA RIVER
POWDER COATING



When we met, you mentioned two recent young hires that you believe have great potential in this industry. Tell us about them.

First, I hired Preston Stotts when he was 20 years old. He is 21, now. Every new hire starts out sandblasting. Preston sandblasted for over six months before we brought him in to powder coat. I like to have all my employees cross-trained, so they know how to sandblast with all that entails and then to powder coat. I brought in our Cardinal rep, Alex, (who had been a powder coater for 12 years prior to working for Cardinal) to work with Preston and our other employees. They have learned a lot.

About eight months ago I hired Jesse Clark, who is 21 and going to college at night to be an EMT while working part time at the shop. Preston has started working with Jesse and showing him how to powder coat. Jesse recently powder coated his first truck bed.



Jesse and Preston in the shop.

Why did you hire them?

Both Preston and Jesse were hired through an employment temp service in town. I hired them because I liked their personalities, both different, but great young men. They had good energy and they've turned out to be wonderful employees. I could not have found any better. I wanted younger employees to train them the way I wanted things done.

Where will the industry be in five or 10 years if measures are not taken now to get more young people into the industry and mentored by those currently working?

I think the industry will keep going strong. There is a huge trend of steel manufacturers adding powder coating shops to their businesses, so in this aspect, there will be older employees to teach the new ones and share their experience. I think where the industry will struggle will be the younger businessmen who want to start custom coat shops. They will lack the knowledge of coating and they will have to compete with manufacturers that already have powder coating facilities. There is a lot more to powder coating than many people realize; it takes skill and a certain talent. That was our biggest obstacle, to have someone actually give our powder coaters hands on training.

As a woman, of which there are obviously few in the industry, perhaps that gives you a different perspective when hiring, training, and keeping new employees? Can you speak to that?

I never looked at any of those questions being from just a women's point of view, but I guess since I'm a woman, my point of view qualifies for just that. When hiring, I wanted to hire younger people, someone I could train to do things the way I wanted them done, as opposed to have to retrain an older employee. I also wanted younger people, because I want to invest in their future and plan on keeping them around. Take Preston for example. I have him doing 90 percent of the powder coating now and I am training him to be the lead powder coater. I have plans for him to help run the shop in a few years, which he does a lot of already. He is still young, but very capable. His greatest trait when it comes to powder coating is his heart and passion for his work. He treats every job as if it was a job for himself. If something doesn't work out he wants to know how to fix it and keeps building his knowledge base with every new job.

I do my best as a manager to make sure my employees have all the proper tools and equipment they need to do a good job. I think it is important to make your employees feel valuable and important. I want to give them the self-confidence to do their jobs and I try and provide them with knowledge when the need comes up. I arrange dates and times to have our Cardinal rep, Alex, come to our shop and teach the boys things like powder gun maintenance, how to fix different things that might happen when you coat, and how to powder coat certain types of metal. I feel the more I elevate myself with my employees, and we do this as a team, it's better for them and for the business as a whole.

What do you think are the best ways to get more young people into the industry? What can both companies and industry do?

I think young people can easily get into the industry. For about \$50,000, a person could open a small custom coat shop, but the biggest difficulty and hurdle I see is they would not realize that there is an art to powder coating, or at least to doing it right. There are few places where people can go and get hands-on training in powder coating and if you do not know what you're doing, you will lose money in a business fast with constantly having to redo everything. Your reputation will be shot. Also, I don't think powder coating has the return that most young people are looking for in this day and age. It is a lot of work that doesn't bring in a lot of money in the beginning, and younger people tend to like a quicker turnaround with their investments of time. I think if the industry really wants to help the younger powder coaters, they would offer schools that would give hands-on experience to help cut wasted time and mistakes so when they go out and powder coat they are experienced and it will help expedite them to success.

It struck me that the event invite was extended to those 40 and under and there is some work to be done to get young people into the industry.

Yes, I certainly agree. I felt over 65 percent of the people attending the conference were over 50. I think I saw more young professionals when it came to the vendor booths, than younger people attending the conference.

Is there anything you would like to add that people should know?

I think when people decide to go into powder coating for a business, they need to do their research, attend one of these conferences, get a feel for what they are getting into, and learn, learn, learn. Most people have the mistaken idea that powder coating is so easy and there is nothing special about it. But, if you really care about the quality of work that you put out, and want to be a responsible powder coater, it is a big deal. I have learned more about powder coating in this last year than I even knew existed and by next year I'm sure my guys and I will have learned even more. Take pride in your work and it will take you far.

**THE INDUSTRY VETERAN
GARY LEROUX
PRESIDENT AND CEO
CANADIAN PAINT AND
COATINGS ASSOCIATION
(CPCA)**



Where will this industry be in five or 10 years if measures are not taken now to get more young people into the industry and mentored by those currently working?

It will be challenging if we do not find a way to attract the best and brightest out there. Many companies are recognizing this fact and the CPCA board has also been considering ways in which the association can help. We have done a few things like launching our online CoatingsTech course six years ago to assist those entering the sector or thinking about it; we have always tried to invite students in the sciences to attend annual conferences across the country to gain exposure to our sector and meet potential employers; and more recently, we have been considering

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ways and means to engage more women in the industry by raising the profile of the many fantastic women we now have. The problem is, we don't have enough of them! To the point, if we don't make a strategic plan to address the issue, the industry will be challenged and may have to find other ways of moving product such as via online platforms. More than just lacking new talent, we could be in a position of lacking the leadership and institutional knowledge needed to tackle and advance the industry as it has been over the past 20 years, wherein we have seen the deployment of new technologies and more sustainable and more functional/smart coatings come to market. All of this has seen consistent growth in the numbers globally, CAGR, every five years. The question is, will there be less advancement and less ability to keep up with these trends that are now part of the mosaic of the coatings industry. It's not clear yet if that will be the case, but it needs to be considered now, before it becomes a challenge we cannot meet in terms of new and strong entrants to the industry. This is a challenge all industries will face, but it may hit some harder than others.

What do you think are the best ways to get more young people into the industry? What can both companies and individuals do?

There are many ways to get more young people into the industry, old and new approaches will need to be employed. The old ways with internships, summer jobs exposing young people to the sector, and job fairs in concert with universities and colleges. Those have worked to some extent, but companies may need to employ more digital approaches to attract new entrants by exposing potential employees to every aspect of the industry. The industry is multi-faceted in terms of the many different jobs, but I don't think that is immediately obvious to the average person, and students considering a career of some sort. We need to do a better job of exposing those jobs to prospective employees. Too often we talk about the challenges in the industry and not the many successes that have led to innovations for more sustainable products, smart coatings for unique sectors like aerospace and electronics, products for microbial control that take on a whole new meaning in the current pandemic environment, the same coatings that help reduce fossil fuel consumption and enhance air quality, etc. We need to accentuate the positive, as the old song goes, and raise awareness of how coatings help reduce the environmental footprint of many other industries. New recruits are now more focused that ever on value companies that can deliver environmental and societal benefits for all. The social license for the coatings industry is strong but we all need to communicate it better. We have tried to do that more at CPCA and will continue in the coming years.

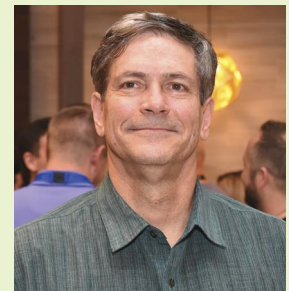
Do you have any numbers such as the percentage of the workforce in the industry over 50, etc.?

