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Volume 14 Number 3

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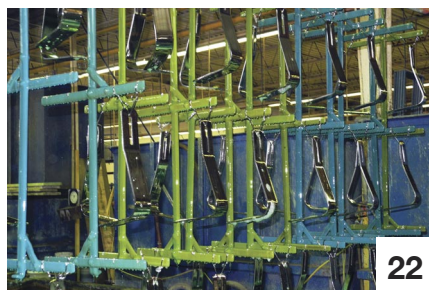
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Strong Foundations

This year will certainly be remembered as one for the books.

CFCM's Founding Publisher, Pete Wilkinson, passed away on April 30 after fiercely battling multiple myeloma. He was 72. On behalf of his family and us at the magazine, thank you all for taking the time to send in your memories and messages of love and support. You made us laugh and smile. Pete was clearly known and respected, not only in Canada, but throughout the North American finishing and coatings industry.

We're also in the midst of uncharted territory with a pandemic but as an "essential service", this industry may not experience the worst effects. Yes, things will look different and we all must adjust to new ways of doing things, but hopefully there is room for cautious optimism. We've got some great stories of your creativity as well

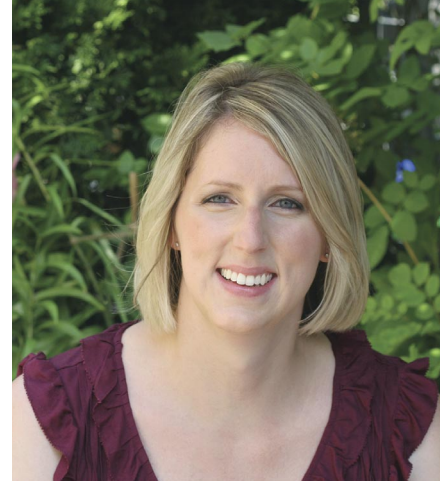
as some business tips beginning on page 30. No doubt, having a strong foundation to rely on helps determine the right path in tough times.

Gary LeRoux, President and CEO of the Canadian Paint and Coatings Association, has some interesting COVID-related thoughts and data to share on pages 13 and 48.

And new this issue, Bob Smith, of the Canadian Association for Surface Finishing, also shares some great insights from that part of the industry. This is the first of what will be a regular column. Read more on page 17.

We dedicate this issue to Pete's life and memory. He set the foundation as any great leader will do and we remain dedicated to the publication, his legacy.

Theresa Rogers
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CFCM Mourns Loss of Founder and Publisher, Pete Wilkinson

It is with deep sadness Canadian Finishing and Coatings Manufacturing Magazine announced that founding publisher, Pete Wilkinson, passed away on April 30 after battling cancer. He was 72.

Born in Toronto in 1947, he studied English at the University of Waterloo, where among other things, he promoted and organized rock concerts for the other students. His early career centered on the camera business, selling cameras of all types across Ontario. He remained a photography buff throughout his life, and he made photo spreads a consistent feature in CFCM. He was also a keen fisherman, who always enjoyed an afternoon spent on the lakes around southern Ontario, and, especially, near his home close to Peterborough, ON.

He switched from camera sales to the publishing industry in the 1980s, working for magazines serving a variety of industries. In this period, he was employed by Maclean-Hunter Ltd. and Naylor Publishing Co.

In April 1995, he joined the former Kay Publishing Co. as sales representative for Coatings magazine.

Coatings was bought by Toronto-based Rogers Media in 1999, and he moved with the publication, at the same time



taking over as publisher, following the retirement of the magazine's founder, Barry Kay.

In 2007, he launched CFCM magazine, using his extensive experience and contacts in the paint and coatings industries. He was joined in 2009 by business partner Brian Jones, whom he had met at Rogers Media.

His new venture was initially published in tabloid format, switching to the more conventional journal format in 2015. The magazine grew and thrived and Pete became a fixture in the industry, always seen at tradeshow with his signature camera in his hands.

Jones died in August 2018, leaving Wilkinson the sole owner of CFCM. His own cancer, a form of multiple myeloma, had been diagnosed in April

of that year, but he drew strength from running the publication and from his life partner, Jacquie, and sister, Mary. Pete remained dedicated to his beloved magazine, working and connecting with clients throughout his illness. He always used to say, "As long as I have a phone, I can sell."

A wonderful man and a kind soul, Pete will be dearly missed. We remain dedicated to his legacy and the industry he loved.

Memories of Pete

Pete was a very kind soul that always offered support and brought a smile to your face. I will always remember seeing him at the trade shows we attended. He always came to see us in our booth and loved taking group pictures of our team. He never met a stranger and was always kind to everyone at SAMES KREMLIN. I worked with Pete for many years on SAMES KREMLIN's advertising plans with CFCM. Pete had great stories to share with me, and I loved hearing them all. We are so very sorry to hear of his passing. We extend our deepest condolences and prayers to his family. May he rest in peace.

Rhonda Joslin, Marketing Manager, SAMES KREMLIN

All of us at DeFelsko came to know Pete from the various tradeshow and exhibitions that he attended over the years. And all of us have similar stories of the jovial publisher with the world's largest camera coming to take our picture and make us famous, at least in a coatings world sense. He always made a point of coming by our booth, usually with another Canadian in tow, looking to make introductions and catching up on our latest products. We followed Pete from his former publication, leaving when he did, and were proud to be inaugural and perennial advertisers in his new publication. Pete was a true professional, always making sure that we were aware of the promotion opportunities available – even once, at least, from his hospital bed. We will look back on Pete as a champion of the Canadian coatings industry and a true friend of DeFelsko. He will be missed.

Richard Northrop, Marketing, DeFelsko Corporation

Pete was great guy and an adamant supporter of the Canadian paint industry. CFCM was a true small business independent success story of his making.

Azelis Canada

Bayreuth Engineering Scientists Optimize New Spraying Method for Ceramic Coatings in High-tech Applications

Traditionally, the production of ceramic coatings required sintering techniques conducted at more than 1,000 degrees C. However, engineering scientists from the University of Bayreuth, under the direction of Prof. Dr.-Ing. Ralf Moos, say a novel spraying method, Powder Aerosol Deposition (PAD), enables their production at room temperature. This makes the coatings more attractive for industrial applications. The research was recently published in the Journal of Advanced Materials.

With PAD, dense ceramic films can be applied to very different types of materials, such as steel, glass, silicon, or even plastic. To achieve this, a dry ceramic powder is first converted into an aerosol. The aerosol is then transported into a vacuum chamber, and accelerated to several hundred meters per second through a nozzle and directed onto the material to be coated. On impact, the tiny ceramic particles fracture. The resulting fragments, only a few nanometers in size, feature fresh, active surfaces. They form tightly adhering, dense coatings with a thickness of between 1 and 100 micrometers.

“Thanks to their dense microstructure, the coatings already exhibit excellent mechanical properties even directly after the deposition. They are extraordinarily hard and have good chemical resistance,” says Dr.-Ing. Jörg Exner, first author of the study, who was a driving force in the research work on PAD at the University.

Some functional properties of the coatings, though, such as electrical conductivity, proved inadequate without carrying out further steps. In their new study, the Bayreuth engineering scientists report on effective methods of optimization.

Crystalline structures are of crucial importance. The strong impact of the ceramic particles on the materials causes structural defects in the resulting fragments. This not only affects electrical conductivity, but also other functional properties.

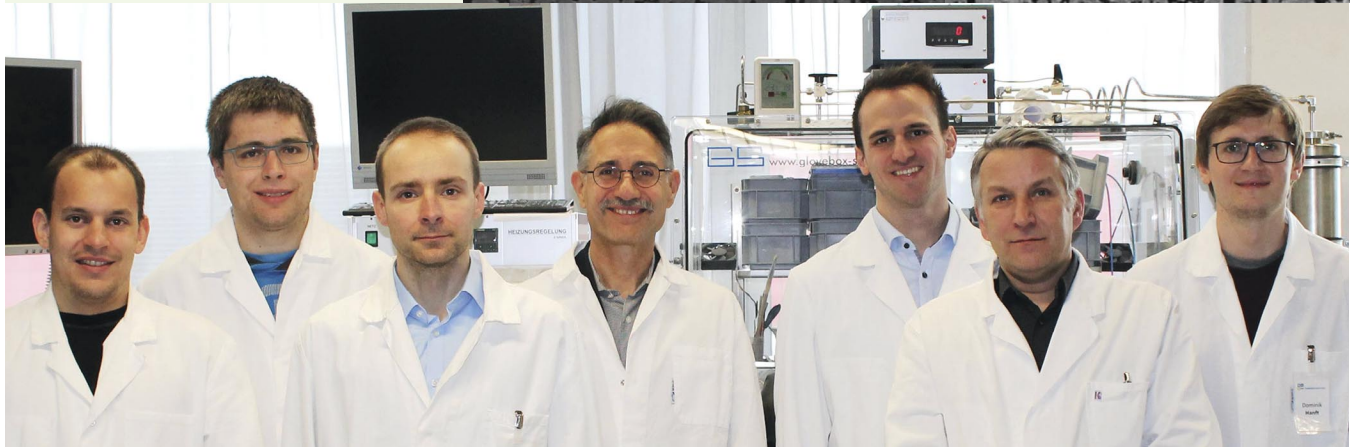
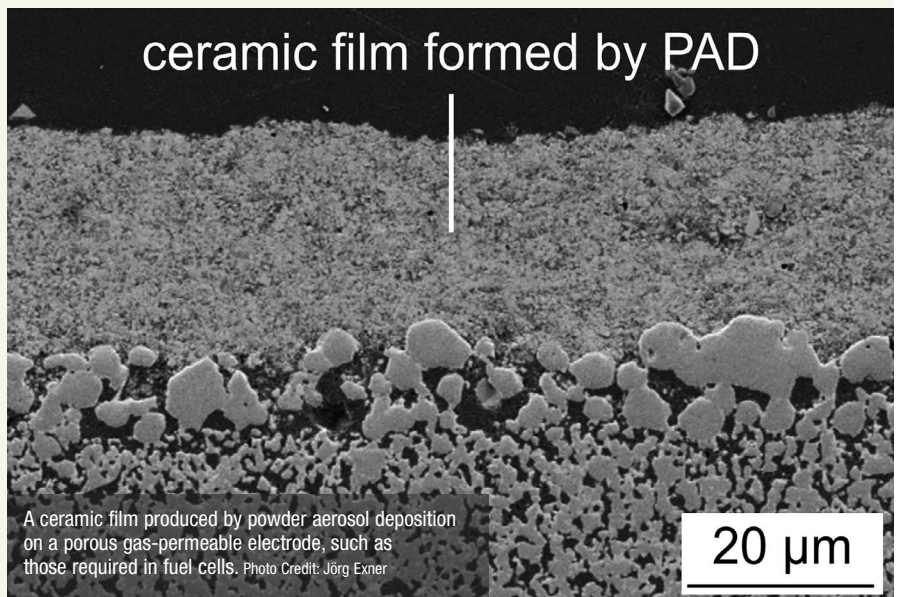
“By a thermal post-treatment, or tempering,

these defects can be almost completely eliminated. We have been able to show that the required temperatures are generally much lower than for conventional sintering. The avoidance of these extremely high temperatures is what makes PAD so attractive. It therefore remains true: This technology offers very high industrial potential, especially where high-quality ceramic coatings are required,” Exner concludes.

What type of ceramic materials are processed depends on the intended technological applications: Dielectric ceramics are suitable for capacitors, electrically conductive functional ceramics are preferred for sensors, and yttrium-stabilized zirconium oxide is used in high-temperature fuel cells. Even lithium-ion batteries can be produced in this way.

The scientific understanding of the ceramic film structures and of their functional properties, gained at the University of Bayreuth, will contribute significantly to the goal of integrating high-quality coated components into complex systems in a sustainable way. New technologies, for example, in the fields of energy storage and conversion, or for the purpose of environmental monitoring, therefore stand to benefit considerably from powder aerosol deposition applications.

www.uni.bayreuth.de/en



Toyol America Expands Palmer Holland's Territory Into Canada

Toyol America, a manufacturer of aluminum powders and advanced aluminum pigments, is expanding Palmer Holland's territory to include Canada.

This territory expansion builds upon Palmer Holland's existing responsibilities in the United States. Palmer Holland represents Toyol America's full spectrum of:

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- Atomized aluminum powders
- Leafing aluminum paste
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- Polymer coated flakes

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Global Industrial Coatings Market Grows

A new report from Transparency Market Research provides a snapshot of the growing global industrial coatings market.

PCI Awards 2020 Scholarships

The Powder Coating Institute (PCI) recently awarded its 2020 scholarships to worthy students who are studying various subjects that can lead to a career in powder coating. "As the Baby Boomers retire, the powder coating industry needs to replace them with new young talent. The PCI scholarship program is the industry's investment into fulfilling this need. We are excited to present awards to six deserving students who are studying chemistry and engineering with the hope they will join our industry after they graduate," says Kevin Coursin, PCI Executive Director.

PCI administers the scholarship program, which promotes and solicits applications from students through numerous educational institutions and industry.

PCI says the scholarship program continues to grow and attract bright new talent to the powder coating industry, which includes students pursuing degrees in polymer science, manufacturing, engineering, business management, and marketing. The growth of the scholarship program enhances the potential of young scholars in the industry and with continued support from corporate donors, PCI says, the scholarship program reach more students and steer them into careers in powder coating.

The 2020 PCI Scholarship Program awarded \$30,000 in total, which includes donations of \$5,000 from corporate donors including Axalta Coating Systems, Gema USA Inc., Nordson Corporation, and PPG.

www.powdercoating.org/scholarship



Celine Schmitt, of the University of Cincinnati, was awarded a PCI General Scholarship. See online for more winners.

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Clariant Ups Its Sustainable Coatings Solutions with New Additives, Dispersants and Pigments in North America

Clariant says it is launching a full suite of more sustainable additives and coatings solutions.

“Clariant’s strategy in the next decade prioritizes sustainability across the value chain. We have four new sustainability designators to make it easy for customers to identify key product advantages, including Vita, for products from a natural origin with a high renewable content. One of our new ‘Vita’ additives is being introduced this year as an example of product offerings to come,” says Tyler Kilgannon, Head of Sales, BU Additives North America.

As North America continues its long tradition of using wood to build homes, and interior features, is offered as a bio-based wax additive for furniture, flooring, window frames and beams. It is based on renewable, non-food competing feedstock and delivers a smooth non-slip, soft-touch and high scratch-resistant protective finish. Formulators also benefit from its easy dispersion, Clariant says. It can also be used for powder coatings to combine the warmth of wood with modern design trends such as bright and bold colors.

and are next generation, high-performance label-free UV absorbers, also with EcoTain certification, for waterborne coatings with improved weathering. And, for those looking to create naturally inspired and in-vogue wood stains, allowing deep color concentration without obscuring the wood grain pattern, Clariant is launching multiple systems to meet waterborne, solventborne and UV-curable coloration trends.

is an innovative low-foaming dispersing agent that helps ensure the color “wow” factor. It holds the Ecotain label, being low VOC (less than one per cent in ISO 11890-2), free of organic solvents and suitable for eco-labels. Clariant says it is high performance, helping to improve efficiency for paste producers, even when using hard-to-disperse red pigment



concentrates, meaning no snail trails on colored paints or time or expense needed for repeat coats to cover them up.

“As we all become part of the growing North American movement in home and community design that is focused on sustainability and immersive wellness, powerful innovation, research and development opportunities are emerging. We’re proud to be at the forefront of industry sustainability, driving these trends,” says Jeff McManus, Business Director, North America, BU Industrial and Consumer Specialties.

A new offering in architectural and industrial coatings is the , a “Next Generation Pigment” Yellow 154. With a lower cost of use due to an increased efficiency in the production process, it provides a higher color strength in both waterborne and solventborne coatings than current grades on the market. In addition, and to meet the trends toward sustainability, Hostaperm Yellow H3G 02 can be co-dispersed with inorganic pigments in waterborne coatings with a dissolver only, another example of Clariant’s commitment to more sustainable solutions.

www.clariant.com

Large-scale development projects carried out across the globe have widely benefited the global industrial coatings market. The building and construction industry in developing regions is considered the major factor for the growth of this market. In addition, high demand for premium paint and the recent introduction of UV-curable coatings and nanocoatings are a few other key factors driving the growth for industrial coatings. Based on the report published by TMR, the global industrial coatings market is expected to progress at a steady 5.8 percent compound annual growth rate during the forecast period to 2022. If the market rises at this rate, the market valuation could reach US\$41.68 billion by the end of forecast period. In 2017, the market was valued at US\$31.47 billion. North America’s share looks promising with this region being expected to generate US\$8.18 billion by the end of 2022. www.transparencymarketresearch.com

Plastics and Composites Maintain Growth Trajectory Through 2020 Uncertainties

Frost & Sullivan’s recent analysis, Global Outlook for Chemicals in the Plastics and Composites, CASE, and Construction Industries, 2020, finds that the market of coatings, adhesives, sealants, and elastomers (CASE), plastics and composites, and construction chemicals will be driven by new supply chain optimization concepts, digital transformation, and circularity in products, processes, and packaging. Under the conditions of COVID-19, the global chemicals and materials market is expected to reach \$3,716.5 billion by the end of 2020.

“Despite the impact of the COVID-19 pandemic across industries, the demand for modular building materials and advanced admixtures will propel the construction chemicals segment,” said Christeena Thomas, Chemicals, Materials &

Nutrition Industry Analyst at Frost & Sullivan. “Sustainability and bio-based chemicals and materials will strongly boost the need for research and development in the CASE industry.”

Thomas added: “Regionally, with increasing urbanization, large population, and a drive for local production by governments, Asia Pacific is likely to become a growth engine for the global chemicals and materials industry. Further, India will register the highest growth due to rising investments in building and construction, infrastructure, and the healthcare sector.”

In China, the chemicals and materials industry is in a state of rapid transition. Manufacturers are expected to focus more on products and services that reflect consumer demand trends. For North America and Europe, a host of uncertainties related to international trade, downturns in manufacturing and economic stability will result in slower growth.

To tap into opportunities exposed by the global chemicals and materials industry in this COVID-19 era, here are some growth prospects:

Manufacturers and suppliers in the plastics and composites, CASE, and construction chemicals industries should invest in Big Data analytics, artificial intelligence (AI), and natural language processing as this will lower costs and enhance productivity, ensuring quality.

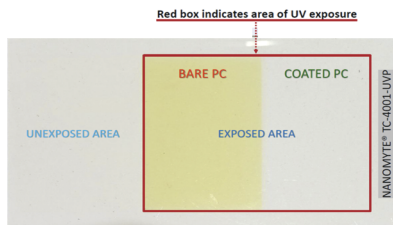
Building materials will witness a rise in the development and commercialization of bio-based or sustainable products due to which market participants in the chemicals and materials industry should focus on producing recyclable materials.

Digital transformation will allow chemicals-as-a-service offerings to customers.

The trade war between the U.S and China is encouraging companies to strengthen their footprint in India and ASEAN countries as this will help them hedge their risks associated with trade involving China.

ww2.frost.com

NANOMYTE TC-4001-UVP Offers Protection Against Damage by UV-C Radiation Used to Disinfect Coronavirus



1,000 hours constant UV exposure:
Polycarbonate in QUV Chamber with UVA
340 lamps @ 0.9 W/m2.

NEI Corporation has announced that its newly developed NANOMYTE TC-4001-UVP product has been shown to offer protection against damage from short-wavelength ultraviolet radiation.

