

JANUARY, 2014

# CORTEC*Vision*



MOVING FORWARD IN 2014 WITH INNOVATIVE PRODUCTS AND IDEAS



IN CORROSION TECHNOLOGY



**CORTEC**  
CORPORATION

Environmentally Safe VpCI®/MCI® Technologies

## 40 Years of Membership with NACE! The World's Largest Corrosion Society

It was January 1, 1974 that Mr. Boris Miksic joined NACE, the world's largest Corrosion Society with over 30,000 members from all over the world. During his forty years, Boris has contributed to the organization in many ways including attending all NACE National meetings since 1975, exhibiting on behalf of Cortec® Corporation at all NACE Expo's since 1976, along with attending many regional meetings and conferences including India, Middle East, Australia, China, LatinCorr, and the European Corrosion Conference and Expo. He has made many friends along the way such as Robert Legault, Professor Bavarian, Harry Byers, John Trim, Roger Staehle, Terry May, Ernie Kletchka, Hartley Duncan, and Pete Rossy.

During his 40 years as a NACE member, Mr. Miksic has built one of the largest privately held corrosion protection companies in the world, Cortec® Corporation. Without a single dollar from outside investment, Cortec® has grown into four plants in the United States, one in Canada, and one in Europe, with operations in 96 countries. He holds 43 US and foreign patents in the field of corrosion protection, which have been developed into the most advanced line of corrosion inhibitors, consisting of over 500 chemical products and systems. Boris has had 150 Publications in international technical magazines and seminars and has been compiling for years, the definitive manual, "Preservation, Lay-up, and Mothballing Handbook" for Equipment and Plants, in its 3rd edition, which is now over 971 pages.

NACE has recognized Boris throughout the past for his dedication and service to the field of corrosion protection. He has been commended with the following NACE awards: NACE Fellow (2000), NACE International Disting Frank Newman Speller Award for contributions to the practice of corrosion engineering both at CORROSION/2004, and the Readers' Choice Award, Materials Performance Magazine (NACE), 2013.

Boris has had an impact on the corrosion control culture by serving as the Chairman of NACE Symposia on Volatile Corrosion Inhibitors (VCI's) 1976, 1979, 1983, 1987, 1994 and 1997; Chairman of NACE Task Groups T-3A-4, T-3A-12, and T-5J-2; and Officer of the Twin City Chapter of NACE (1985/1986). As a contributor to the NACE Handbook on Corrosion Inhibitors (1989), with initiated efforts sponsored by Unit Committee T-3A, which resulted in consensus approval of NACE RP0487- 2000 a Recommended Practice: "Considerations in the Selection and Evaluation of Rust Preventives and Vapor Corrosion Inhibitors for Interim (Temporary) Corrosion Protection". He has had 14 papers presented at NACE technical and research symposia's, 9 papers published in Materials Performance Magazine, and 1 paper published in Corrosion Magazine. He has been the invited lecturer to many NACE Chapters: Twin Cities (4), Greater Boston MA (3), LatinCorr (3), International Chinese Anti-Corrosion Conference (3), Chicago IL (2), Lafayette LA, Ponca City OK, Corpus Christi and Beaumont TX, Detroit MI, Northern Indiana, Dammam Saudi Arabia, North Central Regional Meetings in Minneapolis MN and Columbus OH, the Australian Corrosion Society Sydney, Technology Institute Moscow, JETRO Tokyo, and the NACE India Section Mumbai.



Ines and Boris receiving the 2013 Reader's Choice Award, Materials Performance Magazine.



## EcoCortec® Expansion

### Doubling its Capacities to Produce Films and Bags

EcoCortec®, the most advanced manufacturer of films and bags in Europe, is very proud to announce the phase three expansion of its Beli Manastir, Croatia plant. This expansion will double our manufacturing and warehousing capacities with this 3,000,000 euro investment. The new production hall will contain three new high-tech extrusion lines, confectioning line of VpCl® papers, and warehouse for various Cortec® products.