We don't have specific numbers per se, but we all know from anecdotal evidence that it is high, but we are not alone in that regard. That is a product of demographics and the bulging boomer generation that will not be replicated again any time soon, if ever. It also has to do with the fact that traditional industries have evolved and while the coatings sector has as well in terms technology that is not well known and it is not perceived as a tech industry per se. Even if the number is half that is an issue that will need to be addressed.

Is there anything you would like to add that people should know?

The digitalization of the coatings industry throughout the supply chain is moving at a fast pace and that will likely have an impact on bringing in new entrants both of necessity and the fact that it will signal to prospective employees that the industry needs new skills and by virtue may become better known by others age groups seeking new challenges. It's a matter of awareness. Most people see the industry as the paint on their wall, which is a big part of it of course, but there are so many more segments they are not aware of in terms of the kinds of jobs they might have an interest in pursuing. I think that awareness needs more focus by all in the industry and more importantly, we need to find new ways of communicating the excitement around the industry and what it offers.

**THE ADVOCATE
KEVIN COURSIN
AGE 61
EXECUTIVE DIRECTOR
POWDER COATING
INSTITUTE (PCI)**



What are your goals as new Executive Director, broadly and pertaining to this group?

Ultimately, my goal would be to get this group more active in PCI. I would like to have them join some of our existing committees to provide their viewpoints and interact with others. I would also like to form a sub-committee to develop new marketing and promotional items that would target their age group.

Are you and the Board taking a more progressive mindset in terms of these industry issues than perhaps leaders have in the past? If so, why?

ConnectingChemistry

We have been discussing the aging workforce for a while and know there is a need to get younger individuals involved in our industry. Those of us with the greying hair finally are facing the fact that we will be leaving in a few years and we want to see the industry we love continue to thrive. We know we must attract and train the next generation to take over in order for that to happen.

Where will this industry be in five or 10 years if measures are not taken now to get more young people into the industry and mentored by those currently working?

Those nearing retirement literally grew up with the growth powder coating in North America. There is a lot of institutional knowledge we have gained working in the industry for many years. The transfer of this knowledge through a variety of initiatives such as our Young Professionals is critical for the industry to continue to grow.

What do you think are the best ways to get more young people into the industry? What can both companies and individuals do?

Both the industry and companies need to promote that this industry has a lot to offer a young individual. Even though the powder industry might not be as sexy as computer programming or the automobile industry, it is using very advanced equipment and needs both those with trade skills and advanced degrees. Also, many jobs are local to their hometowns.

How can people become active with the PCI Young Professionals group if they are interested?

PCI will be inviting them to join some of the existing committees and get involved. We will have further discussion with the Board of Directors on additional activities we might want to add.

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Is there anything you would like to add that people should know?

We hope any new young professional will give this industry a good look for career opportunities. We want to be able to show them what is possible and that with industry organizations such as PCI it can be fun meeting people that share the same passion.

THE ESTABLISHMENT

BOB SMITH

AGE 72

PRESIDENT

CANADIAN ASSOCIATION FOR SURFACE FINISHING (CASF)



Where will this industry be in five or 10 years if measures are not taken now to get more young people into the industry and mentored by those currently working?

This is something that CASF have been discussing and addressing for several years now. It's a very real concern as the current workforce ages and all those years of experience are lost to retirement. Of course with the necessary tightening from within the various levels of government, and the industry's policing itself out of its own concern for the environment and its future, we have seen the loss of many of the marginal shops over the past five to 10 years. One hates to see this erosion but in truth, these shops were destined to get caught up in the changing times and technological advancements. On the bright side, this led to a pool of available experienced manpower that were absorbed by the larger finishing shops and took a little of the pressure off the big issue of the aging workforce. But today there is no more relief possible from this source.

One thing we at CASF have seen is a ramping of concern within the industry management teams that has resulted in more focus being placed on the young people entering our industry. Ways are being found to generate a sense of value in these younger employees such that they stop seeing their job as a stepping stone along the way to something else and encourage a loyalty and pride in what they do, and rightly so! Take a look around you at the many ways our industry has demonstrated: the brightwork in the automotive arena, the satin and dark chromium finishes everywhere, the faucets in every house, the black corrosion-resistant finishes under the hoods of vehicles today that 10 years later are still corrosion-free through surface finishing industry technological advancements in zinc alloy finishes.

CASF recently held its 2019 Conference in Toronto and concurrent with that we ran an "Introduction to Electroplating" course specifically designed to appeal to both Surface Finishing shop management as a tool to educate those young people at the front line in their organizations and also, equally important, to encourage that sense of pride mentioned earlier in these young people that they were seen as important and the future of the industry. We think it was a win-win for our very first course with 22 attendees. It was a 1.5-day course and exam, and as a bonus, they all came away with a much broader understanding of the fundamental basics of surface finishing to build from. CASF has plans to run this course regularly in the future and introduce more courses as time passes and all with the mandate of training the young people in our industry for the future.

What do you think are the best ways to get more young people into the industry? What can both companies and individuals do?

There is no easy way. Young people today are attracted to the internet and jobs in technology in all its forms, the big communications companies, finance, or picking up a trade. Our friends over at CPCA face the same issues and there is no simple answer. That's why at CASF we took the approach that in order to generate interest, we needed to go to the bright young people at the colleges and universities directly by presenting to the graduating classes in their Chemistry and Chemical Engineering departments.

Is there anything else CASF is actively doing on this issue?

CASF has been to both Seneca College at York and the University of Guelph and presented to their graduating classes. The format was a "Lunch and Learn" with a lunch provided by CASF. This was preceded with a presentation on the surface finishing industry to the graduating class by several CASF Board members. We took along with us a bright young member from the surface finishing industry as the final speaker, and he gave an overview of his education and experiences in the industry. At Seneca, it was a 31-year-old Technical Manager from Tenneco in Owen Sound, and at Guelph it was a 30-year-old Senior Process Engineer at Kuntz Inc. After both presentations, each of these gentlemen quickly became the center of a scrum, bombarded with endless intelligent questions from these bright, young potential candidates for our industry!

Time will tell if these efforts produce results but it's hard to imagine we didn't provide some food for thought in the room. ■



Powder Coating Week 2020

Powder Coating Week attendees descended on Orlando in February for days of powder coating events and learning. The week included three separate events: Powder Coating 101 Workshop, Custom Coater Forum, and the Technical Conference + Exhibition. The technical conference featured general sessions of interest to all powder coaters, breakout sessions covering all aspects of powder coating, as well as a tabletop exhibition which allowed plenty of time for networking, learning and conversation with exhibitors and other powder coaters.



A Rainbow of Black



A BRAND NEW REPORT from Researchandmarkets.com says the world market for carbon black is expected to expand at a compound annual growth rate (CAGR) of more than four percent from 2020-2025.

Major factors driving the market are growing applications that are mostly in the fiber and textile industries, though paint and coatings, and toner and printer ink remain large market segments.

For its part, Orion Engineered Carbons is continuing its rollout of the company's new Colour Black FW 310. The company says it is the highest-jet carbon black available.

"Colour Black FW 310 can help designers reach new levels of black that previously were unattainable," says Jennifer Stroh, Orion's Marketing Manager – Coatings Americas. "It is an excellent choice for automotive OEM basecoats, refinish coatings and high-end industrial applications."

An after-treatment makes FW 310 a universal grade that performs equally well in both water- and solvent-borne

coatings, Orion says.

"Coatings producers can achieve similar results in applications such as automotive OEM and refinish that require different solvents," adds Carlos Hernandez, Senior Technical Market Manager – Coatings Americas.

