



# CFCM

CANADIAN FINISHING & COATINGS MANUFACTURING MAGAZINE

## Paint and Coatings Manufacturing

- Nanotechnology
- Paint Containers
- UV Photoinitiators
- Powder Coatings: Growth and Opportunities



## Industrial Finishing

- Wood Cabinet Finishing
- Manual Liquid Paint Spray Guns
- UV Curing Equipment

## Plating and Anodizing

- Dangers
- Thickness Testing





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Waterborne Kitchen Cabinet

Photo Courtesy Milmonde and CanLak

from the **EDITOR**

# Living in the **ABNORMAL**

Most of us do something similar every morning. We check the exchange rate on the dollar, scan the business news for anything that might be significant, maybe read something by an economist who supposedly predicted something accurate a couple of years back, and shake our heads

over the US election campaign.

Then, we go off and do something useful. When we're trying to understand what's happening on the macro-level, we always refer to past experience. The problem we've had since 2007 is that none of us have any experience of the kind of situation we're in.

Recessions since the early 1970s have all had a tough but predictable pattern, and in many cases, the companies we worked for came out stronger in the aftermath, and grew in the subsequent upsurge.

But for more than seven years, we've been in a situation that has a parallels with the 1930s, and even less with more typical recessions. If the 2007 meltdown had happened 75 years earlier, a number of banks would have gone under, and the world economy would have tried to regroup. But the big banks were bailed out, and the regrouping has been defensive in almost every sector, from giant corporations to the paint shop in the exurbs. It's as if we became our own insurance companies, anticipating future risk through premiums paid via anxiety levels, not monthly dollar deductions.

We have seen recovery. The complaint we have, the source of our bafflement, is from the fact it's been so gradual, with none of the vibrant bounce-back we saw after 1980-81, or 1991-92. The rational markers for significant reinvestment and hiring of new workers haven't really shown up, even if the smarter shops are constantly upgrading older production lines. Canada scraped through a 'technical recession' early last year, and many of us scarcely noticed.

Most coating operations I talk with say they're doing okay, and are happy to have stayed modestly profitable. A few even say sales are pretty good, even if they're often looking over a metaphorical shoulder as they say it.

Looking at the whole picture, it's fair to say we've made the abnormal normal. Industry across Canada was massively side-swiped from 2007 through the next two or three years, but it has survived and it has re-established itself. A lot of us have different jobs, but as our hopes and plans failed to pan out, we simply adapted as necessary to the changed situation, and established new ways to do business.

But you know this. If you didn't, you almost certainly wouldn't be reading CFCM, and you wouldn't be looking in our pages for new ideas for your own manufacturing process. So, congratulations on having survived. I hope we continue to be a useful part of your success.

*Edward Mason*  
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### CPCA Announces Theme for Annual Conference

The Canadian Paint and Coatings Association (CPCA) has a robust program for its 103rd Annual Conference and AGM. This year's event will take place on May 25-26, in Halifax, NS, at the Westin Nova Scotian Hotel.

"The 2016 conference will feature the theme, 'Succeeding in Times of Great Change,' and we have an exciting line-up of speakers scheduled for our business sessions," says Gary LeRoux, president of CPCA. "They will update attendees on all of the latest trends, opportunities and challenges facing the Canadian paint and coatings industry."



Issues related to stewardship and sustainability in the paint and coatings industry will also be addressed. There will also be the usual update on the relevant issues being tackled by CPCA on behalf of the coatings industry in Canada, a list that continues to grow.

A panel exploring the various aspects of the coatings industry in Canada from the perspective of the manufacturer, supplier/distributor and end-user is scheduled. The conference will address the key elements in the paint and coatings sector that have led to the industry outperforming all other chemical sectors in terms of shareholder value. This is a proven barometer of an industry's strong performance and its ability to meet customer demands.

CPCA's annual conference will also include the Chair's Dinner, its prestigious industry recognition awards and a social program.

For up-to-the-minute information, contact [cpca@canpaint.com](mailto:cpca@canpaint.com)

### Axalta Launches Canadian Learning Campus

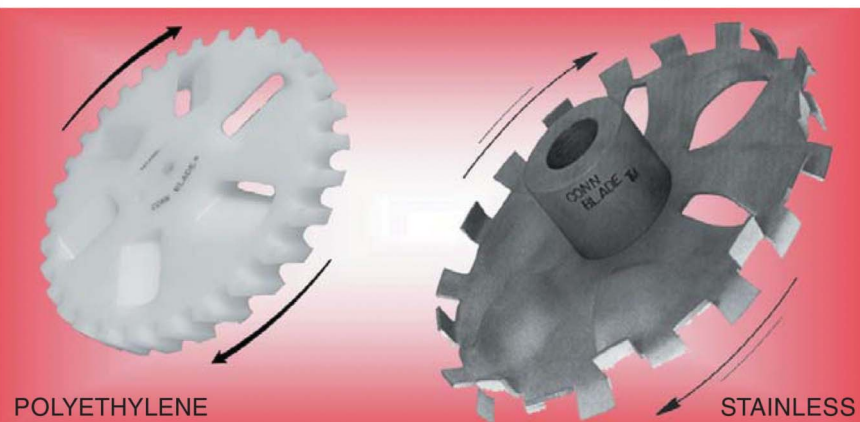
Axalta Coating Systems recently launched the Axalta Learning Campus in Canada. This is a web-based portal that serves as a gateway to Axalta's Learning and Development programs. The campus allows customers to register online for

in-person technical training at a Learning and Development Center or take courses online by accessing a comprehensive library of training programs. Both classroom and online courses are available in English, French and Spanish.

"We are thrilled to extend the power of the Learning Campus to customers in Canada," said

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## in the **NEWS**

Patrice Marcil, Axalta's North American learning and development director. "The convenience of online course registration and learning modules in three languages reinforces our commitment to provide world-class learning and development programs in North America."

Axalta Learning and Development programs are designed to boost customer performance by developing skills and knowledge to help eliminate waste, reduce costs, keep cycle time to a minimum and increase retention by investing in employees' careers. Instructor-led classroom programs use customized, blended learning methods. They are offered at three Development Centers in Canada and at eight centers in the US.

### Fabtech Issues Call for Speakers

The show is many months away, but Fabtech 2016 has issued its call for speakers for this year's show and conference. The CCAI Finishing Technologies Conference will be part of the show, which is being held at the Las Vegas Convention Center in Las Vegas, NV, from November 14

through 16.

Submissions need to include a name and address, the applicant's position or title with their company, and professional or technical credentials. The same applies to co-authors of papers. Each submission also needs an abstract title, and the abstract itself.

Further information is at:  
[www.conferenceabstracts.com/cfp2/login.asp?EventKey=EJLSDYIH](http://www.conferenceabstracts.com/cfp2/login.asp?EventKey=EJLSDYIH)

### US Zinc Expands Relationship with Unipex

U.S. Zinc (Houston, TX) is expanding its relationship with Unipex Solutions Canada, an Azelis Americas company (formerly known as KODA Distribution Group). As of February 18, Azelis Americas will represent U.S. Zinc for zinc oxide and zinc dust across all of Canada.

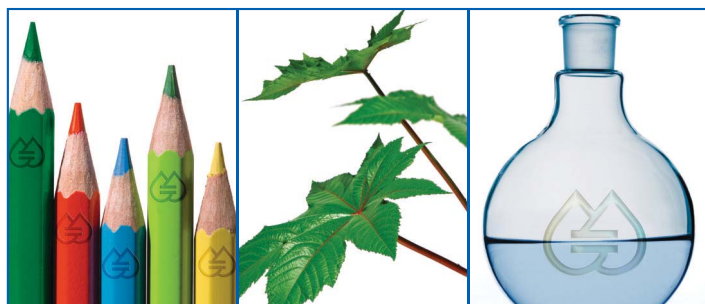
"Azelis Americas is our distribution partner of choice in Canada," said U.S. Zinc president Tracy Baugh. "Its experience in the market as

well as knowledge of the local customer base is outstanding."

Frank Bergonzi, president and CEO of Azelis Americas, said, "We are confident that combining the strength of 70 years of local experience in Canada in the rubber, plastic and the corrosion coatings markets, with the premier global leader in value added zinc products will create lasting value for our clients, and allow us to continue to grow together."

Headquartered in Stamford, CT, Azelis Americas is part of the Azelis Group based in Antwerp, Belgium. U.S. Zinc is a worldwide manufacturer, recycler and supplier of zinc oxide, zinc dust, zinc metal and zinc fines. Prime Western (PW) grade zinc metal is produced at the company's Houston zinc metal plant, which is a full-service provider to the hot-dip galvanizing industry. Its products are used in tires, coatings, rubber and chemicals, and it has plants in North America, South America and Asia. It is an affiliate of Brazilian-based Votorantim Metais, one of the five largest zinc producers in the world.

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## Program Announced for ACS Conference

The Conference sessions for the American Coatings Show have now been finalized. The conference starts the day before the show, which itself runs from April 12 to 14, at the Indiana Convention Center in Indianapolis, IN.

### Monday, April 11:

12:15 - 1:30 pm, Plenary Session. Afternoon sessions on: Science Today – Coatings Tomorrow, Additives, Functional and Smart Coatings, and Pigments. The evening will feature a poster session with networking, and the AC Conference Reception.

### Tuesday, April 12:

Morning sessions: Architectural Coatings I, Polyurethanes I, Radiation Curing, Measuring & Testing. Afternoon sessions: Architectural Coatings II, Polyurethanes II, Direct-to-Metal Coatings, and Novel Materials.

### Wednesday, April 13:

8:30 - 9:30 am, Matiello Lecture. Morning sessions: Industrial Coatings, Alkyds, Biobased Coatings and Protective Coatings.

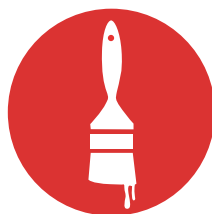


The American Coatings Show draws attendees from across the continent.

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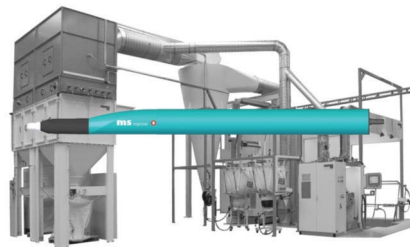
### Carlisle Buys MS Oberflächentechnik.

Carlisle Companies Inc. (Charlotte NC) has acquired MS Oberflächentechnik AG (MS), a Swiss-based developer and manufacturer of powder coating systems and related components.

With annual sales of approximately \$6-million, MS designs and manufactures customized powder coating systems and components for several end markets and sells primarily to customers in Europe. The company has been owned by Henry Marcon for the past 25 years and operates from facilities in Balgach, Switzerland. MS has 30 employees.

In making the announcement, Carlisle president Barry Holt said, "The acquisition of MS fits squarely into our growth plans and further builds upon the global foundation of a comprehensive technology platform under the new Carlisle Fluid Technologies division. With the acquisition of MS we open up significant new incremental business opportunities with both existing and new customers who use this finishing technology."

The purchase of MS means the company adds a fifth brand to its portfolio of brands, including



MS Oberflächentechnik makes powder coating systems like this one.

Binks, DeVilbiss, Ransburg and BGK. Its business operates from 26 locations in seven countries with 50 percent of its sales in the Americas and the remainder primarily in Asia and Europe.

### Jet Edge Opens Aftermarket Division

Jet Edge, Inc. (St. Michael, MN), which manufactures ultra-high pressure waterjet technology, has launched a new aftermarket waterjet parts division, Choice Waterjet Parts, Inc. This aims to supply quality and competitively priced UHP waterjet components for major brands of waterjet

cutting systems including Flow, Omax, KMT, Bystronic and WSI. Genuine Jet Edge parts will continue to be supplied exclusively by Jet Edge.

Choice's extensive waterjet replacement parts inventory includes UHP pump parts, cutting heads, cutting head parts, orifices, nozzles, on/off valve parts, HP seal kits, swivels and much more.

### PPG Completes Facility Expansion

PPG has completed a \$7.8-million investment at its Coatings Innovation Center in Allison Park, PA, close to its global headquarters in Pittsburgh, PA. Upgrades to the facility include increased laboratory and testing space and upgraded equipment that improves the technical capabilities of the company's primary research and development facility for paint and coatings.

These upgrades enhance PPG's resources for creating and testing sealants, adhesives and pretreatment solutions; for simulating the environments where customers use its automotive and industrial paints and coatings; and for training distributors, painters and collision-repair professionals to successfully use the company's automotive refinish coatings.



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“The PPG Coatings Innovation Center continues to provide an elite research and development environment where PPG scientists can ensure our customers have access to the most inventive coatings solutions,” said David Bem, PPG vice-president, science and technology, and chief technology officer-elect. “Many times, the breakthroughs that help us to deliver color, durability and functionality in coatings for everything from cars and trucks to consumer electronics and heavy machinery begin at our Coatings Innovation Center.”

The investment enhances three main areas. The renovated coatings application center provides two robotic spray booths with environmental controls for variable temperature, humidity and airflow. The booths enable PPG to replicate the manufacturing environments of customers around the world to test the application of automotive, industrial and performance coatings products under a wide range of conditions, such as relative humidity ranging from 15 percent to 95 percent.

Space has been converted to laboratories for

synthesis, adhesives and sealants, and pretreatment solutions to accommodate increased staffing and upgraded equipment that support PPG’s growing development needs in these areas.

A completely renovated, 9,000 sq. ft. automotive refinish training center now provides state-of-the-art facilities, including two new spray booths, a prep station, upgraded equipment and two large classrooms where body-shop and collision-repair professionals can learn about PPG products and application techniques.

### New Line Combines Paint and Primer

Sherwin-Williams has launched Infinity, a premium line of interior and exterior paint that is a complete, one-coat, paint and primer in one. The company says it offers exceptional hiding power and coverage.

“Infinity is 50 percent more scrubbable, washable and stain resistant than a leading competitive product, making it one of the most durable home products available,” said Andrew Kinnen, senior director of paint marketing for

Sherwin-Williams’ Diversified Brands Division. “Additionally, Infinity tackles one of the most frustrating DIY paint projects, dramatic color changes.”

It is available in 16 color collections, each featuring 20 coordinating colors. The paint’s crosslinking technology forms a tough barrier that provides exceptional resistance to stains, and its 100 percent acrylic formula provides a durable finish that is easily washed and cleaned so it endures the tests of daily life and retains its color and finish.

Some difficult stains, like water stains, reappear when top-coated with some of today’s paints. Infinity, Kinnen adds, will lock stains in and prevent bleed-through 50 percent better than a leading competitive product. With its mildew resistant properties, it also works well in kitchens and bathrooms where walls regularly come in contact with damaging condensation and moisture.

The paint’s exterior line is optimized for exceptional adhesion even when applied to chalky, glossy or unprimed surfaces, and reportedly withstands the stresses of extreme weather

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conditions ranging from heavy snowfall to severe heat. The enhanced fade-resistant technology protects against UV rays, while its algae-resistant coating shields from damage caused by the growth of harmful spores.

Initially, Infinity is made available solely through the Lowes chain of retail outlets.

### Optical Coatings Market to Hit \$19.7-Billion

The global market for optical coatings is expected to reach \$19.7-billion by 2022, according to a report by Grand View Research Inc. Smartphones, tablets and high-resolution displays are creating the demand that is expected to drive growth over

the forecast period.

Optical coatings are used on glass surfaces used in a host of applications. Growing interest in energy-efficient buildings has also led to increased use of optical coatings in architectural glass. In the LEED standards for green buildings, optical coatings play an important role in reducing energy consumption through thermal insulation. Favorable regulatory policies around the globe are expected to propel product demand in architectural glass applications over the forecast period.

The report suggests that volumes in the anti-reflective segment will grow at a compound annual growth rate of over 10 percent to 2022.

Declining prices for smartphones and tablets, coupled with the emergence of new technologies offering improved user interfaces, is expected to drive demand. Anti-reflective coatings are also widely used in the optics and laser industries, which are expected to further propel growth over the next seven years.

Solar application is expected to witness significant development owing to increasing investment to set up power plants, particularly in emerging economies across the globe. In addition, government policies including incentives and subsidies to promote development of alternate energy sources are expected to increase product consumption over the forecast period.

North America will account for over 30 percent of the global market in terms of revenue. Consumer demand for emerging technologies is expected to propel market growth. Continuous innovation and rising spending in the military and defense industry for applications including night vision cameras, beam attenuators and range finding is also expected to augment growth.

Europe is expected to witness significant growth owing to rising use of optical coatings in automobile displays, car windows and headlamps. In addition, an increasing middle class population coupled with an increased need for affordable cars is expected to propel the market over the forecast period.

