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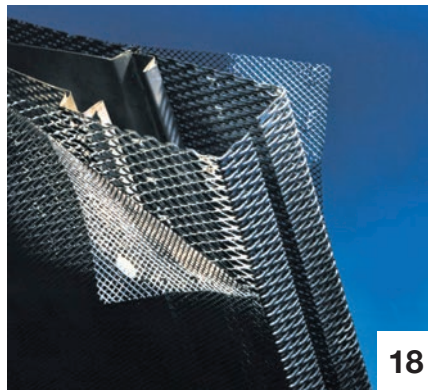
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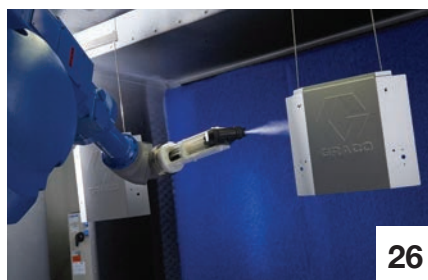
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Regulation is **NOT ALL ONE WAY**

Raw materials' toxicity can be like an octopus to deal with. The issue is not one of simply "Is this harmful or not?" There's always another tentacle to the beast – or several – with which to grapple once we've settled issues of safe distribution, safe in-plant handling or control of emissions outside of the plant.

Titanium dioxide, the subject of a feature in this month's magazine, is under suspicion in Europe as a possible carcinogen, while North American regulatory authorities are holding back on new regulations. TiO₂ is famously insoluble in water, which means it doesn't easily become absorbed into the human body, though the dust of this naturally occurring mineral entering the lungs might pose another story.

But control of dust, while it requires a cash outlay and good staff training, is a much more manageable issue than volatile organic particles, or substances that can enter the water supply. A substance like 2-ethylhexanoic acid (2-

EHA), the subject of a News item in this issue, is unknown to the broader public, but has roles in producing a range of metals derivatives, as a drying agent for paints, and as a catalyst in polymerization. This chemical passed a review by the Canadian government in September 2011, but elsewhere suspicions remained.

Perstorp, the world's largest producer of this carboxylic acid, says that after thorough review by the influential European Chemicals Agency (ECHA) no new restrictions on its use will be imposed in the EU. The Agency decided, as Canada had earlier, that 2-EHA is no longer implicated as a significant problem in reproductive or neurodevelopmental processes, though it must still be handled with risk mitigation measures in place.

There was a time when certain large companies cavalierly denied that anything they made or used was toxic, and left governments to prove otherwise. And on the other hand, activists seemed to campaign against

anything with a chemical name.

Then governments did begin enacting bans, the rules changed, and it was clear industry had to address significant toxicity before the toxicity was aggressively addressed.

There are still endless debates about actual exposure levels of different substances, actual effects of such exposure, and whether it's okay to employ a borderline-dubious substance in a country less regulated than our own. But the 2EHA issue shows that the situation is not all one-way, with a legislative steamroller forever restricting one chemical after another. It is possible to argue science and have the science cause regulators to support an industry's position.

In a time when so much news and scientific information is called into question, this is worth remembering. The octopus' tentacles do have limits, and solid facts are what demonstrate where these should be placed.

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DCC and Lansco Colors Merge



DCC's headquarters in Toronto.

Dominion Colour Corp., a long-term Canadian manufacturer of high performance pigments, dispersions, and preparations for the coatings, plastics and specialty ink industries, and Lansco Colors, a supplier of a wide-range of quality pigments sold to similar industries, are merging their companies. The combination of DCC and Lansco will bring together the strengths of both companies, they said in a joint statement, significantly benefitting pigment consuming customers by offering a broad portfolio of color pigments and technical expertise locally to every corner of the globe.

DCC provides innovation in pigments, dispersions and preparations to coatings, plastics and ink manufacturers in 70 countries worldwide. It has manufacturing facilities in Canada, the Netherlands, and the UK as well as technical sales offices throughout the Americas, Europe, and Asia to enable close collaboration with customers. Lansco's large network of sales representatives, supported by an in-house sales and technical team, allows them to serve the needs of 600 US customers in the coatings, ink and plastics markets as well as in selected international markets.

"Together, we bring a broad product portfolio to the market with a unique value proposition," commented Dr. Mark Vincent, CEO of DCC. "We look forward to working closely with the experienced team at LANSKO so that all our customers see our unique ability to provide the right solution for their needs."

Donald Greenwald, CEO and president, Lansco Colors, remarked that, "as a combined entity, we will be able to offer customers significant synergies and benefits of scale. Together, the capabilities of our companies will create one unified team, dedicated to providing innovative and value-based solutions for customers worldwide. Each of us brings our own complementary strengths. By combining to create a broader global pigment provider, we will offer a range

of organic & inorganic pigments, dispersions, and preparations that will be unmatched in the industry."

He and the Lansco management team will continue with the merged company.

DCC has also completed REACH registration for a wide range of products. This, the company says, will ensure ongoing supply to the European

Union (EU).

As the EU enters into the final stages of registration, DCC is continuing to obtain the registrations for the remainder of the relevant substances in its product lines. After 31 May 2018, only those suppliers with REACH compliance (registration or exemption) may be in commerce in the EU.



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Wheelabrator to close Ontario plant

Wheelabrator Group Inc., a Norican Group company, is consolidating its North American operations. It will centralize both its sales and engineering by creating a North American Region Hub at its LaGrange, GA, facility. The company's Burlington, ON, plant will close in a phased shut-

down, and services will transition to LaGrange by the end of 2018.

Wheelabrator NA sales and service leader Marty Magill commented: "It's challenging to make such a significant change to our business when it impacts highly valued employees. We have not taken the decision lightly and we thank our loyal

team for their contribution to our success.

"The centralization of our Wheelabrator NA business allows us to join our sales and technology teams under one roof. This has become necessary to ensure we can move swiftly to meet customer needs for equipment, parts and service technology in an increasingly 'just-in-time' manufacturing landscape."

The LaGrange facility will become the headquarters for all North American sales and service operations, engineering and technology development and the Customer Application Lab. The company plans to continue leveraging its flexible manufacturing footprint to strengthen the parts and equipment offering, and improve both lead times and service levels. It expects to expand its Monterrey, Mexico, operations in 2018.

Pierre Tanguay, NA supply chain leader added: "Our mission is to exceed our customer's expectations and help them thrive in a fast-paced, highly competitive market. The flexibility of our sourcing, manufacturing and distribution model is critical to our customer commitment to provide competitively priced, best-in-class technology solutions."

ECHA Clears 2-EHA



The European Chemicals Agency (ECHA) has been reviewing 2-ethylhexanoic acid (2-EHA) as a substance that possibly results in reproductive toxicity and potential neurodevelopmental toxicity. ECHA has now concluded that the product is considered safe with risk mitigation measures in place, and it is no longer under consideration for additional classification and labeling. 2-EHA will remain classified as Reproductive Toxicity Category 2, meaning consumer use should be restricted and some risk mitigating measures need to be taken into account when it is used at production facilities.

Andreas Nilsson, product manager for Perstorp (the world's largest producer of 2-EHA), stated, "Despite 2-EHA being the most accessible and cost-effective carboxylic acid available, the suspicion caused the market sentiment to sway towards replacement of 2-EHA in some cases. These studies now make 2-EHA the best-investigated carboxylic acid. We are very happy that these suspicions have been lifted."

2-EHA (2-ethylhexanoic acid) is widely used in esters for PVB film plasticizers and synthetic lubricants, in production of metal soaps for paint driers, in automotive coolants and PVC stabilizers. Other application areas include wood preserv-

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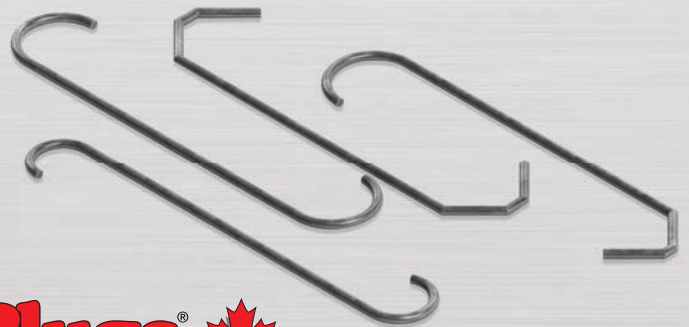
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atives, catalyst for polyurethane and in pharmaceuticals. Yearly production amounts to almost 300,000 tons.

AkzoNobel Spins Off Specialty Chemicals

Nearly a year after declaring it would spin off its Specialty Chemicals business, global coatings AkzoNobel firm has announced a 10.1-billion euro (US\$12.5 billion) sale to The Carlyle Group (Washington, DC) and Singapore's sovereign wealth fund GIC. The transaction, expected to be concluded before the end of this year, results in the creation of two focused businesses—Paints and Coatings, and Specialty Chemicals, now owned by Carlyle and GIC.

In the original announcement last year, AkzoNobel detailed that the plan was to sell or list the chemicals business, which produced about one-third of sales and profits, within a year. At the time, analysts valued the division at approximately 8-billion euros (\$9.9-billion), based on the company's 2016 operating profit of 629-million euros.

"Today is a key milestone in creating two focused, high performing businesses, to generate

value for all stakeholders," said Thierry Vanlancker, CEO of AkzoNobel. "We delivered on our commitment to separate the Specialty Chemicals business and did so ahead of schedule.

"We are very pleased to announce the sale of Specialty Chemicals to The Carlyle Group and GIC. We believe the business is well positioned to capture growth opportunities and further improve performance. Carlyle has significant experience in the chemicals industry and a proven track record when it comes to health, safety, innovation and sustainability."

He added that the deal leaves AkzoNobel as one of the three largest paints and coatings companies in the world.

The Carlyle Group, a global asset manager, reported putting US\$22-billion into new investments in 2017, as well as raising \$43-billion of capital across the platform. Its total balance sheet assets were \$12-billion as of Dec. 31, 2017.

The transaction is still subject to customary closing conditions as well as relevant regulatory approvals. AkzoNobel acquired shareholder approval for the separation at the Extraordinary General Meeting in November.

IHEA Offers Technical Seminars

This fall, the Industrial Heating Equipment Association (IHEA) will offer three concurrent technical seminars in conjunction with the Metal Treating Institute's (MTI) Furnaces North America (FNA) event. These seminars will be held in Indianapolis, IN from October 8 – 10.

IHEA will conduct its Combustion Seminar, Safety Standards and Codes Seminar and Induction Seminar throughout the week. The Combustion Seminar and the Safety Standards and Codes Seminar will be held all day Monday, October 8 and on the mornings of Tuesday, October 9 and Wednesday, October 10, at the Indiana Convention Center. The Induction Seminar will be held on Tuesday morning, October 9. This schedule provides attendees the benefit of classroom education and allows ample time to visit with FNA exhibitors, including IHEA members and companies represented by IHEA seminar speakers.

For nearly half a century, the Combustion Division of IHEA has delivered education for the thermal heat processing industry. IHEA's 49th Combustion Seminar will provide attendees with updated and relevant information from experts in combustion technologies. The seminar is



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designed for those responsible for the operation, design, selection and/or maintenance of fuel-fired industrial process furnaces and ovens. With over twelve hours of instruction from manufacturing professionals, attendees will learn from the best in the industry.

The Safety Standards and Codes seminar will provide a comprehensive overview of the NFPA 86, including newly released updates for many areas of safety. IHEA will offer the Induction Seminar during the fall seminar series to educate those who want to learn more and provide further knowledge on its applications. The Induction Seminar will offer the basics of induction technology and how the electrically powered induction technology can create heat in parts, up to and including melting metals.

Seminar attendees will have the opportunity to attend the FNA opening reception on Monday evening and visit with speakers and exhibitors. Attendees can also visit the FNA show floor for the remainder of the week.

PPG Cuts Jobs in Restructuring

Global coatings manufacturer PPG will be cutting over 1,000 jobs in a restructuring effort that follows on rising raw-material costs and the loss of the company's consumer brands listing from Lowe's home-improvement stores.

The projected layoffs were reported in a filing made to the US Securities and Exchange Commission, which notes that a pretax restructuring charge of \$80 to 85-million will be recorded in the company's second-quarter financial report. Most of that charge will go to employee severance and other cash costs, the filing says. About 1,100 employees will lose their jobs, according to the document.

The company has not yet indicated where the job cuts will occur, but said in the SEC filing that the move was brought on by "a customer assortment change in our US architectural coatings business" as well as "sustained, elevated raw material inflation." PPG's Olympic paints and stains were removed from Lowe's stores in the first quarter of this year when the home-improvement giant signed a deal with the Sherwin-Williams Co.

Last week, PPG announced a new deal it had made with Home Depot, a major competitor of Lowe's and the largest home-improvement retailer in the US, whereby Lowe's will sell Olympic products.

The layoffs will all happen by the second quarter of 2019, according to PPG, and the company expects the restructuring to begin to pay off within two years. The company "continues to review its cost structure to identify additional cost savings opportunities," according to the SEC filing.

The news follows the company's first quarter 2018 earnings report which indicated an increase in net sales over the previous year, but also reported rising material costs.

Axalta Launches Imron Brand

Axalta Coating Systems has announced its new Imron Industrial brand mark. Imron Industrial is a 2k polyurethane multilayer coating that serves a wide array of industrial applications including construction equipment, oil refineries, and amusement parks.

"As we continue to lead innovation as a global company, it is important that we also invest in and expand our global brands that customers recognize and rely on," said Michael Cash, Axalta's president, Industrial Coatings. "This new brand mark allows us to visually represent the premium quality that our customers can expect from Imron Industrial for their business, anywhere in the world."

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long-term durability and excellent corrosion resistance, while, the company says, providing visually stunning finishes. Additionally, Imron Industrial products are designed to meet the most demanding industry specifications, making them an easy and reliable choice for industrial customers.

RPM Reports Record Sales

RPM Inc., the parent company of consumer paints company Rust-Oleum and other coatings firms including Carboline, Stonhard and Tremco, is reporting record sales and record net income in the third quarter of its fiscal year 2018. The company has announced sales of \$1.1-billion for the quarter, which ended February 28, representing a third-quarter record for the company. Sales were up 7.8 percent compared with the third quarter of 2017.

