Heads-Up

A *PaintSquare News* headline on July 16 announced that an ASTM Panel was set to address steel life cycle standards. The article stated: "ASTM Subcommittee A05.13 on Structural Shapes and Hardware Specifications announced that work is under way...to evaluate the costs of steel construction over the lifetime of a project and to compare different corrosion-protection systems in terms of their impact on this lifetime cost. The standards would be used by engineers and architects who design with steel fabrications, ASTM said. One such proposed standard is ASTM WK27436, Practice for Life-Cycle Cost Analysis of Corrosion Protection Systems on Iron and Steel Products."

While we at SSPC agree that such a study may be needed, we are concerned about the possibility of bias in the completed project because the chair of the committee is the technical director of the American Galvanizers Association (AGA). AGA has a history of criticizing the durability of liquid coatings and their life cycle costs. As a standards-writing organization, SSPC has members, especially owners, who question us when the chair of a committee comes from a company that could benefit from how a standard is written. We must be on guard and do the best we can to prevent any perception of bias. I hope the gentleman from AGA runs an open committee where all voices are heard on the subject of corrosion control so any pre-existing prejudices are eliminated.

We also urge that all variables in corrosion protection be considered from the onset. As we know, no one coating fits every situation because of variables like climate, service environment, structure design, life cycle, and the owner's budget. These variables and many others will have to be acknowledged as the committee does its work. We recognize that galvanizing, thermal spray metallizing, other coatings, cathodic protection, and additional corrosion prevention measures have their roles, but every system has limitations, and that fact must also be taken into account.

Ten years ago, we produced a video tape called "The Value of Coatings." Today, we at SSPC remain committed to promoting long lasting coatings to protect assets, at low life cycle costs. We want the coatings industry to compete favorably with all available corrosion prevention alternatives. We firmly believe that coatings can compete if the playing field is level. Life cycle costs can be lowered by employing good standards of practice, educating and training the workforce, certifying all coating professionals—from craftspersons to the inspectors and coating contractors—and lastly, by freely exchanging technical information.

Since the cost of labor is the most expensive element on any coatings project, increasing productivity by these means is key. This will reduce life cycle costs and improve the protective coatings market share. This will also enhance the reputation of protective coatings as the system of choice when owners strive to preserve their structures for 30 or more years.

Two members of the SSPC staff have joined this ASTM committee. We will make every effort to ensure that you are informed of the progress of their work. If you are a member of ASTM, we ask that you also consider participating in the committee so the protective coatings industry has a strong voice during the process.

Bill Shoup
Executive Director, SSPC

New President, Board Members Welcomed at SSPC

SSPC welcomed Russ Brown, Global Business Development Manager for Munters Corporation, as the new President of the SSPC Board of Governors. Mr. Brown takes over for Steve Roetter, P.E., whose term as President ended on June 30, 2010.


Russ Brown


Steve Roetter


Robert McMurdy

Mr. Brown was first elected to the Board in 2003 and has been in the coatings industry for almost 25 years. In addition to serving on the Board for SSPC, he is active in the American Water Works Association, Construction Specification Institute, and American Institute of Architects. His term as President will last until June 30, 2011.

Effective July 1, Steve Roetter, P.E., became Immediate Past President, and Robert P. McMurdy, CEO of Mohawk Garnet, Inc., became President-Elect.


Derrick Castle


Gunnar Ackx

SSPC members elected Gunnar Ackx, Managing Director of SCICON Worldwide bvba (Brugge, Belgium), to fill the newly created International board position. Mr. Ackx has over 15 years of experience in the coatings industry and is a certified SSPC Protective Coatings Specialist (PCS) and an SSPC-certified Protective Coatings Inspector.

Derrick Castle, Chemical & Corrosion Laboratory Specialist for the Kentucky Transporation Cabinet, was re-elected to a four-year term. He is an SSPC Protective Coatings Specialist and a lead instructor for SSPC's Bridge Coatings Inspector program. He is also a NACE-Certified Coatings Inspector.

Mr. Castle participates on numerous committees for development of coatings specifications and has coordinated the Facility Owners Peer Forum at the SSPC Annual Meeting since 2007. He currently chairs the Standards Review Committee for SSPC, as well as serving as a member of the Oversight Committee and the Executive Committee for the American Association of State Highway Transportation Officials (AASHTO) National Transportation Product Evaluation Program (NTPEP). He is also Chair of the Protective Coatings Technical Committee.

The Board will vote on the Vice President at an upcoming meeting. Information about the next scheduled meeting can be found in SSPC News on p. 39 of this issue.

Dumond Chemicals President Retires; New Head Named

Dumond Chemicals Inc. announced the appointment of John J. Petroci III as president and CEO. Petroci succeeds long-time President and CEO Hy Dubin, who is retiring after 29 years with the company.


John J. Petroci III

Petroci has been vice president of sales and marketing at Dumond Chemicals since 2005 and has worked for 27 years in the paint and coatings industry, with leadership positions in manufacturing companies.

Dubin said he is "excited about the future of Dumond Chemicals Inc. under the direction of John J. Petroci III. John brings the full complement of skills in leadership, industry experience, and market knowledge to the post."

Dumond Chemicals is a manufacturer of products for paint removal, stone and masonry care, graffiti control, and lead abatement and encapsulation. The company says its PEEL AWAY® Paint Removal Systems offer an environmentally responsible solution to safely remove coatings from various surfaces. Other brands include SMART STRIP™, Safe'n Easy® Stone & Masonry Care, Watchdog™ Graffiti Control Products, and Lead Stop®.

For more information, visit www.dumondchemicals.com.

William Dimmick Dies; Co-founded Crown Polymers

Crown Polymers executive William "Bill" Dimmick, a respected and popular leader of the polymer industry, passed away unexpectedly at his home July 15 in Crystal Lake, IL. He was 47.

Mr. Dimmick, co-founder of Crown Polymers, was nationally and internationally known as a highly skilled executive and innovator. He introduced countless new application methods and polymer formulations, many of which have become standards within the industry.

"Bill's in-depth understanding of polymer technology, the marketplace and the practical needs of customers

enabled him to produce results that few others have equaled," said Dr. Vinicio Tresin, a company spokesman.

He added: "Bill's approach was as ingenious as it was straightforward. In addition to his technical skill and business acumen, Bill was generous. He was bright, articulate and always willing to share his substantial body of knowledge with others.

"Those of us at Crown Polymers, our customers, and everyone associated with our company will reap the benefits of Bill Dimmick's contribution for many years to come."

Mr. Dimmick is survived by his wife, Deborah; daughters Brynna and Tori; parents, Patricia and Floyd Dimmick; sisters April and Lori; and brothers Floyd Jr. and John.

Memorial donations in Mr. Dimmick's name may be sent to the American Heart Association, 3816 Paysphere Circle, Chicago, IL 60674. On-line condolences may be sent to the family at info@crownpolymers.com.

Worker on PA Bridge Project Survives 100-Foot Fall

A worker on a Pennsylvania bridge project survived a 100-foot fall from the bridge into a containment net on August 2.

The man, identified as Rick Glover, 48, of Dilliner, PA, suffered several broken ribs, a dislocated shoulder, a punctured lung, and a fractured scapula after he fell from an enclosed area under the Donora-Monessen Bridge over the Monongahela River. He was reported in fair condition later the same day at a Pittsburgh hospital.

Glover was abrasive-blast cleaning girders in preparation for a painting project when he somehow slipped and fell from scaffolding underneath the bridge, "narrowly missing an I-beam and a half-inch-thick steel cable," Mon Valley paramedic Sean Cummings told reporters.

Glover works for J.F. Shea Construction, based in Walnut, CA. News reports said he had 15-20 years of experience.

A Shea Construction spokesman declined comment on the incident. No Pennsylvania Department of Transportation personnel were on the bridge at the time of the incident, so the agency also declined comment, a spokeswoman said.

Although rescue workers responded within 15 minutes of the 4:20 p.m. incident, the rescue itself was complex, due to Glover's position on a concrete pier at the center of the bridge, about 20 feet from shore.

Bernie Johnson, the assistant director of the Mon Valley EMS, described the effort as a "very technical rescue."

"The thing to remember about technical rescue is it takes time for us to rig our safety lines to make sure that we're not going to do any more harm to the patient prior to moving him, so that's what the delay in getting him down was," Johnson told the *Pittsburgh Tribune-Review*.

He said tactical rescue teams from several nearby emergency medical services that specialize in "high angle incidents" were called in. Those crews set up the rigging that was used to extract Glover, who was conscious when rescued, the *Pittsburgh Tribune-Review* reported.

News accounts varied as to the distance of the fall. Some reported it as 50 feet, but most said 100 feet, as did Cummings, the paramedic at the scene.

The $19.9 million bridge rehabilitation project began in March 2009 and is scheduled to be completed Nov. 3.

Sneak Peek!

Be the first to know what SSPC has planned for SSPC 2011 featuring GreenCOAT. Turn to p. 35 for a sneak peek of the Show!

SSPC/*JPCL* Webinar in October: Coatings for Wastewater Facilities

The SSPC/*JPCL* Education Series Webinar, "Coating Selection for the Wastewater Industry," will be presented on October 20 at 1:00 p.m. by Bob Murphy of the Sherwin-Williams Company. The Webinar will describe coatings systems for this service and give the pros and cons for each system.

Education Series Webinars provide continuing education for SSPC recertifications as well as technology updates on important topics.

Those who wish to participate in the SSPC/*JPCL* Webinars can register for free at paintsquare.com/education.

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On Determining Dry-to-Handle Times in the Shop

If I apply a zinc-rich epoxy primer at 3 mils' dry film thickness in the shop with air temperature of 90 F, what checks can I make to determine when it is safe to handle and stack the primed steel components?

Adam Backhaut
Diamond Vogel Paints
All technical data sheets will outline dry times, flash times, mix ratios, surface prep requirements, and other information. I would revisit the data sheet because every coating is formulated with different resins and solvents, which will change dry times. I would check the dust-free, dry-to-touch, and dry-to-handle times to verify the proper use of the material.

Tolga Diraz
CIMTAS
I assume that the key word here is the "dry-to-handle time," which is theoretical information available on the paint product datasheet with respect to a certain temperature and relative humidity. This parameter can be also be measured at the shop by the Standard Test Method for Film Hardness by Pencil Test (ASTM D3363) if the specific pencil hardness (i.e., 6H-6B) at the dry-to-handle stage of the paint is obtained from the paint manufacturer's datasheet.

Barry Barman
Barry Barman & Associates
Typical zinc-rich epoxy primers (SSPC Paint System 20—Type II B) applied at 3 mils' DFT and held at 90 F will be sufficiently dry to handle in as little as 2 hours—after the solvents have evaporated and the cross-linking is substantially complete. The dried coating may be tested for degree of cure in accordance with ASTM D5402-06, "Standard Practice for Assessing the Solvent Resistance of Organic Coatings Using Solvent Rubs." If there is little softening or color transfer using MEK solvent, the coated parts should be relatively safe to handle and stack. Of course, care must be taken to prevent mechanical damage, especially along edges from slings when loading. The coating may require as many as 7 days to fully cure, depending on humidity and temperature.

V. Jenkins
Calpolypomona
Take a rag dipped in lacquer thinner or MEK and do 50 double rubs. If there is no mark left on the coating or no color transferred to the rag, the coating is probably fully cured and should not block.

Also, you can coat two panels at the same time that you are coating the parts and put them in a vise face to face for an hour or two. If they come out of the vise without blocking, it is another good indicator that the parts will not block.

Trevor Neale
Blastech Corporation
ASTM D 3003 is a test method to evaluate the blocking resistance of organic

coatings on metal substrates. The test consists of pressure, time, and temperature measurements. Since not all zinc-rich epoxies are created equal, the answer to the question is best generated by a practical test with the selected product in the shop that will reproduce the condition of the weight/pressure on the coated parts for a time span necessary to meet the job requirements. Alternatively, the coating supplier may have the necessary test equipment to generate the information for the selected product.

Ron Lanter
Protec

I would check the paint manufacturer's product data sheet. It should tell you when you will be able to handle the material due to temperature and paint thickness when it was applied. After the specified time has passed and dft has been taken, I would use something like a quarter and perform a scratch test, visually confirming that it is dry enough to handle.

PSF is Now Online and in Print

The answers above came from the online PSF section in our electronic newsletter, *PaintSquare News*, where new questions appear regularly. If you have questions or answers for *JPCL's* Problem Solving Forum, you can submit them through *PaintSquare News*.

Visit www.paintsquare.com to subscribe to our newsletter and answer the PSF questions, or send your answers or questions to kkapsanis@protectivecoatings.com.

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The Case of When the Manufacturers' Claims ≠ Performance: Cohesion Failure of a Novolac Vinyl Ester Lining

By Christina M. Stewart, Chemist, KTA-Tator, Inc.
Richard Burgess, KTA-Tator, Inc., Series Editor

Designers, consultants, users, and even manufacturer representatives rely on information in product data sheets (PDS), or technical data sheets, when selecting coating materials for specific applications and service environments.

In this case from the F-Files, the owner selected a novolac vinyl ester lining system to line a steel outlet flue at a power plant based on performance data reported in the manufacturer's PDS. The selection made sense. Novolac vinyl ester coatings are used in service environments subject to extreme chemical and thermal exposure, such as chimneys, ductwork, and outlet flues. For increased cohesive strength and overall performance, these coatings are formulated to have a higher cross-linking density than standard vinyl ester coatings. When correctly mixed and applied to a properly prepared surface, SSPC-SP 10 Near-White Blast Cleaning, novolac vinyl esters should withstand the extreme exposure conditions.

In this case, however, the selected lining catastrophically failed inside an outlet flue of a power plant after it had been put into service, so a laboratory investigation was undertaken to determine the cause of the failure. A combination of a third party field investigation and forensic laboratory analysis often provides a more complete picture of the failure and its resolution, but the owner felt confident in his ability to provide coating samples and any required background information to the laboratory without the need for an independent site visit.

Cohesive split in the gray topcoat after trying to remove discoloration on the top surface. Photos are not to scale. All photos are courtesy of KTA-Tator, Inc.

Digital Microscopy and Comparisons to the Manufacturer's Product Data Sheet (PDS)

Oftentimes the first step in a laboratory investigation is to study the samples underneath a digital microscope to determine the number and thickness of coating layers, and to identify any contamination between coats or the presence of debris or voids in the cross section of the coating layers. This is where the investigation began.

The manufacturer's PDS called for two (base) coats of the lining product to be applied to a primed surface. The applied and cured system was supposed to consist of four coats total—a white primer between 2 and 5 mils dry film thickness (DFT), and two basecoats (one white and one green) and a gray topcoat between 15 and 25 mils DFT per coat.

The first of two basecoats was splitting cohesively (within the first layer), according to the owner. When manipulated during microscopic examination, both basecoats in the failing samples displayed further cohesive weakness, but the adhesion of the coating layers to one another was good. Since the weak plane in the lining system was within layers rather than between layers, there was no need to examine the intercoat plane.

Microscopic examination revealed that the lining system appeared to have been applied according to the manufacturer's instructions. Four coats had been applied, and each coat appeared to be within the specified thickness range of 2 to 5 mils for the primer and 15 to 25 mils each for the basecoats and the topcoat. The examination did reveal that, although consistent with the thickness recommendations, one of the basecoats had been applied at the lower end of the thickness range, while the topcoat had been applied at the upper end of the thickness range. The additional thickness of the topcoat combined with the lower thickness of one of

Continued

the basecoat layers could have generated additional stress on the base coat during curing of the topcoat.

