

CORTEC *Vision*



Cover Story



40th Anniversary Celebration and 2017 World Sales Meeting

This year, Cortec® is celebrating its 40th Anniversary of providing innovative solutions around the globe. The celebration coincides with Cortec's 2017 World Sales Meeting, a special event that takes place just once every two years. We invite all of our Cortec® friends and family to join us for this exciting event September 13th-15th in beautiful downtown Saint Paul, Minnesota, USA. In addition to informative presentations, tours, and networking, guests will enjoy an Oktoberfest celebration at the Gasthaus Bavarian Hunter and a fantastic riverboat cruise down the Mighty Mississippi. Additional information will be released soon!



20th Anniversary at CAF

Another exciting milestone is the 20th Anniversary of revolutionizing the corrosion inhibiting industry at Cortec® Advanced Films (CAF)! By incorporating Vapor phase Corrosion Inhibitors into plastic film and creating the bestselling VpCI®-126 Blue film in 1990, Cortec® introduced an economical, environmentally friendly way to protect metal parts from corrosion during shipping or storage without requiring the use of greasy or hazardous rust preventatives.

In 1997, Cortec® took that innovation to the next level by acquiring Spring Lake Plastics in Cambridge, Minnesota, to begin producing its VpCI® film in-house. This vertical integration has allowed for direct oversight and continued growth of this important and useful VpCI® product category. Since the 1997 acquisition, production has multiplied five times, accompanied by physical growth of the plant.

Particularly exciting are the plans for a new Plastics Recycling Complex at CAF. Cortec® is eager to expand its recycling program, powered by a state-

of-the-art reprocessing machine that recycles and reuses VpCI® film scraps to produce new batches of high quality VpCI® film. CAF doesn't throw away any VpCI® scraps and has also started to help some of Cortec's customers reduce their carbon footprint by accepting recycled VpCI® film for reprocessing. Cortec® is eager to expand the recycling program, powered by a state-of-the-art reprocessing machine that recycles and reuses the scraps to produce new batches of high quality VpCI® film.



63rd Patent Granted

Looking back, it has been an exciting year for Cortec® IP (intellectual property) with the granting of US Patent #9,518,328 on December 13th, 2016. This is the 63rd patent Cortec® has

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been awarded in 40 years of business. The patent recognizes the novelty of Cortec's CorroLogic® VpCI® Filler, an innovative product designed at the request of a North American pipeline corrosion engineering group to protect annular void spaces between pipelines and their casings. CorroLogic® VpCI® Filler is non-toxic, non-flammable, and nitrite- and phosphate-free—a practical and effective solution for long-term corrosion protection of challenging environments such as pipeline casings and tubular vessels or structures.

10th Consecutive Record-Breaking Year

A celebration took place in November after Cortec® completed its 10th record-breaking year in a row. Employees from production, sales, offices, and laboratories gathered for a time of conversation, excellent food, reflection, and renewed vision. During the event, nine employees were recognized with Employee Excellence Awards for their significant contributions to the company in terms of quality, safety, productivity, and/or leadership. Cortec® hopes these new awards will encourage and

inspire employees to continually improve the quality of Cortec® products and services.



1st Sister City Agreement between Cambridge and Beli Manastir

As a result of the growing business development Cortec® has prompted in Cambridge, Minnesota, and Beli Manastir, Croatia, these two cities formally signed a proclamation of sistership on November 11th, 2016. Both of these cities have benefited from the presence of Cortec® Advanced Films (Cambridge) and EcoCortec® (Beli Manastir) and therefore decided to be joined as sister cities to promote further economic development. A delegation from Cambridge (including CAF Production

Manager, Tim Bliss, and Cambridge City officials) travelled to Croatia for the signing ceremony. CEO Boris Miskic noted his belief that this is just the start of more excellent business opportunities to come for American entrepreneurs and the city of Beli Manastir.