Net income was up substantially year over year, at \$40.2-million in Q3 2018, compared with \$11.9-million during the same period last year. During the third quarter of last year, net income had been affected by pre-tax charges for an intangible impairment on its Rust-Oleum Restore product line, and by the closing of a manufactur-

ing facility in Europe.

Consolidated earnings before interest and taxes (EBIT) were reported at \$56.7-million for Q3, up more than 50 percent compared with prior-year numbers.

“RPM’s operating performance for the third quarter was outstanding, despite severe, continued industry-wide headwinds from higher raw material costs,” said chairman and CEO Frank C. Sullivan.

RPM’s Industrial segment, which includes Carboline, Stonhard, Tremco and illbruck, saw increased sales for the quarter. The segment totaled \$569.2-million in Q3, up 9.2 percent compared with the previous year.

“Our industrial segment, representing over 50 percent of consolidated sales, increased EBIT by nearly 40 percent through greater SG&A (selling, general and administrative expenses) cost leverage, despite higher raw materials costs,” Sullivan said. “Our Tremco Roofing and international polymer flooring businesses did extremely well, partially offset by continued weakness in Brazil and mixed results in Europe.”

In both Consumer and Industrial, acquisi-

tion-related growth largely came from purchases the firm made in fiscal year 2017, including Georgia-based infrastructure chemicals company Prime Resins; raw-materials manufacturer Arnette Polymers; industrial tape maker Adhere Industrial Tapes; and Specialty Polymer Coatings Inc. More recently, RPM has boosted its consumer businesses with the acquisitions of Dutch decorative and specialty coatings company SPS and Iowa-based stain-remover firm Whink Products (both in December) and California-based Miracle Sealants Co. (in March).

The company anticipates “mid- to upper-single-digit sales growth” in the fourth quarter, according to Sullivan, led by the industrial segment, where the firm anticipates mid- to upper-single digit growth. RPM expects mid-single-digit growth in consumer and marginal growth in the specialty segment.

TQC Buys Sheen Instruments

British company Sheen Instruments has been acquired by TQC BV of The Netherlands. Sheen Instruments has a history of over 70 years as a manufacturer of laboratory equipment for



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the paint industry. TQC is a Dutch producer of paint test equipment. The two brands are being merged in the new TQC Sheen label.

The conjoined company says it offers per-



Sheen Instruments produces a wide selection of measuring devices.

haps the most extensive range of paint test equipment available. This includes a wide range of viscosity meters, automatic film applicators, scrub and scratch testers to gloss and color meters, thickness gauges, drying time testers and other instruments.

TQC Sheen has its production, logistics, application lab and R&D center near the city of Rotterdam. It has sales offices in Germany, the UK, Norway, the US, Italy, Singapore and South Korea, as well as a network of dedicated distributors around the globe.

Mosquito-Repellent Paint Gains Approval

Global paints and coatings manufacturer Japan-based Kansai Paint Group recently announced it gained approval from the U.S. Environmental Protection Agency for a paint that repels mosquitoes.

The Kansai Anti-Mosquito Paint is designed for interior use, the company says, and contains a synthetic pyrethroid insecticide. The company maintains that the paint has “shown to significantly reduce the presence of mosquitos in painted areas.”

“Development of the Kansai Anti-Mosquito Paint marks a major milestone, not only for our company but also for the worldwide effort in fighting the spread of infectious diseases,” said Hiroshi Ishino, Kansai president.

“For generations, people all over the world have struggled with mosquito-borne illnesses and the effects they have on families and communi-



ties. Kansai is proud to be the first company in the world to develop a safe paint, approved by the EPA that addresses this challenge in a creative and effective way.”

The paint’s active ingredient, according to Kansai, disables the nervous system in mosquitos, preventing them from flying or biting. Further, the company says, the ingredient has not been shown to be a danger to humans, either by physical contact or oral ingestion.

“Our testing has showed that the Kansai Anti-Mosquito Paint was able to exterminate on contact more than 90 percent of mosquitos and is effective for at least two years,” noted Kalpana Abe, Vice President, President’s Office, Kansai Paint Group. “It will deter various species of mosquitos, which can carry several viruses present in the U.S., including Zika and the West Nile.”

It is the only anti-mosquito paint currently approved by the EPA and it expected to be available in the U.S. this summer (it is already available in Uganda and Zambia).

Production of the paint in the U.S. will be led by U.S. Paint, which was acquired by Kansai in 2016.

Powder Coating 2019 Dates Announced

The Powder Coating Institute (PCI) has announced that the Powder Coating 2019 Technical Conference and Tabletop Exhibition will be held April 1 - 4, 2019. The location is the Renaissance Orlando at SeaWorld, Orlando, FL.

“We are very excited about the location selected for PCI’s Powder Coating 2019, the Renaissance Orlando at SeaWorld,” said PCI’s executive director, Trena Benson. “Following the very positive comments about Powder Coating 2018 and the increased attendance, we are enthusiastic about getting to work on PCI’s next technical conference.

“Continuing to deliver outstanding education to the powder coating industry is a top priority for us. We hope everyone will mark their calendars now and plan to join us next year for another

great conference at a terrific location.”

The Renaissance Orlando at SeaWorld PCI says, is an easy fly-in destination with service from across the US and around the world. It is located near many theme parks and restaurants in the Orlando area.

The four-day event will kick off with PCI’s popular Powder Coating 101: Basic Essentials Workshop, to be held April 1 and 2. The workshop includes a comprehensive agenda that covers all the basics of powder coating operations.

It is conducted by PCI member company experts in a non-commercial setting. Workshop attendees will enjoy a discount when registering for the technical conference and exhibition as well.

The PCI Technical Conference and Tabletop Exhibition will immediately follow the Powder Coating 101 Workshop on Wednesday, April 3 through Thursday, April 4. Complete with general sessions and concurrent technical programming, attendees will have access to a variety of powder coating information as well as personal interaction with suppliers. There will also be social activities and ample networking time with tabletop exhibitors and speakers.



Attendees at the Powder Coating Technical Conference.

The tabletop display area will feature powder coating manufacturers, powder coating application equipment companies, system houses, chemical suppliers and various services that support the powder coating industry. Tabletops and sponsorship opportunities will be available beginning in July after last year’s sponsors and exhibitors have the opportunity to select first.

Clariant Raises Pigment Prices

Clariant has announced a global price increase for many of its pigments and dyes by five to 20 percent. The increase is effective May 1, 2018 or as soon as contracts allow.

The price increase, the company states, is due to the continued rise in prices of key raw materials

driven by several factors including supply-demand dynamics.

Echo Engineering Expands Michigan Operations

Echo Engineering is investing \$2.4-million into 60-plus full-time jobs with additional real estate and automated manufacturing equipment, at its recently acquired plastic injection molding facilities in Michigan. The two facilities, located in Monroe and Frenchtown Township, are expected to grow by 30 percent in the next year with the support of Echo's investment and a \$210,000 performance-based grant received from the Michigan Business Development Program.

The investment focuses on providing additional operations capacity including injection molding machines with automated robotics, increasing warehouse facility capacity, and growing teams to support the daily operations at the Michigan locations.

According to Echo's CEO, Kingdon Offenbacher, "To date, since we made the acquisition, in the first six months we have added 21 full-time positions, and we have already invested more than \$1.0-million." Echo currently has 83 employees at this location.

Echo Engineering acquired Ammex Plastics in October 2017 to create additional manufacturing capabilities to its customers. The full-service plastic components manufacturer primarily supports the automotive industry for custom plastic component technologies including clips, mounts, and fittings for fluid routing, fastening, and suspension systems.

The Michigan Business Development Program is part of an incentive program from the Michigan Strategic Fund, and is in cooperation with the Michigan Economic Development Corp. This program supports local businesses, including manufacturing facilities, by pushing for growth within the state in hopes of creating job opportunities.

People

MacDermid Enthone Names Lynch V-P

MacDermid Enthone Industrial Solutions (MEIS), a division of MacDermid Performance Solutions, has promoted to Richard Lynch to vice-president of the Americas. He has more than 30 years experience in the business.

Most recently he was director of marketing and



Richard Lynch

business development at MEIS. In his new role he will be responsible for the MEIS business in the Americas, leading the commercial strategy to keep the business at the forefront of the industry. In addition, he will continue to develop the corporate approach to sustainable technologies for the industry, such as evolve, the chromium-free process for plating on plastics, and the ZinKlad quality assurance program. This, the company says, will ensure the Americas region is fully aligned with the wider business to bring enhanced performance with environmental stewardship.

Commenting on his appointment, Lynch said: "The Americas region is one of the most important markets for MacDermid Enthone Industrial Solutions, with plenty of exciting developments in the pipeline – opportunities that I'm looking forward to leading in my new role. We have built an exceptional business, with a field team that has more than 2,500 years of collective field experience and directly supports our customers to provide the unrivaled innovation and service they require.

"We are committed to supporting our customers' position as the leading applicators for our industry. It is my aim to build on these foundations and continue investing in our people and programs, to enhance the value we bring to customers, and ensure we remain the leaders in surface finishing technologies."

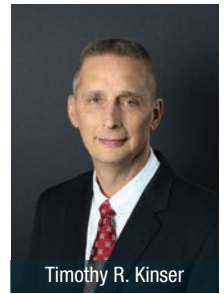
Based in the Waterbury, CT, office, he will lead a team of 200 people, and he takes up this new position with immediate effect.

Kinser Appointed V-P of RPM Inc.

RPM Inc., parent company of the Rust-Oleum, Stonard, Carboline and Tremco brands, has named Timothy R. Kinser vice-president of opera-

tions for the company. He takes up his duties effective June 1. Kinser previously served as executive vice-president of RPM's DAP Products Inc. subsidiary, a maker of caulks, sealants and adhesives.

"Throughout his career, Tim has proven himself as an outstanding operational leader," said RPM chairman and CEO Frank Sullivan. "His commitment to RPM and his experience at DAP have aptly prepared him to produce continuous, sustainable improvements for all of our business segments."



Timothy R. Kinser

Fischer Opens Chicago Facility

Fischer Technology has opened a Chicago sales and service facility. Craig Kuchta, the new Fischer representative and technical advisor for this office, has 20-plus years of technical instrumentation sales and support of products by manufacturers such as Siemens, Honeywell and Wika.

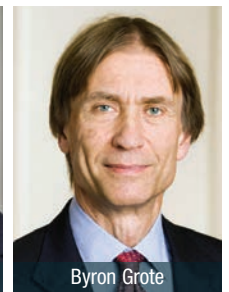
Fischer's regional offices support its complete line of test and measurement instrumentation. Service such as onsite recertification of handheld and benchtop coating thickness gauges, nanoindentation and X-ray fluorescence instruments, including repairs and preventive maintenance, are also available from all locations.

AkzoNobel Names Board Members

AkzoNobel's annual meeting has confirmed Nils Andersen to the supervisory board, and his appointment as successor to chairman Antony Burgmans, who is stepping down after serving three terms. Byron Grote was reappointed to the supervisory board, and has also been reappointed for a second four-year term as deputy chairman.



Nils Andersen



Byron Grote

A Sample of Issues Facing Canada's Paint & Coatings Industry

CPCA Combating Coordinated Efforts to Adopt European Regulatory Approach

For over a decade, CPCA has played a central role in facilitating industry's participation in Canada's Chemical Management Plan (CMP), which seeks to assess all chemicals in commerce today. This comprehensive regulatory process, while onerous and costly for industry, has delivered efficient results utilizing a rigorous, risk-management approach to assess chemicals based on sound scientific data for industry formulations. This is in contrast to the REACH approach in Europe, which focuses on hazard-based chemical assessment. Together with the American Coatings Association (ACA), CPCA has lobbied for greater regulatory alignment with the United States, a country that also uses a similar risk-based chemicals management approach under the Toxic Substances Assessment Control Act (TSCA). Their approach emulates that of Canada for the most part.

Despite the deep integration of North American supply chains and markets, several recent federal initiatives seek to align with or replicate European policies and regulations, that is, the use of a hazard-based assessment regime for chemicals in commerce. CPCA is actively challenging calls to move in such a direction because of the potentially negative economic impacts it would engender, the increased market disruption in Canada, and the absence of evidence that such changes would increase protections for human health or the environment.

The following are brief examples of government initiatives seeking greater alignment with European environmental regulations as reported in CPCA's member-only regulatory news alerts over the past two months.

Explosives Regulations to Implement Additional Restrictions for Acetone and Aluminum Powders & Flakes Sold at Retail

CPCA and several members met with Natural Resources Canada (NRCan) officials from the Explosives Regulatory Division (ERD) to discuss their intent to formally add acetone and aluminum powders as precursors to the List of Restricted Components under Part 20 of the Explosives Regulations 2013. The intent is to prevent security threats by imposing reporting duties on retailers of consumer

products containing these components. This amendment will be published in the summer of 2018 with further consultation to follow over a 60-day comment period based on the actual proposed amendment when finalized in the coming weeks.

Aluminum powders used in coatings and adhesive products are mostly industrial as they provide thermal conductivity, electrical conductivity, and thermo-physical properties. During recent consultations, CPCA members learned from federal officials that elemental forms of aluminum powder will be targeted and NOT solventborne or waterborne paste products. Acetone is a precursor of TATP (Triacetone Triperoxyde), which was used in several homemade bomb attacks by terrorists around the world. Federal officials are targeting all forms of liquid coatings products containing TATP precursors above a certain threshold. That level is still to be determined and when it is we will understand the full impact a wide range of products. Not only does Natural Resources Canada plan to add acetone to the List of Restricted Components but it will also introduce new mandatory requirements for corporate-owned stores and large retailers to: 1) restrict storage, access, and sales; 2) conduct mandatory reporting of thefts, losses, suspicious sales; and 3) increase inspections activities. The larger question remains, should this be expected of sales associates at the retail store level and how might it impact liability of the retailer?