However, the evidence from the microscopic examination indicated the application thickness was probably not contributory to the failure. Thus, the next step was to use manufacturer-supplied liquid coating (control) samples to determine whether the properties of the field-mixed coating contributed to the failure.

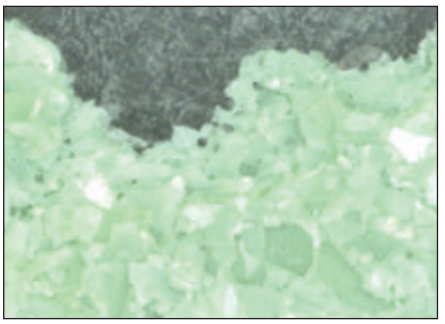
Control samples of the mixed coating were prepared from the liquid components in accordance with the manufacturer's instructions. Cured films from laboratory prepared samples were used to test the tensile strength of the basecoat, confirm the generic identity of the coating, and determine if the mix ratio of the field samples was correct. In addition, the prepared control samples provided an opportunity to assess film behavior following simulated environmental exposures.

Tensile Strength Testing

The tensile strength of the coating is synonymous with its inherent cohesive (internal) strength. Cohesive strength is the theoretical amount of force (stress) necessary to cause a fracture within the coating film when pulling the film apart in tension. Testing was performed in accordance with ASTM D638, Test Method for Tensile Properties of Plastics using a Tinius Olsen Universal testing machine. The tensile strength reported by the manufacturer on the technical data sheet was 5,700 psi. The tensile strength achieved by the laboratory-prepared samples (after several discussions with the manufacturer regarding sample preparation) was approximately 2,500 psi.

Infrared Spectroscopic Analysis

Infrared spectroscopic analysis was used to compare the chemical identity of the samples collected from the site to the mixed liquid control sample. The



Cohesive split in green basecoat.

generic identity of both the field samples as well as the liquid coating was confirmed by infrared spectroscopy to be consistent with vinyl ester resin. The technical data sheet described the coating as a novolac vinyl ester. Although novolac vinyl ester resin cannot be differentiated from vinyl ester resin by infrared spectroscopy (because the components are chemically the same), substitution of other resin systems could be ruled out and material chemical consistency confirmed. It was observed that the liquid control sample at ambient temperature had a greater ratio of resin to silicates than the field samples.

Mix Ratio Analysis

The difference between vinyl ester resin and novolac vinyl ester resin is that novolac formulations optimize cross-linking density. (Cross-linking has the effect of changing a thermoplastic material to a thermoset, thereby increasing strength and resistance to heat and chemicals.) The cross-link density is the measure of mass between cross-link points of the polymer. Differential scanning calorimetry (DSC) was performed on mixed liquid control samples as well as samples taken from the site to investigate the cross-link density. The DSC analysis produces an onset glass transition temperature, which is the temperature at which the sample begins to change from a hardened state to a softer, more flexible state. The higher the cross-link density, the higher the corresponding onset glass transition temperature will be.

The laboratory-mixed liquid control samples were prepared according to the proper mix ratio of components as well as a purposefully under-catalyzed sample. The onset glass transition temperature of the properly mixed control samples was in the range of 27.6—28.5 C, while the onset glass transition temperature range of the under-catalyzed control sample ranged from 24.0—24.4 C. The field samples that were analyzed had onset glass transition temperatures in the range of 25.4—27.5 C, showing that the field samples were more consistent with the properly mixed liquid control samples.

Tensile adhesion testing in accordance with ASTM D 4541, Pull-Off Strength of Coatings Using Portable Adhesion Testers, was also conducted as part of the mix ratio analysis. This testing was performed using a self-aligning pneumatic tester described in Annex A4 of the standard. The tensile adhesion bond strength reported on the manufacturer's technical data sheet was 1,200 to 1,500 psi. The under-catalyzed control sample exhibited an average pull-off strength of 931 psi, while the properly mixed control sample had a pull-off strength of 1,261 psi, demonstrating marked decrease in tensile adhesion in the under-catalyzed sample. The plane of separation of the properly mixed coating and the under-catalyzed sample was at the surface of the coating.

Continued

Elevated Temperature Exposure

Since the outlet flue coating was reportedly exposed to thermal cycling, the next step of the failure investigation was to determine if any thermal degradation had occurred that may have resulted in a reduction of the cohesion properties of the lining. Field and control samples were exposed to a temperature of 160 C and then allowed to cool to ambient (21 C) conditions. These conditions were selected to simulate the exposure conditions present in the service environment. Tensile adhesion testing (according to ASTM D 4541), was repeated after exposing the properly mixed and cast liquid control sample to the temperature cycle. The average pull-off strength of the coating increased to approximately 1,790 psi after this thermal exposure.

Cohesive split in the two base coats and the topcoat after trying to pry the coats apart.

Infrared spectroscopic analysis was also conducted on the mixed liquid control and field samples exposed to the elevated temperature. Analysis of the elevated temperature control sample found the ratio of resin to silicate matched that found in the field samples, showing that the differences reported earlier were probably the result of field service. Even though the ratio of resin to silicates seems to have decreased, there was no marked decrease in the intensity of the epoxy resin band in the spectra, which indicated no evidence of thermal degradation in the control or field samples.

Conclusions

Laboratory investigations serve to identify and rule out coating characteristics that can, or have, led to in-service failures. In the case of the failing liner, several modes of failure were ruled out through the various phases of the laboratory investigation.

The results of the tensile adhesion testing demonstrated that if the product had been under-catalyzed, then the cohesive properties of the coating would worsen. This potential cause of failure was ruled out when DSC and infrared spectroscopic analyses indicated the field applied coating was properly mixed.

The elevated temperature exposure demonstrated that the coating performed better after being exposed to a

thermal cycle, wherein the coating was heated then cooled back to ambient conditions. The tensile adhesion strength of the thermally exposed sample increased from that of a properly mixed sample maintained at ambient conditions. Testing after thermal exposure even produced adhesion values beyond the range indicated in the manufacturer's technical data sheet.

The infrared spectroscopic analysis conducted on the field samples, as well as the liquid control samples exposed to elevated temperatures, revealed that no thermal degradation had occurred, and that the selected product was applied.

After concluding that mis-mixing and thermal degradation did not play a role in the cohesive failure of the novolac vinyl ester, the investigation returned to the product information gathered in the early stages of the investigation. The tensile strength reported on the manufacturer's technical data sheet could not be reproduced in the laboratory, even after several trials and sample preparation methods. (The manufacturer was consulted to establish the sample preparation methods.) The lack of reproducibility of the tensile strength values leads to the conclusion that the cohesive tensile strength value reported on the technical data sheet was not representative of the actual performance characteristics of the coating. Although the generic type of coating was correctly specified for the environment, the specific performance characteristics of the applied coating were not adequate for the service conditions.

The owner elected to have the lining system removed (the cost of removal was borne by the coating manufacturer) and the lining replaced. The replacement product was independently tested in a qualified laboratory for tensile properties (to confirm manufacturer's claims) prior to selection and installation.

Chrissy Stewart is a Chemist with KTA-Tator, Inc., a consulting engineering firm specializing in industrial protective coatings. Employed with KTA since 2006, she is involved in coating failure investigations and comparative coatings testing services provided by both the analytical and physical testing laboratories. She holds a BS in chemistry from Mercyhurst College. Ms. Stewart is a member of the American Chemical Society (ACS) and SSPC.

Testing Permeation Resistance in Coatings for Wastewater Structures

Here's a look at ongoing research on the effect of permeation resistance on coatings in headspaces

by Vaughn O'Dea, Caleb Parker and Rémi Briand, Tnemec Company

Biogenic sulfide corrosion of wastewater conveyance structures can sometimes seem as unstoppable as it is destructive and costly. With elevated levels of H_2S gas and the subsequent formation of sulfuric acid in domestic wastewater collection systems, it's critical to protect valuable infrastructure from sewer corrosion. A protective coatings system is a viable protector of these surfaces only as long as it can withstand the permeation of the sewer gases and acid attack, arguably the most important property of a severe wastewater protective coatings system.

Sewer Bugs: Tiny, Yet Destructive

Biogenic corrosion has been studied since its discovery in the mid-1940s. The basic biogenic processes that result in corrosion, which can be very severe, involve sequential steps and at least two sorts of microorganisms.[1] More than 60 types of microorganisms might be involved. The exact sequence of events varies widely, and depends on the conditions at a given site. However, a general process can be described.[2]

Domestic sewage entering wastewater collection systems contains large amounts of sulfate ions ($SO_4^=$), which are reduced by sulfate reducing bacteria (SRBs, e.g. *Desulfovibrio* sp.) under anaerobic conditions to form hydrogen sulfide gas (H_2S). Under turbulent and decreasing pH conditions, especially, H_2S escapes from the aqueous phase to the sewer atmosphere where it can react with oxygen to form elemental sulfur, which is deposited on the sewer wall. The sulfur then becomes a substrate for oxidizing bacteria (SOBs, e.g, *Thiobacilli* sp.) that convert the sulfur into a dilute sulfuric acid (H_2SO_4), theorized at a concentration no greater than 5–7%.[3] The sulfuric acid attacks the cement binder of the concrete, exposing aggregate, and thereby weakening the structure. This biogenic sulfuric acid corrosion process is a widely known culprit of corrosion in wastewater systems (Fig. 1).

Sewer Gases: An Unpleasant Concoction

Little has been reported about the gases and vapors that commonly emanate from septic sewages flowing in normal domes-

tic sewerage systems. In addition to hydrogen sulfide gas, concentrations of carbon dioxide (CO_2) and methane (CH_4) gases are thought to exist in the headspaces of wastewater conveyance and treatment structures as a result of the decomposition of waste.[3] (Gases such as ammonia [NH_3], sulfur dioxide, and nitrous oxide are also theorized to be present but at much lower levels.) As a group, all of the above gases are referred to as "sewer gases." Moreover, hydrogen sulfide and carbon dioxide are both considered "acid gases"[4] and known to be corrosive to steel, ductile/cast iron,[5,6] and some grades of stainless steel and aluminum.

Hydrogen sulfide gas has always been present in sewerage systems, but in the past, its average levels were thought to be less than 10 ppm. Its levels began to rise after federal regulations mandated the removal of heavy metals (e.g., mercury, cadmium, zinc, lead, etc.) from industrial waste discharges and the use of odor control to contain the noxious odors within these environments.

Although the direct H_2SO_4 attack on protective coatings for wastewater environments has been studied throughout the past several decades, an emerging view is that the sewer gases may play a dominant role in the permeation resistance of protective coatings. While the effects of sewer gases on protective coatings are poorly understood, new research suggests that sewer gases, especially in combination with H_2SO_4, may be the predominant destructive agent affecting the permeation resistance of coatings used to protect the wastewater infrastructure.

In the past, protective coatings such as 65–75% volume solids coal tar epoxies, 55–60% polyamide epoxies, and, less commonly, 90–100% volume solids novolac epoxies have been used with some success in moderately aggressive sewer environments (less than 10 ppm H_2S). However, as hydrogen sulfide levels increased, these types of protective coatings showed blistering and delamination in sewer environments (Fig. 2). It was thought that these coatings failed from direct sulfuric acid exposure generated through biogenic sulfide corrosion. But on many occasions, the authors observed failures of the protective coatings on surfaces with a pH above 4.0-5.0 and very little corrosion on unprotected, adjacent concrete, suggesting that the H_2SO_4 secretion was extremely dilute. Moreover, the authors saw that high-build protective coatings emerging onto the marketplace for these environments were failing, despite purportedly possessing resistance to dilute sulfuric acid exposure. These observations suggest the coating film degradation (permeation) was not necessarily from direct sulfuric acid alone but from a combination of sulfuric acid and the sewer gases in the headspace.

Fig. 1 (Facing page): Biogenic sulfide corrosion to the coal tar epoxy protective coating, exposed concrete substrate and exposed ductile iron piping in less than 5 years.
Fig. 2: (Above): Blistering of a coal tar epoxy coating in the headworks of a wastewater treatment plant. All photos courtesy of the authors.

These observations led the authors to suppose that the sewer gases (i.e., H_2S, CO_2, CH_4, and NH_3), having smaller molecular sizes and linear dimensions than sulfuric acid, could penetrate the matrix of the protective coatings to cause blistering and cracking, and to eventually reach the substrate thereby negating any barrier protection. This hypothesis was supported by accelerated laboratory testing

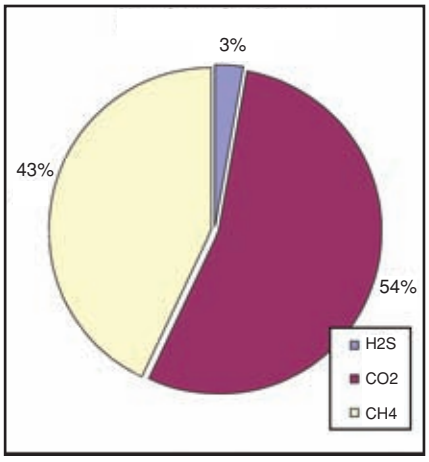


Fig. 3: Mean sewer gas mixture

in which steel panels coated with various high-performance systems commonly specified for severe wastewater environments, were exposed to chamber tests simulating gas/acid conditions of a sewer headspace environment. Using the Severe Wastewater Analysis Test (S.W.A.T.) chamber[7,8] with a vapor phase containing H_2S, CO_2, and CH_4 gases, and an immersion phase containing dilute H_2SO_4 and sodium chloride solution, researchers exposed panels to the sewer gases with periodic immersion in the solution (3 times daily, 15 minutes each) for 28 days.

The coated panels were measured for permeation resistance through electrochemical impedance spectroscopy (EIS) analysis after the 28-day exposure. EIS measures the electrical resistance (impedance) of a protective coating, considered related to its permeability property. Experimentally, impedance is determined as a function of the frequency of an applied AC voltage.[7,9] The data consist of a Bode plot of Log Z versus Log f, where Z is impedance in ohms•cm^2 and f is frequency in Hertz (0.05 Hz to 100 kHz). From the Bode plot, Log $Z_{0.1\ Hz}$ is determined by interpolation. The Log Z value at 0.1 Hz is tabulated and used as the basis of comparison between coatings and for monitoring the change of a coating as a function of exposure time to the test environment. Selection of Log $Z_{0.1\ Hz}$ represents a compromise between speed of

Table 1: Coating Types Common in Wastewater Protection, Subjected to the S.W.A.T

Test Conditions: Sewer Gases: H_2S, CO_2, CH_4; Solution: H_2SO_4, NaCl; Temperature: 65° C

System	Volume Solids	DFT	EIS Impedance Analysis (Log Z) at 0.1 Hz (Ohms•cm²)		Retained Impedance (permeation resistance)
			Pre-test	Post-test (28 days)	
Polyamide Epoxy	55%	19	10.2	0	0%
Polyamidoamine Epoxy	70%	13	9.4	0	0%
Coal Tar Epoxy	75%	33	10.8	0	0%
Cycloaliphatic Amine Epoxy	80%	21	9.5	0	0%
Cycloaliphatic Amine Epoxy	80%	17	10.2	0	0%
Novolac Epoxy	100%	12	10.9	0	0%
Amine Epoxy Mortar	100%	141	11.3	8.1	72%
Amine Epoxy Mortar	100%	119	11.4	7.3	64%
Amine Epoxy Mortar	100%	128	11.3	9.9	88%
Aromatic Polyurethane Fast-Set	100%	42	11.6	7.6	66%

Table 2: Sewer Gas Levels by Site (ppm)

Sewer Gas Levels by Site (ppm)			
	H_2S	CO_2	CH_4
Central Florida	78	11,700	6,000
Northwestern US	6	545	1,500
New England	14	1,550	2,000
Rocky Mountain US	328	1,910	2,500
Midwestern US	256	1,178	1,625
South Texas	590	17,520	4,000
Coastal Virginia	660	3,000	12,000
Average	**276**	**5,343**	**4,232**
Median	*256*	*1,910*	*2,500*

analysis and the selection of a frequency at which differences in coating performance can be reliably determined. Any reduction of a coating's impedance is related to the nature of the polymer, its density and fillers. Although dry film thickness (dft) can also influence impedance, the authors feel that dft is secondary, as evidenced by comparing the coal tar epoxy with the aromatic polyurethane and amine epoxy mortars, all having comparable film thicknesses yet different post-test impedance results, as seen in Table 1.

