



CFCM

CANADIAN FINISHING & COATINGS MANUFACTURING MAGAZINE

Corporate PROFILE ISSUE

All About Powder

- Heavy Duty Coatings
- Spray Equipment
- Resins

PLUS

- UV Photoinitiators
- Chrome Alternatives
- Corrosion Inhibitors

www.cfcmm.ca

JANUARY/FEBRUARY 2020



With over 50 years of experience, Azelis Canada celebrates the dawning of a new decade.

Whether you know us as Chemroy or Azelis Canada, we are excited that effective January 1, 2020 we have united the business under the Azelis Canada brand. A smooth transition over the past ten months has consolidated the strengths of both entities into a new industry leader. Chemroy's legacy remains, as well as its culture of customer service and market expertise – only now it is coupled with Azelis Canada's scale, global reach and technical expertise in additional markets. More than ever, we look forward to providing our customers superior solutions and product selection in the CASE, Food, Pharma, Lubes, and Nutraceutical industries.

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As of January 1, 2020, Azelis Canada and Chemroy Canada have united under one brand, Azelis Canada. This merge has greatly expanded our product portfolio within Canada. We cater to several markets including CASE, Food Ingredients, Nutraceuticals and Personal Care.

With more than 50 years of experience in the CASE industry, we provide our customers with superior solutions, technical services and product selection. Our CASE portfolio serves the industrial, architectural, adhesives, sealants, construction, inks and elastomers industries and offers an extensive product listing of Resins, Additives, Pigments, Diluents, Elastomers, Epoxies, Biocides and Lab supplies.

Azelis Canada Inc is headquartered in Boucherville, Quebec, with two regional Brampton offices and warehouses and a sales and customer service office situated in Edmonton, to service our western customers. All offices provide unsurpassed quality and regulatory affairs, logistics and customer services to both customers and principals.

Our team of technical professionals and specialists have vast experience in identifying innovative new products, collaborating with formulators and enabling our customers to exceed market expectations. Our professional approach to sales is based on providing technical solutions to the industries we serve.

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Stone Tucker Instruments continues to be the supplier of choice for coating inspection and quality control equipment to Canada's coatings industry. Facilities in St. Catharines, Ontario, and Edmonton, Alberta, provide excellence in service and quality products to customers across the country.

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Stone Tucker Instruments serves Eastern Canada from 51 Scott Street West, St. Catharines, Ontario, and Western Canada from Unit 110, 1803 - 91 Street SW, Edmonton, Alberta.

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A Bigger Slice of Pie

A new report says we are embarking on a five-year period of solid industry growth.

Paints and Coatings Market – Growth, Trends, and Forecast (2020 – 2025), from Mordor Intelligence, says the market for paints and coatings is expected to register a compound annual growth rate of 4.5 percent during the forecast period.

North America will experience a medium growth rate while Asia's rate will be high. The major factor driving the growth is housing construction in the Asia-Pacific region, but especially in China.

These architectural applications will dominate the market. Modern advances in paint technology, specifically in acrylic formulations, the report says, have offered a wide range of weatherproof coatings, a major growth area.

A few interesting facts about China:

- Property prices have risen 30 percent due to increased activity in the real estate space.
- In April 2019, the government invested around \$73 billion (U.S.) for key transportation projects.
- China accounts for almost 40 percent of global furniture production.
- The number of packaged cans in China is likely to expand more than six percent in the next few years.

All of these factors are fueling overall demand for paints and coatings. Can manufacturers keep up? And how does Canada grab a bigger slice of the pie?

Our story on UV photoinitiators on p. 50 highlights the ongoing shortage the industry is experiencing in some key ingredients, which presents one bump in the road. The recent out-



break of coronavirus in China, where much of the world's supply of photoinitiator is manufactured, has kept this issue at the forefront for some.

It is by no means a simple issue – with regulation, trade agreements, capital investments, human resources, and the sheer time required – but does it make sense to re-establish more manufacturing capabilities in Canada and at least North America? If one looks at the many benefits, it just may be so.

Theresa Rogers
theresa.rogers@cfc.ca

A large banner for the RadTech 2020 event. On the left is the logo for 'RADTECH UV+EB 2020', with 'RADTECH' in a vertical green box, 'UV' in purple, '+EB' in black, and '2020' in a grey box. To the right, white text on a dark blue background reads: 'March 9-11, 2020', 'Disney Coronado Springs', 'Orlando, Florida', and 'RadTech2020.com'. The bottom half of the banner features a photograph of the Disney Coronado Springs resort at night, with its lights reflected in a body of water.

erratum: GENEQ

We wish to acknowledge that some categories for GENEQ's listing in our 2020 Buyers Guide were inadvertently missed. We apologize for the error. GENEQ should have been listed under Gauges and Instruments, Sieves and Test Equipment.

Burgeoning Application Base to Propel Growth of Global Ferro Fluids Market

A report on ferro fluids by Persistence Market Research states that adoption across several vertical industries will grow. Ferro fluids aid in the recovery of non-ferrous metals from solid wastes such as in automobiles, electrical appliances or other solid waste. The system used for separation consists of an electromagnet and separation chambers, and the means for recovering and removing the magnetic fluid coating is employed in the recovered materials.

Ferro fluids are used in variety of applications such as loudspeaker audio, industrial equipment design, biomedical and domain detection, solenoids, sensors, and switches, aerospace and defense, analytical equipment, and magnetic separation.

According to the report, the global ferro fluids market is expected to witness a compound annual growth rate of 5.5 percent from 2017 to 2025. The market was worth \$48.2 million U.S. in 2017 and is expected to reach \$73.9 million U.S. by the end of 2025.

The demand for wireless audio devices is expected to increase due to growing adoption of wireless technology enabled products, rising adoption of infotainment devices, increase in demand for mobile phones and related accessories, and rapid urbanization, which is creating new markets for smart audio devices. All these factors will directly drive the global market for ferro fluids. Moreover, the demand for ferro fluids will be highly driven by the medical sector as ferro fluids are ideal for a wide variety of bio-medical tests due to their superior particle distribution. Ferro fluids offer a wide variety of performance characteristics that can be optimized for specific assays or diagnostic processes. The current research in the area of diagnostic tests and medical therapies often requires magnetic nanoparticles for successful implementation. The other area of use for magnetic nanoparticles is site-specific delivery to the site of concern in case of hyperthermia therapy.

Although ferro fluids have wide application, the amount used in each product is small. Owing

to limited consumption in terms of volume, the size of the market is limited. As a result, significant opportunities for key players will exist if they develop high grade ferro fluids.

www.persistencemarketresearch.com

Polychem Names Its 2020 Color Trends

A new decade in the new millennium. Polychem asks us to think back to when 2020 was the "future" date that everyone used. "What will you be doing, where will you be living, how will you be travelling in 2020?" The answer was always a space-infused, imagination-fueled picture of Jetson-style travel, robots in charge, and plastic food.

As well as our reaction to how we deal with the future, we are also embracing a new decade. With that comes uncertainty, and with uncertainty comes anticipation and hope, says Polychem.

The company says its four color trends for 2020 – Green Guilt, Imaginative Reaction, Robotic Reality, and Actual Authenticity – are a collection of what we see happening in the world around us, and the colors that represent them. There are reassuring red-toned blues and brasses with warm tones and spikes of color.

Each palette is made up of a selection of colors and effects that have been carefully chosen to represent each of the four trends.

<https://polychemcoatings.com/content/colors/color-trends-2020/>

Brenntag Expands Agreement with Arkema for Distribution of Waterborne Resins in Canada

Effective March 1, Brenntag Canada Inc. will become the primary distributor for Arkema Inc. waterborne resins in Canada.

The expansion of this distribution agreement will follow a similar transition to the launch of the initial agreement covering the U.S. earlier in 2019.

The product lines include more than 45 waterborne resins and are often used in adhesives, caulks and sealants, construction products, architectural paints, traffic coatings, and industrial coatings applications. The relevant tradenames are:

- Encor – acrylic, styrene-acrylic, and vinyl acrylic.
- Celacor – opaque polymer, a highly efficient, voided latex product that improves hiding and whiteness in paints and coatings.
- Neocar – vinyl versatate.
- Snap – structured nano-acrylic polymer.

"Brenntag's ability to market, deliver, and support products in industries where technical expertise is required was a defining factor in making this decision," says Kenny Messer, Regional President for Arkema's coating resins business in North America. "They have the resources and expertise needed to help our customers get the most from their waterborne resin products."

Some resins meet the standards of the Arkema Coating Resins EnVia program, which includes requirements such as no added alkyl phenol ethoxylate (APEO) surfactants, no added formaldehyde or formaldehyde donors, total latex VOC < 5 g/L, no intentionally added carcinogens, reproductive toxins, or ozone depleting compounds, and low residual monomer levels (total Monomer < 500 ppm).

"We are excited for Brenntag Canada to enter into this relationship and to represent Arkema for this innovative and technically advanced product line in Canada. This collaboration enables Arkema and Brenntag to provide solutions and additional value to our customers while leveraging our dedicated technical resources," says Lars Schneider, President, Brenntag Canada. www.brenntag.com

Dow Coating Materials Expands Palmer Holland's Distribution Territory Into Canada

Effective March 1, Dow Coating Materials, a manufacturer of both water-based and solvent-based acrylic technology, is expanding Palmer Holland's authorization to distribute DCM acrylic products in Canada.

Palmer Holland's new distribution territory will encompass all of the United States and Canada for DCM's broad portfolio of binders, dispersants, rheology modifiers, and opaque polymers

for a wide variety of CASE markets.

In addition, Palmer Holland will maintain its exclusive rights to sell and market DCM's lines of Paraloids, Rovace, and Roshield throughout the United States and Canada.

www.palmerholland.com

Canada's Chemistry Sector Commits to Enhancing Engagement with Indigenous Communities

The Chemistry Industry Association of Canada (CIAC) has updated its United Nations-recognized Responsible Care Codes for 2020 to include new commitments for Canada's leading chemical companies to engage Indigenous communities through proactive and formal processes.

While developing the codes, the CIAC engaged with Indigenous communities and their leaders, and these new commitments for CIAC members took effect in January.

CIAC members' efforts to meet these important commitments will be assessed during their obligatory Responsible Care verification process, which is undertaken regularly by third parties

with results made available to the public on CIAC's website.

"Since the beginning of Responsible Care in 1985, CIAC members have been obligated to be accountable and responsive to the public, especially local communities who have the right to understand the risks and benefits of what they do," says Bob Masterson, CIAC President and CEO. "In extending that obligation to specifically include Indigenous communities, Canada's chemistry sector demonstrates the ongoing relevance of Responsible Care and its ability to be responsive to evolving societal expectations for the industry."

Responsible Care commitments require CIAC member companies to:

- Engage with Indigenous People in a manner that respects their unique history, culture and rights;
- Provide appropriate supports to ensure Indigenous Communities have the capacity to engage the company in a meaningful manner; and

- Provide Indigenous communities with equitable access to employment, contracting and business opportunities.

For more than 30 years, Canada's chemistry sector has led the journey towards safe, responsible and sustainable chemical manufacturing through its U.N.-recognized sustainability initiative, Responsible Care. Founded in Canada in 1985, Responsible Care is now practised in 73 countries and by 96 of the 100 largest chemical producers in the world. All CIAC members commit to and are publicly verified to the Responsible Care Ethics and Principles for Sustainability and the Responsible Care Codes, which cover all aspects of the company's business and product lifecycle.

www.canadianchemistry.ca

Polyester Accounts for Three-quarters of Functional Coil Coatings Market

A new report says the functional coil coatings market is growing rapidly with a compound annual growth rate of approximately 5.4 percent through 2029, propelled by the building and construction and automotive industries, globally. Polyester functional coil coating is widely used because of its flexibility, scratch-resistance and cost effectiveness. Demand for functional coil coating is anticipated to witness a spurt with the proliferation of sustainable coating solutions and increased consumption of PVDF-based functional coil coating. On this backdrop, the global sales of functional coil coatings are estimated to surpass \$550 million U.S. by 2029. Key Takeaways Emerging new application areas from diverse industries such as electrical and electronics industries are poised to increase sales 1.6 times by the end of the forecast period. Topcoats and primers are expected to witness a similar growth trend of around 5.7 percent and are poised to bring in \$140 million U.S. by 2029. Polyester material type dominates the global functional coil coating market and is poised to reach \$160 million U.S. by 2029. The study reports that demand for consumer durable end use of functional coil coating collectively accounts for more than two-thirds of the global consumption. Waterborne coil coating among other technologies is likely to witness a major growth of approximately 6 percent throughout the assessment period (2019-2029). Sales of functional coil coatings are predicted to be higher in developing countries

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Technical training seminars are one of many educational programs to benefit from CCAIFEF's support and funding.

CCAI Establishes Education Foundation

The Chemical Coaters Association International (CCAI) announced the formation of the CCAI Finishing Education Foundation (CCAIFEF), a non-profit charitable organization established to support education and training in the industrial finishing and coatings arena.

Education is a key pillar of CCAI's mission. This led to the formation of the foundation, which will develop and deliver effective and affordable educational and training opportunities that support the industrial finishing and coatings industry. "Through CCAI's Finishing Education Foundation we will expand our reach into educating the industry, and work to recruit the next generation of employees," says Anne Goyer, Executive Director. Programs that will benefit from support of the Foundation include Workshops for Warriors, Women in Finishing, the Association's extensive scholarship program, online education, and more.

CCAI and CCAIFEF will work closely together to develop programming and secure funding to support the Foundation's mission. Leading this effort are the officers of CCAIFEF's founding Board of Directors:

President, Sam Woehler, George Koch Sons LLC

Vice President, Dr. Victoria Gelling, Sherwin-Williams

Secretary/Treasurer, James Malloy, Kolene Corporation

www.ccaiweb.com

such as India and China versus developed regions. "Growing demand for green and sustainable functional coil coatings have compelled manufacturers to invest heavily in R&D to develop innovative, environment friendly and cost-effective functional coil coating products," says the report analyst. The functional coil coating market is highly fragmented with key players accounting for around one-third of the global sales. Prominent players including Clariant, Songwon, Solvay and Beckers Group, are increasingly focusing on expansion of production capacity, new product development and inorganic growth strategy to maintain a

strong position in the market. www.factmr.com
Mitsubishi Chemical Advanced Materials
Acquired c-m-p gmbh Image: Mitsubishi

Mitsubishi Chemical Advanced Materials AG (MCAM), a global manufacturer of high-performance materials, has entered into an agreement for the acquisition of c-m-p GmbH (c-m-p) through its German subsidiary Mitsubishi Chemical Advanced Materials GmbH. The transaction is expected to close in early March. With the addition of c-m-p, both companies can further strengthen their market position in the composites world, as well as developing future composite materials. The acquired entity had been a 50:50

partnership between the original founders of c-m-p GmbH and DowAksa B.V. Through this acquisition, MCAM acquires 100 percent of the shares of c-m-p. "Within Mitsubishi Chemical Advanced Materials (MCAM), the acquisition enhances our ability to produce prepreg solutions for customers in Europe, a further step in our mission of metal to plastic conversion which began more than 80 years ago," says Michael Koch, CEO Mitsubishi Chemical Advanced Materials. "MCAM, a fully owned subsidiary of Mitsubishi Chemical Corporation (Tokyo, Japan), identified c-m-p GmbH (c-m-p) as a leader in its areas of expertise and plans to preserve and enlarge c-m-p's unique



Myant Enters Exclusive Partnership with Heraeus to Produce Electrical Sensing Textile Solutions

Myant Inc., leaders in textile computing, and Heraeus Medical Components, experts in biomaterials and components for medical devices, manufacturing technologies, and supply chain excellence, have entered into an exclusive partnership to develop, test, prototype and produce a solution leveraging Heraeus' Tecticoat coating for electrical sensing applications in textiles. Tecticoat is a conductive polymer-based coating that can be applied to textiles to control electrical conductivity, electromagnetic shielding and electrostatic dissipation, making it an ideal material for integration into connected, on-skin textile applications.

The performance of electrodes that interface with the human body via the skin is governed by the electrical behavior of the materials forming the interface. Traditional electrode designs using electrolytic gels or other adhesives are cumbersome and poorly-suited for broad consumer applications, while dry electrodes tend to vary in performance under different humidity levels and generally suffer due to electrical noise. Heraeus has managed to overcome these challenges using Tecticoat, a flexible, robust, medically formulated, polymer-based coating that can be applied onto yarns like the ones developed by Myant for its bioelectrical on-skin sensing (e.g. ECG, EEG, EMG) textile applications. The companies say the integration of Tecticoat into Myant's textile-based biosensing and stimulation solutions is positioned to strengthen the company's leadership in the textile computing industry.

"The quality of data collected from the human body is highly dependent on the quality of the interface between the electrode and the skin," says Tony Chahine, founder and CEO of Myant. "This partnership with Heraeus to develop a solution using Tecticoat takes us another step closer to building a better bidirectional connection to the human body via textiles."

"We are excited to enter into this partnership with Myant to develop solutions using Tecticoat," says Heiko Specht, Executive Vice President of Stimulation and Sensing Solutions and Global Innovation at Heraeus. "This partnership reflects our reputation and history as a leader in materials for advanced technological applications and we look forward to leveraging Myant's experience in technology integration and yarn-based textile production to further explore Tecticoat's use in wearables."

www.heraeusmedicalcomponents.com

market identity. Strategic corporate development activities, such as the c-m-p acquisition, contribute to MCAM's ability to grow rapidly and consistently while maintaining quality and innovation." Following the acquisition, c-m-p can benefit from Mitsubishi Chemical's worldwide network of industry partners, customer relationships and technology developments, while bringing new technologies, specialized skills and market expertise into the group. Through the Mitsubishi Chemical network, new materials and applications will be further developed for the aviation industry, as well as automotive, sports equipment and utility services. With the acquisition of c-m-p, Mitsubishi Chemical will become capable of producing resin-coated carbon fabric in Europe, in addition to Mitsubishi Chemical's capabilities in Asia and the U.S. "DowAksa is proud of being part of the c-m-p GmbH history and growth story," says Douglas Parks, CEO DowAksa. "This announcement marks another important step in this success story."

www.mcam.com

RadLaunch 2020 Full of New Innovations

RadLaunch, the idea accelerator for ultraviolet (UV) and electron beam (EB) technology start-ups, students, and innovators, has selected five key technology developers for 2020 and three special recognition awards. RadTech, the nonprofit for UV+EB Technology, created RadLaunch in recognition of the growing importance of the technology with the digitization of manufacturing and requirements for safe, clean, rapid processes in the fast emerging circular economy. New innovations in materials, optics, design and data, are propelling UV+EB in additive manufacturing/3D printing, inkjet, food packaging, automotive, medical, public health and electronics applications.

For the first time, the competition includes new awards sponsored by the International Ultraviolet Association (IUVA). IUVA is a non-profit dedicated to UV applications in public health and the environment, with a special focus on water, food and beverage and health care.

Here is the RadLaunch Class of 2020:

- HARP (High-Area Rapid Printing), Azul 3D
- Solvent-free radical photopolymerization that continues its extensive post-conversion in the dark, Team from University of Colorado
- Next-Generation Energy Storage with UV Curing of Novel Polymer Electrolyte Materials,

Therma-Tron-X, Inc. designs, fabricates, and installs innovative, custom paint finishing systems for hundreds of contract shop coaters and OEMs. TTX offers turnkey services including multi-stage pretreatment equipment using spray, immersion or a combination; industrial ovens fitting desired spatial needs and utility requirements; environmental rooms offering ideal powder paint application conditions; liquid spray booths balancing air-flow and minimizing overspray; and material handling solutions designed to fit individual needs. TTX Environmental develops water and wastewater treatment systems that minimize operational costs and environmental impact. From start to finish, TTX will automate every step and integrate the finishing system with the facility.

TTX's revolutionary SLIDERAIL SQUARE TRANSFER® (SST®) material handling system performs high volume finishing operations using a fraction of the space required traditionally. Modular Econ-E-Coat® systems are specifically designed to be portable. Monorail, Power and Free, and custom conveyor systems carry parts through paint application processes while fully automating manufacturing facilities and efficiently transferring product between manufacturing, finishing, and final assembly/shipping areas. Programmable hoists are custom designed and built to serve wide varieties of industrial finishing processes and can be integrated with multiple styles of conveyor systems. The TTX Automated Conveyor Carrier System® (TTX ACC®) is a flexible and cost-effective material handling solution that utilizes a wireless network to send instructions to individual carriers throughout your paint line. ACCs are hung on an overhead I-Beam rail and use an adjustable friction drive wheel to maneuver. All TTX systems are PLC equipped.