### PCI Announces Custom Coater Forum

The Powder Coating Institute (PCI) has announced the Custom Coater Forum to be held May 2 & 3, 2016 at the Treasure Island hotel in Las Vegas, Nevada. This is the world's only educational and networking event designed by and for custom coaters. The Custom Coater Forum provides presentations and roundtable discussions on business solutions, new product technologies, PCI programs, and much more.

It is an excellent networking opportunity that helps coaters gain new resources and tools to improve their business, as well as develop relationships with other powder coaters. Attendees benefit from immediate knowledge to enhance business practices! They will learn about the latest efforts by PCI regarding the PCI 3000 Certifications and a new peer group program in development.

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The screenshot shows the CFCM website interface. At the top, there's a navigation bar with links for HOME, MAGAZINE, NEXT ISSUE, MEDIA KIT, BUYERS GUIDE, NEWS, SUBSCRIBE, PHOTOS, CLASSIFIEDS, and CONTACT US. Below the navigation is a large banner image of a factory interior. The main content area features several news snippets with 'MORE' links, including: 'HUBER BUYS MARTINWERK FR MATERIALS', 'FUTURE REGIONS SMART COATINGS', 'CCAI OPENS SCHOLARSHIP PROGRAM', 'ELCOMETER CONSOLIDATES MANUFACTURING IN UK', 'BENCHTOP SPECTROPHOTOMETERS', 'TESLA NANOCOATINGS DEVELOPS WET-ON-WET PROCESS', and 'OMNIX SOLUTIONS NAMES GENERAL MANAGER'. There are also sidebars with 'NEW PRODUCTS' and 'PEOPLE' sections.



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Sponsorships are still available for this event that will give companies exposure to these custom coaters, including networking and face-to-face interaction with key individuals in the industry. PCI would like to thank current sponsors: Axalta, Gema, IntelliFinishing and Parker Ionics.

### Sherwin-Williams Gets Qualicoat Certification



Sherwin-Williams has achieved Qualicoat Class 1 Normal Durable Certification for the polyester-TGIC based powder coatings manufactured at its Arlington, TX, powder plant. These gloss powder coatings include a wide array of colors and include many RAL colors. A Qualicoat Class 1 Certification assures aluminum building specifiers and architects that they are specifying a high quality product that offers long-term value and consistent quality.

“Qualicoat is a worldwide standard known for its rigorous testing practices, which is why Sherwin-Williams is pleased to be the first in the United States to earn this certification,” said Laura Kelleher, vice-president of marketing, Sherwin-Williams Product Finishes Division. “As a market leader in powder coatings, customers have come to rely on Sherwin-Williams for VOC-compliant coatings that perform to required standards and deliver long-term value in terms of both application and durability.”

“Our Powdura TGIC-based polyester coatings have met the requirements for Class 1 Certification,” added David Calabria, director of product marketing for the Product Finishes Division. “When our customers choose a Qualicoat certified product, they can be sure of its durability and performance as prescribed by the certification, which means specifiers and architects can specify these coatings with confidence.”

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

### Chemical Coaters Association Adds Student Memberships



The photo here shows interested students attending the recent Fabtech 2015 in Chicago.

One of the goals of the Chemical Coaters Association International is to reach out to younger people and educate them about the career opportunities available in the finishing industry. To this end, the CCAI board of directors has approved the addition of a student membership category, to help generate interest in the finishing industry among students.

Full-time students who are 16 years or older are eligible for a full-benefit, non-voting membership at the rate of US\$20 per year. Proof of being a full-time student is required to receive the reduced fee, including a valid school email address (.edu), a current student identification card or current class schedule.

Student membership benefits include unlimited access to CCAI TV training videos, and the option of posting content and participating in discussions of group and community forums on CCAI's website. In addition, they may post resumes and search job openings in the online Career Center, and receive discounts on CCAI publications and training manuals.

There are also discounts to attend industry education meetings, seminar, conferences and trade shows sponsored by CCAI, including chapter meetings, CCAI's Annual Meeting and CCAI affiliated events. Membership can be in any chosen chapter, and includes a subscription to CCAI's Finishing Touch newsletter and a listing on the members-only area of the CCAI website. This has a toll-free help line service.

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in the **NEWS**



## Audi Chooses Datacolor Device for Interiors



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Automaker Audi has standardized its interior surface measurements around Datacolor's 45G CT portable spectrophotometer. While many of the interior parts have molded-in color, others do have paint or other coatings, and their finish affects the final appearance of the vehicles. And sometimes, minor flaws in the molded part will affect the final appearance of the piece when it's fitted into the passenger space.

According to Stefan Hauck, responsible for interior material development and outdoor weathering at Audi, the company sets very high standards for the instruments used to produce measurements. In this specific case, it needed to be a hand-held measuring device equipped with analysis software for evaluating the measurement results for weathering tests and objective measurement data.

The device had to be highly reliable both in laboratory conditions and in field operations. It is used for quality assurance in terms of weather resistance and durability, the aim being to determine the most accurate life span of products exposed to weather influences. Weathering

The Datacolor 45G CT measures colour throughout the cars' interiors.

produces a series of damage symptoms, such as bleaching or chalking, that can be measured and analyzed, depending on the influencing factors and structure of the weathered system. Chalking becomes visible as color lightening caused by increased scattering of the pigment and filler particles. Bleaching also becomes apparent as color lightening.

At Audi, the automobiles are tested with the spectrophotometer before and after weathering. The 45G CT must evaluate and display the differences before and after weathering in comparison with the visual impression. It provides objective data for evaluation, graphical representations and lists (e.g. change after five hours, or 10 hours) and trend graphs.

The portable 45G CT spectrophotometer promises excellent accuracy and inter-instrument agreement and can simultaneously measure gloss level and color for quality control. Innovative 45/0 measuring geometry ensures compatibility with visual color perception while its modern, ergonomic design with its color display clearly shows multiple pass/fail tolerances.

For paintings and coatings, such as coil coating, 45/0 measuring geometry is a global standard. The main advantages of the Datacolor

or 45G CT versus a previously used device, are the 45G CT's design which enables measurements be taken in hard-to-reach places in vehicles and on individual components, as well as using the Datacolor TOOLS software and database to structure the measured data.

The onboard software can save standards and samples, and provides a comprehensive display of all important colorimetric data with clear indications of pass/fail decisions. The portable spectrophotometer offers seamless integration in the Datacolor Tools software that comes as standard, synchronization of standard and sample results for generating quality reports as well as a simple management of comprehensive data. The spectrophotometer sets the standard for portable spectrophotometers in terms of accuracy, speed, user friendliness and value for money.

"With this product, Audi can precisely measure and control color and gloss in a single convenient operation," says Stefan Hauck, responsible for interior material development and outdoor weathering at Audi. "The design and measuring technologies guarantee consistent results even with measurements over longer periods."

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## in the **NEWS**

### Hempel Launches Trusted Asset Protection Survey in North America

Global coatings supplier Hempel has launched its Trusted Asset Protection Survey (TAPS) Digital Application in North America. The company has developed this interactive tool for the iPhone and iPad to facilitate coating condition surveys in a more dynamic, interactive and efficient way. It aims to allowing Hempel to help the corrosion industry and its customers reduce maintenance costs while extending the life of their assets. The roll-out began in Vancouver on March 7, at the meeting of the National Association of Corrosion Engineers.

The cost of corrosion in North America has been estimated at over US\$3-billion annually, according to Hempel, and failing to have an overall maintenance plan will only increase this expense. North America marketing director, Jose Luna, said, "This launch is an important milestone in our Journey to Excellence Strategy, where we have committed to supporting continued growth in the maintenance market."

Traditionally, the company has taken more time to deliver final coating recommendations to customers because surveys were administered manually. The overall condition survey focuses on giving the asset a coating and corrosion condition status to help spot potential problems, minimize risk and prioritize the areas that need to be considered first for maintenance. Coating advisors and sales representatives' recommendations aim to help customers focus and plan on where to allocate operational expenses to conserve the performance and aesthetic appearance of their holdings.

Luna added that, "We have developed this tool to assist our customers in the reduction of their maintenance costs by focusing on the long-term protection of their important assets."

All TAPS reports will be stored on the Hempel server and will connect to its customer extranet.

### Metokote Relocates its Performance Test Laboratory

Metokote Corp. the electrocoat, powder coat, liquid paint and specialty coatings supplier, recently relocated its Performance Test Laboratory to a larger space within its Lima, OH facility. The company has offered customers the convenience of an in-house A2LA (American Association for Laboratory Accreditation) certified laboratory since 1995.

This lab has provided service to customers doing business at any of the company's 30 facilities worldwide. The new 1,900 sq ft location provides an improved controlled environment, offers more space, and the ability to perform hundreds of different test methods for customers. Additionally, the new space allows for room to grow for future equipment needs.

"Our Performance Test Laboratory illustrates our commitment to quality and customer service," said Jeffrey Oravitz, president and CEO of Metokote Corp. "Moving to a larger space allows us to continue accommodating customer needs in a timely manner. This service also saves our customers time and money by eliminating the need to utilize outside laboratory services, and our A2LA accreditation offers customers confidence in the accuracy of the testing methods."

The Performance Test Laboratory is staffed by two full-time employees and offers a variety of services such as salt spray testing, cyclical corrosion testing, humidity testing, QUV accelerated weathering, hardness tests, solvent rubs and more. To ensure optimal process performance, bi-weekly panel corrosion tests are performed for the company's 78 process lines located around the world.

The facility conducts Production Part Approval Process (PPAP) testing, performance specification testing to dictate coating requirements, and collects research and development data. Laboratory personnel also maintain a specification library which includes material and performance specifications which are utilized companywide at different stages of the operation. It is recertified by A2LA every two years.

Data collected at the laboratory is internationally accepted and recognized as part of a mutual recognition arrangement A2LA has with international programs such as the National Voluntary Laboratory Accreditation Program (NVLAP), Asia Pacific Laboratory Accreditation Cooperation (APLAC), International Laboratory Accreditation Cooperation (ILAC) and the Inter-American Accreditation Cooperation (IAAC). This reduces technical hurdles for customers who operate or market abroad.

### US Manufacturing Shows January Drop After December Increase

The Association for Manufacturing Technology (Mclean, VA) reports that manufacturing technology orders in the US fell 30 percent in January after an uptick in December, driven by year-end budget and investment decisions. The month-to-month decline was not unexpected and is typical of the past three years. The soft market, said AMT, will continue through at least the next quarter.

The auto, aerospace and medical industries are driving positive activity in the US Southeast. The region is currently the country's bright spot for manufacturing technology investment. Other regions, where off-road construction, oil and gas, and agriculture sectors are predominant, continue to struggle.

Despite the soft market, forecasts from the MFG Meeting, the joint annual meeting of members of AMT and the National Tooling and Machining Association held early in March, suggest that the US economy is poised for growth along the lines of 2.5 to 3.5 percent, driven by consumer demand. Analysts speaking at the conference also expected China's economy to rebound sooner than expected, and oil prices to reach \$45 a barrel by year's end.

## PEOPLE NEWS

### PPG Names Executives

PPG Industries has announced two executive appointments. Dave Cole, currently PPG vice-president, packaging coatings, will become vice-president, architectural coatings, US and Canada. He will report to PPG president and CEO Michael McGarry.

Ken West, currently PPG director of specialty products in the company's architectural coatings, US and Canada business, will become global vice-president, packaging coatings. West will report to PPG executive vice-president Viktor Sekmakas.

"These executives have demonstrated strong performance in delivering growth in their respective businesses," McGarry said. "We look forward to their continued contributions as PPG continues to drive value for our customers, employees and shareholders."

Scott Sinetar, currently PPG vice-president, architectural coatings, US and Canada, will retire from the company effective March 1, 2016. Sinetar joined PPG in 1989 when it acquired Olympic paints and stains. He held a series of sales and management positions before being named to his current position in 2006.

### Roy Tess Award Winner Named

Dr. Mark Soucek of the University of Akron, Department of Polymer Engineering, will receive the Roy W. Tess Award in Coatings for 2016. Officers and the Award Committee of the Division of Polymeric Materials: Science and

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in the **NEWS**

Dr. Mark Soucek

Engineering (PMSE) of the American Chemical Society announced the decision in late February.

Dr. Soucek began his academic career 1993 at North Dakota

State University in Fargo, ND. He was an assistant professor and an associate professor at NDSU. He joined the University of Akron, Department of Polymer Engineering, as an associate professor in 2001 and is now a Professor. He has 15 issued US patents and pending patent applications and has over 150 peer-reviewed publications, of which 15 are chapters in books, and 34 additional publications in proceedings and preprints.

He will receive the Tess Award from Dr. Qinghuang Lin, Chair of the PMSE Division, in August 2016 during the 252nd National Meeting of the American Chemical Society in Boston. An evening reception in honor of the Tess award recipient and other PMSE and POLY award winners also will be held.

### Trainor to Handle Central Canada for Cefla

Cefla Finishing North America has named Jim Trainor sales area manager for central Canada. He will be responsible for sales in Ontario, Manitoba, Saskatchewan and Alberta.

Trainor comes to Cefla after nine years as business development manager at Henkel Corp. Cefla recently partnered with Henkel to combine its Inert Coating Technology with Henkel's Technomelt CHS UV Fusion Coating technology. Initially, the two technologies will help customers speed the process of giving melamine panels and other products highly desirable high-gloss and matte finishes.



Jim Trainor

Prior to his years at Henkel, Trainor was North American sales manager for Kleiberit Adhesives, where he managed up to a half dozen sales professionals and took charge of administra-

tive oversight for offices in both Toronto and Charlotte. He also served as field sales supervisor at Nacan Products, Ltd.

Trainor will immerse himself in the Cefla organization and its products in March, focusing on training at the company's North American headquarters and 15,000 sq-ft lab in Charlotte, as well as in Cefla's hometown of Imola, Italy.

### Fletcher Retires as ASTM Committee Chair

John F. Fletcher, Elcometer Ltd.'s technical support manager, has retired as chairman of the ASTM D01 Committee on Paint and Related Coatings Materials and Applications, after three successive two-year terms in office. Fletcher received an Award of Appreciation in recognition of his outstanding service as an ASTM Committee Chairman from the beginning of 2010 to the end of 2015, at the ASTM D01 meeting in San Antonio, Texas at the end of January.

He stepped down as the ASTM constitution limits an individual to three successive two-year terms as chairman of D01. He has become first

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John Fletcher is congratulated on his service as chairman.

vice-chairman in support of the new chair, Cynthia Gosselin. The D01.23 sub-committee has 31 standards under its jurisdiction.

**PCI Names Board for 2016**



Front row: (left to right): Chris Merritt, Secretary/Treasurer; Ron Cudzilo, Vice President; John Sudges, President; John Cole, Past President. Back row: (left to right): Steve Kiefer, Greg Dawson, Suresh Patel, Paul West, Craig Dietz, Kevin Biller and Trena Benson, Executive Director. Not pictured: Shivie Dhillon.

The Powder Coating Institute has announced its board of directors and executive officers for 2016. The new president is John Sudges, Midwest Finishing Systems, and the vice-president is Ron Cudzilo, George Koch Sons. Chris Merritt, Gema USA, is secretary/treasurer, and John Cole, Parker Ionics, is past president.

In addition to the officers, serving on the Board of Directors for 2016 are: Kevin Biller, president, The Powder Coating Research Group Inc.; Greg Dawson, Eastern US & Canada sales manager, Nordson Corp.; Shivie Dhillon, president, SunDial Powder Coatings; Craig Dietz, product manager, Axalta Coating Systems; Steve

Kiefer, powder coatings business director, Powder Coatings N.A., Akzo Nobel Coatings Inc.; Suresh Patel, business manager, general industry, Chemetall US Inc.; Paul West, director of marketing, Sun Polymers International Inc.; and PCI legal counsel, David Goch, Partner, Webster, Chamberlain & Bean.

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## Calendar of Industry Events

**April 1, 2016:** Ontario Paint Association's annual Night at the Races, at Woodbine Racetrack, in north-west Toronto, [vfinnie@vlomas.org](mailto:vfinnie@vlomas.org).

**April 11-14, 2016:** Powder Coating 2016, Georgia International Convention Center, College Park, GA, [www.powder-coating.org](http://www.powder-coating.org).

**April 12-14, 2016:** American Coatings Show 2016, Indiana Convention Center, Indianapolis, IN, [www.american-coatings-show.com](http://www.american-coatings-show.com).

**April 19-22, 2016:** PaintExpo, Karlsruhe Exhibition Centre, Karlsruhe, Germany. [www.paintexpo.de](http://www.paintexpo.de)

**May 3-6, 2016:** ET 16, the 11th International Aluminum Extrusion Technology Seminar & Exposition, Hyatt Regency Chicago Hotel, Chicago, IL, [www.ET16.org](http://www.ET16.org).