Orion offers a range of specialty carbon blacks for powder coatings including grades for coatings requiring low, medium and high jetness.

The company says Colour Black FW 1 and Colour Black FW 171 Beads, for example, show excellent coloristic properties in powder coatings and outperform similar products in the high-performance category.

"In Orion's test formulation, the results of Colour Black FW 1 and Colour Black FW 171 BEADS showed high jetness even though they were not post-treated," says Stroh. "Depending on the formulation chemistry, grade selection can be made to optimize the perfect undertone and jetness to meet product requirements."

Last fall, Orion opened a new technical service applica-

tions laboratory in New Jersey. In addition to serving coatings and ink customers in the Americas, the lab will take on projects with global application and investigate fundamental advancements in carbon black technology.

“This laboratory will enable us to fast-track customer support, drive new product introductions, and strengthen our specialty carbon black business in the Americas,” says Corning Painter, CEO. “We will be able to formulate, run application testing on solvent- and water-based coatings as well as printing inks.”

The Birla Carbon Specialty Blacks business focuses on the plastics, inks and coatings markets.

Its newest solution is called Raven 5100 Ultra, which it says will help customers achieve “unseen jetness levels” in waterborne systems, superior performance and improved formulation costs.

“Our new Raven 5100 Ultra is the result of the transformative energy we’re experiencing at Birla Carbon. We’re constantly innovating to drive new ideas into market, so we can ultimately deliver better customer experiences,” says Todd Cottrell, President of Birla Carbon’s Specialty Blacks business. “This is just the beginning and with our expanding global footprint, we look forward to serving more customers with our expertly crafted solutions.” ■

Carbon Black Market Growth, Trends, and Forecast (2020-2025)

A brand new report says the world market for carbon black is expected to expand at a CAGR of more than four percent from 2020-2025.

More highlights

- The tires and industrial rubber products application is the largest application segment of the carbon black market with more than 80 percent of the market share.
- Other than tires, it is also required for various molded and extruded industrial rubber products, such as conveyor belts, gaskets, air springs, and grommets to provide flex strength.
- Other large markets include paint and coatings, and toner and printer ink.
- China contributes nearly 43 percent of the global carbon black production, with a volume of almost 5.7 million tons. China is also the global largest exporter of carbon black. The primary carbon black feedstock is coal tar.
- Carbon black prices in China have surged in the recent past, due to a supply shortage amid plant shutdowns caused by the Chinese government’s intensifying environmental protection campaign.
- The plastics industry in China is the world’s largest, accounting for nearly 30 percent of global production.

Note: No figures related to the current health crisis and its effects on Chinese production have yet been released.

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COATINGS TESTING Maintains Standards

PRODUCTION OF PAINTS AND COATINGS calls for rigorous testing standards in the plant. Batch testing, regular sampling and sometimes, determining how a process went rogue one afternoon, are essential steps for completing a quality job.

Stone Tucker Instruments supplies coating inspection instruments to meet any type of testing need. Its proprietary STI Long Arm Probe Extender uses a jointed pole to extend the tester's reach into awkward or deep locations, or narrow spaces too small for an adult arm. The extender will fit a range of DeFelsko probes.

A full range of DeFelsko equipment is also available, such as the PosiTector RTR H, a surface profile gauge for blasted steel and textured coatings. Digital spring micrometers measure and record surface profile parameters using Testex Press-O-Film replica tape. The company says no calibration adjustment is required for most applications; it is solvent, acid, oil, water, and dust-resistant, and weatherproof; it may be attached to any PosiTector probe; and it's portable, with USB, WiFi, and Bluetooth connectivity.

Geneq offers Elcometer, Zehntner and ElektroPhysik products for testing coatings and paint thickness.

The Elcometer 415, for example, can measure paint and powder thickness of smooth coatings on both ferrous and non-ferrous metal surfaces.

The gauge automatically switches from ferrous to non-ferrous, as the substrate dictates. Elcometer says it is ideal for measuring the thickness of paint or powder coating on steel and aluminum, as is the case for body panels or in a workshop.

It features a large display, and is capable of more than 60 readings per minute. The central probe has a V-groove, which ensures repeatability of readings on flat and curved surfaces. Other notable features include an angular sensor, large screen, measurement capability of all angles, and measurement in metric or imperial units.

Fischer offers instruments for testing coating thickness via nine different methods including coulometry, STEP test, Eddy Current Method (amplitude of phase-sensitive), magnetic induction process, duplex measurement, magnetic process, micro resistance method, and x-ray fluorescence.

It has strongly promoted its Fischerscope ST 200 systems for scratch-testing coatings on hard substrates.

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.

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 Industries' Materials Test and Measurement Division specializes in the design and manufacture of test instruments. Best known for its expertise in abrasion and surface wear, Taber also offers solutions to measure resistance to scratch, mar and scuff damage, along with bending resiliency and stiffness.



Elcometer 415.

The TABER Rotary Platform Abrasion Tester - Model 5135 or 5155 - is commonly referred to as the Taber Abraser (Abrader) or Rotary Platform Dual (Double) Head Tester. First introduced in the 1930s, the instrument was developed to perform accelerated wear testing. It can be used to test a wide spectrum of materials including plastics, coatings, laminates, leather, paper, ceramics, carpeting, and safety glazing.

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 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.

Companies looking for more extensive support beyond in-house measures, or looking to solve a particular issue, may choose to look outside their walls for testing.

Intertek, with locations across Canada, offers coatings testing and analysis to support development, formulation and performance or failure investigations through chemical and physical property testing.

It positions itself as a third-party resource which can provide analysis and advisory services to support the research and understanding of the coating’s fundamental

5135 and 5155 Taber Abrasers.



properties and chemical composition.

In the product development phase, Intertek can perform mechanical property testing, scratch resistance, conductivity, thermal stability, or detailed analysis of formulations, and how they may affect cure profiles.

In the final or pre-production phase, the insights can answer questions regarding quality control, quality assurance, or meeting regulatory requirements for powder coatings, adhesives, specialty coatings, paints, lacquers, multilayer systems, laminates, thin-films, and others.

These options just scratch the surface of what is available. As with many aspects of business, one must spend money to make money so while equipping an in-house laboratory or contracting an external laboratory is not a cheap proposition, it is essential. Today’s instruments have an increasingly broad range of capabilities, offering more functionality and value than ever. ■

The Bedrock of Canada's Economy

BY GARY LEROUX

AS IN OTHER COUNTRIES, Canada's coatings sector is a mix of large multinational and national companies. Within this mix are a range of Canadian small and medium-sized enterprises (SME), which are defined as companies of 500 employees or less.

Contrary to popular belief, about 92 per cent of all jobs in Canada are created by SMEs. The larger companies have the capacity for strong investment in R&D for technological innovation, as one would expect. Increasingly, in recent years, SMEs have also shown excellence in both R&D and innovation with a renewed focus on more sustainable finished products. For example, a number of SMEs have substantial labs where they conduct extensive testing on various product formulations, which includes the use of bio-based materials and nanoparticles for improved functionality. In fact, one CPCA member company, Montreal's **Nanoxplore**, has become a leader in the nanoparticle space producing graphite and graphene with state-of-the-art technology for improved performance and more sustainable products. Below is a brief account of several of CPCA's SME members who have stepped up to the challenge of sustainability.

The vast majority of architectural products now manufactured in Canada are water-based. In fact, more than 90 percent of decorative paints are water-based as well as 30 percent in the automotive sector, with that number growing steadily. Some SMEs have become leaders in new approaches to recycling post-consumer leftover paint under extended product stewardship programs across Canada. In 2019, more than 28 million kilograms of post-consumer paint was recovered in Canada by CPCA manufacturer members representing enough paint for 500,000 average-sized homes.