Because so little was known about the actual levels of sewer gases in typical U.S. wastewater collection systems across the U.S. and the gases' effect on high-performance coatings, the authors began a study in 2007 to measure sewer gas concentrations and study their effects on various traditional and emerging protective coatings technologies. The field study began with four testing sites but now has seven testing sites. The sites were chosen because they all had a history of severe biogenic sulfide corrosion and they represented different geographic locations and climates in the country. The current testing sites are in North Central Florida, Northwestern U.S., New England, Rocky Mountain U.S., coastal Virginia, Midwestern U.S., and South Texas.

The purpose of the investigation is two-fold: to measure the gas levels in the severe wastewater headspace environments and to study the effects of these sewer environments on typical protective coatings systems. The expectation is to gain a better understanding of the sewer gases present in sewerage structures and connect them to in situ biogenic corrosion and sewer gas attack. Although testing has yet to be concluded for any of the sites, enough usable data has been collected from them to obtain a general picture of the sewer gas concentrations in a "typical" severe wastewater headspace environment.

To date, a total of 17 sets of sewer air measurements have been taken at the seven testing sites. Researchers gathered grab samples of the sewer atmospheres with a remote multi-gas detector and a methane meter. Additional measurements have been taken by municipal wastewater treatment plant staff and others at some of the sites as needed, using a gas sampling pump or an H_2S logger. The three main sewer gases detected are hydrogen sulfide, carbon dioxide, and methane. Although attempts have also been made to measure concentrations of ammonia (NH_3), sulfur dioxide (SO_2), nitrous oxide (N_2O), and other sewer gases thought to be present, no significant levels have been detected in this study. The main gas composition by testing site, to date, is presented in Table 2, and the mean sewer gas mixture is given in Fig. 3.

The average gas concentrations are noteworthy because they provide a model for a sewer gas mixture in typical domestic wastewater conveyance head-

Fig. 4: Typical testing site with carbon steel and concrete samples suspended in severe wastewater headspace environment.

space environments across the U.S. Although $H_2S/CO_2/CH_4$ gas compositions varied within the testing sites, the general findings reveal that carbon dioxide comprises the overall majority of the sewer gas followed closely by methane gas (although the median values were reversed, with methane comprising the majority). Moreover, H_2S levels consistently composed only a small portion (less than 10 percent) of the overall sewer gas mixture found at each site. Added research found many factors influencing the varying sewer gas levels, such as wastewater detention times, waste temperatures, BOD, and industrial effluents. Nevertheless, the average gas mixture has proven to be representative of all testing sites in terms of the gases' relationship to one another. Once more is learned about the gas mixture, the data can be used for accelerated wastewater laboratory testing for coatings, such as the S.W.A.T.

Field Study: Proof Is in the Sewers

To test the authors' hypothesis that corrosion protection of protective coatings is altered by exposure to sewer gases and by the composition of the corrosive reagents in domestic wastewater conveyance and treatment structures, coated steel and concrete panels were suspended from stainless steel racks into the headspaces of each site (Fig. 4). Six steel coupons (4 in. x 12 in. x 1/8 in.) and five concrete cylinder coupons (3 in. x 8 in.) were prepared and coated with various protective coatings systems commonly used for wastewater corrosion protection. The generic types and target thicknesses are presented in Table 3; actual thicknesses may vary slightly on in situ panels. As a control, one uncoated (blank) concrete cylinder panel was simultaneously exposed to the environment. The panels were removed after 12 months' constant exposure and evaluated for permeation resistance and visible degradation.

The performance measures of the candidate protective coating system for this in situ study are based on the retained properties of permeability as well as a visual inspection of the film. The importance of these performance properties are explained below.

• *Permeability Analyses*—Protective coatings act as a barrier material separating the corrosive service environment from the substrate. Coatings which allow low permeation are assumed to offer better substrate protection within severe wastewater headspace environments. For the coated steel panels, permeability is measured using EIS analysis techniques to quantitatively measure the

Table 3: Field Exposure Panels, Typical

	Description	DFT (mils)*
Steel	Polyamide Epoxy, 2 coats	12
	Polyamide Epoxy Coal-Tar, 2 coats	18
	Fiber-reinforced Polyamine Epoxy	75
	Aromatic Polyurethane Hybrid	75
	Novolac Epoxy, 2 coats	12
	Polyamine Epoxy Mortar	125
Concrete**	Polyamide Epoxy, 2 coats	12
	Fiber-reinforced Polyamine Epoxy	75
	Novolac Epoxy, 2 coats	12
	Aromatic Polyurethane Hybrid	75
	Polyamine Epoxy Mortar	125
	Concrete Control (uncoated)	n/a

* Target dry film thickness (DFT) for each panel.

** All panels received parge coat of an epoxy cementitious resurfacer to fill bugholes and level surface prior to topcoating.

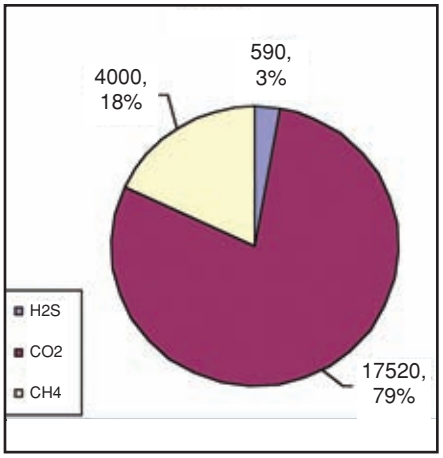


Fig. 5: Mean gas mixture South TX (ppm)

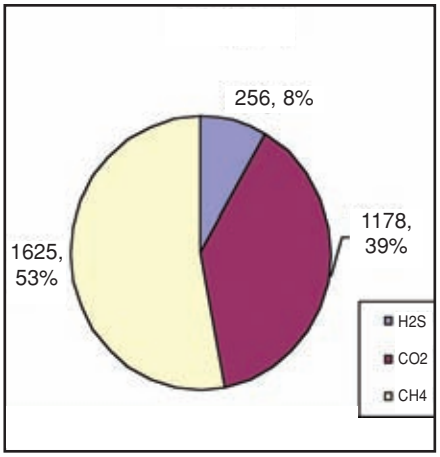


Fig. 6: Mean gas mixture, Midwestern U.S. (ppm)

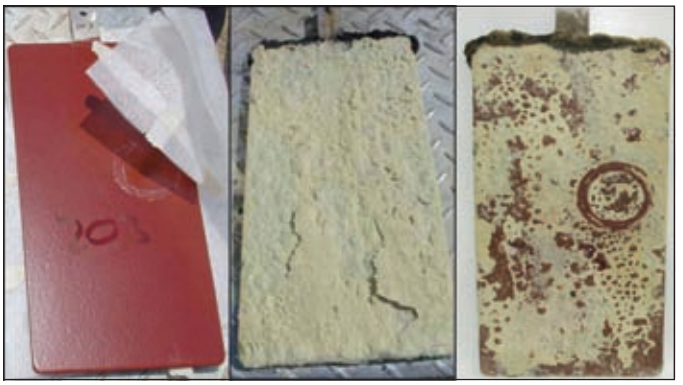


Fig. 7: South TX: 55% solids by volume polyamide epoxy applied at 11 mils DFT to carbon steel panel before 12-month exposure (left), following 12-month exposure (middle), following 12-month exposure, cleaned (right). Note heavy sulfur crust (middle) and ubiquitous blistering on cleaned panel (right).

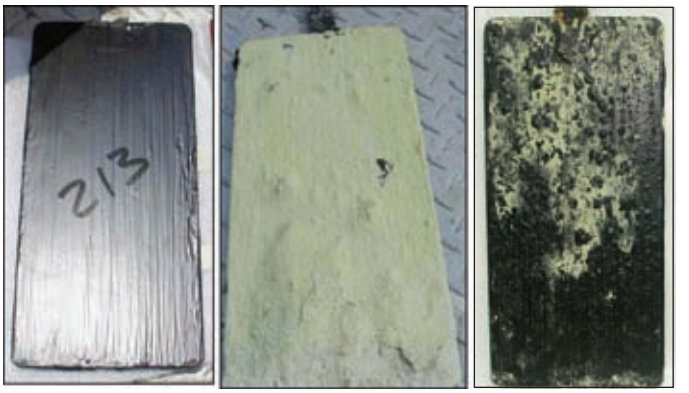


Fig. 8: South TX: A 75% solids by volume coal tar epoxy applied to carbon steel panel at 22 mils DFT before 12-month exposure (left), following 12-month exposure (middle), following cleaning (right). Note heavy sulfur crust (middle) and extensive blistering on cleaned panel (right).

polymer's barrier protection determined by the polymer's electrical resistance. EIS measurements are taken before and after approximately 365 days field exposure. A reduction in the EIS impedance measurement suggests the polymer is negatively affected, via permeation, by the severe wastewater headspace environments.

• Permeation was also measured on the cross sections of the coated concrete cylinder specimens using digitally enhanced optical microscopy. When the cross section of the coated concrete cylinder is viewed through a 100X stereo microscope with digital imaging, permeation is observed as discoloration of the film.

• *Visual Inspection*—Protective coatings should not blister, check, crack, or allow corrosion of the substrate when exposed to severe wastewater environments. Polymers that retain film quality are assumed to offer better substrate protection. Visual inspection of the panels is conducted using ASTM methods for rating blistering, rusting, checking and cracking.

A brief description of the one year exposure data from the South TX and Midwestern U.S. field sites is presented below. Due to limited space, specific data from the other sites is being withheld from this article but influence the authors' overall conclusion.

The South TX in situ testing site is the most severe testing site in terms of abnormally concentrated sewer air and accelerated pace of corrosion that was and continues to take place there. Although it was known previously that the H_2S levels in the headspace were elevated, municipal employees had not attempted to detect other sewer gases. When the authors began testing in 2007 one of the top priorities was to gain a better picture of the sewer gas mixture that was responsible for attacking their particular manhole structure.

Fig. 9: Midwestern US: Polyamide epoxy applied to carbon steel panel at 11 mils DFT before 12-month exposure (left) and following 12-month exposure, cleaned (right). Note moderate blistering following exposure.

Fig. 10: Midwestern US: A 75% volume solids coal tar epoxy applied to carbon steel panel at 15 mils DFT before 12-month exposure (left) and following 12-month exposure, cleaned (right).

The average of five H_2S readings in South TX was 590 ppm, which is considered by the authors as extremely elevated, even for severe wastewater headspaces (Fig. 5). In addition, the averages of CO_2 and CH_4 were also extremely concentrated registering an average of 17,520 ppm and 4,000 ppm, respectively. This particular mixture of sewer gases has proven to be highly corrosive with the three key gases ostensibly working together to penetrate protective coatings and deteriorate both concrete and steel panels.

In Midwestern U.S., the site chosen was an influent channel at the city's main wastewater treatment plant. The influent structure is typical of similar treatment facilities and was chosen to represent a typical sewer gas mixture. Unlike the South TX testing site, the Midwestern U.S.

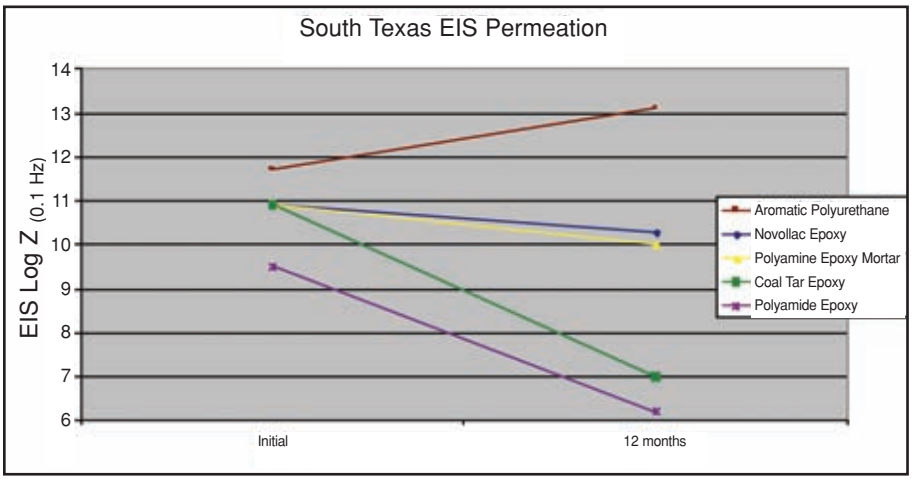


Fig. 11: Initial and 12-month EIS Analysis on steel panels exposed in situ.

site only appeared to experience moderate corrosion to uncoated concrete and cast iron surfaces. But septic wastewater entering the wastewater treatment plant influent channel contributed to consistently high concentrations of H_2S gas, regularly ranging from 200–250 ppm.

The average of four H_2S readings in Midwestern U.S. was 256 ppm (Fig. 6). Although considerably lower than South TX this is still high enough to be considered by the authors as a severe level. It is slightly higher (8%) than the average H_2S level from the entire test samples (3%). The other gases measured at considerably lower concentrations than South Texas and slightly lower than the averages. CO_2 registered at 1,176 ppm and CH_4 at 1,625 ppm.

The panels were removed from their respective sites for evaluation following twelve months exposure (Figs. 7 and 8). One notable difference between the panels was the heavy yellow insoluble sulfur precipitate (crust) on the South TX panels (Figs. 9 and 10). The surface pH was measured above 4.0 on these panels, similar to Midwestern US panels not exhibiting sulfur crust, again, suggesting that sulfuric acid formation is extremely dilute.