**May 16-18, 2016:** RadTech 2016, Hyatt Regency O'Hare - Rosemont, IL, [www.RadTech2016.com](http://www.RadTech2016.com).

**May 25-26 2016:** CPCA Annual Conference and AGM, the Westin Nova Scotian, Halifax, NS, [www.canpaint.com](http://www.canpaint.com).

**June 6-8, 2016:** SUR/FIN 2016, South Point Convention Center, Las Vegas, NV, [www.nasfsurfin.com](http://www.nasfsurfin.com).

**June 7, 2016:** Ontario Paint Association Golf Tournament, at Caledon Woods Golf Club, [vfinnie@vlomas.com](mailto:vfinnie@vlomas.com)

**October 4-6, 2016:** Aluminum Anodizers Council's 2016 Fall Conference, Hotel Omni Mont-Royal, Montreal, [www.anodizing.org](http://www.anodizing.org).

**November 2-3, 2016:** Canada Woodworking East, Olympic Stadium, Montreal, [www.masterpromotions.ca/Previous-Events/canada-woodworking-east-2016](http://www.masterpromotions.ca/Previous-Events/canada-woodworking-east-2016)

**November 16-18:** 2016: FABTECH 2016, Las Vegas Convention Center, Las Vegas, NV, [www.fabtechexpo.com](http://www.fabtechexpo.com)

## in the NEWS

### CAM Superline Wins 2016 Green Manufacturing Award

PPG's commercial coatings group and the National Association of Trailer Manufacturers (NATM) have honored CAM Superline with the 2016 Green Manufacturing Award. Based in Waynesboro, PA, CAM Superline manufactures dumper trailers for the construction and excavating industries. The award was presented to company president Sandy Poffenberger at the 28th annual NATM national convention and trade show held in Las Vegas at the South Point Hotel in February.

The Green Manufacturing Award honors the NATM member with the year's best solution or innovation that has a positive impact on the environment. This may include improvements in material utilization, design advancement, process or equipment enhancements, emissions reductions, recycling methods and other environmentally sensitive areas.

CAM Superline earned the 2016 award by adopting several green technologies and practices that reduced both its impact on the environment and its costs. Steps CAM Superline took included:

Upgrading to energy-efficient lighting for its manufacturing facility, both inside (moved to T5 high bay fluorescent lighting from 400-watt mercury-vapor lighting) and outside (moved to high-efficiency LED lighting with daylight sensors and property lights), which cut energy costs in half;

Replacing use of a contaminant pre-paint wash containing phosphate and molybdenum,

which could harm humans, fish and wildlife through polluted wastewater feeding into the Chesapeake Bay watershed, with a zirconium-based wash, and then increasing operational efficiency to reduce the amount of zirconium-based wash used by 28 percent over two years.

Decreasing volatile organic compound (VOC) emissions from paint processes by more than 1,800 lb between 2013 and 2015, despite a 15 percent increase in trailer production.

Implementing recycling and reuse programs throughout the company for cardboard, paper, wood, steel, toner cartridges and skids; and

Cultivating land that the company owns but doesn't use for its operations to farm sorghum, which is a high-energy, drought-tolerant crop for livestock feed that requires one-third less water for production compared to other feedstocks.

With the noted changes in its operations, CAM Superline earned the 2016 Green Manufacturing Award. A cash gift that the winner may donate to a charitable organization is part of the award. CAM Superline chose St. Jude's Research Hospital, based in Memphis, TN, which is one of the world's premier centers for research and treatment of catastrophic diseases in children.

Ron Yarnell, PPG OEM sales manager, said the Green Manufacturing Award was established to encourage NATM members to implement ecologically sound programs. Award contenders must present case studies that demonstrate improved, ecologically conscious performance in their operations.

Entrants are also required to provide documentation of the green initiatives they have implemented. Entries are judged by the NATM executive committee.

"We at PPG believe that we have a responsibility to minimize the impact of our operations on the environment," Yarnell said. "When we see a company like CAM Superline make significant improvements in the way it works, and those improvements benefit the environment, then we know our commitment and our investment in the Green Manufacturing Award is the right thing to do."

Yarnell also pointed out that the Green Manufacturing Award has become the trailer industry's most important annual charitable event. This year, several trailer-related companies—Optronics International, Dexter Axle, the Carlstar Group and Champion Hoist—joined major sponsor PPG in supporting the award.

The NATM represents manufacturers of light- and medium-duty trailers as well as a wide range of suppliers to the industry. The organization promotes universal recognition of safety and quality in trailer manufacturing to the trailer industry and the general public. NATM works to improve the trailer industry through the promotion of compliance with its guidelines and other initiatives. The association has more than 800 member companies in the US, Canada, Mexico and other countries.

# CPCA Focuses on Health, Safety and Environment

BY GARY LEROUX

## Parliamentary Committee Reviewing Chemicals Management

On March 8, the Parliamentary Standing Committee on Environment and Sustainable Development launched a study to review the Canadian Environmental Protection Act, CEPA. They will examine several aspects of CEPA, but of most importance to CPCA and the chemicals sector generally is its focus on “chemicals management, air and water quality, pollution prevention planning, precautionary thresholds for persistence and bioaccumulation in toxicity assessments, risk management strategies and reassessment of substances. This study may incorporate recommendations for reform in relation to other

federal legislation and/or regulations pertaining to the protection of human health and the environment from toxic substances.”

CPCA will continue its efforts to ensure the committee fully understands the sector’s extensive work on CMP and the heavy burden, including costs, it places on the paint and coatings industry. Over the past 10 years all chemical sectors have sought to provide relevant data to ensure decisions taken to either ban chemicals or establish a suitable risk management approach, such as a regulation, made sense. Early indications are that the Committee will make certain that its final report includes recommendations for a more stringent assessment of chemicals that could lead to more banning of toxic substances

and/or more stringent regulations.

It is no secret that the new government is very active on the environmental front. This Parliamentary review of CEPA supports that view. The Committee includes five government members with a strong environmental activist background having worked for and with organizations such as Environmental Defence and Eco Justice. CPCA will remind parliamentarians that the work on the Chemical Management Plan over the past decade has produced sound regulations and a level playing field for industry, one that has been widely applauded by other countries for both the process and the outcomes achieved.

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### Regulatory Cooperation Council Workplace Chemicals' Work Plan

The Regulatory Cooperation Council (RCC) Workplace Chemicals' Work Plan has released its plan for the period 2016–17. RCC outlined the work that U.S. OSHA and Health Canada will achieve during the period. Their goal is to finalize a work plan that will be released at the end of June 2016. OSHA has created a docket titled International/Globally Harmonized System, to capture both U.S. and Canadian stakeholder comments on the work plan and items for future discussion. The comment period ended March 18, 2016, but CPCA ensured the views of its members were presented with respect to the key concerns of the coatings industry.

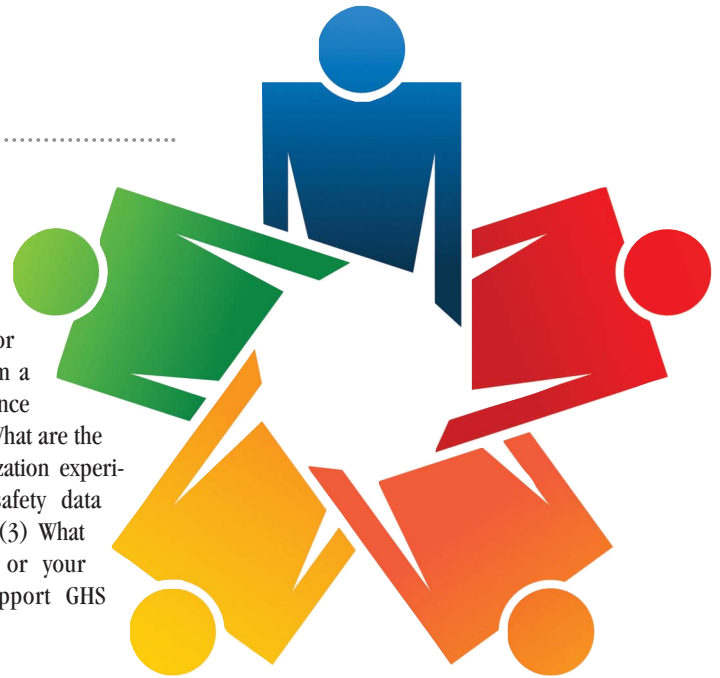
OSHA and Health Canada specifically requested comments on three questions: (1) With regard to implementation of GHS in Canada and the United States, and based on the draft work plan provided, are there other areas you would like to see included in the work plan? (2) Key issues you or your organization have experienced while implementing

GHS: With GHS being implemented in Canada and the U.S., what are the major challenges that you or your organization face from a health and safety, compliance and/or trade perspective? What are the issues you or your organization experience when developing safety data sheets and/or labels? and (3) What additional tools do you or your organization need to support GHS implementation?

### Proposed Resource Recovery and Circular Economy Act for Ontario

The Ontario Government tabled a new waste reduction act in November, targeting improved levels of waste recovery and recycling in the province. There were extensive consultations over the past several months, which concluded at the end of February. An all-party committee of the Ontario legislature is now considering the proposed legislation with a view to possible

amendments based on stakeholder feedback. CPCA presented a 25-page submission that included a number of recommendations that would address key concerns of the paint industry with a long history on paint stewardship in Ontario and across Canada. Our recommendations focused on key principles such as:

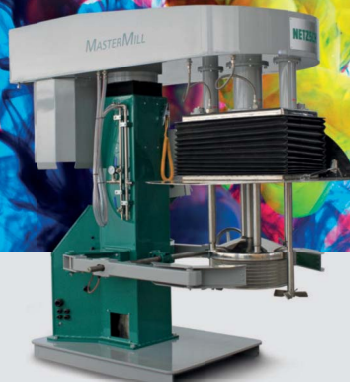


## Innovative Solutions for the Coatings Industry

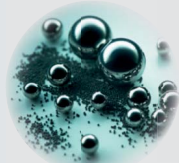
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- Industry is concerned with the overly prescriptive nature of the proposed legislation, which may lead to greater acrimony, higher costs and poorer outcomes.
- Integrity related to governance of the proposed Oversight Authority is called into question given the make-up of the board and the extra duties that can be imposed by MOECC related to reviews, which can lead to conflict, extensive arbitration, litigation and increased costs.
- Well-intentioned policy statements are de facto regulations that are arbitrarily decided on by the Minister and the Cabinet without regard for the impact on stakeholders and thus may be in contravention of the government's Regulatory Policy (July 2014).
- Appropriate amendments are needed to "reduce the administrative burden and lower the cost of doing business" per the Ontario Government's "Business Growth Initiative"

(Fall 2015) and ensure full alignment with the Burden Reduction Reporting Act (2014).

- Recommendations focus on appropriate amendments that will provide stability and a level playing field to ensure industry stays competitive; ensure regulatory clarity that will lead to full compliance; achieve better outcomes on waste reduction and resource recovery; and not drive up the costs for the consumer since they ultimately pay based on the requirements imposed by this legislation.

### Multi-stakeholder Consultation on Microbeads

MOECC held a consultation meeting with stakeholders on proposed regulations for Microbeads in Personal Care Products Used to Exfoliate or Cleanse. CPCA participated in a multi-stakeholder meeting on February 22, which provided more information on the government's timeline for microbeads and an improved range for the restricted use of

microbeads per the listing in Schedule 1 of CEPA, and thus the designation as toxic. As a result, the new range and accompanying explanatory note for the proposed regulation will not capture polymer emulsions used in paint formulations. This is an important development as it will ensure that paint will not be viewed as "toxic" should the issue emerge in future with respect to microbead use. The Canadian approach aims to phase in with the Illinois ruling, since the EPA rule will start phasing out microbeads sooner (July 2017) than the Canadian approach. There will be some differences between the Canadian regulations and the Illinois rule, including size range, targeting biodegradable microbeads in Illinois only. The overall objectives will be the same, however.

### Industry Consulted on Substance-based Performance Measurement of Chemicals

The Stakeholder Advisory Council on Chemicals Management, of which CPCA is a member, pre-

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- > CPCA hosts networking events for the exchange of knowledge and best practices that help foster strong stakeholder-business relationships.

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sented and discussed the Substance-Based, Risk Management Performance Measurement (SBPM) methodology. The performance measurement is conducted on a risk instrument basis (e.g., regulations, Pollution Prevention (P2) Notices). SBPM is the government's approach to determine effectiveness of risk management actions based on a prioritization process and were developed based on case studies (i.e. Bisphenol A). Industry input on the criteria to prioritize candidate substances for measurement and communication of the measurement results is required as noted below.

**Proposed Prioritization Methodology:** Each substance will be scored according to eight criteria: 1) Hazard to human health/the environment; 2) Availability of new information; 3) Level of impact of RM actions i.e. prohibition or international agreement regarding the substance; 4) Complexity of risk management; 5) Availability of indicator data; 6) Social, technological, economic (STE) and political considerations; 7) Anthropogenic sources of exposure and potential for additional risk management; and 8) Time elapsed since addition to CEPA Schedule 1. A ranking of 1, 2 or 3 will be assigned for each criterion, with 1 representing the lowest score and 3 the highest. For example, under 5), if a substance is already part of CHMS, it will receive a score of 3, if it is part of the NPRI or other reporting programs, it will receive a 2, and if no compliance data is available, it will receive a 1. Total SBPM scores will be compiled according to a weighting approach and each substance will then be categorized as High, Medium or Low priority.

**Weighting Approach:** A weighting approach will be used to ensure that results of prioritization align with the areas of greatest risk and highest priority. The weighting for ranking is:  $2 \times \text{Hazard} + 2 \times \text{Impact} + 1 \times \text{STE} + 1 \times \text{Exposure/Release} + 1 \times \text{Complexity} + 1 \times \text{Age} + 0.33 \times \text{NewInfo} + 0.33 \times \text{DataAvailable}$ .

These are some of the important aspects CPCA is monitoring to ensure that decisions on regulations for chemicals used in the paint and coatings industry are indeed science-based and appropriate.

*Gary LeRoux is the president and CEO of the Canadian Paint and Coatings Association.*

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**Sharon Feng, Ph.D.**  
Senior Associate Dean of the Institute  
for Molecular Engineering  
University of Chicago



## Cross-Disciplinary Collaboration: An Imperative for Breakthrough Materials Discovery

In a traditional scientific research model, success often heavily depends on the in-depth expertise, insights and creativity of one principal investigator and/or a team of researchers in a particular discipline. The explosion of scientific discovery and new technologies in the 21st century, however, is turning this model on its head. This has happened because of the increased complexity of the problems that are left unaddressed and the sheer scale of the challenges mankind is facing in areas such as energy, water and sustainability.

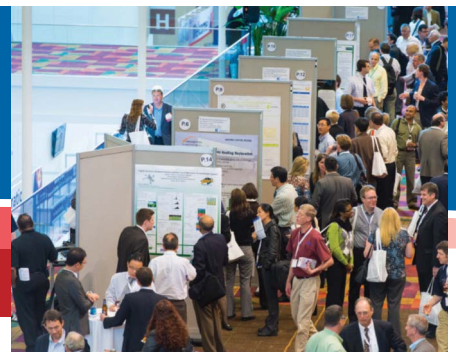
As a result, there has been a large movement toward cross-disciplinary collaboration in scientific research transcending the boundaries of organizations, institutions and even nations.

Keynote Speaker Sharon Feng, senior associate dean of the Institute for Molecular Engineering, University of Chicago, will discuss her perspective on implications that cross-disciplinary collaboration has on industrial R&D, and the impact on the future talent pipeline to industry. She will also provide insight on how it can potentially enable new materials discovery, with exceptional time and cost efficiency, when companies establish strategic and mutually beneficial collaborations with academic partners through open innovation.



KEYNOTE SPEAKER

## SCHEDULE AT A GLANCE



### Monday, April 11, 2016

8:30 am – 10:00 am	Pre-Conference Tutorials 1-5
10:00 am – 10:30 am	Networking: Coffee Break
10:30 am – 12:00 pm	Pre-Conference Tutorials 6-10
11:30 am – 12:15 pm	Networking: Welcome Lunch
12:15 pm – 1:30 pm	Plenary Session Welcome Address and Conference Introduction, Keynote Presentations, Award Ceremonies
1:30 pm – 2:00 pm	Networking: Coffee Break
2:00 pm – 5:30 pm	Session 1: Science Today – Coatings Tomorrow Session 2: Additives Session 3: Functional and Smart Coatings Session 4: Pigments
5:30 pm – 7:00 pm	Poster Session/Networking: AC CONFERENCE Reception

### Tuesday, April 12, 2016

9:00 am – 12:30 pm	Session 5: Architectural Coatings I Session 6: Polyurethanes I Session 7: Radiation Curing Session 8: Measuring & Testing
1:30 pm – 2:00 pm	Networking: Conference Lunch
2:00 pm – 5:30 pm	Session 9: Architectural Coatings II Session 10: Polyurethanes II Session 11: Direct-to-Metal Coatings Session 12: Novel Materials

### Wednesday, April 13, 2016

7:15 am – 8:30 am	Fun Run
8:30 am – 9:30 am	<b>Mattiello Lecture</b> <b>Donald C. Sundberg, Ph.D.</b> Director, Nanostructured Polymers Research Center University of New Hampshire
9:30 am – 1:00 pm	Session 13: Industrial Coatings Session 14: Alkyds Session 15: Biobased Coatings Session 16: Protective Coatings
1:00 pm	End of Conference and <b>Lunch-Around-the-World on the Show Floor</b>





# AC American Coatings SHOW 2016

Hosted by the American Coatings Association, in collaboration with Vincenz Network.