To further complicate matters for industry, this initiative will not be aligned with the US program related to acetone, which exempts acetone and regulates other TATP precursors. Rather it will be modeled on the European approach that is currently under revision and likely lead to further misalignment between Canada and Europe. As such, CPCA is advocating caution in moving quickly on this effort to ensure that it is not out of alignment even further with Europe those revisions are made. This would put Canada at odds with two of its major trading partners. As a critical non-toxic VOC-exempt compound, acetone is used in many coatings and adhesives formulations to help lower VOC emissions in products, which reinforces compliance with other federal VOC regulations for coatings. Therefore CPCA's formal comments will ask the federal government to consider the widespread use of acetone in coatings and the

need for an exemption for complex mixtures for paint and coatings to ensure we continue to achieve lower VOC emissions. These emissions have been reduced by 75 percent over the past ten years with the help of important VOC reducing substances like acetone. CPCA will gather more information on current acetone concentration ranges and volumes in order to submit an evidenced-based submission to the federal government in the coming weeks. CPCA officials will be attending CPCA's sectoral working group meeting to further discuss the proposed restrictions on acetone.

TiO₂ Category 2 Classification: CARACAL Delays Authorization Process in EU

The American Coatings Association (ACA) and their counterpart in Europe, CEPE, are actively working with major international trade authorities to raise concerns with responsible European Authorities and provide strong evidence on the negative impact of a more restrictive Category 2 cancer hazard classification for TiO₂. This is critical for the coatings industry given the fact that 60 percent of the TiO₂ produced globally is used in the coatings industry.

The overarching authority called CARACAL (Competent Authorities for REACH and Chemical Labelling and Packaging), which is comprised of representatives from each EU Member State, advises on aspects of REACH and fur-



ther CLP development. It recently expressed concerns on the proposed classification that led to the postponement of a formal decision and instead referred it to a special working group for further study and deliberation prior to any final regulatory authorization and action by the European Commission.

Industry hopes that the scope of the CARACAL working group's review will include the consideration of "poorly soluble, low toxicity" dusts, as this provides

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industry with an opportunity to further advance its opposition to the proposed classification. It is hoped that this effort will emphasize the potential for such an approach to negatively impact international trade and the notion that Europe would clearly be advancing an unfounded interpretation of the UN Globally Harmonized System for Chemicals in the Workplace (GHS). ACA and CEPE continue to coordinate efforts with other IPPIC member associations to block this EU classification. It is currently expected for publication by mid-2019, followed by an 18-month transition period. However, even after it becomes law, the possibility of legal action remains, for which there is some precedent in Europe.

Canada-European Union Comprehensive Economic and Trade Agreement (CETA) Regulatory Cooperation Forum

CPCA's top priority regarding regulatory cooperation under CETA is not the existing trade barriers but rather concerns over the possibility of Canada abandoning its current approach to chemicals management in favour of alignment with practices in Europe. Canada's Chemical Management Plan is recognized internationally as an efficient, scientific and evidence-based risk management program that serves to protect human health and the environment while providing certainty industry.

CPCA believes that the adoption of a European hazard-oriented regulatory regime will negatively impact the Canadian economy and further erode existing manufacturing in Canada. At the same time, it will not deliver the desired outcomes related to health and environmental protection as the experience in Europe has been a long drawn out process wherein there are fewer controls or regulations on chemicals in commerce due to the enormous red tape associated with chemical assessment. Canadian industries rare hopeful that the federal government remains supportive of the current Chemicals Management Plan and the strong foundation of sound science on which it rests.

The European approach to chemicals management is not suitable for a market like Canada, which is dominated by small and medium enterprises. It has been widely criticized for being time-consuming, unnecessarily costly, especially for a small market such as Canada), very slow and inefficient.

Third Canadian VOC Regulations for Certain Products Postponed to Late 2018

Following extensive 5-year discussions with industry, the Third VOC regulations will reach the Canada Gazette Part I late this year, imposing VOC limits on 130 consumer product categories and subcategories, including adhesives, sealants and caulks, multipurpose solvents, thinners, cleaners, aerosol products, automotive maintenance prod-

ucts. The regulations will remain aligned with the 2010 CARB Rule. But the federal department of Environment and Climate Change Canada will adopt several changes related to exclusions, permits, and VOC concentration limits for several categories (e.g. new VOC limit set to 30% w/w for multipurpose solvents and paint thinners and specific exclusion of all products covered by the two other Canadian VOC regulations). More details were made available in a recent CPCA bulletin. The final regulations are now expected in late 2019 or early 2020, with a coming into force date set for the following January, followed by a 2-year sell-through period.

PMRA Share General Views on Its Communication on Treated Articles with CPCA

CPCA met with Pest Management Review Agency (PMRA) officials to discuss their current strategy regarding a new communication on treated articles to be disseminated in late spring or summer of 2018. The intent of the communication is to deliver a clear message to all Canadian retailers and other businesses and raise awareness about the presence of non-registered biocides in imported products manufactured or sold in Canada. CPCA prepared a questionnaire on the possible content of this communication to obtain members' feedback and recommendations. PMRA will likely develop a general high-level communication followed by a more technical one to be distributed to companies in future. PMRA is relying on CPCA member feedback to focus on matters of greatest importance related to treated articles in their products. The goal is not to have this become another huge regulatory burden on CPCA members and the chemical sector generally.

CPCA Launches "Cluster Analysis" Questionnaire on Several Paint and Coatings Preservatives

PMRA officials formally requested descriptive information on use profiles for all in-can paint preservatives, which are set for final re-evaluation decisions prior to 2020. It will be used to refine their current exposure models for Sodium Omadine, Folpet, Chlorothalonil, Dazomet, Ziram and Diodofon. To further assist PMRA and US registrants, CPCA is in the process of gathering Canada wide specific workplace or user information via an online survey of manufacturer and supplier members and their chemical products containing these targeted biocides. The objective is to provide specific, relevant information on the chemical composition as well as the use scenarios related to exposure in order for assessors to make truly informed assessments before taking action on potential bans or restrictions of use for paint products. ■

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Automating Plating Lines

AUTOMATED SYSTEMS in any field do not necessarily become less expensive with time. If anything, as the variety of features and controls available increases, the actual systems often increase in price.

What does happen, though, is that the efficiency and cost-savings of emerging systems also increases. And while higher productivity is the primary goal, today there is also an increasing focus on reducing energy usage.

Equipment suppliers report seeing steady if modest growth in automatic systems for plating. The plating market is highly price competitive, though with the focus strongly on both productivity and traceability.

Jessup Engineering is one supplier that has placed strong emphasis on its computer controls. The current generation, the company says, automatically monitors, stores, and exports load-by-load quality data on immersion times, tank temperatures, rectifiers settings, chemistry adds, rinse water replenishment, barrel rotation/oscillation, ventilation/air make-up, and wastewater. The goal is to facilitate precise resource management, reduce operator input errors, and eliminate manual quality monitoring/reporting while reducing labor costs.

Jessup says it works with each customer to develop an operational plan to minimize downtime and maximize throughput on a line. The biggest challenges this can pose in implementing automation might not be related to the technology, but to financial planning and scheduling downtime. A complete line replacement can be a multi-million dollar venture, so it takes careful analysis and financial provision for things to work out right.

The company says it uses a simultaneous engineering approach to improving throughput. Factors that must be 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 field. The company offers automated hoists systems as part of its automation offering, with hoist capacities up to 10,000 lb.

Belt-lift mechanisms offer zero to a 60 ft/minute lift/lower, and a direct-drive transfer offers zero to 200 ft/minute transfer, with laser-based horizontal positioning for the hoist. Other features include a variable-frequency drive system for the hoist's lift/lower, slack cable safeties and a station-occupied sensor. There are also hoist collision safeties, 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 company states that the dif-

ference between an automated hoist line and a return type machine is that a return type offers higher throughput but lower flexibility, while a hoist line offers less throughput and higher flexibility. A return type machine works well for longer production runs, while an automated hoist line is ideal for short 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.

The system is 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. There is a PLC based control system, and process control data collection and reporting.

American Plating Power produces a range of controls for automated plating operations. Its Standard Remote Controls are used for switch mode power supplies and thyristor rectifier devices with analog or digital measuring instruments.

The remote control panel is built into a shock and corrosion resistant casing with a transparent plastic cover to protect the integrated measurement and operating components. This unit, the company says, is designed for wall mounting and therefore includes special hinge technology for easy installation.

The MFD 10 Process Controller is recommended for almost every type of rectifier and electrochemical process. In addition to the basic functions (current and voltage control, ampere-hour meter, timer and set-point ramp) there are three different functions available.

These optional functions, the company states, are Version 2.0 which includes a V pilot; Version 3.0 which includes an (unipolar) pulse; and Version 4.0 which includes a polarity reversal and (bipolar) pulse. There is an electronic precision set-point for pre-setting the process current and voltage, and a corrosion-resistant polystyrene enclosure for use in industrial environments.

Another system from American Plating Power, the AS 100, is claimed to increase productivity and improvements in quality, compared to a conventional voltage/time or current density controller. Basic control is realized with just two buttons, simplifying operation and saving the operator plenty of time.

AS 100, the company adds, can be combined with all

The biggest challenges in implementing automation might not be the technology, but financial planning and scheduling downtime.

conventional rectifiers with thyristor, switch modes, and variable transformer technology. The optional Pro Ano Windows-based software provides process data logging and allows real-time verification from the main control room.

The system automatically takes on monitoring and logging duties, improving productivity and reducing errors. It can be connected to any standard rectifier with an output voltage of > 20 V and an analog interface. The integrated current density characteristic has been specially designed for aluminum alloys and the creation of decorative oxide layers.

Anodize USA offers its PAS II~III technology for this market. This system offers anodizers a new method to calculate the square footage of parts, and the necessary amps per square foot. This has long been considered

one of the fastest and most accurate way of anodizing parts, but working out the square footage of the parts and the load size can be a time-consuming task.

The new remote digital version of PAS II~III will, the company says, send an even more accurate (ASF) signal to the power supply than did previous versions. The DC power supply can be over 50 feet away, and the signal can pass through walls. The remote read, the company adds, is simple, easy and requires no wires.

At the start of the run, the operator sets the desired ASF ramp time. The PASS II-III includes, if needed, a five-step ramp with total run time based on the 720 rule.

The system consists of a hanging rack and meter with a one-sq ft, removable aluminum load panel (a choice of alloys is available) that

allows the operator to dial in exactly the desired ASF.

The set time based on the 720 rule is for 6000/5000 alloy. For 2000 and 7000 series alloys, operators must deduct five to six percent from the required time.

As stated earlier, planning is the key aspect of all automation, since it is very expensive to re-engineer a line that was not thought out properly. Once the right mentality is brought to the automation process, it becomes possible to design systems that go substantially beyond the capabilities of what was commercially available a few short years ago.

That is when a company can effectively realize the gains that the newer systems and their controls over to plating operations of all types. ■



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Anodes Against Corrosion

TURNING THE DESIGN AND PRODUCTION of anodes into an exact science has always been an elusive goal. The rate at which any given anode lasts, protecting the more structurally vital surface onto which it is applied, is dependent on factors that are not wholly predictable, so there is always a fudge factor in the best of calculations.

Use of anodized coatings on aluminum aircraft parts goes back almost a hundred years, so there is little essentially new in the general concept of anodizing. Much of the science and engineering of the anodizing process has been established for decades, with the refinements coming in terms of the peripheral equipment, controls and of course, the anodic formulations.

Sacrificial anodes are particularly needed for systems where a static charge is generated by the action of flowing liquids, such as pipelines or watercraft. Sacrificial anodes are also generally used in tank-type water heaters.

The American Galvanizers Association points out that sacrificial anodes generally come in three metals: magnesium, aluminum, and zinc. "Magnesium," AGS says, "has the most negative electropotential of the three and is more suitable for on-shore pipelines where the electrolyte (soil or water) resistivity is higher. If the difference in electropotential is too great, the protected surface, the cathode, may become brittle or cause disbonding of the coating."

Zinc and aluminum, it adds, are generally used in salt water, where the resistivity is generally lower. Typical uses are for the hulls of ships and boats, offshore pipelines and production platforms, in salt-water-cooled marine engines, on small boat propellers and rudders, and for the internal surface of storage tanks.

The advantage of sacrificial anode systems over others are they need no external power source, are easy to install, the low voltage and current between the anode and the surface it is protecting infrequently generates stray current, overprotection is unlikely, and inspection and monitoring is simple for trained personnel.

De Nora is one of the largest anode producers, and its DSA brand-name is almost a synonym for mixed metal oxide (MMO) anodes. These products are titanium anodes coated with proprietary and patented mixed metal oxide compositions comprising different elements such as iridium, ruthenium, platinum, rhodium, tantalum.

Thanks to the specific characteristics of coating formulations and techniques, DSA anodes can be employed in a wide range of processes, such as a long-established application in the chlor-alkali industry, as well as more recent uses involving oxygen evolution.

The company asserts that development of several industrial electrolysis processes and technologies were dramati-

cally improved thanks to the introduction of DSA anodes suitable for these processes. The application of MMO anode coatings to oxygen-evolving processes contributed to obtaining high-quality products while substantially reducing power consumption and use of additives in several industries, starting from galvanic processes to copper foil production and printed circuit board manufacturing, thus contributing to advance the performances of electronic devices and batteries.

Various anode structures have been developed by De Nora over the years to match the industry requirements. Today it produces anodes in numerous shapes: sheet, mesh, rod, strip, plate, wire, tubular or combinations thereof. Their size varies from few square centimeters to several square meters. The process in which the anodes are used determines their size, shape and coating specification.

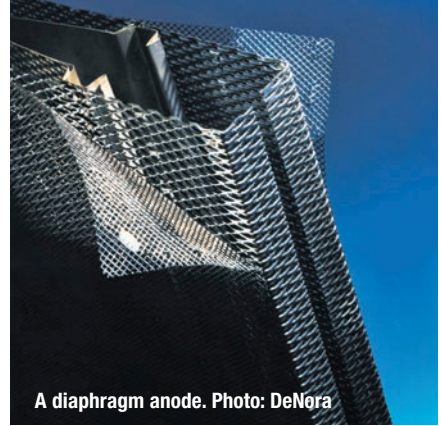
California-based Optimum Anode Technologies Inc. set out at its founding 10 years ago to advance the science of anode design.