The steel panels coated with the polyamide epoxy were observed blistering from both sites following 12 months in situ exposures. This corresponds to the substantial drop in impedance reflected in Figs. 11 and 12. The coal tar epoxy panel exhibited blistering and a

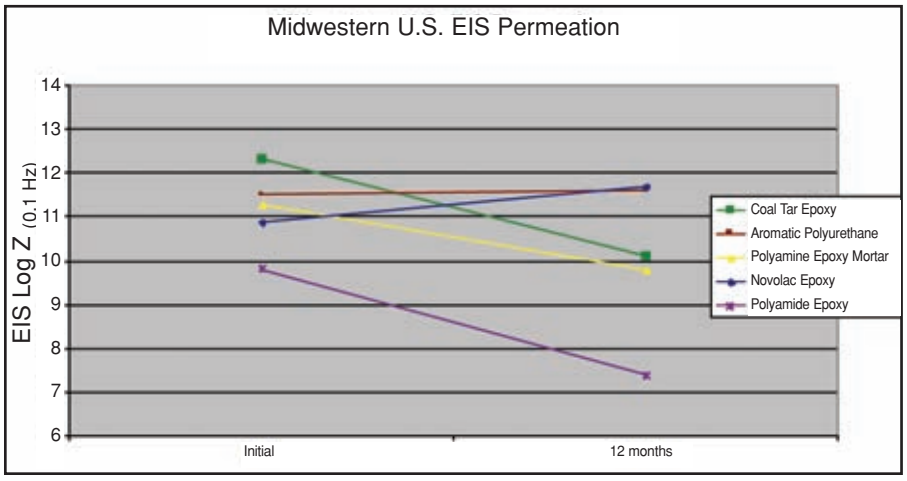


Fig. 12: Initial and 12-month EIS Analysis on steel panels exposed in situ.

Fig. 13: South TX: 55% volume solids polyamide epoxy applied at 17 mils DFT to concrete cylinder panel before 12-month exposure (left) and following 12-month exposure (right).

sharp drop in EIS from the South TX site, but only discoloration and a flatter drop in impedance were observed from the Midwestern US site. The other products, from both sites, showed much higher retained impedance and no signs of visual degradation following 12 months. The panels will be evaluated following an additional 12 months' exposure.

Permeation was also conducted on the coated concrete specimens using optical microscopy analysis of the coated cross section of the panel. Measurement points were taken at four, evenly divided locations (e.g., 3, 6, 9, 12 o'clock positions) circumferentially along cross section (Fig. 13). A 100X stereo microscope with digital imaging measured permeation of the film, via discoloration, at each of the four measurement points (Fig. 14 and Table 4).

Besides hydrogen sulfide gas, little is

Table 4: Polyamide EP Concrete Panel: South TX

Position (o'clock)	Permeation (mils)	Total DFT (mils)
3	4.69	18.3
6	3.38	20.5
9	4.04	16.3
12	3.04	15.7
AVG.	3.79	17.3

known about how other sewer gases work together to permeate a coating and reduce its ability to protect the substrate. It is the authors' belief that hydrogen sulfide, carbon dioxide and methane act synergistically with dilute sulfuric acid to permeate protective coatings as well as the underlying substrates they protect. Field studies in various wastewater collection structures have demonstrated that higher concentrations of sewer gases are linked to increased rates of failure of organic coatings and subsequent corrosion of the substrate. Therefore, based on the authors' research, the most important factor in the success of a protective coating is its ability to resist permeation of gases, primarily. The authors' research continues and will be reported later. For more details on the research to date, contact the authors.

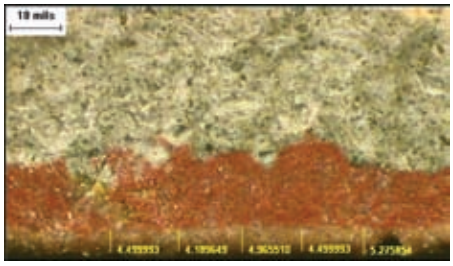


Fig. 14: South TX: Optical microscopy measurements of permeation at the 3 o'clock position of the polyamide epoxy cross section.

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Developments in Pipeline Protection Reviewed

By Brian Goldie, *JPCL*

All photos courtesy of Stopaq Europe B.V.

Recent developments in pipeline protection were discussed at the 18th International Conference on Pipeline Protection, organized by the BHR Group and held in Antwerp, Belgium (November 4–6, 2009).

More than 20 presentations were given, with fusion-bonded epoxy (FBE) coatings being the primary technology discussed in papers covering different aspects of the effect of temperature on the application of FBE powders. Other main topics discussed were three-layer polyolefin coatings (LPO), field joint coatings, and the rehabilitation of existing pipelines.

This article summarizes some of the developments presented.

Fusion-Bonded Epoxy (FBE)

Application-related problems were the theme for the presentations on FBE. The effect of a novel chemical, non-toxic pre-treatment on increased adhesion of the FBE layer was described in a paper by G. Gaillard and J.L. Bouliez, of BS Coatings (France). According to the authors, the long-term anticorrosion protection of buried pipelines is linked to the good barrier properties of the coating, which also needs to have good adhesion to withstand severe conditions of high temperature and humidity.

It has already been determined that for FBE, good barrier performance is due to its hydrophilic nature and the resulting ability to maintain a high glass transition temperature (Tg), despite humid and hot surroundings. The key to maintaining adhesion under such conditions is good surface preparation, usually based on chemical pre-treatment of blasted steel with chromate- or phosphate-based products. The authors described the development of a faster, solvent-free, non-toxic chemical pre-treatment. They then demonstrated its effect on the adhesion of FBE coatings immersed in hot water.

The development of new FBE products was the subject of two presentations. J.K. Pratt and M.L. Mallozzi of the 3M Company (USA) discussed the development of an FBE coating that could be either a stand-alone coating or a primer in a multi-layer system. The authors reported that the new FBE could be applied at temperatures as low as 180 C (356 F). The authors also explained that for FBE coatings to achieve optimum performance, they need to be applied at temperatures in excess of 230 C (446 F) for single-layer systems and 200 C (392 F) for three-layer systems. High-strength steels have started to be used for pipeline construction, but most of these grades cannot withstand pre-heat temperatures above 200 C (392 F). The temperature limit puts constraints on the coating to be used. This new FBE coating provides a solution for protecting pipeline made of high strength steels. The authors also highlighted the two additional benefits of the coating—enhanced line speeds and energy savings.

M. Patterson, S. Drew, and V. Boerschel of AkzoNobel Powder Coatings GmbH (Germany) described the development of a mid-Tg coating suitable for application on high-temperature pipelines (120–150 C [248–302 F]), but still having good flexibility and good adhesion. As the exploration and extraction of oil from fields at increasing depths continues, pipelines need to carry these fluids at temperatures in the 120–150 C (248–302 F) range. The authors noted that it is widely accepted that the Tg of a coating should be at least 10 degrees C (18 degrees F) above the operating temperature of the pipeline, but that few FBE coatings are commercially available with Tgs in the 130–160 C (266–320 F) range. The few that exist have limited flexibility, particularly at low temperatures. The low flexibility limits the range of environmental conditions that pipelines coated with the products can withstand. The paper presented the development of a range of mid-Tg FBE powder coatings (Tgs in the 130-150 C [266–320 F] range) that had demonstrated excellent adhesion and mechanical properties down to -60 C (-76 F).

The use of kinetic and rheological tools to predict melt viscosity and curing behavior of FBE powder was presented in a paper by M.A. Shafi et al., The Dow Chemical Company (USA). The authors explained how the approach could be used to select the appropriate powder for the specific application. During the application of FBE coating, the powder must melt, flow, and cure before quenching. The minimum melt viscosity of the FBE powder is critical. Melt viscosity influences the ability of the material to form a uniform layer on the substrate before it gels. Consequently, achieving the correct balance between the rheology and cure kinetics is important to maximize the coating performance.

Three-Layer Polyolefin Coatings

The presentations on three-layer polyolefin (LPO) coatings included the results of two studies. A. Hussain and C. Pflugbeil, Comtech GmbH (Germany), described the findings of an analytical study of three-layer polyethylene coatings with emphasis on the FBE primer/substrate interface.

A team of experts from the US and Canada reported results from an extensive study (sponsored by the US Department of Transportation [DOT]) of the disbondment of the FBE layer from the steel surface and topcoat cracking. According to the authors of the DOT study, there have been several incidents of coating disbondment at the FBE-steel interface of three-layer polyolefin coatings and polypropylene cracking reported in the literature. The research analyzed the residual stresses in LPO coating systems and how these stresses affect coating disbondment and the polypropylene topcoating cracking. The high coefficient of thermal expansion of three-layer LPO coating materials generates high residual stresses, which remain high due to their low water absorption and permeability. The three-layer LPO coating can delaminate from the steel substrate if the FBE/steel interfacial strength becomes low. This reduced strength could be due to poor surface preparation, under-cure, or thermo-oxidative or hydrothermal ageing, and the delamination is more severe if the polyolefin layer is thicker. The polypropylene topcoat degrades by thermo-oxidation either during the extrusion process or in storage under direct sunlight. The residual stresses will cause cracking of the polypropylene if its strength retention becomes lower than the residual stresses.

A further presentation from O. Henschke, Dow Europe GmbH (Switzerland), described a new three-layer polyethylene coating suitable for high temperature pipeline applications. The system is based on a maleic anhydride-grafted adhesive resin with excellent peel strength at high-temperatures and a high-density polyethylene topcoat.

Field Joint Coatings

Field coatings are traditionally thought of as the weak link in corrosion protection of pipelines. Two presentations addressed this concern. The paper by M. Mallozzi and M. Perez, the 3M Company (USA), described the development of a new coating system, based on an interpenetrating network of linear polyolefins and monomeric epoxy. The coating has the ability to adhere to the FBE primer without the need of a polyolefin adhesive. The network coating is also compatible with polypropylene topcoats to give a seamless system between the field joint coating and the factory applied pipe coating.

The second paper, by D. Tailor and E. Tacoma of Canusa-CPS (Canada), reviewed the recent installation of a 24-inch gas pipeline across the Mediterranean Sea. The authors focused on the field joint coating solutions adopted for onshore, shallow water, and deep-water sections. The solutions involved a number of joint system designs and installation innovations to meet the project requirements.

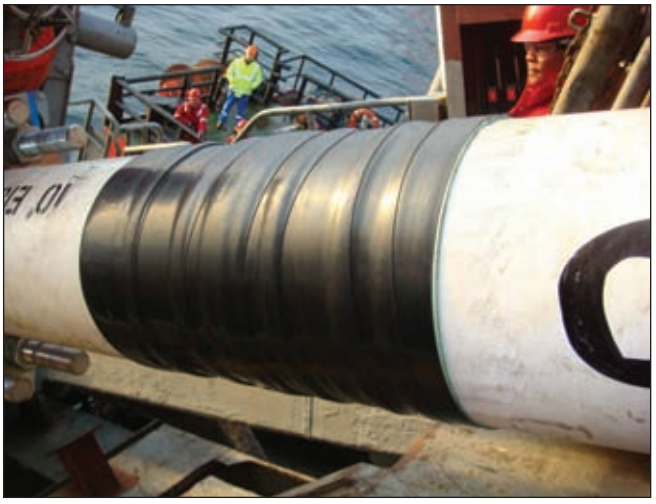
Maintenance and Rehabilitation

Pipeline rehabilitation for the 21st century was the subject of a presentation from T.J.M. Bond et al. of Pipestream® Inc (USA) and Xodus Group Ltd (UK). The authors described a method to continuously apply reinforcing steel strips to existing corroded pipelines in the ground, while they are still operating, to reinstate them to their original condition. According to the authors, the benefits to the owners of continuous reinforcement from one valve to the next

are greater throughput and higher operating pressures with renewed asset integrity for the design life.

The repair system has three components.

- Ultra-high-strength steel (UHSS) strip helically wrapped round the defect area and factory coated with FBE for corrosion protection.
- Heat- and chemical-resistant epoxy adhesive, manually applied to fill any corrosion pits and to bridge weld caps. This adhesive allows direct transfer of hoop stress to the reinforcing strips. A different epoxy is used to bond the strips to the pipe.
- Concentrically-wrapped terminating UHSS strips to retain the ends of the reinforcing strips and prevent them from becoming unwound or disbonded from the pipe. These strips are also coated with FBE for corrosion protection.



The authors reported a demonstration project carried out to confirm the efficiency and viability of the concept. Defects were introduced into a 10-inch-long New Process Steel pipe, 5.9 mm wall thickness x 42 inches inside diameter, by removing 4.8 mm of wall thickness. These defects were rehabilitated with a total thickness of 2.2 mm of UHSS strip. The repair proved to be stronger than the original pipe, with burst pressures well in excess of 200 bar (~3,000 psi).

An alternative rehabilitation process was explained by M. Schad et al. of Denso GmbH (Germany). They described the use of state-of-the-art tape wrappings and polyurethane coatings as economical solutions for a variety of project requirements. This detailed presentation covered a range of pipeline coatings in use today that have to be rehabilitated, including bitumen, coal tars, PVC tape with hot-melt or bituminous adhesives and PE tapes with hot-melt or butyl rubber adhesives. The authors discussed material properties needed for the rehabilitation process and how they can be met by three-ply tapes or hot-spray applied polyurethane. The use of self-amalgamating three-ply tapes in the refurbishment of a 40-inch oil pipeline is also described in detail. The authors concluded that for the refurbishment of pipelines operating up to 50 C, three-ply tapes offer the widest range to meet the many conditions on site and can be applied at temperatures from −35 to + 60 C. For higher operating temperatures or for increased mechanical resistance, thermosetting compounds based on polyurethane or epoxy would be a better choice, the authors said.

The renovation of the pumped water storage system of the Wehr hydropower station in southern Germany was described by A. Zwangzinger of Corro Tec Korrosionsschultz Vertriebsges (Germany) and co-authors from the power station owners and energy supply company. The plant had been in operation for 30 years. Over 12 months, approximately 41,000 m^2 of steel surfaces were renovated. The old tar-based coating was removed by abrasive blasting and recoated with two to three coats of a solvent-free epoxy system. The authors concluded that this system, compared to more conventional products, improved the quality of the recoating and reduced the time spent on the renovation, both critical aspects for the owners.

F.A. Orr et al. of Applied Concrete Systems Partnership (UK) described the use of a rapid hardening concrete cloth for pipeline protection and also as an aid for access in difficult terrains. The concrete cloth consists of a pre-blended cement mix held between two layers of polypropylene and PET fibers.The cloth was initially developed to produce tough, self-supporting, demountable shelters for military and humanitarian aid deployment. The cement blend within the cloth matrix was designed to match the permeability of the carrier cloth to permit water to penetrate to the interior and subsequently hydrate the cement, producing a durable, stable structure. The hardening is achieved by either passing the impregnated cloth through a tank of water as the cloth is unwound or by placing the cloth as a sheet in the required position and hosing the set-up with water.

The authors gave examples of using the concrete cloth as a pipe coating to provide a rock shield during back-fill; or to act as a weight coating, or to provide temporary (or permanent) bunds, ditches, or hard standing for tracked vehicles during pipelaying. According to the authors, the system allows flexibility of application, coupled with the simplicity and practicality of a product on a roll to provide concrete protective coatings.

Further Information

The complete set of papers presented at the conference can be obtained from the organizers, the BHR Group, www.bhrconferences.com.