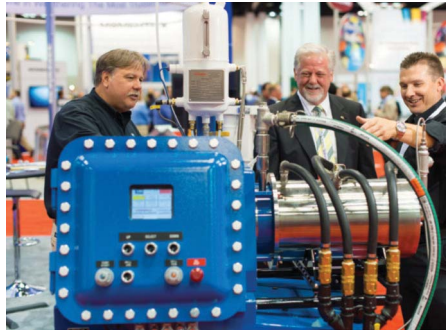
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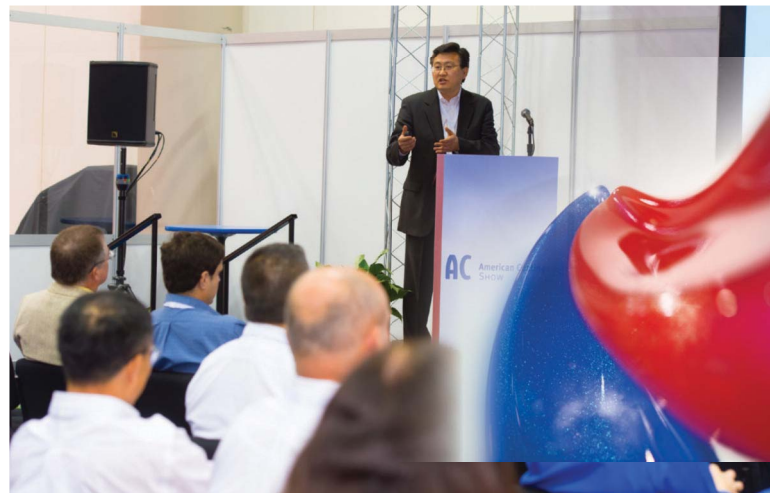
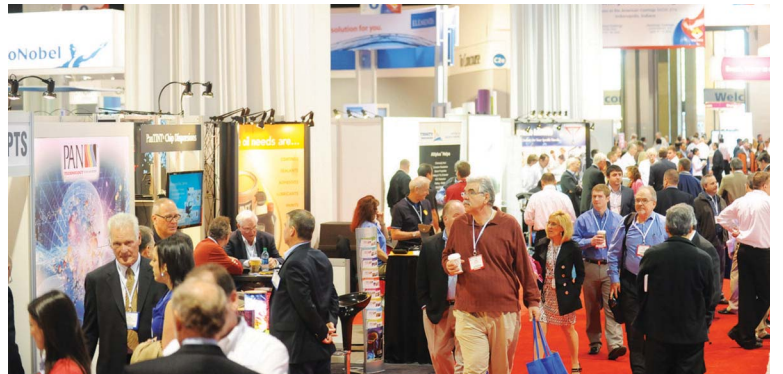


## JOIN THE *FUN RUN* AND SUPPORT THE STUDENTS

Join us for the ACS Fun Run! The show and conference hosts are encouraging every exhibitor and attendee to participate. Proceeds from the ACS Fun Run will be used to fund student participation at future AC CONFERENCES.

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\*Facts stated are from the 2014 ACS, which won the distinction of "Fastest Growing Trade Show, Attendance Overall" from Trade News Network.



paint and coatings manufacturing: **NANOTECHNOLOGY**

# Super-Small **Thinks Big**



Car externally coated with BASF's iGloss nanocoating.

Nanomaterials is a term that covers a wide range of technical capabilities. The basic definition of nano – anything under a billionth of a meter across – doesn't tell us a lot on its own, and we have to look at the actual physics of tiny particles to understand better what is happening. In most cases, we are talking about minerals or mineral-like crystals such as graphene.

A key factor is that extremely small particles have a much greater surface area in relation to their interiors than larger ones. This means they have different effects on other materials in their immediate environment, achieving such effects as orienting or redistributing them.

With surfaces such as paints and coatings, they will create a surface tension quite different from what occurs with larger particles. Gloss can be smoother and more reflective, and there is often less tendency to for surface fracture and subsequent cracking. This helps produce water-repellent surfaces.

Naturally, all this means that preparation and mixing of formulas with nanoparticles needs to be done very carefully. It is vital to ensure proper distribution of the particles, since clumping can cause unusual problems that conventional

ideas on formulation would not predict.

In some cases, such as mineral fillers in paint, nano-sized particles have been in use for many years.

BASF's iGloss has been one of the most successful nano-based materials. This automotive topcoat combines two kinds of materials in a nanostructured hybrid. Between 90 and 95 percent of the hybrid material, depending on the area of application, consists of organic material which forms the paint matrix. This makes the finish flexible and elastic and ensures a high level of weathering resistance.

Five to ten percent of the inorganic material is embedded in the organic matrix, and these silicate nanoclusters are particularly hard and scratch resistant. They consist of a small number of atoms and are distributed throughout the coating homogeneously and densely.

The organic and inorganic components are covalently, and thus elastically, bonded. This allows the clearcoat to immediately spring back to around 90 percent, for instance, when hit by the bristles of a carwash brush.



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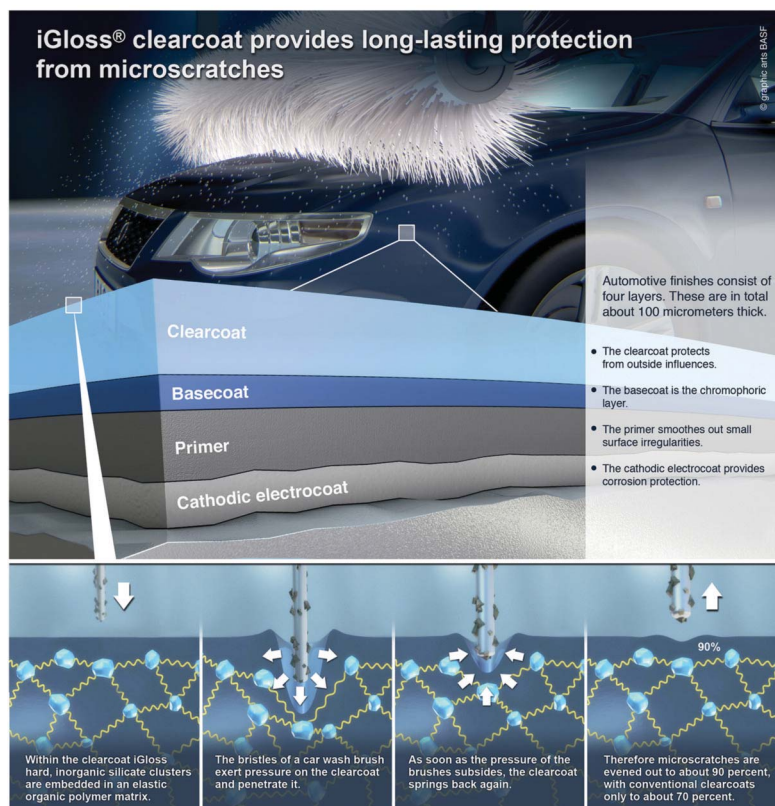
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## paint and coatings manufacturing: **NANOTECHNOLOGY**



These coatings can be applied directly to metal without first requiring a primer coat. In addition, the layers prevent oxygen from reaching the metal and thereby protect against corrosion.

The thermochromic coatings will change color depending on their temperature. They then either absorb heat, or become transparent and permit its reflection.

“Metal strip possesses very special properties when coated in this way,” Schmid explained. “If temperatures are below 30 deg. C, the black coating absorbs heat. If it is warmer, the color changes. The varnish, which has now become transparent, allows the infrared radiation to be reflected.”

Strip and wire coated like this are useful in architectural applications. They can be interwoven and used as exterior self-regulating thermal cladding for walls and façades to help cool buildings passively and thereby reduce operating costs.

But it isn't just metal surfaces or buildings that will benefit from nanomaterials. Colorado-based NanoTech Coatings uses a proprietary formulation to provide a long lasting, durable, line of nanocoatings for a wide variety of substrate.

“NanoTech Wood Coating will protect, enhance, and if you desire, stain your wooden surfaces all with our two-part quartz coating,” said a company spokesman. “Our Wood Coat protects from UV damage, acid etching, water spots, moisture and other natural decay. These features make NanoTech Wood Coating ideal for use not only in the home, but also in industries such as restaurants, marinas, decks, furniture, and the rest of the great outdoors.” And in Penticton, BC, nanoTech Canada Inc. is offering a wood coating for decks, furniture, hardwood flooring and other wooden surfaces. Nano-coating, the company claims, can withstand temperatures down to -60 deg. C., and provides complete protection against sunlight and moisture. It preserves the natural look of the wood and resists snow and repels pests. It can, the company says, be applied to surfaces both old and new.

There has been some reluctance to promote nanotechnology, especially in Europe, after allegations of health issues resulting from inhalation of the particles, or exposure to them in the general environment. To date, the allegations have not been solidly substantiated. Normal safety procedures any plant should be following ought to contain any threats, but some companies using nanomaterials have been reluctant to state this for fear of adverse publicity.

However, as the varied benefits are more widely proven, and the processing technologies are better understood, it's one technology that is going to yield increasing benefits, and above all, more versatile and effective paints and coatings. ■

This is referred to as ‘elastic recovery’ or instant reflow.’ Conventional clearcoats only attain reflow rates of approximately 70 percent. With iGloss, microscratches that occur are reportedly significantly flatter and therefore less visible.

Germany has been a major player in the nano game, especially through the Fraunhofer Institute, the research conglomerate that brings varied resources to such technical problems. One of its most recent efforts has been in thermochromic nanocoatings, which can help reduce energy usage and generate savings. The coatings either absorb heat or permit its reflection, depending on their temperature.

Last year, Fraunhofer experts demonstrated this phenomenon using samples of coated metal strips at the Hanover Trade Show. The new coatings, said Fraunhofer ICT researcher Helmut Schmid, can be applied easily like a paint or varnish.

“The special properties of nano-composites only become apparent if the particles do not clump so that an agglomeration is avoided,” he explained. With colleagues at the institute, he developed a process through which the nanoparticles are distributed uniformly in the polymer matrix.

“In addition,” he said, “integrating the nanoparticles in the plastic system provides extra safety. The binding forces prevent the uncontrolled release of individual nanoparticles. We can prove this using analytical techniques able to detect extremely small concentrations of substances.”

The process is highly adaptable and suited to processing quite varied nanomaterials, and releases hardly any VOCs.





## EXHIBITING COMPANIES

Aal Chem  
 Alberdingk Boley, Inc.  
 Allnex  
 American Ultraviolet  
 BASF Corporation  
 BYK Additives & Instruments  
 CB Mills Division of Chicago Boiler Co.  
 CFCM Magazine  
 Changzhou Tronly New Electronic Materials Co., Ltd.  
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 Colorado Photopolymer Solutions  
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 Dymax Oligomers & Coatings  
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 Enercon Industries Corporation  
 Energy Sciences Inc.  
 Excellitas Technologies (OmniCure)  
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# New Ideas in UV Initiators

Using ultra-violet light for curing is a process with a lengthy history, but it keeps on improving. The chemistries that can achieve near-perfect finishes are continually improving.

The big plus with UV-cured materials has always been the near-zero level of emissions. They might not be the cheapest materials available, but using UV makes environmental compliance issues disappear, as well as producing a high-quality finish on anything from an adhesive layers and high-end wood surfaces to book and magazine covers.

UV topcoats are widely used for prefinished wood flooring, kitchen cabinets, and some three dimensional furniture applications. The alpha hydroxyketone family of photoinitiators facilitated much of this market growth, since in addition to having low VOC emissions, they offered significant increases in productivity through fast curing, and excellent abrasion and stain resistance properties from the cured coatings.

BASF offers the Irgacure line of photoinitiators, which includes such hydroxyketones, and which it purchased from Ciba in the 2000s. However, today's Irgacure range covers a very broad range of chemistries.

The free radical class of Irgacure initiators represents the majority of commercially used initiator chemistry, while Irgacure cationic curing photoinitiators are used with epoxy or vinyl-ether functional resins.

For example, the Irgacure 250 is a versatile photoinitiator that can be used for for cationic polymerization of epoxy or oxetane-based photo-curable systems upon exposure to light or to an electron beam. It will cure cationic inks and coatings, such as printing inks, white base coatings, and adhesives.

Irgacure 819 is versatile, acyl phosphine oxide photoinitiator for radical polymerization of unsaturated resins given UV light exposure. It is, the company says, especially suited to white pigmented formulations, to the curing of glass fiber reinforced polyester/styrene systems, and, in combinations with light stabilizers for clearcoats used outdoors. Thick section curing is also possible with this photoinitiator.

Dymax (Torrington, CT) manufactures UV/visible light-curing coatings that are used to cover the surface of substrates or components, with an emphasis on protecting them from destructive or environmental agents. It has a full line of UV-conformal coatings for use with printed circuit boards, and its adhesive coatings can also be used as dome coatings to provide a decorative cover on materials.

"As with all products, there are limitations associated with light-curable materials," the company says. "The most obvious limitation of LCMs is that they are only appropriate in applications where, after assembly, the LCM can be exposed to light. Where light-curing technology is not fea-

sible, customers should consider using two-part, no-mix structural acrylics, which are ideal for bonding magnets and metal substrates.

Generally, Dymax adds, LCMs are limited to cure depths of one-quarter to one-half in. (0.6 to 1.3 cm). There are, of course, upper and lower limits for each of the physical properties associated with Dymax products, like hardness, viscosity, temperature resistance, etc.

The company's LCMs are usually one-component mixtures of oligomers, monomers, photoinitiators, and modifiers, which can include hardness modifiers, colorants, fluorescing agents, thickeners, wetting agents, and other substances. Over 95 percent of its materials are acrylates, having a urethane backbone with an acrylic functional group. The balances are cationic epoxies.

The UV-curable acrylates generally offer faster and deeper cures and a wider range of properties, including adhesion to a wider range of substrates. The UV-curable cationic epoxies generally offer superior adhesion to certain substrates such as polypropylene, polyethylene or silicone, as well as superior resistance to some solvents. They also provide tack-free surface cures, even at very low intensity, where some UV-curable acrylates will exhibit a tacky surface due to oxygen inhibition.

Spectra Group (Millbury, OH) offers its H-Nu line of photoinitiators, though the company specializes in individual problem-solving. Its Type I products produce reactive intermediates directly after light absorption, while its Type II photoinitiators require a second compound, a so-called co-initiator, to produce such intermediates.

Its H-Nu line dates to the early 1990s, and deals predominantly with two types of polymers: acrylates and methacrylates, which are cured by free-radical processes; and epoxides, cured by cationic processes.

Key benefits of the product range include high absorptivity, which means low concentrations of photoinitiator are needed, and speed of cure, which can be moderate to fast, depending on the formulation. Adding H-Nu products to an existing UV formulation can, Spectra says, means there is better light utilization and a reduction in the levels of UV photoinitiators normally required.

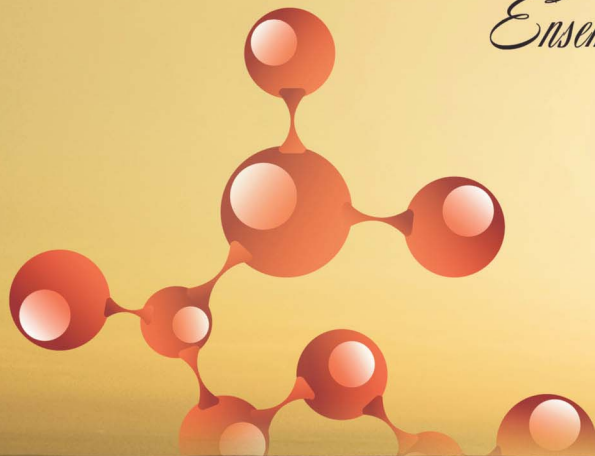
They can provide a thick cured coating, up to one in., after one pass, and will cure through UV opaque, pigmented or colored substrates, such as colored plastics. They also feature photoinitiator bleaching, creating either a pale residual color or none at all.