"Drawing on more than 100 years of electrochemical knowledge and anode coating experience," the company says, it "applied developments and improvement in coatings, substrates, and complex electrochemical theory to maximize anode technology. Its innovations in dimensionally stable anodes set new industry standards for a wide variety of electrochemical applications including chlor-alkali, electrowinning, sodium hypochlorite, plating and other applications."

Fully integrating its own operations, Optimum Anode performs research and development, product engineering, design, fabrication, coating and testing in a single location. The company has an affiliated business partner, TITAN Metal Fabricators, to harness the benefits of reactive metal alloys – titanium, tantalum, zirconium, niobium, and nickel alloys – to create quality, long-lasting and cost-effective products for industrial application.

"Our iridium oxide series of anode formulations enable the energy-efficient production of oxygen," Optimum Anode says. "Iridium, the primary precious metal, is converted to oxide. Depending on the environment and the exact requirements, the iridium can be combined with other precious metal and/or base metal oxides to produce the optimum electrochemical catalyst for your specific process conditions and desired operating performance and product results."

Applications for this include electrolytic recovery, cathodic protection, electrophoresis, electrosynthesis of organic and inorganic compounds, electro-dionization, electrogalvanizing, and more. The iridium oxide TCA-coated titanium anodes for trivalent chrome plating are,



A diaphragm anode. Photo: DeNora

it claims, the most cost-effective solution for tri-chrome plating.

“An environmentally and technically sound anode solution, IrOxide TCA anodes are a simple, easy-to-use and cost-effective alternative versus lead anode systems, which require a semi-permeable membrane to prevent the buildup of hexavalent chrome as well as continual maintenance and additional, costly waste treatment,” the company says. “IrOxide TCA anodes are fabricated from commercially pure titanium to the size requirements of your application.”

Vector Corrosion Technologies focuses on anodic protection for bridges and other physical entities such as marine structures and industrial facilities. Since the late 1990s, it has offered galvanic protection systems for reinforced concrete structures, beginning with the introduction of the Galvashield and later the Galvanode product range of galvanic


anodes for concrete.

In 2006, it acquired the intellectual property and assets of Post-Tech Construction Technologies related to the evaluation, repair and corrosion mitigation of post-tensioned structures, and in 2009, it acquired the rights and assets from Fosroc International for Fosroc Corrosion Solutions. These systems are electrochemical corrosion mitigation technologies for concrete, and include electrochemical chloride extraction (that is, desalination), realkalization, and embedded galvanic anodes for concrete.

The company says its range of corrosion mitigation systems today includes specialty corrosion solutions for corrosion problems found in post-tensioned and prestressed structures, marine pilings and steel frame masonry structures. Its DAC-Anode system is a distributed impressed current cathodic protection anode system originally known as DAC-85, which

has been used for over 30 years, and offers 10 to 20 years of expected service life. It is used as a non-destructive corrosion mitigation solution for aging concrete infrastructure such as parking structures, condominium balconies and walkways, and similar structures in a corrosive environment.

Another technology it has is DAC-Anode WB, a single component, single coat, electrically conductive coating applied by brush, roller or spray to the surface of concrete. DAC-Anode is applied between 8 to 12 mils (200 to 300 microns) dry film thickness. The material dries in three to four hours and can be recoated in four to six hours. ■



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Fume Suppression for Hexavalent Chromium Plating

BY STEWART TYMCHUK AND IRYNA GAFIYCHUK,
DYNAMIX INC.

Introduction

Chrome plating is a surface treatment process where a layer of chromium is electrochemically deposited onto the surface of metals. The electrochemical process produces a significant amount of gassing released from the process tank. These gases rise to the surface as bubbles. Most bubbles burst at the surface and when they burst, they form aerosols which are released to the atmosphere. These aerosols consist of process liquid containing chromic acid and thus may expose the environment if no mist suppressant agent is used.

Wetting agents/fume suppressants are defined as any chemical, added to the electroplating bath that reduces or suppresses fumes or mists at the surface of the bath. Electroplating baths, in this case hexavalent chromium baths, emit bubbles of hydrogen and oxygen at the bath cathode

and anodes respectively. In fact, for hexavalent chromium electroplating baths, 85 to 90 percent of the electrical energy supplied to the baths produces bubbling. (The other 10 to 15 percent causes chromium to deposit onto the metal substrate). These bubbles burst as they rise to the surface of the baths, causing the generation of chromic acid mist.

“Surface active” fume suppressants (also called surfactants) are added directly to chromium plating baths and are classified as either temporary or permanent. Fume suppressants may further be divided into the way in which they reduce emissions. Foam “blankets” typically suppress the mists produced on the surface of plating baths, while wetting agents change the surface chemistry (i.e., the surface tension) of the plating baths to reduce misting.

Mist suppressants reduce the surface tension of a liquid. When mist suppressants lower the surface tension of a plating bath, gases escape at the surface of the solution with a diminished “bursting” effect, causing less mist formation (i.e., smaller bubble size, less surface impact). Mist suppressant chemicals are organic compounds whose components have opposing solubility tendencies, typically an oil-soluble hydrocarbon group and a water-soluble ionic group.

Where We’ve Been

The “first-generation” mist suppressants were hydrocarbon-based with an ionic group at one end, such as kerosene or paraffin oils. The disadvantages of the first-generation mist suppressants outweighed their benefits. The oil components were layered on the surface and carried over into proceeding rinse tanks. Health and safety issues included fire hazard potentials and dermatitis. Further, these mist suppressants oxidized rapidly producing trivalent chromium and insoluble organic compounds that eventually decomposed to carbon dioxide. This behavior required frequent or continuous mist suppressant additions, making them a more temporary than permanent solution. The excess trivalent chromium was also a bath contaminant requiring the plating bath to be replaced or regenerated more often.

In the “second-generation” mist suppressants, the hydrocarbon chain was replaced with a fluorinated or perfluorinated carbon chain. This mist suppressant, which was first reported in the chromium plating industry back in 1954, was considered permanent since it was found to remain stable in boiling concentrated chromic acid and was tolerant to the highest oxidizing conditions existing at the electroplating bath anodes. The original second-gener-



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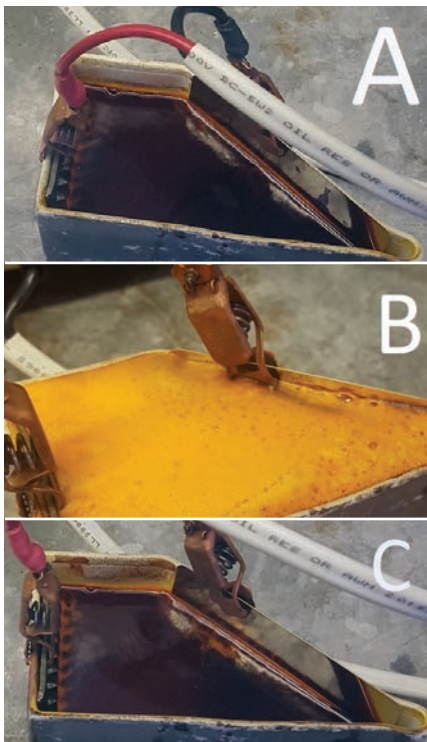
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Comparison of foam blanket produced by three types of fume suppressants.

A: PFOS-based 'third generation' fume suppressant

B: Fluoride-free 'fifth generation'

C: PFOS-free 'fourth generation'

ation mist suppressant, although chemically neutral, was a cationic surfactant with a dihydroamine functional group. The amine group was later replaced with the sulfite group that changed the surfactant to anionic. The active ingredients in the second-generation mist suppressants included potassium perfluoroalkyl sulfonate, amine perfluoroalkyl sulfonate, potassium perfluoroethyl cyclohexyl sulfonate and ammonium perfluorohexylethyl sulfonate. These mist suppressants had a low solubility and became suspended causing roughness, porosity and cracking on the chromium plate during hard chromium plating operations. Salt was added to these mist suppressant compounds to improve solubility. The salt itself may have caused adverse effects on product quality as well.

The "third-generation" mist suppressants (introduced in the late

1980's/early 1990's) were also perfluorinated, but with higher solubility and lower foaming. Supplemental chemical additives, such as salt, were not required to improve their solubility, therefore eliminating issues present from second-generation suppressants. Active ingredients included organic fluorosulfonate and tetraethylammonium-perfluorocetyl sulfonate. These fume suppressants, however, posed an environmental concern, which eventually led to them being banned for use in the electroplating industry in Canada, USA and many other countries. Perfluorinated surfactants were stable in the plating baths which translated to

stability in the environment. These compounds did not biodegrade and posed a serious risk of bioaccumulation and biomagnification.

Today and Tomorrow

The "fourth-generation" mist suppressants are perfluorooctane sulphonate (PFOS) and perfluoroalkyl substances (PFAS)-free halogenated aliphatic acids which are fluorinated anionic surfactants designed to reduce surface tensions of aqueous solutions to very low levels. These compounds demonstrate exceptional chemical stability in corrosive media and very acidic solutions. In chrome plating baths, these

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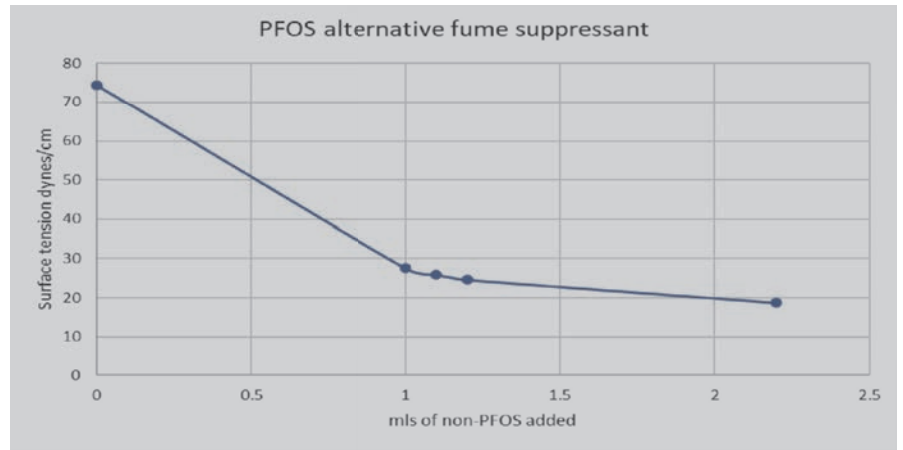
FUME SUPPRESSION

compounds have demonstrated to aid in wetting and to promote the formation of a slight foam layer on solution surfaces, providing mist suppression properties. In addition, although the surfactants still contain fluoride, they are more biodegradable compared to the PFOS-based third generation fume suppressants.

Dynamix Inc. researched suitable replacements for old generation fume suppressants, with the objective of developing PFOS and PFAS-free chemistry that did not interfere with electroplated surface quality, while providing decreased chrome emissions to the environment as well as employee occupational exposures. Two chemical families were studied: fluorinated and non-fluorinated surfactants that showed stability in highly acidic environment.

The latest development in Dynamix's Dynaplate Cr FS product line is "fifth-generation" chemistry that is fluoride-free, PFOS/PFAS-free and halogen-free, capable of providing all the benefits of the previous generation, while being completely biodegradable. These non-ionic, dispersive suppressants work by coating the surface of the plating bath with a very stable low foam blanket, while reducing the surface tension to below 40 dynes/cm. Another important benefit is that these agents can be used in both decorative and hard chrome plating, which gives the end user versatility and practicality in the operation of chromium plating baths.

The Dynaplate Cr FS product line demonstrates that "fourth" and "fifth" generation wetting agent/fume suppressant technology to hard chromium electroplating baths reduces up to 99.9% of hexavalent chromium airborne emissions to the environment, while reducing employee occupational exposures in the electroplating facility. Dynaplate Cr FS products work by reducing the surface tension of the chromium electroplating bath, resulting in reduced size of the bubbles produced, reduced misting and



reduced hexavalent chromium emissions. As a result, less chromium is exhausted to the air pollution control devices (APCD), with less fugitive emissions into the plant environment, thereby reducing employee occupational exposure.

With additions of 1 percent by volume of Dynaplate Cr FS liquid fume suppressant to hard chromium electroplating baths and allowing a short period of time for the baths contents to reach equilibrium, the surface tension of the bath is effectively lowered from above 70 dynes/cm to below 30 dynes/cm.

Studies have shown that surface tension, controlled to 30 dynes/cm or less, reduced atmospheric emissions from the hard chromium bath exhaust system to a level that complies with the NESHAP emissions limit of 15 µg per dry standard cubic meter (g/dscm). It was also demonstrated that there was a significant reduction in fugitive chromium emissions from the bath (i.e., emissions to the workplace). Dynaplate Cr FS fume suppressant additives reduce occupational exposures to help ensure compliance with the current Permissible Exposure Level (PEL) of 100 micrograms per cubic meter (g/m³) as chromium trioxide (CrO₃), which is equivalent to 52 g/m³ as chromium.

While emissions are important, maintaining material quality for electroplated equipment was paramount and the fume suppressant was to have no negative effect on the integrity of the electroplating process, the hard chromium coating, nor the func-

tional properties of the plated components. Critical properties were fatigue characteristics and embrittlement. Evaluation showed that material testing of hard chromium-plated samples produced in baths containing Dynamix Cr FS fume suppressants performed as well as samples treated in baths without fume suppressants.