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Photo courtesy of the Las Vegas News Bureau

SSPC's New Show Debuts in VEGAS

For the first time since 2003, SSPC: The Society for Protective Coatings will hold its own show, SSPC 2011 featuring GreenCOAT, in Las Vegas, NV, on January 31–February 3, 2011. According to SSPC, it is the only show that features 100% protective, marine, and industrial coatings and caters to painting contractors, facility owners, coating manufacturers, equipment suppliers, inspectors, and engineers to address protective and marine coatings issues as well as trends in environmental solutions for industrial projects.

Here is a preview of special events and workshops for SSPC 2011 featuring GreenCOAT.

Check www.sspc.org/sspc2011 and upcoming issues of *JPCL* for updates on events, workshops, and much, much more.

Events

Special events for SSPC 2011 featuring GreenCOAT span the entire conference, including the ones listed below.

• 1st Timers' Reception, Monday, January 31, 4:30–5:30 p.m.: Is this your first SSPC meeting? Join President Russ Brown, Board members, and SSPC in a social setting at the First Annual Greenhorn Reception.

• Welcome Reception, Monday, January 31, 5:30–7:30 p.m.

• Exhibit Hall Reception, Tuesday, February 1, 5:00–8:00 p.m.: Make the most of your exhibit time by pre-planning your visit. Browse the online list of exhibitors. Future issues of *JPCL* will provide exhibitor descriptions, booth numbers, and contact information.

• Awards Luncheon, Monday, January 31, 11:30 a.m.: SSPC President Russ Brown, the Board of Governors, and SSPC Executive Director Bill Shoup will honor the 2011 award recipients. Among other awards, the 5th Annual SSPC Structure Awards will be presented. This is a ticketed event. A ticket will be provided in the registration packet.

• Protective Coatings Specialists Breakfast, Wednesday, February 2, 7:15–8:30 a.m.: This event is invitation only for all SSPC PCS-certified professionals. The 4th Annual PCS Breakfast offers an opportunity to network with peers and will include an update from the Individual Certification Task Group.

• Facility Owners Breakfast and Peer Group Breakfast Forums, Thursday, February 3, 8:30–10:00 a.m.

• Guest Program: SSPC 2011 will offer two tours for spouses and guests. All registrations must be made in advance.

The first guest event is the Las Vegas City Highlights Tour on Tuesday,

Photo courtesy of the Las Vegas News Bureau

February 1, from 9:00 a.m.–Noon. Attendees will see the Las Vegas Strip, famous marquees, hotels, Freemont Street, and Grand Canal Shoppes.

The second tour goes to Red Rock Canyon & Spring Mountain Ranch on Wednesday, February 2, from 8:00 a.m.– Noon. From the Red Rock visitor center, the group will take a 13-mile scenic drive to the magnificent rock formations and learn the history of the Canyon. Attendees will then go to Spring Mountain Ranch Park, a 520-acre oasis.

Workshops

Attendees will be able to learn or review a range of topics at workshops planned for the conference. A preliminary list, with descriptions when available, follows.

Monday, January 31

There are three workshops planned for Monday, January 31.

- 2:00–4:30 p.m., "Session 1: Workshop–Protective Coatings–An Overview," presented by Chris Farschon, Tony Serdenes, Lloyd Smith, and Kirk Shields of Greenman-Pedersen, Inc.
- 2:00–4:30 p.m., "Session 2: Workshop–Failure Analysis of Paints and Coatings," presented by Dwight G. Weldon of Weldon Laboratories, Inc. and Gary Tinklenberg of Corrosion Control Consultants & Labs.

The instructors will present the methodology involved in solving coatings failures with topics that include what to look for at the job site, sample taking, and laboratory techniques. Case histories of actual failures will also be presented.

- 2:00–4:30 p.m., "Session 3: Workshop–An In-Depth Look at Standards Most Frequently Used By Industrial Painters," presented by Skip Vernon of Coating & Lining Technologies, Inc. and Michael Damiano of SSPC.

The instructors will explore all of the standards used by industrial painters, including a review of the basics and a focus on the more obscure requirements and ambiguities. The workshop will address what constitutes an industry standard, the contractual implications of specifying using only a standard, and the impact of secondary and tertiary references in standards.

Attention Exhibitors!

If you have registered to exhibit or are planning to and would like a free description of your company in *JPCL*'s December issue, the deadline for descriptions is October 8, 2010. Descriptions must be 25 words or less. *JPCL* reserves the right to edit for style, length, and content. Please send your information to Kate Jurik at jurik@sspc.org.

Wednesday, February 2

Two workshops are scheduled for Wednesday, with one in the morning and one in the afternoon. Details are below.

- 9:00–11:00 a.m., "Session 2: Workshop–Waterborne Technologies for Protective Coatings," presented by Leo Procopio and Thomas Tepe of the Dow Chemical Company.

The presenters will focus on the structure and chemistry of waterborne versus solvent coatings. Some topics to be covered in the workshop include how waterborne coatings form films, their performance features, and causes of and solutions for coating defects and failures.

- 3:00–5:00 p.m., "Session 4: Workshop–Failure Analysis of Paints and Coatings on Concrete," presented by Randy Nixon and Mark S. Schilling of Corrosion Probe, Inc..

This workshop will include presentations on the most common evaluations and testing for performing failure analysis for coatings on concrete. The most prevalent problems, such as high moisture vapor transmission, pinholing, outgassing, and poor surface preparation, will be discussed. Photos will provide examples of commonplace problems and the best evaluation methods.

Thursday, February 3

There is one workshop planned for the final day of the conference.

- 9:00–11:00 a.m., "Session 1: Workshop–Creating an Inspection Plan; Strategic Planning for the Coatings Inspector," presented by William D. Corbett of KTA-Tator, Inc. and Derrick Castle of the Kentucky Transportation Cabinet.

The instructors will describe the benefits and the processes associated with developing an inspection plan for an industrial coatings project. Participants will have an opportunity to prepare an inspection plan based on a tank or a bridge coating specification.

SSPC Releases Two New Coatings Standards

SSPC-Paint 42, Epoxy Polyamide/Polyamidoamine Primer, Performance-Based, was developed by SSPC's Epoxy Coatings Committee (C.1.3.C), chaired by Greg Girard of The Sherwin-Williams Company.

This is a new performance-based standard for a two-component epoxy coating for use as a primer on blast-cleaned steel. It includes requirements for flexibility, direct impact resistance, chemical resistance, and humidity resistance as well as for rusting, blistering, and scribe undercutting after exposure in a cyclic salt fog/UV exposure test cabinet.

The purpose of the standard is to give the specifier evaluation criteria that can be used to define requirements of an epoxy primer coating submitted for inclusion in the production specification and/or owner's Qualified Product List (QPL).

The standard is expected to be most useful to owners and specifiers who require a high-performance epoxy primer coating.

Coating System Standard SSPC-PS 28.02, Three-Coat Moisture-Cured Polyurethane Coating System, Performance Based, was developed by the Polyurethane Coatings Committee (C.1.3.D), chaired by consultant and former SSPC president Michael J. Masciale.

This standard contains performance requirements for a moisture-cured polyurethane coating system for use on steel substrates comprised of a zinc-rich, moisture-cured polyurethane primer meeting performance requirements of SSPC-Paint 40; a moisture-cured polyurethane intermediate coat meeting requirements of SSPC-Paint 41; and a moisture-cured aliphatic polyurea topcoat meeting requirements of SSPC-Paint 38.

The performance requirements for the coating system include minimum adhesion criteria for the primer to the substrate and for the intermediate and topcoat adhesion to the primer, as well as minimum requirements for rust, blister, and scribe evaluation of the three-coat system.

The standard also contains requirements for three performance levels based on the color and gloss retention of the topcoat. For example, a specifier who desired maximum gloss and color retention for a three-coat, moisture-cured polyurethane coating system would require conformance to PS 28.02 Level 3 requirements.

The coating system utilizes three single-package moisture-cure urethane coatings that are being used as a system in the field, especially in high-humidity environments, and can be used in cool-weather applications. This standard may be used to define requirements of a coating system submitted for inclusion in project specifications and/or QPLs.

Industry segments likely to use this standard include highways and bridges (rapid recoat times, high humidity environments); water-treatment facilities (high humidity environments); and general industrial (refineries, utilities, and various high humidity applications).

For more information, visit www.sspc.org.

SSPC held its PCI Course in Singapore for 15 students.

PCI Course Held in Singapore

SSPC held its Protective Coatings Inspector (PCI) Course June 21–July 2 in Singapore. Abdul Quim and Muniandi Dewadas were the instructors for the course, which was held as a night class. Fifteen students participated.

SSPC Announces Qatar Local Chapter

SSPC members from Qatar met with SSPC Executive Director Bill Shoup, UAE Chair Pradeep Radhakrishna, and the members of the UAE Local Chapter Board on June 29, 2010 in Abu Dhabi to draft a plan for the start of the Qatar Chapter.

Within weeks, the group completed the requirements and submitted their charter and petition to the SSPC Board of Governors for approval. On August 10, 2010, the SSPC Board approved the charter for the Qatar Chapter.

Chapter Chair Rehan Ahmed said, "We are truly grateful that SSPC has given the chapter due recognition, and we will endeavor to be the best SSPC chapter in the world."

The officers are: Chapter Chair, Rehan Ahmed, RasGas Co. Ltd.; Vice-Chair, Yasser Abu Elomrin, Qatar Petroleum; Secretary, Sreedharan Gopalkrishnan, Qatargas; and Treasurer, Jeevanandam Shanmugam, RasGas Company, Ltd.

SSPC Board to Meet in September

SSPC will hold its next Board of Governor's meeting on Wednesday, September 22, 2010 in Pittsburgh, PA.

The deadline for members and other interested parties to submit agenda

Continued

PolySpec Hosts BCI Course

PolySpec L.P. in Houston, TX, hosted the SSPC Bridge Coatings Inspector (BCI) Course on July 12–17. Six students attended the course, which was led by Ernst Toussaint.

Six students attended the SSPC BCI Course in Houston, TX.

items is September 17. Persons interested in addressing the Board must submit their name and topic by the same date.

Information should be sent to William Shoup, Executive Director, SSPC, 40 24th St., 6th Floor, Pittsburgh, PA 15222; phone: 412-281-2331, x2230; fax: 412-281-9992; e-mail: shoup@sspc.org.

Hampton Roads Chapter Plans Golf Outing

SSPC's Hampton Roads Chapter has planned a golf outing for October 8, 2010, at Sewell's Point Golf Course in Norfolk, VA. Contact Terry New at airbosn1@msn.com for more information about the golf outing.

Hotel Rate Reduced for SSPC 2011 Featuring GreenCOAT

SSPC has announced that the hotel room rate for SSPC 2011 featuring GreenCOAT, the new SSPC annual conference and exhibit, has been reduced until Sept. 17 to $139 per night.

The conference will be held in Las Vegas at the Mandalay Bay Hotel & Convention Center from Jan. 31–Feb. 3, 2011.

Staying at the conference hotel provides attendees with the benefit of after-hours networking and easy accessibility to meetings and sessions.

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Continued

SSPC UAE Chapter Holds Inaugural Meeting

Members of the SSPC UAE Chapter participate in the inaugural meeting on June 29, 2010.

The SSPC United Arab Emirates (UAE) Chapter held its inaugural meeting on June 29, 2010 in Abu Dhabi with more than 120 industry specialists from all sectors in attendance. The UAE Chapter was granted a charter on April 26, 2010. The event was sponsored by Jotun, Quad Technical Services, and Blastline.

Pradeep Radhakrishna, chairman of the chapter, and Bill Shoup, executive director of SSPC, opened the chapter meeting. Their presentations included information on the future plans for the chapter and a report on SSPC and its activities in the U.S. and worldwide. The technical part of the program was a presentation by Sherif Abdelmegeed of Jotun on "New Generations Topcoats—Polysiloxanes and High Solid Polyurethanes." The meeting concluded with a formal dinner and raffle prizes.

In addition to Mr. Radhakrishna, WGI Heavy Minerals, Inc., as the Chapter Chair, other officers include Ravishankar Nagarajan, Jotun UAE Ltd., Vice Chair; Munzir Khan, ZADCO, FI, Secretary; and Zeid Hawi, Mazrui & Hawi Painting Company, Treasurer.

The next event is a field trip to a local paint manufacturer, planned for some time in October. For details, contact Fernando Batista at batista@eim.ae.

For quick access to sspc.org on the go, download a barcode reader app on your smartphone, and capture the barcode.

WEFTEC Takes 83rd Conference to New Orleans

WEFTEC 2010, the 83rd annual technical exhibition and conference of the Water Environment Federation (WEF), will take place at the New Orleans Morial Convention Center in New Orleans, LA. The conference portion is scheduled for October 2–6, 2010, and the exhibition is set for October 4–6, 2010.

WEFTEC is the biggest meeting of its kind in North America and the world's largest annual water quality exhibition, drawing thousands of water quality professionals from around the world, according to the Federation. Those who attend WEFTEC include collection systems managers, consultants, equipment manufacturers and representatives, industrial water and wastewater professionals, public officials, water and wastewater utility managers, water and wastewater operators, and more.

There are 112 technical sessions and 35 workshops scheduled, addressing topics such as collection systems; membrane technologies; plant operations, treatment, and management; regulations and research; residuals and biosolids, water recycling, and more. In addition, there are also six facility tours planned throughout New Orleans. At WEFTEC 2010, attendees have the opportunity to earn up to 1.2 Continuing Education Units (CEUs), 17.5 Professional Development Hours (PDHs), and several contact hours.

Several technical sessions may be of interest to professionals in the industrial maintenance coatings field.

On Monday, October 4, from 1:30–5:00 p.m., session TS029: Managing in Challenging Times—Communicate and Reduce Costs will take place. The overall session is designed to teach the importance of communication in difficult economic times, along with ways some utilities are further reducing costs while still providing exceptional customer service. The first presentation is "Designing Communication—One Link at a Time." The entire session will

Continued

Photo courtesy of the New Orleans Metropolitan Convention and Visitors Bureau (New Orleans CVB)

be moderated by John O'Neil, with assistance from Bruce Husselbee.

TS067: Effective Rehabilitation and Unique Design is offered on Tuesday, October 5, from 1:30–5:00 p.m. The session contains top rated papers and covers effective sewer rehabilitation and unique design approaches applied to successful projects. The moderator is Barbara L. Swafford, and assistant moderators are Vicki Francis and Lindsay Tucker. The following are the planned presentations.

- 1:30 p.m., "Rehabilitating Eight Miles of Large Diameter Aging Infrastructure"
- 2:00 p.m., "Aging Infrastructure in Sensitive Areas"
- 2:30 p.m., "Novel Approach for Sewer Rehabilitation"
- 3:30 p.m., "Pressure Reducing Station (PRS) Evaluation Study"
- 4:00 p.m., "Behavior of Compressed Air Masses in Deep Tunnels Which May Blow Off Manhole Covers"
- 4:30 p.m., "Tractive Force Design for Self-Cleansing of Sanitary Sewers Evaluating Design Guidance Based on the Performance of Existing Sewers"

For the complete schedule and up-to-date information, visit www.weftec.org.

Exhibitors

At press time, over 970 exhibitors were signed up for WEFTEC 2010. The following is a list of coatings and related companies that serve the water and wastewater industry.