VpCI® Application Article

Don't Let Corrosion Eat Away Your Plant Assets

By Julie Holmquist



Wise corrosion prevention strategies help industrial plants avoid unnecessary failure, maintenance, and replacement costs in the long run. Many simple steps can be taken to protect basic plant components and assets, such as electrical boxes and equipment, metal and reinforced concrete structures, and equipment or finished goods in storage or shipment. Using corrosion protection products that incorporate Vapor phase Corrosion Inhibitor (VpCI®) technology offers unique advantages such as increased effectiveness, easier application, and greater environmental and user friendliness to corrosion protection efforts.

Electrical Controls

Every plant has electrical control boxes, wire-ways, and electronics. With the increase in automation, the number of electrical controls and electronics in a plant has skyrocketed. Power boxes, switching equipment, communication systems, and remote electronics all play an important role in the functioning of a plant. In addition to the multiple electrical panels for basic plant electricity, each piece of automated machinery has its own control box. Control boxes can range in the hundreds to thousands depending on plant size. Corrosion in these areas can lead to outages, equipment failure, and cumulative repair costs. This is an area of corrosion protection that is easily overlooked but can be controlled by very simple preventive maintenance steps. The nominal cost of doing so far offsets the cost of service calls or replacement.

Corrosion prevention can be as basic as sticking a small cup (emitter) filled with VpCI® powder inside a control cabinet. The powder inside an emitter vaporizes and disperses to fill the enclosed space until equilibrium is reached. VpCI® molecules then adsorb on metal surfaces to form a protective monomolecular barrier that guards against the ingress of moisture, oxygen, and other corrosive substances. If one VpCI® molecule becomes dislodged, other VpCI® molecules in the enclosed atmosphere are attracted to the exposed metal surface to fill in the gap. Taking this simple step can save the many headaches that would arise with the start of a little corrosion on electrical connections and wires.



Another effective method of corrosion protection is the use of VpCI® spray. This is a good choice for electrical and electronic components such as circuit boards and electrical contacts. The spray seals the environment and can be combined with a UV tracer to ensure that coating is complete. Some sprays can also protect components from fungus and dendrite growth.

Protecting Structural Metal and Reinforced Concrete

Corrosion inhibiting coatings can be used to protect structural metal from corrosion and are especially useful for tank protection. Coatings that contain nano-sized VpCIs have an added dimension of protection because they protect against micro-corrosion. Their small VpCI® particles fill in the gaps that are left by traditional sacrificial corrosion inhibitors and provide a measure of protection against “creepage” corrosion (corrosion that spreads from a point of coating damage).

On areas where corrosion has already begun, it is recommended that a water-based passivating rust primer be applied. This type of primer is especially good for areas, such as tank interiors, where it is difficult to perform good surface preparation. Instead of struggling to remove rust that has already started, this type of primer penetrates the rust and turns it into a hydrophobic passive layer that can be top-coated with a water- or solvent-based coating. For submerged areas, combining this primer with a high solids moisture cure urethane is especially recommended.



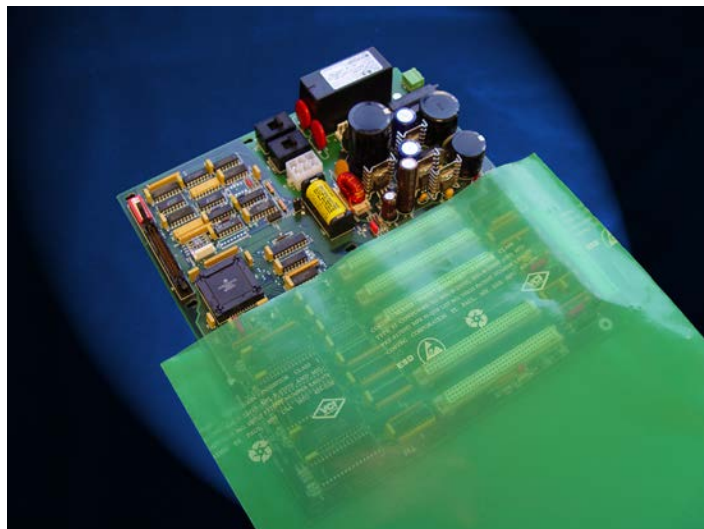
VpCI® coating application

Reinforced concrete surfaces such as floors, walls, pillars, and loading docks can benefit from the protection of migrating corrosion inhibitors. These can be combined with repair mortars, coatings, and sealers. When applied, migrating corrosion inhibitors travel through concrete pores to reach the metal surfaces of embedded rebar, where they are attracted and form a monomolecular barrier. This adsorbed layer protects rebar from corrosive elements such as air, moisture, and chlorides and can significantly extend the service life of a concrete structure. A good rule of thumb is to reseal and treat reinforced concrete structures every ten years.