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- Power and Free Conveyor
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- Real-time feedback controlled monomer conversion: a new paradigm for UV curing process control, Eindhoven University of Technology's High Tech Systems Center and TNO (Eindhoven, The Netherlands)
- Special RadLaunch University award: Novel UV-initiated Dual-curing thermoset materials suitable for 3D printing, Hamidreza Asemani, Professor Vijay Mannari; Coatings Research Institute, Eastern Michigan University, Ypsilanti, MI
- Special IUVA student awards: Innovative, Low-Cost, Water Purification Method by Leveraging the Synergetic Effect of UV and IR Radiation from the Sun, Sujay M. Swain, Montgomery Blair High School; and All-in-one (AIO) Solar-LED Purification Bottle for Every Home Use, Dana Pousty, Prof. Hadas Mamane, Water Research Center, School of Mechanical Engineering, Tel-Aviv University

The RadLaunch 2020 class will all give presentations at RadTech 2020 and the co-located IUVA Americas 2020, March 8-11, in Orlando, FL. www.radtech2020.com

Gabriel Performance Latest Acquisition Expands Their Alkyd



Product Line

Gabriel Performance Products, a U.S.-based specialty chemicals company serving the coatings, adhesives, and composite markets, recently announced the acquisition of a select portfolio of alkyd resins from Deltech Resins Company.

Gabriel has purchased the remainder of Deltech's alkyd resin product line. This includes coconut, vinyl-toluene, and silicon modified specialty solutions. Gabriel will produce these products at its Harrison City, PA facility, home of its Ranbar® alkyd resin technology. The products are complementary to Gabriel's current offering of alkyd resins. The Gabriel sales and technical team will work with customers to ensure a smooth transition.

The transaction marks Gabriel's sixth acquisition since 2014 and builds on its focus of growing its proprietary product portfolio serving the CASE markets. www.gabrielchem.com

Milliken & Company Announces Intent to Acquire Borchers from The Jordan Company



Milliken & Co. has signed an agreement to acquire Borchers Group Limited, a global specialty chemicals company known for its high-performance coating additives and specialty catalyst solutions, from The Jordan Co., L.P. (TJC). The acquisition is expected to close in January 2020, subject to customary closing conditions.

Headquartered in Westlake, OH, Borchers carries a portfolio of additives for the coatings, inks and adhesives markets with a comprehensive range of cobalt-free driers, dispersants, rheology modifiers, wetting agents, polymerization catalysts and adhesion promoters. The addition of Borchers — particularly its expertise in specialty coating additives — further builds Milliken's portfolio, aligned with the company's strategic objective to develop a global range of growth platforms.

"I'm thrilled to accelerate our commitment to innovation and sustainability with the acquisition of a company so aligned with our values," says Halsey Cook, President and CEO of Milliken & Co. "Borchers brings particular technical expertise that will boost Milliken's strengths and propel our growth."

Devlin Riley, President and CEO of Borchers, says, "We are ecstatic about partnering with Milliken to further invest in our business, build out our global platform and continue providing innovative and satisfying solutions to our customers. Combining our capabilities and approach with the depth of Milliken's technology and innovation will allow us to provide exemplary solutions to the markets we serve. I want to thank the TJC team for their guidance and strong partnership." www.milliken.com

Emerald Kalama Chemical Opens Office in Rotterdam



Emerald Kalama Chemical, a business group of Emerald Performance Materials, recently cele-

brated the grand opening of a new office in Rotterdam that will serve as the company's central hub for European operations. Among other functions, the office will house Emerald's growing team for order fulfillment and technical service, focused on serving customers worldwide for products manufactured at Emerald's operations in Europe.

"As we continue to grow as a global organization, we realized the need for a centralized EMEA hub that will create alignment with our global headquarters in Vancouver," says Ed Gotch, CEO. "Our new European Central Office will help us to ensure continuity and excellent service for our customers, as well as provide space for the growth of our team."

Emerald already has a major stake in the Rotterdam region, with its manufacturing facility located in Rotterdam Botlek. As a result, the new office in Rotterdam provides a strategic location that is also convenient to one of Emerald's key European manufacturing operations.

The company says the Rotterdam Botlek facility is one of the largest and most efficient facilities of its kind, and Emerald has executed a number of capacity and product line expansions at the site over the last decade. Emerald also has a European operation in Widnes, United Kingdom, where Emerald has made recent expansions to increase production and add new chemistries. The new ECO will service customers of products manufactured at these two facilities.

Emerald Kalama Chemical is a supplier of specialty materials for a variety of products, including paint and coatings. www.emeraldkalama.com

People

RadTech Names New Board Members

RadTech has announced the election of new board members serving two-year terms beginning in January 2020. New members include Karl Swanson, President of PCT Ebeam and Integration; Evan Benbow, Director of R&D for Wikoff Color Corp.; and Diane Marret, Product Manager of UV Curable and Exterior Thermal technologies at Red Spot Paint & Varnish. In addition, Todd Fayne, PepsiCo, and Mike Bonner, Saint Clair Systems, were re-elected for second two-year terms.

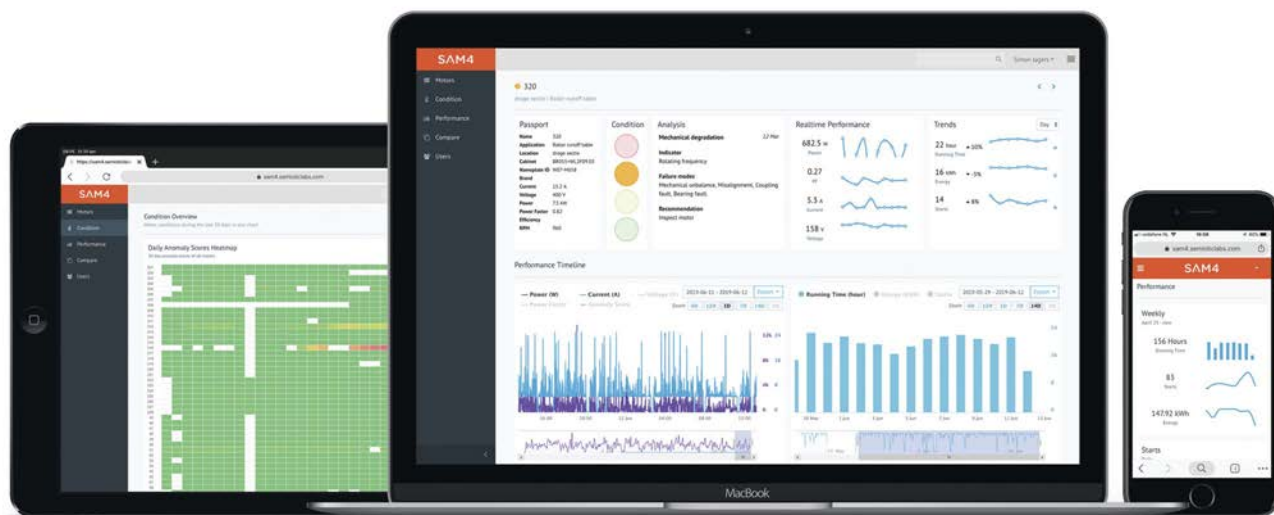
"With the continued significant growth of UV+EB in a number of applications, we are motivated to continue to develop new activities that

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Nouryon to Use Digital Technology from Semiotic Labs to Boost Plant Reliability

Nouryon has signed a framework agreement to implement self-learning technology developed by Semiotic Labs that helps predict when to maintain and replace pumps and other rotating equipment. Semiotic Labs was one of the winners of Nouryon’s 2018 Imagine Chemistry open innovation challenge.

The technology uses electrical waveforms that can accurately predict 90 percent of upcoming maintenance needs in rotating equipment such as pumps, compressors, and conveyors, up to five months in advance. This gives time to repair or replace critical equipment during planned stops, preventing unexpected interruptions to production and improving reliability of supply and process safety.

The technology has been successfully implemented at Nouryon’s chlorine plant at Ibbenbüren, Germany, and will now be rolled out to seven other sites in Europe.

Marco Waas, Director R&D and Technology Industrial Chemicals at Nouryon says, “Working with start-ups like Semiotic Labs allows us to tap into novel technologies that can provide significant benefits. Our customers rely on us for a reliable supply of essential raw materials and this predictive maintenance solution can greatly help improve the performance of our plants, while decreasing cost.”

Simon Jagers, Founder at Semiotic Labs adds, “Since the Imagine Chemistry challenge in 2018, we have been working together on a pilot program to test and improve our technology. I am very pleased to see it making a difference in real-life production settings and look forward to the further rollout in partnership with Nouryon.”

Nouryon and Semiotic Labs will also look at ways to generate more value from waveform analysis by developing features that will enable significant reductions in CO2 emissions. The first large-scale implementations are planned for early 2020.

www.nouryon.com www.semioticlabs.com

help advance our technology,” says Eileen Weber of allnex, President of RadTech. “We are extremely excited to welcome our new board members as their diverse experiences and expertise will greatly further our ability to do this.”

Continuing Board members include Lisa Fine, Ink Systems Inc., Immediate Past President; JoAnn Arceneaux, allnex, President-Elect; Susan Bailey, Michelman, Secretary; Paul Elias, Miwon NA, Treasurer; David Biro, Sun Chemical; Michael Gould, Rahn USA; Jeffrey Klang, Sartomer; Jim Raymont, EIT; Chris Seubert, Ford Motor Co.; PK Swain, Heraeus; Hui Yang, Procter and Gamble; and Sheng “Sunny” Ye, Facebook Reality Labs.

www.radtech.org

Lippert Added to Women in Finishing Forum Program

The Chemical Coaters Association International (CCAI) has added Jason Lippert, CEO of Lippert Components, to the Women in Finishing FORUM program. Lippert supplies a broad array of engineered components for the leading OEMs in the recreation and transportation product markets. The event will be held from May 6-8, 2020, at the Embassy Suites South Bend at Notre Dame in South Bend, IN.

As part of a comprehensive agenda, FORUM attendees will tour Lippert Components Inc.’s finishing operations followed by a presentation from Lippert. His presentation, “World-Class Operations Driven by a Culture of Caring,” supports Lippert



Jason Lippert

Daemar manages the sourcing and delivery of millions of essential components including the complete line of Caplugs masking and protective products to Canadian manufacturing and finishing industries. Our Caplugs inventory includes more than 12,000 lines of standard parts - featuring caps and plugs developed specifically for masking applications and available in materials including: silicone, EPDM, Flex 500 and vinyl. Our tapes and standard die-cut discs are available in polyester, polyimide, glasscloth, crepe, aluminum and more.

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For more than 40 years, Daemar has provided solutions for industry applications from high volume production lines requiring design assistance and supply chain management, down to a simple one-off application requiring a single cap. Daemar's regional warehouse network with stocking facilities in Toronto, Montreal and Edmonton provides fast and efficient delivery of parts to customers throughout the country.

Trust Daemar and our extended team's expertise to solve your masking challenges.



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 - Polyester tapes
 - Polyimide tapes
 - Glasscloth, Paper & Silicone Rubber
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1.800.387.7115

Components' mantra of "Everyone Matters." The company believes business can and should be a force for good in the world. Attendees will learn how its focus on leadership and culture development has made a drastic impact on attrition over the last five years and the positive impact this has had on quality, safety, efficiency, and innovation. Attendees will also hear about how the leadership at Lippert Components has a powerful influence on people's mental and physical health.
www.womeninfinishing.org

Darren J. Birkelbach Appointed CEO of LBB Specialties LLC



Darren J. Birkelbach

Darren J. Birkelbach has been appointed Chief Executive Officer of LBB Specialties LLC.

Birkelbach, who joined LBB Specialties in May 2019 as President, American International Chemical (AIC), will have oversight for all commercial and operational functions across LBB Specialties – including AIC, Charkit, and future acquisitions. An industry executive with more than 25 years' experience in specialty chemical distribution, Birkelbach has a successful track record driving business growth in diverse roles that include sales and marketing, operations, and finance.

In addition, Jay Lang, formerly President of Charkit, has been promoted to Executive Vice President, Strategic Business Development for LBB Specialties. Lang will lead key commercial growth initiatives for both organizations. He also will play a key role in assessing potential acquisition targets for fit within the LBB Specialties portfolio.

Birkelbach says, "LBB Specialties is perfectly positioned for accelerated growth through our focused market coverage, strong relationships with specialty product principals, acquisition strategy, and commitment to provide top-notch service and quality to our growing customer base. I'm excited to begin my expanded role and the opportunity to work alongside the entire team to meet and exceed expectations."
www.lbbspecialties.com

Cambrian Solutions Appoints New President

Cambrian Solutions, a Maroon Group Company and distributor of specialty ingredients and chemicals based in Oakville, ON, has named Mike Emrich to succeed Peter Jobling as President. As part of a long-term succession plan, Peter Jobling retired effective December 31, 2019.

Under Jobling's leadership, Cambrian Solutions achieved exceptional growth, becoming a preeminent distributor of specialty ingredients and chemicals in Canada. Emrich has been part of Cambrian Solutions' leadership team since 1997, most recently serving as Vice President. In this role, he spearheaded Cambrian's efforts to deliver on the company's goal of creating value for customers with innovative formulation capabilities and a differentiated portfolio of specialty ingredients and chemical solutions across its diverse end markets.



Mike Emrich

"This succession plan has been in place for quite some time. We've worked closely with Peter as an orderly transition of leadership was important for our employees, customers, and suppliers. We remain forever indebted to the Joblings for allowing us to partner with Cambrian Solutions and welcome their incredibly talented team to

Maroon Group," says Mike McKenna, Maroon Group's President and COO. "This is a dynamic time for our organization and we're excited about the future of the business. Mike Emrich embodies our culture and will play a pivotal role leading our Canadian business, as well as being a member of Maroon Group's Executive Leadership Team. We're confident that under his guidance, we will continue to see the business sustain its level of outstanding performance and market leadership," McKenna added.
www.maroongroupplc.com

New Research and Development Director Appointed at Elcometer



Paul King

Elcometer Ltd. has appointed Paul King Research and Development Director.

King joins Elcometer with more than 17 years of leadership experience at global companies, which included mechanical engineering and technology groups. He spent a large part of his career at Nokia, becoming the Director of Mechanics Technology, before he was transferred to Microsoft in the position of Concepting Director.

King's key responsibilities at Elcometer include managing the overall activities in the R&D department at Elcometer's head office in Manchester, UK.

www.elcometer.com

In Remembrance: David Beamish

David Beamish, President of DeFelsko Corporation, died peacefully at home on November 4, 2019. He died with his family by his side at the age of 63 after a 32-month battle with cancer.

Born and raised in Ottawa, Beamish studied Civil Engineering at Carleton University where he earned his Bachelor of Engineering. He joined

DeFelsko Corporation, a leading U.S. manufacturer of inspection instruments, offers a variety of instruments to meet the coating industry's needs.

New additions to the PosiTector and PosiTest line of inspection instruments include:

Dew Point Meter Logger

The new PosiTector DPM L Dew Point Meter Logger magnetically attaches to steel structures to measure and record climatic conditions at user-selected time intervals independently for up to 200 days on a single battery.

The American made PosiTector DPM L Loggers are designed to wirelessly connect with your device via Bluetooth Smart Technology. Fast response, precision sensors provide accurate, repeatable readings.

The environmentally sealed enclosure is weatherproof, dustproof, and shockproof - meeting and exceeding IP65, and features a Kensington Security Slot for anti-theft protection. Ideal for surface preparation as required by ISO 8502-4 and backed by DeFelsko's two-year warranty.

Uncured Powder Thickness Gage

The PosiTest PC Powder Checker measures uncured powder coatings using non-contact ultrasound technology to predict a cured thickness ensuring adequate coverage and reducing waste. The instrument has been completely redesigned as a dedicated standalone unit - no PosiTector gage body required.

With a measurement speed up to four times faster than previous models, the new PosiTest PC is easier to use, especially on moving parts and challenging geometries.

Low voltage pinhole detector

The PosiTest LPD uses a wet sponge to detect holidays, pinholes, discontinuities and other coating flaws on metal and concrete substrates without damaging the coating. Supplied in a rugged inspection case, the lightweight, ergonomic PosiTest LPD includes everything needed for testing. Features include four regulated voltage output options and GroundSense™ to visibly reassure the user that the instrument is properly grounded. Select from two kit options: the PosiTest LPD Basic kit includes everything needed for detecting pinholes using a rectangular sponge wand; the PosiTest LPD Complete Kit includes the Basic Kit and adaptable sponge hardware including rectangle (flat), roller, ID and custom sponges in a hard shell case.

Call DeFelsko at (800) 448-3835 or visit our website at www.defelsko.com to get assistance selecting the optimal instrument for your application.

For more information:

Tel: 1-800-448-3835 (USA & Canada) (315) 393-4450

Email: techsale@defelsko.com

Web: www.defelsko.com

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* Versus the previous generation PosiTector PC Powder Checker

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David Beamish

the Bell telephone company after graduation, ultimately becoming recognized as a Professional Engineer. In his spare time, he ran his own software development company and pursued his passion for flying powered and unpowered (glider) aircraft.

It was while volunteering as a gliding instructor that he met his wife of 32 years, Linda. After marrying, they left their respective professional careers to join DeFelsko, a small distributor and manufacturer of testing instrumentation with fewer than 10 employees started by David's father-in-law, Frank Koch.

During his time at DeFelsko, Beamish was responsible for its worldwide sales and distribution channels, while contributing significantly to new product development and associated marketing initiatives. He chaired and participated in many industry committees, including ASTM, SSPC, and NACE and actively worked to improve the standards and processes of the industry for the benefit of all stakeholders.

The combination of an analytical mind, congenial personality, strong work ethic, and an innate ability to educate, greatly influenced the company Beamish ran and the relationships it developed. He travelled the world developing DeFelsko's distributor network, educating users, and furthering the company's reach.

During Beamish's 31-year tenure at DeFelsko, the company grew significantly and now employs more than 90 employees, has distribution in nearly every country, and is a leader in the

inspection equipment industry.

The DeFelsko team has lost a beloved and honest friend who will be greatly missed by the entire staff and business partners around the world. Linda Beamish, David's wife, and DeFelsko founder Frank Koch's daughter, has assumed role as President after 31 years as Vice President. Beamish's son, Michael, assumes responsibilities as Vice President and General Manager.

www.defelsko.com

Erratum: Hardwood Line

We wish to acknowledge that Hardwood Line was not listed under Barrel Finishing Equipment with its 6x12 Battery Barrel in our 2020 Buyers Guide. We apologize for the oversight.



Calendar of Industry Events

Feb. 17-20, 2020: Powder Coating 2020, Orlando, FL.
<https://conference.powdercoating.org>

March 9-11, 2020: BIG IDEAS for UV+EB Technology Conference, Orlando, FL.
www.radtech.org

March 31-April 1, 2020: American Coatings Show, Indianapolis, IN.
www.american-coatings-show.com

May 6-8, 2020: Women in Finishing FORUM, Embassy Suites South Bend at Notre Dame, South Bend, IN.
www.ccaiweb.com/page/WiF

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

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

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

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

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

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



Erie Powder Coatings (EPC) has been offering custom and stock powder coatings and manufacturing powder coatings in Niagara since 1994. Erie has built up a strong customer base on both sides of the border and across North America. The company is very flexible, able to manufacture products from 10,000 kg or more down to a single box. The addition of a U.S. facility near Erie, PA, has added a great advantage for Erie's customers, many of which also have operations on both sides of the border, to purchase from both facilities.

The addition 10 years ago of the U.S. facility has allowed the company great flexibility in dealing with customers. While the Canadian facility acts as a manufacturing base and corporate headquarters, the U.S. facility allows local production of coatings to the U.S. market, as well as warehousing and sales functions.