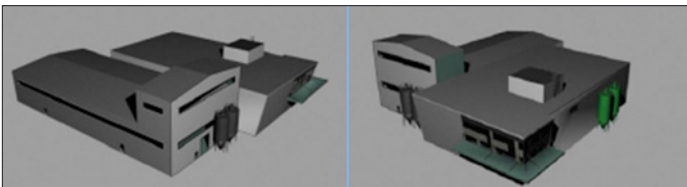
EcoCortec® specializes in manufacturing Cortec® Corporation's innovative Vapor phase Corrosion Inhibitor (VpCl®) films and offers customers complete converting, extruding, and printing capabilities. We manufacture films and bags according to customer specifications in terms of product size and performance, and are very flexible when it comes to order sizes and meeting special customer requests. Our products are tested in Cortec's ISO/IEC-17025 accredited laboratory.

The plant is located on a 10,000 square meter site which places this facility in an excellent geo-strategic location of Central Eastern Europe. This new expansion, with new state of the art equipment, is a confirmation of EcoCortec's leadership in the field of biodegradable films manufacturing in Europe; and proof that our innovative ideas, quality products, and professional team obtain excellent results and growth even in the times of economic crises.

The continuous expansion of production and procurement of new equipment is never really finished. By strengthening the plant's position in the market, new requirements for equipment are growing every day. For this reason we are continuously widening our capacities.

The new production hall will also warehouse Bionetix products. Bionetix International; headquartered in Montreal, Canada is a wholly owned subsidiary of Cortec® Corporation in the business of manufacturing microbial based bio products. It is comprised of solid, proprietary technologies to produce biological waste treatment products that are used in thousands of applications and various industries throughout the world. With this new expansion our plant has absolutely no relevant competitor in Europe.

**This latest investment will enrich our plant with new state of the art equipment; the new production hall of 1.600 m<sup>2</sup> usable space is in the final stages.**



## Re-engineered Product: VpCI<sup>®</sup>-144

Cortec's moisture barrier VpCI<sup>®</sup> paper is now even better. It has the same corrosion inhibitor properties as always, but now the moisture barrier properties are significantly improved, to a level comparable to polyethylene (PE) coated papers. Unlike PE papers, however, VpCI<sup>®</sup>-144 is designed to be fully repulpable and recyclable. Thus VpCI<sup>®</sup>-144 offers a more environmentally friendly alternative to PE coated papers without having to sacrifice performance. With this change, VpCI<sup>®</sup>-144 now also comes in a new look. It is printed with product and company identifying information on the barrier side, providing assurance that it is a genuine Cortec<sup>®</sup> product. The VpCI<sup>®</sup> coated side is left in the natural color of the Kraft paper stock.



## Coming Soon

### MCI<sup>®</sup>-2012

#### A multi-approach admixture for the protection of concrete steel reinforcement

MCI<sup>®</sup>-2012 is a new addition to the concrete protection war chest at Cortec<sup>®</sup>. It is an admixture employing synergistic blend of migrating corrosion inhibitors and waterproofing ingredients. It enhances the protection by forming a protective film on steel rebar while simultaneously reducing ingress of water soluble corrosive species through the concrete cover.

There are various waterproofing admixtures on today's market, aiming at reducing intrusion of chloride-containing water into the concrete. The majority are based on polymeric compounds, silicon chemistry, metallic stearates, or hydrophilic crystalline materials such as silicates. The protection mechanism of this type of products is to block water or to reduce corrosive species. This type of products do not directly protect the steel rebar themselves, the entity that plays the most important role in determining the longevity of a concrete structure. Inevitably, some electrolyte ingress will occur, setting the stage for the initiation of rebar corrosion and eventual deterioration of a concrete structure. Incorporating a second protection mechanism, to the steel rebar itself, is much desired in a well-thought admixture for the long term integrity of a concrete structure.

The inhibitors in MCI<sup>®</sup>-2012 have demonstrated field performance. Showing they delay the onset of corrosion. Watch for PDS and MSDS to be posted soon!





MCI®-2012 was developed after many tests to find a favorable combination of corrosion inhibitors and water-repelling ingredients. MCI®-2012 has the following technical test data.

#### **Water Repellency Tests:**

Water Permeation Test per RILEM Test No. 11.4. showed that MCI-2012 provided 100% improvement vs. the untreated control. Water Adsorption Test per Alberta Technical Standard BT001, and BS 1881 Part 122, showed that MCI®-2012 treated concrete absorbed 55-57% less water vs. the untreated control. The water repellency tests indicated that MCI®-2012 produced a concrete of lower water permeability, decreasing ingress of electrolyte when placed in service in harsh environments.