Among the leaders in recycled paint is **Laurentide Re/sources**, an SME based in Quebec with substantial R&D facilities that includes its recently opened 30,000 square-meter facility. Here, chemists work on new product formulations and new uses for leftover paint. Founded in 1950 in the city of Shawinigan, Société Laurentide is a privately owned manufacturing company that includes Laurentide Paint, specializing in the design and manufacturing of architectural and industrial paints; and Laurentide Re/sources Inc., a leader in the recovery and reclamation of post-consumer residual paint. The company's plants are located in Shawinigan, QC, Victoriaville, QC, and Springhill, NS, along with distribution centers in Richibucto, NB, and St. John's, NL. Recycled paint is preserved and

used to manufacture one of Laurentide's signature products, Boomerang Recycled Paint. The manufacture of Boomerang Recycled Paint emits four times fewer greenhouse gases (GHG) in the air than traditional paints. A number of manufacturers operating in Canada now offer consumers a recycled paint product along with a wide range of low and no VOC products.

Stains now also include water-based products to meet growing customer demands. Based in Strathroy, ON, for more than 30 years, **Sansin Corporation** is one of the companies that pioneered the use of sustainable stains and sealants. Almost 20 years ago it began using resins and gums from trees, while still retaining strong performance characteristics. Sansin is a global leader in environmentally friendly wood protection. Since 1986, it has focused on creating one of the best-performing, most beautiful waterborne wood finishes in the world. It has an innovative research and development program making it a leader in developing sustainable alternatives to traditional wood coatings and preservatives. With a growing network of dealerships across Canada, the United States, western Europe and Russia, Sansin EnviroStains are fast becoming one of the most popular brands for customers who demand the best in performance and beauty for their homes.

A number of Canadian companies collaborate with universities and research institutes to develop more functional and smart coatings. Another member company in Quebec, **CANLAK**, based just outside Quebec City in Daveluyville and in Markham, ON, has close to 200 employees. CANLAK is a key player in refining wood finishes for interior wood products to enhance both the appearance and performance attributes of wood. The National Science and Engineering Research Council of Canada created the "NSERC/Canlak Industrial Research Chair in Finishes for Interior Wood Products" with ongoing research focused on wood stains. Research and development is the foundation CANLAK's success with one of the largest application labs in North America and a team of chemists and lab technicians who are able to simulate conditions encountered on the production line for shop-applied finishing products. As with all SMEs, it continues investing in employees to ensure further product development and long-term growth to serve its customers in Canada and around the world.

For more than 50 years, **Halton Chemical**, based in Burlington, ON, has been driven to provide the best in custom formulation and toll manufacturing for global

clients. Halton has built its name on a commitment to quality, innovation, safety and environmental protection through research and development. The company has a fully equipped formulation lab providing the tools needed to develop and continually improve high quality products, including custom formulation and toll manufacturing. A team of chemists is led by Dr. Richard Johnston with 35 years of experience in formulating, problem solving and troubleshooting, with staff capable of handling even the most specialized client requests for solvents, waterborne products, polyurethanes, lacquers and related wood coatings, epoxies and adhesives.

As a third generation, family-run company, Halton Chemical maintains the values of its founders, two brothers and their co-worker dating back to 1965. The company continues to pursue the responsible use of chemicals in its products and to better understand and limit their impact on both human health and the environment. Evidence of Halton's commitment to quality is its distribution company, Katilac Coatings, which was ranked 25th in the annual Profit 500 rankings of Canada's fastest-growing companies by *Profit Magazine* several years ago.

The demands of the coatings sector is not unlike any other economic sector in that it must have a level playing field to conduct business. One of the main challenges for

a level playing field is the regulations imposed on the production and sale of products. The greatest impact of those regulations is often most severely felt by SMEs who understand first-hand the impact of regulations on their bottom line and their employees. In Canada, we have a disadvantage as Canada will often look to Europe for approaches to the regulation of chemicals in commerce, while Canadian companies conduct 75 per cent of their business with the United States where regulations often vary with those in Europe. In addition, the United States offers very attractive incentives for Canadian SMEs to relocate south of the border.

The Canadian Chamber of Commerce released a report last year noting Canada is already over-regulated, with more than 130,000 regulations at the federal and provincial levels of government. As a result, there is now a federal regulatory modernization effort underway to reign in outdated regulations. The goal is to ensure new regulations factor in the burden on industry, especially the foundation of Canada's economy – small and medium-sized enterprises. ■

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



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All MIXED UP

BY CHARLES ROSS & SON CO.

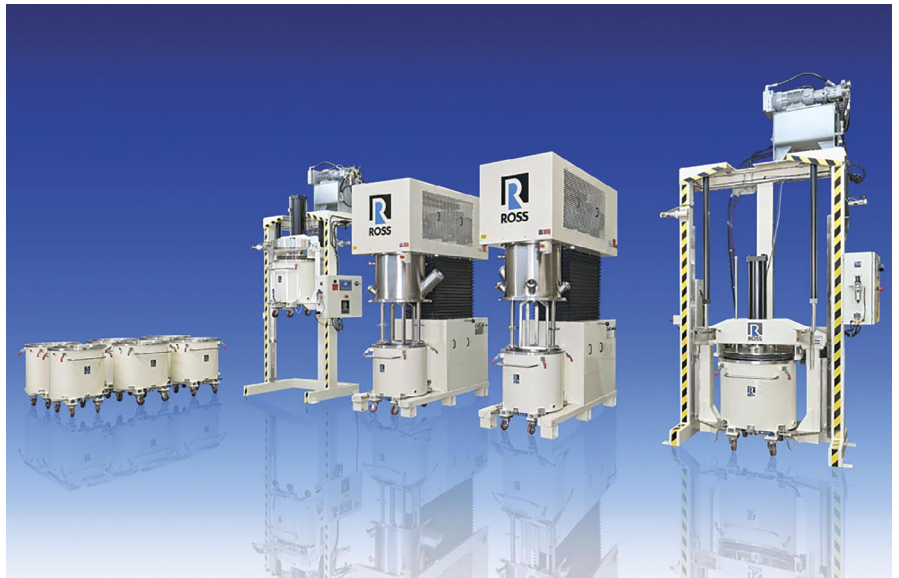
REGULATORY REQUIREMENTS in the past few of decades have prompted the coatings industry to move its focus from conventional low-solid, solvent-based formulations to water-borne systems, high-solids coatings, energy-curable inks and other low-VOC technologies. This important environmentally responsible shift coincided with exciting developments of new functionalities as a response to changing customer needs. Now faced with a growing demand for specialty and high value-added coatings, manufacturers are taking a closer look at their processing methods, including mixing and milling steps as coatings producers strive to improve performance and compliance while managing costs.

Various dispersion tools are employed in the production of paints, inks and coatings. 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. We'll review some considerations for high viscosity coatings and pigment dispersions here.

HIGH VISCOSITY COATINGS

Depending on their method of application and intended use, certain coatings are produced as high viscosity fluids. Controlling rheology is one way of achieving desired coating performance in terms of sag and spatter resistance, flow leveling, gloss, film formation and other attributes. The mixing technologies utilized in the production of high viscosity coatings vary from one formulation to another. Mixer selection is based on a number of factors but primarily viscosity profile and shear input.