Recent innovations in the line, the company says, include: liquid blend H-Nu 605 IL, which offers easy addition to water-based free radical formulations, initiating in the UVA (380 nm



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## paint and coatings manufacturing: **UV INITIATORS**

) and visible/near IR portion of the spectrum (605 nm); liquid blends targeted to match and optimize surface cure with UVA LED light sources; and further extension of the H-Nu line to provide curing with red and infra-red (IR) light sources. There are also products that provide tack-free cure (acrylates) in the UVA/visible light range that are capable of sensitizing both iodonium and sulfonium salts in this range, and antimony-free H-Nu 390 and both antimony- and benzene-free H-Nu 390-HI liquid blend cationic photoinitiators.

The available range of photoinitiators in North America was recently extended by an agreement signed by Swiss-based DKSH and Hampford Research Inc. (HRI). The exclusive agreement covers HRI's photoactive technology products in North America, Europe and Asia.

HRI specializes in high purity chemicals for end use applications in the electronics, dental, personal care, printing and imaging as well as for the adhesives industries worldwide. The agreement includes HRI's entire UV/EB line, including photo acid generators, photoinitiators, monomers and co-initiators, as well as future products created from customer-specific product development. HRI has chosen to work with DKSH for its first-class reputation in

providing integrated and tailored market expansion services along the entire value chain, as well as for its comprehensive global network and strong customer base in the specialty chemicals industry worldwide.

Mike Wrostek, director of sales and marketing at Hampford Research, said of the deal, "Our partnership with DKSH represents an exciting new chapter for HRI. Our custom manufacturing capabilities combined with DKSH's industry knowledge and contacts will undoubtedly result in many new success stories."

And for DKSH, Carole Lin, global business development manager, specialty chemicals industry, added: "We are very pleased that Hampford Research has chosen DKSH as their Market Expansion Services partner for their innovative photoactive technology. We look forward to introducing their exciting product range to our extensive global customer base and to developing a successful long-term partnership."

As the number of applications for UV coatings continues to grow, there will be more options made available to coaters needing a high-quality finish. Given the degree of creativity already in place, there are sure to be more developments to watch for in the not-so-distant future. ■



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# Powder Coatings Continue to Surprise

The opportunities for powder coatings have been increasing steadily for years. Where at one point there were problems with effective application and temperature stability, these have broadly been addressed. There are still technical challenges, but the frontiers are pushed back every year.

An example came last year when AkzoNobel and Chinese automaker JAC Motors announced they had commercialized VOC-free powder technology in truck body coatings. JAC is successfully using AkzoNobel's Interpon powder technology for coating truck bodies at its plant in Mengcheng, China.

The two firms explained their collaboration at an industry forum in Shanghai, organized by the Coating Division of the China Surface Engineering Association. Other participants of the forum include GM Auto, and leading Chinese automakers Sinotruk, Geely, and Yogomo.

Chinese auto makers have worked on ways to meet coatings standards announced in 2006. Though powder coatings are listed as a recommended solution for cleaner manufacturing, this is the first example of their use in volume manufacture. The production line at Mengcheng has been operating successfully using AkzoNobel's Interpon A powder coatings for JAC's SLX truck.

Wenping Xing, technical director of JAC Motors, said: "Environmental friendliness is a top priority as we pursue production technology excellence. Powder coatings have the advantages of high utility rate and zero wastage, making them a sustainable solution of choice for body coating.

"Our first powder coating line for truck combined the proven technologies of AkzoNobel and the state-of-the-art manufacturing equipment. It helps us with good quality control and delivering our promise on environmental protection. We are now planning on the second powder coating line."

Wailing Wu, secretary-general of the Coating Division of the China Surface Engineering Association, called for all industry related companies to take actions to put cleaner manufacturing into practice. "We should strive to enable manufacturing process and equipment that produce high efficiency with less emission. These efforts will ensure the long-term sustainable development of the industry."

Erie Powder Coatings has been pushing the envelope for powder coatings on metal with its Z1000-G5 zinc-rich primer.

"Anyone that has used a zinc rich primer epoxy in the last



JAC trucks are among the first in the world to use powder coating for their exteriors.

30 years," the company stated, "has heard the same warnings from their suppliers. Coaters have read about or even experienced problems when using these zinc rich epoxy primer products."

Two problems EPC identifies are that some zinc-based primers have little zinc in them, and the other is topcoat adhesion to the primer.

The zinc in these primers acts as a sacrificial metal matrix that significantly slows rusting or oxidation of a steel substrate. Zinc itself is expensive, and difficult to use in a powder manufacturing operation.

"As you can imagine," EPC noted, "when a zinc rich primer hardly has any zinc in it, it doesn't offer the long term corrosion that the coater expects." The Z1000-G5 powder primer has a zinc content above 60 percent, to ensure that it gives long-term corrosion stability.

The second and more difficult problem is adhesion of the topcoat to the primer coat. Often, it is an exterior polyester, essential to the overall durability of the coated system. But if the topcoat peels from the primer, this creates problems from product failure.

EPC's lab has changed the formulation to keep the corrosion control, but made the product much easier to top-coat. It has extended the window for recoat substantially.

To establish the product's effectiveness, the company took a competitor's zinc-rich epoxy product for a base coat on two panels, and Z1000-G5 primer on another two panels. The competitor's product, while effective, has an extremely narrow window for re-coatability, making it difficult to use.

The photo here shows the competitor's primer (left) with

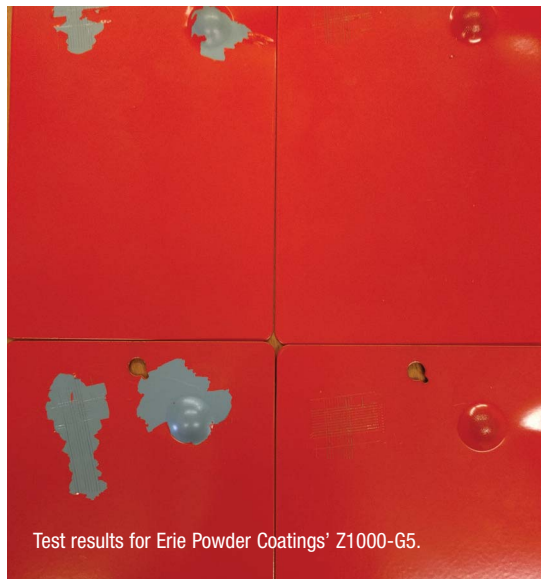
## paint and coatings manufacturing: **POWDER COATING**

topcoat P645-G8 KBTA orange, and on the right, the Z1000-G5 zinc rich primer with topcoat. The top panels had their primers baked for 10 minutes at 400 deg. F, the bottom panels for 30 minutes at 400 deg. F prior to topcoating. All primers were baked in a convection gas oven.

The results, EPC says, speak for themselves.

Sherwin-Williams says it, too has pushed the envelope, in the field of architectural coatings. It recently achieved Qualicoat Class 1 Normal Durable Certification for polyester-TGIC based powder coatings manufactured at its Arlington, TX, powder plant. These gloss powder coatings include a wide array of colors and include many RAL colors. A Qualicoat Class 1 Certification assures aluminum building specifiers and architects that they are specifying a high quality product that offers long-term value and consistent quality.

“Qualicoat is a worldwide standard known for its rigorous



testing practices, which is why Sherwin-Williams is pleased to be the first in the United States to earn this certification,” said Laura Kelleher, vice-president marketing with the company’s Product Finishes Division.

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

TCI Powder Coatings has pushed another part of the powder coating envelope with its Tru-

Illusion metallic finish powders. These aim for a high DOI, and high reflective metallic look.

The 9000 series polyester systems offer a broad formulation range in color or gloss, and the company says it will meet or exceed AAMA 2603 performance requirements. Products in this series have a gloss range of 20 – 90 percent plus, and meet many decorative and functional requirements for chemical resistance, physical properties, color, gloss and weatherability.

High chroma colors are also available. Typical uses include aluminum extrusions, playground equipment, agricultural equipment and machinery.

The 10000 series aims at superior outdoor performance, again using polyester systems. This series meets the AAMA 2604 specification. Products in this series have a 60 deg. gloss range of 30 – 90 percent plus and are available in a wide selection of colors.

Proper chrome or non-chrome pretreatment is critical for these products, TCI says. A chrome conversion coating must be applied at a minimum of 30 mg/sq ft. The non-chrome must also be applied according to the supplier’s specification, and a TCI technical representative must audit each application system to ensure products meet the 2604 spec.

Lastly, the 11000 series consists of organic systems formulated to meet the requirements of the AAMA 2065 specification. Products in this series have a 60 deg. gloss range of 35 – 80 percent plus and are available in many colors.

Proper amorphous chromium phosphate or amorphous chromate pretreatment is critical for correct product performance. The chrome coating weight must be applied at 40 mg/sq ft minimum, and once more, a TCI technical representative must audit each application system to ensure products meet the 2605 spec.

While some of these processes will be challenging for run-of-the-mill shops, the potential for powder coatings is clearly still expanding. The eventual limits for the technologies used are clearly nowhere in sight yet. ■



“Steel pails contain 25% post consumer content and are 100% recyclable”

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# Paint Containers

Paint containers are seen by some as problem kids. They have to contain a heavy load of viscous contents, and to keep those contents air-free while also being practical to open and reseal. And they can be hard to recycle and require their own infrastructure for collection and reprocessing, separate from streams of reusable waste that householders can clean in a kitchen sink before sending it to the curbside for collection.

The first plastic retail containers appeared in the late 1990s, though initially they were mostly in hybrid styles. And these tended to be five-gallon pails, while the mainstay of the consumer market, the one-gallon pail, remained a metal can with a metal lid.

By the early 2000s, blow-molded high-density polyethylene (HDPE) one-gallon containers had arrived. The design that garnered the most attention was Sherwin-Williams Dutch Boy Twist and Pour design, that was sold by Wal-Mart.

This had a rigid HDPE body and a more flexible polypropylene lid. Not long after the Dutch Boy introduction, quart HDPE cans appeared, usually with a square shape and pour-spouts.

But while consumer convenience was a selling point, the plastic containers were three times as expensive as the metal equivalents, so there was a lot of experimentation to find a cheaper alternative. PET cans, employing the same material as is used for pop bottles, came in next. While the PET material was itself pricier than HDPE, the mass production process that was used with it cut the costs.

With the passage of time, improved grades of polypropylene and HDPE have largely replaced the PET. Atlanta, GA-based BWAY, which is represented in Canada by Andicor Specialty Chemicals Corp., produces a hybrid paint can made in part from recycled polypropylene, and KW Containers (Troy, AL) also offers paint containers made from recycled plastics.

There is no perfect container, of course. If there was, it would be light and impact-resistant as the best plastics and as strong as steel.

And steel is still the preferred material for larger containers for paint. UN regulations for international trans-shipment specify it.

“As environmental awareness grows, steel containers continue to provide a viable option for the packaging of paints, coatings, adhesives and

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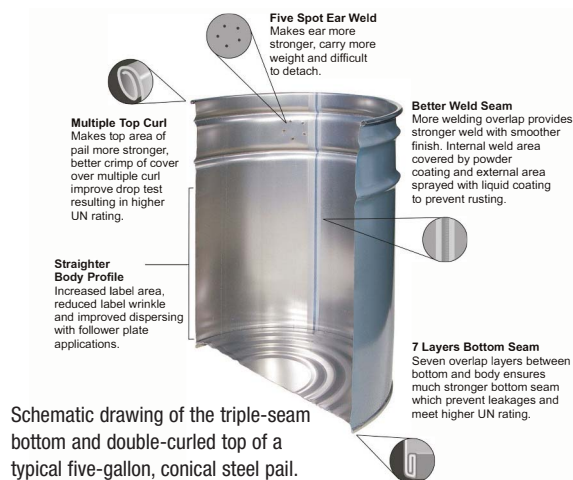
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## paint and coatings manufacturing: **PAINT CONTAINERS**



Schematic drawing of the triple-seam bottom and double-curl top of a typical five-gallon, conical steel pail.

sealants,” says Afzal Awan, president of Allied Can (Mississauga, ON). “Packaging and transporting of flammable and hazardous chemicals continues to be a concern in the paints, coatings, adhesives and sealants industry. This is commonly known as transportation of dangerous goods (TDG), which are regulated by the United Nations (UN) and implemented by the ministry of transportation of the specific country.

“When it comes to packaging flammable and hazardous chemicals, metal packaging has gained a proven record over other packaging materials by attaining the highest UN ratings compared to cost. This makes metal packaging the preferred packaging product for the paints, coatings, adhesives and sealants industry.”

He adds that, while paints, coatings, adhesives and sealants manufacturers continue to compete to formulate products with the lowest volatile organic compound (VOC) content possible, metal packaging manufacturers are vying for the highest UN-rated steel pails within the metal packaging industry. This is possible thanks to newer manufacturing technologies that allow manufacturers to make steel pails with triple-seam bottoms (seven overlap layers) and double-curl tops, along with better side seam welds. Traditional methods involved

double-seam (five overlap layers) bottoms and single-curl tops of the conical steel pails.

The illustration with this article shows a schematic drawing of the triple-seam bottom and double-curl top of a typical five-gallon, conical steel pail.

“Triple-seam bottoms and double-curl tops,” Awan says, “provide the required strength while keeping the steel gauge low to survive an internal hydrostatic pressure test of 100 kpa and a drop test of as high as 2.5 meters. This allows adhesives and sealants manufacturers to package materials as high as 2.5 specific gravity on Y-rated (medium hazard) materials and 1.7 specific gravity on X-rated (high hazard) materials.”

UN-rated steel pails are available in many sizes, both in open-head configurations (conical shape) with removable covers, as well as tight heads with non-removable tops. Steel pails are also 100 percent recyclable and contain 25 percent post-consumer content. ■



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Photo Courtesy Irpinia Kitchens and CanLak

## Wood Trends Stay **Vibrant**

Despite the various alternatives that have emerged over the years, wood remains as popular as ever for indoor cabinets. The range of finishes, though, is constantly increasing, and consumers are always looking for something to make a kitchen stand out more. Additionally, a superheated housing market in two or three of Canada's largest cities has also created a demand for kitchens and interiors that satisfactorily reflect the cost of an upscale home.

"In Ontario, we notice that the trends tend to lean more towards high-gloss and solid colours, particularly bright oranges and blues with ultra-matte gloss with a two-tone wire brushed effect," observes Normand Guindon, president and CEO of Canlak (Daveluyville, QC). "Greys and taupe colors in matte are currently our most popular."

Buyers are, he adds, interested in formaldehyde-free clear and pigmented systems. In addition, they are selecting chrome high-gloss on oak or ash wood, as well as reactive stains that change the wood's appearance to a natural aged look.

"We also have developed melamine coatings that has a 5B adhesion rating according to ASTM D3359B standards," Guindon says. "Our success greatly depends on our distribution network which we will continue to grow in the months and years to come."

The company maintains a substantial applications laboratory at its Quebec headquarters, with a team of chemists and lab technicians. This was being expanded in spring of this year, while some of the research is also outsourced to the company's foreign partners. In early March Guindon stated that the company will be financing a newly created research chair specifically aimed at the industrial wood coatings industry.

"This will be through a reputable Canadian university," he added, "so stay tuned for the official announcement."

Sherwin-Williams has placed a major focus focusing on waterborne UV coatings. Nick Bartoszek, global marketing product director – wood finishes, with the company's Product Finishes division, says it recently released a new series of UV-cured topcoats, the Ultra-Cure Waterborne UV Pigmented Blending System, and has also introduced a new range of pigmented coatings.

"There is a trend to pigmented coatings that offer opaque finishes as opposed to stained finishes," he says. "Ten to 20 percent of this market used to be pigmented finishes, but it's now close to a 50-50 split. We are also seeing more finishes that are matte, dead flat or below a 5 gloss."

There is also a demand for a close-to-the-grain look, which has been growing for about the past four years. Flooring is

**DARE TO TAKE A CLOSER LOOK.**

## industrial finishing: **CABINETS**

a strong market for this, but it is being used in other areas such as furniture.

And against these two requirements, there's a contrary trend to high-gloss finishes for highlight pieces that can form a contrast to the rest of a kitchen's appearance.

Predominantly for furniture, but also in other areas, some wood coaters are being asked to provide a soft-touch finish. This can be particularly challenging, since long-term durability is a trade off for the soft feel.

"There's no scientific test to measure

a soft feel," says Steve Clouse, Sherwin-Williams' marketing product manager — Wood Finishes. "Application of the soft coating isn't technically difficult, but one customer will want one thing, and another needs something a little different, so balancing the formulation between performance and feel can vary." UV-cured coatings (covered elsewhere in this issue) are increasingly popular, and LED (light-emitting diode) UV curing is particularly a growth area. It does require a significant initial cash outlay, but it offers certain advantages

in wood finishing.