- A.W. Chesterton Company (Groveland, MA) provides sealing devices, wear, and corrosion coatings for the industry. Booth 6745, I2 Hall
- Arizona Instrument, LLC (Chandler, AZ) designs, manufactures, and markets Jerome portable and fixed gas analyzers for mercury vapor and hydrogen sulfide detection. Booth 3200, F Hall
- Atlas Copco Compressors LLC (Rock Hill, SC) offers an energy-efficient range of ZS screw blowers. Booth 1151, D Hall
- C.I.M. Industries, Inc. (Peterborough, NH) offers elastomeric linings to bridge cracks in concrete while maintaining a waterproofing barrier. Booth 7138, J Hall
- Carboline Company (Saint Louis, MO) provides protective coatings, linings, and manhole rehabilitation products for the wastewater industry. Booth 3076, F Hall
- Denso (Houston, TX) has been in business for over 125 years and has manu-

facturing plants worldwide for corrosion prevention products. Booth 901, C Hall

• Devoe High Performance Coatings (Strongsville, OH), a brand of International Paint, offers a full line of coatings for asset protection and technical expertise in corrosion protection. Booth 7639, J Hall

• ENECON Corporation (Doylestown, PA) offers high-performance polymer systems for rebuilding, resurfacing, and protecting all types of fluid flow machinery, equipment, and structures. Booth 7820, J Hall

• Gardner Denver, Inc. (Quincy, IL) offers a complete source of positive displacement blowers with Sutorbilt, DuroFlow, CycloBlower, and HeliFlow. Booth 2851, F Hall

• Induron Coatings Inc. (Birmingham, AL) makes Protecto 401 Ceramic Epoxy Lining for protection of ductile iron pipe used in sewer service. Booth 3246, F Hall

• Insituform Technologies, Inc. (Chesterfield, MO) provides proprietary technologies and services for pipeline protection including corrosion protection for rehabilitating sewer, water, energy, and mining piping systems. Booth 5019, H Hall

• International Paint (Strongsville, OH) includes Devoe High Performance Coatings, Enviroline, and Ceilcote and is committed to technical expertise in corrosion protection. Booth 7639, J Hall

• ITW Futura Coatings (Saint Louis, MO) manufactures high-performance polyurethane, polyurea, epoxy, epoxy novolac, and vinyl ester coatings and linings for steel and concrete tanks and pipes. Booth 7416, J Hall

• Kerneos Inc. (Chesapeake, VA) offers SewperCoat®, a 100% calcium aluminate material designed for the municipal wastewater industry to provide structural and corrosion-resistant protection against biogenic corrosion (H2S). Booth 2775, E Hall

Continued

• NACE International, The Corrosion Society (Houston, TX), is large, well-recognized, and international association for corrosion control, providing standards, training, conferences, and publications that address corrosion issues. Booth 1430, D Hall

• PPG Protective & Marine Coatings (Pittsburgh, PA) offers high-performance coatings solutions for the water and wastewater industries. Booth 609, C Hall

• Raven Lining Systems (Broken Arrow, OK) provides coating solutions for protecting and renewing water/wastewater infrastructure through a Certified Applicator network. Booth 3309, F Hall

• Rhino Linings Corporation (San Diego, CA) offers polyurethane-polyurea coatings to protect water and wastewater treatment facilities from corrosion. Booth 1058, D Hall

• Sauereisen, Inc. (Pittsburgh, PA) specializes in protective materials for municipal wastewater infrastructure with products including substrate repair materials, cementitious sealants, and polymer linings. Booth 1602, D Hall

• The Sherwin-Williams Company (Cleveland, OH) offers a line of tank linings and coatings systems for wastewater treatment environments, potable water storage facilities, sewer infrastructure rehabilitation, and secondary containment. Booth 6052, I1 Hall

• Spectrashield Liner Systems (Jacksonville, FL) manufactures the SpectraShield® liner, a spray-applied, multi-layered, silicone modified polyurea system used to rehabilitate and protect wastewater structures such as wet wells. Booth 5056

• Sprayroq, Inc. (Birmingham, AL) developed SprayWall® (structural) and SprayshieldGreen® (elastomeric) rehabilitative lining systems, which are installed by a network of trained, certified licensees. Booth 6547, I1 Hall

• SSPC: The Society for Protective Coatings (Pittsburgh, PA) will exhibit information about upcoming conferences and training courses, the advantages of its professional certification programs, and the benefits of SSPC membership. Booth 7123, J Hall

• Sunbelt Rentals (Fort Mill, SC) has Pump & Power specialists to deliver a wide range of pumps and accessories from more than 24 locations nationwide. Booth 618, C Hall

• Tnemec Company, Inc. (Kansas City, MO) is a provider of protective coatings and linings for the wastewater industry. Booth 5339, H Hall

• Wasser (Auburn, WA) is a large producer of and authority on single component moisture-cured urethane. Booth 2463, E Hall

associations

NACE Names New Executive Director

NACE International, the Corrosion Society, has named Robert (Bob) H. Chalker as its new Executive Director, effective Aug. 4.

Chalker has served for 18 months as managing director and CEO of ASQ Global, a wholly owned subsidiary of the American Society for Quality. He has extensive experience in strategic planning and global development.

Prior to joining ASQ Global in 2009, Chalker served for five years as Director, Global Development and Strategic Planning, at SAE International. He was responsible for the society's $57 million in revenues and for setting its sales and marketing direction. He also led the customer service team, membership and section activities, pre-professional educational initiatives, and the SAE Foundation.

From 1981 to 2003, Chalker worked for Delphi Corp., where he held positions in sales, engineering, and manufacturing. His last position was sales director and global customer manager.

Chalker holds an MBA from Oakland University (Rochester, MI) and a Bachelor's degree in Industrial Engineering from the University of Cincinnati. He and his wife Kim will be relocating to Houston, TX. They have two grown children.

NACE International, based in Houston, has more than 23,000 members in 110 countries.

ASTM Revises 2 Adhesion Test Methods, Tests a Third

ASTM International has revised Standards D2197 and D4541, regarding test methods for adhesion of organic coatings and for pull-off strength of coatings.

D2197, Standard Test Method for Adhesion of Organic Coatings by Scrape Adhesion, developed by Subcommittee D01.23 (Physical Properties of Applied Paint Films), has been found useful in differentiating the degree of adhesion of coatings to substrates. It provides relative ratings for a series of coated panels exhibiting significant differences in adhesion.

Studies performed in a laboratory using the loop stylus specified in the previous edition showed meaningful adhesion data were impossible when loads of 10 to 20 kg were required to break the surface of a solvent-based coating. Similar meaningless data were obtained when powder coatings were tested that required more than 10 kg to break the surface. Therefore, testing under these conditions is not applicable.

This test method covers the determination of the adhesion of organic coatings such as paint, varnish, and lacquer when applied to smooth, flat (planar) panel surfaces.

D4541, Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers, developed by Subcommittee D01.46 (Industrial Protective Coatings), serves as a means for uniformly preparing and testing coated surfaces, and evaluating and reporting the results. This test method is applicable to any portable apparatus meeting the basic requirements for determining the pull-off strength of a coating.

This test method covers a procedure for evaluating the pull-off strength of a coating system from metal substrates. The test determines either the greatest perpendicular force (in tension) that a surface area can bear before a plug of material is detached, or whether the surface remains intact at a prescribed force (pass/fail).

Variations in results obtained using different devices or different substrates with the same coating are possible. Therefore, it is recommended that the type of apparatus and the substrate be mutually agreed upon between the interested parties.

The purchaser or specifier shall designate a specific test method (that is, B, C,

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ICRI Moving National Office

The International Concrete Repair Institute (ICRI) announced the move of its national offices from Des Plaines, Ill., to Rosemont, Ill.

The institute's new office location is 10600 W. Higgins Road, Suite 607, Rosemont, IL 60018-3705. The phone and fax numbers did not change.

ICRI's mission is education and information aimed at improving the quality of repair, restoration, and protection of concrete and other structures in accordance with consensus criteria. The institute publishes technical guidelines for concrete repair, and is a co-sponsor of World of Concrete.

D, E, or F) when calling out this standard.

A task group under ASTM subcommittee D.01.46 is asking for volunteers to participate in testing of ASTM D7234-05, Standard Test Method for Pull-Off Adhesion Strength of Coatings on Concrete Using Portable Pull-Off Adhesion Testers.

The task group is proceeding with the round robin for this standard and is looking for volunteers to participate in laboratory testing at two locations: Maple Shade, NJ (near Philadelphia), and Pittsburgh, PA. The dates are not yet set but are tentatively proposed for September or October 2010.

The task would consist of all procedures detailed in the test method to determine pull-off adhesion of coatings on concrete, including scoring, gluing, attaching, and engaging the instruments, and recording the results.

Parts of two consecutive days would be required to complete the task. Persons who are familiar with this method and the equipment used in this method, and who wish to participate in this round robin, should contact Fred Gelfant at gelfant@stonhard.com or 856-321-7557.

ACI Issues Polymer Overlay Spec

The American Concrete Institute (ACI) issued a new specification for methyl methacrylate slurry (MMS) polymer overlays for parking garage and bridge decks.

The specification, 548.10-10: Specification for Type MMS (Methyl Methacrylate Slurry) Polymer Overlays for Bridge and Parking Garage Decks, covers materials and procedures for polymer overlays for new construction and for repair and rehabilitation of bridge and parking garage decks.

Methyl methacrylate slurry (MMS) polymer overlays incorporate a methyl methacrylate-based primer, binder, and topcoat, with selected filler and aggregate to produce a flexible, skid-resistant, and water-resistant overlay. The specification includes requirements for chemical components, aggregates, storage and handling, surface preparation, surface profile, mixing, placement, finishing, quality control, and quality assurance. The specification is available in hard copy or PDF format.

EUROCOAT Show Set for November in Italy

Program plans have been announced for Eurocoat 2010, the coatings industry show for Southern Europe and North Africa scheduled for Nov. 9-11 in Genoa, Italy.

Continued

Planned in conjunction with the show is the Fatipec Congress, the technical conference offered by the European Federation of Coatings Scientists and Technicians.

The show and conference are geared to a theme of "Coatings Throughout the Third Millennium: Evolution, Innovation, or Revolution?"

Show organizers say more than 60% of the show's exhibit space has already been booked, with a variety of companies participating, including suppliers of raw materials, subsidiary products, lab equipment, colorimetry, production engineering, automation, inspection and measurement, surface treatment and coating application, environment, training, and information.

Submissions of papers for the Congress originated from 15 countries around the world, with several noted authorities on organic coatings science and technology scheduled to address the event, Congress organizers said. Nearly 100 papers and presentations are planned.

companies

PPG Announces Four Executive Reassignments

PPG Industries has announced four new executive assignments, including new appointments to its Executive and Operating Committees. These changes were effective Aug. 1.

J. Rich Alexander, senior vice president, performance coatings, has been elected executive vice president and joins PPG's Executive Committee. Alexander has held a number of positions since joining PPG in 1978. He was appointed global general manager, general industrial coatings, in 2000; in 2002, he was elected vice president, industrial coatings. He has held his current position since 2005.

J. Rich Alexander

Pierre-Marie De Leener, senior vice president, architectural coatings EMEA, and president, PPG Europe, has been elected executive vice president and also will join PPG's Executive Committee. In addition, De Leener will assume management responsibility for the company's information technology function. Werner Baer, vice president, information technology, will report to De Leener.

Pierre-Marie De Leener

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Pierre-Marie De Leener

De Leener joined PPG with the acquisition of SigmaKalon Group in January 2008 and was appointed to his current roles that same year. He had been CEO of SigmaKalon since 1999. Prior to that, he had held a variety of positions with PetroFina, the Belgian oil company.

Cynthia A. Niekamp, vice president, automotive coatings, has been elected senior vice president and will join PPG's Operating Committee. Niekamp joined PPG in her current role in January 2009 after a variety of positions with General Motors, TRW Automotive Inc., Mead Corp., MeadWestvaco, and BorgWarner Inc.

Cynthia A. Niekamp

Viktor R. Sekmakas, vice president, coatings, and president, PPG Asia/Pacific, has been elected senior vice president and will also join PPG's Operating Committee. In addition, Sekmakas will assume responsibility for PPG's packaging coatings business. Douglas Pegg, vice president, packaging coatings, will report to Sekmakas.

Viktor R. Sekmakas

Sekmakas joined PPG in 1997 with the acquisition of Lilly Industries' electrocoat business and became market development manager, powder coatings. He held a variety of positions with PPG Asia/Pacific, eventually being named president in 2008. Earlier this year, he assumed responsibility for PPG's global industrial coatings business.

Miceli Named VP, GM of Guzzler, Vactor

Federal Signal Environmental Solutions Group appointed Sam Miceli vice president and general manager for the company's Guzzler Manufacturing and Vactor Manufacturing subsidiaries. Miceli is primarily responsible for overseeing business strategies and growth initiatives for both companies.

Miceli most recently was plant manager for the Guzzler/Vactor facility located in Streator, Ill. He began his career with Federal Signal Environmental Solutions Group in 1993 at the Elgin Sweeper subsidiary in Elgin, Ill., and has held various manufacturing-management positions in the organization. He has an MBA from Bradley University and a BS degree in industrial engineering from the University of Illinois.

The Guzzler and Vactor product lines share technology, manufacturing effi-

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ciencies, and new product development. Guzzler is a major manufacturer of industrial vacuum loaders for cleanup of industrial waste or recovery and recycling of raw materials. Vactor Manufacturing is a maker of sewer cleaners and vacuum excavators.

Short Elliott Hendrickson Names Claassen President

Professional services firm Short Elliott Hendrickson Inc. (SEH) named Sam L. Claassen, PE, the company's new president, effective July 1.

SEH, based in St. Paul, Minn., is comprised of more than 650 engineers, architects, planners, scientists, and coating specialists.

The company serves public and private clients from nearly 30 offices in Minnesota, Wisconsin, Indiana, South Dakota, Nebraska, Colorado, and Wyoming.

A long-time SEH employee and respected leader within the company, Claassen has held the positions of vice president, chief operating officer, and wastewater practice leader.

Claassen previously was vice president and then president of Reike, Caroll and Mueller (RCM), a 110-person engineering firm that merged with SEH in 1999.

Short Elliott Hendrickson Inc. is a multidiscipline, professional services firm. The firm provides a range of civil, transportation, environmental, and energy services.

3M Buys Dailys Ltd.

The 3M Company has acquired Dailys Ltd., a UK-based supplier of industrial protective clothing, the companies have announced.

"This acquisition supports our strategic direction by broadening our protective apparel portfolio," said Julie Bushman, vice president and general manager, 3M Occupational Health and Environmental Safety Division.

Jim McSheffrey, managing director, 3M United Kingdom, said: "Adding products from Dailys will accelerate our presence in disposable protective clothing not only in the U.K. but globally as well."

Family-owned Dailys primarily produces chemical protective coveralls for industrial use. Its brands include Macrobond, Candour FR, and Candex.

BIS Expands in Benelux

The BIS Group has formed a new industrial surface protection unit in the wake of its acquisition of a majority stake in Mobile Brabant.

The purchase, announced July 8, resulted in the formation of Brabant Mobile BIS, an independent unit within BIS Industrial Services Nederland B.V. that will specialize in industrial surface protection.

With annual revenues of about 250 million euros (about $320 million USD), the BIS Group already dominates the industrial scaffolding market in Benelux and is a major provider of insulation and piping, it says.