Ross Multi-Shaft Mixers are well-proven equipment in the manufacture of high viscosity coatings up to several hundred thousand centipoise (cP). Equipped with two or more independently-driven agitators working in tandem,



The Planetary Dual Disperser (PDDM) delivers major processing power adhesives, composites, coatings, and chemicals.

multishaft mixers deliver a robust combination of high shear agitation and laminar bulk flow ideal for a wide range of non-Newtonian fluids. The agitators can be engaged in any combination and at any speed for any interval during the mixing cycle. Although this sounds complex, Multi-Shaft mixers are actually engineered to be comparatively simple and cost-effective.

The most economical design is the dual-shaft mixer which features a low-speed anchor and a high-speed saw-tooth disperser blade. A typical mixing procedure starts with blending of the solvents and binders, followed by stepwise addition of solids and minor liquid components, i.e. pigments, extenders, wetting and dispersing agents, rheology modifiers, defoamers, moisture scavengers, other additives and catalysts. Temperature control during the different stages of mixing is important and scrapers attached to the anchor agitator help optimize heat transfer across the jacketed sidewalls and bottom of the vessel.

Finished product that is too slow to discharge by gravity (even with assistance from the anchor) is usually pressed out of the vessel by a platen-style discharge system. This technique allows for fast and efficient product transfer with minimal waste and clean-up.

Specialty coatings that undergo very high viscosity



The Ross VMC-1000 VersaMix is a 1,000-gallon triple-shaft mixer available on a pivot-design single-post hydraulic lift. This allows the machine to be raised from a vessel, rotate 90 degrees and lowered into another vessel, reducing overall processing time and minimizing downtime.

peaks (above one million cP) are better prepared in planetary dispersers and double planetary mixers. Planetary-style mixers consist of two or more blades which rotate on their respective axes as they revolve around the mix vessel. The 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 large amounts of solids into a thick liquid base. Each agitator is independently controlled so flow patterns and shear rates are easily fine-tuned with every change in product rheology. The classic double planetary mixer, on the other hand, is ideal for formulations which start out with melting of a semi-solid or highly viscous paste. Moving at relatively low speeds, the identical planetary stirrers impart increasing levels of shear as the batch gains considerable viscosity. A typical

processing method in the double planetary mixer is mostly high viscosity mixing (to ensure satisfactory solids dispersion), followed by a let-down step towards the end of the cycle. Testing is recommended to confirm the best mixing strategy and

equipment for a particular high viscosity coating.

PIGMENT DISPERSIONS

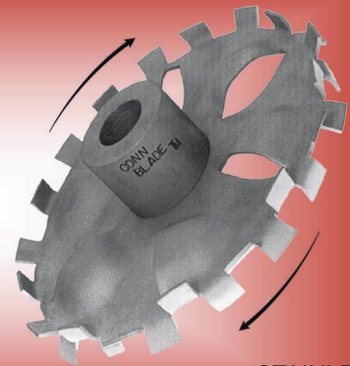
Pigment dispersions are typically prepared in a two-step process: (1) powder wet-out in a batching tank and (2)

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6



MIXING AND DISPERSION EQUIPMENT



The ROSS MegaShear HSM-706M-50 features a 50HP motor and is used in the chemical, coatings, composites and other industries for creating dispersions, suspensions and emulsions. This unit is mounted on a movable pallet.

one or more passes through a mill to achieve the desired fineness of grind.

The costly and time-consuming milling step is often a production bottleneck which in the past has forced manufacturers to add more milling equipment to handle multiple passes or

simply keep up with volume demands.

Today, companies are looking at better ways to prepare the premix and disperse agglomerates as closely as possible to the desired specifications to reduce the number of mill passes, allow the use of smaller grinding media, or even to eliminate milling altogether.

Ross High Speed Dispersers are standard processing equipment used throughout the paint, ink, chemical,

plastic, and adhesive industries. One of the most common applications of this basic mixing device is the wetting out of pigments (pre-mix preparation). Turning at tips speeds up to around 5,000 fpm, the saw-tooth blade of the high speed disperser produces a deep vortex on the liquid surface into which dry powder ingredients are added. At this stage, large and loose agglomerates are generally disintegrated by the high speed disperser. The resulting pre-mix is then fed to downstream milling equipment for the polishing step.

For pigment dispersions that demand very long milling times, manufacturers can improve overall production by upgrading the pre-mix step and without costly modifications to the milling operation. One such solution is the patented Ross PreMax Ultra-High Shear Mixer, a batch rotor/stator device capable of wetting pigments while accomplishing some level of grinding and fine deagglomeration. The Delta generator of the PreMax produces a double vortex – it draws product components from above and below the rotor – enabling very fast powder incorporation and product turnover at ultra-high shear conditions.

The PreMax is proven to generate higher levels of dispersion than any other batchstyle mixer including saw-tooth dispersers or dissolvers, traditional rotor/stators and immersion mills. In addition, mixing results in a PreMax are usually comparable to one or two passes through a media mill. This reduces the number of mill passes required to achieve the target particle size distribution, and in some applications, eliminates milling entirely.

It makes good business sense to optimize your operation's mixing and dispersion procedures. Even traditional products and well-established processes can benefit from a strategic reassessment of the operation. Some of these technologies are relatively new solutions to age-old processing issues. ■

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Automating THE PLATING LINE



THE SHORTER RUNS ENCOUNTERED in plating will probably never allow for cost-effective automation. But increasingly, as automated systems become less expensive and more versatile, a widening range of options is entering the plating market.

The shift to automation is being driven as much by the requirements for consistently better-quality finishes as much as it is by the basic economics of manufacturing. Platers need to establish their proficiency in the niches they focus on, and today's automation systems are a key tool they can use for achieving that.

Jessup Systems is a supplier to the industry specializing in programmable, automatic plating hoist systems. This includes barrel plating, rack plating, alodizing and anodizing, E-coat, A-coat, phosphate coating, and dye penetrant inspection of metal parts.

The company's turnkey plating systems include plating barrels integrated rectifiers, filters, boilers, chillers, ultrasonics, zinc generators, exhaust ventilation, water conditioning and waste water treatment equipment. The plating equipment is built from commercially available industrial

grade components. Each system includes a comprehensive spare parts list, start up, training, and lifetime e-support.

Its computer controls, the company states, automatically monitor, store, and export load by load quality data for immersion times, tank temperatures, rectifiers settings, chemistry adds, rinse water replenishment, barrel rotation/oscillation, ventilation/air make-up, and wastewater.

The goal is to install advanced machine features with complementary controls, to enable precise resource management, reduce operator input errors, and eliminate manual quality monitoring/reporting, thus reducing labor costs.

Jessup works with its customers individually to develop an operational plan to minimize downtime and maximize throughput. Usually, the company adds, the biggest challenges in implementing automation are financial planning and scheduling downtime. Cost estimates for automation can range from the mid-thousands, up to multi-million dollar expenditures for a complete line replacement. Both take analysis and planning to determine the project scope with the best payback.

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AUTOMATIC PLATING LINES

The company uses a simultaneous engineering approach to improving throughput. Factors taken into consideration include: rack and barrel design optimization; system layout; ergonomic load/unload areas; and bar-coding of part recipes.

Corrotec is another player in this particular market, and offers a full line of hoists for all surface finishing applications. These hoists run from 150 lb to 10,000 lb capacity, and have a zero to 60 fpm lift, with a lift mechanism based on a belt lift. The direct drive transfer systems have zero to 200 fpm transfer.

The units use solid-state electronics, need minimized maintenance according to Corrotec, and also include hoist automation features. These include laser or encoder-based horizontal positioning, a silent cable carrier with a cat track, and a variable frequency drive system for the hoist's lift/lower action.