Ultraviolet radiation in the 100nm – 280nm wavelength range, also referred to as UV-C, is increasingly being considered as a means for disinfecting surfaces that large numbers of people are likely to come in contact with, such as parts of transit systems, theme parks, cinema theaters, public restrooms, airports, and other areas of high traffic. The COVID-19 virus has made frequent cleaning of surfaces a top priority for maintenance managers of high traffic areas.

However, UV radiation causes significant damage to painted surfaces by creating free radicals that then cause polymer degradation. The NANOMYTE coating offers protection for surfaces exposed to UV-C radiation, NEI says.

NANOMYTE TC-4001-UVP shows the ability to block UV-C, as evidenced by spectroscopic measure-

ments. All radiation below 350nm is blocked completely by a film that is only 1/5 mil (5 microns) thick. The transparent coating is a single component formulation designed to protect metals and other surfaces from degrading, preserving their structural integrity and appearance.

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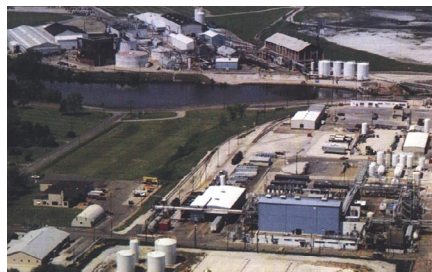
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composite consisting of organic and inorganic phases. It resists scratching and chipping and adheres strongly to bare, pretreated or painted metal surfaces. A variety of other surfaces may be coated as well, such as plastics and composites. The coating is easily applied by immersion, spraying or brushing, in thicknesses ranging from microns to mils, and is available in glossy or matte finishes.

www.neicorporation.com

PPG's Barberton and Huron, Ohio, Facilities Honored For Environmental, Health and Safety Initiatives



PPG recently announced that its Barberton and Huron, OH, facilities were recognized by the Ohio Chemistry Technology Council (OCTC) for programs that advance the company's health, safety and environmental performance.

The Barberton location was presented with an Award for Excellence in Health and Safety Performance for an initiative that reduced injuries by 58 percent and spills by 29 percent. The facility transformed its health and safety procedures by implementing a Human and Organizational Performance (HOP) system.

HOP is a science-based approach to understanding how and why people make mistakes or errors and how to avoid them. The process teaches how to predict when human error is more likely to occur and recognize individual "error traps" that are present both at work and away. The methodology prescribes proven prevention tools to reduce the likelihood of error traps from occurring.

"I am very proud of our Barberton Team — each and every team member has embraced Human and Organizational Performance and used the methodology to put stronger controls in place that reduce risk of injury and spills in our processes," says Tom Selleny, PPG Plant Manager, Barberton.

Part of PPG's specialty coatings and materials business, the Barberton facility manufactures precipitated silica, optical monomers and coatings,

PPG TESLIN substrate and phosphorescent organic light-emitting diode (OLED) materials.

The Huron facility, which manufactures consumer paints such as the Glidden brand, received OCTC recognition for Environmental Performance. The site was able to reduce waste to landfill, waste disposal fees, raw materials and labor by replacing the dust collector. The dust collector is a piece of equipment that creates a vacuum to remove and collect airborne dust when powdered materials are added during the paint manufacturing process.

The new dust collector empties automatically into a single bulk bag, rather than requiring manual intervention to empty the hopper in a single event. The dust is then re-purposed as a raw material used in the production process. Through this improvement, the facility team effectively eliminated its dust collector waste stream in 2019, and reduced total non-hazardous waste sent off-site by nine percent.

"Receiving this acknowledgement from the OCTC further solidifies PPG's sustainability goal to achieve zero landfill status from process waste and reduce our overall environmental impact," says Dave Kuhn, PPG plant manager, Huron. www.ppg.com

People

NACE and SSPC Announce Robert H. Chalker as Chief Executive Officer of New, Combined Organization

NACE International and SSPC: The Society for Protective Coatings announced in May that Robert H. Chalker has been named Chief Executive Officer of the new, combined organization that was approved by ballot of both NACE and SSPC membership bodies in April. Bill Worms, who has served as Executive Director of SSPC since 2015 will remain at the helm of SSPC while the process of combining the organizations begins. The staff and office facilities of SSPC will remain in Pittsburgh, PA.

Chalker has nearly 20 years of association management experience and has served as CEO of NACE International since 2010. Prior to joining NACE, Chalker was the Managing Director of ASQ Global where he was responsible for developing a global network of quality professionals and experts focused on educating the world on the principles of quality. He also served as Director of Global Development and Strategic Planning for the Society of Automotive



Bob Chalker

Engineers (SAE International).

"Bob's association experience is tailor-made for this transition," says Terry Greenfield, President of NACE International. "Bob's extensive background in management and organizational leadership has resulted in a culture of high performance and success for NACE. That will be a tremendous asset as the leaders of both organizations work to strategize and develop a single organization that will serve the world's corrosion and coatings professionals at every level of expertise."

"I'm honored to lead these two venerated organizations through this monumental change," says Chalker. "This is an opportunity to provide coatings and corrosion professionals worldwide with more mission-driven value, making societies safer by strengthening the standards, education and certification programs that makes our members the best at what they do.

"In just five years, Bill has managed to build a legacy that will be foundational to success of the new organization," says Chalker. "What Bill has done on behalf of SSPC's members and the coatings profession has elevated the value of SSPC programs — and strengthened safety, environmental, and economic benefits afforded to industry through those important programs.

In its 70-year history, SSPC has only had five Executive Directors.

Currently, leaders of SSPC and NACE are planning on a January 4, 2021 debut for the new association. Worms is expected to remain at SSPC through the end of 2020.

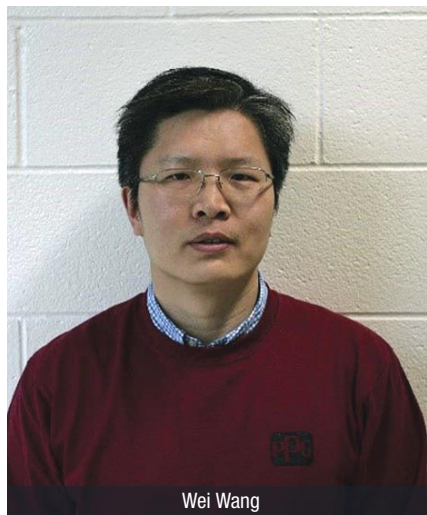
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Wei Wang Wins 2020 Gordon E. Moore Medal

The Society of Chemical Industry (SCI) America announced recently that Wei Wang, PhD, is the recipient of the 17th annual Gordon E. Moore medal. SCI established the Gordon E. Moore Medal to recognize early-career success in innovation, as reflected both in market impact and improvement to quality of life. Dr. Wang, senior research chemist at PPG, will be presented the award at a luncheon in his honor during Innovation Day, hosted jointly by SCI and the Science History Institute on September 22, 2020 at the institute's headquarters in Philadelphia.

"Dr. Wang's work in designing novel polymers and developing their use in formulations to solve coating issues for PPG has been remarkable," says John Paro, Chair and CEO of Hallstar and Chair of SCI America. "He is a key contributor to the success of PPG's developments in polymer science and their use in advancing the automotive coating industry's efforts around energy conservation and productivity improvement."

Wang was a key contributor to the success of PPG's 3C1B (three-coat, one bake) compact



Wei Wang

process automotive coatings technology which three coating layers are applied wet-on-wet-on-wet and then baked together. 3C1B eliminates heated dehydration and the curing step between layers and was commercialized at an automotive OEM plant in Shanghai, China in 2016. The polymer technology enables the overall desired appearance of the coating stack, as well as the

physical properties of the cured film.

"The technology developed by Dr. Wang and his team have enabled automotive OEMs to cut energy consumption by 30 percent, reduce CO2 emission by 43 percent, VOCs by seven percent and reduce process time by 30 percent," says Dr. David Bem, PPG Vice President and Chief Technology Officer. "These outcomes represent significant sustainability benefits to our customers. We are proud Dr. Wang is being recognized for these accomplishments."

www.ppg.com

Elcometer Technical Manager Appointed NACE Standards Board Vice Chair

Following the recent formation of combined standards board, NACE International, David Barnes, Elcometer's Technical Manager, was appointed Vice Chair.

Barnes has worked as Technical Manager at Elcometer for more than nine years, working closely with NACE, SSPC, ASTM, BSI and ISO on standardization, writing and presenting technical papers at industry conferences around the world.

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in the NEWS



David Barnes

In addition to his role as Elcometer's liaison to international standards organizations, Barnes heads up Elcometer's global technical support

and training department, training Elcometer and distributor personnel and customers across Elcometer's range of abrasive blast equipment, NDT equipment and inspection equipment for the coatings industry.

Barnes will serve a three-year term as the NACE Standards Board Vice Chair, followed by a further three years as its Chair. His term as Vice Chair is scheduled to begin June 20.

Playing a vital role in providing oversight and management of the NACE Standards Program, Barnes's role as Vice Chair will include developing strategies, objectives and tactics to enable the NACE Standards Program to better respond to the standardization needs of the corrosion industry.

"It is an honor to be elected to become the first Vice Chair of this newly formed Board and I look forward to helping improve the development of standards within the organization," says Barnes.

www.elcometer.com

Calendar of Industry Events

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

October 12-15, 2020: PaintExpo, Karlsruhe, Germany. www.paintexpo.com

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

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

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

July 13-15, 2021: SUR/FIN, Detroit, MI. www.nasfsurfin.com

April 5-7, 2022: American Coatings Show, Indianapolis, IN. www.american-coatings-show.com

June 2022: Fabtech Canada, Toronto, ON. www.canada.fabtechexpo.com



Paint & Coatings Issues in Canada

PUBLIC SAFETY CANADA DESIGNATES PAINT & COATINGS AN ESSENTIAL SERVICE

CPCA distributed a backgrounder to all federal and provincial government departments to emphasize how paint and coatings should be considered essential products to support critical working activities and infrastructure maintenance in uncertain times. CPCA recommended that these activities be specifically mentioned in all lists of essential services. In response to the letter from the Canadian Paint and Coatings Association, Public Safety Canada added the following reference to paint and coatings: "Workers who support the supply chain of building materials from production through application/installation, including cabinetry, fixtures, doors, cement, hardware, plumbing, electrical, heating/cooling, refrigeration, appliances, paint/coatings, and employees who provide services that enable repair materials and equipment for essential functions." These essential services include activities from production to application, which had already been captured in the list generally, and also captured within the provinces' essential list. Given that it was not specifically stated CPCA wanted to ensure that any further reference to the Public Safety Canada essential list was conclusive and not misinterpreted, especially as governments are now considering restarting the economy in the coming days.

COVID-19 SLAMS CANADA'S ECONOMY

The Conference Board of Canada changed its near-term projections for the Canadian economy which is now expected to contract four percent in 2020, down from an expected gain of 1.7 per cent as predicted in January. However, a 4.9 per cent recovery is anticipated in 2021 as the virus's aftermath fades. Canada could shed 330,000 jobs over the second and third quarters in an end-of-August scenario, while the jobless rate could climb to 7.7 per cent. The key issue for business is liquidity to survive the crisis. The proportion of entrepreneurs reporting a negative impact of COVID-19 on their operations rose from 39 percent in mid-March to 90 percent two weeks later, according to BDC surveys.

COVID-19 ECONOMIC IMPACT ON THE CANADIAN PAINT AND COATINGS MARKET IN 2020-2021

Orr & Boss, a CPCA Affiliate Member, completed a Canadian Market Update for CPCA to address outstanding and ongoing questions caused by the pandemic for the paint and coatings and adhesives and sealants industry in Canada. CPCA would like to thank Doug Bohn at Orr & Boss for leading this effort, which helped all CPCA members' forecasting efforts during these uncertain times. As the response to the

pandemic continues, the impact on the Canadian paint and coatings industry is becoming clearer. There will be a significant decrease in coatings sales due to the enforced shutdowns across the country. In summary:

- Overall paint and coatings volume sales are forecasted to decline 24% in Q2 and 4% overall in 2020.
- Automotive and other Industrial Coatings segments will be hardest hit in Q2 with enforced plant shutdowns and limited demand.
- DIY Architectural Coatings sales will likely benefit from the shutdown.
- Packaging Coatings sales will also increase as consumers stay home.
- We are hopeful as lockdown measures start to relax and we can begin to think about the recovery phase.

Key points to consider in the outlook are:

- DIY sales will be strong as consumers focus on improving their homes.
- Low interest rates should help maintain and even grow the residential construction market.
- There is likely to be strong demand for anti-viral paints in all coatings segments.
- Online sales of paint are likely to grow; some of this will be for in-store pickup and some will be shipped. In either case, it is likely that an improved online presence will be needed by the industry.
- The speed and suddenness of the recession may be matched by the speed and suddenness of the recovery. If so, the industry will need to look to real-time indicators to understand the shape of the recovery. Searches on Google Trends may be one way to do that as would other leading data like mortgage applications and building permits.
- If oil prices remain below \$30 USD per barrel, we would expect raw material prices to drop five to 10%.
- The industry will need to readjust its plant and warehouse production processes. Disinfecting the plant, implementing staggered shifts to reduce the people density in the plant, and one-direction flow of material to keep plant employees a safe distance apart may all be necessary.

Before the impact of the pandemic was known, we were expecting 2020 to show some modest volume growth of 1.5%. Housing was off to a pretty good start with existing home sales up three percent in January and February of 2020 versus the 2019 levels. Automotive OEM was expected to decline about three percent as production cuts at

	Q2 2020	2020 Full Year
Architectural	-20%	2%
Auto OEM	-35%	-20%
Automotive Refinish	-30%	-10%
Other Trans	-50%	-25%
Powder	-35%	-5%
Industrial Wood	-20%	-10%
Coil	-25%	-10%
Packaging	8%	5%
GI	-30%	-5%
IM and PC	-10%	-10%
Marine	-10%	-5%
Total	-24%	-4%

Canadian assembly plants continued. The other segments were expected to show volume increases in the one to two percent range. In total, we were expecting the market to grow at a two percent volume rate and four percent value rate in 2020. This has now all changed due to the pandemic. The table below now provides our estimates for Q2 and full year 2020. We are now expecting that the volume will decline more than 20% in Q2 and by about four percent overall for 2020. Segments where plants have been shut down will be hardest hit including auto OEM, General Industrial, and Powder Coatings.

The primary assumptions in the above table are that:

- The announced shutdowns will stay in effect until about the middle of May.
- Full year Canadian GDP will be flat or show a modest decline (<5%).
- Automotive sales and production will decline by 20% this year.
- Oil prices will remain near their current level (under \$30 USD/barrel).
- New construction activity will decline five percent this year.
- Full copy of the report available at www.canpaint.com (Credit: Orr & Boss – Doug Bohn)

CPCA POSTS COVID-2019 PUBLIC INFORMATION ON ITS WEBSITE

The paint industry supports the public and those on the frontlines of the COVID-19 response. The industry supports health care, hospitals, defence, food, hygiene, agriculture, energy, public works, information technology systems and many others. Life-saving equipment such as ventilators and

medical monitors contain multiple components that must be coated to ensure performance and we want to ensure people are aware of that.

ONTARIO ENVIRONMENTAL FEES TO BE RETURNED TO PROGRAM OPERATOR PAINT RECYCLING IN ONTARIO

The recent Ministerial direction to Stewardship Ontario (SO) related to excessive funds accumulated in the Municipal Hazardous or Special Waste (MHSW) program was published on April 1 and another on April 28. The latter was to ensure that funds will, in fact, be used for waste recovery and recycling and not more red tape in administering the windup of two materials still left with SO. It is hoped that things are clear now as to the way forward

as those funds were designated for recycling, not unnecessary administration. It applies to the MHSW material categories for which there are approved Industry Stewardship Plans (ISPs) that include paint and coatings; pesticides, solvents and fertilizers; and automotive materials. After many discussions with CPCA and other industry groups, the Minister directed SO to move forward in a responsible way to ensure that 100 percent of steward surplus funds, still retained by them “in trust,” be returned in a one-time lump sum transfer to the organizations that contributed the funds via internalized fees and which now operate ISPs independently of Stewardship Ontario. This is the only way to ensure they are used for the originally intended purpose waste recycling, not administration.

It is unfortunate that Stewardship Ontario continued its refusal to return funds it overcharged industry stewards via internalized fees before the Paint ISP was approved by the Minister in 2015. The Paint ISP has not been operating under Stewardship Ontario since before 2015 and two other ISPs also left shortly thereafter due to poor program management and lack of transparency, representing 80% of the materials now operated under other organizations. This leaves Stewardship Ontario with only two of nine material groups, which will soon be one with batteries being wound up in June 2020. Yet, they insist on retaining more than \$12 million in reserve funds, most of which was contributed by the stewards who left years ago and with nothing to do with SO operations since that time. The detail related to the use of those funds has never been disclosed and yet they say it’s critical to windup two materials, which has been managed by two staff members for the past several years. This seems to be a cross-subsidization of materials with funds from other material-specific groups, namely the independent ISOs,

The paint industry supports the public and those on the frontlines of the COVID-19 response ... Life-saving equipment such as ventilators and medical monitors contain multiple components that must be coated to ensure performance and we want to ensure people are aware of that.

which is in direct contravention of the Act.

It is interesting to note that Stewardship Ontario charges the remaining stewards under MHSW \$3 million a year in administration costs for running the two remaining MHSW products, which has an operating cost of just over \$10 million a year. That is 23 per cent in administration costs! These two groups also have to pay an additional amount in windup costs, increasing the 23 per cent significantly. As such, the paint and other stewards were wise to have created ISPs in recent years to escape such predatory costs.

In contrast, CSSA's charges for administering the Automotive Services ISP as the program is about 10 per cent per year and Product Care's administrative costs for the paint program is slightly less. It's clear who stewards would prefer to have running their recycling program in Ontario. Clearly, Product Care has shown the way and proven the state of waste recycling in Ontario in recent years needs a major overhaul. It should also be noted that the inherent costs of recycling in Ontario is out of control with paint recycling in Ontario costing about twice as much per tonne than in other larger provinces. Yet it continues to

persist and the current wind up plan approved by the oversight authority, Resource Productivity and Recovery Authority (RPPRA), shows a lack of concern with productivity as it relates to cost-benefit for industry stewards.

There are many other areas of concern with the operations of waste recovery in Ontario, with growing costs of oversight as a recent presentation by the Retail Council of Canada clearly shows with numbers in excess of 400 per cent over two years for administration for the oversight agency, RPPRA. This will need to be put under the light of public scrutiny in the days to come to ensure Ontarians are not subject to excessive charges with little increase in recovery and recycling to show for such cost, if the current system continues to run as it has. The Product Care model for paint program operations is one that should be modelled by other programs run by Stewardship Ontario and CSSA if they are permitted to continue running such programs with such high costs. In fact, the Product Care recycling model has been adopted by other countries such as the United States and Australia.

It is important for organizations supporting waste recycling in Ontario under current legislation to consider the



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cost versus the benefit because the producer always pays and is legally required to deliver. It would be important to do so under two important goals of this government: reducing red tape and to show manufacturers, producers, that Ontario is “open for business.” Ultimately, the costs are borne by all Ontarians as there is only one source of funds in any commercial enterprise in a capitalist system, no matter the source of the mandate.

CPCA PARTICIPATES IN WORLD COATINGS COUNCIL WEB CONFERENCE ON SUSTAINABILITY

WCC is examining the possible issuance of a global sustainability reporting approach for the paint and coatings industry. Findings related to the implementation of sustainable development goals will be the cornerstone of the proposed report. Additionally, the American Coatings Association recently published its Sustainability Report 2020. CPCA is

working on publishing its own report later this year.