Erie offers a strong line of custom manufactured products, built to customers' specifications. The company offers a unique ability to offer small volume custom-built orders, while still being competitive on larger volumes, and also offering advanced chemistries and coatings.

EPC has had a strong offering in some very specialized markets, such as anti-corrosion coatings, anti-graffiti coatings, and SEFA (Scientific Equipment and Furniture Association) grade coatings.

EPC found that the standard zinc rich corrosion primers on the market had a big problem in application - real problems with inter-coat adhesion which can lead to disaster for users of this type of product. Erie has fixed this problem and made this type of powder far easier to use successfully. Erie is currently marketing two zinc primers for this type of application.

Several anti-graffiti (AG) chemistries are available, but the newest and most popular product is the hybrid anti-graffiti product. This product is substantially different from others on the market. Other AG products are expensive, difficult and often contain a number of hazardous ingredients. Erie's hybrid AG products have the distinct advantage of being fast cure but oven stable, and free of TGIC and isocyanate, which are often used in these products.

SEFA sets standards for laboratory furniture and cabinets. Erie has been active in this market and has qualified powders that meet or exceed these specifications. While this is a select and niche market, Erie has found this market to be a strong one.

Fast cure product lines are also a specialty that Erie excels in. One of the primary reasons for this is the type of equipment that Erie uses - specialty

Swiss-made plastics extruders that are better at producing low-cure temperature coatings than other types of extruders.

Erie Powder Coatings is proud to be ISO 9001:2015 compliant.

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Despite stormy weather which cancelled flights and left many scrambling, FABTECH 2019, North America's largest finishing, metal forming, fabricating, and welding event, drew record attendance in Chicago in November. Show organizers say the event closed with a 7% increase over the previous FABTECH Chicago. A total of 48,278 attendees from 95 countries participated in four days of product evaluation, education and collaborative discussions on key industry issues. Three massive exhibit halls full of more than 500 new products and 1,700 exhibitors highlighted the emerging trends and technologies influencing the future of manufacturing. On these pages is a selection of photos highlighting the paint and coatings industry.

FABTECH 2019



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Gema is a pioneer in powder coating equipment technology, offering customers the confidence and expertise that comes with being the industry's global leader. Equipment from Gema is durable, flexible and engineered to last, providing increased performance, greater efficiency, and a better return on investment. Gema sets the industry standard, developing the finest powder coating equipment available.

Gema is leading the way in color change solutions, offering the latest product innovations designed to maximize productivity and color change flexibility.

Gema's OptiFlex® Automatic and Manual powder coating guns integrate the most advanced powder charging technology available. Every component is designed for total reliability, convenience, and performance. Using 100,000 volts of FirstPass Power™, you can coat it right the first time - every time!

Gema's Magic Series® quick color change booths are designed to handle a large variety of colors and guarantees extremely quick and clean color changes.

All of this without any mechanical cleaning tools or entering the booth!

The OptiCenter™, with its quick and dust-free powder management, enables excellent coating results. Short suction tubes, new injectors, and optimized pneumatic connections ensure a higher powder flow rate with less air consumption, resulting in reduced wear and tear. The overall design allows extremely quick color change.

Gema's OptiColor™ performs color changes in a matter of seconds, while managing multiple colors at one time and eliminating the risk of contamination. This easy to use and cost effective solution allows you to save time and money when changing from one color to another. OptiColor is designed for manual spray operations using multiple hoppers set up to spray various colors.

Gema's product offerings include manual & automatic spray guns and booths, fast color change equipment, cartridge and cyclone recovery systems, gun movers, control systems and other ancillary equipment.



The Gema North America office offers direct sales and distribution support in Canada, the United States and Mexico. To learn more about product offerings or obtain assistance in determining which equipment is best for your operation, visit www.gemapowdercoating.com, Powdersales@gema.us.com or call 800-628-0601.

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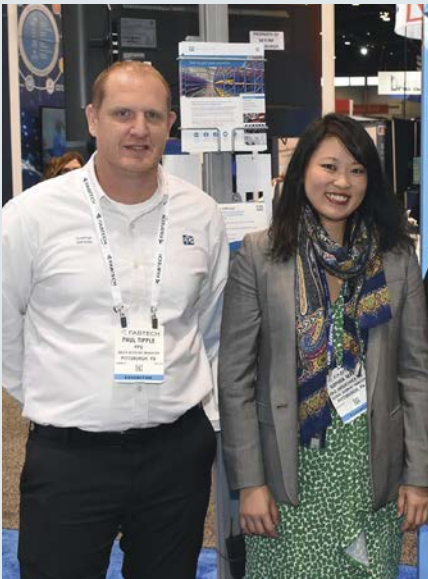
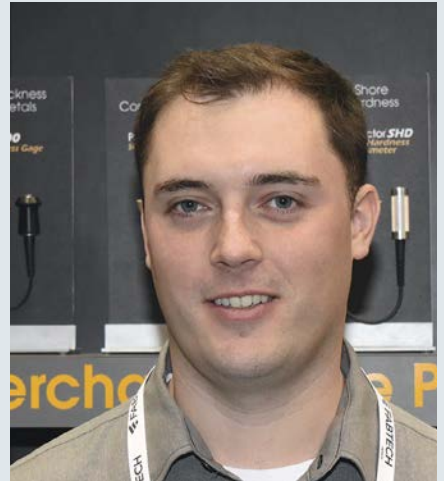
- Great application performance with metallic and special effect powders
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Gema

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FABTECH 2019



MOCAP is a leading manufacturer of standard and custom, plastic and rubber injection-molded, dip-molded and extruded products. We offer a full line of caps, plugs, grips and tapes for product protection, masking and finishing purposes, sold to virtually every industry for countless applications.

In business since 1982, MOCAP's philosophy has always focused on finding the right solution for our customers whether through our standard or custom products. We serve our customers' requirements globally, with locations in North America, Europe and China.

We currently offer a full line of masking products in various materials designed to meet the requirements of nearly any coating/finishing application. Materials range from one-time use high temperature vinyl to ultra high-temp reusable silicone rubber, while our extensive product line includes standard cap and plug configurations, as well as pull plugs, washer plugs, tapes, discs and tubing. The products can be used for your high temperature painting, plating, anodizing and coating operations, and in some cases, like EPDM and silicone products, can be used repeatedly for optimum savings.

Some of our Masking Products include:

High Temperature Vinyl Caps and Plugs - Designed for one-time use, our caps and plugs are available in various sizes and styles to meet your requirements. The high-temp vinyl will withstand approximately 450 F for 30 minutes.

EPDM Caps and Plugs - Designed for repeated use, our line of EPDM caps and plugs are perfect for temperatures up to 475 F and are a more economical solution than silicone. They also offer better chemical resistance.

Silicone Rubber Caps and Plugs - The ultimate in masking materials, silicone rubber offers ultra-high temperature resistance, up to 600 F, and reusability, all in one.

Polyester/Polyimide Tapes and Discs - We offer both materials in both styles for masking of flat surfaces. Polyester material will resist up to 425 F for up to one hour, while the polyimide material will resist over 500 F for up to one hour. These tapes and discs can be removed easily and will not leave behind any residue.

Silicone Rubber Tape - Our self-fusing tape will conform to any standard or irregular shape and works excellently as a custom mask. The tape will stretch up to 300 percent and has no adhesive, so it is safe for temperatures above 500 F.

Silicone Tubing - The silicone tubing is sold in coils and works with any high temperature environment. It resists temperatures up to 500 F and can be cut easily at your facility to the length required for your application.

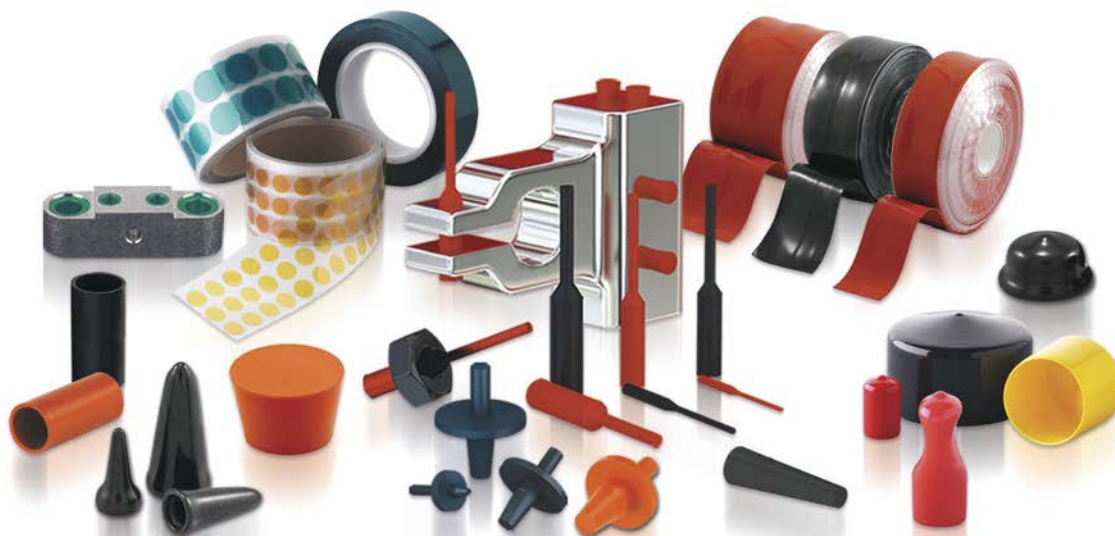
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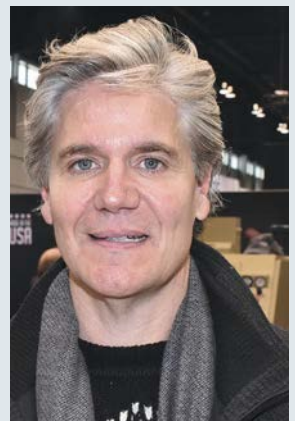
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FABTECH 2019



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PAINT & COATINGS NEWS

EMERALD KALAMA CHEMICAL OPENS OFFICE IN ROTTERDAM
Emerald Kalama Chemical, a business group of Emerald Performance Materials, recently celebrated the grand opening of a new office in Rotterdam that will serve as the company's central hub for European operations.
[MORE](#)

NEW SILICONE RESIN FOR POTS AND PANS WITHSTANDS PUNISHMENT
Colorful cookware is right on trend. Bright reds, deep blues, and vibrant yellows – pots and pans are increasingly becoming a design feature rather than simply a functional tool. This means the external coating has to look good and withstand a fair amount of punishment.
[MORE](#)

FINISHING NEWS

CVC THERMOSET SPECIALTIES INTRODUCES EPOXY TOUGHENING AGENT FOR AUTOMOBILE ADHESIVES
CVC ThermoSet Specialties, an Emerald Performance Materials company, introduced HyPox RA875, its newest carboxyl-terminated acrylonitrile-butadiene (CTBN) epoxy adduct toughening agent.
[MORE](#)

ASTERION INTRODUCES INCREDIBLY CORROSION RESISTANT ZINC PLATING SYSTEMS
Asterion is excited to introduce the industry's next generation of alkaline and chloride zinc plating systems. Possessing incredible white corrosion and red rust resistance, extended NSS performance is consistently achieved when choosing any one of the company's new, multi-level Asterion systems: Ultra, UltraPlus, or UltraMax.
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FABTECH 2019



Beyond Chemistry

More than words, this motto represents EMCO-Inortech's "raison d'être", always striving to give unique and unparalleled service to our customers and suppliers.

The great experience of EMCO-Inortech's personnel at the customer service, sales, regulatory and technical levels will, without a doubt, enable you to successfully establish new technologies. Our laboratory is always maintained at the cutting-edge of technology and we constantly make sure that the latest equipment is available. In doing so, we ensure outstanding support to our customers and suppliers.

EMCO-Inortech's mission is always to push to the limit of the technologies offered by our suppliers and others for innovative and leading-edge solutions.

In order to maintain our technology expertise and the excellent interpersonal skills so well recognized by the market we serve, all EMCO-Inortech's personnel, without exception, are encouraged to go to conferences and seminars, and to follow continuous professional development.

For the last 25 years, EMCO-Inortech has strived to help customers successfully secure new opportunities, supported by its unparalleled technical team. Also, for our suppliers, we assure outstanding visibility and excellent market penetration.

Being proactive in the markets we serve - coatings, inks, plastics and adhesives - and being especially attentive to our customers' demands and problems, we always make sure that the selected supplier is at the cutting edge of their technology. This approach strengthens and guarantees a long and fruitful partnership with our customers and suppliers.

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Industry Updates

BY GARY LEROUX

Results of the Evaluation of the Code of Practice for MEKO: The federal government, led by Health Canada, recently concluded evaluation of the MEKO Code of Practice, which will soon be made public and will likely include additional use restrictions via mandatory regulations to manage risk associated with exposure. Overall, the MEKO (a chemical commonly used as an anti-skinning agent in the formulation of alkyd or solventborne paints, primers, varnishes and stains) survey results showed low participation rates by industry, which means the Code was not widely adopted. Based on the limited responses collected by government, 80 to 90 percent of MEKO concentrations in products were largely unchanged compared to five years ago, while the Consumer Education Program part of the Code was poorly implemented by many companies, with a noted lack of consumer education resources on their website. The Performance Measurement Report for the Code will be made public in the first quarter of 2020. There are ongoing discussions with Health Canada on possible future regulatory actions on MEKO or some other approach. CPCA issued a member bulletin on the subject and will continue to work toward a reasonable approach in the days ahead for the benefit of members.

US EPA on NMP Risk Evaluation: The US EPA has made a preliminary determination that NMP (a key ingredient in a variety of paint and coating removers) does not present risks to the environment, bystanders, or occupational non-users but discusses using NMP-containing products more safely as well as alternatives. These initial determinations may change as EPA's evaluation becomes more refined through the public comment and peer review processes. NMP is a CMP-3 substance in Canada awaiting final publication of a risk screening assessment on which CPCA provided input and will continue to monitor in the coming days.

Zero Plastic Waste Strategy's Potential Impact on the Paint Industry: Canada is seeking a proactive and leading role on the plastic waste issue through the Ocean Plastics Charter among which includes a list of 22 governments, 64 businesses and organizations around the globe. The Charter is aiming for 100 percent recoverable and recyclable plastic by 2030 and an increase of recycling content and reuse in 55 percent of plastic packaging by 2030 (100 per-

cent by 2040). Canada is implementing the 2018 CCME Canada-wide Strategy on Zero Plastic Waste and Action Plan and has launched several Plastics Innovation Challenges. Phase I was approved last June and Phase 2 will be developed in 2020. According to Deloitte's "Canadian Plastic Industry, Markets and Waste" report for the federal government, packaging represents 47 percent of plastic waste disposal in Canada while automotive and construction plastics are responsible for 14 percent of wastes. The post-consumer paint recovery will pose challenges for plastics such as separation from substrates with few recycling options for thermosets. In 2016, the government estimated that plastic resins in paints, coatings and adhesive products (domestic and imported) represented a \$434M value or about four percent of total plastic use value in Canada. How the paint and coatings sector contributes to Canada's achievement of its zero plastic waste strategy will be among the some of industry's discussions in 2020.

Amendment of CEPA Could Lead to More Chemical Restrictions: The federal Minister responsible for the environment, John Wilkinson, received a mandate letter from the Prime Minister to strengthen CEPA. The Environment Minister is expected to work with the Minister of Health to better protect people and the environment from toxins and other pollution, including by strengthening the Canadian Environmental Protection Act, 1999. This implies that CEPA reform is officially on the table for the 2020 session of Parliament with the possibility of CEPA amendments being tabled later in the year. The letter also noted that the Minister should also lead in implementing the whole-of-government plan for climate action, a cleaner environment and a sustainable economy, which includes exceeding current 2030 targets and developing a plan to achieve a net-zero emissions economy by 2050. It will be an interesting year ahead and more work for the chemical industry to do to ensure reasonable assessment of chemicals in commerce are risk-based as they have been to date under the current Chemicals Management Plan.

VOC Emissions and Air Quality: VOC emissions and air quality continue to be a strong focus of the current federal government. Officials are now conducting a comprehensive study related to broad national VOC limits for 63 categories of architectural coatings in Canada enacted in

2009. The industry must be prepared to respond to the study especially as it relates to impacts on coatings products used across a wide spectrum of sectors. The data collected will form the basis of future negotiations on VOC limits. As such, it is critical that the government fully understands the regulatory impact on product formulations and related performance over the long term. CPCA will be fully engaged with industry throughout the course of this study as it could have dramatic, long-term effects, possibly as much as the first round of VOC limits for AIM and those will be followed later by the Automotive Refinishing Coatings regulations.

Holding the One-Liter Exemption: The federal government completed a survey of the one-liter exemption under the architectural VOC regulations. CPCA made the case that the exemption should remain in place as it does generally help reduce VOC emissions overall since consumers who require smaller quantities can easily access the one liter or less size option as per the original intent of the exemption. Preliminary results indicate officials will retain the one-liter exemption for the benefit of all CPCA members.

National Survey of Architectural Paint VOC Content and Volume: CPCA continues to work with federal officials and the contractor on this project to ensure all members can complete and return the survey expeditiously. The results of this national survey will help federal officials compare the VOC content of all 63 categories of paint products sold in Canada with the VOC limit of other North American jurisdictions (namely OTC II, California rules, etc.) and estimate total VOC emissions reductions that might be expected from future actions, included the costs and benefits for the environment. It is important for the industry to note that an amendment to the current Architectural VOC Regulations could be proposed sooner than later and federal officials may once again adopt the CARB limits in Canada. Therefore, CPCA continues to prepare the groundwork for a successful negotiation of any VOC limits for coatings in future.

VOC-exempt Compounds: PCBTF, a key VOC-exempt compound in Canada used in industrial paint formulations, was added to Proposition 65 as a cancer-causing substance last June. Such a decision is expected to gain traction in the rest of the United States based on a National Toxicology Program (NTP) report. VOC-exempt compounds are still available to industry to help reduce existing VOCs in products in Canada and CPCA continues to monitor this issue to ensure all exempt compounds remain available to help members meet existing VOC limits in their various product formulations.

Federal VOC Agenda 2020-2030: There has been little development to report with respect to Canada's Federal VOC Agenda 2010-2020, which will be renewed in the coming months after further discussions between the fed-



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eral government and CPCA. Federal officials alluded that additional industrial categories will be added in the next Federal Agenda 2020-2030. CPCA maintains a close 'watching brief' on this file.

Ontario Waste Recycling Always a Challenge: The Industry Stewardship Plan (ISP) for paint was approved by the Minister of Environment in 2015 and both the Minister and the Oversight Authority did so because both had agreed that the ISP would "achieve objectives that are similar or better" than the program operator it replaced, Stewardship Ontario. Since then, the Paint Industry Steward Organization (ISO), Product Care, has met and exceeded waste recovery targets in Ontario. The ISP stewards have no trust or faith in Stewardship Ontario as an efficient administrator of surplus funds, which were improperly accumulated on its watch, totalling approximately \$17 million for the paint industry, and \$53 million overall! Those fees should never have been charged in the first instance. CPCA strongly believes administering those surplus funds in the best interests of consumers and all Ontarians, via a fee reduction, can be best done by the current program operator. Product Care operates program operations for

Ontario paint producers representing 99.8 percent of the volume of paint sold in the province and provides services for a small number of paint stewards still under Stewardship Ontario, all done without incident. Why would it revert back to Stewardship Ontario to manage those funds when it has not had anything to do with that organization since 2015?

There is nothing in the Act that would prevent the fee reduction being administered by the program operator for the Paint ISPs. It was in fact, created under the Waste Diversion Act, approved by the Minister and the Oversight Authority (RPRA), and all aspects of the ISP program operations are currently under the oversight of RPRA to ensure full compliance with requirements. CPCA remains hopeful that the surplus funds will soon be handed over to Product Care to be administered on behalf of paint stewards for recycling, as they should have been from the beginning. ■

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

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In 2019, Andicor was pleased to announce a new exclusive distribution partnership with Cathay Industries. Under this agreement, Andicor will distribute all pigments sold under the Cathay and Hoover tradenames into all market areas across Canada. Cathay manufactures and sells construction, coatings, and plastics grade synthetic iron oxide pigments and naturally occurring umbers, ochres, siennas, and unique eco-friendly transparent iron oxides. Cathay works to continuously expand their capabilities and focus on innovation, sustainability, and ability to provide the best value iron oxides to meet their customers' many needs.