There are slack cable safeties, a "station occupied" sensor, shuttle interlocks and hoist end-of-track safeties. Corrotec also offers return type machines, which are employed where extremely high throughput and detailed data logging are essential.

The difference between an automated hoist line and a return type machine is that a return type offers high throughput but low flexibility, while a hoist line offers less throughput and high flexibility. A return type machine works well for long production runs, while an automated hoist line is recommended for shorter runs.

The company's return type machines feature computer controls, automated or manual ergonomic load/unloading, delayed set-down, advanced pick up, cycle selector, lubrication systems, a built-in rack strip, built-in parts dryer, and vertical rack agitation. They also feature a positive chain drive, which can be designed to handle a wide variety of loads.

Corrotec's systems are also available with carrier arms in single or multiple rack arrangements. With

advanced pick-up and delayed set-down, carrier arms may be lifted independently to meet different specifications during one machine cycle. It has a PLC-based control system; process control data collection and reporting.

In the past couple of years, Anodize USA has heavily promoted its PAS II~III technologies, which offer a way to calculate the area of the parts being anodized, and the load size of a particular job.

"In the anodizing industry, using amps per square foot anodizing has always been considered the fastest and most accurate way of anodizing parts for a quality-minded customer," the company states. "The only drawback was figuring out the square footage of the parts and the load size. Measuring parts and then calculating the total square footage was a daunting and time-consuming task for the most conscientious operator and shop."

The company has now taken its technology two steps further. The new remote digital version of PAS II~III will send a still more accurate (ASF) signal to the line's power supply. That can be more than 50 feet away and through walls to the location of the control of the dc power supply.

"The PAS II~III remote read is simple, easy and requires no wires, just accurate ASF readings at your command," the company adds. The PASS II~III includes, if needed, a five-step ramp, with a total run time based on the 720 rule.

Automating a plating or anodizing operation is, like any automated installation, a process to be entered on carefully, and after extensive conversations with suppliers. Once put in, an automated system will also require a period where staff learn to use it properly, and find out its real benefits.

Properly conducted though, it can be a way to broaden a company's ability to serve its customers and broaden the niches it serves. ■



RadTech 2020 and the 2020 IUVA Americas Conference

Orlando was the place to be this winter as attendees of RadTech 2020 and the 2020 IUVA Americas Conference also gathered there to hear the latest news on energy curing technologies. Sessions included electronics, equipment, sustainability and regulatory, photoinitiators, kinetics, global markets, and more. Speakers who were unable to attend the event due to travel restrictions or concerns about COVID-19 were able to present via video.



Today's Dangler Technology

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 seek out and test new designs as the plant's requirements shift, or as innovative new concepts come onto the market.

If one aspect of dangler design has improved consistently over recent years, it has been the shift toward improving the insulating layers. Conventional vinyl sleeves, for example, can cause drag-out, whereas a plastisol dip gives a much more secure covering. The initial outlay per dangler for a plastisol covering could be higher, but it pre-empts the risk of a chemical ingredient being carried from one tank to the next, or the possibility of chromate leakage into the parts happening at the unload station.

On barrel plating lines, staff need to check the danglers each time the barrel is unloaded. In most production systems, there is usually enough time to replace a dangler without removing the plating barrel itself from the line. There is a selection of quick-change tools available from most suppliers that can make this process easier.

Most dangler suppliers will tell you that replacement of barrel danglers, or the contact tips, should be part of any ongoing maintenance program. A damaged or worn dangler can impede the plating process and add to production costs.

Dangler designs and construction change with the times, and the engineering they employ has shifted. There are also, of course, market forces forcing changes.

Over the past decade, new barrel lines were installed by many companies, with the higher capacities



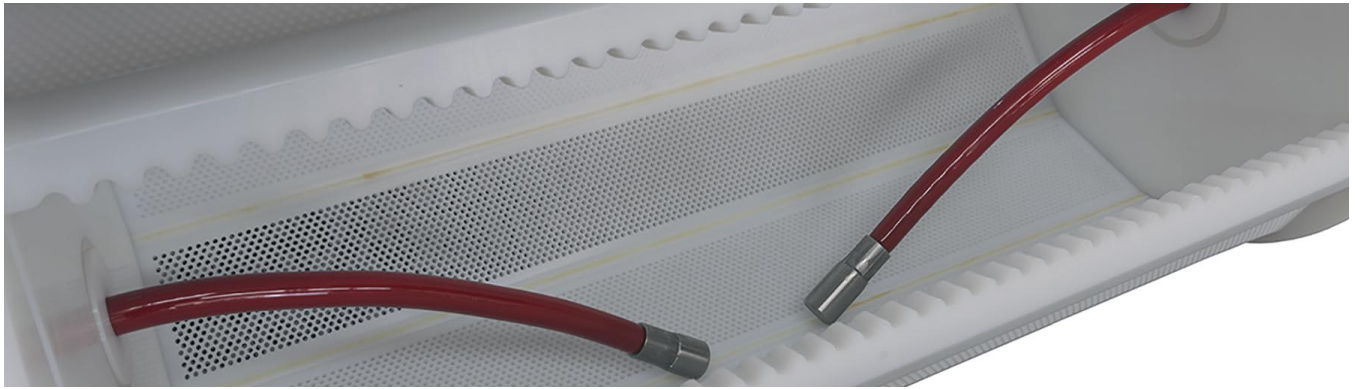
A. Brite 36-in. dangler.

that lead to a more competitive operation. As a result of this shift, demand for customized danglers has taken off in recent years.

Most suppliers concur that the plating industry has, overall, opted for customized danglers that suit specific applications. Even job shops are now asking for such customized designs featuring non-standard coatings, lengths and cable sizes that can accommodate the range of work that comes in.

Newact Inc. says it offers the only dangler on the market with a completely vulcanized sleeve. The rubber sleeve is molded directly to the cable, reinforcing the cable jacket to resist cuts and bends.

"No significant loss of flexibility occurs with this molded sleeve, as is commonly seen over time with a plastic sleeve," the company says. "This superior design substantially extends the life of the dangler, reducing



Danglers from Eagle Engineering.

If one aspect of dangler design has improved consistently over recent years, it has been the shift toward improving the insulating layers.

maintenance and virtually eliminating drag-out, all of which lowers a plant's operating costs."

Extended life is a benefit claimed for the sleeve. More important, Newact adds, is the quality of the plated parts. The sleeve reduces the carryover of chemicals from tank to tank that is often found with plastic sleeves.

Danglers, Newact says, exist mainly to carry current from the electrified saddles to the parts inside the cylinder to be plated, and this process can produce some parts agitation. Making a good connection at the horn on the superstructure is important because without a good connection the amperage will be lessened or possibly absent.

The company's dangler products are all custom manufactured to fit a customer's individual barrels, with most cable sizes from 4/0 to #8 offered as standards. Large gauges are also available. Special requests for knobs and moldings will be considered, the company adds.

The danglers are manufactured to customer specifications in lengths up to 120 in., and in most standard cable sizes up to 0.75 in. in diameter. Additional customization options include crimped over, standard, double-

crimped, or custom configured knobs.

Double crimped knobs give a positive electrical connection and added strength not found in soldered knobs. Two types of knobs are available, including standard and crimped-over. There is also a model available using Kevlar-reinforced rubber.

Intercon Enterprises Inc. also offers a range of danglers among other electroplating supplies.

These are available with brass or steel ends. Widths are 75, 95 and 120 mm, and lengths range from 600 mm (24 in.) to 1,300 mm (52 in.).