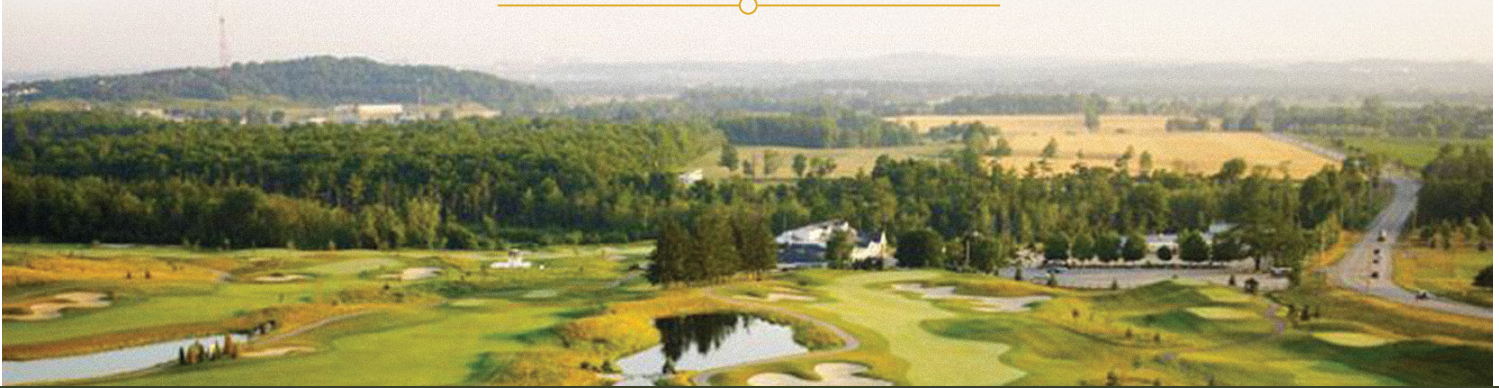
Stability of both types of surfactants was shown to be comparable to the PFOS-type suppressants and required minimal recharge amounts due mainly to drag-out.

Changes in regulations are today's main driving force in the evolution of electroplating chemistry and its additives. Although fume scrubbers have been the plating industry's go-to solution for chrome emissions, introduction of fume suppressants has been met with skepticism and generations of less-than-optimal performance of these agents have perpetuated the cautious view of these additives. Much progress has been made in providing the most optimal performing additives. Nevertheless, fume suppressants are extremely important in keeping chrome emissions within allowable range. With the new wave of chemistries that have emerged it is expected consumers will reach for additives before they reach for scrubbers due to lower operating cost and ease of use. In the end, the goal is to create a chrome plating system where virtually all of chrome misting is eliminated. ■

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Today's Automatic **Spray Guns**

AUTOMATIC SPRAY GUNS IMPLY automatic controls. In turn, that implies high volumes, and high volumes imply issues of reliability, maintenance and economies of scale.

"These guns should be easily maintainable in house," says S.T. Rajan, vice-president with SAMES-KREMLIN Inc. "They should be simple to install and easy to operate."

Education by the manufacturers on the do's and don'ts, he adds, is also important. And no purchaser overlooks efficiency or finish quality.

Ideally, he says, there needs to be "a better coordination, understanding and relationship between the equipment builder, spray applicator supplier and the paint company. The triangle has to be perfect for the customer to be happy with the finished product."

When there is any purchase being considered, he points out, detailed discussions need to be held with the gun supplier and also the paint company, to ensure there is the best transfer efficiency and an acceptable finish.

"Training is paramount and every customer is looking

to get better trained to use the equipment with ease. This training will help maintain adequate supply of spare parts to avoid downtime."

SAMES-KREMLIN has recently ensured all its Airmix guns can be converted to airless guns through the addition of parts.

"This keeps the capital equipment investment low and at the same time helps the paint companies with their coatings," Rajan says. "We have inserts and vortex which could be fitted to a few of our automatic air spray guns, enhancing the spray pattern."

The company's new series of automatic guns ASB will be released in a months' time. These guns come with its patented skill tips, which can atomize paints at lower pressures, resulting in additional savings for the customer.

The Nanobell 2 robotic bell sprayer, he says, has been made more compact, and is specially designed for mounting on small robots. The company's Multi Spray, a hybrid robotic applicator that gives the user a quick way to tran-



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SAMES-KREMLIN Nanobell
2 robotic bell sprayer.

sition from fan spray to bell technology and back, is recommended for high-risk gun-to-bell conversions.

All the company's non-electrostatic guns are designed to handle water-based material aside from solvent-based. Hence, all wetted parts are stainless steel.

All the electrostatic guns are made of plastic, which is non-conducting, durable and at the same time lighter than metal. The composition of plastic used changes, depending on requirements.

Graco's Pro XPC guns are designed to safe, durable and PLC-controllable. They are made for efficient system integration, and each comes with a serialized certificate of performance.

The system has 250 user settable presets and maintenance reminders that can be controlled from a PLC or switchbox control. This improves flexibility for the customer, who can spray with a wide variety of shapes and sizes.

This range is designed to be robot-friendly, with a weight and size that allows robots greater reach capabilities. A switch box can make spraying flexible, and there are patent-pending charge points for high transfer efficiency and reduced material usage. There is also system integration with nozzle tips, to assemble a robot movement system or fixture.

The company points out that safety is always a concern, especially with electrostatics. With only a 100 kV power supply and a more flexible and durable low voltage cable, it has been able to reduce the risk of fire.

Another automatic spraying product from Graco is the ProBell rotary atomizer. This offers high performance spraying with intuitive controls and a scalable design. It also provides flexibility with controllers, allowing customers to start small with one or install a complete system.

It is offered in three different styles. The standard model offerings include the solid wrist robot and the reciprocator or fixed mount, while a hollow wrist robot model allows users to remove the applicator from the robot without touching hose connections, making it more convenient for maintenance.

DeVilbiss' HVLP series of automatic guns covers the range of standard commercial sizes. At the smaller end of the scale, the compact I HVLP features, the company says, a wide range of air caps, and a removable, stainless steel spray head for fast and easy maintenance.

Control of spray performance and fluid flow is managed through a fluid adjusting knob, and the units feature stainless steel passages. They have an independent fan,

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AUTOMATIC SPRAY GUNS

and atomizing and triggering air, which is essential for robotic and automatic spray machine applications.

At the larger end of the scale, the X HVLP spray gun is a sophisticated automatic gun that can be detached from its mounting block in a few seconds via the easy thumb release mechanism, offering fast and easy maintenance and serviceability. This special feature, the company asserts, dramatically reduces production downtime. No tools required for detachment.

There is a recirculating and non-recirculating gun head that is an all-in-one unit, and fixed gun positioning. The guns also have a small footprint.

A larger option is the Automatic HVLP, which is designed for use with robots and automatic machines, and for stationary mounting. Its gun is built to withstand the harsh conditions found in many automatic spray finishing applications.

There are only two moving parts, permitting greater reliability and easier maintenance. Patented PTFE needle packings are spring-loaded for extended service.

Abrasive fluid packing is available as an option for more abrasive coatings, and there is a detachable spray head for fast needle packing replacement. Circulating capability is standard, and there is optional remote fan control.

The Ransburg Evolver 560SE automatic electrostatic spray gun from Carlisle Fluid Technologies is a compact unit with simple, rugged design. Built on the company's established Evolver platform, the Evolver SE is suited for fixed gun, reciprocator or robotic applications.

The unit's air cap technology can achieve fine particle atomization, the company says. These air caps deliver uniform spray patterns, consistent paint build-up and quality finishes. The major components are made from high-strength, engineered resins.

Transfer efficiency is claimed to be 30 percent higher than non-electrostatic spray guns. The gun's 85kV charging voltage delivers superior wrap, Ransburg states, for an eco-friendly application.

A key offering from Nordson in this area is its model A7A automatic airless spray gun. This, the company says, delivers maximum reliability in high-production airless painting, sealant and adhesive applications.

Nordson airless systems, with A7A guns, produce fine atomization and a soft, controllable spray to deliver high finish quality with minimal overspray. The air-actuated A7A guns provide fast response time (30 to 40 milliseconds) and high-speed cycling capability (up to 2500 cycles per minute), and are ideal for coating situations requiring precise material application.

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AUTOMATIC SPRAY GUNS

Fast cycling with positive cutoff provides precise operation with minimal dripping and spitting

They are available in single-, dual-chamber, and dual-chamber angled models, and can be used in either non-circulating or circulating heated airless applications. Aluminum, steel,

and stainless-steel models are offered.

Nordson offers its Cross-Cut and dome nozzles for effective atomization of hard-to-atomize coatings, to achieve minimal paint waste. The gun mounts to a half-inch round bar for fast, easy installation.

The company's similar modular

Quattro automatic spray gun provides fast color and coating changes in high-production airless painting applications. Fast cycling with positive cutoff provides precise operation with minimal dripping and spitting.

The modular design, Nordson says, facilitates spray gun removal for fast cleaning and repair with minimal downtime. Stainless steel construction facilitates use of waterbornes and highly corrosive materials. There is a PTFE coated packing cartridge to resist material build-up on the shaft and spring and again, each gun can mount to a half-inch round bar for fast, easy installation.

The SATAJet 3000 ROB HVLP gun has an integrated, standard air micrometer. Spraying of highly viscous paint materials using air-atomizing, wet application methods could lead to material bounce back. In such a case, paint particles are deposited on the air cap horns due to turbulent air streams.

This can be prevented to happen by using air caps with shortened horns which are also set further apart, thus avoiding air turbulences. The fluid tip is equipped with a patented SATA air circulation system that prevents the air stream from entering the air cap directly and without any control.

The impact plate ensures that the compressed air fills the air cap in a regular manner. Thus, atomization air is fed into the air cap at a constant speed. The result is a steady, soft and almost turbulence-free air stream and in consequence, a soft, steady spray fan, creating an almost completely mottle-free spray pattern with the application of metallic basecoat.

The unit provides fast color and coating changes in high-production airless painting applications. Fast cycling with a positive cutoff provides, the company says, precise operation with minimal dripping and spitting, while the modular design facilitates spray gun removal for fast cleaning and repair with minimal downtime.

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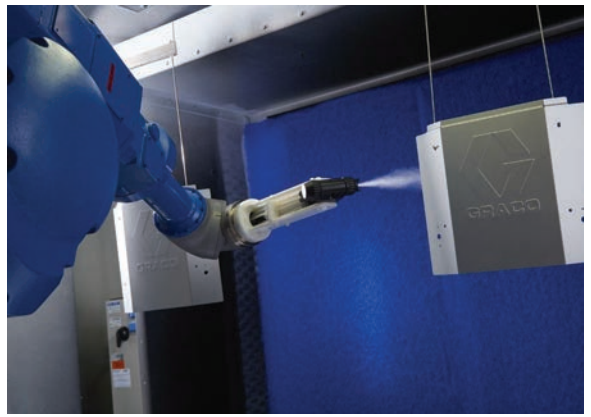
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Graco Pro XPC spray gun on a robotic arm.



The stainless steel construction is ideal for waterbornes and highly corrosive materials, and a PTFE coated packing cartridge resists material build-up on the shaft and spring.

The company's Trilogy AAA (air-assisted airless) automatic spray gun is a compact, lightweight gun that can be used in a variety of liquid spray applications. The gun incorporates a variety of performance features, including separate air regulators for round or flat jet spray patterns, offering more application versatility.

Its modest size and weight commend it for fixed, robotic and reciprocating applications. It has a stainless steel packing cartridge, and the needle seal is accessible from outside.

There is separate round and flat jet regulation, for a better level of adjustment versatility, and the gun is available in both imperial and metric versions.

Anest-Iwata's HVLP range of guns

includes the compact LPA100 gun for automated painting equipment, reciprocators or robotic painting. This unit offers multiple mounting and spraying options.

The LPA 200 is a full-sized model with the same capabilities. Both models feature stainless steel fluid passages, and will work equally well with waterborne or solvent-based coatings.

Choosing automatic spray equipment requires a lot of careful consultation. SAMES-KREMLIN's Rajan says, "We pay a lot of attention when installing paint systems so that they are planned for tomorrow.

"Customers go from manual systems to automatics in a year or two depending on their production volumes. In such cases we plan for the pumps to be sized higher, the lines are designed to take care of more

flows. In some cases we hard pipe the lines suitable for the future."

In finalizing for today, he adds, he believes in the need for dialogue with the customer on how he would like to proceed in a year or two. This helps design and plan the system better for tomorrow.

It also helps in reducing costs for the customer, avoids down time and the installation looks neater. So, whatever the variety of systems available in the market today, the precise choice of spray guns needs to be made very carefully, and with an eye to the future as well as the near-term. ■

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Powder Coatings for Tough Uses



A powder-coated Liebherr mining truck.

Photo: Liebherr.

POWDER COATINGS FOR AGRICULTURAL and off-road applications form one specific industry segment, but one that is constantly growing. As powder coaters become progressively more efficient at the work they do, and as the powder spray systems become more precise and better at reaching odd nooks and corners of the parts they coat, so this particular field expands.

The requirements present a unique combination of needs. The outdoor end-use means that UV resistance is essential, while the coatings need to handle grit, mud, rain and plant-sap that might contain substances that can be corrosive with prolonged exposure.

Producing a powder that can handle all of that, and of course finding a coater that understands how to apply it properly. A successful powder coating for what is often called the ACE sector (for agricultural and heavy equipment) comes from a combination of well-chosen material, and a highly competent coating company.

The coatings involved are mostly polyurethanes or specialty polyesters, plus some specialty epoxies. The usual descriptor, 'super-durables,' varies in its meaning from supplier to supplier, but in nearly all cases the term refers to powders that were not in widespread use until a few years ago.

Vitracat America Inc. specializes in such powders. Its Super Durable Corrosion Resistant (SDCR) powder coatings are recommended for corona application, to achieve an optimal bond with the substrate. The products fluidize and spray as a conventional powder, removing any need

for special application equipment.

Tested under laboratory conditions and applied to blasted clean steel, SDCR powder coatings offer, the company says, excellent performance up to 3,000 hours in neutral salt spray testing.

Environmental testing has also shown superior surface and edge protection is provided.

The coatings can be used on non-blasted steel substrates with the use of a high-quality phosphate pretreatment system. They can also be used as a substitute for liquid primers, and they eliminate drying time constraints.

Axalta's Alesta range of powders is based on a super durable polyester resin system. This, the company says, incorporates high grade pigments and stabilizers with outstanding exterior durability.

The Alesta range includes a broad portfolio of powders, many of which are used for architectural applications as well as transportation and other outdoor uses. In all cases, the powders are aimed at situations where there is likely to be extreme wear and tear.