#### **Concrete Properties:**

MCI®-2012 doesn't alter set time. It provides comparable performance to the untreated control.

#### **Corrosion Protection:**

The Electrochemical Impedance Data (EIS) indicated that the rebar in MCI-2012 treated concrete exhibited 4.6 times Polarization Resistance vs. the control, or 78% reduction in corrosion rate. ASTM G109 test showed 98% reduction in total corrosion current at 8th cycle (test on going).

## **Comparison of the Corrosion Protection Effectiveness of the VpCI®-337 Vapor Corrosion Inhibitor and Nitrogen Blanketing System**

Corrosion behavior of steel samples used for storage tanks and cross casing pipe applications were investigated using two different protection mechanisms: vapor corrosion inhibitor and nitrogen blanketing system. The objective of this project was to demonstrate which technique provides more protection in corrosive environments, especially where there are restricted geometries such as crevices, threads, notches, and under-deposits.

Corrosion behavior of steel samples were studied in two different conditions; the first contained 200 ppm chloride solution + 10% corrosion inhibitor addition, the second included 200 ppm chloride solution with a nitrogen blanketing system at 10 psi applied pressure. The corrosion rate of the exposed samples were monitored for more than five months (~3,800 hours) using linear polarization resistance (LPR) and electrical resistance (ER) probe techniques.

The corrosion data have demonstrated that vapor phase corrosion inhibitors have superior advantages over the nitrogen blanketing system in the presence of excessive salt and moisture. On average, the LPR corrosion rate measured less than 0.06 mpy for samples immersed in VCI solution, no sign of corrosion was observed. The immersed and nitrogen blanketing samples, in contrast, showed a corrosion rate of 1.78 mpy and the samples were covered with a thick red rust. ER probes showed a corrosion rate of 0.18 mpy for VCI treated while the nitrogen blanketing samples showed a 2.12 mpy corrosion rate and probes were heavily corroded. It is interesting to report that when VpCI®-337 was injected into the nitrogen blanketing corrosion cell, the corrosion rate of the corroded steel probes dropped to less than 0.26 mpy in under 20 hours. This shows a significant reduction in the corrosion rate by more than eight times.



#### **Excerpted from:**

Department of Manufacturing Systems Engineering & Management  
College of Engineering and Computer Science  
California State University, Northridge, USA

Behzad Bavarian, Jia Zhang, Keyang Lu and Lisa Reiner

## India Sales Meeting 2013 Record Setting Meeting!

Cortec® India has experienced more than 30% growth for each the past 5 years as a result of the dedicated efforts at key industries and services. Cortec® India's growth strategy revolves around delivering 'World Class Preservation' to all customers every time. This involves the tenets of technical training, world-class technology, environmental stewardship, application support and 'supply and apply' turnkey projects. The Annual India Sales Meeting (ISM) is a prime example of this growth strategy in action.

The 2013 ISM attracted record setting attendance with attendees hailing from all across India as well as Singapore, Thailand, Japan, and Indonesia. The conference began with a kick-off reception featuring demonstrations of local Rajasthan music, dance, and food followed by a full day of technical sessions. The third day was set aside as a day full of camaraderie and local sightseeing at locations such as the Jaipur City Palace, Jantar Mantar Observatory, Jal Mahal, and Hawa Mahal.

The technical sessions focused on awareness and sharing of best practices from around the world on key applications within oil/gas, energy, heavy industrial manufacturing, export and key asset preservation. Significant milestones have been achieved at multi-national and India conglomerates within marine, mining, power generation and automotive sectors. Cortec® India's efforts were bolstered by the participation of Cortec® partners who shared success from across Asia.

### The top 5 distributors for the 2013 India Sales Meeting were:

1. **Mayuresh Marketing Pvt. Ltd Ltd**, Nasik
2. **Vertex Corrotech Solutions**, Coimbatore
3. **Advance Engineering Corporation**, Bangalore
4. **Siva Technical Services Pvt Ltd**, Chennai
5. **Siddharth Trading Company**, Mumbai

Through the dedicated efforts of channel partners, industry verticals, communication within India and global coordination of efforts throughout the Cortec® Family worldwide, customers in India are assured they receive best in class product, service and support.