Intercon's manufacturer is Germany's Druseidt GmbH & Co. KG, a company that specializes in all types of high-current engineering, and has long maintained a product line for electroplating.

The UK's Eagle Engineering offers a polyurethane-insulated plating dangler. This, the company says, makes it highly flexible, and impact and twist-resistant.

"This is available in 16 square mm to 240 square mm cross sections," the company says. "PVC options can also be supplied."

Dangler contact tips can be fixed or detachable, and are available in mild steel, stainless steel, brass and copper. Detachable tips can be pro-

vided, and are recommended for copper and nickel plating where the tips can become coated, resulting in reduced plating efficiency. The screw-in tips can be replaced without the need for a new dangler.

A. Brite Co. is another company with a sideline in danglers. This is in addition to its already broad plating product line.

Metafin Supply Co. offers heavy-duty danglers made from durable, insulated high-tensile strength cable, in standard 4/0, 2/0, 1/0, 6ga, 4ga and 2ga sizes. Knob sizes for these are available from two to five in.

The barrel danglers are custom-made to fit individual customers' barrels. Non-standard sizes, special designs or special materials are available as well.

While danglers can easily be seen as merely generic products, the market remains competitive, and it's always worthwhile for a plating operation to hunt for options in its purchasing. The industry continues to explore creative options and better materials, and active cooperation with a committed industry supplier can help solve the problems of technical functioning as well as cost-efficiency. ■

Achieving and Controlling Coating Thickness



Screws electroplated in zinc. Here, coating thickness matters greatly in terms of threadability and tensile strength.

BY CONNOR STEWART

IN THE METAL FINISHING industry, the thickness of a coating can dictate the functionality, appearance and cost of a final product. Coating thicknesses are typically found in the range from 0.1 to 85+ microns, depending on the application, so it is imperative that the thickness of coatings are monitored and controlled. Coatings are often required to reach a minimum thickness to ensure the performance and appearance of the parts are consistent. Plating thickness is crucial for functional coatings since the thickness of the coating is proportional to its durability. For example, to improve corrosion resistance, zinc coatings are commonly employed over steel. Zinc undergoes galvanic corrosion when in electrical contact with steel meaning it is more electrochemically active and preferentially corrodes compared to steel. Products which function in corrosive environments will require a minimum thickness of zinc to guarantee the lifetime of the final product. Similarly, copper deposits used for conductivity applications will have strict thickness requirements to make certain the deposit has the correct current carrying capacity. In decorative applications, plating thickness is equally important as it often relates to appearance. For example, decorative chrome deposits should not be in excess of one micron or else the deposit can lose its lustrous appearance. Or in decorative gold plating, a minimum thickness

should be achieved with little excess to ensure the expensive, precious metal is not overconsumed. Evidently, attaining and controlling the proper coating thickness is crucial in both functional and decorative applications.

Without controlling the thickness of coatings, applicators risk achieving an insufficient or excessive coating thickness – both of which can be problematic. In the case of an insufficient plating thickness, common issues include partial coverage, pinpoint rusting and brittle deposits.

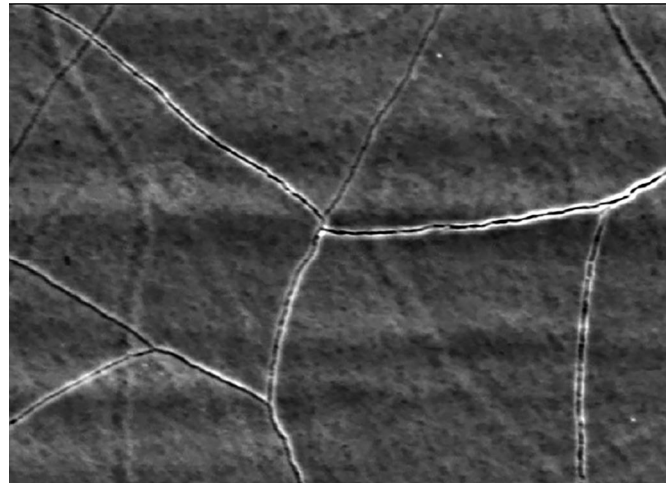
Partial coverage is identified when the substrate or subsequent coatings have bare spots after plating. This defect can be visible which detracts from the appearance of the product and can also lead to premature part failure. Voids in the coating can introduce corrosion sites on the substrate or cause damages/discolouration from UV degradation, all of which compromise the integrity of the product.

Pinpoint corrosion is observed when an insufficient coating thickness does not provide enough cathodic protection over the base metal. As a result, the coating will fail to provide enough corrosion protection across the entirety of the part and rust spots will develop. Similar to partial coverage, this issue threatens the appearance and functionality of the part.

Finally, insufficient coating thicknesses can result in brittle deposits. Plated deposits have a tendency to imitate


the crystal structure of the underlying metal substrate during the initial atomic layers. This phenomenon is exemplified in decorative chrome applications, where chromium can achieve its lustrous appearance from the underlying bright nickel deposit. While this feature has aesthetically pleasing results, the assumed crystal structure also imposes stress and brittleness in the deposit. Especially in functional coatings like sulphamate nickel, the brittleness achieved by insufficient plating can be disastrous.

While insufficient plating thickness can cause numerous issues, serious problems can also be caused by excessive coating thickness. Excessive coating thickness is commonly found on high current density (HCD) areas on a part. HCD areas are often associated with edges or sharp points on a part which will be closest to the anode and as a result receive the highest current density. Deposits tend to buildup in HCD areas which can cause dimensional issues, especially with parts with a tighter dimensional tolerances. For example, parts used for fittings or threaded parts like screws will have tight thickness requirements to ensure the coating thickness does not hinder the functionality of the part. Excessive plating thickness can also result in brittle deposits. Excessive buildup introduces a great deal of internal stress within the metal deposit which can cause the deposit crack and cause structural and visible damage. Finally, unnecessary buildup is costly as it wastes resources and time to achieve.




A cracked deposit in chrome.

To avoid issues caused by improper coating thicknesses it is important to measure and monitor coating thicknesses of both decorative and functional coatings. At Dynamix, in addition to supplying metal finishing chemistry, we also have a fully equipped lab dedicated to analyzing electroplating processes. Our lab uses numerous instruments to accurately and precisely measure coating thicknesses. Perhaps the most powerful instrument used for this function is the X-ray Fluorescence Spectrometer (XRF). This non-destructive technique uses x-rays to probe the thickness of different metallic coatings. The XRF operates by focusing an x-ray on the sample which excites the metal coating causing it to emit a unique, secondary x-ray. The XRF



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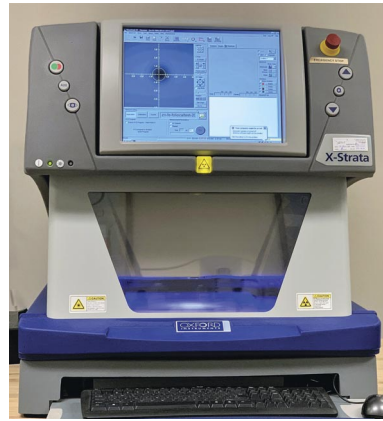
THICKNESS TESTING

measures the secondary x-ray produced from the coating and depending on the energy and intensity of the radiation, the instrument can calculate both the composition and thickness of the coating with extreme accuracy. Using different laboratory standards, an XRF can measure the thickness and composition of any metallic coating over any substrate.