Mobile Brabant specializes in blasting and coating for the tank building, petrochemical, civil engineering, shipbuilding, and energy industries. It has 130 employees and annual revenues of 22 million euros (about $28 million USD).

CMU Plans 'Smarter Infrastructure' Lab

IBM and Carnegie Mellon University (CMU) will create a collaborative lab at the university to undertake research and create technologies to help cities, governments, and industries worldwide develop smarter infrastructures.

The new lab, part of the Pennsylvania Smart Infrastructure Incubator (PSII), will be located within the Department

of Civil and Environmental Engineering on the CMU campus in Pittsburgh, PA. The PSII is a Commonwealth of Pennsylvania economic development initiative to create an incubator for advanced infrastructure technology in partnership with industry and the state. The lab is expected to be operational in the fall of 2010.

The IBM Smarter Infrastructure Lab at Carnegie Mellon University will develop technologies that are consistent with IBM's Smarter Planet initiative, IBM's offerings in Business Analytics and Optimization, and CMU's work within its Center for Sensed Critical Infrastructure Research, the parties said. The lab will be a focal point and catalyst for collaboration with like-minded research colleagues from IBM Research and across CMU, including its engineering, architecture, public policy, and business schools. The lab will also be an important resource at CMU to educate and train future scientists and engineers to build smarter cities.

Lab researchers will collect and analyze massive amounts of data about the physical condition and energy efficiency of buildings, water pipelines, and other infrastructure on which governments, businesses, and societies depend. One research initiative will explore physical infrastructures with innovative digital sensor networks that will produce large amounts of new data, which will be acquired in real time and integrated with advanced analytical tools. The analysis will be directed to detect patterns, understand exposure to risks, and help predict outcomes of management and operational decisions with greater certainty.

Government agencies at the municipal, city, state, and federal level along with businesses from diverse industry sectors will be invited to partner with the lab. Some of these partners will make data from their diverse infrastructures available to the lab, while others may provide complementary technologies or support additional research activity. The lab will also be integrated with a new Collaboration and Distance Learning Center to be located in CMU's Department of Electrical and Computer Engineering, where leaders can meet—either physically or virtually—to learn how smarter infrastructures can make them more competitive.

Speeflo Founder Gets Honorary Degree

Speeflo founder, paint-spray innovator, and philanthropist Gustave S. Levey has received an honorary doctoral degree from Ben-Gurion University of the Negev for his longtime support of solar initiatives.

Levey, a lawyer and inventor, "has been a longtime proponent of solar energy initiatives, which have helped position Ben-Gurion University as a global leader in alternative energy technology," the university said in a statement. "In addition to his foresight as a major supporter of BGU's initiatives in this area, he has also been instrumental in securing important patents for BGU in the solar energy arena."

Levey is president of GSL Investments Inc., a Houston real estate company. He also founded Speeflo Corp., which manufactured gas- and electric-powered paint sprayers. He sold the company and secured 19 patents, some of which have revolutionized the spray-painting industry.

BGU President Rivka Carmi called Levey "a brilliant, generous and humble man who has been a longstanding philanthropic supporter of Israel, as well as

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the Houston community, and is most deserving of receiving the university's highest honorary award."

Levey has been able to combine his philanthropic interest in education with his real estate acumen, converting several Houston commercial buildings into schools. He and his wife Marjorie also underwrote the Marjorie and Gustave Levey Dormitory located on the American Associates, Ben-Gurion University of the Negev (AABGU) Dormitory Complex in Beer-Sheva.

Levey began his education at Wichita University and then served as a navigator in the U.S. Army Air Corps. After his service, he earned a B.S. in economics and a law degree from the University of Houston.

AZZ , NGA Merge

AZZ Inc., a provider of galvanizing services and manufacturer of electrical products, has consummated the merger of North American Galvanizing & Coatings Inc. (NGA) with and into Big Kettle Merger Sub Inc., an indirect, wholly-owned subsidiary of AZZ, with NGA as the surviving corporation.

NGA provides corrosion protection for iron and steel components fabricated by its customers. It has 11 galvanizing and coating operations in the U.S.

AZZ offers hot dip galvanizing services to the steel fabrication market nationwide, as well as a specialty electrical equipment for the global markets of industrial, power generation, transmission and distributions.

Wooster Brush Appoints New President

The Wooster Brush Company announced the retirement of Allan K. Rodd as president and treasurer after more than 42 years with the company, the last 12 as president.

William S. Fagert

William S. Fagert, who joined the company in 1985, has been named president.

Rodd will remain vice chairman of the company's board of directors.

Fagert, who becomes only the ninth president in the 160-year history of Wooster Brush, has held various finance positions with the company, including accounting manager, assistant treasurer, controller, and most recently, vice president of finance.

Founded in 1851, Wooster Brush is a privately held, employee-owned company and one of the largest paint-applicator manufacturers in the U.S. The company's manufacturing, shipping, administrative, and warehousing facilities are located in Wooster, Ohio.

Frato Joins Spider as N.Y. District Sales Manager

Marc Frato has joined the Spider division of Safeworks LLC as district sales manager for the New York location, with responsibility for representation to the contractor and facility owner markets in the metropolitan New York area.

Frato has 20 years of experience in the powered-access industry and was most recently vice president, operations, at Interstate Equipment in New Jersey. He also has held the position of vice president, operations, for Swing Staging Inc., and was owner of Markey Swing Scaffold in New Jersey.

Frato is a licensed special rigger in New York City and has completed the Safety Program for Suspended Scaffolds of the Scaffold Industry Association.

Send news about your company to kkapsanis@protectivecoatings.com.

products

App Designed for OSHA-Compliant Lockouts

The Brady Lockout Procedure Online Design Tool, from Brady Worldwide Inc., is a new web tool that allows customers to design OSHA-compliant graphical lockout procedures online for less than the cost of a lockout procedure-writing software program, the company says.

The Design Tool utilizes graphical procedure templates that comply with OSHA's lockout/tagout standards. The templates feature high-quality images and step-by-step instructions for properly locking out hazardous energy sources, the company says.

Customers upload digital images of their equipment onto the procedure and customize it based on their equipment list and lockout points.

After the procedure is purchased, customers can immediately download the PDF and print it using their laser or inkjet printer as many times as needed. The procedure will be saved to their account for 30 days after the purchase date. Companies pay only for the procedures they need.

The new tool offers several options, including proofing. The proof can be circulated to key stakeholders for approval, and is saved to the customer's account for 30 days after it was created.

For more information, go to BradyID.com/lockoutprocedures.

Coatings Removal Machine Uses 'Green' Media

The new, self-contained coatings removal machine from Farrow System USA removes corrosion control coatings without damage, chemicals, or hazardous materials, the company says.

The Farrow 185 uses patented Farrow Green Clean media, a 100% natural product with very low dispersal characteristics that requires minimal, if any, containment and minimizes clean-up and disposal costs, the company says.

The method uses heat to add energy to the cleaning stream, to remove even the most durable coatings, Farrow says. The system uses less than two quarts of water per minute and about one-tenth of the media typically required by conventional blasting to achieve similar results, according to the company.

The machine is designed to quickly remove industrial or architectural corrosion control coatings from wood, plastics, composites, delicate gel coats, steel, aluminum, brass, ceramic tile, concrete, asphalt, decorative pavers, brick, stone, and more, leaving them ready for immediate recoating.

The system also is designed to clean surfaces underwater. A bulkhead cleaning video is available at farrowsystem.com.

The operating process uses air pressure as low as 28 psi to a maximum 80 psi, and the stainless-steel tank holds 110 gallons of water. Optional extension hoses reach work areas up to 250 feet from the machine, the company says.

For further information, go to www.farrowsystem.com.

Pipeline Coating Designed for 1000 F

Industrial Nanotech Inc. says it has developed a nanotechnology-based

thermal insulation coating capable of being applied to surfaces of at least 1,000 degrees F.

Nansulate Extreme High Heat "was developed as a result of a request by Saudi European Petrochemical Company IBN ZAHR, a customer of the company's exclusive distributor in Saudi Arabia, Saudi Environmental Projects, Ltd, to insulate a 2.1-mile pipeline transporting high pressure steam," Industrial Nanotech said in a statement.

According to the company, it has successfully tested the coating on surfaces up to 1,004 degrees F.

IBN ZAHR is an affiliate of the Saudi Basic Industries Corporation (SABIC). SABIC is one of the world's five largest petrochemicals manufacturers.

Industrial Nanotech, based in Naples, Fla., produces nanotechnology-based industrial, residential, agricultural, and solar thermal insulation specialty coatings. For details about the product, visit www.industrial-nanotech.com.

Seicoat Introduces Anti-Graffiti Coating

Seicoat Corp. introduced GPA-300 Graffiti Proofer Non-Stick coating for use on a variety of surfaces, reported to facilitate the removal of graffiti without the use of chemicals.

The company says the product has demonstrated effectiveness in third-party test results, with evaluation in accordance with the ASTM D6578 graffiti-resistance test method.

The product is reported to resist adhesion of paint, permanent marker, stickers, and adhesives.

The formulation incorporates a nanotechnology constituent that penetrates the surface and builds a durable non-stick and chemical-resistant film, the company says. Graffiti residue can be wiped away with a dry cloth or water

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flushing without the use of cleaning chemicals.

More information is available at www.seicoat.com.

Invisible Coating Targets Metal Thieves

An invisible coating has become the latest weapon in the war against metal thieves who have targeted utilities, transportation, and communications facilities as well as hospitals and churches throughout the UK.

SmartWater, by SmartWater Technology Ltd., is a sophisticated forensic marking liquid that is unique to a particular location. The paint is designed to "tag" metal thieves after they touch it and stays on the skin for 60 days and helps police trace the thief, as well as any stolen materials, back to the scene of the crime, the company says.

The company calls SmartWater almost impossible to remove and says it has been independently tested to withstand burning. It is also resistant to direct exposure to sunlight and is unaffected by bleaching and other household chemicals, according to the company.

The thefts are being driven by soaring prices worldwide in the price of copper, lead, and other non-ferrous metals. Beyond the property loss, sites have been damaged, and phone and power lines have been cut, causing service outages.

Metal theft costs UK firms about 770 million euros (nearly $1 billion US) per year, according to reports. The problem has become so severe that UK authorities established a National Metal Theft Crime Unit in 2009, run by the Association of Chief Police Officers and British Transport Police and jointly funded by the Home Office and the Energy Networks Association.

For additional information, go to www.smartwater.com.

Gemite Launches Waterproofing Line in U.S.

Construction chemicals supplier Gemite Products Inc. has introduced its waterproofing coatings line to North America, through a distribution agreement with W.R. Meadows Inc.

The companies recently announced a strategic partnership that will make W.R. Meadows the exclusive distributor for the product line in North America.

The initial Gemite product offerings in North America are Adi-Con Plus CW, an integral waterproofing admixture; Cem-Kote CW Plus Premix, a crystalline, in-depth waterproofing product; Cem-Kote Flex CR, a flexible, chemical resistant waterproofing coating; and Cem-Kote Flex ST, a positive and negative waterproofing product.

These products are specially formulated for wastewater treatment plants, water tanks, containment structures, and various other applications, according to the manufacturer.

All of the products are available immediately, says W.R. Meadows, which is based in Hampshire, IL.

W.R. Meadows maintains an international network of authorized distributors, 12 manufacturing facilities, and warehouse operations.

For more information, visit wrmeadows.com or gemite.com.

Rhino Linings Expands Offerings with 1:1 Ratio Products

Rhino Linings Corp. (San Diego, Calif.) expanded its range of protective coatings products with the introduction of 1:1 mix-ratio spray coatings, designed to simplify the use of rapid-set polyurethanes and polyureas for containment linings, metal coatings, and other applications. The company's exist-

ing products are 2:1 ratio materials.

The 1:1 ratio product introductions include the company's flagship Rhino Tuffgrip™ 11-90 hybrid polyurea lining, a spray elastomer formulation, reported to offer superior toughness, color stability, impact resistance, and weather and corrosion protection. Also included are Rhino HardLine™ 11-55, a hybrid polyurea lining for applications requiring resistance to heavy impact and scratching, and Rhino Extreme™ 11-90, a polyurea lining formulated for application at low temperatures or in high-humidity conditions.

In addition to use as truck-bed linings, the products are used as protective coatings for concrete, wood, fiberglass, and foam substrates, with applications in the pipeline, storage tank, building/architectural, steel pole, and other markets.

For more information, go to rhinolinings.com.

Tnemec Adds to Linings for Secondary Containment

Tnemec Company Inc. has introduced epoxy and vinyl ester linings for secondary containment to its StrataShield product line.

The ChemBloc line of vinyl ester and 100% solids epoxy linings are fiberglass mat-reinforced systems offered in 65 and 125 mils' dry film thickness (DFT). Each chemical-resistant lining system protects against harsh chemicals, thermal cycling, impact, and abrasion, the company says. Specific products include the following:

- Series 206SC ChemBloc, a modified flexible polyamine epoxy, is a glass-reinforced base coat for bridging small substrate cracks in secondary containment concrete structures. The 100% solids coating replaces a mortar/slurry base coat for other ChemBloc linings when a flexible base coat is desired, according to Tnemec.
- Series 237SC ChemBloc, a modified polyamine epoxy lining system;
- Series 239SC ChemBloc, a modified novolac polyamine epoxy lining system; and
- Series 252SC ChemBloc, a novolac vinyl ester lining system.

Further information is available at www.tnemec.com.

Send new product information to Karen Kapsanis, Editor, *JPCL*, kkapsanis@protectivecoatings.com.

Phase 3 of Lewis & Clark Bridge Painting Underway

By Brian Churray, PaintSquare

On June 30, 2010, a joint venture of Odyssey Contracting Corp. (Houston, PA) and Geronimo Painting Company, Inc. (Lisbon, OH) began work on the third phase in the complete repainting of the Lewis and Clark Bridge. The 8,288-foot-long cantilever bridge spans the Columbia River between Longview, WA, and Rainier, OR, carrying a heavy traffic load of 21,000 vehicles per day on average, including 13% freight. The $33,774,714 contract, which is a shared responsibility of the Washington and Oregon Departments of Transportation and includes American Recovery & Reinvestment Act funding, is the third phase of a three-part effort to replace the coatings that were applied in 1984.

Photos courtesy of WSDOT

Abhe & Svoboda, Inc. (Prior Lake, MN) recoated approximately 14,236 tons of existing structural steel under the $14.6-million first phase contract, which took place between August 2006 and February 2008. Certified Coatings (Concord, CA) is recoating substructure elements of the bridge, including in-river piers, under the $5.1-million second phase contract, which commenced in April 2009 and is scheduled for completion in September 2010. The third phase, which will address the

Continued

DOT Quick Hits

Certified Coatings (Concord, CA), SSPC-QP 1- and QP 2-certified, won a contract of $1,114,112 from the California Department of Transportation to steam clean and/or pressure wash and recoat three steel girder bridges in Mendocino County.

The Illinois Department of Transportation awarded a contract of $1,506,410 to Eagle Painting and Maintenance Company (Lansing, IL) to abrasive blast-clean and recoat 17 bridges, which includes lead abatement and disposal.

Jave, LLC (Lexington, KY) secured a $3,359,394 award from the Kentucky Transportation Cabinet to abrasive blast-clean and coat structural steel surfaces on five bridges in Pendleton County. The project also includes deck restoration and waterproofing.