They feature, Axalta adds, environmentally-friendly formulations and ultra-low VOC formulations that offer excellent protection. In addition, they have high color accuracy and gloss stability, along with easy-care, easy-clean and anti-graffiti properties.

For the related field of oil and gas applications, Alesta offers its NapGard product line, which meets all relevant major Canadian government safety and reliability stan-

dards. These fusion-bonded epoxy materials provide corrosion-resistant coverings, and can handle situations where wastewater or salt-water are involved.

The company has noted continuous interest in coatings that can tolerate high service temperatures of up to 180 deg. C. In today's oil and gas applications, temperatures can rise beyond this point and NapGard materials are being formulated to perform under such conditions.

Sherwin-Williams is in this market segment with its Powdura OneCure powder coatings. These have the advantage of providing improved edge coverage and corrosion resistance over previous materials, while the primer and topcoat are applied in a single cure cycle.

The primer and topcoat, moreover, can be different chemistries, offering coaters the best of both worlds in terms of improved properties and simplified and lower-cost application. In any long production run, obviously, eliminating a step or phase of the process is a winning strategy.

The two coats crosslink and co-react to form a tight inter-coat adhesion bond. This type of technology, the company has found, is especially interesting to coaters of heavy duty equipment or infrastructure components, which in many ways are functionally identical or at least similar to agricultural and off-road applications.

Sherwin-Williams has also placed an emphasis on driving down cure temperatures. With heavy-gauge steel parts, for example, it can take longer to achieve the required metal temperature for cure. The lower this temperature can be driven, the quicker parts can be processed, and the lower the temperature and energy required to achieve full cure.

AkzoNobel's offering in this sector is its Interpon line. Interpon ACE 2010, the company says, offers superior UV and weather resistance in a TGIC-free polyester powder coating explicitly designed for exterior exposure for agricultural and construction equipment and components.

Tested against the most severe specifications, provides significantly improved gloss retention and resistance to

color change. Additionally, the company states, it possesses outstanding transfer efficiency and faraday cage penetration.

Interpon 610 and 620 are two other TGIC-free coatings. They reportedly offer excellent light and weather resistance from a single coat finish on a variety of substrates.

The enhanced heat resistance of Interpon 600 powders commends them for use where color retention on surfaces

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American Coatings Show 2018

ACS was held April 10-12 at the Indianapolis Convention Center. More than 11,000 visitors came to check out stands from over 500 companies showing old and new materials and concepts for the coatings industry. On these pages are some of the exhibitors.



Fischer's Craig Kuchta ready to promote the company's instrumentation.



EMCO-Inortech's Michael Kovacic, Erika Spanbauer and Michael Wolf.



Tony DiRisio and Carmen Wong at Clariant's stand.



Ralph Kuise and Eddie Waters of DeFelsko.



Jake Dagen and Stewart Rissler on the Netzsch stand.



Shelby Shirey, Kyle Proctor, Rhonda Bovin and Kayla Susko from Dow.



Byk's John Kowalski and Gergana Böttner, with one of the company's newest measuring devices.



Mark Vincent, president of DCC, with Michelle Claeson.



Scott Ellis and Annales Maddox from Gelest Inc.

exposed to continuous heat is required. They are available in a wide range of colors in gloss, satin, matt and textured effects and can be custom matched to the user's requirements.

One agri-sector customer for Interpon coatings was CNH, which makes the Case IH, New Holland Ag and Steyr brands of mobile farm machinery, as well as construction equipment. The range includes equipment to meet all needs in all regions, from its tractors to specialty grape harvesters and massive combine harvesters in agriculture, as well as skid steer loaders and powerful hydraulic excavators in construction.

Gasoline and diesel powered agricultural and construction vehicles and machinery contain exhaust systems that reach extremely high operating temperatures. The performances of typical powder coatings are suitable to 400 deg. F, but at higher temperatures these coatings quickly deteriorate, resulting in

cracking, delamination and unacceptable change in color and gloss.

Interpon ACE High Temperature resistant coatings are formulated specifically to protect metal surfaces operating at temperatures from 500 deg. F (260 deg. C) to 950 deg. F (510 deg. C). With proper preparation, Interpon ACE HT products provide the necessary adhesion, film integrity, corrosion, weathering and thermal shock-resistance throughout the entire temperature range, even after repeated high temperature exposure.

The items coated included mufflers, exhaust stacks, and related accessories such as heat shields, clamps, flex and tubes.

Among other applications for the Interpon materials has been a US-manufactured line of mining equipment. Leibherr Mining Equipment Co. of Newport News, VA, produces large dumper trucks for the mining industry.

The worldwide mining industry

uses large loading and transport vehicles and machines from Leibherr for open-cast mining and the extraction of various raw materials. These giant vehicles move material under arduous conditions, making a high level of surface protection for them a necessity.

Interpon ACE 500 coatings in particular offered the necessary UV stability while providing exceptional protective qualities. They were used to coat ancillary parts to giant dump trucks such as ladders, platforms, cabs, hand rails, and motor brackets, and all in Leibherr's proprietary range of colors.

The success of this program indicated what today's most durable powder coatings can accomplish, under the most hostile working conditions. No single coating can do everything, but the best powder coatings can protect against most of the predictable outdoor hazards, while still looking good on the finished product. ■

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E-coat Tackles Critical Parts

THE E-COAT PROCESS is specialized coating technology that continues to develop and attract new business. Usually referred to as electrodeposition when written out in full, or sometimes as the electrophoretic painting process, it provides coatings with a particular combination of properties that are in demand for certain demanding applications.

The standard E-coat process involves immersing a metal part in a water-based solution that contains a paint emulsion. An electrical charge is applied to the part that causes the paint emulsion to condense onto it.

A key advantage of E-coat is that a part can be painted at any point where the liquid reaches a metal surface, including the inner surfaces that would be hard to access with a regular spraying process. This applies with both primer and topcoat E-coats.

The coating thickness is limited by the applied voltage. As areas of high voltage build a coating, they become insulators and so cause lower voltage areas to build up.

According to E-coat equipment supplier George

Koch Sons, LLC, E-coat finishing has very high transfer efficiency, uniform film build, and excellent corrosion resistance. The parts pass through a pretreatment process, then the cleaned parts enter a temperature-controlled grounded steel tank, which is lined with chemically-resistant dielectric material.

“After a 90 to 120 second dwell in the water-based electrocoat paint solution with a DC electrical charge applied, parts are conveyed through a series of counterflowing permeate rinse stages to remove undeposited paint.” the company states. “The parts are then conveyed to an oven to cure the electrocoat paint coating prior to unload.”

George Koch Sons says it installed the first E-coat system in North America, in the 1970s. It has since implemented more than 300 systems, in a wide range of industries. The company provides full-service, turnkey system support with expertise in all process stages from pretreatment through final cure.

“We have extensive experience in all major electrocoat-



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ing techniques,” the company states, “such as continuous conveyorized systems, indexing systems, and bulk coating systems, where parts can be randomly packed.”

In addition to its materials-related businesses, PPG also has a machinery division that produces E-coat equipment. The company leverages its expertise on the materials side for new line installations, as well as upgrades to existing lines.

Its Equipment Division, PPG says, “can also ensure that older facilities remain on the leading edge of efficiency and innovation by implementing projects such as installing heat-exchangers to capture and reuse oven ‘heat’ waste, redesigning paint pumps to create more reliable systems or developing new machine designs to handle larger production volumes.

“Since being founded in 1974, the Equipment Division and its legacy companies and staff have accumulated decades of institutional knowledge. That technical prowess enables us to find the right coatings solution for any part, regardless of size or shape, while positioning our team to help your business meet the difficult challenges of the future.”

It involves itself in initial concepts, layout and design of equipment, and will also design and build racks, carriers, part pallets, coating racks, and shipping pallets. Further, it will design part containers to hold parts prior to assembly, as well as shipping containers that meet international regulations.

Eastman Manufacturing Inc. is another E-coat equipment supplier. The company points out that the method is an immersion painting process that leaves no blemishes or runs, and makes the surface of any item look naturally smooth.

“The high level of control and coating of this process,” Eastman states, “makes using E-coat equipment a highly efficient option since it eliminates the need for technicians spending time touching up any missed areas manually.

Eastman also produces ovens and related finishing equipment. It can therefore supply full E-coat lines to customers.

The Therma-Tron-X Econ-E-Coat finishing system offers, the company says, high density throughput, and it has similar features to the company’s Sliderail Square Transfer (SST) system, but in a smaller work envelope. Specifically designed to be portable, this modular unit, TTX states, relocates easily.

The Econ-E-Coat system provides the same high quality and durability as the SST, with many lines having accumulated more than 100,000 hours of operation. Coating capacity of the system is between 50 and 150 sq ft per load, or up to 3,000 sq ft per hour. It employs either a multi-stage phosphate or a conversion coating pretreatment system.

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Immersion anodic or cathodic E-coat paint application is done using ultra-filtration, temperature control and a rectifier. There is a three-stage recirculated immersion post rinse, as well as glass-enclosed pretreatment.

A bottom entry/exit dehydration /cure oven is mounted above the tank section, and units include a forced-air cooling tunnel. There is an integrated utility area for a hydraulic unit, and a PLC controller with a color HMI touchscreen.

Options on the Econ-E-Coat include a batch or continuous-flow wastewater treatment system; a reverse osmosis water generation unit, and an automatic chemical feed for the pretreatment section. A process data management system is also available.

On the E-coat materials side, Valspar is a player in the business with its Vectroguard coatings. These, the company says, are used in a range of commercial

applications, including construction, agriculture and transportation, including cabs and wheels. It adds that these cathodic finishing solutions “deliver excellent corrosion protection along with key operational benefits. They are commercially available in a range of traditional primer colors.”

The benefits offered include superior edge-corrosion protection, along with a range of primer technologies to meet specific needs. Vectroguard is also stated to offer three to four times the abrasion resistance of standard single-coat products.

Further, it provides good resistance to a range of chemicals including household detergents, pesticides and motor oil, and can be applied over a range of pre-treatments that meet operational needs. An additional feature is a wide operating window, which allows for a strong first pass yield, and provides higher film builds, to protect equipment. The formula-

tions are also lead and chrome free, providing a finish with low environmental impact.

The Clearclad process, from Clearclad Coatings, has been developed since the early 1990s. It was originally developed for applying an anti-corrosive coating over steel car bodies, and subsequently extended to other markets, including such consumer goods as hardware, jewelry, eyeglass frames, giftware and other items.

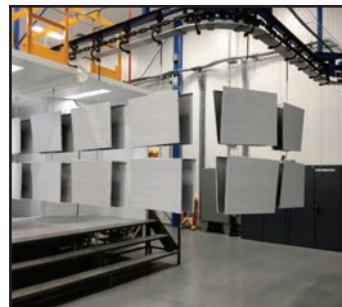
Material utilization, the company states, is close to 100 percent. This high production efficiency, Clearclad states, coupled with advanced quality, results in lower unit costs.

The coating materials can include resins, pigments and additives that are dispersed in water and held in a bath. The parts to be coated are immersed in this solution and an electrical current is passed through the bath using the parts as electrodes.



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Electrical activity around the surface of the parts makes the resin directly in contact become insoluble in water. This causes a layer of resin – including any pigments and additives present – to adhere to the surface of the parts. The coated parts can then be removed from the bath and the coating is normally cured by baking in an oven to make it hard and durable.

A predictable and consistent thickness of coating can be applied through adjustment of the current in the bath. This, the company says, is essential if tinted coatings are required, such as brass or gold colors applied over bright nickel or zamak (zinc-aluminum) alloys.

There is no need to dry parts after water-based cleaning or pre-treatment processes with Clearclad. Also, through use of ultrafiltration technology, rinse water can be extracted from the bath and used to recycle nearly all of the drag-out



Koch E-coating conveyor system.

back into the bath.

E-coat is for specific niches that require its high-precision finishing, and not a one-process-fits all method. It is therefore less used than regular spray-painting processes, or powder coating.

However, it is a valuable tool for demanding applications that require high-quality, consistent finishes. In this area of industry, it continues to be an important way of finishing critical appearance parts. ■

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Spray Booths and Filtration Systems

A SPRAY BOOTH AND ITS FILTRATION SYSTEM are easy to take for granted. Yet proper design of both, and careful monitoring of the system over time, offers a cost-effective way of improving a paint-line's performance.

All booth designs require shrouds or rigid partitions, along with a means of moving air through so as to eliminate build-up. And at the other end of the painting operation, it is about filtration of the air to ensure a clean operation.

"A booth is all about filtration and air movement," observes Lizabeth Bjarnason, who manages marketing for Therma-Tron-X Inc. "Anyone can make a booth, but those two things are what make a good one."

One step some suppliers in the field have taken is to standardize their product offerings. Global Finishing Solutions, for example, has recently been promoting a new general-purpose line of spray booths where the various options offered are now considered standard features.

This approach, the company says, has enabled it to reduce lead-times on new systems. It has also added an option for a roll-up door, which saves space when there is not enough available for a swing-out door.

Another feature GFS is offering is a peelable system called Booth Shield – it peels off. This, the company says, brightens and protects paint booth surfaces, and usually takes no more than 10 minutes to paint or air-brush on.

It can then be removed when necessary. This is aimed particularly at operations that perform numerous color changes.

Therma-Tron X markets both dry filter booths and water-wash booths. Liquid paint today still comprises 80 percent of all paint sold anywhere, and most booths must be designed for this.

Many, perhaps most, booths are intended for use with high-volume batches of parts, and they need good flow-through. Monorails are still a popular option for achieving this, but TTX has heavily promoted its Square Transfer Indexing Systems (SSTs) as an alternative. These can be good for loads of up to 20 racks per hour.

Monorail systems transport parts in a continuous line along a chain conveyor. A chain conveyor can be an overhead power conveyor, as well as power and free conveyors in either overhead or floor-mounted configurations.

In square transfer systems, each load travels through



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the finishing operation on a step-by-step basis. A load is lowered vertically into each process tank, held there for a prescribed period of time, then raised vertically from the tank, shuttled a set distance to the next station, and lowered into the next process tank.