While the laboratory-grade XRF at Dynamix is very expensive and requires training and regular maintenance, handheld XRFs (HXRF) are becoming more available. HXRFs operate under the same principle as laboratory XRFs and provide accurate readings while being more affordable and easier-to-use. While the XRF does provide reliable readings, it is difficult to measure layers which are composed of numerous elements like metal-oxide layers or multilayered deposits consisting of the same element like a semi-bright and bright nickel multilayer. As such, other measurement techniques are employed.

A technique employed to measure metal-oxide coatings uses eddy current. An eddy current thickness gauge uses a nondestructive method to measure nonconductive surfaces over nonferrous substrates using a magnetic field. The gauge emits a magnetic field which penetrates the nonconductive layer and induces an electrical current in the substrate called eddy current. The eddy current strength and respective magnetic field produced is measured by the thickness gauge which in turn calculates the thickness of the nonconductive coating. This test is often employed to measure the thickness of anodized aluminum and can also be used to measure phosphate coatings and paint thicknesses. Eddy current thickness gauges are inexpensive and follow a straightforward operating procedure. However, eddy current gauges struggle to report precise measurements when the base substrate surface is rough like zinc die castings. The eddy current induced on rough surfaces produces varying signals which consequently limits the ability of the gauge to accurately report thicknesses.

Another instrument regularly used in the Dynamix lab is the simultaneous thickness and electrochemical potential (STEP) test. This is a destructive method usually employed to measure multiplex nickel products. This is a coulometric test, meaning the test measures anodic dissolution under a constant current. Based on the varying amount of sulphur content in different nickel layers (i.e. semi-bright vs. bright), the time it takes to dissolve each layer can be related to the thickness of that layer. A difference in voltage indicates a change in sulphur content and thus can be used to differentiate between two different nickel layers. The STEP test can accurately measure different nickel thicknesses while also measuring the electrochemical potential between the two layers which is a crucial requirement for a lot of automotive applications. The STEP test can be used to measure the thickness of numerous electroplated coatings both single or multilayer,



The X-ray Fluorescence Spectrometer uses x-rays to probe the thickness of different metallic coatings.

but again, is most commonly used for nickel coatings. While this test is effective, it is a destructive test so samples used for this test are scrapped after testing.

While the lab at Dynamix is well prepared to measure coating thicknesses, service representatives also help troubleshoot and service electroplating processes when plating thickness becomes an issue. When insufficient plate is observed, often the electroplating bath has a source of inefficiency causing insufficient plating thickness in electroplating processes. For example, in chrome plating, poor chromium coverage can be a result of low chromium concentration or low chromium to catalyst ratio. A lower chromium content reduces the ability of the metal to deposit evenly across the substrate and can result in partial coverage and premature part failure. Partial coverage can also be observed in electroless nickel deposits when the bath becomes over stabilized. Stabilizers present in electroless nickel baths help keep nickel in solution. When present in excess, stabilizers prevent the nickel from plating out onto the substrate and can result in poor nickel coverage. Contaminants can also affect the throw of an electroplating solution. The throw of a solution is the ability to plate in recesses or low current density (LCD) as with a comparable thickness in HCD areas. For example, in chloride zinc electroplating, metallic contamination like copper, lead and cadmium can result in poor LCD plating and can lead to pinpoint rusting in those areas.

Excessive plating thickness, as mentioned previously in this article, is often associated with HCD areas on a part. Since different parts have varying geometries and different degrees of HCD, buildup in these areas is a constant battle amongst electroplaters. Many chemical suppliers, including Dynamix, provide proprietary chemical additives to help level deposits by preventing buildup. Often termed “carriers” or “levelers”, these additives interact with HCD areas and provide a consistent plating environment across the entirety of the substrate to provide a uniform and leveled deposit. For parts with very unique geometries, consider using conforming anodes to compensate for areas of LCD/HCD to ensure no buildup is found in HCD areas. ■

Connor Stewart, B.Sc., is Technical Sales and Service Representative, Dynamix.

Versatile Crosslinker from Nagase Opens New Doors for Formulators To Create High-Performance Coatings



Nagase America has released Denacol EX-622, a new crosslinker it says provides value-added solutions to many coatings formulation challenges. Formulators pressed to deliver high-performance coatings can use Denacol EX-622 to fulfill customer needs while imparting additional processing and end-use benefits.

Denacol EX-622 is a sorbitol polyglycidyl ether – its aliphatic epoxy backbone enables formulators to create coatings that are non-yellowing, weather-resistant and low in color. Due to its tetrafunctionality, Denacol EX-622 increases reactivity and crosslink density, resulting in faster cure speeds and better resistance to water staining, chemicals and mechanical wear.

This versatile crosslinker can be used both in traditional epoxy systems and non-isocyanate (NISO) systems. Standard epoxy curatives such as amines can be used with Denacol EX-622 for traditional epoxy systems. For NISO systems, Denacol EX-622 can react with carboxyl functional acrylic resins or specialty curing agents – available from Nagase – to produce high-solids, ambient-cure coatings.

“Denacol EX-622’s unique properties are ideal for indoor or outdoor topcoat applications such as industrial, commercial and architectural flooring, light industrial corrosion protection and agricultural and construction equipment,” says JP Masson, Director of Sales and Marketing. “It also works well in other high-performance applications – such as adhesives – where fast cure speed and high crosslink density are necessary.”

Depending on the application method and requirements, Denacol EX-622 can be formulated with other epoxy materials from the Denacol series to adjust final properties.

www.nagaseamerica.com

Dow introduces New Water-based Formulations for Industrial Coatings

Dow has introduced two innovations simplifying the formulation of water-based, high temperature resistant industrial coatings.

The company says DOWSIL 8016 Waterborne Resin is a new generation silicone resin emulsion for high temperature resistant waterborne coating systems, with low contribution to odor and emissions of volatile organic compounds (VOCs). It offers high temperature resistance up to 600 deg. C and elevated coating hardness for metal substrates protection. It is suitable for air drying with appropriate condensation catalysts.

Dow says the resin achieves high paint performance and aesthetics

without solvent or coalescent, therefore enabling exceptional sustainability profile and facilitated environmental compliance compared to traditional solvent-based formulations. As concerted efforts to limit VOC emissions are ongoing across the industry, this innovation enables formulators of high temperature resistant coatings to meet increasingly stringent requirements.

Dow also released DOWSIL 107F Additive, a foam control agent combining improved compatibility with optimal performance at low dosage in waterborne coatings. A formulated defoamer based on silicone polyether and hydrophobic silica, the additive is designed for formulations serving the architectural, wood and metal coatings segments.

“We continue to combine our deep knowledge of silicone chemistry with our unique experience of water-based coating formulation, to bring innovations to the market that help our customers enhance the competitiveness of their formulations,” says Isabelle Riff, Marketing Manager for Silicone Coatings. “We innovate to address strong market trends driving demand for high-performing, water-based formulations that respond to tighter environmental requirements.”

www.dow.com/coatings

BYK Releases New Cylindrical Mandrel Tester



BYK has launched a new cylindrical mandrel tester, a simple and quick method to test the flexibility of coatings. Bending coated sheet metal over a defined radius is an indicator of the elongation and adhesion of a paint film at bending stress. This mandrel is used for simple and quick testing of the flexibility of a coating by bending a coated panel over a rod of known diameter and then examining the coating for cracking, flaking, or other damage.

It features 12 mandrels of stainless steel, rod diameters from 2 to 32 mm, a handle design that makes it easy to bend the metal panel, anodized aluminum construction, panels up to 2.56 inches (65 mm) width can be tested, and a maximum panel thickness of 0.031 inches (0.79mm) can be tested.

www.byk.com



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