# Life without **CORTEC**®





## Congratulations Cortec® Laboratory for ISO/IEC 17025:2005 Recertification

Cortec® Corporation's Laboratory (Lab) has been recertified to ISO/IEC 17025:2005, with a new scope of test protocols. As the only laboratory in our industry that has this accreditation Cortec's Laboratory stands far above the competitors, maintaining the highest quality standards to supply you with accurate and reliable results.

During the recertification process, the Laboratory Accreditation Bureau put Cortec's Lab through stringent criteria and procedures examining technical competence and specifically addressing factors relevant to a laboratory's ability to consistently produce precise, accurate test data.

### These criteria include:

- Technical competency of staff
- Validity and appropriateness of the methods
- Traceability of measurements to national standards
- Suitability, calibration and maintenance of test equipment
- Handling of test items
- Quality assurance of testing

### Testing - Mechanical

Technology	Methods Used	Product Types
Viscosity	ASTM D2196 CC-035	Coatings, lubricants
Accelerated Weathering Test, UV Stability	ASTM G53	Coatings, polymer films
Humidity	ASTM D1748 ASTM D1735 CC-018	Coatings, lubricants
Salt Fog	ASTM B117 ASTM B368 (CASS)	Coatings, lubricants
Vapor Inhibiting Ability (VIA)	MIL-STD-3010B CC-027	Crystalline, liquids, VCI coated materials, VCI containing films
Immersion Corrosion Testing	ASTM G31 CC-029	Additives, corrosion inhibitors for water
Electrochemical Polarization Measurements	ASTM G5 CC-030	Water based electrolytes
Electrochemical Impedance Measurements	ASTM G106 CC-022	Concrete samples with rebars
Cyclical Testing	GMW 14872	Coatings, RP
Color Matching	CC-033	Coatings
Adhesion (Tape)	ASTM D3359	Coatings
Adhesion (Testers)	ASTM D 4541 (Test Method B); ASTM D7234 CC-034 CC-036	Coatings

### Testing - Chemical

Fourier Transform Infrared (FTIR)	CC-006	Liquids, powders, polymer films
Ultra Violet (UV) Visible Spectrometry	ASTM E 169; ASTM D 2008; CC-040	Liquids



# Cortec® Sales Meetings in 2014

## European Sales Meeting

October 8 – October 10  
Budepest, Hungary and  
Beli Manastir, Croatia

## South America Sales Meeting

October 25 – October 26  
San Andres Island, Columbia

## Asia Sales Meeting

November 19 – November 21  
Waikiki Beach, Honolulu, Hawaii

## Great job Cortec® Spray Technologies!

"We got both cans yesterday and we are really pleased with it! Stephane, my boss, is REALLY excited about the small one, which he's been wanting to have for a very long time. We love the quality of the label and the can. I love it too, but I realized there's a small detail I'm gonna have to change for the next batch, nothing bad though. Thanks again for everything!"

Have a fantastic day,

**Valérie M.**  
**BioLub**  
**Québec, Canada**

## Cortec® Corporation Represented Globally at Vital Tradeshows

Cortec® Corporation and our products have been showcased at many more tradeshows around the world thanks to our partners. If you are participating in a tradeshow in 2014 please let us know and we will add you to the Cortec® website tradeshow calendar.

One featured show from 2013 is Exponor which was held in Antofagasta, Chile June 17-21. This important mining tradeshow is the second largest in the world. It was a very productive four day show with 1120 exhibitors and attendance of over 45,000 visitors from 30 countries.

Ferrimex, Cortec's distributor in Chile exhibited in the US Pavilion and was the only corrosion control solutions exhibitor at the event. Cortec's Surface Preparation, High Performance Coatings, Electrical/Electronic protection products were the main interest as they made connections with all major international mining companies, and mining, maintenance, and equipment providers.



## PowerGen 2013 Orlando, Florida



Cliff Cracauer, Vice President of Sales, assisting customers and answering questions at the Cortec® booth during PowerGen in Orlando, Florida.

## International Water Conference 2013 Orlando, Florida



Kathy Motzinger, Carmen Tomadin and Ines Miksic at Cortec®/Bionetix booth at International Water Conference in Orlando.



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