In 2018, Andicor announced a new exclusive distribution partnership with Heubach/Heucotech (a leading manufacturer of anticorrosive pigments, organic and inorganic pigments, and dispersions), so with this most recent development (and combined with Orion Engineered Carbons and CQV, innovative suppliers of specialty carbon blacks and pearlescent pigments,

respectively), Andicor has quickly become a leading supplier of pigments to the Canadian market. To recognize this achievement, in 2020 Andicor promoted Steve Whate to the position of Product Manager-Pigments.

Andicor is pleased to continue its master distribution partnership with the Small Packaging division of Mauser Packaging Solutions, formed from the 2018 merger of BWAY Corp. and Mauser Group. Mauser is the first company of its kind to reliably and sustainably deliver products and services across the entire packaging lifecycle for customers around the globe.

Andicor successfully completed verification of the RDC (Responsible Distribution Canada) RD:2013 Code for its Mississauga, ON, headquarters in 2018.

Andicor is also a corporate member of CPCA (Canadian Paint & Coatings Association), TRFA (Thermoset Resin Formulators Association), and PAC (Packaging Association of Canada), supporting the organizations that advocate for the industries responsible for Andicor's success for more than 15 years.

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Controlling Airborne Pollution



Two side-by-side Anguil model 200 Regenerative Thermal Oxidizers installed at a California facility.

OUR UNDERSTANDING of air pollution has come a long way since the first efforts at filtering emissions many years ago. Anyone designing an industrial facility today understands the problems with noxious gases or particulates.

Manufacturers in the plating and anodizing industries also grasp more of the implications of pollution within a plant as well as those caused by external emissions. They appreciate the processes they need to use necessarily create emissions, and are learning more all the time about how to regulate and reduce them.

Any air pollution control system needs to reduce odors as well as more dangerous substances such as nitrogen oxide or volatile organic compounds (VOCs). There is obviously a crossover between the two things at times, and even if there is not, employers need to keep conditions for workers at tolerable levels under occupational law.

Many anodizing systems, for example, make use of demisters, because an anodizing tank gives off a faint mist

containing sulfuric acid that is a byproduct of electrolysis. Periodic water washdown, or the use of a scrubber, can aid in this.

In numerous instances, plants use secondary containment that entails a protective coating surrounding the anodizing operation. A full enclosure will protect against leaks or other equipment failures.

Anguil Environmental Systems has a broad line of advanced yet user-friendly air pollution control products for the abatement of industrial emissions. Such emissions can include VOCs, hazardous air pollutants (HAPs), nitrogen oxides (NOX) and process odors. Each thermal and catalytic oxidizer product, the company says, represents a value-engineered system with emphasis on cost minimization for vapor combustion and fume incineration applications.

The company says its Regenerative Thermal Oxidizer (RTO) is the most widely used technology in the industry because it easily destroys such substances. Anguil RTOs achieve emission destruction through the process of high temperature thermal oxidation, using the proper mix of temperature, residence time, turbulence and oxygen to convert pollutants into carbon dioxide and water vapor.

“What makes the RTO the most widely used emission abatement technology,” the company states, “is its ability to repurpose the thermal energy generated during operation to reduce operating costs and energy consumption of the system itself.”

VOC- and HAP-laden process gas is either pushed or pulled into the inlet manifold of the oxidizer via a system fan. Flow control or poppet valves then direct this gas into energy recovery chambers where it is preheated. The process gas and contaminants are progressively heated in the ceramic media beds as they move toward the combustion chamber.

Once oxidized in the combustion chamber, the hot, purified air releases thermal energy as it passes through the media bed in the outlet flow direction. The outlet bed is heated and the gas is cooled so that the outlet gas temperature is only slightly higher than the process inlet temperature.

Poppet valves alternate the airflow direction into the media beds to maximize energy recovery within the oxidizer. The high energy recovery within these oxidizers reduces the auxiliary fuel requirement and saves operating cost. The Anguil oxidizer, the company says, achieves high destruction efficiency and self-sustaining operation, with no auxiliary fuel usage at low concentrations.

Anguil also offers a selection of catalytic and recuperative oxidizers, including models that combine both technologies. Catalytic oxidizers are useful for situations where a plant wishes to operate at lower temperatures, the catalysts taking on some of the work that heat would otherwise perform.

The company's Thermal Recuperative Oxidizer uses a mix of temperature, residence time, turbulence and oxygen to achieve destruction or thermal oxidation. It is designed to employ on volume of airflow, organic vapor concentrations and desired destruction efficiency.

During operation, HAP- and VOC-laden air is drawn into the system fan and discharged into the inlet, where it is preheated in the tube side (typically) of a shell-and-tube style heat exchanger. Contaminated air then passes by the burner where it is raised to the thermal oxidation temperature (1,200 – 1,800 F, or 650 – 1,000 C) for the specified residence time (0.5 – 2.0 seconds) and an exothermic reaction takes place. The pollutants are converted to carbon dioxide, water vapor and heat within the reactor chamber.

The hot, purified air then passes again through the shell

side (typically) of the heat exchanger where the energy released by the reaction is used to preheat the incoming air. The heat exchanger minimizes the system's fuel consumption with the system being self-sustaining at moderate lower explosive limits (LELs). Finally, the contaminant-free air is exhausted into the atmosphere.

Applications that involve silicones may have the configuration reversed. This would allow the hot, silicone-laden air to pass through the tube side of the heat exchanger after the burner, for maintenance and cleaning.

Ship and Shore Environmental is a company heavily invested in regenerative thermal oxidizers, for optimal emission control. These systems, the company explains, convert VOCs into carbon dioxide and water, working on in-plant emissions.

“Commonly, VOCs are emitted by manufacturing facilities as part of their processes,” the company says. “These VOCs are typically referred to as solvent fumes, hazardous air pollutants, hydrocarbons, halogenated hydrocarbons, and other odorous emissions. Our system can achieve VOC destruction rates ranging from 96 to 99 percent.”

These systems can reach VOC concentrations of up to 25 percent of the LEL. Different solvent mixtures and/or exhaust air volumes can be run together on the same production line.

“Recovery of heat will be as high as 95 to 97 percent,” the company says.

Ship and Shore's Low NOx Burners offer the ability to work with chemicals in a solvent mixture providing catalyst destruction properties. It produces such systems with, if needed, multiple burners, including propane, natural gas, low BTU gas, LPG or fuel oil burners.

“Little, if any, fuel support is needed for most applications,” the company adds.

For control of external emissions, Ship and Shore's pollution abatement systems reduce air volume (in total cfm), while significantly reducing operating costs. The customized design of VOC capture and recirculation systems for selected processes, the company says, may reduce the air volume requiring abatement. Further, 100 percent VOC emission capture is possible in areas with accurately developed permanent total enclosures (PTEs).

Almost all air pollution control systems need to be customized, since every facility is different in design, size and age of its equipment. This, though, means a buyer has the chance to work with a supplier to keep the costs of an installation to within a budget, and to allow for future expansion of the capacity.

As is always the case, good pollution control system design follows from disciplined consideration of a plant's needs and capabilities, and clear communication regarding cost and available funds. Choosing the right system is rarely easy, so careful planning is the key to a successful installation. ■



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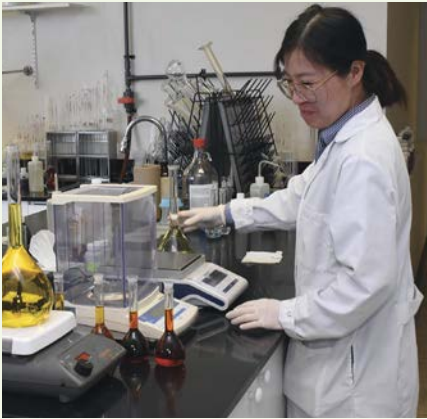
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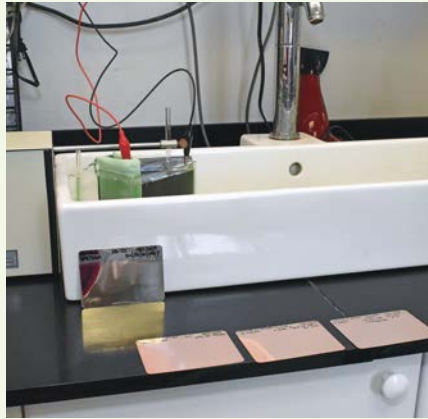
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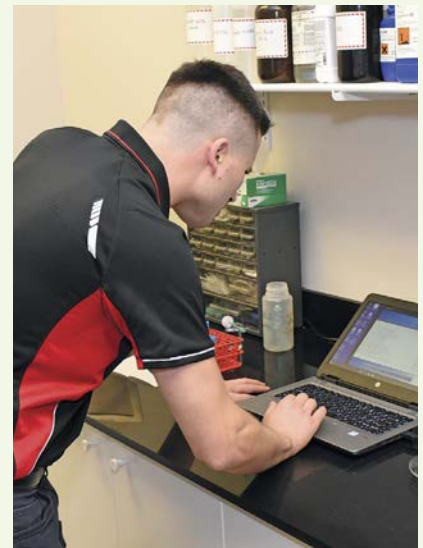
The company was established by three entrepreneurs who share a unique combination of technical, business and operational skills. Their combined knowledge of technical service, research and development, manufacturing, ISO 9001:2008, marketing and sales enables Dynamix to provide high quality products and cost-effective opportunities to their customers. With more than 75 years of combined experience in metal finishing, Dynamix has positioned itself as an expert in the metal finishing industry.

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Exploring Alternatives to Chrome Plating

CHROME PLATING, the technique of electroplating a thin layer of chromium onto a metal object, has been around for one hundred years since its discovery by Columbia University scientists, Colin Fink and Charles Eldridge in the 1920s.

A chromed layer can be decorative, provide corrosion resistance, ease cleaning procedures, or increase surface hardness.

Chrome plating a component typically involves degreasing to remove heavy soiling, manual cleaning to remove all residual traces of dirt and surface impurities, pretreatments depending on the substrate, placement into the chrome plating vat where it is allowed to warm to solution temperature, and application of plating current for the required time to attain the desired thickness.

There are many variations to this process, depending on the type of substrate being plated. Different substrates need different etching solutions, such as hydrochloric, hydrofluoric, and sulfuric acids. Sometimes the component enters the chrome plating vat while electrically live. Sometimes the component has a conforming anode made from lead/tin or platinized titanium. A typical hard chrome vat plates at about 1 mil (25 μ m) per hour.

Various finishing and buffing processes are used in preparing components, and the chrome plating chemicals are very toxic. Disposal is heavily regulated.

Hexavalent chromium plating, also known as hex-chrome, Cr⁶⁺, and chrome (VI) plating, uses chromium trioxide (also known as chromic anhydride) as the main ingredient. Hexavalent chromium plating solution is used for decorative and hard plating, along with bright dipping of copper alloys, chromic acid anodizing, and chromate conversion coating.

Trivalent chromium plating, also known as tri-chrome, Cr³⁺, and chrome (III) plating, uses chromium sulfate or chromium chloride as the main ingredient. Trivalent chromium plating is an alternative to hexavalent chromium in certain applications and thicknesses such as decorative plating.

According to SPC, in Emigsville, PA, hard chrome plating has been a preferred metal finishing solution since the 1940s and grown into a \$20-billion industry. Chrome's superior hardness (which exceeds that of steel), excellent corrosion protection, abrasion resistance and gleaming finish make it a top choice for various applications in indus-

tries such as automotive, aerospace, military, mining, machine tools, plastic molds, and salvage.

DISADVANTAGES

Chrome plating, however, has its disadvantages. The hexavalent chromium solution used in most hard chrome finishing processes exhibits poor throwing power, which makes it difficult to produce a uniform surface coating. And because hexavalent chromium is a carcinogen, there are stringent regulations on its use in manufacturing environments. Consequently, companies that wish to implement hard chrome plating must often jump through hoops and incur significant expenses to equip their facilities which can sometimes make the process cost-prohibitive.

ALTERNATIVES

SPC says nickel offers a solid replacement solution for hard chrome plating. Nickel's ability to oxidize slowly offers the strong corrosion resistance required for various manufacturing applications. Nickel also adheres well to other metals, allowing it serve as either an undercoat or topcoat. In addition, bright nickel's silvery-white, gold-tinged color can make it a viable replacement for chrome in processes where visual appeal is paramount.

Hard chrome alternatives featuring nickel include:

- **Nickel Silicon Carbide:** Nickel featuring a dispersion of hard silicon carbide particulates produces an electro-composite coating that provides excellent sliding wear resistance. Depending on the conditions and application, the coating can reduce the impact of wear up to five to 10 times greater than chromium. A nickel silicon carbide finish, SPC says, also provides exceptional corrosion resistance and adheres well to aluminum, titanium and other metals.
- **Nickel-Tungsten Alloys:** Nickel-tungsten serves as solid hard chrome substitute in high-temperature applications due its excellent resistance to decomposition when heated. Skilled metal finishing companies can produce nickel-tungsten alloys that will create a finish that is much harder than chrome and offers greater longevity. The NiW plating process is also more efficient than chromium plating. It's possible to plate multiple layers in a single step, which saves time and money.

CHROME ALTERNATIVES

- **Electroless Nickel:** EN can provide a good barrier coating that enhances corrosion resistance. Because electroless nickel does not require an electrical current for deposition, the process results in a more uniform coating application than hard chrome plating. Applications where EN can serve as an acceptable substitute for chrome include plastic and glass molds, gears, bearings, medical devices and aircraft parts and components.

The automotive industry has traditionally been a big proponent of chrome. According to Grand View Research, the world's automotive chromium market was valued at approximately \$14.3 billion in 2015 vehicles. Last year, Business Wire analysts forecasted the growth of the chrome industry to be approximately six percent from 2018 to 2022.

And though the future of chrome does seem bright in the automotive industry, anodized aluminum offers a

viable alternative for those who are searching.

Aluminum is anodized when the metal undergoes an electrolytic passivation process to increase the thickness of the natural oxide layer on the surface of metal parts.

The many benefits associated with the use of anodized aluminum in automotive include reduced costs in finishing and vehicle maintenance; durability leading to an extended life span and less maintenance, as products made from anodized aluminum are less likely to flake or peel; a wide range of appearance choices, as finishes come in numerous colors and can vary from textured to smooth or matte to bright; lowered shipping costs due to its lighter weight; and reduced environmental impacts.

Despite the hazards associated with chrome, chrome still has a place in many industries. More organizations, however, are looking to alternatives such as nickel plating and anodized aluminum which offer reduced risks and a host of benefits. ■

A Bridge Between Technology and Music

Heraeus AMLOY and Nik Huber Guitars build the first guitar with amorphous metals

Some swear by brass, others on nickel-plated or gold-plated aluminum, but the opinions of the guitarists differ on the subject of bridges. The bridge's individual sound changes depending on how it transmits the impulse of the strings to the instrument.

Nik Huber Guitars has tried something new in this conservative market and, in cooperation with Heraeus AMLOY, has for the first time installed a 3D-printed bridge made of amorphous metal.

Amorphous metals are formed by the shock freezing of molten metal. The atoms have no opportunity to form a crystalline lattice and solidify in a disordered (amorphous) manner. The material is particularly elastic, but at the same time, very strong. "Since amorphous metals are significantly more elastic than crystalline materials, they transmit vibrations very well," says Jürgen Wachter, Head of Heraeus AMLOY. "Therefore, the material is ideally suited for stringed instruments such as guitars." In addition to their elasticity, amorphous metals are also scratch- and corrosion-resistant. In contrast to conventional materials, the bridge made of amorphous metal there-

fore does not wear out and does not need to be replaced. In addition, it is biocompatible and therefore, unlike plated aluminium bridges, also suitable for allergy sufferers.

Nik Huber has been building guitars for 24 years, accompanying world-famous bands on international stages. Together with his team, he is constantly working to improve his products and their sound characteristics. He likes to try out new materials such as special woods or metals.

"3D-printed amorphous metals are a promising material for guitar building due to their unique properties," says Nik Huber, Founder and Owner of Nik Huber Guitars. "Especially in our conservative guitar market it is important to be open for further developments but also new materials and technologies."

Heraeus AMLOY 3D-printed the amorphous bridge. In contrast to conventional bridges, it is not solid but, like the regulators, has a bionic structure. 3D printing opens up a wide range of new design and customization possibilities.

In addition to the optics, the honeycomb structure also influences the vibration period of the bridge, because it dampens the vibrations less than closed, solid structures. This changes the sound properties. "One could also imitate the sound of other metals by changing the structures inside the bridge," says Jürgen Wachter. "A bridge made of amorphous metal would then sound like a bridge made of brass, for example. The difference is that due to its elasticity it keeps the sound longer, does not wear out and still looks like new even after years."

A guitar with 3D-printed bridge and regulators made of amorphous metal at the NAMM Show in Anaheim, CA, in January.



Palm Commodities International, LLC is a chemical manufacturing and distribution business based outside of Nashville, in LaVergne, TN. Palm produces high purity liquid nickel concentrates such as nickel bromide, nickel chloride, nickel sulfamate and nickel sulfate solutions. Palm also offers toll blending, contract manufacturing and private labeling services for liquid chemical products. In addition, Palm distributes more than 150 chemical and

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De Nora Tech is a global leader in the development, manufacturing and sales of mixed metal oxide anodes for electrochemical plating processes. De Nora Tech (DNT) provides support to its customers by providing high-level, on-time electrode delivery, ISO 9001-2015 product consistency, and proven superior plating performance. DNT supports customers' commercial needs by delivering specialized technical product assistance.

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Through its state-of-the-art Technology Center located in Concord, OH, and electrode manufacturing/ coating facility located in nearby Mentor, OH, De Nora Tech remains well positioned to service its North American clients. Building on the legacy of ELTECH Systems (acquired in 2005) De Nora Tech recently completed a state-of-the-art 130,000-sq. ft. manufacturing facility in nearby Mentor, OH. The \$31-million investment is in operation and a further expansion in support of additional business is already in planning. Currently, DNT has established coating capacity to 1.7 million sq. ft. annually.

De Nora Tech is part of the worldwide De Nora Network operating 12 manufacturing facilities across the globe with De Nora's corporate headquarters located in Milan, Italy. With more than 95 years in business, De Nora aims to strengthen its position as the world's leading provider of electrochemical products and services by uniting a unique value proposition of economic success, respect for the environment, and social responsibility.

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Accurate Thermal Control is Key to Successful Plating



ELECTROPLATING is a process of depositing a layer of metal on another material by means of electricity. Electroplating is primarily used to change the surface properties of an object (such as abrasion and wear resistance, corrosion protection, lubricity, aesthetics), but may also be used to build up thickness on undersized parts or to form objects by electroforming.

The process requires a high level of diligence, experience and precision, and is dependent not only on the exacting specifications of the electrochemical process but also on a thorough prep job before the switch is even turned on. If not, several defects can occur due to the complexity of the process.

Understanding temperature control is a primary principle all platers must grasp. Too much heat and the plated coating is either too fluid, or displays other properties that aren't helpful. Too little, and the plating layer won't flow or cohere properly.

Correct process temperature and safety concerns in chemical plating tanks means constant temperature monitoring is required. This is often done with thermocouples of different metals connected to a digital temperature controller.

Titan Industrial Heating Systems makes temperature sensors. The company says maintaining the correct temperature in a metal finishing tank and limiting outside parameters like evaporation of solutions can be easily controlled by installing the thermocouple at the correct location.

"For example, if the tip of the sensor in a chemical

process tank is located at the bottom of the tank, the control cannot sense the 'rising heat' and will consequently stay on to meet the demand of the control," Titan says. The right thing to do is to ensure the sensor is located in the top 30 percent of the process solution. Thermocouples are cost-effective and easy to exchange. In case of a thermocouple failure, the digital temperature controller will sound.

Aside from constant control of the temperature, the company also recommends installation of a liquid level safety control. It says this is a must-have safety device in polypropylene and PTFE-coated plastic tanks, but also a good investment in metal tanks because solutions evaporate, and tanks fracture, erode, corrode or disintegrate due to electrolysis.