SAICM BRIEF PREVIEWS CHEMICALS MANAGEMENT NEEDS BEYOND 2020

The Strategic Approach to International Chemicals Management (SAICM) published a policy brief on lessons learned since 2006, to inform discussions on the future focus of SAICM and the sound management of chemicals and waste beyond 2020. The brief, which was released in April 2020, explains that SAICM has made significant progress regarding strengthening capacity, commitment, technical knowledge, and political will to implement and mainstream chemicals into national planning. However, its objectives and 2020 goal to minimize the adverse impacts of chemicals and waste will not be achieved. More ambitious action is needed and the brief describes progress made and future considerations in moving forward beyond 2020 and CPCA is reviewing the industry’s response closely and will seek member involvement in the coming months.

Reminder: Ontario Facilities Must be Compliant With Final Phase of O.Reg 419/05: Air Pollution – Local Air Quality

Ontario facilities needing to prepare or update ESDM reports need to ensure that Schedule 3 standards and applicable models are now being used during the annual update of their ESDM report. The final implementation phase has been in effect since February 1 for all facilities listed under Schedule 5, which must demonstrate compliance with the newest point of impingement standards/limits by utilizing MECP approved versions of the more sophisticated dispersion modelling software (AERMOD and ASHREA). ■

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

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Canada's Source for News & Information in Surface Finishing

BY BOB SMITH

THE CANADIAN ASSOCIATION for Surface Finishing (CASF) is the only surface finishing industry association in Canada established to provide support services to its corporate members (electroplaters/surface finishers, suppliers, and professional service providers) and individual members. CASF provides a single, unified voice for the surface finishing industry across Canada. It is a volunteer-based organization that relies on the participation and experience of finishers, suppliers, and decision-makers within the finishing industry to help members and our industry prosper. Our primary objectives are to act as the voice of the industry, help our members' businesses succeed, help our industry succeed and act as the liaison between the different levels of government and the surface finishing industry in the area of present and proposed environmental legislation. We also have a social component and will be running our biennial golf tournament again this September 22 with a return to the Whistle Bear course in Cambridge, ON. You can interact with us in many ways, including joining us as a member through our website at www.casf.ca.

This first column from CASF unfortunately coincides with Canada finding itself in the middle of a disaster not seen since the Great Depression in the 1930s and we have devoted our first column to this unprecedented situation and its effect on our country and our industry. COVID-19 has resulted in the near shutdown of the entire world in the grips of a pandemic that is killing people by the thousands as we all wait for a vaccine. And the majority of those are our senior citizens, those in long-term care facilities and our revered health care workers. In Canada, at the time of writing (April 26), there have been 46,895 cases of COVID-19 and 2,560 deaths. Quebec has been particularly hard hit, but no one is safe. A puzzling statistic shows that 43 percent of all cases in Canada are male and 57 percent are female and of all cases in Canada the largest share is from those who fall between 40 to 60 years old at 31 percent, with those between 60-80 at 23 percent followed by those between 20 to 40 at 22 percent and those over 80 at 21 percent. The "safe" group continues to be those under the age of 20 where there is currently only a two percent infection rate.

An unexplained statistic that will likely be examined in depth later is the prevalence in the province of Quebec where currently 52 percent of Canada's total cases of COVID-19 are located with 31 percent in Ontario and 17

percent in the rest of Canada combined. Sadly, 57 percent of all deaths in Canada are from Quebec, (as of April 25), 34 percent are in Ontario and only nine percent in the rest of Canada. Across the border, things don't look good either: almost one million cases as of this date with over 55,000 who have passed away, almost half of whom resided in New York state. The U.S. has gone from outstandingly low unemployment numbers in early 2020 to currently listing 26 million who are out of work due to COVID-19.

In Canada, more than one million have lost their jobs as this is written and two million more have become part-time. Almost seven million Canadians have applied for the CERB emergency assistance as of April 23 and more than one million Canadians believe they are on the brink of having to declare bankruptcy. One-quarter of all jobs in Canada have been wiped out. The Canadian Revenue Agency, (CRA), expected more than one million companies to apply for the Emergency Wage subsidy when it opened for applications on April 27 and at the end of March, unemployment in Canada stood at 7.8 percent with the April number looking predictably worse.

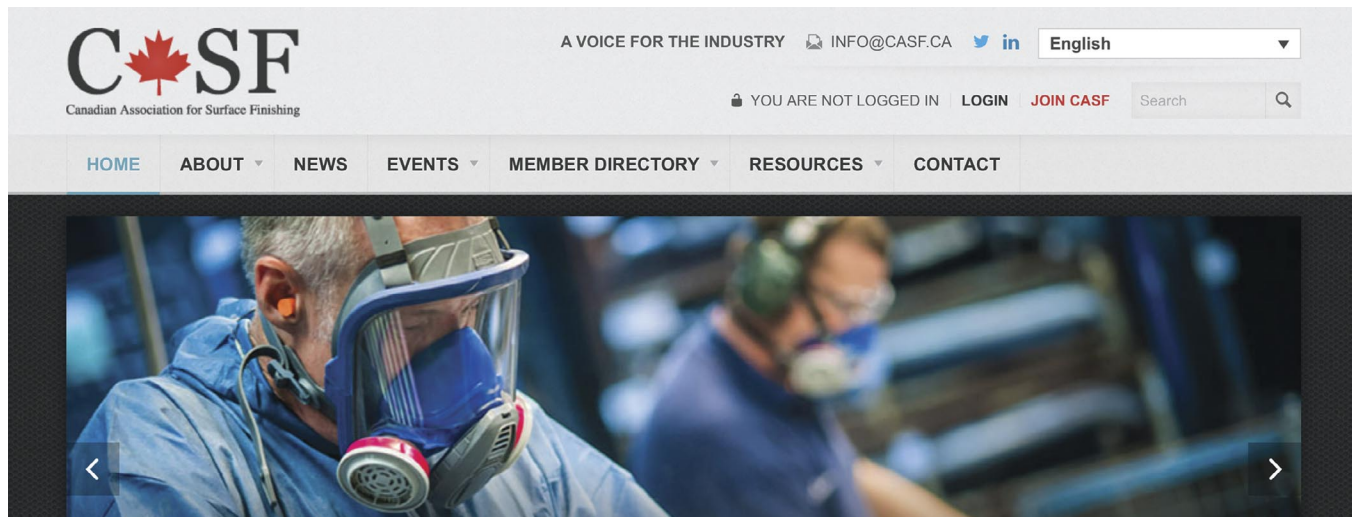
The International Monetary Fund (IMF), in its best-case scenario, says the world is likely to lose a cumulative US\$9 trillion in output over two years, and a global economic shrinkage of three percent during 2020, the worst performance since the early 1930s. Flight activity is down more than 80 percent and the International Air Transport Association predicts a US\$320 billion hit in 2020 to the world's airlines.

On March 17, Ontario Premier Doug Ford declared a state of emergency in Canada's most populous province in response to the pandemic. The announcement came hours before news broke that Ontario's first presumptive death from the novel coronavirus had been reported.

The emergency declaration meant the immediate mandatory closure of all bars, restaurants, child care centers, schools, places of worship, theaters, and recreation centers. Essential services were to remain available, along with public transit, grocery stores, pharmacies and other public services.

The emergency declaration followed a similar move by Quebec made on March 12, while some Canadian cities had also made such declarations, which enabled additional funding to be made available and measures to be taken in response to this disaster. Later, Alberta and other provinces made similar announcements.

Since this time, the Canadian border was closed to most



non-citizens and flights were rerouted to major airports. The Prime Minister and our premiers have been holding daily press conferences in order to update Canadian citizens on the latest developments.

Many industries have ground to a halt. Those that remain open have had to react and consider potential implications to their employees, customers and supply chain partners. The health and wellness of employees and business partners has become the highest priority. Action plans were put in place to both prevent and respond to any impact COVID-19 may have on their organizations.

Highlights of response plans include:

- Following recommended hygiene practices from health professionals.
- Taking extra disinfecting measures in their facilities.
- Cross-training employees and identifying essential workflows.
- Maintaining multiple supply lines, while in close contact with vendor partners.
- Adding safety stock to raw material inventories.
- Honoring policies put in place by customers and vendors.
- Making strategic decisions to reduce in-person contact by sales/service teams.

The COVID-19 pandemic has quickly become another emergency in a long list of disasters that has affected Canadian workers over the past several years. The wildfires in western Canada, including Fort McMurray in 2016; flooding in Quebec, Ontario and other neighboring provinces; record snowfalls in Newfoundland and Labrador; and the collapse of the oil and gas industry in Alberta and resulting unemployment.

Employers must do everything they can to protect their workers. These are unprecedented times and we must rise to the challenge.

For its part, CASF is actively monitoring all of the above and continuing to provide as much help for its members as possible. A lot of the demand for the output from the surface finishing industry comes from the U.S. and a signif-

icant amount of that is linked to automotive and related needs. Therefore, it was no surprise that when the U.S. automotive industry decided almost universally to shut down to protect its workforce, the repercussions were fast, hard and serious across the board and this affected Canadian plants, too. Between March 19 and 23, ninety-five percent of the U.S. and global automotive industry closed down. May 4 was cited as a possible start-up date, a date that has since been revised because COVID-19 is a moving target. Two General Motors plants and one Ford plant have switched over to manufacturing ventilators and one plant is now producing facemasks but despite this, unemployment became immediately rampant across the continent as all the Tier 1 and 2 suppliers were also quickly devoid of orders and needed to shut down for lack of work. But there are signs appearing now that this is easing.

In Canada, most of the larger surface finishing shops were forced to close and many of their employees were reluctantly laid off. Many of the second-tier shops were fortunate to be diversified and have been able to continue but as time has passed, some of these have also been forced to temporarily close or reduce their workforce as three-shift operations became one shift and most are reporting being down 70 percent or more. A few are busier due to being contracted for necessary components such as parts for hospital bed chassis, ventilators, etc.

Another seldom-discussed reason for the second-tier slowdown is the problem business owners are facing because their staff, many of whom rely on public transport to get to the plants, are fearful of contracting COVID-19 by sitting on a bus or subway. The scarcity of available facemasks is also a factor. But with all this bad news, there are signs of a movement to get Canada running again.

All Canadians are adjusting to a tectonic shift in their lives, the true magnitude of which will only become known for what it is with the passage of time, but we must all pull together to support each other through these uncertain times. ■

Bob Smith is President, Canadian Association for Surface Finishing (CASF). www.casf.ca

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Canadian Association for Surface Finishing

How to Clean Anodized Aluminum



BY PAUL J. FREDERICKS

YOU ALREADY KNOW ABOUT the versatile application of anodized aluminum components across various industries. There are anodized aluminum parts in everything we use on a daily basis, such as our smartphones, bicycles, and kitchen utensils, to more complex objects like firearms, multi-tools, and even window frames. There likely isn't a car or a plane out there without some anodized component integral to its functionality and sturdiness. If you've noticed the possibilities for protective coatings on things you use nearly every day, perhaps you were wondering about starting a small business for anodizing aluminum components. You should get acquainted with as much of the process as you can before purchasing the machinery. There are multiple steps to anodizing aluminum, but there are also a

few steps in pretreatment and cleaning anodized aluminum that we will focus on.

INDUSTRY-SPECIFIC ALUMINUM ANODIZATION TERMS

During your research into the anodization of aluminum, you will come across some terms that will be mentioned on and off to explain the process. Some of these terms relate to the chemistry of the process, while some refer to the physics and electronic aspects. This is because anodization is an electrochemical process that results in the passivation of an aluminum surface, producing a thick oxide coating that becomes corrosion and tarnish-resistant. Bare aluminum is prone to corrosion, but the process of

aluminum oxidation creates an anodized aluminum surface that saves it from further corrosion. This artificially oxidized aluminum component is also more durable, adherent to paint, and resistant to abrasions.

Now that we know the core of the process and its aim, we are going to discuss some processes that each aluminum extrusion needs to go through before becoming fully functional kitchenware, a tool, or aluminum siding for a home.

PRETREATMENTS OF ANODIZING PROCESS

Anodized aluminum extrusions need to be subjected to a thorough cleaning process before being submerged into the chemical bath with an electric current. These cleaning procedures require more than a simple cleaning solution. The anodizing process cannot begin if the aluminum surface contains any grease, oil, or dirt. The surface also has to be as smooth as possible to achieve premium results. This is why we will explain the process of rinsing, etching, and deoxidizing, as they are the most important steps in the cleaning process.

CLEANING – REMOVING ORGANIC SOIL

Aluminum parts sometimes contain oil and grease, which are often referred to as organic soil. These contaminants are normally removed with a non-etching alkaline soil cleaner. Even if your aluminum component is already a formed object, it's absolutely vital to remove any organic contaminants before immersing it in the chemical bath. If you fail to observe this step carefully, the organic matter left on the component will react with the anodizing electrolyte solution and leave marks on the surface. Each time a step in pretreatment is performed, a ritual of rinsing with cold, flowing water needs to be completed.

DEOXIDIZING – REMOVING INORGANIC SOIL

As its name implies, deoxidizing is the process of removing oxide buildup on the surface of aluminum via oxidation-reduction reactions (redox). Sometimes there are excess alloyed metals remaining on the surface of aluminum, and deoxidizing removes them with the help of mineral acids. There are three acids we can use: nitric acid-based, chromic acid-based, and hydrofluoric acid-based. Deoxidizing can be light-duty or heavy-duty, with etching or with no etching, or it can be used after alkaline etching as a rinse neutralizer.

ETCHING

The most efficient and vital part of surface preparation can be done in two ways: using an acid solution or using an alkaline solution. Etching is performed to even out or smooth the outer layer of metal and provide a uniform surface. This upper layer is sometimes referred to as “disturbed”, since it often contains nano-sized grains. A good pretreatment guarantees the removal of these grains,

a smooth surface free of imperfections, and a corrosion resistance of the highest quality.

Acid etching comprises a mixture of phosphoric acid and a surfactant, while alkaline etching is made up of caustic soda, a surfactant and a chelating agent. With the application of these acids, sometimes there is residue, which is called smut.

DESMUTTING

Desmutting is the act of removing excess alloyed metals from the surface of aluminum after etching, and it can be done using any mineral inorganic acid, although most often nitric acids are used. You shouldn't confuse it with deoxidizing, as the latter uses redox reaction to remove aluminum oxide only. Another difference is that you may not always be able to deoxidize aluminum before processing it, but you can always give it a thorough desmutting.

RINSING

We've touched on the importance of rinsing only briefly. The truth is, its importance cannot be overstated. It can be quick, but a thorough rinse is always recommended. Some time in the rinse tank is needed for contaminants to dilute off the surface of aluminum components. A mechanical stirrer or air usually contribute to the best results. Depending on the part size and application, you need to pay attention to the water flow, water temperature and quality. Whatever the case may be, the water needs to be purified. Regular tap water may have high mineral content, so it's best you use distilled water during your process.

LIST OF PRETREATMENT STEPS

For a perfect aluminum finish, the most important steps you can take are in the beginning of the process. Anodized surfaces will look clean and polished only with the proper application of the following steps:

- Cleaning Organic Soil
- Rinsing
- Deoxidizing
- Rinsing
- Etching
- Rinsing
- Desmutting
- Rinsing
- Anodizing

To achieve a perfect anodized coating, it's going to take more than rubber gloves and a soft cloth. Only once you've mechanically cleaned it can you really say that your aluminum surface is perfect. Aluminum requires cleaning and maintenance, but the end result is well worth it. ■

Paul Fredericks is Founder and CEO, Aerospace Metals LLC.

The Evolution of Decorative Nickel Plating

BY LORENZO LAMANNA

HISTORY

We all know nickel to be a very important metal with diverse applications such as the manufacturing of stainless steel, batteries, and of course, its extensive use in the plating industry. It is readily available, being the fifth most common element on Earth, and it has excellent properties including a natural resistance to corrosion and oxidation, as well as being easily deposited by electrolysis. However, nickel has not always had such a sterling reputation. The name nickel is derived from the German word, kupfer-nickel, with a literal meaning of copper demon. It was given this name by miners as the red-colored ore appeared to contain copper, yet it failed to yield any when processed.

Electroplating was made possible in the 1800s with the development of electrochemical piles which were used to pump current through wires. Although this did not initially prove useful, in 1837 G. Bird described the electrodeposition of nickel chloride or nickel sulphate on platinum which resulted in a thin layer of nickel.

Further progress was made by Dr. Isaac Adams, who in 1869 patented a nickel ammonium sulphate plating process. His process was aggressively marketed throughout Europe and the United States, resulting in widespread acceptance by industrialized countries. Adams' success led to massive efforts by his rivals to attempt to improve on his findings and develop alternative processes.

The greatest success was achieved by Professor Oliver P. Watts, who in 1916 published his findings on a new and innovative formula for nickel plating. This formula became known as the "Watts Bath" and it formed the foundation for much of today's nickel plating. His formula consisted of an aqueous solution containing nickel sulphate, nickel chloride and boric acid. The concentrations and ratios of these components have varied over the years but due to the contributions of Professor Watts, we still refer to these plating baths as "Watts Nickel Solutions".

A Watts-type bath contains nickel sulphate, nickel chloride, and boric acid in an aqueous solution. The nickel sulphate contributes the nickel metal necessary to provide the latitude for the operating current density range. Complex shapes and/or the use of higher current densities should have the highest nickel sulphate concentration. The nickel chloride primarily contributes the chloride ion necessary for proper anode corrosion, good bath conductivity and



Contrasting matte (top) and bright nickel (bottom) finishes.

Photo: The Rubinet Faucet Company



Racked decorative chair parts plated in a semi bright and a bright nickel.

function by reducing the surface tension and providing detergency to the plating solution to help ensure a pit free deposit. They are used in both air agitated and mechanical processes, although the formulation may vary.

A vital component of modern nickel solutions is often referred to as the “carrier”. Carriers are commonly formulated with aromatic organic compounds which are a source of sulfur. During electrolysis the sulfur is co-deposited with the nickel. The sulfur ion acts to change the crystalline lattice structure of the nickel deposit effectively trans-

for improving the limiting current density. Increased concentrations may lead to a decrease in ductility. The third component, boric acid, contributes the cathode film buffering necessary for the plating bath to produce deposits with good ductility, brightness, levelling and limited current densities.

TODAY'S DECORATIVE NICKEL FORMULATIONS

The formulation put forth by Watts, and expanded upon by subsequent researchers, produced a nickel deposit that was fairly functional but it was difficult to control and was lacking the aesthetic features we look for in a decorative finish. The deposit did not have a consistent appearance over a wide current density range; it lacked brightness and levelling and was prone to hydrogen gas pitting. To achieve a pleasing finish, the producer was forced to resort to mechanical operations. The nickel, being relatively soft, could be polished to a bright finish. The satin appearance, popular on appliances in the 1960s, was achieved by brushing the parts post-plating. Although these operations were able to produce acceptable finishes, the cost was quite prohibitive for many markets.

The first challenge to be successfully overcome was the creation of anti-pitting agents. These compounds, often referred to as wetting agents,

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Table Depicting Typical Decorative Nickel Plating Solution Parameters

Component	Typical Range
Nickel	75-90 g/L
Nickel Sulphate	260-335 g/L
Nickel Chloride	60-120 g/L
Boric Acid	37-52 g/L
pH	3.5-4.5
Wetter	0.1 – 0.25%
Carrier component	2.5-3.5%
Index component	0.5-1.0%
Brightener component	0.1 – 0.25%
Wetting agent	0.1 – 0.25%

forming the natural internal stress of the nickel structure from tensile to compressive. The carrier adds ductility to the deposit as well as reduces the tendency to burn at higher current densities. Although these compounds act as grain refiners and add some lustre to the finish, they

do not impart a bright finish without the use of brighteners and auxiliary brighteners.