Simple and Effective Packaging Strategies for Storage and Shipment

Ensuring that finished goods are protected from corrosion during shipment is critical to protecting a company's bottom line and securing the customers' confidence. A very simple way to do this is to use VpCI® packaging—papers that are coated with VpCI®, or films that have VpCI® directly embedded. Many versatile packaging options are available,

whether VpCI® papers for wrapping and interleaving; VpCI® linerboard and packing boxes; VpCI® film for shrouding, shrink wrapping, and bagging; and VpCI® bubble wrap for extra padding and static dissipation. VpCI® packaging materials like these eliminate the time-consuming task of greasing and un-greasing finished goods to guard against corrosion. Many of the materials can be combined with additional protective qualities such as fire retardants or extra moisture and grease resistance. VpCI® shrink wrap film works well for protecting backup plant equipment, or equipment temporarily offline. VpCI®-impregnated foam pads can be inserted in lay-up packaging for additional protection.



VpCI® Film for corrosion protection of electronic parts

Another advantage to using VpCI® protection is that such products and methods are often more environmentally friendly than traditional corrosion inhibitors. VpCI® technology is highly effective and often overrides the needs for dangerous chemicals such as nitrites to be included in the product makeup. VpCI® methods typically cut down on the amount of materials needed, as well, and many VpCI® products can be recycled or disposed without special permits.

Taking a look at these basic areas of corrosion prevention is an important step toward protecting your plant against the unnecessary corrosion costs and losses that come with everyday exposure to oxygen, moisture, or other contaminants. Using current corrosion protection technology that is easier to apply and remove is an excellent option of which to take advantage. A little corrosion prevention goes a long way toward extending plant service life and lowering costs. It is an excellent alternative to letting corrosion eat away plant assets.

Special thanks to Cliff Cracauer and Jessi Meyer of Cortec® Corporation for their insights into corrosion protection of electrical controls and reinforced concrete, respectively.

Julie Holmquist is marketing content writer at Cortec® Corporation, the global leader in innovative, environmentally responsible VpCI® and MCI® corrosion control technologies. To learn more, please visit www.cortecvci.com.

Highlights from Headquarters

Cortec® in the Press

Cortec® seeks to spread the word about innovative, environmentally friendly corrosion solutions in a variety of formats and is especially pleased when information about Cortec's innovative products is circulated by important trade magazines.

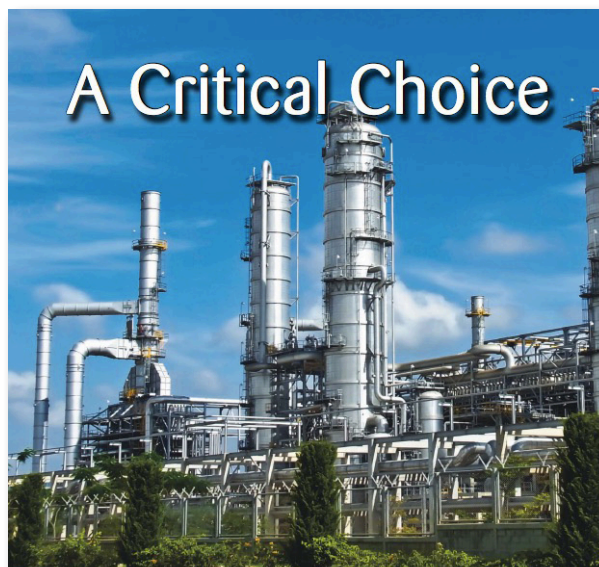
Last Autumn, Cortec's commitment to discovering natural solutions was highlighted in *The Analyst* magazine, an important voice in the water treatment industry. The magazine discussed developments at the Cortec® Biotechnology Campus, a site that facilitates discovery and production of natural bioremediation building blocks and offers a haven for winter shipment of Cortec's environmentally friendly water-based coatings.