Titan also sells NADCAP-compliant (National Aerospace and Defense Contractors Accreditation Program) temperature controls.

It says higher demands on accurate process temperature controls in plating tanks, documentation requirements (such as NADCAP and AMS 2750E), and safety concerns, require the use of digital temperature controls. Titan notes that metal finishing tanks with old, gas-filled capillary assemblies for temperature control lack accuracy (they can be off by as much as 5 degrees F) and are not up to safety standards.

A Titan temperature controller receives inputs from a temperature sensor (example: "J-Type" thermocouple) or RTD. The display of the digital temperature controller can be up to 100 feet away from the metal finishing tank. If the controller is connected to a communication system,

**THE IMPORTANCE OF PLATING TEMPERATURE:
A Controllable Variable in Brush Plating**

By: Danijela Milosevic Popovich, SIFCO ASC R&D Manager

While most brush plating solutions produce high quality deposits when plated in the temperature range of 70 deg. F to 120 deg. F, a few solutions must be plated within a tighter temperature range or at higher temperatures, such as 140 deg. F to 160 deg. F, to provide the desired thickness, quality, and deposit characteristics (e.g., alloy composition).

In addition to having the plating solution (bath) within the proper temperature range throughout the plating operation, getting to and maintaining the correct temperature in the work area is also important. The work area is the thin film of solution on the workpiece where plating is taking place. There are four factors that influence the temperature in the work area:

1. Temperature of the part.
2. Temperature of the solution being used.
3. Heat developed in the work area during plating.
4. Amount and exchange of solution being supplied to the work area.

Temperature of the part is a concern when plating large parts which can quickly chill a preheated solution. In these cases, temperature is largely controlled by heating the part to the proper temperature prior to plating.

Alternately, temperature of the solution becomes a concern when plating thin or smaller parts that can be rapidly heated by a warmed solution.

When using solutions plated at higher voltages (over approximately 12 volts), plating at high currents, or plating higher thicknesses of deposit, the heating effect from the passing current is a factor. The amount of heat developed, while plating, is proportional to the voltage used, multiplied by the current passed:

Heat ∝ Volts x Amps

The developed heat is typically sufficient to quickly heat the work area, tool and solution. But, in some cases, heat from plating can result in excessive temperatures in the work area, causing the tool to overheat. This is characterized by:

1. The plating tool, part and solution becoming noticeably hot.
2. The current diminishing as plating continues.
3. Raised voltage leading to decreased amperages.

Tool overheating problems are best controlled by a change in the set-up, such as:

1. Using a larger flow system.
2. Increasing the size or number of solution distribution holes in the anode.
3. Decreasing the thickness of the cover.

How fast and how much solution is supplied to the work area is the last factor. Rapid supply of solution to the work area tends to keep the work area closer to the temperature of the solution being used. Less rapid supply allows the work area to be heated more rapidly. An example of how rate of solution supply can be manipulated is the case where the heat generated from plating is relied on to heat the work area. This technique is used with solutions that plate better at high temperatures, but which are not preheated. When starting out, low rates of solution supply are used. This helps keep the heat developed in the work area. This permits the voltage and amperage to be raised sooner without a burned deposit resulting. This in turn develops more heat. The net result is that the proper elevated temperature is reached sooner. The solution supply then is increased to prevent the work area from overheating.

Diligently monitoring the factors that influence the plating temperature of the work area will produce a quality, deposit without issue.

operators can control, monitor and record the temperature settings from a remote location.

Safe operation of a plating or rinse tank includes the installation of a liquid level control. Titan says integrating this safety device into the digital temperature control terminal box is economical, improves operational safety and can have a positive impact on insurance policies for all types of immersion heaters and various metal finishing applications.

Titan offers digital temperature controls in various configurations, even simple (M25), featuring on/off controls without PID loops. Metal finishing tanks requiring accurate temperature control (electroless nickel plating, Watts-Nickel plating, rhodium plating, palladium plating, gold plating, anodizing, and hard chrome plating) require temperature control with PID control loops (M43) for ramp and soak. In hardchrome plating tanks, the chemical solution must be heated and cooled and remain within 1 to 3 degrees F of the setpoint.

Sharrett's Plating Company (SPC) says electroplating is a complex process and temperature-related problems may occur before or after coating. One common source of pre-coating defect is referred to as "cold shuts". These are the result of metal that has hardened at different stages. They show up on the surface of the metal as flow marks or lines.

"Cold shuts form when a flow of melted metal reaches the cooler surface of the die," SPC says. Due to the difference in temperature between the molten metal and the cold die, rapid cooling occurs in the molten metal. This causes it to harden before completely filling the mold. When the next flow of molten metal enters, it fills the remaining gaps between the die and the previous flow.

The new flow bonds with the previous chunk of hardened metal, instead of the whole piece hardening as one. This causes differential bonding that results in lines across the surface of the object.

The most common cause of this defect, SPC says, is a die at too low a temperature. The result is a piece has inadequate mechanical strength, and fracturing will often occur along these lines when strain is applied.

After plating, other temperature-related problems can occur, the company adds. Two possible causes of dull and hazy deposits are incorrect temperature and inadequate preheating. The bath temperature must be between 130 and 140 degrees F. Use an air agitator to keep the temperature consistent throughout the bath, and try to stay within a margin of two degrees.

Inadequate preheating can also cause defects. Ensure that they have heated up to the bath temperature all the way through.

Electroplating, SPC stresses, is a process that requires skill, experience and the right equipment. Controlling the temperature of all aspects of the process will ensure quality results every time. ■

Options for Corrosion Protection Increase Along with the Length of Protection

AS ANYONE WHO MANUFACTURES metal for use in exposed situations knows, corrosion is inevitable at some point. It will come sooner in proximity to salt water, or in urban environments with high pollution levels. But the processes of chemical attack can only be postponed, not fully prevented.

This is the key reason why the industry speaks of corrosion inhibitors, as opposed to corrosion preventatives. Along with some protective physical processes, the chemistries used to protect exposed metals are a focus for industries such as offshore oil drilling, or the various forms of marine transportation.

In simple terms, corrosion is destructive erosion caused by chemical or electrochemical reactions between metals and their surrounding environment. Lubrizol Performance Coatings, which has a portfolio of products for this segment, points out that “severe corrosion can also cause sudden disasters and environmental pollution accidents, such as corrosion of oil pipelines. In fact, in China alone, the economic losses caused by corrosion are estimated about three percent to four percent of the total economy.”

While paints, zinc plating and other well-established technologies are still important methods for limiting corrosion, polymeric techniques have become more prominent in recent years.

This year, AkzoNobel is launching its new Interpon Redox range of powder coatings in North America. These, the company says, offer customers a one-stop-shop that “provides the simplest route to maximum corrosion protection. It covers a full array of substrates, surfaces and environments – from cable cars and chemical plants to window frames and wind turbines.”

Long-term performance is paramount for specifiers, who rely on finding the right corrosion protection system for their steel products. However, the process of selecting the right system is influenced by various factors, such as the material used, the environment it’s exposed to and how quickly it’s likely to corrode. Interpon Redox helps to simplify this often complicated decision-making process and offers customers the best possible corrosion protection, in all conditions.

“Interpon Redox is all about bringing simplicity to corrosion protection,” states Daniela Vlad, Managing Director of AkzoNobel’s Powder Coatings business. “Selecting the right primer for the right level of corrosion can be a lot more complex than people may think. So our Interpon Redox systems have been developed with characteristics that address all the variables, making it much easier for customers to pick the perfect coating system.”

AkzoNobel previously entered a strategic partnership with the University of Manchester, in which the scientists there develop corrosion protection technologies that the business can apply in products and processes. Stuart Lyon, the AkzoNobel Professor of Corrosion Control, points out that there is a clear sustainability advantage when improved corrosion protection is applied. Whatever it is a customer trying to protect, when its useful life is extended, it is possible to reduce demand for scarce resources.

The most challenging in-service conditions, AkzoNobel states, are continuous or intermittent seawater immersion, particularly where cathodic protection systems are employed to control corrosion. Epoxies hold a large part of this market, but powder coatings appear to offer new opportunities in the area.

The ultimate performance, the company says, would be effective corrosion prevention throughout the lifetime of the asset to be protected, which could be 25 years in the case of some marine vessels. In addition to corrosion prevention, some degree of abrasion resistance is a desirable attribute.

Current technology offers medium to high solids, defined as 60 to 80 percent by volume, and the general trend is toward higher solids or solvent-free coatings. This presents a challenge to maintain acceptable drying times and workable pot life at low temperatures.

Sherwin-Williams has long had a broad range of corrosion inhibiting coatings, especially epoxies with various types of additives. Its Macropoxy product line includes a variety of primers, several with different zinc combinations or compounds, to protect steel and other metal substrates.

For topcoats, its Acrolon range offers a selection of polyurethanes specifically formulated for harsh environments. There are also Macropoxy epoxy finishes to com-



plement the primers from the same product family.

The off-road and mining industries present idiosyncratic challenges to researchers in fighting the effects of corrosion, both in economic loss and environmental safety. Cortec's philosophy is that its corrosion engineers must understand that each facility has a different atmosphere, and is thus exposed to very different corrosive environments.

The company says it can create a unique plan to fight and prevent corrosion-related problems in these industries, using proprietary Vapor phase Corrosion Inhibitors (VpCI) technology. These are claimed to be safe, cost-effective methods for preventing and diminishing the severe damage caused by corrosive process streams.

"Whether a company is concerned with maintenance painting to prevent corrosion, or more serious corrosion problems affecting personal safety and continuation of production," the company states, "Cortec provides highly efficient and economical corrosion protection for the off-road and mining industries."

VpCIs offer a method of treatment with low toxicity and low polluting effects. Unlike some corrosion inhibiting systems of the past, many of Cortec's VpCIs do not contain chromates or other heavy metals, nitrites, nor chlorinated hydrocarbons.

Unlike conventional methods, such as filming amine corrosion inhibitors, users can inject the self-replenishing Cortec VpCIs into any part of a system, making them go to work immediately. Continuous, uninterrupted protec-

tion in the liquid phase, interphase, and vapor phase can be added at multiple points. The automatic injection of Cortec VpCIs into a system — with no attending operator — provides protection immediately, even on rusted or scaled surfaces.

The company's Clean, Protect, Preserve cycle begins with the quality and safety checking of parts. To achieve the very highest standards in corrosion protection, these parts and its performance are analyzed, and the question of quality is addressed by Cortec at every stage.

Parts are evaluated for corrosion based on the length of their storage, damage caused, the cost, and the sensitivity of the part. The packaging path is also determined. The parts are then cleaned, and if necessary, existing corrosion is removed. The product is dipped, sprayed, or brushed if required (without being given time to dry), and then neutralized with Cortec's environmentally friendly products.

Once primary protection is reached through cleaning the parts, packaging, coating, or both can be used to further the corrosion protection process. This can be done with Cortec's packaging, coatings, bags, emitters, MRO sprays, or its Milcorr products for crate replacement. The length of storage and speed should be assessed to determine the best path to provide protection from one to more than five years.

Lubrizol's Aptalon product line uses alloys of polyamide (nylon) and polyurethanes to increase the range of performance to coatings, in particular for water-

The Hamburg Bridge after treatment.



borne technologies. The technology, the company says, “offers a new platform for resin development that introduces high levels of hardness, chemical resistance, hydrolytic stability, and resistance to thermal degradation. This combination means outstanding toughness and durability opportunities for coatings.”

The Aptalon polyamide technology is claimed to be unique in its adaptability, as it can deliver premium performance benefits in many types of coating systems. For metal coating applications, Aptalon aliphatic polyurethane dispersions deliver reportedly high chemical and alkali resistance when used in paints and coatings.

Aptalon can also be used as a primary and coblending resin in metal coating applications requiring high gloss, UV durability and strong abrasion resistance. Exterior applications include topcoats for OEM equipment in agricultural and construction equipment (ACE), appliance, oil and gas, infrastructure, and commercial construction.

Another Lubrizol product is waterborne polyvinylidene chloride (PVDC)-acrylic co-binder. This was developed and applied in waterborne anti-corrosive primers, as an alternative to waterborne epoxy primer. PVDC, Lubrizol says, provides an excellent barrier to corrosion media, both oxygen and water vapor. Its co-polymerization with acrylates synergizes its excellent barrier properties and adhesion as well as uniform film formation with durability and flexibility properties of the acrylates.

The co-binder performs well as an anti-corrosion primer,

especially for low to medium atmospheric corrosivity environments. It offers advantages over the conventional waterborne epoxy primers, such as fast-drying properties, 1K, or room temperature curing. It is used in waterborne anti-corrosive coatings that are low VOC, APEO-free, and meet emerging environment requirements.

Covestro’s Pasquick polyaspartic coatings lay claim to fast application and thus cost reduction. The materials, the company says, use one layer less than competing types, which offers a cost savings of five to 10 percent on total painting operational costs. The coatings meet requirements defined in ISO 12944.

“With Pasquick,” the company says, “you are perfectly equipped for the future, as industry standards in general shift towards more efficient two-coat systems.”

The company cites a recently installed swing bridge over the Lotsekanal, a stretch of water that separates the Harburger Schlossinsel, a small island, from Hamburg, Germany’s city center. To improve accessibility in both directions, the city administration decided to build the bridge for pedestrians and cyclists across the 44-meter-wide channel. This project was chosen to become the official test for Pasquick technology as an innovative coatings system for the public sector.

“As a matter of principle,” Covestro states, “public authorities consider the introduction of innovative materials only if their successful performance has already been proven beyond any doubt. This is why extensive testing of Pasquick under real-life conditions was conducted before it was given the green light for use on the Zitadellenbrücke (‘Citadel Bridge’).”

This bridge was the first application of Pasquick in a public infrastructure project in Germany.

The unique benefits of our solution were confirmed by Dresdner Lackfabrik Novatic GmbH & Co. KG, the manufacturer that provided the Pasquick-based coating for the bridge. The company stated: “The technology enabled a curing process that was four times faster than normal, resulting in a significant productivity boost.” In addition, NE Sander Eisenbau GmbH, the firm responsible for the steelwork engineering of the Zitadellenbrücke project, praised the good handling properties of the coating material without the need for new equipment or further training measures.

It’s unlikely that any technology will ever provide decades-long protection for metals against salt, water, ice, and abrasion. Not only is the selection of materials broadening, however, but the understanding of how each works is improving every year.

This means metalworking industries have an increasing range of options for making their products last longer and also that they can expect to cut the cost of doing this with every passing year. ■



Sustainability

a Major Target in Powder Coating Resins

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

In addition, sustainability is a new mainstay in the industry.

Allnex specializes in coatings resins and says its powder coating resins are a green and sustainable coatings technology solution. The company says no solvents are used with powder coating and therefore almost zero VOCs are released. During powder coatings application, overspray can be re-used, reducing waste to a minimum. Simple clean-up and maintenance are required with this coating solution, Allnex adds.

Recent technological advancements, such as the ability

to cure at lower temperatures, are now opening new opportunities to use powder coatings on heat-sensitive substrates, such as MDF, solid wood or special metal alloys. The company's powder resins product portfolio includes polyesters for TGIC, HAA and epoxy crosslinkers, polyesters for use with urethane powder coatings, additives, unsaturated polyesters, isocyanate hardeners, polyanhydrides, and acrylics.

Allnex says its recent sustainable resin innovations include sustainable polyester resins based on alternative raw materials, low bake indoor polyester resins for MDF, low bake indoor and outdoor polyester resins for metal, polyester resins for outdoor with improved corrosion resistance, architectural polyester resins for combination with hydroxylalkylamide with improved moisture resistance, one-shot matte solutions, tin-free polyester resins, and polyester resins for metal packaging.

Used to formulate low- and zero-VOC coatings for metal trim components, Sun Chemical Advanced Materials' FINEPLUS GMA acrylic resins are additives in powder coatings that produce "unprecedented adhesion and dispersion properties" in aluminum wheel coatings, body clear coats and metallic finishes. In addition to "optical" quality clearcoats for aluminum, they also are used to control gloss in non-acrylic powder coatings to provide superior anti-burnish resistance.

The company also says FINEPLUS GMA acrylic resins provide metal architectural coatings with excellent weatherability, workability, mechanical properties, pigment wetting properties and gloss retention as well as flow and leveling. Numerous grades of FINEPLUS GMA acrylic resins are optimized to provide metallic architectural coatings with high gloss, clear coats or matte finishes. Sun adds that the resins offer corrosion and stain resistance, and are curable at low temperatures.

The same FINEPLUS GMA acrylic resins also utilize proprietary chemistry to provide automotive powder coatings with adhesion to aluminum, corrosion resistance, clarity, and dispersion properties. Sun says unlike conventional resins, FINEPLUS GMA acrylic resins are crosslinkers for polyester resins in matte coatings where they serve as gloss-control agents.

Other important features for use in automotive coatings and more, include use as primary-film formers in aluminum wheel coatings, full-body clear coats, building products, black trim, brass hardware and metal furniture; exceptional gloss-control properties in automotive trims, architectural metals and high-quality furniture. They are also usable as additives to improve leveling and flow as well as chemical and stain resistance in polyurethane, polyester hybrid and polyester TGIC powder coatings.

Last March, at the European Coatings Show (ECS), in Nuremberg, Germany, DSM launched a series of sustainability targets for its coating resins business it says will

help it become more environmentally friendly in the coming years.

It declared its intention of "becoming one of the most environmentally friendly producers within the coating resins industry, and the most market-leading supplier of sustainable solutions."

Helen Mets, President of DSM Resins & Functional Materials, says, "For too long, there has been a general feeling that you either do well in business or do good for the environment – that you have to choose between performing well financially and contributing to a better world. I'm proud that my organization doesn't think this way. We strongly believe that doing good and doing well go hand-in-hand."

In order to improve both the environmental impact of its operations and the sustainability value of its portfolio, DSM announced specific targets including:

- By 2030, reducing GHG emissions by 30 percent compared to 2016 values. At least 75 percent of purchased electricity will be renewable, and overall energy efficiency will be improved.
- By 2020, reducing all emissions-to-air from our operations by 40 percent.
- Zero waste to landfill by 2022.

The company says it is committed to developing the most sustainable product portfolio within the industry. It will start by accelerating the phase-out of all chemicals of high concern from its finished products.

"We already started this journey and it's our ambition to have no sales of products containing chemicals of high concerns by 2025," DSM says.

The company says on average, about 90 percent of the carbon footprint of every kilogram of product it sells is caused by the raw materials used. To accelerate this carbon footprint reduction, DSM commits to ensuring by 2030 that at least 30 percent of the raw materials it sources are bio-based and/or recycled materials.

"We will achieve this," Mets says, "by improving our own performance and by being the most ambitious, innovative and transparent resins producer and supplier. We will support our clients' efforts to become market leaders in sustainable green solutions, through use of safer, low-CFP and renewable solutions from our product portfolio. And, we also will advocate a faster transition by the industry to a sustainable coatings ecosystem."

For its part, DSM announced last year the launch of its latest Uralac EasyCure resin, P 3225, for low-temperature and/or fast-cure powder coating applications for heavy machinery or architectural components. DSM says the new resin underlines the company's "commitment to using its scientific capabilities to develop products with both higher functional performance and a higher sustainability value than conventional alternatives."



Above all, it says, the new resin addresses the growing market demand for powder coatings that can be cured quicker or at lower temperatures. In particular, the Uralac EasyCure P 3225 resin can either be cured in just five to six minutes at 180 deg. C, compared to the 10 to 12 minutes of market alternatives, or in 12 minutes at 160 deg. C. In this way, the resin enables higher production output and can help prevent bottlenecks, as well as lowering energy consumption, and reducing natural gas usage by up to 30 percent.

DSM says when the new Uralac EasyCure P 3225 resin is cured more quickly or at lower temperatures, it will deliver the same appearance and coating properties as current alternatives offered at 20 deg. C higher temperatures. Specifically, the Uralac EasyCure P 3225 resin offers a unique combination of coating benefits by enabling good appearance, robust outdoor durability, higher degassing

limit and reliable storage stability, the company says. With these properties, “coatings can ultimately deliver aesthetic and performance benefits to architectural components and heavy machinery applications.”

Marten Houweling, Global Product Manager, DSM Resins and Functional Materials, adds, “We’re very excited [about] our new Uralac EasyCure P 3225, which will reduce the energy consumption and improve the operational efficiency of coating manufacturers around the world.”