Over the years, significant research has taken place with brightening agents. The naming of these compounds varies with terms such as primary brighteners, secondary brighteners and auxiliary brighteners. Regardless of the name used, these compounds made decorative nickel plating possible. They imparted many characteristics to the deposit including ductility, low stress, grain refinement, brightness, and levelling. They helped to control hazing and burning while increasing the effective current density range. Without these compounds, the commercial use of electrodeposited nickel would be greatly diminished.

DECORATIVE APPLICATIONS AND TRENDS

The popularity of many decorative finishes tends to vary with the whims and desires of architects, designers and the discriminating consumer. The impacted products may include housewares, point of purchase displays, plumbing, lighting, architecture, building hardware, furniture, appliances, fashion jewellery, automotive, hearth products, and many other consumer goods.

Today’s decorative plater is forced to adapt to these changing trends quickly and effectively. One finish which has been widely used for decades is matte nickel. The description of this finish can vary widely just as the methods used to produce it are vastly different from shop to shop. The applicator may choose to mechanically impart lines on the parts prior to plating or brush them after plating. They may choose to sandblast or use glass bead. Regardless of the method used, the amount of time and effort greatly increases the cost of producing the products.

Dynamix Inc. has developed a unique product to overcome these many challenges. The Dynaplate Ni B200 decorative plating system is a simple-to-use, single additive, decorative nickel plating system. It was formulated to produce a uniform, decorative, matte nickel deposit over a wide current density range. The degree of matte finish can be easily controlled to provide a range of finishes, ranging from the look of sterling silver to the appearance of stainless steel. The truly unique aspect of this product is the ability to convert a nickel bath from bright to matte through a single addition. When the matte finish is no longer required, brightener is simply added back to the bath. This gives the applicator flexibility to change his operation to instantly meet the requirements of the changing marketplace, without the need of additional tanks.

The metal finishing industry continues to evolve and so do customer requirements. Ensure your shop is uniquely positioned to accept the next challenge. ■

Lorenzo Lamanna is a Technical Sales and Service Representative at Dynamix Inc. He has been working with decorative nickel for almost 30 years.



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Washing the Water



A Kontek membrane filtration system.

POSSIBLY MORE ATTENTION is paid to cleaning up water from industrial processes than any other environmental issue. There's an argument to be made that some airborne emissions will simply disperse, especially when the plant is not close to other facilities or, more problematically, residential property. But water with toxic residues can remain in place for years or even decades, rendering soils unusable and streams or lakes unsafe.

The plating industry is keenly aware of these issues. It has been working on improving its effluent control processes for decades, and is always hungry for better or more cost-effective technology.

Chemical isolation and filtration is a proven approach to eliminating certain metallic materials from a wastewater stream. Bentonite clay-based formulations, for example, have long been used to separate oily contaminants from wastewater, and to precipitate metallic hydroxides.

These react ionically with non-precipitated heavy metal cations, and encapsulate the contaminants, forming a non-hazardous waste. The procedure is simple, one step, and can be accomplished by either manual or with completely automatic equipment.

A. Brite Co., for example, offers a variety of bentonite clays in its Envirobrite product range for removing oils, metals and suspended solids from wastewater. Each of the products in its WBC range is based on sodium bentonite clay.

"These are available pure or blended with other dry chemicals to treat a wide range of wastewater streams," the company says. "Polymers and other powders are mixed with clay and are time-released when added to a waste stream. A series of sequential chemical reactions take place without operator intervention, saving time and labor.

"The entire treatment process is simplified by minimizing treatment steps and equipment needed. WBC products will encapsulate contaminants, resulting in a sludge that is usually non-leachable and therefore non-hazardous, substantially reducing disposal cost.

"The product removes oil and grease while reducing BOD, TSS and heavy metals. WBC products also create a strong filterable floc by allowing the floc to readily release water resulting in a drier sludge cake."

A. Brite also offers a range of coagulants that allow total suspended solids to clump or coagulate so that they can be filtered out. Its proprietary Envirobrite WTC-815 is a concentrated liquid material that produces stronger coagulation and floc action than is possible from inorganic iron and aluminum salts.

It produces, the company says, large, rapidly settling floc, yet reduces sludge volume. It is recommended for breaking highly chelated waste streams, substantially reducing sludge and removing turbidity in the water.

The WTC-104 product assists the anionic polymer in flocculation of heavy metal precipitates. It helps produce a

WASTEWATER TREATMENT

dense rapidly settling floc and does so, A. Brite says, with less sludge volume than inorganic seeds such as ferrous sulfate and alum.

A third coagulant, WTC-100, is a concentrated solution of divalent metals and coagulants that are effective in breaking heavy metal chelates and oil emulsions from alkaline cleaner streams that are often associated with metal finishing waste streams.

The Envirobrite range also includes flocculants and precipitants. These, too, have a strong focus on removal of heavy metals from wastewater.

Kontek is a Canadian-based equipment manufacturer producing both automatic batch treatment and continuous precipitation process machinery for wastewater treatment. The company says its batch treatments “contain pre-programmed chemical recipes designed to guarantee that each of your different wastewater sources will receive its specific treatment formula to consistently meet discharge compliance requirements.”

The system it adds, will treat a fixed volume of wastewater from different sources with a specific treatment protocol design to remove the constituent contaminants, and can drive down costs by reducing treatment chemical consumption.

The units feature an interactive touch screen HMI unit diagrams, analytics, and data logging. There is constant probe supervision, and the pumping stations offer service and standby modes.

There are neutralization reactors to maintain pH levels, and SmartLogic automated controls.

The continuous precipitation equipment is calibrated to deliver optimal results in industrial settings. Kontek’s 1200 series, for example, is designed for small spaces in pre-existing facilities. It can handle up to 40 US gallons per minute (gpm).

The 1300 series models are self-contained in a single modular unit, for quick and easy installation. They are designed to treat wastewater streams from 10 gpm to 40 gpm, for safe discharge in compliance with municipal limits.

These systems are fabricated with complete integral pre-wiring and pre-plumbing. The 1300 models can accommodate up to four chemical reagent feed stations and 12 chemical feed metering pumps, to provide treatment for multiple contaminants simultaneously.

The larger 1400 systems, Kontek says, “are integrated within each facility to meet the stringent effluent requirements that exist for metal finishers. Each unit is meticulously engineered to deliver customized results for flow rates, from 50 US gpm up to 1,000 US gpm.”

The manufacturing process begins with a comprehensive plant inspection that allows Kontek to identify wastewater sources and precise treatment requirements. Company engineers then determine which combinations of reagents and components are required.

Water and Wastewater Equipment Co. offers metal scavenging systems that, the company says, can remove metals to parts-per-billion levels. This includes lead, copper and nickel-chrome.

The company’s equipment is available in duplex and triplex systems, and it says paybacks can occur in less than one year.

It also makes ion exchange purification systems that can be employed in closed-loop water recycling, as well as for removal of selected metals. The ion exchange sends water through bead-like spherical resin materials (ion-exchange resins), and ions in the water are exchanged for other ions fixed to the beads. The two most common ion-exchange methods are softening and deionization.

Reverse Osmosis (RO) is, the company states, “the most economical method of removing 90 per cent to 99 per cent of all contaminants. The pore structure of RO membranes is much tighter than UF membranes.”

RO membranes are capable of rejecting practically all particles, bacteria and organics down to 300 daltons molecular weight (including pyrogens). In water purification systems, hydraulic pressure is applied to the concentrated solution to counteract the osmotic pressure. Pure water is

driven from the concentrated solution and collected downstream of the membrane.

The same company also makes tubular crossflow microfiltration membrane systems that are designed to remove selected inorganic, organic, or heavy metal contaminants to meet the regulatory compliance and/or water recycle objectives. A two-step process makes the microfiltration systems reportedly more efficient and reliable than conventional treatment methods.

First, chemical pre-treatment converts the contaminants to filterable particulates and mitigates fouling effects. And secondly, membrane microfiltration accomplishes physical separation of the particles.

ALAR Engineering Corp. is another supplier with a range of filtration equipment to deal with metals extraction from wastewater. Its Auto-Vac employs a liquid ring vacuum pump that pulls water through a precoat drum filter while sucking moisture out of the suspended solids.

The inside of the drum is hollow; the outside consists of a wedge wire screen covered by a polypropylene cloth. The drum rotates in a trough [filter pan] where one-third is submerged in liquid and two-thirds are exposed to ambient air.

When activated, and before filtration, the drum surface is coated with a filter aid "cake" of diatomaceous earth (DE) or Perlite. This consumable filter media is porous, allowing air and water to pass through while capturing

micron size particles.

Once a full cake is built on the drum, the wastewater is pumped into the pan at a controlled rate. The vacuum sucks the liquid through the drum and pumps it away.

Suspended solids, precipitated metals, or de-emulsified fat, oil and grease larger than one micron will accumulate on the filter cake surface. These solids will build with each revolution of the drum until the vacuum cannot draw any more water through.

At this point, a stepping motor activates a variable speed knife blade that removes the top layer of solids with lathe-like precision. The knife also shaves off a slight amount of filter aid cake as it advances toward the drum, leaving a clean layer of media to grab more solids.

Just which system, and which supplier, will work for your operation requires, as usual, a careful process of elimination. Over-engineered systems can be as much a liability as under-engineered ones, and knowing what the true requirements are for your current and near-future needs calls for some careful calculation.

Once that is done, however, you can be sure the selection available today is bound to offer something suitable to your operation's compliance requirements, with the reliability that's essential in a conscientious manufacturing facility. ■



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CONTROL of FUME EMISSIONS in Chrome Plating

ANY INDUSTRIAL PROCESS that involves heating metals to high temperatures carries some health risks. Metal ions themselves, or compounds formed from them, can be emitted into the work area, endangering both employees and those who live or work nearby.

Chromium's potential toxicity issues are well known, even if they are manageable with today's technology. One such key technology is fume control systems that can capture the emissions and divert or transform them.

The specific issue that has consumed a lot of attention in the past couple of years is PFAs. These fluorocarbons are efficient at capturing emissions by means of mist suppression.

There have been several generations of PFAs, the most recent to become widespread – the fourth – appearing in the 1990s, with the advent of perfluorooctane sulphonate (PFOS) and perfluoroalkyl halogenated aliphatic acids.

These mist suppressants are fluorinated anionic surfactants designed to reduce surface tensions of aqueous solutions to very low levels. They display exceptional chemical stability in corrosive media and very acidic solutions. In chrome plating baths, they show an ability to aid in wetting and to promote the formation of a slight foam layer on solution surfaces, providing mist suppression properties.

In addition, although these newer surfactants still contain fluoride, they are more biodegradable than the third generation PFOS suppressants. But they can produce reproductive and other health problems, and in animals, have been shown to produce cancers. The quest for a fifth generation of suppressants was necessary.

Dynamix Inc. set out to develop PFOS and PFAS-free chemistry that did not interfere with electroplated surface quality, while providing decreased chrome emissions to the environment as well as employee occupational exposures. Two chemical families were studied: fluorinated and non-fluorinated surfactants that showed stability in highly acidic environment.

The most recent development in the company's Dynaplate Cr FS product line is a chemistry that is fluoride-free, PFOS/PFAS-free and halogen-free, and reportedly capable of providing all the benefits of the previous generation, while being completely biodegradable. These non-ionic, dispersible suppressants work by coating the surface of the plating bath with a very stable low foam blanket, while reducing the surface tension to below 40 dynes/cm.

These agents can be used in both decorative and hard

chrome plating, which offers versatility and practicality in the operation of chromium plating baths. Dynamix asserts that using Cr FS products can reduce hexavalent chromium airborne emissions from hard chromium electroplating baths reduces up to 99.9 per cent. It also reduces occupational exposure in the plant.

By reducing the surface tension of the chromium electroplating bath, there is a size reduction in the bubbles produced, which reduces misting and hexavalent chromium emissions. With additions of one per cent by volume in hard chromium electroplating baths and allowing a short period of time for the baths contents to reach equilibrium, the surface tension of the bath is effectively lowered from above 70 dynes/cm to below 30 dynes/cm.

Mech-Chem Associates Inc. designs, fabricates and installs scrubbers for all types of chromium-using applications, including anodizing, etching, plating, stripping, decorative plating and hard chrome plating. It has fume control systems for use with chromic acid, trivalent chromium and hexavalent chromium, and it advocates a different approach than mist-type systems.

"A packed bed scrubber with a Chevron mist eliminator will have a moderate chrome removal rate," the company states. "Using a mesh pad instead of a mist eliminator will increase the amount of chemical laden droplets kept from exiting the scrubber, yet neither of these designs offer the high efficiency removal rate required by today's air emission standards."

The majority of scrubbers, the company points out, function using adsorption, which involves the contact of a gas stream with an aqueous solution. However, due to the fact that the chromium exists in the mist droplets, and not as a gas, the adsorption method is not entirely effective.

"To properly scrub chrome," Mech-Chem states, "mesh pads are used to create separation of the chrome-laden vapor from the air stream on contact. By using these mesh pads in a multi staged set-up, within a horizontal scrubber, chrome scrubbing efficiency greater than 99 per cent can be achieved."

The mesh pads are considered key in chromium scrubbing due to their high removal rates of the metal, ability to handle moisture build up, resistance to being plugged, reduction of pressure drop through the scrubber and their ability to handle larger volumes of air laden with chromium-contaminated liquid. These factors, the company says, reduce both operating cost and overall main-

tenance of the system.

Tri-Mer Corp.'s offering in this market is a mechanical one. Its Fan/Separator is an all-mechanical, two-stage fume scrubber that can be used for sulfuric acid pickling, metal plating, and battery charging operations. It therefore includes chromium fume control in its portfolio of applications.

The scrubbing liquid wets the contaminant as it enters the fan, allowing it to be centrifugally spun out of the fan scroll through dynamic mixing. The centrifugal action, using the fan wheel as part of the scrubbing process, eliminates a reported 55 percent of all airstream contaminants. The scrubber has dynamic scrubbing as the first stage and impingement as the second stage. The impingement process causes the air to change direction as it passes across the rigid packing media. The packing media also act as a mist eliminator section.

It is supplied in framed packs and provides a claimed 99 percent removal efficiency of 20 micron and larger liquid droplets under a continuous duty load. Contaminants enter the eye of the fan where they are treated with a fog mist of scrubbing liquor.

The system is claimed to operate with 20 percent less brake horsepower than conventional fume eliminators. The fume scrubber's high efficiencies are possible, Tri-Mer says, due to its unique use of the fan as a centrifuge in the scrubbing process.

Fan velocity is precisely controlled so that air crossing the rigid packed media stays within design parameters. The system is positively pressured, working in a manner that is the reverse of conventional "negative air" scrubbers. Thus, air is pushed, rather than pulled, through the system.

Tri-Mer says 55 percent of the system's performance results from contact between the contaminant-laden air and the rigid tube packing, while 45 percent is from the centrifugal action of the fan wheel. The unit is said to be extremely effective in eliminating corrosive contaminants, and the outlet is near saturation. Total energy consumption is reportedly 15 to 20 percent less than comparable wet scrubbers with a negative pressure design.

The Tri-Mer fume scrubber was engineered for simple installation and start-up, so start-up costs are said to be low. Fan/Separator units are manufactured of PVC, polypropylene, stainless steel or mild steel. Tri-Mer will select the appropriate material for each application. The company also designs and manufactures duct systems in PVC, polypropylene and fiber-reinforced plastics.

Choosing the correct fume suppression system for a chromium plating operation requires careful assessment of the current line and its throughput, as well as examining plans for future expansions to capacity. However, where options a few years ago were relatively limited, today's selection of methods and equipment offers far more in the way of precise matching of a system to a line. ■



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Coronavirus Impacts on Your Business

Without utilizing a formal survey, we at CFCM Magazine wanted to know how the finishing and coatings sector is doing amid this pandemic, as well as take a look at any issues and trends that may be emerging. We canvassed the industry looking for stories from readers large and small, and following is a snapshot of the industry at this moment in time. The environment is not all bleak! There are many creative, positive stories of adaptation, helping in your communities and trying to stay positive. We salute you and hope you enjoy reading about how this industry continues to survive and thrive.

YOUR PANDEMIC EXPERIENCES

SATA

April Chadwick
Marketing Specialist

IN THE WAKE OF ONTARIO AND QUEBEC classifying autobody repair and their supply chains as essential businesses, SATA Canada remains open and working hard to get customers everything they need in the paint booth and sometimes beyond.

Recently, SATA responded to an urgent request from Terry Cargoe Paint Works in Bradford, ON, for our RPS cups and some other desperately needed necessities.

Unfortunately, we can't repeat this one-off delivery, but we can get you spray guns, filtration, breathing equipment and even offer gun repair!

SATA Canada has been conducting webinars with its customers including distributors, bodyshops and paint manufacturers, throughout the pandemic.

Hosted from the SATA training center classroom in Vaughan, ON, customers can connect with SATA Canada Business Development specialists across the country.



Photo: JP Kleniewski, Business Development Specialist, Ontario

Webinar topics include breathing safety, NIOSH/CSA compliance, filtration and spray gun setup and maintenance.

Contact SATA Canada toll free at +1 844 554 SATA (7282) or e-mail us at contact@sata.ca to arrange a custom webinar for your company.

LEMMER SPRAY SYSTEMS

Hussein K. Bawa
President

WITH THE ENTIRE WORLD living in an unprecedented time, many companies are helping prevent the spread of COVID-19 by producing items such as masks and sanitizing solutions.

Every company has a moral responsibility to do its part to help their communities to prevent the spread of the COVID-19 virus. At Lemmer Spray Systems, we have adapted two of our top-selling airless spray systems to be used to spray sanitizing solutions. We not only sell the equipment but educate our customers on how to use our systems properly.

Lemmer Spray Systems' DC-1500 and DC-3100 are the two sanitizing sprayers currently being sold across Canada. These systems are both airless and are light-weight and portable.

Our tough piston pump is designed for dependability. The universal brush-type motor will handle up to 100 feet of #14 extension cord. The pressure control is mechanical and modular for reliability and ease of service. The DC-1500 is light, as it only weighs 15.5 pounds.

The DC-3100 with its DC motor will handle up to 300 feet of extension cord and withstand job conditions of low voltage. The pressure control is mechanical and modular for reliability and ease of service.

Overall, Lemmer Spray Systems has adapted well during the downturn in the economy. This is due to our commitment to providing quality products and exceptional service, which have been the corner stone of our company since 1965. Despite the downturn, our branches are in operation.

Our ability to adapt to the changing environment has been due to the amazing work of our employees who consistently have provided high-level customer service and to our loyal customers who have the confidence in us. Our suppliers have also been a great help to ensure their supply chain issues had minimal impact on our operation.

Our practice of maintaining sufficient inventory level provided an adequate lead time buffer which enabled us to ensure we have sufficient inventory and minimized any supply chain issues.

We are being responsive and flexible to customer requests as per usual. Many of our customers are now calling in or emailing us their purchase orders and their technical questions, in order to maintain social distancing, while some are using social media platforms such as Facebook to inquire about our products and services. However, there are some customers who prefer to visit us at our various locations to purchase supplies and equipment and to drop off their equipment for repairs.

DYNAMIX

Michael Black
Marketing Manager

THERE IS A NOTION IN LEADERSHIP training courses that I often think back on and that is the concept of "controlling your 15 percent". This relates to a situation where you are trying to get your way and influence a decision. The 15 percent comes from the fact that you only have 15 percent control of a situation and you have to understand where to implement your control to make the most out of the outcome and not to worry too much about what is out of your control.