"The energy cost using LED is significantly less," Bartoszek says, "and the heat build-up is also significantly less. That is good when you're dealing with wood, and you'll get a more consistent finish. However, with LED you do have to be very close to the surface."

Sherwin-Williams, he adds, was one of the first suppliers to launch a LED UV-curable coating, and has been at the forefront of developments in Europe. It is undergoing a major upgrade of its Greensboro, NC, applications laboratory to further this practical development work in North America.

"The big advantage with UV curing is always cure speed," Bartoszek stresses. "It's significantly faster than with conventional acid cure methods. There are huge gains when you go from 40 to 60 minutes for a cure down to perhaps 10 minutes, and you're also able to handle the wood right when it comes off the line.

In addition to the waterborne materials, the company has also recently launched a solvent-based line, the Sher-Wood SB Stain System of spray and wipe stains.

"There hadn't been much innovation in solvent-based coatings for many years," he says. "But we thought we could produce materials with deeper, richer color, and more workability." A study done in one plant, which had needed to re-work 47 pieces in one month using an older system, showed problems were reduced to the point that just one needed to be re-done in the same period using Sher-Wood SB.

Research and development of new coatings is a hot area generally, and in Canada, Quebec has been a focal point. At the start of the year, AkzoNobel announced that it would create a Regional Service Center for Wood Coatings at its Warwick, QC, site. The facility will become the commercial headquarters for its wood coatings business in eastern Canada and would provide local support as the business's R&D and Technical Application Center for Canada.

The center was due to be fully oper-





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## industrial finishing: **WOOD CABINETS**

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ational by mid-2016. It will provide services including quick-response small batch manufacturing, product development for the local Canadian market, custom color matching, and commercial and customer support. In 2015, the company announced that its large-scale batch manufacturing would be transferred to other AkzoNobel sites in North America, including Port Hope, ON.

“This investment allows us to continue offering the broad range of services that our customers expect from AkzoNobel and the Warwick site, reinforcing our leading position in the North American market,” said Doug Gilliam, regional director of AkzoNobel’s Wood Coatings business in North America. “The facility will ensure outstanding support, with dedicated on-site teams focusing on meeting our customers’ needs and expectations.”

In eastern Canada, AkzoNobel has been supplying wood coatings for commercial and industrial customers in the furniture, flooring, building products and cabinetry markets for over 50 years. “We remain highly committed to the Canadian market and this investment demonstrates our continued drive to bring leading technologies and services across the region,” Gilliam added.

Katilac Coatings Inc. (Woodbridge, ON) has several new cabinet finishes on the market, including its recently launched KD Series Diamond Conversion varnishes. Diamond is a water-white, HAPs free, ultra-low formaldehyde clear topcoat.

“Aside from being our most durable conversion varnish finish, Diamond is a true extended pot-life product,” says Rob Penfold, sales and marketing manager. “After catalyzation, Diamond can be used for up to five days with out any compromise in application characteristics or final film forming properties. So for shops with concerns about product waste due to pot-life, Diamond is the solution.”

Katilac has also just released its new KF Series Fusion Quick Dry post-catalyzed topcoat. This product offers very fast drying and excellent sandability.





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

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## industrial finishing: **WOOD CABINETS**

“Fusion QD is an improvement on our post-catalysis technology,” Penfold says. “It is particularly well suited for both cabinet shops and furniture manufacturers not wanting to make the investment in conversion varnishes. Like our Diamond, Fusion is also water-

white, HAPs free and ultra-low in formaldehyde.”

Another recently launched Katilac product is the AX Series Woodguard interior/exterior waterborne coating. This is a single component, self-crosslinking, clear waterborne topcoat

that Penfold describes as exhibiting outstanding resistance properties and long lasting protection against UV exposure. Woodguard can be used as a self-sealing product, or with Fiberset LC 2000, a penetrating primer that uses lignin bonding chemistry to stabilize and strength the actual wood fibers.

Katilac has some other product launches lined up for the coming months. These include a waterborne primer that sticks to almost anything, and a full complement of formaldehyde free products.

Like other suppliers, Katilac has noted the trend towards the prominence of natural-look finishes. There has, Penfold says, been a great demand for low gloss and ultra-low gloss products

“We have formulated several of our products like our Diamond Conversion Varnish, which is a ‘zero sheen’ finish, to give that dead flat look while still providing the protection customers expect,” he says. “On the opposite end of the spectrum, we do also see a strong interest in high gloss finishes.

“On the color side of things, dark stain colors remain strong but lighter greys are increasingly popular. Opaque finishes still remain the biggest part of our color business. As with stains, we are seeing a lot of grey come through the color lab.”

Katilac’s focus in 2016 is on growing its distribution footprint. It is approaching its tenth anniversary, though its parent company, Halton Chemical, has been making wood coatings for 50 years.

“We’ve spent this time building our own customer base,” Penfold explains. “We have two of our own distribution centers in Burlington, ON and Woodbridge ON, as well as some distributors in BC, Alberta and Michigan.” New distributors will be appointed this year in Ontario, the Maritimes, Alberta and also in the US.

“We have a high quality, innovative line-up of products and working hard to build brand recognition across the country,” he adds. “We really feel that we provide a fresh, new alternative.” ■



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Competition in spray guns has always been strong, and it isn't about to change. The effort to design and manufacture guns that can produce more spray, or superior distribution, keeps on producing better systems, or guns with superior ergonomic features. Manual guns are receiving perhaps more attention in this way than automatic systems.

Exel North America's most recent product is the Xcite spray gun, which works with the company's Airmix pump. This features fast color changes, with priming at very low pressures.

"Wherever possible, we recommend the use of Airmix systems for spraying," says vice-president S. T. Rajan. "This consumes less air, hence there are tremendous savings in power."

The company claims that if its EOS pump is partnered with the Kremlin Rexson Xcite Airmix manual spray gun, this can result in up to 86 percent transfer efficiency and a fine quality finish. The design and components used provide reliable performance, and allow for simple maintenance, easy cleaning, and fast color changes while using minimal solvents.

Technical challenges that spray shops have to meet, Rajan says, include high solids and water based paints, as well as handling post cat and polyurethanes. In addition, shops need to make a decision on when to go for two component automatic mixing systems, considering the advantages and return on investment.

"You need to look at solvent recovery units," he adds, "You should examine when to use them, and what is the return on investment and disposal of waste, as well as the type of booths to install, and when to have a paint kitchen

and air make-up units. You also need to settle when to automate or semi automate the finishing process. The return on investment has to be worked out.”

Saving energy is always a priority, he points out, and the Airmix systems were developed to offer better efficiencies here. Shops also need to see if booth motors can work at slower speeds when they’re not spraying.

“Wherever possible use two component mixing systems, where the accuracy of mix is unmatched, and there’s reduced wastage,” he advises. “Freshly mixed and sprayed paint offers an extremely high level of gloss control.

“One of our tasks, also, is advising people, when changing coatings from solvent based to water based. we place emphasis on training and retraining so that tools are used properly and efficiencies are gained.”

“Our customers are looking for a number of qualities in manual liquid

paint spray guns that have eventually led them to our products,” says Jorge Flores, who handles marketing for the Walther Pilot line. “They are looking for top tier spray guns with premium features. Top quality atomization and finishing appearance are usually the primary attributes.”

Durability, he adds, is another extremely important quality, as longer equipment cycle lives equate to financial savings and a longer, uninterrupted workflow. The company has also seen a lot of calls for certain types of material and energy savings.

“For a spray gun, this usually means higher transfer efficiencies and lower energy use,” he says. “With everyone looking to cut costs and save on the bottom line, we have been taking a lot of orders for HVLV gun models with higher transfer efficiencies.”

The Walther Pilot Premium HVLV is, he adds, the company’s most versatile



Walther Pilot Premium HVLV spray gun

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## industrial finishing: **MANUAL SPRAY GUNS**

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“With the industry standard for HVLP being 65 percent, it is easy to see that the Pilot Premium is in the upper echelon when it comes to HVLP material savings and spray performance,” Flores says.

Graco’s line of spray systems is broad, and includes the GMAX range, which

uses Honda engines, and features the SmartControl 3.0 pressure control. It also uses a rugged cart design, with chrome plated over steel for long-term durability.

The GMAX 3900, which has a 120cc Honda engine and additional features for increased productivity, can handle up to two guns and is recommended for the professional contractor who sprays a wide variety of coatings. The smaller GMAX 3400 is for entry-level contractors, and the largest 5900 and 7900 models are aimed at high-production professionals.

The model 7900 has a 200 cc engine, and can handle multiple spray guns as well as a wide range of tip sizes. It also features the MaxLife pump, designed for extreme duty applications, and it can handle longer hose lengths and heavy coatings.

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Exel North America's XCite spray gun.

One recent market development that customers for liquid spray systems might have noticed was when the the Wagner Group acquired C.A. Technologies LLC, (Louisville, CO). C.A Technologies products include the C14 Air-Assist-Airless (AAA) pump system, the CAT-X Gravity Spray Gun, and the Panther Glue Gun. C.A. Technologies was founded in 1997.

Company head Jim Jacquemard said, “C.A.Technologies is proud and excited



Prona's R 715 spray gun.

to be joining the Wagner Group. Together, we look forward to achieving advancements in development and innovation, while continuing to provide stellar customer service and support. This partnership will advance our product portfolio and expand our global presence.”

Martin Kuerzinger, CEO of the Wagner Group's industrial solutions division, added: “C.A. Technologies is a perfect fit for our industrial solutions business strategy. It offers a complementary product line to Wagner's existing liquid coating, powder coating, and dispensing solutions along with excellent application and customer service expertise.”

Titan Tool (Plymouth, MN) has partnered with Sherwin Williams, which recognized its FlexSpray HandHeld paint sprayer as the winner of the company's 2015 Vendor Product of the Year Award. Representatives from Titan received the award at a ceremony held at Sherwin-Williams Paint Stores Group national sales meeting in Orlando, FL, in January.

The Vendor Product of the Year Award recognizes a single

“The effort to design and manufacture guns that can produce more spray, or superior distribution, keeps on producing better systems, or guns with superior ergonomic features.”

new product or product line exclusive to Sherwin-Williams that provides breakthrough technology, immediate sales and strong field organizational support.

In a news release announcing the awards, Sherwin-Williams stated, “With an innovative design and function, Titan's FlexSpray HandHeld Sprayer allows individuals to spray a wide range of coatings, functioning as both a fine finish and



Titan Tool's award-winning FlexSpray manual gun.

production work sprayer. It was immediately embraced by painting contractors and DIYers alike. The innovative sprayer, coupled with Titan's superior sales support, led to growth in the Sherwin-Williams handheld sprayer category.”

And there's a new name in the spray gun business, which is Prona Tools (North York, ON). The Taiwan-based company has, however, been in existence since 1985, and has been making inroads in Canada since 2013.

It specializes in high-end pneumatic tools, but places a strong emphasis on its spray-gun business. It has developed much of its own technology, and holds a range of patents, especially in the area of pumps. Double-diaphragm pumps are a particular focus for its engineering development. ■

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# Harnessing the **Power** of **UV**

As with any type of processing system, the keys in profitable UV curing lie in the chance for more consistency of production, and ever-improving throughput. Any coating operation that can do better in either area can move ahead of the competition.

The big story in recent years has been the increasing switchover to LED (light-emitting diode) UV curing, as the intensity of lumens produced by diode technology increases, as does the wavelength. But there is still room for conventional mercury-using lamps, which have been the industry norm for decades.

Traditional medium-pressure mercury (Hg) lamps will produce a wide spectrum of radiation, specifically, in this context, UVC, UVB, UVA and UVV. This spectral breadth permits rigorous selection of photoinitiators to optimize curing of acrylate-based inks, coatings, adhesives, sealants and composites according to the type and intensity of the light source. It also accounts for additives or mineral components within the formulation that block and/or absorb UV light, such as pigments and fillers.

Most traditional Hg lamps will yield up to 75 percent radiation in wavelengths that aren't useful mostly high-energy infrared light that results in the production of unwanted heat. The need to keep typical Hg lamps cool requires substantial airflow, and, thus, additional energy. Such high airflow rules out using inert gas to improve surface cure, since the gas would be expelled along with the air.

LED light sources began to encroach on this field about a dozen years ago, when it became easier and more cost-effective to generate suitably high flux of intense UV photons with light-emitting diodes. There are now many commercial applications for UV-LED technology, thus allowing for wider use

of heat-sensitive substrates as well as eliminating an air handling structure. The savings here can be significant, and some studies estimate that energy savings gained from eliminating the water used in high output systems can be as high as 50 percent, compared to a mainstream mercury lamp system. However, inks and some other substances employed in UV-LED printing must, however, be extremely well-defined and tuned to the narrow band or wavelengths of light emitted by UV-LEDs.

Sherwin-Williams has been in the forefront of UV-cured materials employing LEDs, and thus has had to pay close attention to the hardware.

"Energy is a very volatile cost," says Nick Bartoszek, global marketing product director – wood finishes, Sherwin-Williams Product Finishes. "But with LED it will always be less than with conventional UV systems. And the heat build-up is also significantly less."

This can be important with heat-sensitive substrates such as wood or plastics, where distortion could mean the piece has to be discarded, or at least re-worked. And while an LED curing system is going to be more expensive than a more traditional one, coating shops that have not yet made the leap to UV but want to increase their production, can go straight into using it, and achieve the actual operating savings once they've allowed for the capital investment.

Pieces coming out any UV system still need a flash off period that is product and line dependent, but the pieces come off the end of the line fully cured in as few as 10 minutes. This compares favorably with the 40 to 60 minutes that's the case with a conventional system. And they are also sufficiently dry to be handled immediately....

Of course, there are more than just the two options of





UV curing oven from SPDI (Delray Beach, FL).



mercury and LED systems on the market. There is electron-beam (ebeam), for example, discussed in the accompanying sidebar story. This is still a high-end process, however, and is used more at this point in time for curing inks than other types of coatings.

Nordson offers robust microwave-powered UV curing systems for liquids, powders, coatings, adhesives and sealants. These can be employed with wood, plastics, glass and other heat-sensitive substrates. They deliver, the

company says, great application flexibility with a range of precisely focused and flood reflector geometries.

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

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

The company's Cool Wave 2-610 system has a patented, incorporated cooling pressure digital readout, allowing easy monitoring of the actual lamp head internal cooling air pressure. And the Cool Wave 306 is available in 6-in. widths and is rated at 300 watts per in. This works with an MPS-306 power supply, and is offered with either an

integral or external cooling blower.

Superfici is offering the Cure UV systems, which range from hand-held units to full curing chambers, cabinets and ovens. These are available with UV-A, UV-B and UV-C light outputs in a multitude of configurations.

Models available include a stand-alone UV lab testing enclosure with an adjustable 16.5 x 20 in. specimen shelf, with a three to 10 in. range of adjustment from specimen shelf distance to lamp output, to provide intensity variation. System status indicator lamps feature a ready signal and safety interlock.

The programmable start timer has an auto shutoff feature for cycle repeatability and more consistent deliverability pertaining to UV milo-joule dosage. The on/off timer is indicated in minutes and seconds. Forward and rear doors are provided with a UV-filtered viewing glass for safe subject/cycle observation.

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

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## industrial finishing: **UV CURING SYSTEMS**

Frequently, a single radiator is sufficient for clear lacquers, though color paints will require two radiators. The technology offers more than 20 percent additional energy savings compared to the predecessor model, as well as a reduced IR portion ('cold light') for sensitive materials.

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

Heraeus Noblelight America recently launched its Light Hammer 10 Mark II system. This is particularly recommended for wood coaters, since it is claimed to run cooler than competing systems. This becomes extra important in UV coating of pine, which is rich in resins that can be drawn to the wood's surface under heat.

The Light Hammer 10 Mark II is compatible with the company's AIMS

(Advanced Integrated Monitoring System) software/hardware, and is enabled for the addition of a future intelligent irradiator. It is the successor to the current LH10 and is also the foundation for the Light Hammer 6 Mark II.

Light Hammer product platforms are DC-driven sources, so that they can deliver near-constant UV energy output. This significantly impacts the photopolymerization process, the polymeric network structure, and cured film performance properties.

The high intensity output of the LH platform can, the company says, generate a higher number of domain cross-link structures. The near-constant UV energy output also significantly reduces premature terminations, resulting in a more uniform size domain structure. The end result is superior uniform physical properties across an entire UV-cured film, including surface hardness, elongation, weatherability, and optical

functions including anti-glare, anti-reflective, refractive index, and more.