Another exciting feature was an update on the Severn Bridge (UK) project in *New Civil Engineer Magazine*, which mentions the use of "vapour phase inhibitor" in efforts to protect the Severn Bridge after corrosion was found in the main cable in 2006. This project inspired Cortec's development of PTC Emitters for post-tension cables, and the bridge now appears to be in stable condition.

Cortec® has also written a number of informative product application articles that provide helpful information for those facing a variety of corrosion challenges. Cortec® invites readers to peruse the following articles for helpful information in their quest for corrosion control:

- **[“Protecting Cooling Systems from Corrosion during Winter Layup”](#)** (Process Cooling, September 2016 cover story)
- **[“Corrosion prevention: incorporating trust into the powder metallurgy process”](#)** (Metalworking World Magazine, November 2016)
- **[“Innovative biodegradable packaging for corrosion protection”](#)** (BioPlastics Magazine, December 2016)
- **[“A Critical Choice: Protecting Mothballed Facilities and Operational or Critical Spares from Corrosion”](#)** (North American Oil & Gas Pipelines, January 2017)
- **[“Don't Let Corrosion Eat Away Your Plant Assets”](#)** (IMPO – Industrial Maintenance and Plant Operation, January/February 2017)

- **[“A Safe Corrosion Solution for Potable Water Reservoirs”](#)** (Concrete International, February 2017)
- **[“Environmentally friendly corrosion treatments offer versatile solutions to pipe and tubing corrosion”](#)** (Tube Products International, March 2017)
- **[“Introduction of Cortec's EcoSonic® ESD Paper”](#)** (White paper released by Cortec® in February 2017)



A Critical Choice

Protecting Mothballed Facilities and Operational or Critical Spares from Corrosion

By Julie Holmquist

When oil prices drop, critical questions arise as to whether to cut production or even mothball oil and gas facilities. But regardless of market prices, there is always a need for pipeline components and lay up equipment spares. The question is how to keep mothballed facilities or their corrosion free and in peak condition ready for use. Finding corroded parts or equipment at a critical need can result in expensive downtime or safety hazards. Therefore, it is crucial to employ preservation methods that promote maximum possible uptime. Across the energy industry, many facilities have discovered how vapour phase corrosion inhibitors (VPCIs) can effectively satisfy these needs. Compared with traditional methods of lay-up, VPCIs are easier to apply and remove, are more environmentally friendly and are more cost effective in the long run. They have been successfully used for lay-up of oil and gas equipment and facilities globally.



On the Road with Cortec®

Cortec® and its distributors are often on the move, networking and sharing VpCI® solutions at trade shows and sales meetings across the globe. Here's a glimpse of some of the activities Cortec® representatives have been up to in the last six months:

Asia and Latin America Sales Meetings

Near the end of October, Cortec® hosted sales meetings in both Shanghai and Mexico City. These meetings were opportunities for distributors and representatives from the Asian and South American regions to network, share strategies, gain insights, and experience the local culture. The Asia Sales Meeting boasted record attendance with 56 individuals from 15 countries and regions around the world (from as far as the U.S., Australia, New Zealand, India, and the Middle East). The Latin America sales meeting conveniently coincided with LATINCORR 2016, and Cortec® was grateful for the assistance of distributors from Brazil, Chile, Colombia, Peru, and Mexico at the strategically situated booth. Both sales meetings offered new vision for the future and recognized top distributors in the two regions.