DSM also launched a new low-bake, matte, super-durable dry blend with a good gloss consistency, it says rounds out a complete resin portfolio for Uralac EasyCure and comprehensively addresses customers’ demands.

Arkema’s powder coatings are 100 per cent solid systems that require no solvent. Rea-free resins allow easy formulation of low-VOC and environmentally friendly powder coatings with advanced performance charac-

DSM’s Uralac EasyCure resin drives its sustainable powder coatings for architectural and machinery applications.

Photo: DSM Resins & Functional Materials

teristics, the company says.

The company has emphasized its UV durable products, it says, which it claims are growing faster than the market overall. The current trend, Arkema states, is towards powder coating for exterior heavy-duty products, especially in architectural coatings.

Arkema has also been a promoter of PRIMID crosslinkers, primarily in Europe. These, it holds, offer superior capabilities to TGIC crosslinker technology.

Clearly, sustainable solutions are driving growth in this area.

“To be an effective catalyst for change in our industry, we must set targets we will achieve and be transparent in our progress,” says DSM’s Mets. “We are up to the challenge and prepared to step up as market leader in this regard.” ■



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ACCORDING TO A recent market report published by Lucintel, the future of the global photoinitiator market looks promising.

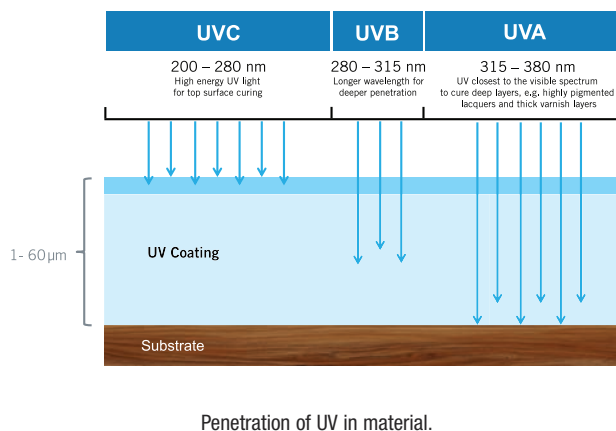
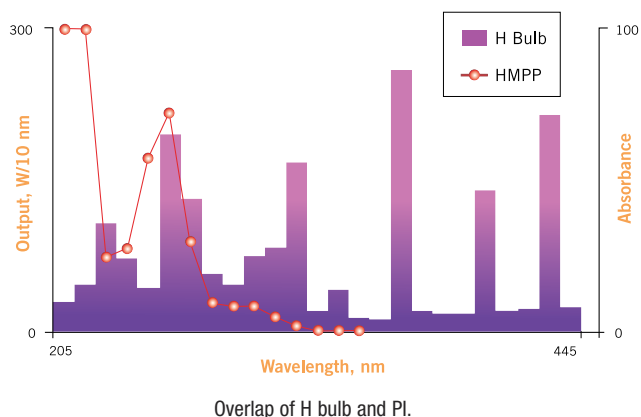
The report, entitled “Growth Opportunities in the Global Photoinitiator Market 2019-2024: Trends, Forecast, and Opportunity Analysis,” says opportunities in UV-cured coatings, inks and adhesives, especially, will propel the market globally to an estimated \$1.4 billion by 2024 and is forecast to grow at a compound annual growth rate of 7.1 percent from 2019 to 2024. The major driver of growth for this market is increasing demand for photoinitiators due to their relative stability and range of light absorption.

Photoinitiators are compounds that produce radicals when exposed to UV light. These then react with monomers or oligomers to initiate polymer chain growth.

They are essential ingredients of all UV-curable adhesives and inks, as well as automotive and wood coatings, and flooring.

Lucintel forecasts that UV-cured coating is expected to remain the largest application due to increasing demand in wood coatings, automotive coatings and powder coatings. UV-cured ink is expected to witness the highest growth over the forecast period due to increasing demand in printing, graphic arts and LED ink curing.

Asia Pacific is likely to remain the largest region and it is also expected to witness the highest growth over the forecast period due to increasing demand for photoinitiators in electronic, packaging, and automotive industries as it improves the overall productivity by reducing cure time and low VOC emissions.



Emerging trends, which have a direct impact on the dynamics of the photoinitiator industry, include improved performance of UV-cured coating photoinitiators in electronic assembly, and advancements in light cure adhesive technology.

The only possible cloud on the horizon is the recent outbreak of coronavirus in China, where much of the world's supply of photoinitiator is manufactured.

Last year, manufacturers were already weathering the storm caused by a supply shortage of photoinitiators for inks and coatings used globally across many industries. Only a few companies in China produce the precursor needed for a commonly used photoinitiator, TPO (trimethylbenzoyl phosphine oxide).

Many companies are watching carefully.

IGM says many of its customers have questions around the security of the supply of photoinitiators and energy curable resins.

At the time of printing, after the Lunar New Year holiday break, the company was assessing the supply of raw materials and movement of goods and any corresponding impact on the restart of its manufacturing operations.

"With regional stocks of products produced in China boosted to cover the annual Spring Festival holidays we do not foresee any immediate impact on the normal supply of our products," says Andrew Chambers, IGM's Global VP, Photoinitiators.

"Our Mortara, Italy, photoinitiator production and Charlotte, NC, energy curing resins production are unlikely to be affected."

Equipment-makers are feeling the pinch, though. Kevin Joesel, Director of Sales for the Americas UV Products, Heraeus Noblelight America LLC, says the photoinitiator shortage is still an issue and highlights the need to spread the capacity of photoinitiator production on a global basis.

In addition, UV formulators and raw material suppliers have been working diligently on formulation solutions to decrease the use of photoinitiators, Joesel says.

With photoinitiators typically the highest cost compo-

nent in a UV formulation, Joesel says there has always been an incentive to decrease the loading.

"The primary photoinitiator shortage was in the long-wavelength absorbing photoinitiators – phosphine oxides which are used extensively in formulations designed for curing by UV LED lamps," he says. "The trend toward UV LED curing technology brought additional focus to the shortage of these longer wavelength photoinitiators." Curing with traditional medium pressure lamp systems, microwave or arc, often does not need this class of photoinitiator, or can use a lower percentage of photoinitiator.

"According to published papers, another way to reduce the level of photoinitiators, by as much as 50 percent, is to use IR heating immediately before UV exposure," Joesel says. "It is a fairly simple concept that, by increasing the kinetic energy of the coating prior to UV exposure, improves the efficiency of the cross-linking reaction."

Heraeus Noblelight does not manufacture photoinitiators but says it offers the most complete UV curing product portfolio of lamps and complete curing systems. "Because it is critical for the equipment to work hand in hand with the formulated coatings, Heraeus has UV chemists on staff who are very knowledgeable about photoinitiators and UV formulations so that we can help end users and formulators develop and optimize UV curing processes," says Joesel.

The chemicals must work seamlessly with the equipment. Because photoinitiators absorb UV energy in specific wavelengths, typically characterized in an absorption curve indicating the absorption intensity at various specific wavelengths, for an efficient UV curing process, it is important to match the wavelengths of this photoinitiator absorption curve as closely as possible with the UV curing equipment output wavelengths.

"UV curing takes place from the top of the coating down to the bottom," Joesel says. "If there is not sufficient UV energy reaching the bottom of the coating, then the surface will be cured, but not the bottom, causing adhesion issues. This is not usually an issue with clear coatings,

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UV PHOTOINITIATORS

but pigmented coatings can be especially challenging because the pigments compete for the UV energy.”

To solve this, a formulator will typically choose a photoinitiator that absorbs in a different wavelength than the pigments. It's also important to note that for thicker pigmented coatings, such as those on metal, the formulator will choose two different photoinitiators, a short wavelength for surface cure and a longer wavelength to penetrate further down into the coating to ensure “through cure”.

UV curing lamps are available in a variety of wavelength output. For example, most UV curing processes use mercury, or H bulbs, which emit primarily shorter UV wavelengths. Thick pigmented coatings typically need gallium (V) or iron (D) doped UV bulbs which emit longer wavelengths to ensure through cure and good adhesion.

At Miltec, Bob Blandford, President, and John Phillips, UV Technical Sales Manager Southeast and Mid-Atlantic USA Sales Manager, agree that, to relieve some of the production stresses on this global shortage and cost, a more efficient curing process is the solution. This efficient curing solution can be achieved using a very high peak irradiance UV curing system, they add.

The Miltec UV HPI UV Curing System, they say, achieves this necessary high irradiance UV level.

“At 450 W/inch power level, with a conventional Hg lamp, Miltec's HPI UV system will produce a peak irradiance around 3000 mW/cm² UVA, and about 4000 mW/cm² when powered at 650 W/inch power level,” Blandford and Phillips say. “If metal additive lamps are used, the Miltec HPI UV Curing System peak irradiance can increase to as much as 6000 mW/cm² UVA.”

Not only does higher peak irradiance cure UV inks and coatings faster, more efficiently, and deeper into the coating for better through cure, higher peak irradiance will almost always

result in lowering the overall mJ/cm² energy requirement to cure the UV coatings and inks too, which means fewer UV lamps required to cure. “With a reduction of the number of UV lamps or running lamps at lower power levels, the end user will save money in electrical consumption costs, consumable parts costs, and UV equipment maintenance costs,” they add.

The most recent advancements in photoinitiators, Joesel says, are primarily driven by advancements in UV curing technology. Because traditional UV curing technology is moving to UV LED technology, there is a need for more photoinitiators that absorb in the longer wavelength regions where the UV LEDs emit, specifically 365 nm, 385 nm and 395 nm. There's also been a lot of work to reduce yellowing in clearcoat formulations, as in wood lacquers.

Joesel says the biggest mistake people make in the process is not engaging with a UV curing equipment provider early enough.

“Most industrial coating processes are unique in regards to things such as substrate materials, size and shape, how the product is conveyed, desired line speeds and coating functionality requirements, so it's critical to find a UV coating formulator and curing equipment partners who can work closely with your process design engineers to develop the most efficient UV curing process that meets your production requirements,” he says.

“With the many factors that impact a UV curing process, choosing partners who have development, testing, and broad application experience will help you get to an optimal solution faster. At Heraeus, we have UV curing application expertise, application labs for testing, and equipment for running on pilot lines or in-plant trials. Many end users come to us to help them find the best UV curing solution at the lowest cost, both the initial cost and ongoing production costs.” ■

Digital Support in Chemicals Management

BY GARY LEROUX

THE C-SUITE MUST HAVE access to all relevant data points to make informed decisions for the corporation including data related to marketing, sales, supply chains, distribution channels and regulatory compliance. In 2020, digital data is the way society in general deals with information and for companies it is mission critical. Digital data is now a fact of life and that is something CPCA chose not to ignore in its ongoing quest to provide value-added services for members. The association could no longer ignore the increasing challenges with respect to regulation of substances used in thousands of finished products in the coatings industry. Companies work hard to stay current and associations like CPCA face a number of information management challenges as they seek to help member companies stay on top of their game. An association must strive to ensure members have current information on which to make sound business decisions to reduce business uncertainty, including managing and mitigating regulatory risks, which is CPCA's core competency.

The generation, collection and storage of data is no longer as expensive as it once was, but it is not without costs. At the same time, the digital mindset of business has expanded, increasing the willingness to enhance digital solutions with higher expectations for the quality of user interfaces and levels of service for both company employees and customers. CPCA member companies now use advanced analytics to extract relevant management information from large amounts of unstructured data generated on a daily basis, which includes a much larger regulatory component. Legislative and regulatory data is used daily with respect to ongoing business operations in areas such as product development, product formulation, plant operations, work safety, environmental sustainability, product performance, cross-border shipping, and much more. Such information can even help companies make better and more informed decisions across the full range of a company's business processes and divisions. The coatings industry includes critical raw material suppliers and distributors delivering a vast array of chemicals used in finished

products – in multiple industry sectors – all of which translates into opportunities and challenges for manufacturing.

CPCA has inserted itself in the digital world as it relates to regulatory requirements for all chemical ingredients used in finished goods. A major component of that is quick and easy access to the existing 'regulatory license' for those chemicals whether they are additives for enhanced product performance or biocides used for in-can/film preservation. Regulatory requirements allow those chemicals to remain in commerce, dictate specific use levels, clarify use restrictions, benchmark exposure limits and detail other critical components that determine the final formulation of products. CPCA's Canada Coating-sHUB is a quick resource for companies to help them confirm the status of a chemical in commerce in Canada. This information can, in turn, help confirm the performance attributes of chemicals, which sometimes can determine the success or failure of certain products. The Coating-sHUB helps address many of those critical elements for member companies in an expeditious manner as the old adage reminds us, time is money.

In 2019, CPCA embarked on a digital modernization effort that saw its entire public-facing website rebranded and redesigned. CPCA sought to create the first of its kind "digital issues management platform" to provide members with real-time data on regulatory development and a wide range of issues impacting industry, curated and searchable on all digital devices. The Canada CoatingsHUB was developed by CPCA staff along with a team of experts analyzing data, structure, and the overall requirements to create an online data platform that would provide maximum value for members. It's no secret that the paint and coatings industry is a heavily regulated industry in Canada and that navigating the regulatory landscape can be just as complex as the regulations themselves. This is where the intrinsic value of the HUB rests. The HUB allows members to navigate the Canadian regulatory environment with ease, receive notifications on issue updates of importance for the sector and search a comprehensive database on all

digital platforms. Users have access to a fully customizable dashboard and can manage notifications from their personal profile. The HUB provides members quick access to industry-specific issue updates, formal positions and submissions, a compliance calendar, member notifications of pending government actions and much more.

The Canada CoatingsHUB will soon have a new feature added for the benefit of members: a database of more than 2,000 substances used in

literally thousands of products in Canada. That database will be launched on the HUB early in 2020. It will contain information on the current status of chemicals in commerce used in the Coatings, Adhesives, Sealants and Elastomer (CASE) sector. CPCA members can search the new substance database by chemical number (CAS-RN), providing them with substance-specific information as and when needed. This provides an at-a-glance overview of the status of substances of interest in commerce in

Canada. This is something no other digital platform provides and it sets the Canada CoatingsHUB apart from any other offerings on the market. With over a thousand resources already posted on the HUB, the Canada CoatingsHUB is proving to be one of the most robust, rigorous and relevant online tools for association issues management today.

The new substance database will also indicate whether or not the chemical is being assessed or reassessed or evaluated and at what stage of that process. This means a company supplying or shipping raw materials in Canada or manufacturing finished products in Canada, who is a CPCA member, can immediately search the substance database to determine where things stand with respect to compliance requirements. It will also provide an opportunity for the company to provide direct input in cases where those substances are being assessed or re-evaluated. That input could help determine whether or not a chemical remains in commerce at reasonable use levels and continue providing the performance demanded by customers.

The Canada CoatingsHUB continues to revolutionize the way CPCA engages with members. CPCA members manage hundreds – in many cases thousands – of paint and coatings products with R&D and regulatory teams at the forefront of their companies. Their primary objective is to get their product to market following all Canadian standards and regulations. CPCA's job is to support members by providing access to the latest information available on current regulations and issues, and those looming on the horizon, all of which is now easily accessible as and when needed on a searchable digital platform. ■

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

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CPCA CHRISTMAS LUNCHEON

The Canadian Paint and Coatings Association welcomed members to its annual Christmas luncheon and cocktail reception, in December, at the Doubletree by Hilton Toronto. Following are a few photos from the festivities.



CPCA CHRISTMAS LUNCHEON





CPCA CHRISTMAS LUNCHEON



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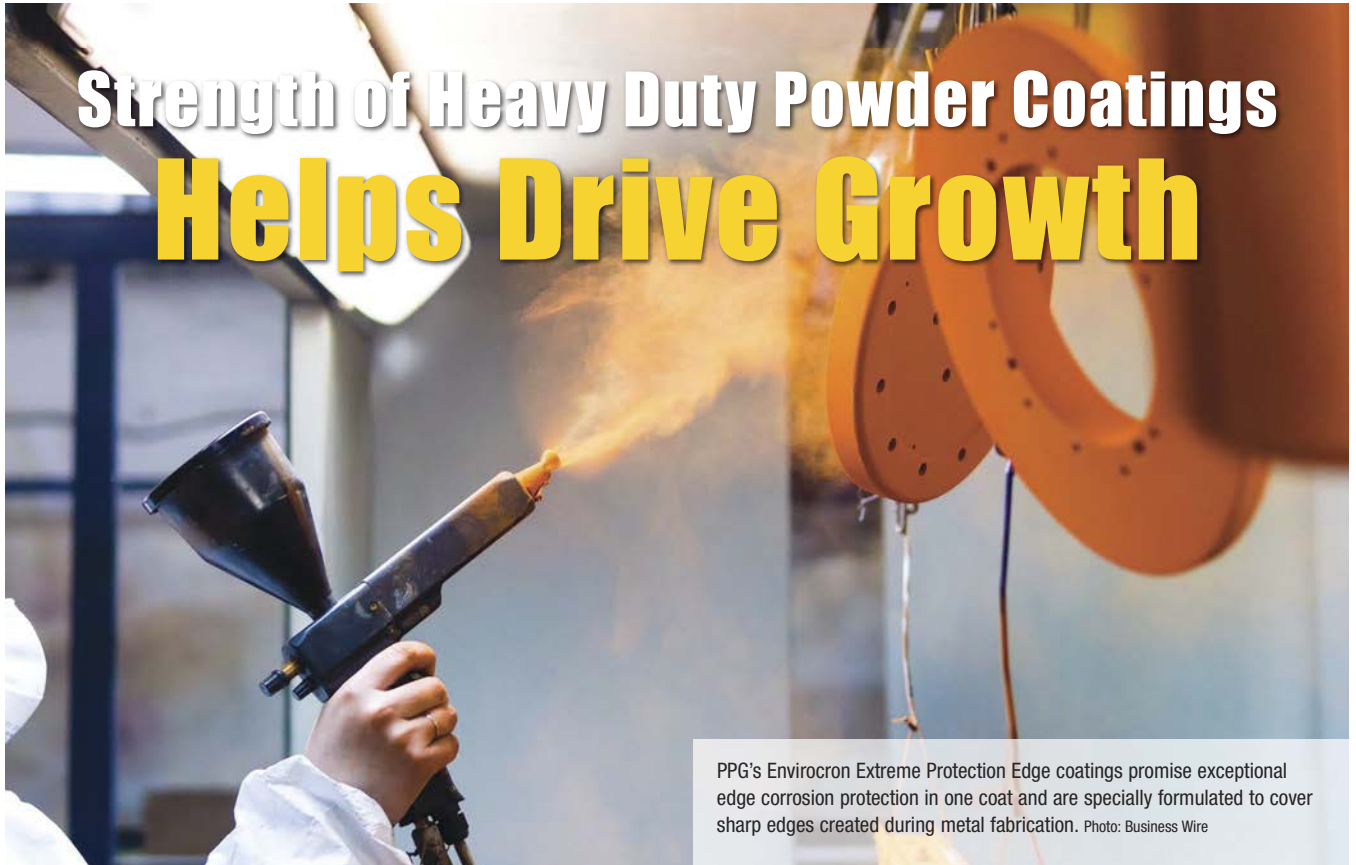
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Strength of Heavy Duty Powder Coatings Helps Drive Growth

PPG's Envirocron Extreme Protection Edge coatings promise exceptional edge corrosion protection in one coat and are specially formulated to cover sharp edges created during metal fabrication. Photo: Business Wire

BENEFITING FROM ever stricter environmental regulations, powder coating has gained substantial popularity as a VOC-free coating technology during the few last years. The powder coating market presents rapid growth driven by the development of new materials, new formulations and the advancement of equipment and application processes.

According to a report from Acmite Market Intelligence, global demand for powder coatings was valued at approximately \$7.2 billion (U.S.) in 2016 and is expected to grow 5.8 percent through 2025. Industrial uses present the largest application market, while the automotive industry is the most promising. Furniture and appliance markets will continue their steady and strong growth while IT and telecom is a new market where applications are being extensively explored.