This pandemic has seen a lot out of our control. Changes made essentially overnight, restrictions introduced and limited time to react to the "new normal". The shops that are surviving are the ones doing the most to control what they can. Planning can be extremely difficult, but successful planning and a little creativity can go a long way.

We have seen scheduling changes made where one shift is stretched out into two or three shifts to limit employee interactions and allow physical distancing. We have seen flow diagrams changed so hallways in plants become one-way routes to limit employees running into each other. We have seen doors retrofitted to include handles that can be opened using your elbow to avoid hand contact. We have seen customers approve more alternative suppliers to ensure they are not single sourced on critical materials.

You can experience problems in electroplating if you are continuously shutting your line down and starting it back up. You often see fewer problems when the lines run continuously and you don't have to shut down rectifiers, turn off agitation, cool down tanks, etc. Some of our customer partners wait to schedule work over consecutive days so they can make the most out of their equipment and personnel. Some shops have elected to only run Tuesday to Thursday for this reason. This is where planning becomes critical.

The pandemic has changed the way people view buying. In the chemical market, "best price" doesn't always win the business or the order. Timing is very important, supply is very important, and getting the most performance out of what you are buying has become crucial. Technical service and laboratory support become invaluable.

Dynamix is fortunate to have local manufacturing and a differentiated product offering as well as customer base. A lot of surface finishing is tied to the automotive and aerospace industries, but there are still many shops performing essential work to the agriculture, energy, safety, medical, and construction industries. Common items like washers, valves, tubes, fittings, hose connectors etc. aren't always considered "essential" products but they are certainly used

COVID-19: INDUSTRY OVERVIEW

in equipment that goes into all of these industries. Some of the customers that have been managing the best seem to have a diverse portfolio of customers themselves.

I think some of the trends we are seeing now may last long after the pandemic has cleared. I hope and think the notion of “buying local” and supporting your local businesses will remain in the memory bank of consumers for a long time. This will trickle into our industry and might just slow down the trends of globalization that have been on the rise for years. Either way, our success is highly dependent on our customers’ success and we remain committed to providing our customers with the service excellence they require to be successful, while implementing our 15 percent the best we can.

RADTECH

Gary Cohen
Executive Director

A RADTECH SURVEY conducted in mid-April revealed that while UV+EB related coatings projects have been delayed, very few had in fact been canceled to that point. While current business depends on the health of our users, survey respondents pointed to a number of new inquiries as users look to innovate with UV+EB including work in antimicrobial coatings, the implementation of new UV LED systems and a renewed emphasis by customers on how they may implement sustainable, flexible production and offer innovative products. UV+EB equipment is also being repurposed to offer disinfection services by several members; while UV 3D printing is contributing to the making of PPE.

Read survey results at <https://uvebtech.com>.

CHROMAFLO

Jennifer Kapalin (and team)
Marketing and Communications Manager

CHROMAFLO TECHNOLOGIES CORPORATION, a global supplier of colorant systems and chemical dispersions, has, like many organizations, faced challenges in combating the COVID-19 pandemic.

Chromaflo is a critical supplier of colorants required for application in a wide variety of essential industries including transportation, infrastructure, pharmaceuticals, energy, construction, defense, communications, and consumer goods. This has made it critical that manufacturing sites remain open and producing during the pandemic. For example, the healthcare industry relies on life sustaining items that require colorants like latex gloves and personal protective equipment that have been in short supply.



In order to continue operations while keeping employees safe, Chromaflo continues to monitor and adhere to governmental guidelines and regulations, including the advice and guidance from health organizations and governments at the global, regional and local levels. Employee health and safety is a top priority.

While all North American and European facilities remain fully operational, Chromaflo had experienced some plant shutdowns in the Asia-Pacific region; however China, Malaysia and South Africa are reopened and operational again. The situation in India is being monitored and that facility will safely reopen when allowable.

Chromaflo has been proactive in addressing risks to employees and business health.

“It was clear to me that a regional approach was needed as I expected each national and local government would be initiating its own specific requirements,” says Scott T. Becker, President and CEO. “This has absolutely come to fruition.”

In March, Chromaflo set up geographic cross-functional teams to address the potential threat from the COVID-19 virus. By forming response teams at each of its locations around the globe, Chromaflo was able to respond to the



pandemic while accounting for each location's size, spacing, number of people and capability.

At the outset, Chromaflo adopted workplace measures as recommended by the World Health Organization, the Centers for Disease Control, as well as specific country, regional, and local health officials.

In addition to these measures, Chromaflo implemented a number of social distancing protocols to protect employees:

Initiated a work from home program for more than 160 regional administrative employees.

Implemented changes to normal operating schedules by eliminating shift overlaps.

Placed limitations and restrictions on visitors and meetings in locations that remain open.

Conducted daily meetings with each regional leadership team on the status of employee health and business continuity.

In addition to employee health, Chromaflo monitored its business health by consistently reviewing its supply chain to ensure continued supply of critical materials that are used in colorants. Since many of Chromaflo's customers are considered essential businesses and some of their products are used to protect front-line workers from the COVID-19 virus, it was essential to ensure an uninterrupted supply chain. Thus far, Chromaflo has ensured continued supply of key raw materials.

These rapid-response plans and strategies implemented at all of Chromaflo's facilities have helped to ensure colorant manufacturing and supply remains consistent while protecting employees.

Chromaflo also created a team to investigate hand sanitizer production as a means to assure the health and safety of employees and customers. They saw that disinfecting materials were important to the safety of their

community, but that global supply shortages made them challenging to acquire.

To address this problem, Chromaflo is now producing and selling ChromaSafe Hand Sanitizer to B2B customers in the U.S.

The COVID-19 global pandemic has certainly created many hardships and challenges for businesses and individuals alike. To adapt and respond swiftly, Chromaflo Technologies Corporation created a strategy of rapid response, recognizing that speed and flexibility would be essential in staying in front of this pandemic. Protecting the health and safety of employees while ensuring their customers an uninterrupted supply of quality colorants remain top priorities. Adapting under challenging circumstances to also produce and launch a new hand sanitizer demonstrates how a nimble and responsive organization such as Chromaflo can balance global business needs and act as a good local citizen at the same time.

TRINSEO

Rüdiger Schmitz

Vice-President, Latex Binders

TRINSEO IS ADAPTING TO our new reality. In any decision we make, we are guided through our core values of safety and responsible care. Since the beginning of the COVID-19 outbreak, Trinseo has set up a Global Crisis Management Team to closely monitor the situation and take appropriate actions, including precautionary safety measures inside our plants, offices and other locations. The Global Crisis Management Team also assesses all external factors that could impact the continuity of our operations, as the security of



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supply to our customers is of utmost importance to Trinseo.

This is uncharted territory, but we have been tracking this from early on to anticipate impacts and make plans to ensure the safety of our employees while meeting customer demand. We are taking short-term actions to ensure short-term financial stability, as well as longer-term strategic actions to better position Trinseo in the future.

We are working diligently to meet customer needs and are committed to supporting them during this difficult time – both on day-to-day operations, as well as current and future product development and project management. It is our utmost priority that operations continue running without major disruptions on both sides.

While it's too early to know just how the global coatings industry will be impacted and how consumer behavior will change in the wake of the COVID-19 pandemic, this is certainly something companies will need to consider as they plan for the future across each step of the value chain.

We're already seeing shifts in how consumers are spending their discretionary income, and this will likely continue as we experience volatility and uncertainty in the economy. Inevitably, this will place prolonged pressure on industries tied to consumer demand.

As with any industry, we'll need to closely monitor these changes and emerging megatrends, and then make considerations for where we can innovate to meet the new demands that the future presents.

Giving back to the communities we serve is intrinsic to who Trinseo is as an organization. Since the outbreak of COVID-19, we have been extending our care to the communities where we are based, in addition to imple-

menting additional safety measures on our operations and employees.

In light of the shortage of hand sanitizer in the market, Trinseo Hong Kong sourced and donated hand sanitizer to “Baptist Oi Kwan Social Service Tsing Yi Neighbourhood Elderly Centre” and “Missing Link – Polyfoam Recycling Scheme,” benefiting hundreds of families and cleaners in the city.

There is also currently a shortage of protective materials for children in Taiwan. In response, Trinseo Taiwan sourced and donated thousands of children's surgical masks and hundreds of children's goggles to Hsinchu Care Association as well as Hsinchu Fund for Children and Families. The donated supplies will help protect orphans and children of foster families.

And in communities close to Trinseo's Zhangjiagang (ZJG) manufacturing site in China, a shortage of protective materials required in their epidemic prevention work. When Trinseo became aware of this, employees began to source relevant supplies, sending through a batch of personal protective materials and sanitizers to surrounding communities to support these volunteers.

COL-MET ENGINEERED FINISHING SOLUTIONS

Judy Lietzke
Marketing Manager

COL-MET ENGINEERED FINISHING SOLUTIONS wasn't going to let the pandemic, limited travel or social distancing slow it down. Within days of the many state travel restrictions, Col-Met developed the Col-Met Academy, using the restricted time as an opportunity to help identify cost savings opportunities and highlight new products with a series of web-based training[s].

To date, Col-Met has held 14 different webinars, with an attendance totaling more than 1,400 customer and distributor partners, based on topics such as converting your spray booth to LED lighting to help save energy, reduce maintenance time and generate cost savings. One of the upcoming webinars focuses on understanding and properly using a manometer to understand filter change-outs.

Several new products have been launched to reduce cycle times and increase productivity. What better way to spend time when you can't be on the road visiting customers? The webinars are also recorded and then posted to the Col-Met YouTube channel as reference tools to assist with training new hires. After the pandemic is over, Col-Met will continue to provide educational webinars to help educate the industry. ■

NEWS

Sherwin-Williams CEO Explains Strategy During Lockdown



Sherwin-Williams CEO John G. Morikis has outlined the steps his company is taking to support customers during the quarantine period. Given the scope of the company, it has had to adopt different steps for the different markets it serves, but in each area it is finding ways to stay productive.

"In our Sherwin-Williams Paint Stores, we temporarily closed our sales floors and moved to online ordering, telephone ordering and delivery or curbside pick-up," Morikis says. "For our industrial customers, our sales representatives will partner with you to support your business activities. We know that you are counting on us to continue providing you with the products and trademark customer service you need to continue your business through this challenging time."

Company operations in various countries have provided masks, gloves and lab coats to healthcare workers. Closer to Sherwin-Williams' usual corporate mission, it has stepped up its role in providing specialty coatings to assemblers of ventilators, oxygen tanks and hospital bedframes, ensuring steady supply and delivery.

It's also maintaining options for online education of customers, via Zoom or Webex. This is especially recommended for designers and architects that need technical advice or coaching.

Further, it has launched a Pro Support Center, a website that the firm says is dedicated to tools and education resources for painting contractors and other professionals. This also features tips and anecdotes from contractors and others who survived the 2008 economic slowdown, and came out of it stronger.

<https://swppc.com>

PPG and DuraPaint Coating Dividers in Pop-up Hospital



PPG and Dura Industries, DuraPaint, an applicator of liquid spray coatings, are working to provide bed dividers in the construction of the Joseph Brant Hospital pop-up, a 93-bed pandemic response unit in Burlington, ON. The unit will house those with mild to moderate symptoms of the coronavirus, and provide much-needed space so the hospital is not overwhelmed with a projected influx of patients.

Durapaint and PPG are coating the metal dividers with PPG's Duracron in white, a one-coat thermosetting acrylic baking enamel providing corrosion resistance, film integrity, color control, and impact and mar resistance. www.ppg.com

EverLine Coatings & Services Repurposes Equipment for Surface Disinfection



Disinfecting handrails. Photo: EverLine Coatings and Services

EverLine Coatings & Services said in March it is the first in the world to repurpose its line painting equipment to become mobile disinfectors as a response to the COVID-19 pandemic outbreak. The company offers pressurized, mobile disinfecting services for surfaces at hospitals, grocery stores, distribution centers, and other high-traffic businesses and public locations across Canada.

Like other businesses, EverLine Coatings

was looking for a way to pivot its services to help fight the spread of the pandemic.

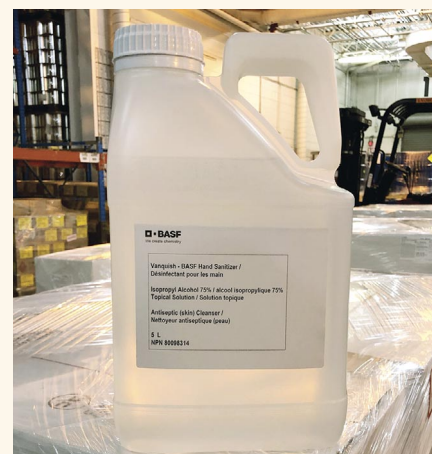
"We want to be part of the solution to keep people safe during this crisis," says President John Evans. "I was so fortunate to discover that this is actually feasible and affordable for clients – and could potentially save lives.

"I felt it was my duty as a Canadian and as a human being to concentrate my company's resources, so that we could help in any way possible. There is not a better time to get this work done, and we are ready to work around the clock to help out. Line painting machines are uniquely effective by being mobile and can apply disinfectant with a concentrated blast that will blow this virus into oblivion."

EverLine says the pressurized systems in its line painting machines are effective for disinfecting purposes. Disinfectants are turned into a pressurized mist that can be applied to kill the COVID-19 virus on all types of surfaces.

<https://everlinecoatings.com>

BASF Manufactures and Donates Hand Sanitizer



With the goal of helping overcome bottlenecks for hand sanitizer resulting from a significant increase in demand, BASF started production of hand sanitizers in Canada in April.

The product, manufactured at BASF's Windsor facility, will be donated to hospitals, care facilities and other institutions in areas of high need, identified in collaboration with the provincial governments of Quebec, Ontario and Alberta.

"The novel coronavirus outbreak has had a tremendous impact to our society," says

Marcelo Lu, President of BASF Canada. “At BASF Canada, we have considered how our businesses and local footprint could positively respond to these challenges and support those who are particularly in need now and in the immediate future: healthcare facilities and essential service professionals.

“I am extremely proud of our Canadian colleagues for their fast response to the crisis. They worked diligently and in close collaboration with Health Canada, other government departments and our supplying partners to obtain approvals and pivot our production to hand sanitizers. We thank both federal and provincial governments for their rapid response in collaborating with industry as we work together to provide solutions for the COVID-19 pandemic and supply shortages.”

BASF’s Windsor site, where the hand sanitizer is being produced, is a key coatings supplier in several automotive OEM and refinishing applications. “Given the slower demand from the automotive sector, we were happy to adjust and contribute to the fight against COVID-19,” says Jeff Klevering, Site Director

for the Windsor facility. “We have an amazing team who wanted to rally around this cause and generate a positive impact.”

In the past weeks, BASF Canada has also donated other key supplies to the healthcare sector across Canada such as disinfectants, hand soap, masks, gloves and protective suits.

Globally, BASF Group currently supplies around 175,000 liters of hand sanitizer weekly free of charge and has recently donated more than 100 million protective masks.

www.basf.com

Axalta Donating PPE and Hand Sanitizer

Axalta is also leveraging its global operations and technical know-how to provide critical equipment and products to people and organizations in its local communities around the world.

“Axalta is committed to worldwide efforts to support the safety, health, and well-being of hospital professionals, first responders, and our employees,” says Robert Bryant, Axalta’s Chief Executive Officer. “Our entire

global Axalta family is pulling together to use our collective energy and resources to help fight coronavirus in the communities where we live, work, and raise our families.”

“We are putting our manufacturing might and supply inventories to work in order to offer products that will make a difference where they are needed most – whether that be in hospital rooms, on ambulances, or on the manufacturing floor,” says Bryant. “We will continue to look for opportunities to leverage our capabilities to the fullest and remain steadfast in our goal of serving our communities and the true heroes on the front lines of this fight.”

Axalta’s coronavirus relief efforts include:

- Production of thousands of gallons of hand sanitizer. Axalta’s plants in Front Royal, VA; Mount Clemens, MI; Tlalnepantla, Mexico; Guarulhos, Brazil; and Wuppertal, Germany are shifting their manufacturing to produce thousands of gallons of hand sanitizer. This product will be donated to local hospitals and first responders, as well as used at Axalta plants to ensure the safety of employees and their families.
- Sending PPE to hospitals globally: Axalta is donating personal protective equipment (PPE) such as facemasks (including its N-95 inventory), coveralls, closed hoods, and protective sleeves to hospitals throughout the world. Medical professionals can use the PPE normally worn in Axalta’s manufacturing facilities and by our customers to reduce the risk of contracting or transmitting coronavirus.
- Providing seat covers to medical professionals: Axalta is donating more than 5,000 seat covers, typically used in body shops, to local hospitals that are low on protective supplies. Medical professionals use the seat covers in their own cars to reduce the risk of transmitting coronavirus when they are visiting those affected by COVID-19.

In February, to rapidly fulfill a critical need order at the request of a major customer, Axalta’s Changchun, China plant was granted a special permit to resume work (after all employee safety requirements were met) to manufacture paint for a fleet of ambulances that were in high demand at the peak of the outbreak in China.

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Surface Coating Innovation that Kills COVID-19 Virus Developed in Guelph

NanoCleanSQ is the joint effort between the University of Guelph and EnvisionSQ.
Photo: EnvisionSQ

A SURFACE COATING THAT KILLS viruses upon contact, like the COVID-19-causing coronavirus, and that lasts for weeks, is based on innovation developed by the University of Guelph and Guelph-based company EnvisionSQ.

This self-sterilizing nano-coating, called NanoCleanSQ, is among the latest Canadian technologies to receive funding from the government's Next Generation Manufacturing Canada program. The program is aimed at developing and producing new, in-demand technologies, equipment and medical products to fight the COVID-19 pandemic.

SARS-CoV-2, the virus that causes COVID-19, can live on surfaces for upwards of 72 hours, increasing the threat of spread. NanoCleanSQ is a clear coating that when applied to surfaces kills 99.9 per cent of viruses and bacteria, researchers say. Its germ-fighting power is fuelled by light and can provide longer protection against surface-to-contact transmission than conventional sterilizers.

It can be used on high-touch surfaces such as plastic chairs, doorknobs and handrails to reduce the spread of COVID-19, says University of Guelph engineering professor Bill Van Heyst, who helped develop the technology.

"There is tremendous opportunity for the application of NanoCleanSQ in hospitals, long-term care facilities, day cares, public transit and other public spaces where transmission of SARS-CoV-2 has been more prominent. It will have a direct impact on helping protect front-line workers and expedite the return to normalcy."

NanoCleanSQ is a transformation of a novel air pollution removal technology called SmogStop developed by Van Heyst and EnvisionSQ that can clean smog, industrial pollutants, cannabis odor and other airborne chemicals from the air.

The technology uses a photocatalyst, or light-activated coating of chemicals, that break down pollutants into harmless elements like nitrogen and oxygen.

The SmogStop photocatalytic coating technology has been tested in highway noise barriers along Highway 401 with positive results.

Funding Facts

In May, Next Generation Manufacturing Canada (NGen), the industry-led organization behind Canada's Advanced Manufacturing Supercluster, invested more than \$21 million in projects it says will lead to the production in Canada of critically needed technologies, equipment, and medical devices to aid in the fight against COVID-19.