Spreading the Word through Trade Shows and Project Design

Cortec® had the opportunity to participate in a variety of trade shows in the US, including **Pack Expo 2016** in November and **Power-Gen International** in December. The Cortec® team received positive feedback at Pack Expo regarding the large width and multiple format options of VpCI® film and paper. At Power-Gen, there was strong interest in Cortec's coatings and turnkey capabilities

Across the ocean in Europe, Cortec® teamed up with long-time distributor Corpac to present VpCI® packaging, liquids, and additives solutions at Corpac's top quality booth for

FachPack 2016. Corpac's CORRCOON version of Cortec® VCI film wrapped around a motorcycle drew special attention while the team reinforced their strong market presence and worked on building relationships with new and established customers.

At the **5th Annual Corrosion Management** summit in Saudi Arabia, Cortec® Middle East (CME) in association with CorroLogic® AST service provider, Abdulla Fouad Impalloy Ltd. Co., joined top industry experts to dialogue on corrosion management in key KSA industries. Khalil Abed, CME Regional Manager, spoke about Cortec® products and solutions for asset preservation and operational readiness. He also moderated a panel discussion that included conversation on the role of innovative products and corrosion management techniques for cost-effective operations and maintenance programs.

In the land down under, Cortec® VpCI® products have been on tour across Australia and in New Zealand thanks to Cortec's international distributor Savcor. In 2015, Savcor exhibited at the 2015 **ACA (Australian Corrosion Association) Conference** in Adelaide, Australia. In November 2016 they re-appeared at the ACA Conference in Auckland, New Zealand. During July and August of 2016, Savcor was also on the road exhibiting at three shows held in Melbourne, Sydney, and Perth. Savcor reported receiving good feedback from newly interested clients, as well as from those who already use Cortec® and appreciate the products and services.

Two of the directors at Savcor Products Australia are well known, recognized consultants who perform Cathodic Protection Designs and consulting services for many large Australian clients. These directors have agreed that they will be specifying Cortec® VpCI® Emitters on all junctions and TRUs in their project designs. Cortec® appreciates the expertise, support, and market exposure that distributors like Savcor lend to corrosion inhibiting needs around the globe.



Cortec® Recognizes and Rewards Employee Achievements

As part of Cortec's vision for an ethical and respectful company culture, Cortec® recently implemented a new *Rewards & Recognition* program to encourage, motivate, and reward employees for achievements in quality, safety, productivity, and/or leadership. The first round of awards was presented in November 2016 at the employee appreciation dinner.

One of the Cortec® Excellence Award winners was Tim Bliss, Production Manager at Cortec® Advanced Film Division. Bliss has worked at the Cambridge plant for 28 years and was nominated for "Above and Beyond" leadership in Safety and Production Management. While he knew that the awards program was being set up, he didn't know that anyone had nominated him.

"I was actually really surprised....I was very grateful," said Bliss about the award. He commented on the importance of continuing the Rewards & Recognition program for all employees and recently shared some highlights from his own one week getaway to Hilton Grand Vacations at SeaWorld in Orlando, Florida, February 27th-March 5th—an experience he thinks would be great for everyone!

While it was a big change to go from 28°F temperatures in Minnesota to 90°F, humid weather in Florida, Bliss was soon acclimated. For the first two days, Bliss and his wife enjoyed

visiting Disney Springs and just kicking back at the beautiful hotel. They used a few days to visit a friend in nearby Fort Meyers and also took the opportunity to visit the Cortec® Biotechnology Campus (CBC) in Sarasota, Florida. Kären Brasile (CBC General Manager) gave them a tour of the plant, and they went out to lunch with some of the CBC employees. Upon returning to Orlando the Blisses visited Cocoa Beach and Cape Canaveral before heading home to Minnesota and the making of more VpCI® film!



Congratulations to our Cortec® University Graduates!

Cortec® University provides an intensive program which offers product and application education taught by the people who develop, test, sell, and market our products every day. Cortec® is pleased to provide not only classroom-style education, but also problem-solving labs, guided tours of manufacturing areas, in-depth discussions to define strategies, and a nurturing process for developing top opportunities by region. The training also provides the tools for students to access the ample Cortec® resources for becoming anti-corrosion champions in their geographic areas and chosen industries.