According to Surtech Industries, the technique with which a powder coating is applied lends a host of benefits and features to the application. Firstly, powder coatings possess incredible resistance to abrasion and corrosion, especially compared to liquid coatings. Additionally, many companies add compounds to their powder coatings to enhance anti-corrosive or anti-abrasive properties, maintaining the quality of the coating for a longer period.

Secondly, longevity cannot be overlooked. The quality of a powder coating lasts for years, remaining bright and vivid with less fading over a longer period. Regardless of

UV radiation and use, the quality of a powder coating will remain.

Surtech says appliances make up the largest portion of the powder coating market, accounting for approximately one-third of all industrial powder coated parts.

It is in the tough, heavy, outdoor jobs – where the coatings are subjected to weather and all kinds of wear and tear – that powder coatings shine.

Farm and construction equipment, outdoor furniture, signs, and the burgeoning architecture market, are great representations of what powder coating does best.

Agricultural and construction equipment applications often have large parts, lots of surface area, and usually require durability to be outstanding. “For the most part, these types of equipment tend to be complicated and expensive and are often used in locations that are very tough on the coatings,” says Erie Powder Coatings. Machines and equipment that work in farmers’ fields, in rock quarries, or for use in construction will demand every bit of durability that can be had from a coating.

For this reason, coatings sold into this industry are prized for their durability – their ability to adhere to the metal surface and their exterior lightfastness are extremely important. For the most part, fully exterior polyesters with excellent adhesion and flexibility are the most used types of powders. Superdurable polyesters are commonly applied due to their outstanding weather resistance.

Surtech says the durability provided by powder coatings is what makes it so attractive to these markets. With the wide variety of colors and finishes available in powder coatings, more and more construction companies are turning to powder coatings to provide long-term exterior finishes for outdoor venues and public works projects. Some of the most common applications for powder coatings in construction include stadiums, windows and doors, fencing and poles, and building facades.

PPG's newest heavy duty powder coating offering is its Envirocron Extreme Protection Edge Coatings, which it says use a patent-pending, advanced powder coatings technology that delivers exceptional edge corrosion protection in one coat and are specially formulated to cover sharp edges created during metal fabrication.

These coatings require no primer, and applicators do not need to modify their existing coatings lines or add equipment to use this new solution. Applicators also can save capital costs by avoiding the need to finish edges with mechanical edge rounding or blasting equipment. Longer term, PPG Envirocron Extreme Protection Edge powder coatings have the potential to reduce warranty claims and improve resale value by extending the product lifecycle, PPG says.

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

PPG says the new powder coatings add "industry-changing performance" to the company's existing polyester powder coatings technology. They are available in a range of standard and custom-matched colors, including mica and metallics, and can be applied using manual and automatic powder coating systems.

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.

Alesta Lync, Axalta adds, is an innovative Dry-on-Dry (DOD) powder coating application system. The process is energy-efficient and has excellent edge corrosion protection. With its unique topcoat and primer combination, Alesta Lync is designed to provide two paint layers, but requires only one cure cycle. This results in a reduction of process time and capital investment and an increase in productivity. This product offers paint shops the additional benefit of minimal carbon output.

Alesta Lync has been engineered initially for ACE segment coaters, but is suitable for many other general industrial applications, Axalta adds. Coaters using direct to metal systems today can get better edge coverage and corrosion resistance with Alesta Lync without having to add an additional oven to gel cure a primer.

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.

In November 2019, the company announced that Europe's tallest building will be protected from the ravages of the Warsaw weather by a powder coatings system supplied by AkzoNobel.

Standing 310 meters tall, the Varso Tower will feature a sleek black exterior which has been created using the company's Interpon D2525 super-durable topcoat on the cladding and profiles. The Interpon Redox Plus primer provides a super tough core.

"It's inspiring to be working on this prestigious development with some of the leading names in the industry," says Mattijn Klaver, Sales Manager Benelux for AkzoNobel Powder Coatings. "Customers now want the look of a liquid with the properties associated with powder. Our Interpon D range is available in a variety of on-trend colors and finishes. It's also highly durable and combines sustainability with favorable economic benefits."

Due to be completed in 2021, Varso Tower will feature an observation deck on the 53rd floor, offering spectacular views of the revitalized neighborhood.

With the disadvantages being minimized and advantages further strengthened by the development in materials and technologies, powder coating provides a market full of opportunities and potential, especially in its strong area, heavy duty uses. ■

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AS POWDER COATINGS GAIN constantly broadening market share, so do the properties of the powders themselves widen. From simple pigmented polymers, the coating materials now might have ceramic, metallic or other additives that can complicate the process of applying them. Equipment suppliers are keeping pace.

Rhonda Joslin, Marketing Manager at SAMES KREMLIN, says the company is planning to launch a new line of powder application equipment later this year. The new line, some of which was previewed at Fabtech last year, will include new automatic guns, manual guns and a redesigned reciprocator.

For now, the company offers a wide-ranging line of powder coating spray equipment from manual to automatic to robotic.

In November 2019, Nordson introduced its Encore Engage Powder Coating Controller. The company says the “next-generation powder coating controller technology promises to deliver effortless, intuitive control for increased efficiency and maximum productivity.”

The controller provides customers clarity and confidence in every step of the powder coating process. “From the very start, we designed Encore Engage with powder coaters in mind, building in customer feedback and making user experience our top priority,” says Stephen Lovass, Executive Vice President, Nordson Industrial Coatings Systems.

The equipment features an easy-to-understand, 15-inch touchscreen with modern graphics and intuitive symbol-driven navigation, “to help operators increase process knowledge and become expert powder coaters.” A guided “recipe” feature provides step-by-step navigation with pre-set options to help operators confidently create new recipes.

Video tutorials and guided instructions provide greater visibility to key information and give additional support for critical tasks. For operators around the world, Encore Engage includes several screen language options to eliminate guesswork and uncertainty.

Encore Engage connects to the Nordson Wisdom smart connected platform, an IIoT solution that brings powder coating customers into the era of Industry 4.0.

“Our Encore Engage controller empowers powder coating operators to become experts in what they do,” says Lovass. “We set out to give powder coaters not just a controller they can enjoy using, but also a tool that makes them feel confident in how they do their work.”

All of this, Nordson says, is to be the driver of robotic powder coating innovation. In December 2019, the company announced a global strategic alliance with Zoomlion Group, a Chinese high-tech construction machinery manufacturer, to drive that innovation.

Through this global strategic alliance, Nordson will provide Zoomlion with advanced powder coating products

POWDER COATING SPRAY EQUIPMENT

and technologies for the company's diverse line of heavy construction machinery.

"After meeting the leaders of Zoomlion and visiting the Museum of Zoomlion Lugu Industrial Park, I was deeply impressed by Zoomlion's values and innovative products," Lovass says. "We are looking forward to cooperating with Zoomlion, not only in China, but also in Europe and the United States."

Zhan Chunxin, Chairman and CEO of Zoomlion Group, says, "Zoomlion is still a young enterprise with big ambition. We have high standards of product quality and ambitious goals for enterprise development. Zoomlion has decided to build a world-class coating line with Nordson's first-class products and technologies in our newly developed industrial park in Changsha to realize the advantages of new technology and improved environmental protection."

The partners will focus first on two new Nordson technologies – the aforementioned Encore Engage controller and Nordson's Industrial Internet of Things (IIoT) solution, the Wisdom smart connected platform, along with robotic powder coating featuring Nordson's Encore HD dense-phase technology.

Gema's OptiFlex Pro manual powder coating series delivers 110 kV high voltage and 110 μ A charging current at the touch of a button. With this full increase in power, any coating, even with the most difficult powders, can be applied quickly and safely, the company says.

The newly developed PowerBoost technology of the OptiFlex Pro series offers the highest powder charging capacity in the powder coating industry, with 110 kV, Gema says.

PowerBoost is the integrated interaction of OptiSelect Pro gun, OptiStar 4.0 control and flat spray nozzle. The components newly developed by Gema and designed for PowerBoost result in a high total area output with fan expansion of the powder cloud.

The coating performance, precise control, DVC and PCC functions, and the modern nozzle range make the new OptiFlex generation a great solution in various applications.

All OptiFlex Pro units are equipped with OptiStar 4.0 controls as standard and are compatible with the Gema E-App. Coaters and production managers can check productivity and maintenance data and call up configuration and system information via smartphone.

The concept and material selection for the new OptiSelect Pro gun have been fundamentally revised for the PowerBoost high-performance technology, says Gema. The activation of the PowerBoost directly at the gun enables the coater to use the extra power anytime and anywhere. Despite the integrated power pack for generating up to 110 kV high voltages, the gun is light and balanced, and robust and durable.



Inobell-R Bell Powder Sprayer
from SAMES KREMLIN.

Wagner has always focused on complete control systems for powder coating. Its PXS system is designed to manage the complete coating system, as the entire system control is already integrated in the switch cabinet, and operates via a central touchscreen.

The compact design, the company says, permits space-saving and ergonomic integration of the system into a customer's individual work environment. Because of its diverse functions, which enable a high degree of automation as well as efficient powder application, this system is recommended for challenging coating tasks with varying demands.

A fresh powder supply comes directly from the powder box. There is vibration and fluidization of the powder for optimal powder preparation, and a change of collector nozzles takes seconds.

An optional ultrasound sieve reduces entry of dirt, and the system permits automatic optimization of color change processes. There is an integrated powder consumption documentation feature, and the system is integrated with the PEM-X1 Corona manual gun.

This gun, the company adds, combines balance, maximum service life and optimum handling. Its balanced ergonomics ensure flexible and fatigue-free operation. It is a competitor in the field of lightweight guns, weighing just 490 gm. It offers, Wagner states, a homogeneous and stable powder cloud, and even layer thickness distribution.

Powder coating is now a well-established approach to finishing parts. However, it is clear there are still ways in which it is being optimized to make it faster and more efficient. Indications are this evolution will continue for some time. ■

As Canadian Distributor of Elcometer products for more than 20 years, GENEQ is proud to announce that since July 2019, we have an office in Vaughan, ON, to serve you better and faster, with the help of our qualified sales representatives.

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Laboratory & Physical Test Equipment

When assessing a coating for suitability to a particular application, the testing of physical properties such as bendability, impact resistance, hardness, washability and abrasion resistance are all required to provide information for decision-making. Testing of pigments using fineness of grind gauges, determining the specific gravity of a coating using density cups, measuring the viscosity using viscosity cups or rotational viscometers and assessing the drying time all provide information for the coating’s technical data sheets.

Film applicators and test charts provide repeatable test conditions for films of a variety of products including paints, inks, glues, and cosmetics, by controlling the application process so that tests such as hiding power and opacity can be carried out.

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Woodworking Machinery & Supply Conference and Expo

WMS connects Canada's professional woodworking buyers with industry machinery manufacturers and suppliers. The 2019 edition, which took place at the International Centre in Mississauga, ON, Oct. 31-Nov. 2, featured 75,000 square-feet of exhibit space and more than 175 exhibitors, including those in finishing equipment and materials. Check out some of the photos!





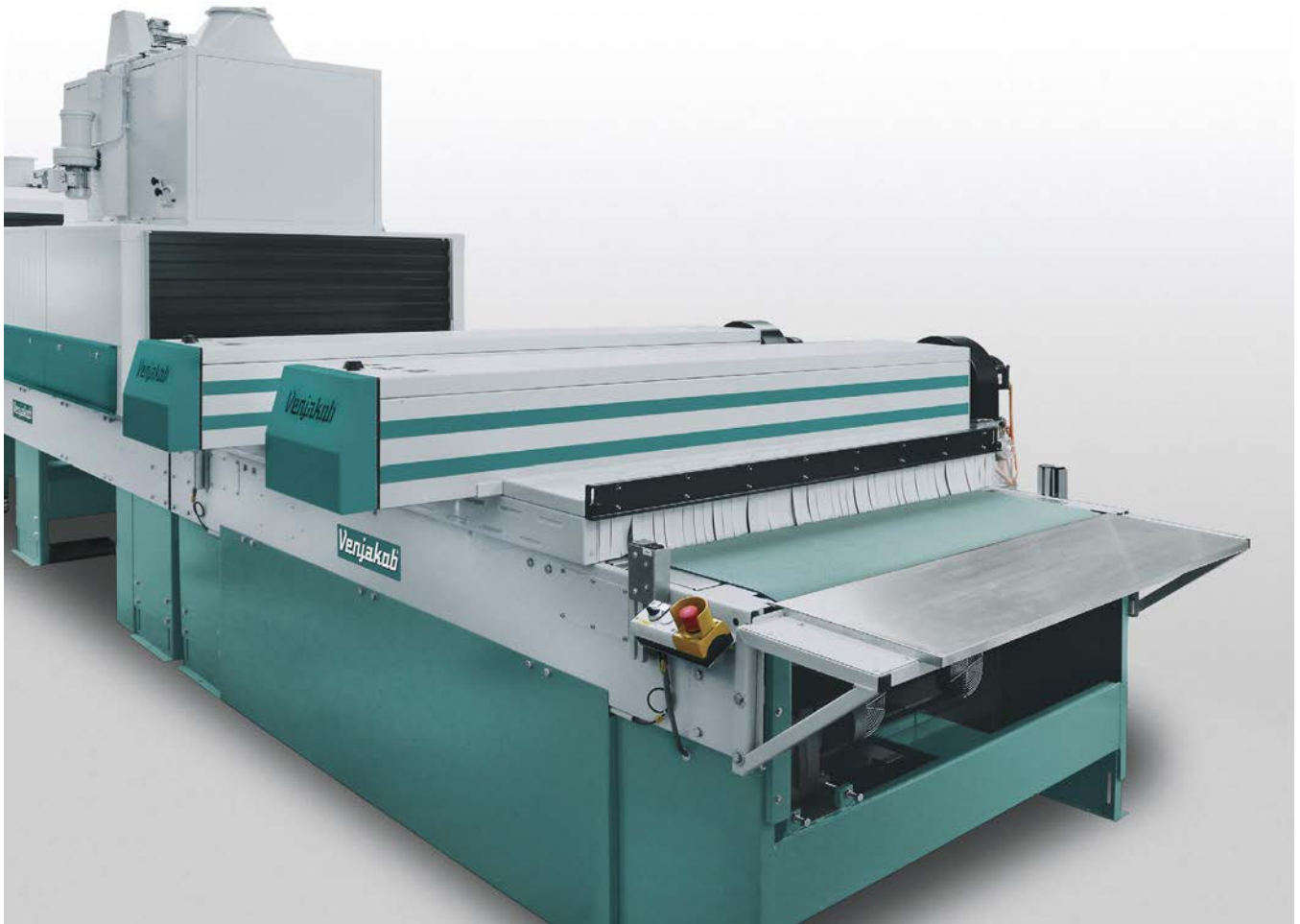
Woodworking Machinery & Supply Conference and Expo





UV Systems

Keep Pushing the Limits



A Venjakob Ven Dry UV system.

ULTRAVIOLET CURING continues to grow in market penetration and technical sophistication. Many earlier problems of range of UV wavelength and durability of the systems have been addressed, and today's systems are capable of reliability in the field that was impossible six or seven years ago.

Naturally, as the equipment has become more precise and flexible, the number of applications has grown. In turn, this has pushed up against the limits of the process, which still has extensive room for technological improvement.

Mercury vapor lamps have been the standard sources of illumination for decades, but LED lamps have been replacing them steadily, even if they still do not hold a majority position in the field. Mercury vapor offers light

in the ranges of 240 to 270 nm (nanometers), and 350 to 380 nm.

A third approach is use of fluorescent lamps. These can offer specific frequencies of UV light relatively inexpensively, including multiple frequencies. They are not viewed as being as efficient as mercury vapor or LED, however.

As a general rule, LED bulbs work in a much narrower range than other types. While not the least expensive option, but lasting up to 10 times longer than conventional bulb technologies, LEDs can be cycled on and off frequently, requiring no startup or cool-down period.



Nordson's CoolWave technology offers various bulb types, including metal halide.

While they can not produce the same spectrum as mercury vapor or fluorescent tubes, photoinitiators in the coatings can be formulated to work with them easily. Other advantages of UV LED systems include the ability to be more compact, an ability to work with heat-sensitive substrates, and improved safety through avoidance of toxic mercury.

Further, they do not produce ozone to the extent that older alternatives do. Free radical oxygen is always a problem in curing of coatings, since it is very reactive and will bond with other monomers, oligomers and intermediate chains.

Ozone, while less of a problem than regular oxygen, can still pose obstacles that must be handled by venting in some form. LEDs' reduced oxygen and ozone output is therefore a significant benefit.

In addition to producing raw materials for coatings,

Nordson Industrial Coating Systems offers metal halide bulbs in its CoolWave product range. Its iron-based bulbs, the company says, offer a rich output of UV-A light, while its gallium bulbs operate in higher frequencies from 405nm to 420nm. Its indium bulbs can handle frequencies touching 450nm.

Nordson's Mercury+ bulbs are similar to conventional mercury bulbs, in both design and output. However, they specifically offer enhanced emission in the shorter UV-C wavelengths.

Nordson's Cool Wave 2-410 system has a modular design that allows for two or more lamps to be placed side by side, for use with wider curing applications. It has no internal gasketing, which reduces operational and maintenance costs, and it uses proprietary dichroic-coating glass reflectors for cooler operation, higher intensity and design flexibility.

This is available in 10-in. widths and is rated at 400 watts per inch. It works with an MPS-410 power supply that offers digital display for troubleshooting, remote I/O, easy operator interface, and electric noise filtration.

Phoseon Technology lays a solid claim to have pioneered use of LED technology for UV curing applications in adhesives, coatings and printing. Its portfolio of LED UV curing products, the company states, comes in a variety of sizes to match application needs, available in both ambient air-cooled and water-cooled solutions.

The company pioneered and patented Semiconductor Light Matrix (SLM) technology to drive high-power UV LED technology. Its components, Phoseon says, are strictly engineered into a system that provides maximum UV energy, controlled curing intensity, and superior performance for demanding applications, including those using heat-sensitive and thin substrates.

It has built on the SLM foundation to include its more recent TargetCure and WhisperCure technologies. TargetCure technology is designed to deliver precise, stable and consistent curing. WhisperCure addresses a different issue, offering a low-sound solution, reportedly with increased UV output.

Venjakob currently offers UV LED systems up to 1.3 meters in width. Its systems, the company states, use small water coolers to achieve the necessary cooling capacity.

Additionally, they offer lamp width control by means of workpiece-dependent switching on and off of individual LED segments. They also reduce thermal stress on workpieces, as well as optimizing energy consumption.

The company's Surround-UV technology uses optimized high-reflection radiators for energy savings. Units built using this can offer through-feed curing of surfaces and all edges.

Frequently, a single radiator is sufficient for clear lacquers, though color paints will require two radiators.

Contamination can also be generated by a UV system that uses aluminum components, which are increasingly frowned on as a consequence. Aluminum will react during the UV process to create aluminum oxide; a chalky substance that can become airborne during the curing process and land on parts.

The technology is claimed to offer more than 20 percent additional energy savings compared to the predecessor model, as well as a reduced IR portion ('cold light') for sensitive materials.

Systems are made to be quickly convertible for other workpieces, materials and/or lamps. The systems are variable and modular.

While the compactness of most UV systems means use of plant real estate is not a major concern for many coatings operations, electrical cabinets can occupy extensive space. Superfici, as one example, has focused on producing more compact cabinets for its customers. The company has also noted that some customers, notably in the flooring business, are configuring their lines for smaller batches, in order to be more flexible. In some cases, Superfici reports, users have shifted from a typical 1.35 meter width to 650 mm to accommodate such requirements.

A frequent goal is to install two or more narrow lines geared for quick color changes, or for sanding effects. Such requests have particularly come from kitchen cabinet manufacturers, as this sector continues to transition to waterbased coatings.

Heraeus Noblelight offers microwave-powered UV curing systems with three primary components: an electrodeless bulb, a lamp module and a power supply. These components, the company says, are easy to service and their modular design offers process flexibility with lower cost of ownership.

The core of the microwave-powered system is the electrodeless bulb, which features an exceptionally long service life with consistent output. Electrodeless bulbs are available in a variety of spectral outputs to help optimize the UV curing to specific process needs.

The UV lamps are available in either 6-inch or 10-wide modules, and can be combined to span across any width process or positioned around three-dimensional parts. For variable process widths, users can switch off individual modules not needed to reduce operating costs. Each UV lamp module comes with a matching power supply which provides efficient operation and flexible control.