The efficiency of the LH10 Mark II is driven by the electrical design of the power supply. Advanced circuitry design achieves a realized power factor correction of 99 percent. This translates to significantly higher electrical efficiency, balanced current draw over all three phases, lower demand on the utility's reactive power, and lower THD (total harmonic distortion). There is a claimed 93 percent converted efficiency which means less heat generated, cooler operation, and fewer problems for engineering and maintenance personnel.

Which is, of course, the essence of the business, as we said at the start. Working with UV curing requires more calculation, calibration and in-plant expertise than some other coatings processes. But for the highest quality surface finishes, it's currently the process to beat. ■



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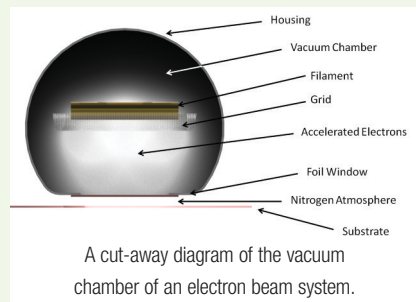
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## Ebeam Moves Into New Areas

BY JOHN SALKELD



Electron beam technology – known short-handedly as ebeam – is used primarily to cure coatings, inks and laminations. While it is experiencing traction among newer applications like metal coat curing, sterilization and digital print curing, it also continues its rise in popularity in its primary converting industry, both as an alternative to traditional curing methods and in its newest role in package decoration.

Ebeam technology uses electrons to alter the molecular state of a targeted material or surface. In the ebeam process, clouds of electrons are generated inside of a vacuum chamber, which are then accelerated through a thin, metallic foil window, and are directed onto a moving printed web surface. The inks, coatings or adhesives that react to ebeam are made up of molecular elements known as monomers and oligomers. These accelerated electrons connect these molecules into longer-length polymers – instantly changing their chemical composition from a wet state into a dry or solid state.

The ebeam systems used for these curing and crosslinking applications are considered 'low energy' ebeam systems, with voltage levels ranging from 80kV to 300kV. Low voltage EB systems are best suited for curing of coatings used in a variety of printing, converting, metal coating and manufacturing applications. Tailored system configurations allows processing of a wide variety of materials including webs, flat materials, and the three-dimensional (3-D) ebeam curing of objects like rigid packaging and cans.

Ebeam continues to be a growing topic among printers and package converters because it instantly dries – or more accurately, cures – ebeam friendly inks, coatings and laminate adhesives on paper, film, paperboard or metal. Ebeam curing provides higher conversion, more consistent output, and more efficient energy usage than other drying or curing technologies, and has

become a growing alternative to both oven (thermal) drying, and ultraviolet (UV) curing for a number of reasons.

### Specific to Thermal Drying:

Ovens require an enormous amount of energy, and can be staggeringly expensive to operate and maintain. Studies that have shown that in some cases an ebeam system requires up to 95 percent less energy than the oven it replaces.

Ebeam systems generate very little heat in the substrate being targeted, making the technology a superior choice for coaters and converters over thermal and UV curing, and sometimes the only option if heat-sensitive materials (like thin films) are involved.

Ebeam systems take up much less space than ovens, which can in some cases be hundreds of cubic feet in size. Some converters who have replaced their ovens with an ebeam system find they have freed up enough floor space to put in an entire new line.

Finally, ebeam systems help contribute to workplace safety and comfort. With no need to remove solvents from inks and coatings, ebeam curing eliminates the volatile organic compounds (VOCs) that are associated with thermal drying.

### Benefits When Compared to UV Curing Include:

Ebeam curing has proven more effective and more powerful than UV curing, and does a particularly better job of curing thick, opaque and/or high density ink and coating layers.

Like thermal drying, UV curing produces a significant amount of heat. In certain cases ebeam curing has been shown to require up to 80 percent less energy than UV curing.

By definition, UV curing requires photoinitiators to complete the curing process. Photoinitiators are toxic, and run a slight but nonetheless real risk of migrating into food. Ebeam curing does not need photoinitiators to work and thus poses no potential for migration. This makes ebeam extremely popular among coaters and converters associated with food package printing.

Unlike UV bulbs, whose power declines over time, ebeam curing offers extremely precise processing, with a stable energy output that does not drift over time.

Ebeam curing also offers the added benefit of higher gloss finishes with superior scratch resistance.

In recent years printers and package converters have discovered that ebeam can be used not only to cure inks, coatings and adhesives, but is a useful tool to give extra 'eye appeal' to packaging. A recently developed 4-in-1 converting line allows package printers to utilize ebeam systems to create innovative package designs. Visual enhancements offered by an ebeam package decorating system include overprint coating, laminating, cold foil transfer and Cast & Cure holographic embossing.

Ebeam package decorating systems are designed for use with web-printed packaging materials, including flexible packaging, folding cartons, labels and multi-wall bags. These systems work at high speeds, are compatible with wide web widths, and generate low substrate heating, which is important when utilizing sensitive flexible packaging materials like thin films.

Ebeam is an effective technology for coating curing, printing, food package converting, and in cases involving sensitive substrates that might be damaged by heat or thick and/or opaque coatings or inks. But not every printing process benefits by using ebeam curing. For example, most commercial printing jobs would not benefit by having its inks cured using ebeam technology.



*PCT Engineered Systems, LLC (PCT) is part of ebeam Technologies, a division of COMET Technologies in Switzerland. Headquartered in Davenport, IA, PCT is an OEM for a line of ebeam systems sold under the BroadBeam label; and its Innovation practice provides industrial automation integration solutions, primarily with a metals market focus.*  
 Its website is [www.teampct.com](http://www.teampct.com)

*John Salkeld is PCT's marketing manager, and is an author and occasional speaker on ebeam technology.*

# Choosing the **Right Dangler**

Like so many finishing processes, metal plating is a defined science, but also a less definable art. This applies as well to danglers, where the basic design has long been settled, but where there are still many possible tweaks, and many small shifts in design, that will improve the performance and durability.

“The right dangler design is critical in barrel plating,” says Tom Vale of Newact Inc. (Batavia, OH). “Manufacturers have seen several cases where the design or quality or selection of the barrel dangler significantly influences the success or failure of the electroplating process. The dangler must not be too heavy or low quality or too small or various plating problems will occur.”

There is a large variety of danglers available in the marketplace today, he notes. These including plain, PVC sleeve, full length PVC sleeve, baked plastisol coated and vulcanized custom rubber as well as OEM danglers.

“Some danglers have a completely vulcanized sleeve,” Vale adds. “The rubber sleeve can be molded directly to the cable, reinforcing the cable jacket to resist cuts and bends. No significant loss of flexibility occurs with a molded sleeve, as is commonly seen in time with a plastic sleeve. This superior design substantially extends the life of the dangler, reducing maintenance and downtime, lowering operating costs.”

Extended life is one benefit of the sleeve, but the quality of the plated parts is important too. The vulcanized sleeve reduces the carry-over of chemicals from tank to tank that often happens with plastic sleeves.

Crimped over knob design, according to Vale, gives a positive electrical connection and added strength not found in soldered knobs. Cathode danglers are manufactured from flexible welding standard cable in diameters from 16 sq mm to 240 sq mm, with fixed or detachable contacts in brass or steel. They are supplied in rubber, polyurethane or PVC, for durability and extended life.

“Dangler contacts can be fixed or detachable,” he says. “Detachable tips (or, contact bombs) can be provided and are particularly useful for copper and nickel plating where the tips can become coated, resulting in reduced plating efficiency. The screw-in tips can be replaced without the need for a new dangler.

“Danglers are durable and flexible to aid the efficiency of the plating process. Safe plating operation is assured through uniform compression fixings.”

Danglers, he continues, exist mainly to carry current from the electrified saddles to the parts inside the cylinder to be plated, although they may provide some parts agitation. Making a good connection at the horn on the superstructure is important because without a good connection the amperage will be lessened or possibly absent.

“Broken or frayed danglers need to be replaced,” he cautions. “Another consideration is the possible drag-out from a vinyl sleeve as opposed to a plastisol dip (preferred dangler).

“Although there is an initial higher cost per dangler, this needs to be compared with the cost of chemistry carried from one tank to the next and the possibility of chromate leakage into the parts at the unload station. Also typical dangler longevity is better with plastisol dipped sleeves, compared to a vinyl sleeve.”

However, anecdotally, dangler manufacturers say the vast majority of customers use a vinyl sleeve in their plating barrels.

Barrel plating line employees need to visually inspect danglers each time the barrel is unloaded. Sometimes there is sufficient time to replace a dangler without removing the plating barrel from the line. There are quick-change tools that make the process easy and quick.

That said, he observes, “Replacement of barrel danglers, or the contact tips, should be part of any ongoing maintenance program. A damaged or worn dangler can impede the plating process and add to production costs.”

Most suppliers in the field are constantly innovating. For example, The Dangler Guys (East Tawas, MI) have just designed a new dangler that has a thicker vulcanized sleeve and is made of a new combination of materials to make it more chemical resistant, flexible, and to last longer.

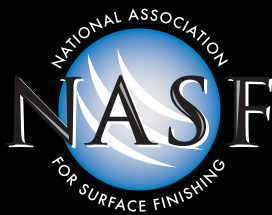
Aimed at customers that run larger loads, it went into testing soon after it was designed eight months ago. The tests, according to president Brad Hatcher, showed, the dangler lasting one week longer than the company’s previous best product, under the same plating conditions.

“Today’s industry is growing and becoming more efficient,” he says. “I am seeing the industry trying to carry more amps, which in return plating can be done faster. To meet the demands of this new industry The Dangler Guys have designed and marketed a line of 350MCM danglers, to suit these customer needs.”

All TDG dangler heads feature an exclusive triple-crimp design. This dangler can be used with any sized parts or barrel loads.

The plating industry, Hatcher notes, is growing and becoming stronger after its hard times back in 2007-08. Customers are starting to spend money once more on new barrel lines offering improved efficiency lines.

“These lines are bigger than ever, and productivity and efficiency have greatly increased,” he says. “We are pushing to make our danglers the best on the market, at a reasonable price with the best customer service possible.” ■



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plating and anodizing: **THICKNESS TESTING**

DeFelsko's PosiTector, with simple control layout.

## Thickness Testing Goes the **Extra Mile**

urements of precious metals and solution analysis. Three point sample support, the company says, ensures safe and repeatable measuring, even on curved surfaces.

The optional compact measurement box not only carries the whole system safely, it also converts into a mobile bench top instrument so small specimens can be easily positioned and reliably measured. A modern silicon drift detector achieves high accuracy and detection sensitivity.

Fischer's fundamental parameter method allows for analysis of solid and liquid specimens as well as coating systems without calibration. The operation and evaluation of measurements as well as the clear presentation of measurement data is performed on a tablet PC, using WinF software.

"When it comes to instrumentation, I believe simplicity of use is a requirement that I am seeing," says Neil Howard, of Folio Instruments Inc. (Kitchener, ON). "Companies don't want complicated menu structures with too many options. When there are too many options there is a greater chance of settings being accidentally change which may result in measured values changing from their standard. The downtime trying to figure out if it's the product or the instrument costs money."

Folio distributes for Oxford Instruments, which uses, among other techniques, analytical X-ray fluorescence (XRF), laser induced breakdown spectroscopy (LIBS), optical emission spectroscopy (OES) and nuclear magnetic resonance (NMR). Several of these, though not all, are used in plating.

Its latest instruments, Howard says, the CMI255 & CMI257, reflect this need for simplicity.

"For common features like statistics they put a button that says 'statistics,'" he points out. "There's no complicated menu to scroll through. An operator can be up and running in less than five minutes. The CMI255 has an integrated probe, and the CMI257 has a tethered probe for applications where measuring thickness might be more difficult to reach."

"The main emerging market requirement is ease of use," agrees James Fusco, technical director with Paul N. Gardner Co. Inc. "Our customers are looking for instrumentation with a high level of accuracy, with equal ease of use and efficiency. Instruments need to be sophisticated but intuitive, and with the new smartphone compatible instruments this is being made possible."

The biggest area where improvement is occurring, he notes, is in the versatility of the devices now offered. Today's

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

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

Fischer Technology Inc. (Windsor, CT) recently launched the Fischerscope X-Ray XAN 500 unit. This is a universally applicable energy dispersive x-ray fluorescence measuring instrument for non-destructive coating thickness measurement and material analysis with an element range from chlorine (atomic number 17) to uranium (92), right up to 24 elements simultaneously. It is particularly useful for large specimens or difficult-to-reach locations.

Typical fields of application include measurements on large coated parts, like machine components and housings; mobile measurements in electroplating shops; mobile meas-

“In an ideal world, plating and coating processes would be so precise that confirming thickness would be superfluous.”

gauges can store, batch and send data to almost any type of peripheral device.

“And they are small, compact and most can fit in your pocket,” he adds. “Some manufacturers now offer a universal body that can accept different probes which can measure DFT along with surface profile, temperature, humidity and wall thickness.”

Richard Northrop, marketing manager with DeFelsko Corp., concurs on the market demand for ease of use. In addition to enhanced reporting tools and connectivity, he also cites product durability as a key requirement.

“We’re offering our customers automated reporting and the ability to share readings, in real time, across the globe. Our instruments generate custom, professional reports and share them instantly.

“And you can select the level of detail you want, so you can include it or not. That might be charts, histograms, readings, time-stamps, and more.”

DeFelsko’s PosiTector probes will connect wirelessly to an Apple or Android smart device, taking full advantage of the touchscreen, keyboard, microphone, camera and other fea-

tures. They will also share, back-up, synchronize and report measurement data via email, various apps, or the cloud. Additionally, they will share professional PDF reports and CSV data instantly via email, AirPrint, Dropbox or other applications on such devices.

The PosiTector 6000 series of coating thickness gauges allows quick and easy conversion from a coating thickness gauge to a surface profile gauge, dew point meter or ultrasonic wall thickness gauge, with a simple probe change. Each probe retains its own unique calibration information allowing for full probe interchangeability.

“The convenience and cost savings are attracting interest among users of all inspection instruments,” says Northrop. “Long form certificates of calibration are included with each probe.”

The 6000 series is available in either Standard or Advanced versions. All models feature built-in memory, onscreen statistics and PosiSoft USB drive. Advanced models also include color LCD, onscreen graphing, and more. Download and transfer options include USB, WiFi, Bluetooth, PosiSoft.net cloud-based storage and new PosiSoft 3.0 desktop software.

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## plating and anodizing: **THICKNESS TESTING**

A common concern among end-users is durability, as well as the capability to measure parts right out of a curing oven.

“We’re offering more robust designs for enhanced durability,” Northrop says. “And using new materials for

measuring on hot or rough coatings. These include zirconia toughened alumina wear faces, and braided steel cables. This means you don’t have to wait for parts to cool down, so you can monitor your processes as you go, and make adjustments as necessary.”

### **DYNAMIX** Blending Technology, Service and Value



Dynamix is one of North America’s fastest growing manufacturer and supplier of metal finishing chemistry. “The philosophy at Dynamix is simple - enhance our customers’ performance and profitability, while dealing with all of our partners in an open and honest forum.”

The primary focus of Dynamix is the design and manufacture of specialty chemicals for the metal finishing industry, covering all aspects of metal finishing from anodizing to zinc plating. Toll blending, packaging and distribution of custom formulated products are also available.

We offer a service that encompasses all of our values with a highly skilled and motivated team. The laboratory at Dynamix is well equipped and able to provide analytical solutions specific to a particular sector of industry and/or customer. Products are designed at Dynamix to provide unsurpassed performance and solution economy. Superior chemistry is only the beginning, as the company realizes that technical and application knowledge are just as vital to the metal finishers’ success.

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- Copper/Nickel/Chrome Processes.
- Copper and Brass Processes.
- Bright/Dull/Satin Nickel Processes.
- Tin Processes.
- Antiquing Processes.

#### **SPECIALTY PRODUCTS**

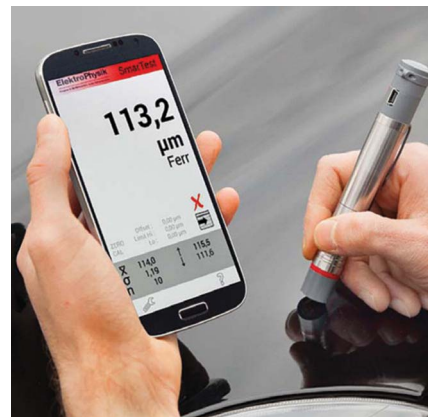
- General purpose and heavy - duty cleaners for all substrates and applications.
- Metal strippers.
- Paint strippers for use on ferrous and non-ferrous substrates.



# **DYNAMIX** Inc.

Toronto: 905-477-0900  
Montreal: 514-292-4322

[www.dynamix-inc.com](http://www.dynamix-inc.com)



ElectroPhysik’s SmarTest interfacing with a smartphone.