For its November and February sessions, Cortec® University added an exciting, hands-on dimension to the training. During one of the classroom periods, attendees were given the opportunity to work their way through a real-life Cortec® product application. Each group was given a box with metal pieces, various Cortec® products, and a problem to solve. Three scenarios were addressed, and the group reviewed existing Cortec® Case Histories that coincided with the box scenarios. Following the problem solving sessions, attendees were brought to Cortec® Labs to get further training and hands-on experience with three product groups and processes:

- Rust removal using VpCI®-422 and VpCI®-416
- Monitoring concentration of VpCI®-377 with a refractometer
- Applying VpCI® coatings



Some students chose to stay for an optional third day to speak with Cortec® personnel about individual issues or needs.

Watch the **Cortec® website** for updates on when the next Cortec® University will be scheduled! Please contact your Regional Sales Manager or Lara Nichols (LNichols@cor-tecvci.com) with any questions.

Available Brochures

Brochure Translations

Two Cortec® brochures have recently been translated into different languages, allowing easier access for Cortec’s global customer base.

- **Desalination:** Distributors and customers in Portuguese-speaking countries, many of which are expanding desalination capabilities due to drought and water shortage threats, can now learn about potential VpCI® products to apply to this corrosive industry with “**VpCI® Technology for Desalination Industry**” now available in Portuguese!
- **Marine Corrosion Control:** In Europe, where Cortec® has been expanding the availability of its consumer Bull Frog® line, German-speaking yacht and watercraft owners now have access to a handy German-language Bull Frog® “**Complete Marine Corrosion Control System**” guide.



Cortec’s desire is that these translations will make helpful tools for distributors.

Service Excellence

Cortec® Receives “Preferred Supplier” Rating!

Supplier Rating System						
Date: 10/21/2016	Quarter: 3					
Supplier: CORTEC	Jul - Sep					
Attn: Quality Manager						
The Supplier Evaluation Report listed below represents your company's performance as a Supplier or Subcontractor to Independent Packing Services, Inc. The rating is determined by the following weighted factors:						
Quality will account for 50% of rating		50%				
Total Number of Line items/per PO	13					
Total number of Rejected Line items/per PO	0					
Delivery will account for 40% of rating		40%				
Total Number of Line items/per PO	13					
Total number of Late line items/per PO	0					
Quantity will account for 10% of rating		10%				
Total Number of Line items/per PO	13					
Total number of line items with Qty Variance	0					
Your performance rating for this period is		100%				
<table border="1"> <tr> <td>90 - 100 % Preferred Supplier</td> <td>80-89% Acceptable Supplier</td> </tr> <tr> <td>70-79% Probationary Supplier</td> <td><70% Must be removed from Active Supplier List</td> </tr> </table>			90 - 100 % Preferred Supplier	80-89% Acceptable Supplier	70-79% Probationary Supplier	<70% Must be removed from Active Supplier List
90 - 100 % Preferred Supplier	80-89% Acceptable Supplier					
70-79% Probationary Supplier	<70% Must be removed from Active Supplier List					
Regards,						
Independent Packing Services, Inc						

Excellence in service is a cornerstone of Cortec’s guiding principles. It was therefore with great pleasure that Cortec® received feedback of a 100% third quarter performance rating from one of its distributors in October. The distributor broke down this rating into 50% for quality, 40% for delivery, and 10% for quantity. Receiving a full score on all counts, Cortec® was ranked as a “Preferred Supplier” by the company.



New Products

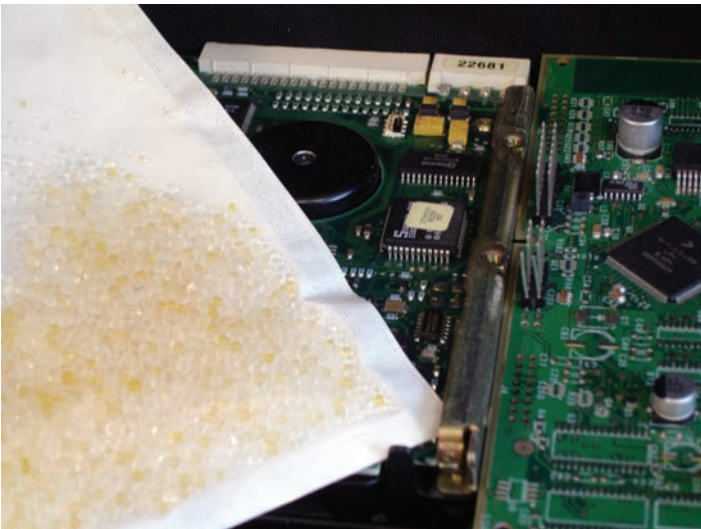
Cortec® Formally Launches Six New Products