- Since NGen announced its COVID-19 funding program in late March, it received more than 900 expressions of interest from advanced manufacturing companies across Canada. The projects approved to date include the development and manufacturing of ventilators and components, test kits, face shields, and a coating material that kills bacteria and viruses on contact.
- NGen worked closely with the Ministry of Innovation, Science and Economic Development, Canada's National Research Council, Health Canada, and the Public Health Agency of Canada to prioritize projects for funding.
- NGen funding will allow EnvisionSQ to scale up production of NanoCleanSQ within 12 weeks to produce more than 1,000 liters per week. This is enough product to protect more than one million doorknobs, 75,000 km of handrails, or the interiors of 8,750 elevators, 400 city buses or 200 passenger airplanes per week.

"We always knew that our SmogStop pollution removal technology had the ability to kill bacteria and viruses, but it was not optimized for this purpose," says Scott Shayko, CEO of EnvisionSQ. "We specifically reformulated SmogStop to help society combat the COVID-19 pandemic."

The funding provided by the federal government will be used to establish the first production facility of NanoCleanSQ at University of Guelph.

"University of Guelph is proud to be at the forefront of research and innovation that is being used to combat the COVID-19 pandemic" says Malcolm Campbell, Vice-President (Research). "Prof. Van Heyst's exceptional contribution to EnvisionSQ's brilliant COVID-19-combatting innovation exemplifies the University of Guelph approach toward creating impactful, real-world solutions that improve life." ■

Survey Provides View into What HR Professionals Face and What's to Come With COVID-19

Human Resources Professionals at Decision-making Table Like Never Before

IN APRIL, the Human Resources Professionals Association (HRPA) released the results of a survey revealing the impacts and scale of change Ontario's HR professionals are currently facing as a result of COVID-19. The 1,107 respondents represented HR professionals from organizations of varied sizes, sectors, and industries. Manufacturers accounted for a large chunk of respondents at more than 11 percent.

The HR professionals said:

- 40% were able to provide work from home options
- 34% introduced policies/ expectations about workload for remote workers
- 48% are providing unique mental health supports
- 53% have implemented a hiring freeze
- 52% have changed approaches to onboarding

“With COVID-19, ‘change’ is the new norm for the foreseeable future,” says Louise Taylor Green, CEO, HRPA. “I’m struck by how quickly business decision-makers had to move to face the realities of COVID-19 head-on. While many organizations were able to pivot operating norms to keep businesses running, others were faced with the brutal task of reducing hours and staff. It’s clear we all face immense change with the impending return to work.”

Green says HR professionals were at the table with business decision-makers like never before and continue to play a key role on issues of technology, workload, communication, issues management, and mitigation.

Looking ahead, the survey results revealed key themes that will be particularly relevant to business as back-to-work planning occurs.

Working from home policies will need to be revisited. Currently, only 37 percent of respondents indicate their organization allows working from home (at least some of the time). Often a controversial and unclear policy, COVID-19 has brought it to the forefront of policy considerations.

Organizations will think of “essential services” differently moving forward. Based on Government of Ontario criteria, 75 percent of respondent companies were deemed to be an essential service. Organizations will need to better understand their role when considering commitments to employee safety and well-being.

Mental health of workers will become a top priority.

While many respondents said their organization added mental health supports for employees, 52 percent have not yet addressed this need, revealing a significant opportunity to improve.

The survey revealed most organizations are not currently focusing on updating or modifying existing employee programs so rewards/compensation and labor/employment relations will require focus over the coming months, HRPA says. If you have an HR department, these professionals will continue to play a significant role during recovery and rebuilding phases post-COVID-19. If your shop does not employ someone in an HR role, consider seeking advice for what is sure to be new territory going forward. ■

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Is Your Business Clean? Really Clean?

AS MORE AND MORE Canadians became afflicted with the deadly coronavirus, entrepreneurs Mitchell Moshenberg and Louis Paulozza, members of the construction and building restoration industry for more than 25 years, joined the fight with their new company, We Clean COVID19 Inc.

Already conducting HAZMAT abatement as part of one of their businesses, it was a “no-brainer” for them to repurpose and retool to join the fight and help stop the spread of the deadly virus, they say. They had the materials, staff and infrastructure to quickly mobilize.

HAZMAT abatement and the decontamination/sanitization of homes, commercial and industrial properties are the company’s main focus. Emergency cleaning services for COVID-19 outbreaks are also available.

“There’s an inherent need to control the conditions in our homes and businesses in order to reduce the chance of the virus spreading. Our goal is to help protect our communities and join the fight in preventing the further spread of this pandemic,” says Mitchell Moshenberg, Co-Founder, We Clean COVID19 Inc. “Private residences, businesses, commercial properties, and even new homes need to be thoroughly decontaminated.”

The need for proper decontamination is a crucial part in helping to control virus spread.

Cleaning refers to the removal of dirt, grime or particles from surfaces, while disinfecting refers to the use of chemicals to kill germs from surfaces. Utilizing both methods controls the levels of adenosine triphosphate (ATP). Lowered levels of ATP reduce the risk of spread of infections such as SARS-CoV-2 (the cause of COVID-19).

We Clean COVID19 offers various levels of service including disinfecting and sanitization of spaces using EPA-approved products such as Myco Mold Control and Benefect Decon 30 (only available to licensed HAZMAT abatement professionals); specific care (with hand wiping) of high-contact surfaces such as tables, counters, switches, door handles, faucets, machines/appliances, etc., utilizing disinfectants deployed with professional foggers and spray/atomization systems to reach all surfaces without any residue; indoor and outdoor decontamination (power washing and other methods used for outdoor spaces); deep cleaning; etc.

The company controls the level of ATP from all touch zones within the space cleaned to a level that kills COVID-19 virus. After each cleaning, an environmental engineer inspects the property, conducts a swab test to ensure the ATP levels are safe and provides a certificate so anyone entering the premises will know it has been Level One cleaned and sanitized and is safe to enter.

Along with providing HAZMAT abatement, the company is also increasing its workforce in several communities. “Sadly, this pandemic has cost many their jobs or caused companies to reduce employee hours, so we encourage any qualified individuals looking for work to contact us for current job opportunities,” adds Moshenberg. ■



Photo: WeCleanCOVID19.ca

Does Your Business Require Deep Cleaning and Sanitizing?

- Don’t forget that there’s a difference between cleaning and disinfecting; just because spaces have been cleaned to remove dirt and grime it doesn’t mean they have been disinfected to remove germs. To properly disinfect requires a cleaner that has been labelled as a “disinfectant”.
- For CDC compliance, deep cleaning and sanitization of any space, hire a professional HAZMAT abatement professional.
- Headquartered in Newmarket, ON, We Clean COVID19 services the Greater Toronto Area and various parts of the province. Other regions are being explored as the company expands.
- Pricing is based on square footage, the type of space, how often cleaning is required, and the level of service that is required.
- Crews are available at night, during “off hours” or during the day if the space is empty.
- All clients are provided with a certificate of deep cleaning and sanitization. Crews are all licensed professionals equipped with proper HAZMAT gear and supplies.
- Depending on the size of the space, it can take two to four hours to conduct a Level One cleaning. Employees can re-enter within a few hours.
- While HAZMAT abatement and the decontamination/sanitization is the company’s primary focus, indoor and outdoor spaces can be arranged to comply with physical distancing guidelines. Power washing of outdoor spaces and items furniture is offered as long as the client/owner has conducted primary cleaning (the removal of dirt and grime). Hand wiping of commonly used touch points is also offered for outdoor spaces.



Resins Market Update

Market Continues to Grow Despite Rising Costs, Stricter Environmental Regulations

BY ANTHONY LOCICERO

THE COATING RESINS MARKET is projected to grow from \$29.5 billion in 2018 to \$37.9 billion by 2023, at a compound annual growth rate of 5.1 percent, during the forecast period, according to MarketsandMarkets.

The growth of end-use industries, such as building and construction, packaging, industrial, automotive, marine, aerospace, and furniture, are driving the growth of the coating resins market, per MarketsandMarkets.

“We have seen the demand for resins increase as building and construction activity has grown with the broader economy,” said Daniel T. Grobe, Director of Sales and Marketing at Specialty Polymers.

Coating resins are organic compounds used for decorative and industrial coatings to protect surfaces from extreme environmental conditions coupled with properties such as high durability, adhesion, corrosion resistance, and wear resistance, according to Allied Market Research.

These coatings are extensively used in furniture, automotive, marine, and protective applications, Allied Market Research noted.

“Coatings manufacturers are looking for greater durability and longer coating life at a lower total cost,” said Dan Latas, Marketing Manager at Lubrizol. “In addition, they may look to enhance the coating application process, enabling applicators to lower the overall cost to apply, such as through a reduced number of coatings required or faster dry times/completions.”

The market is divided into waterborne, conventional solvent-borne, high solid solvent-borne, powder coating, radiation cured, and others, per Allied Market Research.

Sun Chemical Advanced Materials reported growth in the global resins market in 2020, especially in sales of UV-curable, waterborne, and powder coating resins, ac-

ording to Michael T. Venturini, Marketing Director, Coatings, Sun Chemical.

“In the areas of industrial coatings, we see a continued shift toward waterborne over solvent-borne technologies,” said Diana Rowe, Industry Marketing Manager – Transportation, Industrial, Furniture and Flooring, BASF.

“Water-based resins that are able to reach lower VOCs are currently what customers continue to ask for,” according to Marcia King, VP of UV, Specialties, & Distribution and Dr. Terri Carson, Director of Technical Service and Quality Control at Alberdingk Boley, Inc.

Based on resin type, the market is segmented into acrylic, epoxy, polyurethane, alkyd, vinyl, unsaturated polyester resin, saturated polyester resin, and others, Allied Market Research reported.

“Some of the key drivers for epoxy resins in the coatings market include the cost and availability of key raw materials such as ECH and BPA, the timing of plant turnarounds and the availability of shipping containers and transportation modes (truck, railcar) on a global basis,” said Dan Weimann, Market Development Manager, Epoxy Specialties at Hexion. “Therefore, procurement of epoxy resins and amine curing agents from domestic producers can be a strategic way to improve the security of supply.

“Coatings manufacturers are also looking for cost-effective resins that deliver value above any switching costs, but without sacrificing the security of supply,” Latas said. “For the resin manufacturer, when developing new coating products, all other things being equal, formulators will look at raw materials that are plentiful and more cost-effective than ones that may cause supply chain disruptions.

However, “The novel coronavirus (COVID-19) is impacting the global supply chain in ways that emphasize

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RESINS

the importance of partnering with global suppliers who have local production," he added.

"While the fundamental drivers for the coatings market will return to normal, today the coronavirus epidemic is having a major impact on the coatings business," Venturini said. "Prior to the epidemic, regulatory and environmental trends included performance improvement and special functionality like anti-fingerprint, infrared absorption, UV-protection and many others. Currently, the main drivers are supply chain security and anti-viral properties."

MORE DRIVERS FOR GROWTH

Powder coatings are projected to be the fastest-growing technology of the coating resins market due to increasingly stringent environmental regulations for zero or non-VOC coatings, according to Markets and Markets' research.

"Sustainability is a key driver that we see across a number of market segments. In the printing and packaging space, this has materialized as a focus on products with increased levels of bio-renewable content," said Simon K. Foster, Industry Marketing Manager, Printing & Packaging - Dispersions & Resins North America at BASF. "Through bio-sourced raw materials, the industry hopes to reduce the overall environmental impact of our formulations without sacrificing efficacy. Overall across application areas – industrial coatings, printing and packaging, etc. – we see a drive to lower VOCs to improve worker quality of life and further reduce the environmental impact of finished coating formulations."

"In the development of new resin products, manufacturers must stay ahead of a continuously changing regulatory landscape across the globe," Latas said. "From new NMP regulations to APEO-free to VOC restrictions, regulations are constantly changing the face of the resins market, and resin manufacturers must keep up and

deliver prompt solutions to remain viable in a competitive market. That means knowing what the next regulations are going to be before they happen so that when they do occur, manufacturers are ready to provide a solution.”

Added Robert Schlager, Coatings Account Manager, Georgia-Pacific Chemicals: “Georgia-Pacific Chemicals sees the primary drivers affecting the industry to be the regulatory issues regarding volatile organic compounds and the market is looking for resins that have lower free monomer content, be they lower formaldehyde, lower phenol, etc.”

REGIONS FOR GROWTH

APAC – most notably China, Japan, India, South Korea, Thailand, Indonesia and Singapore – accounted for the largest share of the global coating resins market in 2017, according to MarketsandMarkets.

“Growth swings for coatings between regions are a result of economic, demographic and environmental demands that influence the global manufacture of durable goods and the increase in building and construction,” Latas said.

“With the China tariff situation causing concern for growth in that market, manufacturers are increasingly looking at countries such as India and Vietnam for manufacturing opportunities as well as growth,” added Schlager.

“Environmental trends continue to move forward in Europe and the U.S. but is quickly growing in Asia driven by China’s regulations for improved air quality and reduced VOC emissions,” Venturini said. “This has required paint producers to transition to powder, waterborne or other low-VOC technologies. The ever-growing importance of waterborne technology has created exciting innovation opportunities for resin manufacturers.”

In 2017, Asia-Pacific and Europe collectively accounted for more than 79 percent of the global coating resins industry, in terms of value, according

to Allied Market Research.

“According to market studies, high growth regions for epoxy resins were forecast to be China, the Asia Pacific region and North America,” Weinmann said. “This forecast is likely to remain true but the rate of growth can be expected to decrease for 2020 due to the impact of the coronavirus.

“China and India remain well known high growth areas, but accelerated growth in developing economies in the Middle East and Africa are occurring as well,” Latas said. “In addition, with ongoing regulatory pressures throughout the global resins market, big opportunities exist in regions that tend to act quickly to adopt new environmental regulations in a short time period.

“In China, for instance, mandated conversions from solvent-based to water-based resin systems in an extremely short time period has represented new opportunities for resin suppliers,” he continued. “In other regions, including Europe and North America, formulators may want to be fast adopters of new resin technologies in order to enhance competitive positioning. In Latin America, there are always opportunities for growth as the overall size of the coatings market continues to expand.”

“Rapid urbanization in India and China is creating a good demand for resins across all the applications segments in the industry,” said Gunjan Khanijow, Global Strategic Marketing Manager Epoxy & Chlorinated Organics EME China at Olin. “China is driving the demand for waterborne coatings as well as hybrid-based powder coatings. The Middle East and Russia are leading regions of growth for epoxy powder-based pipeline coatings. The U.S. and Western Europe are mostly driving resin consumption in various repair and maintenance programs for infrastructure and construction. Also, in the African continent, especially in Nigeria, we are observing growth in mortars and coatings for flooring, which is primarily driven by new pub-

lic infrastructure programs.”

Foster reported a number of opportunities in North America’s regional resin market.

“There are a number of opportunities in the regional resin market that are driven by end-use markets in our region,” he said. “In the packaging space, recyclability is becoming an ever-requested product attribute so we’re focused on product development to enable greater package circularity so that brand owners can fulfill their sustainability commitments.”

CUSTOMER DEMANDS

On the supplier side, “Performance is key, and customers are looking for more technical support and polymer design based around their specific application,” according to Grobe.

From a distributor’s perspective, “Customers are demanding increased performance and cost control, not necessarily lower costs,” said Brendan M. Cullinan, Technology Director Coatings & Construction, Brenntag North America.

“Demand for improved product performance is being driven by consumer demands for durable goods improvement in areas of higher heat resistance, lower VOCs, and better flame retardancy/intumescing.”

Low VOC is a popular request.

“Due to regulatory and environmental concerns, our customers are looking for low VOC, low monomer, low bisphenol A and low free formaldehyde phenolic resins,” Schlager said. “Customers are also looking for bio-based, green solutions.”

“Typical customer demands include requests for lower VOC and higher performance,” Weinmann said. “However, today’s customers are asking for new products that reduce costs, offer lower use levels, as well as, asking for more sustainable options.

“This means a strong interest in amine curing agents that do not contain benzyl alcohol or nonylphenol, ultra-low VOC waterborne epoxy systems, and faster reactivity curing

agents,” he continued. “All of these customer demands have driven new product offerings from Hexion that are coming to the market in 2020.

“Furthermore, there is great interest in testing and qualifying lower yellowing epoxy systems because they avoid the use of isocyanates and offer contractors the opportunity to reduce the number of coatings layers,” Weinmann concluded.

Help with navigating the “challenging” compliance landscape is something Lubrizol’s customers seek.

“Probably the biggest demand we’ve seen from coating formulators is in helping them navigate the challenging compliance landscape,” Latas said. “Customers often expect their suppliers to fully understand and share knowledge of upcoming regulations and to provide enhanced testing and formulation validation of products to meet or exceed those regulations prior to even ordering a sample for their own testing purposes.”

Cost-efficiency is key for BASF customers.

“Overall, customers continue to explore every possible cost-efficiency in order to remain competitive, while at the same time the expectations for resin performance could not be higher,” Foster said. “As a result, we’re working to pursue opportunities that strike a balance for customers between cost, performance/efficacy, and sustainability, where possible or relevant.”

“The key need for customers right now is for our team at Sun Chemical to monitor our global supply chain, proactively manage each of our sites and warehouses, and frequently communicate with our supply base and customers with important updates,” Venturini said. “The challenges Sun Chemical faces are the same as every other company: Managing the supply chain, rapidly changing tastes and market needs, government regulations and consumer preferences. Sun Chemical’s philosophy to deliver ‘solutions, tailor-made,’ shapes our relationships

with our customers to learn and understand what drives their markets and helps us develop and bring them products that they specifically need to compete and succeed.”

For powder coatings, customers are asking for lower curing temperatures, lower film thicknesses, and phenolic hardeners that are in compliance with ongoing regulatory changes, said Khanijow. “For metal and mineral coatings, we have customer requests for products complying with developments in Environment, Health, and Safety (EH&S) requirements, faster cure periods to reduce the downtime of assets and flexible epoxy systems with higher chemical and mechanical resistance properties to improve on existing systems, to name a few.”

BALANCING DEMAND WITH RISING COSTS

Recently, BASF increased the prices on polyalcohol Neopentylglycol (NPG), a high-quality intermediate used, for example, to produce polyester resins for coatings, unsaturated polyester resins, lubricants and plasticizers, in Europe.

“For applications with high-performance requirements, the drive has been to find products that enable lower formulated cost, or cost-in-use, without sacrificing performance,” BASF’s Foster said.

For Specialty Polymers, meeting customers’ demands amongst rising costs is all about “finding the right balance.”

“It’s all about finding the right balance for each customer, and communication is key,” Grobe said. “During the collaboration process, we work with the customer to find the best balance for them. When we develop a custom resin it’s important to understand every aspect of their needs, from performance goals to cost goals.”

“Every customer is treated on a case-by-case basis in that their needs from a partner may be different,” Schlager added. “We want to meet their needs in such a way that it

creates value for them, and for Georgia-Pacific Chemicals.”

Alberdingk meets customer demands and addresses rising costs “through aggressive raw material sourcing/purchasing, process innovations and analysis of plant performance indicators that yield actionable process improvements,” per Carson and King.

Lubrizol employs methods such as six sigma manufacturing, “to continuously evaluate and improve manufacturing efficiency and operational costs,” according to Latas.

“We invest in equipment in plants to improve our quality and product consistency, which helps minimize extraneous expenses,” he continued. “Our long-term strategy also includes the expansion of production capabilities at the regional level to get closer to customers. All combined, our goal is to continuously deliver advanced resin capabilities to meet customer demand at a cost and quality level that is mutually beneficial.”

Hexion practices what Weinmann called “responsible chemistry.”

“Hexion focuses on developing innovative new products with improved sustainability and we are a leader in operational excellence,” he said. “There are multiple examples where Hexion has decreased waste streams, increased production yields, decreased energy use, reduced emissions and lowered process risk by implementing engineering controls. All of these actions improve sustainability and protect our ability to provide superior service to our global and regional customers.”