ElectroPhysik is another supplier that was an early adopter of smartphone connections for measurement devices. Its SIDSP units process all data at the point of measurement, which eliminates any chance for external environmental influence on the coating thickness measurement.

“In the past and with all other devices in the market, the probe or sensor generated an analog signal and sent it to the gauge for processing,” says Aivars Freidenfelds, vice-president. “From the point of measurement and the processor the signal could have been amplified or experienced a loss and as a result the thickness displayed might not truly reflect the actual thickness.”

“With ElektroPhysik’s SIDSP digital sensors, only the completely processed thickness measurement is digitally ported to the gauge. And now with our Bluetooth Sensor adaptor and the SmarTest app, that reading can be ported to your smart device.”

Cables and wires have always presented an issue, as they can get in the way and they do wear. By eliminating this one component of the system as the conduit to processing a reading, the company has increased the integrity and accuracy of the reading.

“The SmarTest I think is a great example of ElektroPhysik’s recognition of how the marketplace is evolving,” Freidenfelds adds. “People have become so connected to their smart devices. The SmarTest and the SmarTest





DeFelsko's PosiTector 6000 series, with the array of measuring probes it can use.

app align perfectly with the connection people have with their smartphone.”

What are we likely to see in future? Instrument suppliers, naturally, won't say exactly what they're working on, but they offer some hints.

“Customers would like to have one economical gauge that can measure all their DFT requirements,” Fusco says. “A gauge that can measure coating thickness on plastic, wood, concrete, ferrous and nonferrous substrates, and all-in-one small, compact, hand-held instrument would be a big game changer.”

Howard suggests there could be further developments in integration with phones and tablets, for easier sharing of measured results. He also sees a continuing need for simple units.

“One industry that is starting to utilize thickness coating measurements is automotive refinishing,” he says. “They



Oxford Instruments' CMI 257 thickness measuring device features simplicity of operation.

are using it as a quality check and to make sure they are meeting the same thickness standards used by the automotive manufacturer.

“Oxford Instruments offers an even simpler model called the CM155 that is suited for this industry. It has a single-button operation and can auto-

matically detect ferrous or non-ferrous substrates and apply the proper measuring technique.”

In sum, while the technology for thickness measurement is now proven and mature, that doesn't mean development is ending. The future, as always, is just beginning. ■

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## new PRODUCTS

### Bio-Based Rust Preventative



BioCorr rust preventative has received registered trademark approval from EU's Office of Harmonization. BioCorr is a waterbased, ready-to-use formulation intended for preservation of metals in storage and during transportation. Its solution is formulated with renewable raw materials and contains 64 percent biobased content. It provides multi-metal corrosion protection by combining film-forming additives with vapor phase corrosion inhibitors (VpCIs).

BioCorr is an environmentally sound alternative to petroleum-derived products. It can provide protection for up to two years of indoor storage or during shipments.

Unlike rust preventative oils, it leaves a dry film on the surface of metal that is virtually undetectable. It is VOC free and contains no chlorinated compounds, chromates, or nitrites. It has also been awarded USDA BioPreferred designation.

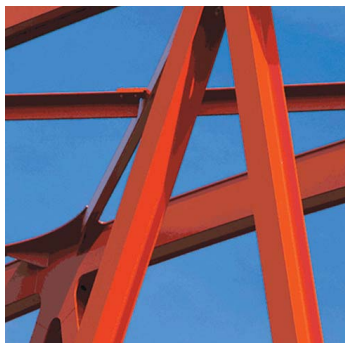
[www.cortecvci.com](http://www.cortecvci.com)

### Polyimide Binder

Michelman's new ProHere I 13002 is a waterborne polyimide binder used by manufacturers of metal coatings needing extremely high temperature resistance, excellent adhesion and very high chemical resistance and mechanical strength. The VOC-free formulation allows metal coatings to withstand long-term temperatures up to 370 deg. C.

ProHere is Michelman's line of water-based polymer dispersions and emulsions developed specifically for use in metal coatings. Available grades include polymer resins that serve as organic binders in coating formulations; lubricants; and anti-scratch additives for metal processing and in-use lubricants.

[www.michelman.com](http://www.michelman.com)



### Surface Examining Microscope

Gardco's USB Microscope's optical design combines the advantages of a USB-microscope digital camera with the precision optics of a microscope illuminated with LED lights. With the 20–200 times magnification, it permits determination of the fine structure of surfaces.

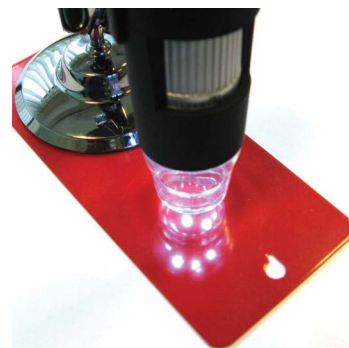
This compact instrument is recommended for analyzing coating failures, imperfections, pretreatment quality and similar issues. It can be used in direct contact with the substrate or at larger distances. Its eight integrated white light LEDs are adjustable in strength, guaranteeing a clear view without causing reflections.

Special software for editing and making videos comes with the unit. The software can determine the length, width, height and angle to the radius of the objects.

The USB microscope is supplied with a magnetic microscope holder, which gives it a steady and straight position. It also enables it to be used in a vertical position on ferrous material, due to its three very strong magnets.

It will take 2.0 megapixel pictures, which can be interpolated to 5.0 megapixel images. File formats include JPG and AVI.

[www.gardco.com](http://www.gardco.com)



### Urethane Primers Suit Plastic Substrates

PPG's industrial coatings business has introduced Spectracron SPU conductive and non-conductive urethane primers. The company says these are the first products of their kind to be engineered for application over multiple plastic substrates, such as Metton LMR (liquid molding resin) and sheet-molded composite (SMC) plastics.

Scott Laney, PPG liquid products manager, industrial coatings, said Spectracron SPU is a major advance in primer technology because it enables heavy-duty equipment (HDE) and automotive component manufacturers to prime parts made from multiple plastic substrates with a single product.

"OEMs and their tier suppliers traditionally have prepped multi-plastic parts with multiple primers, adding time and complication to the production process and increasing the potential for quality problems," he explained. "PPG's new Spectracron SPU urethane primers deliver excellent performance on most types of plastic used in the heavy-duty equipment and transportation industries."

In addition to being compatible with a wide range of plastic substrates, this new primer reduces wet-on-wet times to three minutes, allowing manufacturers to finish parts several minutes sooner than is possible with other conductive plastic primers.

Spectracron SPU non-conductive and the PACCAR-approved conductive primer are formulated to harmonize with PPG's OEM-approved two-component (2K) topcoat, giving manufacturers the option to streamline their inventories by stocking an integrated primer and coatings system from a single supplier.

[www.ppgindustrialcoatings.com](http://www.ppgindustrialcoatings.com)

## Gas-Fired Curing Oven



No. 887 is a gas-fired 1000 deg. F cabinet oven from Grieve, currently used for curing metal coatings onto parts. The unit's workspace dimensions measure 38 x 38 x 38 in. It has 175,000 BTU/HR installed in a modulating natural gas burner provide heat, while a 2,000 CFM, 2-HP stainless steel recirculating blower furnishes a horizontal airflow across the workload.

This cabinet oven features an aluminized steel exterior and a Type 304, 2B finish stainless steel interior, plus inner and outer door gaskets which seal against the door plug and the front face of the oven.

No. 887 has eight-in. thick insulated oven walls, consisting of two in. of 1900 deg. F block and six in. of 10 lb/cf density rockwool insulation.

All safety equipment is onboard as required by IRI, FM and NFPA Standard 86 for gas-heated equipment, including a 325 CFM, 1/3-HP powered forced exhauster.

A digital indicating temperature controller is also provided.

[www.grievcorp.com](http://www.grievcorp.com)

## Adhesive Fluoropolymer Bonds Dissimilar Materials

AGC Chemicals Americas Inc. has added a resin to its LM-ETFE AH series of adhesive fluoropolymers. Fluon ETFE LH-8000, the company says, exhibits advanced adhesive properties that allow it to bond to dissimilar materials, such as polyamides, polyethylenes and metals. The adhesive functionality is recommended for producing multilayer structures in a one-step process without surface treatment, and by often eliminating the need for a tie layer.

LH-8000 has chemical resistance and electrical and non-stick properties equivalent to conventional ETFE resins. However, it is an ultra-low-melting resin that is cost-effective for applications such as chemical bags, hot water hoses, rubber hose mandrels, anti-stick conveyor belts, multilayer monofilament, interlayer insulation film for

electronic substrates and tubes that convey harsh materials in the chemical, plastics, oil and gas, building and paint industries.

"Processors and molders using Fluon LH-8000 can reduce their initial investment because a fluoropolymer layer can be co-extruded with conventional engineering plastics, like HDPE and PA, without the need for special corrosion-resistant equipment," said AGC product and development engineer Katie Sprick.

Fluon LH-8000 has an ultra-low melting point of 180 to 190 deg. C, the lowest of all of AGC's AH series resins. It also offers the widest processing temperature range between melting point and onset of degradation (350 deg. C) among all of AGC's Fluon ETFE products. This large processing temperature window minimizes any possible material decomposition. In addition, the corrosive off-gas levels at melt processing of Fluon LH-8000 are very low, minimizing damage to the molding equipment.

[www.agcchem.com](http://www.agcchem.com)

## Zinc-Nickel Process for Bulk Plating

Enthone has introduced Zincrolyte Sprint, an alkaline zinc-nickel process. It has been engineered to consistently deliver high throughput plating in bulk operations, on complex parts commonly used in automotive and other high value applications.

It features a high current efficiency that is maintained over the entire bath life, with an enhanced current load capacity to deliver significantly faster plating speeds than conventional zinc-nickel processes. The zinc-nickel process, says Dr. Bjoern Dingwerth, global product line manager – Enthone Corrosion Resistant Coatings, requires less maintenance than conventional processes as it does not require any freezing such as carbonate crystallization and does not create any scales on anodes or other equipment. Its higher conductivity results in reduced cooling.

"ZINCROLYTE Sprint," he adds, "meets the most demanding automotive industry corrosion protection requirements. The new process consistently provides exceptionally high current efficiency paired with increased burning resistance. This results in high plating rates with smooth and uniform deposits in both high and low current density areas."

[www.enthone.com](http://www.enthone.com)

## VISCOMETERE FEATURES NEW INTERFACE

Brookfield/AMETEK has introduced its DVE Viscometer. This features a new user interface and keypad, so that it adopts the look and feel of the DV1, DV2T and DV3T product family.

The illuminated display features distinctive alpha-numeric characters that are easy to view, both close up and at distance. The bubble level has been conveniently situated on the front of the instrument below the display panel, so that users can easily adjust the instrument for true vertical position.

The updated DVE also offers a choice of scientific units for viscosity measurement



## new PRODUCTS

including both cgs units: cP (centipoises) and P (Poise), and SI units: Pa-s (Pascal-seconds) and mPa-s (milliPascal-seconds).

Viscosity test parameters including spindle identity and rotational speed can now be quickly selected from a table in the instrument's memory. Also, the new display shows test control parameters (spindle, speed) and measured values (percentage torque, viscosity).

[www.brookfieldengineering.com](http://www.brookfieldengineering.com)

### Blackest Black Offered as Spray



*black*

Vantablack, which has been deemed the world's blackest material, is now available in a spray version. Its nano-structure absorbs virtually all incident light, permitting among other things the optimization of precision optical systems. The material's developer, UK-based Surrey NanoSystems, has mimicked the performance of its original Vantablack with a new version that can be sprayed onto objects, rather than deposited using chemical vapour deposition.

Vantablack S-VIS, the company says, greatly widens the potential applications space, making it possible to coat larger complex shapes and structures. It is applied at temperatures that are easily withstood by common plastics, further extending its use. and reportedly traps 99.8 percent of incident light. This property confers the ability to make objects appear to be two-dimensional black holes, as it becomes impossible to make out surface topography.

The only other commercially-available material darker than the new S-VIS version is the original Vantablack, which absorbs 99.965 percent of incident light. It was originally developed for satellite-borne earth observation imaging and calibration systems, where it increases instrument sensitivity by improving absorption of stray ultraviolet, visible and infrared light.

Since then, many other applications have emerged, including solar-energy collector elements, functional surfaces in buildings and architecture, cinematographic projectors, high-performance baffles and lenses, and scientific instruments. Its ability to deceive the eye also opens up a range of design possibilities to enhance styling and appearance in luxury goods and jewellery.

"The original Vantablack coating has had a big impact on the market, and is helping many companies to bring out higher-performing equipment," says Ben Jensen of Surrey NanoSystems. "We are continuing to develop the technology, and the new sprayable version really does open up the possibility of applying super-black coatings in many more types of airborne or terrestrial applications. Possibilities include commercial products such as cameras, equipment requiring improved performance in a smaller form factor, as well as differentiating the look of products by means of the coating's unique aesthetic appearance. It's a major step forward compared with today's commercial absorber coatings."

[www.surreynanonsystems.com](http://www.surreynanonsystems.com)

### UV-Curable Binder

Ebecryl 898, from Allnex, is a solvent-free, UV curable binder based on polyester acrylate chemistry. When combined with a matting agent, it helps to achieve substrate-specific end properties on wood, resilient flooring, plastic, and paper foil substrates, without the need for added solvent or monofunctional diluents.

The company says it provides an outstanding ultra-matte effect to the final coating, with gloss levels of < 5 at a 60 deg. angle, without sacrificing mechanical performance properties. Importantly, these gloss levels are stable and do not increase over time, even under high-speed curing conditions or in formulations stored for months. Furthermore, Allnex adds, compared to conventional low-gloss systems, coatings that contain Ebecryl 898 require less matting agents, leading to enhanced rheology, transparency, and stain and scratch resistance properties. An improved 'soft feel' effect can also be attained.

This new solvent-free resin can be used in ultra-low and low-gloss finishes applied at a wide range of dry film thicknesses ranging from three to 100 microns. In addition, it is suitable for clear and colored systems used as top coats or self-sealing coatings that are applied by spray-, curtain, or roller coating.

"Ebecryl 898 has a white, milky, creamy aspect. Once fully cured, however, it becomes transparent and its ultra matt properties are realized," said Marie-Astrid Goes, global marketing manager for UV/EB curable resins at Allnex.

"The resin system is an ideal blending partner because it is compatible with polymers and matting agents that are commonly used in 100 percent solids radiation cured coatings, and can be cured over the full spectrum of UV light, even up to 120 microns thickness, or with LED or electron-beam radiation. Considering that it can also be used for clear and pigmented systems, this binder is a real all-round solution that will accommodate a high number of end applications, providing formulators of low- and ultra-matt coatings the flexibility and performance they need."

[www.allnex.com](http://www.allnex.com)

### Floor Coating Offers Ease of Application

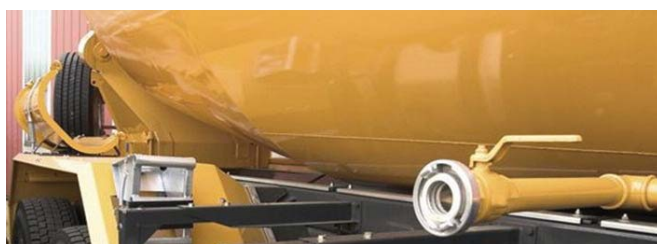
Floor coatings must meet strict functional requirements, and also offer low-cost, speedy application. Covestro's Pasquik technology makes coating floors easier and less time-consuming than conventional processes, due primarily to the fact that the number of coats required can be reduced and curing time shortened significantly.

"Building owners and operators benefit just as much from the technology as architects, civil engineers and, of course, floor coating specialists," said Contardo Pafumi, head of marketing for building applications in Covestro's Coatings, Adhesives, Specialties segment. "Eliminating one of the coating steps saves contractors time and labor costs. Thanks to the rapid curing, they can apply several coats of such floor coatings in a single day using standard equipment." Application takes place at room temperature, and the surface can be walked on after a few hours. The floor coatings reportedly exhibit high chemical and temperature resistance, are solvent-free and fulfill the Deco Paint and VOC directives. On top of that, they are lightfast, weather-resistant and have crack-bridging capabilities.



Acid stain prior to application promotes good adhesion of the coating and provides the desired marble effect. The scratch-resistant surface retains its glossy finish over the years and is also easy to clean.  
[www.covestro.com](http://www.covestro.com)

### New Range of Primers



PPG's industrial coatings business has introduced Spectracron SPU conductive and non-conductive urethane primers. The company says these are the first products of their kind to be engineered for application over multiple plastic substrates, such as Metton LMR (liquid molding resin) and sheet-molded composite (SMC) plastics.

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[www.ppgindustrialcoatings.com](http://www.ppgindustrialcoatings.com)

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