Programmed hoists are one type of square transfer system in which loads are individually transferred from one process to the next by one or more hoist mechanisms. Indexing square transfer systems, on the other hand, will move all loads simultaneously. This offers the advantage of having all process tanks full at all times, and minimizes material handling time for maximum throughput.

Indexing square transfer systems, TTX says, have various advantages over monorail systems, perhaps most important being reduced floor space requirements. Square transfer systems permit immersion pretreatment and coating in a fraction of the space required for monorail systems due to their ability to vertically immerse product into tanks only marginally larger than the maximum work envelope.

The use of a square transfer arrangement in the cure oven minimizes oven volume, which results in capital and operating costs savings. In addition, the oven is typically positioned directly above the process tanks, further optimizing the system's footprint.

For powder and liquid spray coating systems, the



A liquid paint spray booth designed and installed by Therma-Tron X.

indexing square transfer material handling concept can still serve an important role by providing economical immersion pretreatment and dry-off prior to the painting operation. This is particularly true for pretreatment processes in which immersion is the preferred application method, such as cleaning, phosphating and pickling.

Another supplier offering a range of booth styles is Annadale Finishing Systems. Its product line includes both custom-designed and packaged spray booths. These are available in down-draft, cross-draft and semi-down-draft formats, for automotive and truck, enclosed or conveyORIZED and bench dry filter spray work.

The company states that its products offer effective air

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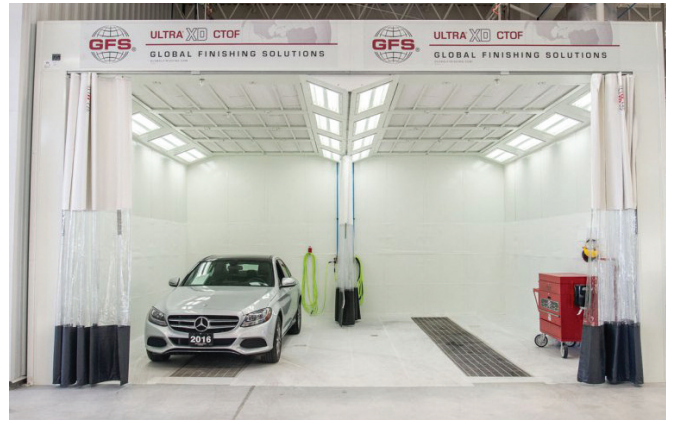
flow volume and pressure to remove airborne particulates and provide optimum paint transfer efficiency. It also produces high production water wash spray booths, with centrifuge sludge removal systems, offering efficiency and low maintenance.

Batch style booths available with spray and cure options. For more elaborate installations, it also offers fire suppression systems, spray booth filters, booth coatings.

Pacific Spray Booths produces and distributes a broad range of booths and filtration systems. Its side downdraft spray booths are an option offered for companies that want a full downdraft, but do not want the expense of excavating an exhaust pit, for some reason cannot do so, or want a raised exhaust basement.

With these, air enters through the filtered booth ceiling and down to the floor, exhausting out the bottom of the side walls. Exhaust plenums behind the filters are connected to vertical plenums that lead to the exhaust fans, with one fan per side. An air make-up unit can be added by ducting to a plenum above the ceiling filter section.

Available only in British Columbia, Pacific's 5 Series spray booth oven is, the company says, a highly specified production unit. A LEVAC or EVAC fully extracted and balanced floor is incorporated into the 5 Series spray booth oven as a standard feature.



An automotive paint spray booth from GFS.

In combination with the full width, full length plenum, the downdraft airflow through this cabin, the company states, is second to none. It incorporates a full range of features including: T-5 high output lighting and offers energy savings at all levels. The QADs air movement system is standard.

For those who think that paint booths are simply spaces used for painting, appreciating the sophistication available in today's designs can be encouraging and eye-opening. If increasing paint booth capacity, or upgrading existing capacity, is on your company's agenda, the options available in the market now can provide significant upgrades in throughput and energy savings over older designs. ■

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THE LIQUID PAINT MARKET has always been about choices. Consumers being able to select the style of finish and the hue they want has built the industry to where it is today, and the quest among paint suppliers has always been to keep expanding that variety.

As the optics of pigments become progressively better known, just like the formulation of colorants using them, so the range of available colors stretches. In turn, this greater choice is creating a demand for ever-higher quality pigments.

“The market demand for high chroma colors is increasing, and these colors require highly transparent, chromatic colorants in a range of pigment types,” says Dr. Barry Snyder, Axalta’s senior vice-president and chief technology officer. “There is also a growing desire for more and more jetness in black cars, which also correlates to the transparency of the dispersion.

“Pigment companies are continually introducing increasing numbers of new gonio-apparent pigments which, while expensive, provide unique effects and colors which are highly desired by many automotive companies to expand styling color capability. These specialty pigments can also be used in creative multi-layer color structures to achieve tailored benefits such as light reflectance, which is growing in customer awareness due to the impact on both heat management and autonomy detectability.

“An example of a color designed for both looks and reflectivity is Axalta’s 2018 Automotive Color of the Year, StarLite, designed to look great on all vehicle sizes while providing the functional benefits expected from a light and reflective hue.” Star-Lite is a pearlescent white formulated with synthetic pearl flakes.

Snyder describes programs to improve the pigment distribution and stability in water-based colorants as an ongoing endeavor, Axalta, he says, routinely creates or identifies new materials to help us in this effort.”We consider the development of both new dispersants and new

processes to be a core competency of our company, allowing better pigment distribution to achieve higher chroma colorants and improve overall color capability.

“These improvements translate into newly styled OEM colors as well as expanded tint lines for the refinish market, which can lead to tailored products for our customers. An example is Cromax EZ, which combines the benefits of waterborne coatings with a workability window similar to solvent-borne.”

Axalta, he adds, sees the role of solvent-borne coatings continuing in both OEM and repair systems, particularly in North America where solvent regulations vary by state and province. Some of the company’s solvent-borne customers may require high solids/low VOC systems, such as Spies Hecker, Permahyd Hi-TEC, while others need exempt solvent systems such as Cromax Mosaic. Each of these systems requires different colorants to provide the desired coatings attributes.

John Ceglarek is associate director, color technology, with Sherwin-Williams Industrial Wood Coatings. He, too, notes that in recent years pigment manufacturers have created many new pigment grades designed specifically for water-based applications.

“These newer materials allow coatings manufacturers such as Sherwin-Williams to make colorant that provides a higher level of stability, viscosity control and improved color space,” he says. “The water-based colorant lines that we can offer now have nearly identical capability to their solvent counterparts.”

Solvent-based colorant and colorant development in general, he notes, has been about increasing the color range that is possible, in order to meet a changing market taste for brighter and more durable colors.

“We are seeing customer demand to have bright translucent colors normally associated with aerospace and automotive markets being brought into wood applications,” he says. “We also see it as necessary to provide those colors in a colorant that is exterior durable to pro-

COLORANTS

vide flexibility in where and how the colorant is used.”

Clariant used the recent ACS event in Indianapolis to release two new pigment dispersion ranges for industrial and architectural coatings manufacturers.

Brandon Devis, director of sales and marketing at Clariant's Pigments business, commented, “Pigment dispersions support the industry focus on improving operational efficiencies while reducing overall cost of use. Over the past few years we have seen increasing interest from North American manufacturers in embracing our dispersions in their coatings production. Clariant is therefore delighted to support the shift in color trends towards a more colorful and interesting palette in both automotive and decorative paints.

“Our product range contributes to greater sustainability, performance improvements and creativity options for our customers and their end markets. Importantly, producing our globally-compliant dispersions within the region means we are well placed to meet its specific needs.”

Clariant now has two new complete color ranges available in North America: ‘Super-transparent’ dispersions based on halogen-free pigments, for easy formulation of metallic and mineral effect shades or transparent coatings; and the Hostatint A 100-ST range, which features nine ready-to-use, highly transparent pigment dispersions that offer the entire color circle to solvent-based paint systems. They provide a cost-efficient way for manufacturers to enhance effects with color intensity similar to dyes but with very high light and weather fastness, and no migration or bleeding.

The Hostatint range provides, Devis says, a cost-efficient way for manufacturers to meet trend directions in lifestyle electronics, consumer goods, wood, glass, coil coatings and automotive applications. The pigment dispersions are highly-stable, contributing to safer storage, transportation and handling, and a long paint shelf life.

“The Hostatint UV range is for easy and safe coloration of radiation-cured coating systems for industrial and wood coatings,” he explains. “The high-performance, easy-to-use colorants are offered as ready-to-use liquid pigment dispersions that support UV curing’s gain in popularity. “They are high in pigment content but with a low viscosity that ensures good flow. The pigment dispersions go the next step in supporting easy formulation of low VOC1 high performance coatings, adding further value to the increased productivity, lower costs and surface performance improvements of UV cured wood coatings. The tinters are suitable for both interior and exterior coatings and cover the full color spectrum in opaque and transparent applications for dual and 100 percent UV systems.”

BASF used the ACS event to launch a stir-in pigment for automotive coatings. This, the company says, provides enhanced color depth, flop, and sparkle. eXpand! Red (EH 3427), marketed under the Colors and Effects brand, is the

first pigment to result from the strategic partnership between BASF and Landa Labs that was established last year.

“We are excited to introduce the first pigment in our eXpand! line,” said Paul Verhoeven, eXpand! business leader at BASF. “By bringing this technology to our customers, we continue to demonstrate our commitment to offering a revolutionary generation of Colors and Effects pigments that meet the requirements of the automotive coatings industry.”

The blue-shade red pigment features both high transparency and high tinting strength for unique, more intensive shades with lower scattering. Compatible with modern automotive coating systems, eXpand! Red is the first of its kind suitable for outdoor applications.

The small particle sized stir-in pigment is easily dispersible and cuts the time involved in the production process as opposed to conventional milling methods. This, Berhoeven says, lowers costs significantly.

Certain challenges remain in the field of colorants and the extension of technology into the new areas creates more of them. Axalta's Snyder points out there are multiple factors to consider when creating a new colorant, or replacing a pigment in a colorant, and the relative importance of these characteristics can vary by market, business or supply chain.

“In general, a colorant must be storage stable, not flocculate, seed or settle, and be in a system which is compatible with the overall paint system,” he says. “Gonio-effect pigments such as aluminums and interference pigments are more likely to have settling issues to address, but stabilizing organic and inorganic pigments, particularly transparent dispersions with very small particle size, can create new challenges in retaining crystal structures and stabilizing the increased surface area that accompanies particle size reduction.”

Sherwin-Williams' Ceglarek observes that the drive toward higher levels of translucency in colorant is currently the most significant challenge in terms of colorant development. The technology is available from other markets and it is now a matter of adapting it for use in the wood coatings market.

The drive toward higher levels of translucency in colorants, Ceglarek notes, is currently the most significant challenge in terms of colorant development. The technology is available from other markets, and it is now a matter of adapting it for use in the wood coatings market.

“Although we see a general trend across all of the wood markets toward brighter colors with greater translucency I believe that trend is driven by the furniture market,” he says. “Color trends in all markets tend to follow fashion trends and the furniture market is an early adopter of those fashion trends.” ■

Paint and Coatings Innovation Continues to Drive Industry Value

BY GARY LEROUX

IT HAS BEEN SAID THAT a disruptive technology or “disruptive” innovation “is an innovation that helps create a new market and a new value network, eventually going on to disrupt an existing market and value network.” This can occur over a few years or could take decades to displace earlier technology. The term ‘disruptive’ is used in business to describe innovations that improve a product or service in ways that the market does not expect: first by designing for a different set of customers in the new market, and later by lowering prices in the existing market.

“Sustaining” innovation, on the other hand, does not create new markets or value networks but rather grows existing markets with better value, allowing the firms within the market to compete against each other’s sustainable product improvements. Both types of innovation have occurred and continue to occur in the coatings industry at a rapid pace. Fierce competitive forces drive some of those innovations, while others are driven by customer demands for better functionality, and still others by government regulation.

When manufacturers enter new markets via consolidation or grow organically it usually means they come with stronger balance sheets and are willing to invest in R&D for new or complementary products. This is true of Canadian-owned companies, both large and small, as well as for multinational companies already based here, which acquire new markets in need of further R&D investment. There is ample evidence of this over the past ten years with very large consolidations in the case of PPG and Akzo Nobel, Sherwin Williams and Valspar, Sherwin Williams and General Paint, DuPont and Axalta, and others. All of these major companies have invested heavily in R&D and have proven they can and will always seek out innovation for their products to increase functionality and grow market share.

The rapid increase in innovation is also largely in direct response to environmental issues and the related public policy pressures resulting from it. This new ramped up innovation is evident throughout the entire supply chain from raw material suppliers to coatings manufacturers to application equipment vendors. Such an approach to innovation in the coatings sector is now part of the DNA

of coatings companies and all view innovation and the focus on functional, sustainable products as part of their value proposition. In effect, it has become part of their social license to operate as well, which is the goal of all companies today whether chemical or not.

Over the past ten years, the shift to waterborne products, which began with decorative paints, has resulted in a 75 percent reduction in VOC emissions in Canada, and now almost 100 percent of latex paint is water-based. Today there are also many high performing automotive coating systems on the market that are water-based. There are also low- or zero-VOC coatings that surpass the durability and function of the solvent-based alkyd paints they replaced. Without investment in R&D and a commitment to innovation, this would not have occurred and the industry would not be where it is today, nor would the environmental benefits delivered directly and through the environmental benefits of their customers indirectly.

Environmental regulations heavily influence how manufacturers formulate paint. Manufacturers and their suppliers must comply with existing environmental standards while also keeping an eye on where regulations may go in the future. It’s imperative that raw material suppliers have in-house experts who understand what’s required to meet environmental standards in various places around the world, as many of CPCA’s supplier and distributor members do here in Canada. This enables them to partner with formulators to meet their innovation and compliance goals, regardless of the application.

There are several facets that encompass sustainability with respect to socio-ecological trends, including renewable raw materials, new environmentally friendly technologies, and responsible manufacturing. There are a number of issues specifically related to paint and coatings such as the development of new resins capable of improving performance with little or no added VOC. It also includes the increasing use of renewable bio-based materials in place of petrochemicals to reduce the environmental footprint.