Cortec® has formally launched six products in the last six months, or one product per month on average. These products include important developments in the area of biodegradability, electronics protection, and diesel fuel additives.

EcoClean® Biodegradable Scale and Rust Remover powered by Nano VpCI®: One of the fastest acting products on the market for dissolving heavy scale, corrosion, and naturally occurring oxides off metal surfaces in contact with water while protecting them from flash rust. The product contains 100% USDA certified biobased content.



Desicorr® Pouches NW: A specially designed desiccant pouch that comes in a windowed or windowless format and protects sensitive devices from moisture, mold, mildew, and corrosion.



EcoSonic® ESD Paper: A static dissipative corrosion inhibiting paper that serves as a complete packaging paper for valuable electrical and electronic items. It also serves other helpful EMS and MEAS industry purposes such as increasing machine throughput and efficiency, creating a temporary ESD-safe work surface, or making disposable jackets for travelers and routing guides.



EcoShield® Heat Sealable Paper: A non-toxic, fully repulpable, and readily recyclable paper with a water-based heat sealable adhesive coating. This flexible packaging solution makes it easy for industries to create their own custom-sized recyclable bags and envelopes on demand.



VpCI®-706: A new Vapor phase Corrosion Inhibiting additive that protects carbon steel diesel fuel tanks and systems from corrosion at a very low dosage of 0.5% per tank volume. This additive is fully compatible with diesel and bio-diesel fuel.

New Products

VpCI®-277: A ready-to-use rust preventative ideal for robotic assembly of precision components requiring tight tolerances. VpCI®-277 was specially design for a major automotive manufacturer who needed a low VOC solvent-borne rust preventative that would leave a drier film on parts.



Coming Soon

Stay tuned for upcoming press releases on the following products:

EcoAir® Mold Release powered by Nano VpCI®: Mold release and corrosion inhibitor for injection molds.

DesiCorr® VpCI® Pouches NW: Desiccant and Vapor phase Corrosion Inhibitor pouches with or without windows.

EcoCorr™ Water-Based Rust Preventative powered by Nano VpCI®: Replacement for oil-based rust preventatives.



Tradeshows



MARCH

ICRI Spring Convention
"Bridges and Highways"
March 15-17, 2017
Le Westin Montreal
Montreal, Quebec, Canada
www.icri.org

NACE CORROSION

March 26-30, 2017; Booth #1517
Ernest N. Morial Convention Center
New Orleans, Louisiana
www.nacecorrosion.org

MAY

Offshore Technology Conference
May 1-4, 2017; Booth #5113
NRG Park
Houston, Texas
www.2017.otcnet.org

SEPTEMBER

ISSA/INTERCLEAN North America (Bionetix)
September 11-14, 2017
Exhibits: September 12-14; Booth #1370
Las Vegas Convention Center
Las Vegas, Nevada
<http://show.issa.com/issa-2017-save-the-date/#prettyPhoto>

AWT 2017 Annual Convention and Exposition
September 13-16, 2017
Devos Place and Amway Grand Plaza Hotel
Grand Rapids, Michigan
<https://www.awt.org/annualconvention17/>

NOVEMBER

2017 ICRI Fall Convention
November 15-17, 2017
Hyatt Regency New Orleans
New Orleans, Louisiana
<http://www.icri.org/event/2017FallConv>

DECEMBER

POWER-GEN International
December 5-7, 2017; Booth #9406
Las Vegas Convention Center
Las Vegas, Nevada
<http://www.power-gen.com/index.html>



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