Advantages of the microwave powered UV system, Heraeus says, are its high intensities at the substrate, resulting in high production speeds; consistent and reliable curing for better process control; and easy configuration for curing of three-dimensional parts. It also offers low maintenance and downtime, reduced product scrap rates, and a system solution for retrofitting to existing manufacturing production lines. Bulb life is guaranteed to from 6,000 to 8,000 hours of operation.

While UV curing is simpler and less messy than some other coatings processes, it does have to be monitored carefully. Nordson notes that removing contaminants from the air supply and near the UV curing area is critical, as contaminants in the air can settle on bulbs and reflectors in the UV system.

Dirt or other contamination will inhibit the UV output of the bulb, and reflectors inside the UV lamp can be adversely affected by dirty air. A dirty reflector will not perform optimally and will affect the quality of the cure.

Filters should be used to clean the air circulation around the UV system. A preventative maintenance schedule also should be established to periodically clean bulbs and reflectors to maximize performance and life of these items.

Contamination can also be generated by a UV system that uses aluminum components, which are increasingly frowned on as a consequence. Aluminum will react during the UV process to create aluminum oxide; a chalky substance that can become airborne during the curing process and land on parts. This contamination will cause surface defects, especially noticeable on Class A surfaces. Aluminum oxide build-up will also shorten the life of an aluminum reflector.

Every year sees fresh extensions of UV curing capabilities offered by manufacturers. The process is still not optimal for really large parts, and there is no ideal bulb nor line configuration that will address all the technical problems that arise.

However, UV's reputation for clean, uniform coatings with minimal output of toxic emissions is well earned. The field is only going to become more capable as the years roll by. ■

Capability: Custom Pumps, Vessels and Systems

Filter Pump Industries is a globally known manufacturer of corrosion-resistant pumps, vessels, filtration systems and filters with two plants in Southern California. It has supplied a vast spectrum of fluid management systems to the chemical processing and metal finishing industries for more than 45 years.

Superior quality and craftsmanship separate FPI from all others. Custom designs and engineering service, along with complete in-house manufacturing capabilities and attention to detail, ensure customers receive the highest quality work, all performed under the same roof. Whether on a contract as needed or on a just-in-time (JIT) basis, FPI is the right choice.

There is a broad array of custom pumps offered, including vertical seal-less immersible, horizontal centrifugal direct drive or magnetic driven centrifugal, and self-priming. Experienced application engineers are available to assist in design and implementation of all products. All pumps are of exceedingly high quality and are used in a wide scope of industries and applications, with special emphasis on vertical seal-less pumps. A diverse variety of pump features are available to fulfill any customer design requirements.

Filter vessels are manufactured in many sizes with a wide variety of filter media and types available, including string wound, melt blown, pleated, bag, and carbon. The company facility accommodates a wide variety of materials for the construction of custom-built filtration systems. It regularly manufactures using CPVC, PVDF, polypropylene, stainless steel,

titanium, Viton, Kynar, EPDM, PTFE, PVC, and many other materials. These filtration systems are resistant to a broad range of chemicals, including bases, acids, salt water, sulfuric acid, plating baths, and numerous others.

There is also a wide variety of standard and custom filters, including bag and carbon treatment, as well as string wound, melt blown, and pleated cartridge filters.

The company takes great pride in the quality of its work. A team of experts continually researches the latest technologies to create the most advanced systems available. Pumps and filtration systems feature the highest levels of durability and performance. Special attention is paid to detail, and with the complete in-house capabilities, the highest levels of quality control are fulfilled from beginning to end.

The company can be reached at (818) 504-2391, at the website or email address, or through area distributors.

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SAMES KREMLIN Launches New ASC Automatic Airless Spray Gun



SAMES KREMLIN recently released a new ASC Automatic Airless Spray gun. The new ASC Automatic Airless Spray gun is available in two different pressures: up to 240 bar (3480 psi) and up to 400 bar (5800 psi).

The company says the ASC automatic spray gun provides superior atomization and is developed for high production at medium to high flow rates with low overspray for minimal paint waste. It adds, the ASC gun is the lightest, stainless-steel automatic spray gun, minimizing payloads on painting machines and decreasing bearing wear. Its compact design allows easy access to recessed part areas.

Users may choose from 184 tips: Skill, superfine finishing Airless tips, Flat for fine finishing and reversible “TipTop” for protective coatings. The simplicity and quality of the material used guarantees low maintenance costs. ASC is well suited for applying harsh coatings (acid catalyzed, UV coatings) water-based, high viscosity 2K pre-mixed and abrasive type materials.

SAMES KREMLIN says purchasers will appreciate premium airless application whether solvent-based, water-based, or UV curing materials ; heavy duty sustainability to offer a large selection of options to optimize lifecycle as well as a choice of cartridge, lubrication, filtration, and speed assistance making it a very powerful tool ; and the fastest on/off triggering to apply the proper volume of material on the target avoiding waste, to minimize the color changing time, and to optimize dosing process.

www.sames-kremlin.com

Heraeus Noblelight Launches New Products for 2020

UVHeraeus Noblelight, a manufacturer of ultraviolet and infrared technologies for curing, drying, disinfection and analysis, announced its presence at the upcoming RadTech 2020 UV+EB Technology/2020 IUVA Americas Conferences.

Visitors will see a broad portfolio of products including market introductions of new UV LED systems.

- New UV LED curing solution designed specifically for optical fiber drawing, wire and cable applications, the Semray UV PC6003.
- New high-power Semray UV5000 and UV7000 UV LED curing sys-

tems, operating at 23 W/cm² and 30 W/cm² respectively. Demonstrations of intelligent, Industry 4.0-ready UV curing solution

- Heraeus Noblelight’s intelligent and Industry 4.0-ready microwave-powered UV curing system LightHammer 10 Mark III and real-time monitoring software AIMS (Advanced Intelligent Monitoring System). Using advanced sensor technology

inside the lamp head with a smart power supply and the AIMS software, end users can monitor and analyze UV curing system data in real time. Users can reduce downtime, compare operations across and within plants to improve maintenance practices, and improve product quality and production rates as a result of analyzing this UV system data.

- Semray UV LED modular plug and play UV curing system on both benchtop and floor standing conveyors ideal for laboratory testing and small-scale production. A drop-in boot makes it easy to integrate the Semray UV4103 system on existing LC6 benchtop conveyors. IR for hybrid curing or drying applications
- Infradry, the latest IR technology ideal for hybrid UV/IR curing applications such as water-based inks and coatings. Combining IR radiation and air management, Infradry modules can be used in combination with UV or as standalone drying for efficient removal of moisture.

www.heraeus.com

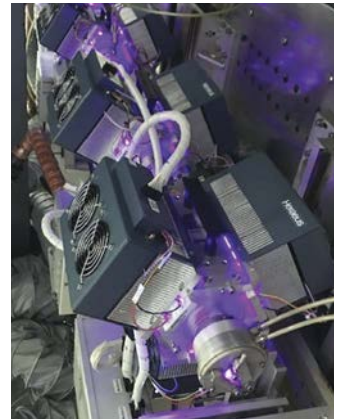
Go Water-Based with a DTM Coating Powered by NANO VpCI

When it comes to finding a water-based coating for outdoor corrosion protection, Cortec says its VpCI-386 is a great place to start. VpCI-386 is a fast drying, water-based acrylic one-coat system that can be applied DTM (direct to metal) for corrosion protection in outdoor unsheltered applications. It offers a variety of environmental and user benefits.

VpCI-386 is a good alternative to solvent-based corrosion inhibitor coatings. VpCI-386 has a relatively low VOC of 0.6 lbs/gal (72 g/L). As a water-based product, the company says VpCI-386 is able to compete with many paints and zinc-rich coatings thanks to the power of Cortec’s “NANO” VpCI inhibitors. These inhibitors fight micro-corrosion by forming a molecular protective layer that follows the intricacies of the substrate’s micro-cavities. This offers fuller inhibitor coverage than traditional sacrificial metal inhibitors, which leave gaps due to their relatively large particle sizes. Implementing VpCI-386 allows users to lower environmental impact by reducing VOCs while also minimizing worker exposure to solvents and making coating cleanup easier.

VpCI-386 is adaptable to a variety of applications. In addition to DTM applications, it can also be applied as a clear coat on top of another coating, creating minimal change to surface appearance.

As a permanent coating that can be welded over, VpCI-386 does not need to be removed before final installment or use of the protected



Meeting Mixing and Blending Needs for More than Half a Century

Conn and Company, headquartered in Warren, PA, has been designing and manufacturing industrial mixing equipment for more than 60 years.

The Conn Blades

Conn and Company recognized the need for blending blades and dispersion blades that provided true pumping action instead of plowing action. The company has brought four patented blades to the market under the trade name Conn Blade®.

The ITT style blade has a combination of louvers and teeth. It is a high pumping high shear dispersion blade and is the most efficient and aggressive dispersion blade available.

The IT style has the louvers providing superior pumping action, but without the teeth. It is a high pumping, low shear, blending blade and is excellent for mixing micro spheres or flakes or other fillers that need to be well mixed, but not destroyed.

The ITC CONN Blade® is an eight-vane open style blade providing excellent material flow, with more shear than the IT, but is not as aggressive as the ITT.

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The Conn blades are available from 2" diameter to 48" diameter with mounting holes or mounting hubs to retrofit and upgrade a customer's existing equipment. Split construction is available for entry through manways. Conn also manufactures complete units and drive assemblies to mount on your tanks. Conn supplies air or electric utili-



ty/laboratory mixers, spool-type top entry for flange mounting to the customer's tank, and drive assemblies for mounting on bridge support for open top tanks. Conn and Company just needs the customer's requirements and will be happy to be of assistance.

Conn handles all worldwide sales from the home office in Warren, PA.

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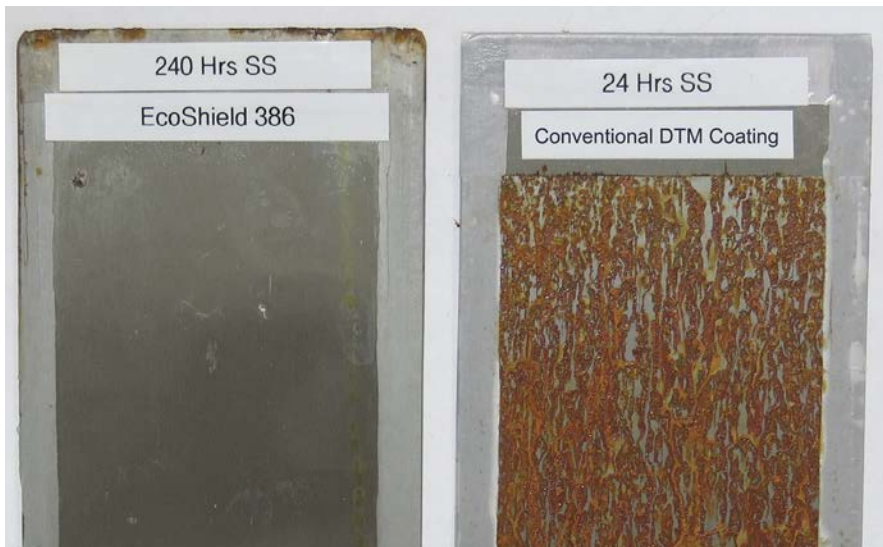
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metal components. Although it is ideal to apply VpCI-386 at the manufacturing site from the outset, it can also be applied farther down the line to protect expensive metal assets that will sit for extended periods at storage sites.

www.cortecvci.com

Eckart I Launches Trendy Matte Effects and Intense Combination Gold



Structureless matte effects are on trend, so ECKART has released SYMIC A 502 and A 522 synthetic pearlescent pigments to produce earthy bronze and copper shades with a velvety sheen. The new SYMIC A 393 enriches the A range with its distinctive, brightly colored combination gold.

With a particle size of 1-15 µm, the A fraction represents the finest pigments from ECKART's SYMIC product family. SYMIC A 502 and A 522 are a combination of the gentle sparkle of pearlescent pigments and strong earth tones.

Due to its synthetic mica base, SYMIC is ideally suited for both pearlescent color accents and intensive full tones. SYMIC pigments are characterized by their intense effects and color purity.

Technically, the colors process easily in all common aqueous and solvent-based systems. They have high intercoat adhesion and long durability. ECKART recommends the pigments primarily for decorative interior applications.

www.eckart.net

Brenntag, the global market leader in chemical distribution, covers all major markets with its extensive product and service portfolio. Headquartered in Mülheim an der Ruhr, Germany, the company operates a global network with more than 530 locations in 74 countries. In 2015, the company, which has a global workforce of more than 14,000, generated sales of EUR 10.3 billion (USD 11.5 billion).

Brenntag connects chemical manufacturers and chemical users. The company supports its customers and suppliers with tailor made distribution solutions for industrial and specialty chemicals. With more than 10,000 products and a world-class supplier base, Brenntag offers one-stop shop solutions to around 170,000

customers. This includes specific application technology, an extensive technical support and value-added services such as just-in-time delivery, product mixing, formulation, repackaging, inventory management and drum return handling. Long-standing experience and local excellence in the individual countries characterize the global market leader for chemical distribution.



Brenntag purchases and stores large-scale quantities of industrial and specialty chemicals from various suppliers, repackages them into smaller quantities and provides a full-line portfolio of chemicals in less-than-truckload quantities as well as value-added services. This includes



ConnectingChemistry

specific application technology, an extensive technical support and value-added services such as just-in-time delivery, product mixing, formulation, repackaging, inventory management and drum return handling. Brenntag aims to be the partner of choice for our customers and suppliers with these products and services.

When we think of our business, we need to ask ourselves two questions: How can we help our business partners to succeed – today and in the future? What is the benefit for our partners working with us? Our strap line “ConnectingChemistry” is the ultimate answer to both of these questions.

Brenntag strives to be the industry’s most effective and preferred channel partner. Our industry and customer-focused approach to chemical distribution builds on connecting customers and suppliers in a winning partnership. Always being committed to our partners’ success, we serve as their extension, sharing our intelligence on markets, industries and applications. We support them in reacting flexibly to ever-changing market conditions and help them focus on their core business by managing their complexity. We are the only chemical distributor which complements a broad global network with outstanding local execution. Brenntag is there for its partners – anytime, anywhere.

Brenntag is truly a “people’s business”. Everything we achieve as a business is accomplished with and through our employees. They are the connection between our business partners. They connect people and build relationships. All in all, they connect chemistry on all levels.

We demonstrate that the distribution of chemicals and ingredients is not just a business for us. It is an attitude and our passion to be the best partner connecting you as our customers and suppliers in local markets worldwide.

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BUILDING A BRIGHTER WORLD



Globalization and ever more stringent regulation confront the manufacturing industry each year, presenting greater and greater challenges. Brenntag Canada recognizes that the specialty chemicals market does not have to be so complicated, however – we aim to make all aspects of chemical distribution less complex for our customers and suppliers.

Through a dedicated and experienced team of technical experts and sales agents, Brenntag Canada offers tailor-made solutions to each customer’s individual needs and business challenges with a degree of professionalism that few of our competitors can match. From providing advice on improving formulations, to devising innovative supply-chain solutions, to sourcing specialty ingredients, Brenntag Canada delivers products and services which put our customers and suppliers a step ahead of the competition.

We at Brenntag demonstrate that the distribution of chemicals and ingredients is not just a business for us. It is an attitude. And our passion is to be the best partner connecting you as our customers and suppliers in local markets worldwide.

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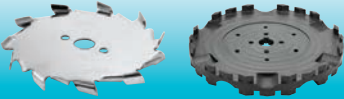
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SATA Canada opened for business on January 1, 2017, the first full subsidiary of SATA GmbH & Co. KG.

SATA paint spray equipment has been available in Canada since the 1980s. The opening of SATA Canada marks a new era in how the company will service and market its products for Canadian customers.

The headquarters of SATA Canada is in Vaughan, Ontario. The facility, close to Toronto, occupies a total of 15,000 sq. ft., including offices, warehouse and training centre. The headquarters also includes a service facility right in the building, with the goal of turning any product around within a 24-hour period.

Whether high-end vehicles, exclusive yachts and boats or



designer furniture, when glossy surfaces are of utmost importance, painters swear by SATA. SATA products are designed and manufactured in Germany allowing demanding customers worldwide to obtain the perfect tools, to create perfect finishes.

SATA sets the standard for paint spray guns, cup systems, breathing protection, filter technology and accessories. Our close cooperation with painters from various trades and industries as well as our research and development departments with application technicians from the leading paint manufacturers allow us to produce superior products of the highest quality.

“SATA Quality” is a firm conviction for any painter: reliability, durability and ergonomics of their SATA products are not something to be questioned.

The SATA brand is headquartered in Kornwestheim, a town in the district of Ludwigsburg, Baden-Württemberg, about 10 kilometers north of Stuttgart. SATA is a leading spray gun manufacturer with 276 employees, active in over 100 markets worldwide with 2,436 customers.

SATA has a long history of producing superior products of the highest quality dating back to 1907. The company's original focus was on medical instruments but began production of spray guns in 1925. The following year saw the first spray gun patent and by 1931 the company had its own line of commercially available SATA branded guns.

Throughout its history SATA has focused on meeting the demands of new paint technologies and perfecting its equipment to attain consistency for the industry.

In 1990 SATA introduced its High Volume Low Pressure (HVLP) and Reduced Pressure (RP) technologies, which gave painters more options for atomization, while addressing growing environmental concerns.

In 2005 SATA pioneered a multi-purpose cup system, SATA RPS (Rapid Preparation System) for the efficient mixing, painting, refilling and storing of paint. Participate in the SATA Loyalty Program and collect coins with every cup. Download the SATA Coins & More App in the App Store or Google Play Store. Set up a user account, scan QR codes located on every box of SATA RPS cups, collect points and convert them into attractive rewards for your shop.

SATA continues a tradition of quality and technological leadership with the introduction of the SATA air vision 5000 system for painter health protection and the SATA trueSun LED colour check lamp.

At SEMA 2019 SATA introduced the SATAjet X 5500 PHASER. Our new top model PHASER employs the same revolutionary SATA X-nozzle system as the SATAjet X 5500 B.

SATA is the first spray gun manufacturer to offer a nozzle system based on two distinct spray fan shapes for each nozzle size. Parallel and oval-shaped. The SATAjet X 5500 provides an incredible wealth of perfect solutions. For all kinds of painters. For all kinds of paint systems and climatic conditions. For all kinds of objects to be painted. Using only one spray gun.

In January 2020 SATA Canada received approval from the Ontario Ministry of Labour, Training and Skills Development to offer an automotive painter apprenticeship program at our in-house training centre.

At SATA our success is an obligation to us. Our employees and distribution network will always do our best to ensure painting will remain plain fun.

For further information, please contact:



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SATAjet® X 5500

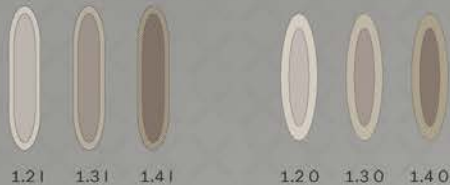
PHASER™



Now available as an X-model
the SATAjet X 5500 PHASER



Fan pattern shape I and O nozzle HVLP/RP



The revolutionary SATA X-nozzle system is now available for our top model "PHASER" with nozzle sizes ranging from 1.2 to 1.4 for HVLP and 1.2 / 1.3 for RP, both with "I" and "O" fan pattern options.

The elegant SATAjet X 5500 PHASER combines a unique design with the suitability for daily use in the paint shop.

Depending on the material, the work methods as well as the climatic conditions, painters now have the option to choose between controlled or fast application, regardless whether relying on the HVLP or RP technology.

Nozzle size	HVLP	1.2	1.3	1.4
	RP	1.2	1.3	-
"O" Nozzle set cpl. with RP multi-purpose cup 0.6 l / 0.9 l (each 1x), with swivel joint	1096107	1096115	1096123	
	1096090	1096082	-	
"I" Nozzle set cpl. with RP multi-purpose cup 0.6 l / 0.9 l (each 1x), with swivel joint	1096157	1096149	1096131	
	1096066	1096074	-	



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