Being a low-cost producer is an essential part of Olin’s strategy, Khanijow said.

“We are constantly working on streamlining our operating costs structure through productivity programs such as recycling waste streams from our production lines and the optimization of our supply chain and product portfolio,” Khanijow added. ■

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Waterborne Coatings and Environmental

Regulations Drive the Waterborne Pigments Market

BY HARSHIT NIGAM

WATERBORNE PIGMENTS are coloring matter that is carried by water. Stringent government regulations along with shifting consumer focus toward the adoption of eco-friendly products are prime drivers in escalating the product demand. These pigments are witnessing significant utilization across waterborne paints and coatings, as they reduce evaporation of pollutants to limit the impact on the environment and human health.

Ongoing developments across waterborne pigments to enhance performance characteristics are also driving its incorporation across coating and paints.

A waterborne coating is a surface covering of the material that uses water as a solvent to diffuse the resin, in order to develop the coating. Its composition includes 80 percent water along with minor amounts of solvents including glycol ethers. The growing end-user awareness toward the long-term impact of products is stimulating the coatings industry to develop improved and sustainable coatings and paints through the utilization of bio-based or renewable materials.

Waterborne pigments, besides the environmental benefits, offer other significant advantages such as reducing explosion risks and lowering odor levels. In addition, ongoing advancement in the performance of waterborne coatings has contributed to the expansion of their application across direct-to-metal (DTM) coatings and high gloss coatings. These coatings offer improved performance at a striking price, making the product more attractive to the end-users. Furthermore, improved shelf life, enhanced adhesion, high dispersion capabilities, exhibition of primer characteristics, and no requirement of additives, hardeners, or thinners, are some of the additional benefits offered by the product.

END-USER INDUSTRY

Waterborne pigment-based coatings are mainly used for architectural applications along with significant application in multiple end-user industries comprising packaging and



general industrial coatings, transportation and automotive, and construction and infrastructure.

Architectural demand is a major consumer of waterborne pigment-based coatings. The exterior and interior application of waterborne paints accounts for approximately 80 percent to 90 percent of the share, respectively, in comparison to other coatings, as they are widely used for roof and floor applications.

The packaging and general industrial coatings area utilizes the product across two markets that include metal packaging and plastic. The metal packaging utilizes coatings that cover significant total share, in which more than 95 percent uses waterborne coatings when compared to other coatings. The coatings components used for food and beverage packaging cans must comply with edible items regulations. For instance, packaged food items should not contain Bisphenol A (BPA), one of the key trends across the food packaging industry.

Further, the plastic coating industry substantially utilizes waterborne technologies, with a total end-user share of more than 20 percent. The plastic coating comprises of two types, that include 2K PU for interior components, and 1K basecoats for exterior components. Major OEMs have no preference for coating type unless the finished

product meets specific regulations and requirements although a significant number of OEMs prefer waterborne basecoat in combination with clear coat and solvent-borne primer.

Overall, the end-users across metal packaging and plastic are inclined toward coatings products that abide by low VOC regulations, though, to some extent, a lesser performance level and

higher production cost associated with waterborne coatings in comparison to solvent-borne coatings are hampering the industry growth.

The transportation and automotive industry accounts for a considerable share in terms of the end-use industry due to growing automobile OEMs' demand for a more compact process. The waterborne compact coating and paint process eliminates the primer surface layer, which in turn improves the aesthetics and offers superior performance to the vehicle. The buses, truck, and other vehicles stand for around 20 percent of the waterborne coatings across the transportation industry, as it is used for topcoats, basecoats, and mono-coats. In the refinish area, solvent-borne technologies dominate the segment, although 2K waterborne dispersions are used where stringent VOC regulations are imposed.

The aircraft industry holds a major share of waterborne technologies in comparison to other modes of transportation, on account of synchronization in efforts for the development of waterborne chromate-free primers. In the rail industry, the technology is gaining traction pertaining to shifting focus toward reducing carbon footprint along with limiting energy usage and VOC emissions. The waterborne coating utilization across the marine industry is limited to interior parts coating and for routine maintenance.

The infrastructure and construction industry has a limited dependency on waterborne coatings due to issues associated with performance, cost, and application of the product. For instance, waterborne coatings cover around one-third of the coatings for the protection of concrete, whereas only two percent of the type is used in steel. Although waterborne coatings reduce VOC contents in ACE coatings, the waterborne coatings share remains small across the industry. The ACE manufacturers have evaluated the waterborne technologies, but the challenges associated with appearance, varying flow, corrosion protection, and adhesion have hindered

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product adoption.

The coating comprising waterborne pigments is further used in the printing industry comprising machines such as fax machines, copiers, and printers. Its application is extended to removing coatings from coal cars, plastic pellet hoppers, trucks, and refuse containers and is further applied to coat porous materials including leather or paper. The ongoing efforts and shifting focus toward improving its characteristics by the industry players is stimulating the industry landscape.

The coating industry is integrated with multiple global players, including Williams-Hayward Protective Coatings Inc., BASF, AkzoNobel N.V., PPG Industries Inc., RPM International Inc., Asian Paints Limited, Jotun and Nippon Paint Holdings Co. Ltd. These players are focused on developing enhanced characteristic products in order to enhance their market penetration. For instance, in 2018, Tikkurila introduced a waterborne fire-retardant lacquer for timber surfaces. The product improves the aesthetic appeal and imparts fire safety features to the treated surfaces.

The product is witnessing immense demand from developing as well as developed regions. Over the last few years, demand has significantly emerged from North America, Europe, East Asia, New Zealand, and Australia in response to environmental concerns, climate change, and strict legislation and regulatory measures.

Further, a growing population and positive economic outlook across the Asia Pacific leading to an escalation in demand for residential and commercial complexes and automobiles is further contributing to demand waterborne technologies.

The prevailing COVID-19 pandemic situation has suppressed the demand for waterborne coatings across construction and automotive equipment. The recovery path for the industry depends on the period of lockdown and restrictions imposed and its impact on the economic activities across the globe. With that in mind, the widespread slowdown due to the pandemic is anticipated to incorporate a paradigm shift toward health, as the consumer will be thinking of health and hygiene. The minimized impact on health from waterborne coatings in comparison to other coatings is expected to help product demand.

The emission of VOCs from solvents is one of the critical challenges across the industry, owing to the implication of health and environmental regulations aiming at minimizing VOC emissions. A VOC is a compound which contributes to atmospheric photochemical reactions to develop ozone that impacts the respiratory system, eyes, leads to bronchitis, premature death, and reduced breathing capacity. Over the last decade, strict environmental regulations along with ongoing technological advancements have amplified the demand for zero-VOC prod-

ucts and high-performance characteristic materials. As per the regulations, waterborne coatings are obligated to possess a VOC content of less than around four pounds (1.8kg) per gallon of water.

Some disadvantages such as limited coating thickness and low drying rate in comparison to solvent-borne coatings must be solved. Furthermore, waterborne coatings are not suited for operations below 5 C, have limited development of foam, and can develop edge marks with fast evaporation of water. These coatings can be vulnerable to the development of micro-cracks due to partial freezing of the coatings and may show brush marks due to improper coating, which in turn may impact material performance.

The shortcomings of waterborne pigments-based coatings necessitate research and development activities to enhance the hydrophobicity nature, in order to enhance the water corrosion resistance and improving humidity condition features. Moreover, industry players are making efforts toward improving surface hardness as well as the durability of the coating through self-crosslinking polymer technologies. Ongoing innovation to improve various properties, longevity, and performance-attained optimum cost is poised to drive the industry growth over the years to come. ■

*Harsbit Nigam is an Analyst at
Adroit Market Research.*

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Economics of the Pandemic for Paint & Coatings

BY GARY LEROUX

THERE IS MUCH DOOM AND GLOOM about the economic fortunes caused by the pandemic, which is obvious and understandable. There is also some trepidation with the reopening of the economy. Some have tried to see the positive in these uncertain times by focusing on health, including economic health. At the time of writing, then Governor of the Bank of Canada, Stephen Poloz, noted that there was indeed a great plunge in output in March as never before, but he cautioned that the crash will be “cushioned by low-interest rates and hundreds of billions of dollars in government support.” We have seen governments become unusually nimble in dealing with the fallout in recent weeks and we are pleased they have learned this new, rarely seen skill. The Governor added that if the virus spread slows by the summer, the economy should make up much of the lost ground by the end of the year. To that we say, Amen!

In early May, CPCA released an economic update related to the pandemic, completed by Orr & Boss, to provide members with some context specifically related to the paint and coatings industry. It confirmed the negative impact of the first and second quarters and aligns with what the Governor said. It sees Canada’s GDP collapse in the second quarter, as does TD Bank, by about 42 percent. TD predicts the economy will bounce back by 33 percent in the third quarter and about 16 percent in the fourth quarter. If that holds true, the economy will be on the rebound and on a clearer path to profitability in the not-too-distant future.

Similar robust measures were taken in the United States in an effort to pump money into the economy and prop up markets. Government spending to date amounts to about one-third of GDP in a very short period of time and that is calming markets. In any case, investors don’t really have a lot of places to go with their money with government bonds offering super-low returns, if at all. It seems as though the market is feeling a bit more optimistic about the future than the science around coronavirus would suggest. Only time will tell.

There’s no guarantee this market rally will last or if investors have it right. Many traders, analysts, and experts admit everyone is operating in a black box. Some experts don’t understand at all and one analyst recently noted, “Nobody knows what’s really going on.” The separation of markets from the economy also happened during the

recession in the late 1990s with the global financial crisis and it’s not clear if there are similarities as this downturn is several times larger than what has been called the Great Recession.

CPCA’s multinational members operating globally have also seen more stability than expected during this difficult time across the globe. They seemed to have learned important lessons from the recession just 12 years ago, which has helped them navigate these rough waters. The fact that most member companies continued to manufacture goods and conduct retail sales, where they have them, also bodes well for them being in good position for the next quarters. The paint and coatings category was designated an essential service by Public Safety Canada and in all the provinces across Canada because of their role in critical infrastructure; medical equipment including ventilators; food security including with food packaging; etc. However, as with everything, there could be some surprises in the numbers across industry as noted by Orr & Boss in the aforementioned economic update done for CPCA.

Rebounds from previous recessions led to a “new normal” of sorts and what that looks like could determine the speed of economic recovery. A crucial part of that new normal has much to do with the consumer and how he or she views the world. Some have suggested that there may be a “new modesty” level wherein people are less likely to spend on non-essentials like restaurants and chic clothing, with more cocooning at home, more gardening and Netflix. This is likely to lead to an increase in savings, which had been at historic lows before the pandemic. Might they take on more home-based projects that involve paint and stain? We hope.

But how long the modesty or austerity levels will hold is anybody’s guess and certain sectors could be impacted more than others. It would be a guessing game to predict what the near future might be and trying to time the markets is a fool’s game. One thing is certain when it comes to humans, it’s safe to say that socialization and consumption is more the true norm, as opposed to isolation and austerity. We are all hoping for a healthy population first and foremost, and the best economy possible with good jobs for all. ■

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

Automatic Spray Guns

Increase Efficiencies Across the Board

AUTOMATION IS VITAL in manufacturing where the quest is to do more in less time for less money. The current trend of process automation is being spearheaded by small and medium-sized shops in order to compete with their larger counterparts. The perception that robotic automation is a hefty investment has been sidelined, thanks to technological advancements which have proven automation is accessible, easy and affordable.

Affordability is the major factor that has enabled the transition from manual to an automated process in small and medium businesses. In automating the paint and coating spray process, the benefits very much outweigh the costs. The integration of automatic spray guns has provided many benefits, with the primary ones being cost reduction, improved quality, increased flexibility, and reduced labor costs.

Businesses have many financial aspects to consider before upgrading their manufacturing processes, but with the emergence of advanced technologies and more user-friendly robots, automation has become accessible to these industry segments. The main challenge faced by many lies in improving the efficiency in their operation and production, as well as mitigating risks and reducing costs. Working automation into the painting and coating processes can help.

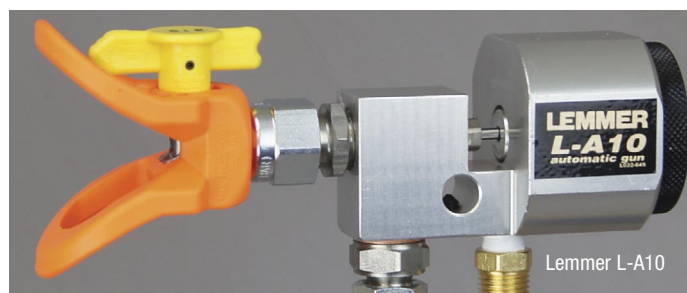
Because robots are programmed to follow a specified path consistently, they are a great tool for painting as well as spraying coatings such as sealants, adhesives and primers. Automatic spray guns attached to the robots help in laying sealant in a uniform manner prior to the assembling process. Conventional spray guns have a low level of transfer efficiency. Conventional spray guns have limits to their efficiency.

This results in some wastage of material in its deposition on the targeted part. This situation can be further aggravated if the operator has a poor technique. This is where automatic spray guns can help manufacturers gain an edge in their production processes.

Automatic spray guns have high transfer efficiency which helps reduce the consumption of expensive materials. These guns ensure a reduction in overspray and facilitate optimum production courtesy of the regular and reliable spray quantity.

Automatic spray guns come in various types; high volume low pressure (HVLP), low volume low pressure (LVLP), and electrostatic spray guns, among others. HVLP spray guns make use of a compressor for air supply and require low pressure. This results in a larger proportion of paint being deposited on the target surface with minimum overspray and wastage.

LVLP spray guns operate at low pressure as well as using a low volume of air when compared to HVLP, and are instrumental in increasing the transfer efficiency. Electrostatic spray guns electrically charge the particles, resulting in an even spreading of the material as it exits the nozzle. This method helps in painting areas that are hard to reach with the other spray gun types.



At Calgary-based Lemmer Spray Systems, President Hussein Bawa says spray guns are always evolving and incorporating new technologies.

Bawa says the Lemmer Airless Automatic Spray Gun L-A10 is a compact, lightweight gun design that increases production speeds and provides a quality finish with a low cost of ownership.

It can be used with a range of tip types and sizes including reversible tips, which allows for quick cleaning and can be used under high pressure for large projects without the added use of compressed air.

He adds, the L-A10 can be used to spray paint, protective coatings such as lacquer, enamel, water-based emulsions, mold release agents, sound deadeners, oil, glue, and underbody coatings.

When deciding to purchase, Bawa says, there are a few things to think about, including the power source. Having sufficient amount of air to trigger the gun and to operate any paint spray equipment is an important consideration.

“How many spray guns will you use at one time, currently and in the future?” he asks. “If you plan to use more than one spray gun at a time, then you should consider purchasing a unit that has the ability to handle multiple spray guns.”

The hose length is also important, Bawa says. This will depend on the job site, material being sprayed, spray tip size, and hose diameter. “Your automatic airless gun must be able to support the length of hose.”

And obviously, consider how much you want to spend. Buying an automatic airless gun is an investment. You want a quality and economical gun that will be an asset to

AUTOMATIC LIQUID PAINT SPRAY GUNS

your business.

“The Lemmer L-A10 steel fluid passage provides superior fluid flow with the use of a wide range of tip sizes,” Bawa says. “In addition, the Lemmer L-A10 has a tungsten carbide seat for exceptional durability and a high-power spring which enables a quick

and clean fluid shut off. Our technical team will walk customers through all the features of the product and will answer all post-sale questions.”

SATA is offering the new SATAjet X 5500 PHASER, says April Chadwick, Marketing Specialist for SATA Canada.



SATAX 5500B Phaser

It uses the SATA X-nozzle system for this next generation of the company’s top-selling PHASER model with nozzle sizes ranging from 1.2 to 1.4 for HVLP and 1.2 / 1.3 for RP, both with “I” as well as “O” fan pattern options.

Chadwick says the SATAjet X 5500 PHASER is suited for daily use in the paint shop and 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 of whether they are using HVLP or RP technology.

“Due to the optimized air distribution inside the spray gun body in combination with the new design of fluid tip and air cap, the air distribution insert is no longer required,” Chadwick says. “In addition, we have managed to reduce the noise level of this whispering nozzle during application, giving painters the feeling of a much softer and more comfortable coating process.”

Automated spray guns offers numerous quality benefits in terms of consistency across production lines, especially in certain verticals such as automotive. The benefits are numerous and the adoption process is getting progressively easier. The automation ecosystem is expected to further advance from the progress achieved in related technology such as Artificial Intelligence. Overall, as technologies advance and ownership costs recede, robotic coating and painting are expected to spread across more industry verticals and all sizes of shops as we collectively aim to minimize costs and realize efficiencies. ■

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Choosing a Conveyor System



An enclosed track overhead conveyor for wet spray paint line from Pacline.

THE SELECTION OF A finishing system depends on a number of factors including the types of parts being coated, required surface treatment process, size and weight of the parts, sequence of process steps, and the flow of material through the entire fabrication process.

The finishing line layout should be planned based on the space requirements of the process equipment. The design should route the conveyor to carry parts from the loading point in the fabrication area through the process system to the unloading point in the assembly/shipping area. This will minimize material handling, damaged parts and the number of employees required on the job.

For liquid-paint process lines, two types of conveyor systems – overhead monorail and overhead power (free) conveyors – are typically used.

Overhead monorail conveyors have the load-carrying and drive functions combined in an endless chain. This chain is guided by a rail system based on either an I-beam or an enclosed track. Parts are suspended from the chain by special attachments or load bars. The conveyor can follow only one path so while this system is simple and efficient, it is not very flexible.

Overhead power and free conveyors are two-rail systems. The load-carrying element, (trolley) and the driving element (chain) are separated. The trolleys use the lower “free rail,” and the chains are in the upper “power rail.” The “free rail” can be equipped to allow the trolleys to follow several different paths, or be lifted or lowered, stopped, or moved at different speeds through the system. The entire conveyor system is computer-controlled.

This system is more costly, but flexible enough to link

fabricating processes, paint lines, assembly and shipping, and to accommodate process variations within these areas. It will also reduce the number of personnel and the cost of transporting parts through several fabrication steps, reducing the danger of damaged parts through various manual handling steps.

Other conveyor systems include automatic hoist systems for dip processes (typically e-coat and dip pretreatment); square-transfer systems (applications similar to those for hoist systems); inverted monorail or power and free conveyors; roller conveyors for transporting skids of parts or assemblies; and dual-chain and drag-chain conveyors for



The 500S Trolley from IntelliFinishing.

CONVEYORS

dolly systems. The conveyor types can be combined to provide the optimum paint system for a specific application.

IntelliFinishing bills its Friction-Driven Overhead Conveyor System as the alternative to power and free conveyors.

The company says the backbone to its design is the spinning tube (friction-driven) conveyor paired with smart controls. The technology, says IntelliFinishing, provides flexibility and efficiency by allowing trolleys to move both forward and in reverse, stop in a zone or within a process, move at variable speeds within zones, and change processes or destinations of products with immediate system response.

The system is recommended for masking projects, painting, inspection, and others.

Unlike power and free or monorail systems, IntelliFinishing says the spinning tube conveyor does not use a chain to move the parts, eliminating the chance of falling debris from a dirty chain contaminating the part, and other issues.

TTX designs, manufactures and installs a wide range of conveyors, including: I-beam, enclosed track, overhead power and free, inverted power and free, chain on edge, power and gravity roller, flat belt, and more.

The company says no matter what the coating process and production rate, it can design conveyors that will meet any specifications.