The desire for higher functionality, better durability, ease of application, and faster curing all impact the future of coatings and they often drive new innovation. Environ-

PAINT AND COATINGS INNOVATION

mental awareness, the nonstop drive toward sustainability, the quest for lower VOC products, and tougher ingredient use restrictions continue to affect the paint and coatings industry. In the short-term, technology needs in architectural coatings will continue to be driven by regulation and consumer awareness around low-VOC coatings. The increasing price of raw materials will be another important factor, as paint manufacturers seek alternative products and technologies that allow them to control the formulated cost of a can of paint or coating without compromising performance.

Historically, coatings have served two primary purposes, that is, to protect the underlying surface and to decorate. Functionality has not been a part of the coating industry's offerings to any great degree until more recently. With the advent of biotechnology, there is the emergence of new "smart" surfaces that are capable of autonomously recognizing the environment and reacting to it. There are also functional additives being introduced in the marketplace. These naturally occurring additives are designed to provide intelligence to coatings. Some of the intelligence provided includes things like self-healing, detoxification, non-toxic and non-polluting biocides, self-degreasing surfaces and nerve agent neutralizers.

There are other new functional coating systems being

studied. One such system is an additive that can be incorporated in a marine coating, through its interaction with the naturally occurring metals and minerals in the ocean, setting up a battery-type current effect to eliminate the growth of barnacles. This leads to less weight, more "slip" or reduced friction, resulting in enormous fuel savings for ocean-going vessels. Another innovative coating system utilizes additives made up of a commercially ready carbon-nano-tube technology, which can reduce needed film thicknesses and costs in epoxies and urethanes; while strengthening the film integrity. The end result is film that is five to seven times more flexible while increasing corrosion protection more than four times. That is truly innovative.

There are countless other innovations of similar market significance in the industry across the entire coatings spectrum. These are reported on in various media regularly with coatings companies winning national and international awards. Many of these innovations are often profiled in the sustainability reports published annually by CPCA member companies. ■

Gary LeRoux is President & CEO of the Canadian Paint and Coatings Association.
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New Players Enter Titanium Dioxide Market

TITANIUM DIOXIDE is the world's most widely used pigment. At present, according to the federally run Canadian Centre for Occupational Health and Safety (CCOHS), it accounts for an estimated 70 percent of all pigments used globally.

Since the phase-out of white lead, decades ago, it has been the crucial ingredient for white paints, coatings, paper and molded products, and it is produced in many countries around the world. Over 5-million tons is used annually.

Titanium dioxide supplier Venator, formerly a division of the Huntsman organization, notes that

titanium is the ninth most abundant element in the world and that titanium dioxide occurs naturally in two main forms: rutile and anatase.

“Odorless and absorbent,” the company notes, “TiO₂ has a high refractive index – meaning it has excellent light scattering capabilities. Ideal for inclusion in a variety of consumer and industrial products, TiO₂ is particularly well suited to applications that need to deliver high levels of opacity, brightness and ultraviolet (UV) protection.”

Venator sells its products under the Tioxide, Hombitan, Deltio and Altiris brand-names.

Another long-time supplier Kronos explains, “TiO₂ combines high refractive index with high scattering power in the visible region of the spectrum. It thereby imparts whiteness and opacity when incorporated into a coating.”

The two traditional production processes for making TiO₂ use either a sulfuric acid or a chloride method. Which method is employed depends on the type of ore being mined, and the crystalline structures in the ore.

TiO₂ has had its share of problems over the past couple of years, as the European Chemicals Agency (ECHA) has concluded that titanium dioxide may cause cancer if inhaled. This followed a report from the International Agency for Research on Cancer (IARC) listing TiO₂ as an IARC Group 2B carcinogen “possibly carcinogenic to humans.”

However, there have been relatively few trials to assess its toxicity to humans, and the proposal to classify titanium dioxide as a chemical suspected of causing cancer was based on the discovery that high levels of titanium dioxide nanoparticles caused respiratory tract cancers in rodents.

In response to ECHA's move, the chairman of the Titanium Dioxide Manufacturers Association, Robert Bird, expressed disappointment at the proposal. In a press release he stated that “there are no grounds for classifying titanium dioxide as carcinogenic for humans via inhala-

tion.” However, this is not the first time that concerns have been raised over the potential carcinogenic properties of titanium dioxide, since research in 2008 linked inhalation of the chemical to cancer in humans. The European commission will have the final say on whether to accept ECHA's proposed classification.

The Canadian government takes a cautious approach to the issue, noting on its CCOHS website that “the series of biological events or steps that produce the rat lung cancers (e.g. particle deposition, impaired lung clearance, cell injury, fibrosis, mutations and ultimately cancer) have also been seen in people working in dusty environments. Therefore, the observations of cancer in animals were considered, by IARC, as relevant to people doing jobs with exposures to titanium dioxide dust. For example, titanium dioxide production workers may be exposed to high dust concentrations during packing, milling, site cleaning and maintenance, if there are insufficient dust control measures in place. However, it should be noted that the human studies conducted so far do not suggest an association between occupational exposure to titanium dioxide and an increased risk for cancer.”

That said, under the WHMIS rules, Health Canada advises manufacturers and suppliers of titanium dioxide to review and update their material safety data sheets and product labels based on the latest information. It further states that employers “should review their occupational hygiene programs to ensure that exposure to titanium dioxide dust is eliminated or reduced to the minimum possible. Workers should be educated concerning this potential newly recognized risk to their health and trained in proper work procedures.”

In other words, as happens with almost any mineral dust, users of TiO₂ should avoid inhalation, and handle it cautiously. Allowing any kind of dust volumes to build up in the breathable air of a plant offers a potentially unsafe situation.

For a long time, a small group of European and North American producers supplied much of the TiO₂ that went into paint and powder coatings. More recently, Chinese producers have entered the market in a serious way, and others from India and Brazil are also starting to export refined TiO₂ to North America.

One example is G and J Resources Inc., the sales organization for Yunnan Metallurgy Xinli Titanium Co. Ltd. Yunnan Metallurgy is a state-owned company with access to a

20-million titanium ore body in Yunnan in south-west China, where it has its production facilities.

It also has rights to an ore body in Mozambique. However, it takes advantage of the multilingual nature of central Canada's population to maintain an international sales office in Markham, ON.

"We are also doing some of our development work in Canada," says CEO George Chen. "In other words, we have the best of both worlds: low production costs close to the ore, but the advantages of being in Canada for sales and technical development work."

Yunnan Xinli claims to be the only manufacturer in China that can produce chloride process TiO₂ on a consistent basis. The total production capacity is 60K metric tonnes per year, which will increase to 300k metric tonnes in the next few years. Yunnan Xinli has been involved in the

titanium industry for more than 40 years, and recently completed a titanium dioxide manufacturing plant using modern German technology, and employing the most advanced chloride processing.

"Our latest grade is YR 803, which we introduced in January," Chen says. "It's especially for masterbatches, and is coated with aluminum and silicone."

Another Chinese supplier aiming to impact the North American market is the Lomon Billions Group. Neil Macdonald, the company's technical support manager, spoke about his company at the recent American Coatings Show in Indianapolis, explaining that it is the fourth largest TiO₂ manufacturer in the world, with an annual capacity of 700 kilotonnes. It plans to bring that up to 1.3 kilotonnes by the mid 2020s.


"We have four ISO-certified TiO₂ pigment production sites," he

said, "with three sulfate process plants and one chloride process plant." Listed on the Shenzhen stock exchange, the company has almost 30 years of TiO₂ manufacturing experience.

This March, Lomon Billions announced its intention to buy the ilmenite titanium ore producer Anning, based in Sichuan Province, China. Once this acquisition is concluded, it would move Lomon Billions from third position among China's sulfate TiO₂ producers to first place.

"We are up to 90 percent self-sufficient for sulfate pigment feedstock requirements," he said. "Our objective is to become fully backward integrated for both sulfate and chloride production."

Pollution has become a major concern in China in recent years, and most industrial operations are moving to improve their emissions. Lomon Billions is replacing use of third-party coal-fired energy with clean energy. It



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continues to invest in chloride production technology, and Macdonald said its processes are beyond compliance with national pollution regulations.

It currently has two additional 1100kt per year lines under construction at its existing site in Jiaozuo, Henan Province, where it expects to achieve commercial production in 2019. The learning experience from operation of the first line at this site has been incorporated into design for new lines.

Another Chinese supplier looking for North American business is Shandong Doguide Group, which offers rutile titanium dioxide materials. This company is a joint-venture with Japan's Mitsui and Co. Ltd., and Fuji Titan.

The company says its sales network extends to more than 20 countries outside of China. Like Lomon Billions, it claims its emissions are now better than national standards require.

Among longer-established suppliers and their product ranges, Kronos offers its Kronos 2043 and 2044 grades as typical examples used for coatings. These materials are designed for heavily filled systems, such as matte architectural paints and synthetic resin plasters. They impart, the company states, a warm tone and high brightness and show excellent opacity in coating formulations above the critical pigment volume concentration, making them very economical in use.

Chemours Titanium Technologies, a descendant of the DuPont group of companies, describes itself as the world's largest manufacturer of titanium dioxide products. In the 1950s, the company developed the chloride manufacturing process.

"Even beyond the products we deliver," the company states, "we also strive to be a partner that enables the development of sustainable solutions to customer challenges, further enhancing their business performance." Consistent advancement in its Ti-Pure TiO₂ pigment design has, the company continues, expanded its quality and utility across the numerous applications in

which it is a component.

Future development of titanium dioxide products lies mostly in encapsulation processes, which make it more compatible with the materials matrix into which it is combined. There are some variations in crystal size and configuration that also affect

its brightness and opacity.

As a well-understood pigment, it offers few surprises, even if new grades and formulations constantly extend its usefulness. The ever-broadening number of suppliers, however, will continue to keep the market on its toes. ■

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Variable Flow Cap for Spray Guns



Working from feedback received for the variable flow cap used with its Fusion CS guns, Graco has announced a new variable flow cap for use with Fusion AP guns. Variable flow allows a user to change the output of the gun without having to change the mix chamber.

Most contractors find a reduced setting they prefer and then quickly toggle between full flow and reduce flow settings. The cap provides 10 different flow settings ranging from full output to a limited stream of chemical.

Typical situations where reduced flow may be beneficial is when spraying may require less output to reduce over-spray, such as: corners, around doors and windows.

www.graco.com

Exterior Wood Stain

Michelman's new Michem Wood Coating 44 is a water-based surface additive for use in exterior wood stains and sealants. The company says it helps produce wood coatings with excellent weatherability characteristics. This topical wood treatment is a low-VOC and environmentally responsible solution that imparts outstanding water beading, along with outstanding water and swell resistance.

Michem Wood Coating 44 penetrates deep into wood substrates and poses no re-coatability issues, the company says, so a second or third layer can be easily applied. With its water-resistant properties, the new additive improves surface aesthetics by slowing mold and fungal growth, and improving color integrity. Michem Wood Coating 44 also produces a natural surface appearance and is particularly suitable for

softwood as well as extending the look and use of outdoor wood furniture.

The treatment is based on naturally occurring products. It is the latest addition to Michelman's family of low-VOC Michem wood-coating solutions.

www.Michelman.com

Low-VOC Resin

Georgia-Pacific Chemicals LLC has introduced a new resin that can help manufacturers formulate coatings with lower volatile organic compounds (VOC). GP BKS-2605 resin provides the performance attributes of Georgia-Pacific Chemicals' successful GP BKS-2600 resin but has the added ability to allow customers to produce a lower VOC coating than that available with GP BKS-2600 resin.

Designed for drum, pail and other rigid substrate coating applications, GP BKS-2605 resin provides outstanding chemical resistance and metal adhesion characteristics. It contains higher solids than the popular GP BKS-2600 resin.

"Lowering VOCs continues to be a major driver for our customers," says Robert Schlager, Georgia-Pacific Chemicals account manager for coatings. "We are working closely with them to develop products that will help them achieve their specific goals."

<https://gp-chemicals.com>

Manual Spray Gun

The FPro Airspray manual spray gun from SAMES-KREMLIN is offered in conventional, HVLP and LVLP versions. Perfectly balanced, the company says, it provides a superior finish for all painters.

Thanks to patent-pending technologies inside the gun, the painter has complete control over the application of paint. The paint speed controller and spin effect reportedly deliver a perfect atomization with a very high transfer efficiency that goes up to 78 percent in the HVLP version.

www.sames-kremlin.com



Calendar of Industry Events



The Inn at Laurel Point, Victoria, BC.

May 23-24, 2018: Canadian Paint and Coatings Association Annual Conference and AGM, Marriott Eaton Centre Hotel, Toronto. www.canpaint.com

June 4-6, 2018: SUR/FIN 2018, Huntington Convention Center, Cleveland, OH. www.nasfsurfin.com

June 12-14, 2018: Fabtech Canada 2018, Toronto Congress Centre, Toronto. www.fabtechcanada.com

September 11, 2018: CASF annual golf tournament, Whistle Bear Golf Club, Cambridge, ON. www.casf.ca/events/casf-golf-tournament

September 13-14, 2018: CanWeld 2018 Expo and Conference, Place Bonaventure, Montreal. www.canweldexpo.com

October 10-12, 2018: Pacific Northwest Society of Coatings Technology, Coatings-Fest 2018, The Inn at Laurel Point, Victoria, BC. <https://pnwsct.org>

October 24-25, 2018: Canada Woodworking East, Espace St-Hyacinthe, St-Hyacinthe, QC. www.canadawoodworkingeast.ca

November 6-8, 2018: Fabtech 2018. Atlanta, GA (Venue to be announced). www.fabtechexpo.com

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

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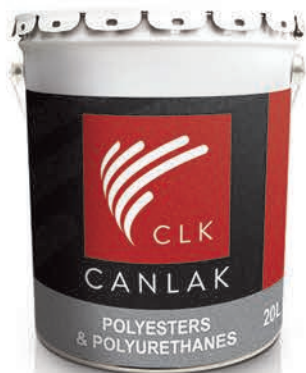
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