TTX conveyor systems can be integrated into electro-

coating, powder coating, liquid spray-painting, cleaning, pretreatment, and heat-treating operations.

Mississauga, ON-based Pacline also offers a multitude of overhead conveyors. Its PAC-LINE Monorail Enclosed Track Conveyor is a compact, medium capacity, chain conveyor that allows maximum conveying flexibility in small spaces. Small radius vertical curves of up to 90 degrees can be built into the system.

“The PAC-LINE Enclosed Track Overhead Conveyor is a proven performer with over two million feet of conveyor in use today,” the company says, adding, it is best suited for “slot down” applications such as paint lines where the load is beneath the conveyor track.

The company says its enclosed track conveyors are designed to handle loads of up to 50 pounds from single pendants, which are standard on six-inch centers. Coupling two pendants with a load bar allows up to 100-pound loads. Distributed loads of up to 30,000 pounds can be conveyed on a 600-foot system with one drive. All Pacline conveyors can withstand temperatures up to 600 degrees F.

Conveyor options are as endless as the tracks they run on. Versatility, productivity and flexibility are key considerations when examining process requirements, material handling needs and space. Look to your supplier for their knowledge and expertise when designing the conveyor concept that will work best in your operation. ■

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Choosing a Spray Booth and Filtration System

PURCHASING A SPRAY BOOTH and filtration system may seem easy, but appearances are often deceiving. Booth sizes, options and prices run the gamut so although the sole purpose of a paint booth may be to establish a controlled environment in which to complete finishing projects, ensuring you've got the right one for your needs is crucial.

At Venjakob, the motto is "plug it in and let it paint". The company's new Ven Spray One is a compact painting machine it says is tailored to the needs of craftsmen and small businesses. With the newly designed individual solution, Venjakob says, joiners, carpenters and all companies that coat in small quantities can get started with semi-automated coating fairly quickly and easily. A delivery time of four weeks increases flexibility when making investment decisions.

"Now we are also offering companies a coating solution for which our professional machines are not profitable due to insufficient capacity utilization," says Christian Nüsser, Managing Director of Venjakob.

The company makes it clear that the Ven Spray One is in no way inferior to the Venjakob professional line in terms of handling, design or energy efficiency. The basic model uses high-quality components and a construction designed for sustainability and durability, Venjakob says.

One advantage of the standalone solution is the integrated control cabinet, through which the machine can be easily connected to save time and assembly costs. The base model can be expanded with modules such as remote maintenance, and additional services such as assembly, on-site project consulting or trials and process training are also available.

Workpieces that were otherwise coated using the hand-held spray gun can now be painted faster and in larger numbers with a painting machine. For this, the Ven Spray One is equipped with a powerful linear drive that controls four spray guns evenly. The coating is designed for materials made of wood, glass and various plastics. For consistently high-quality and reproducible painting results, spray programs can be preset in the system control and called up in the recipe management.

At just over four meters long, four meters wide and 2.6 meters high, Venjakob says the Ven Spray One is spacious with large viewing windows. Workpieces with a minimum length of 250 mm can be coated in different sizes. The workpiece to be machined must be at least 25 mm wide and 6 mm high, with maximum dimensions of 1,300 mm in width and 50 mm in height.

All areas within the booth are easily accessible for main-



The Ven Spray One from Venjakob is a compact spray painting machine with an integrated control cabinet for craftsmen and small businesses.

tenance. LED tubes illuminate the spray area while an extra-large touch screen and simple interface are user-friendly.

At Global Finishing Solutions (GFS), Open Face Booths are the company's most popular industrial spray booth as they are suited to a wide variety of finishing applications. The open-front design saves valuable floor space, GFS says, and makes it easy to move parts in and out. There are 260 pre-engineered models or one can be custom-designed.

A crossdraft airflow offers reliable performance at what the company describes as an affordable price point. Since there is no pit to dig, crossdraft spray booths are also easier to integrate into existing facilities, GFS says. In Open Face Paint Booths, unfiltered air enters at the front of the booth. From there, air flows horizontally through the booth, flowing over the product and into a filter bank in the booth rear.

Filters are important. The primary role of a filter is to protect the fan and exhaust system from overspray build-up while this equipment also removes harmful vapors from the coating booth.

Open Face Spray Booths come with a set of 20 by 20-inch GFS Wave exhaust filters. Installing and replacing the filters is based on a grid system, which means shops can avoid excess waste and save money by only replacing the filter square that needs changing. A manometer indicates when the filters need to be replaced.

SPRAY BOOTHS AND FILTERS



GFS Open Face Paint Booths are flexible solutions for a wide variety of finishing applications.

GFS says many factors affect filter life and performance, and also dictate the type of delivery system that is required including the characteristics of the coating material. Viscosity, solids content, and curing method will be varied, and the type of equipment required to apply the coating must be compatible with the coating material. This creates a multitude of variations that can affect the selection of a source capture, overspray removal system.

Identifying the characteristics of the coating material is a logical starting point, GFS says. Although there are several aspects of a coating material that directly affect paint booth filter performance, viscosity plays a large role because it dictates how a coating is atomized for application. Atomization consequently, dictates how dense, or open, a filter's fiber matrix must be to yield maximum performance from the paint arrester. Too dense, and the efficiency may be acceptable but the service life is unacceptable. Open the fiber matrix to extend the service life, and the diminished efficiency leads to bleed-through that would create excessive fugitive emissions that could contaminate the plenum, fan, and stack, possibly leading to the discharge of pollutants into the atmosphere.

Curing methods also categorize coating materials in the way source capture occurs. Thermo-reactive, or UV-reactive coatings, and air-dry coatings will load differently. Thermo-reactive and UV-reactive coatings remain uncured and therefore demonstrate adhesive characteristics when sprayed. When pulled into a filter medium, these types of coatings readily adhere to the fiber matrix and, once captured, remain so until the combination of over-saturation and pressure causes the coating to pass through the medium. Air-dry coatings may set up while entrained in the air stream or, after contact with the filter medium.

In spray-to-waste powder coating systems, the powder is

usually applied electrostatically. The powder-coat material that does not adhere and becomes an overspray will behave like an air dry coating, subject to "particle bounce", where the paint droplet literally can contact a filter fiber and bounce off, or around the fiber, until it is impinged in the paint arrester. Typically, a tackified filter medium is utilized for this type of coating, and also for air-dry coatings that may cure while entrained in the air stream.

Coating characteristics represent only one part of the knowledge required to apply the most effective filter system. The performance efficiency of the filter must be determined for proper selection, especially when a multi-stage filtration system is in use.

The most commonly accepted performance evaluation for a paint arrester is a paint "arrestance test", GFS says. In this test, the subject filter, or filter combination, is sprayed with a liquid coating material, usually a high-solids, enamel. This coating can be any type supplied for the test, but when not specified, a 62 percent, high-solids has become the default coating. While this can be used to establish comparative performance for like products, obviously, attention must be given to variables that occur between the test coating and the coating material in actual use in a given application. Testing the actual coating material is the only accurate way of gauging the true performance of a paint arrester.

"Efficiency is often misapplied as a measure of filter performance," GFS says. Efficiency for paint arrestors is usually the "arrestance" efficiency, or the holding capacity of a filter. The recorded weight of all paint sprayed is accumulated as paint held by the paint booth filter, paint that may run off the filter on the ductwork and framing, and paint that penetrates the test filter and is held in the final filter. The weight of the coating material retained by the filter is determined simply by weighing the clean filter device, the final filter devices and subtracting that weight from the final loaded weights of the filters. This is the "paint holding capacity" of the test filter. The combined weight gain of those two filters is subtracted from the total weight sprayed to determine the runoff. Arrestance is the value obtained by dividing the weight gain of the test filter by the sum of the test filter and final filter weight gain. This percentage is referred to as "paint arrestance efficiency".

Efficiency can also be a measure of the ability of a paint booth filter to remove paint droplets by average dimensional size. This is known as "fractional efficiency".

So when determining the most cost-effective type of filtration for a coating operation, paint booth filter suppliers must have a command of performance differences between available filtration products, and the ability to apply these products correctly in a variety of coating applications. It also means that a greater level of awareness is required for the decision-makers responsible for managing a coating operation and why decisions on a booth and filter system are often taken hand in hand. ■

Coatings in Industrial Pipelines

Offer Seamless Water and Wastewater Treatment and Anti-Scaling of Plant Equipment

BY HARNEET MEHAR

WASTEWATER TREATMENT PLANTS are industrial facilities and corrosive environments. Maintenance of wastewater treatment facilities is a vital and tedious operation. Constant exposure to moisture and contaminants at a wastewater treatment site creates a corrosive environment that attack concrete and metal surfaces of the infrastructure. This leads to rapid deterioration, forcing expensive replacement or repairs. Corrosion is also a critical threat to pipelines, where the cost of corrosion is approximately three percent of the US GDP on a year-on-year basis.

Anti-corrosion coatings are the widely adopted performance coatings which deliver effective and economical solutions for tackling the issue. These coatings act as a barrier between the surface and the corrosion agent and prolong the structure life and efficiency.

Coatings for water and wastewater treatments are widely used among a number of end-use industries where transportation pipelines are affected by pipe failures, sewage backups, and sewage spills every day. Municipalities are addressing this health and environmental challenge and are therefore paying increased attention to every detail, including rehabilitating corroded manholes. This has led to the introduction of high-performance polymer coatings for use in various wastewater treatment applications.

Constant monitoring is necessary at industrial wastewater treatment plants where the harsh environment conditions aggravate corrosion of plant assets. Deployment of anti-corrosion coatings such as epoxy, urethane or acrylic coatings on metal surfaces and VCI emitters in electrical boxes and wire ways are a few important maintenance procedures that can go a long way toward countering the endless attacks of a wastewater treatment environment and minimizing repair and downtime. Incorporation of numerous corrosion epoxy coatings will go a long way in protecting metallic structures in extreme wastewater treatment environments.

COATINGS FOR INDUSTRIAL PIPELINES AND RELATED APPLICATIONS

Pipeline anticorrosion coating applications represent the largest market by volume in the industrial coatings sector. The industrial coatings market is widely dependent on the growth driven by global growth in GDP, infrastructure, industrial production, and building and construction. Growth in infrastructure leads to increased production of

coatings and its demand among various end-use industries. Players such as Axalta Coatings Systems witnessed growth in their liquid and powder coating segment, especially in wood coatings.

In the oil and gas industry, metal coatings provide rigorous protection from offshore platforms to midstream pipeline solutions. Tubes, fasteners, pipelines, and equipment are continuously subjected to corrosive chemicals and water salt spray effects. Metal surfaces coated with cadmium and zinc lack durability and have low performance making them unsuitable in harsh offshore surroundings. However, utilization of pipeline anticorrosion coatings minimize the impact of corrosion and improves the life of high-cost equipment and machinery.

Shipping industries treat wastewater in adherence to strict environmental legislation. Fusion-bonded epoxy (FBE) coatings are used to prevent corrosion in various steel pipes used in pipeline network such as on valves, pipe connections, etc. They are an integral part of protective coatings in the paints and coatings market.

These coatings meet the standards and regulations specified by organizations such as NACE International, American Water Works Association (AWWA), Canadian Standards Association (CSA), European Norms (EN) and International Organization for Standardization (ISO) standards and from past few years have been proven effective against corrosion protection.

HOW DO INDUSTRIAL COATINGS IMPACT THE CANADIAN ECONOMY?

The Canadian paints and coatings industry is led by Ontario and Quebec. These provinces are the leading consumers and manufacturers of paints and coatings in Canada. Ontario and Quebec account for nearly 40 percent and 25 percent of the economic activity respectively in Canada. Hence, automotive OEM, architectural and refinish coatings account for 70 percent of the coatings market demand in the key Canadian provinces.

Paints and coatings products are being widely consumed in end-use segments such as plastic, metal, paper, and others. The coatings industry has added nearly 24 percent of the overall employment in the Canadian economy. Business revenue generated by the local and regional players has directly impacted the industry. Also, paints and coatings suppliers invest heavily in research and development, prod-

EPOXY LIQUID COATINGS

uct innovations and new technologies. An established coatings industry is ideal in sustaining and improving Canada's economic performance and strength. The contribution of coatings to Canada's Gross Domestic Product (GDP) is estimated at nearly \$5 billion annually.

INDUSTRIES TRANSITION TO NEW TECHNOLOGIES WATER-BASED COATINGS

Industries look for coatings which provide increased corrosion resistance from metal and plastic substrates of automobiles, heavy-duty machinery and consumer products. However, challenges faced by coatings manufacturers include the need to make the coatings more environment-friendly by lowering VOC emissions. Globally, governments are formulating legislation and guidelines for industrial coating manufacturers to reduce emissions. Also, governments of the U.S. and Canada are laying down stringent regulations to upgrade deteriorating infrastructure, existing plant expansion and setup of new wastewater treatment plants.

The industrial shift to waterborne coatings as an alternative to solventborne is an effective way OEMs can reduce their VOC emissions. Waterborne coatings provide the advantage of drying easily at colder and other extreme conditions. These are effective for faster curing and provide

resistance to rapid chemical and corrosion issues. Switching to these coatings in finishing operations may also help the manufacturer support sustainability initiatives. For example, 80 percent of the wood furniture products industry in the U.S. and Canada has shifted to waterborne products.

WASTEWATER TREATMENT STANDARDS FOR INTERIOR COATINGS

Wastewater treatment in Canada is set under the federal government's Wastewater Systems Effluent Regulations. These regulations have been established under the federal Fisheries Act and include mandatory adherence to minimum effluent quality standards that should be achieved by the secondary wastewater treatment methods, with one of them being coatings.

Water treatment coatings products in North America are required to comply with the NSF International (National Sanitation Foundation). NSF/ANSI standards for water treatment has set various criteria for water system components such as protective barrier materials, joining and sealing materials, pipes and related products, plumbing devices, and non-metallic portable water materials.

In Canada, the coatings industry remains a heavily regulated sector.

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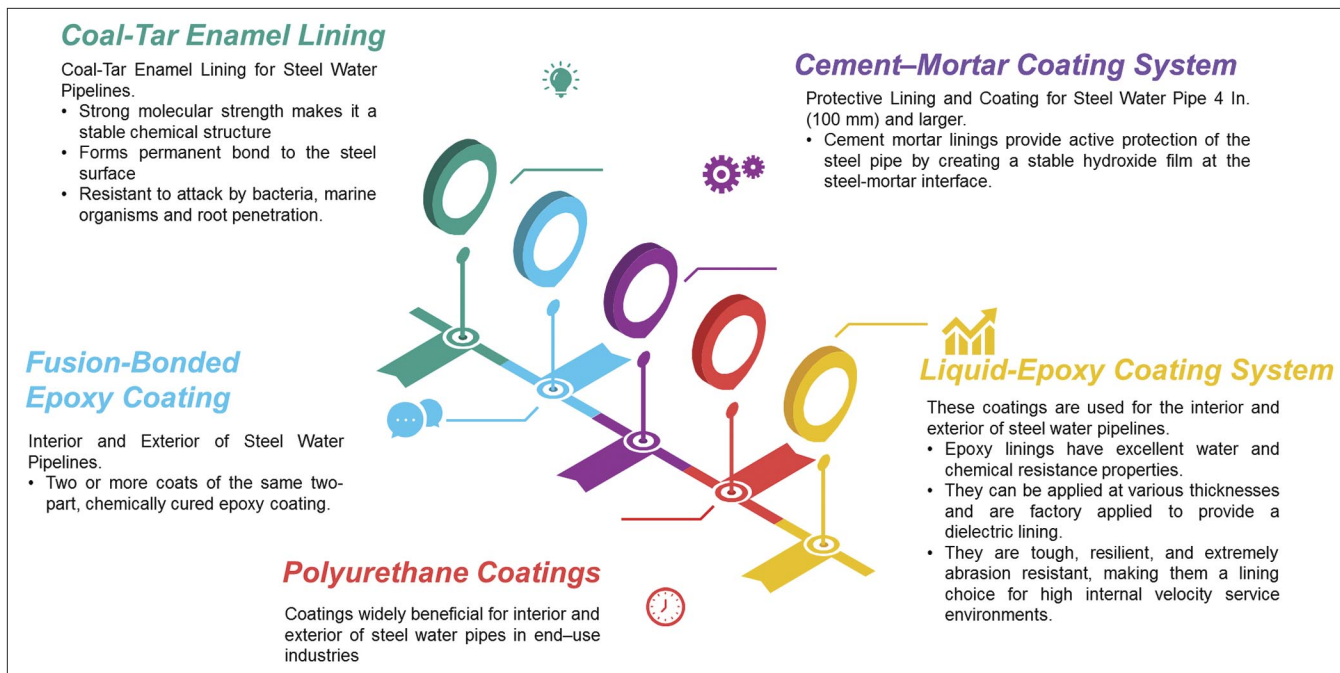
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Source: Adroit Market Research Analysis, 2019

COATINGS FOR INDUSTRIAL SECTORS IN NORTH AMERICA

Various types of interior coatings coupled with the lining material used for the steel water transmission pipe varies from epoxy coatings, polyurethane coatings, coal tar enamel, cement mortar to liquid-applied epoxy.

TRANSFORMATIVE ACQUISITIONS

Like the chemical industry, the paint and coatings industry is undergoing consolidation to support the growth of the market and gain leverage. Consolidation will remain a viable strategy of growth in the face of volatile coating prices, anti-monopoly laws, and nationalistic concerns. Some of the coatings end-use industries have started resembling the structure of manufacturing giants such as automotive, aerospace, and defense where a chunk of big players holds large economies of scale by acquiring new entrants in the market. The North American industrial coatings market has been witnessing consolidation for decades, where less than nine players control 90 percent of the market.

For instance, Sherwin-Williams held a prominent position in architectural coatings in the U.S. and the rest of North America. However, in 2017, the Sherwin-Williams and Valspar merger made it a leader in packaging coatings and industrial coatings. This acquisition will pose lucrative opportunities for the wood coatings industry in Canada. Presence of an established customer base will provide an immense growth and excellent platform to Sherwin-Williams in Canadian market over the years ahead. This strategic acquisition will help the company further diversify its product portfolio of performance coatings segment.

In 2017, the global paints and coatings market was approximately 42 billion liters with revenue of \$150 billion (US), with a CAGR of 4.5 percent from 2018 to 2025. This will be driven by expected growth in global

manufacturing activity and increasing demand for coatings used in the production of motor vehicles, durable goods, and industrial maintenance applications.

Some of the leading suppliers of water and wastewater treatment coatings in Canada include PPG Industries, Carboline, Jotun, ABRI Industries, Sherwin-Williams, Enercon Water Treatment, Ltd. Advanced Polymer Coatings, Brother's Coatings Limited, BASF Canada, Canadian Induracoat Corporation, and Tnemec Industrial Coatings and Products.

CONCLUSION: TRADITIONAL TREATMENTS NO LONGER EFFECTIVE

North Americans view clean water as an active investment in public health and in the growth of their economy.

The water and wastewater treatment coatings market is set to witness explosive growth in the years ahead due to global industrialization and urbanization. These coatings are an integral part of the protective coatings market.

Coal tar epoxies are cost-effective and are easy to apply; however, they lack adhesion on concrete surfaces and are less durable. Thus, epoxies and urethanes remain the work-horses and the major types being used for wastewater treatment globally. However, regulations over the limit of VOC emissions have led to advancements and formation of waterborne coatings. Leading players are focusing on innovation in coating materials to meet diverse industrial atmospheric conditions. Also, changing materials of construction in water and wastewater treatment facilities such as the greater use of concrete, non-ferrous metals, and FRPs demand the use of high-performance cementitious waterborne coatings. ■

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