The New York State Department of Transportation signed a $7,317,655 agreement with Spectrum Painting Contractors (Scarsdale, NY) to abrasive blast-clean and recoat structural steel on 61 bridges and to apply a protective sealant on 62,372 square yards of concrete.

Atsalis Brothers Painting Company (Clinton Township, MI), SSPC-QP 1- and QP 2-certified, won an award of $10,183,625 from the Ohio Department of Transportation to blast-clean and recoat 228,507 square feet of steel. The project also includes installing waterproofing membrane and applying various concrete sealants.

The New Jersey Department of Transportation awarded a contract to Allied Painting, Inc. (Franklinville, NJ), SSPC-QP 1- and QP 2-certified, to perform lead abatement and coatings application on 11 bridges in Gloucester County; the contract is valued at $3,800,406.

Gemstone, LLC (Key West, FL), SSPC-QP 1- and QP 2-certified, won a contract of $998,000 from the Virginia Department of Transportation to perform lead abatement and coatings application on 583 tons of structural steel on a bridge over the James River.

superstructure, has an anticipated completion date of Fall 2013.

The third phase involves recoating the cantilever truss superstructure, including the 1,200-foot-long main span, which reaches a height of 340 feet above the river. The majority of the steel will be abrasive blast-cleaned to a Near-White finish (SSPC-SP 10), while select stringers and expansion joint beams will be cleaned with solvents and compressed air only. The project includes recoating the steel with a moisture-cured urethane system, as well as applying a penetrating sealer to 4,300 linear feet of pack rust. The contract includes erecting containment structures to control the emission of the lead, cadmium, and chromium-bearing existing coatings.

All four companies are SSPC-QP 1- and QP 2-certified.

North Star Painting to Recoat Graff Bridge

North Star Painting Company Inc. (Youngstown, OH), SSPC-QP 1- and QP 2-certified, won a contract of $12,112,804.12 from the Pennsylvania Department of Transportation for coatings application, lead abatement, and related repairs on two bridges. The project includes cleaning and recoating 895,000 square feet of structural steel surfaces on the 15-span, 2,700-foot-long, Judge J. Frank Graff Bridge and 78,148 square feet of structural steel surfaces on a 5-span, 593.5-foot-long ramp bridge. The Graff Bridge spans the Allegheny River between the towns of Kittanning and Ford City, PA. The steel will be abrasive blast-cleaned to a Near-White finish (SSPC-SP 10) and recoated using an organic zinc-rich coating system selected from NEPCOAT List B. The contract includes controlling the emission of the existing lead-bearing coatings (SSPC-Guide 6) and disposing of waste (SSPC-Guide 7). The project also includes a total of 758 square yards of penetrating sealant protective coating application for reinforced concrete surfaces. The project started in early August and has an anticipated duration of three years.

WVDOT Awards Bridge Painting Project

The West Virginia Department of Transportation awarded a contract of $927,200 to Manganas Enterprises (Canonsburg, PA), SSPC-QP 2-certified, to clean and recoat approximately 355 tons of structural steel on a 3-span, 460-foot-long by 28.5-foot-wide through truss bridge over the Cheat River. The bridge was built in 1932 and was last rehabilitated in 1987. The steel will be

abrasive blast-cleaned to a Near-White condition (SSPC-SP 10) and recoated with an organic zinc primer and water-borne acrylic intermediate and finish coats. The contract includes controlling the emission of the existing lead and chromium-bearing coatings within a Class 3A containment structure (SSPC-Guide 6) and disposing of the hazardous waste.

All States Painting to Seal 48 Bridge Decks

All States Painting, Inc. (Alexander, IL), SSPC-QP 1- and QP 2-certified, secured a contract of $198,248.92 from the Illinois Department of Transportation to clean and seal deck and parapet surfaces on 48 bridges in Brown, Pike, and Schuyler Counties. The project involves applying a penetrating sealer to 423,293 square feet of concrete.

Astron Wins Bridge Bearing Painting Project

Photo courtesy of AASHTO

Astron General Contracting Company, Inc. (Jacksonville, NC) secured a contract of $1,065,396 from the North Carolina Department of Transportation to recoat 3,742 bearing plates on the Virginia Dare Bridge. The 5.2-mile-long concrete bridge, which was completed in 2002, connects the North Carolina mainland with the Outer Banks by spanning Croatan Sound. The steel plates will be power-washed, power-tool cleaned to a Bare Metal finish (SSPC-SP 11), and coated with an organic zinc-rich primer and an aluminum epoxy mastic finish.

Georgia DOT Lets Bridge Coating Contract

The Georgia Department of Transportation awarded a $282,800 contract to S&D Industrial Painting, Inc. (Tarpon Springs, FL) to recoat 32,500 square feet of steel on a 333-foot-long bridge over the Oconee River and 7,000 square feet of steel on a 420-foot-long bridge over Commissioners Creek. The contract, which required SSPC-QP 1 and QP 2 certification, involves performing lead abatement and containment, followed by alkyd coating system application.

SSPC Organizational Members as of August 11, 2010

INDUSTRIAL AFFILIATE MEMBERS

Bayer MaterialScience LLC
Benjamin Moore & Company
Carboline Company
Corrpro Companies, Inc.
Devoe High Performance Coatings (International Paint LLC)
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Greenman Pedersen, Inc./Instrument Sales, Inc. A GPI Company
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Grant County Public Utility District
Guam Industrial Services, Inc. Guam Shipyard
High Steel Structures, Inc.
Hirschfeld Industries Bridge
Illinois Dept. of Transportation
Kentucky Transportation Cabinet
Louisiana Department of Transportation & Development
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Lyon Shipyard, Inc.
MODOT Maintenance Operations
Maine Department of Transportation
Marinette Marine Corporation
Marisco Ltd
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Metro Machine Corporation
Ministry of Transportation Bridge Office
Minnesota Department of Transportation
Monroe County Water Authority
Moving Water Industries (MWI)
NAVSEA
NYC School Construction Authority
National Steel & Shipbuilding Co.
Naval Facilities Engineering Service Center
New York City Transit Authority (MTA)
Norfolk Naval Shipyard Production Department
North Carolina DOT
North Florida Shipyards, Inc. Mayport Naval Station
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Oklahoma Dept. of Transportation
Oshima Shipbuilding Co., Ltd.
PEO CARRIERS PMC 312C
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Pacific Ship Repair & Fabrication
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Pearl Harbor Naval Shipyard Design Department
Pennsylvania Department of Transportation Materials & Testing
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Portsmouth Naval Shipyard Code 250
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Quality Coatings of Virginia, Inc.
RPI Coatings, Inc.
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ACME Industrial Piping
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APG, Inc.
ASCO—American Stripping Company
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Absolute Equipment
Abu Dhabi Construction Company
Advanced Industrial Services, Inc.
Advanced Polymer Coatings, Ltd.
Advanced Protective Coatings, Ltd.
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Ajax TOCCO Magnethermic Corp.
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Alaron Corporation
All-Safe Industrial Services, Inc.
All-States Painting, Inc.
Allied Inspection Corrosion Services (ALINCOR)
Allied Painting Inc.
Alpha Painting and Construction Co.
Alpine Painting & Sandblasting Contractors
Amercoat Canada
American Bureau of Shipping
American Industrial Hygiene Assoc.
American Pro Services, Inc.
American Suncraft Const.
American Tank & Vessel, Inc.
Americlean
Amherst Maintenance Inc.
Amstar of Western New York
Anchor Paint Mfg Co
Anka Painting Company, Inc.
Applied Coatings & Linings
Arena Painting Contractors, Inc. (APC)
Arid Dry by CDIMS
Arizona Coating Applicators, Inc.
Arrow Construction Company, Inc.
Astron General Contracting Co., Inc.
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Atlantic Painting & Sheeting Corp.
Atlas Painting & Sheeting Corp.
Aulffo Painting, Inc.
Automatic Coating Ltd.
Avant Guards Coatings
Axxiom Manufacturing Inc.
B&B Korea Co. Ltd.
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BASF Corporation
BELL FLOORING SCIENCES GROUP
BGRS, Inc. Blast Grit Recovery Systems
BIS Salamis, Inc.
BYK Additives & Instruments
Barnes Painting
Barnices Valentine C/Provenza s.n.
Barton Mines Company, LLC
Basic Industries of South Texas, LTD.
Bass Rocks Construction Corporation
Bay Decking Company, Inc.
Bayer MaterialScience Trading (Shanghai) Co., Ltd.
Baytown Painting, Inc.
Bazan Painting Company
Beach Coatings, Inc.
Beam, Inc.
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Blastline Institute (BISP)
Blastrite Pty. Ltd.
Blendex Industrial Corporation
Bloomfield Painting Inc.
Bridges R Us Painting Co., Inc.
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Bulldog Projects
C& K Johnson Industries, Inc.
C-Port Marine Services, LLC
C.W. Beal, Inc.
C3 Industrial Services
CB Tech Services, Inc.
CMP Coatings, Inc.
CMV Blasting Inc.
CSI Coatings Group, LLC
CSI Services, Inc.
Cabrillo Enterprises, Inc. DBA-R.W. Little Company
Caldwell Tanks, Inc.
California Engineering Contractors, Inc.
Cambridge Heat Treating Inc.
CanAm Minerals/Kleen Blast Abrasives
Cape Environmental Management Inc.
Capitol Finishes, Inc.
Cardolite Corporation
Caribbean Insulation Services Ltd.
Carney's Point Metal Processing, Inc.
Carolina Equipment & Supply Co., Inc.
Carolina Painting Company, Inc.
Carr Coatings, LLC
Catamount Environmental, Inc.
Century Drywall, Inc.
Certified Coating Specialists Inc.
Certified painting Company
Cetek LTD
Changzhou Paint & Coatings Industry Research Institute
Channel Coast Corp.
Chespeake Coatings & Decks, Inc.
Chesapeake Mechanical & Coatings
Chicago Area Painting Apprenticeship School
Chlor*Rid International
Church & Dwight Company, Inc.
Cianbro Corporation
Clara Industrial Services Limited
Clark & Pattison (Victoria) Ltd.
Classic Protective Coatings, Inc.
Clemtex, Inc.
Coastal Coatings, Inc.
Coastal Environment Group
Coating Services, Inc.
Coating Systems, Inc.
Coatings & Painting, LLC
Coatings Unlimited, Inc.
Coblaco Services, Inc.
Colonial Processing, Inc.
Colonial Surface Solutions, Inc.
Color Works Painting, Inc.
Commercial Sand Blasting & Painting
Commercial Sandblast Company
Commodore Maintenance Corp.
Construction Technology Laboratories
Copia Speciality Contractor
Corcon Inc.
Corporacion Peruana De Productos Quimicos S.A.
Corporate Painting
Corrocoat USA
Corrosion Control Products Company
Corrosion Specialties, Inc.
Crescent Coatings & Services, Inc.
Crossway Coatings
Crown Painting, Inc.
Custom Coating Applicators
D E Eakin & Son's
DACA LLC
DESCO Manufacturing Company, Inc.
DRYCO, LLC
DUSTNET by EMI International
Dalian YuXiang
Dampney Company, Inc.
Daubert Chemical Company
Davis Boat Works, Inc.
Dawson-Macdonald Company, Inc.
De Koning Groep
DeFelsko Corporation
Dehumidification Technologies, Inc.
Delta Coatings, Inc.
Derochie Painting Ltd.
Derrick Company Inc.
Detroit Painting & Maintenance, Inc.
Detroit Tarpaulin, Inc.
Devox S.A.
Diamond Vogel Paint Company
Distribuidora Kroma S.A. de C.V.
Diversified Container
Dixon Engineering, Inc.
Dur-A-Flex, Inc.
Dura-Bond Pipe, LLC
Duromar, Inc.
E.B. Miller Contracting, Inc.
E. Caligari & Son, Inc.
E. E. Doerr & Associates, LLC
EDCO-Equipment Development Co., Inc.
EPAcoat, Inc.
EPMAR Corporation
Eagle Industrial Equipment
Eagle Painting & Maintenance Co.
Eagle Specialty Coatings
Earl Industries, LLC

Continued

SSPC Organizational Membership

Elcometer Instruments Limited
Elite Contractors, Inc.
EnDiSys
Endura Manufacturing Company Ltd.
EnviroVantage
Environmental Coating Services LLC
Environmental Planning & Management
Envirosafe Stripping Inc.
Era Valdivia Contractors, Inc.
ErgonArmor
Erie Painting and Maintenance, Inc.
Euronavy International
Evco National Inc.
Exceltech Coating & Applications, LLC
Extreme Coatings, Inc.
F & H Coatings
F.L. Crane & Sons, Inc.
F.T.I. District Council 57 J.A.T.F.
FCS Group LLC
FTI of DC77
Fedco Paints And Contracts
Fine Metal Powders Company
Finishing Systems of Florida, Inc.
Fischer Technology, Inc.
Flame Control Coatings, LLC
Fox Brothers Painting
GMA Garnet (USA) Corp.
GTS Inc.
Gaditana de Chorro Y Limpieza S.L.
Garden State Council, Inc.
Gemstone, LLC
General Dynamics/Information Tech.
George G. Sharp, Inc.
Gibson & Associates, Inc.
Goodman Decorating Co., Inc.
Graco Inc China
Graco Inc.
Greenhorne & O'Mara, Inc.
Greenstar Coatings LLC
Groome Industrial Service Group
Gulf Coast Contracting, LLC
Guzzler Manufacturing, Inc.
H.I.S. Painting, Inc.
HCI Chemtec Inc.
HCI Industrial & Marine Coatings Inc.
Hadek Protective Systems Inc.
Hall Industrial Contracting, LTD
Harrison Muir, Inc.
Hartman-Walsh Painting Company
Hempel-HaiHong
Hercules Painting Company
Hi-Temp Coatings Technology
Highland International, Inc.
Hiller Systems, Inc.
HippWrap Containment
HoldTight Solutions Inc.
Hong Hua Guan Marine & Engrg. Pte Ltd.
Honolulu Painting Company, Ltd.
Howell & Howell Contractors, Inc.
Hunstman Polyurethanes
IDS Blast Finishing
IMETECO S.A.
IMPREGLON USA
ISG dba Universal Inc.
IUPAT, District Council #5
Icarus Industrial Painting & Contracting Company, Inc.
Impresa Donelli, S.R.L.
Indian Valley Industries, Inc.
Indiana Department of Transportation
Induron Coatings, Inc.
Industrial Corrosion Control, Inc.
Industrial Marine, Inc.
Industrial Painting Limited, Inc.
Industrial Painting Services, Inc.
Industrial Painting Specialists
Industrial Technical Coatings, Inc.
Industrial Vacuum Equipment Corp.
Insl-X/Coronado Paint Co., Inc.
Insulating Coatings Corporation
Intech Contracting LLC
Inter-City Contracting, Inc.
Interior Finishes, Inc.
International Flooring & Protective Coatings, Inc.
International Marine and Industrial Applicators LLC
International Protective Coatings China
Iowa Waste Reduction Center University of Northern Iowa
J. Goodison Company, Inc.
J. Mori Painting Inc.
J.N.A. Painting and Contracting, Inc.
JOHN LEHNE & SON INC
JTR, INC.
Jal Engineers Pvt. Ltd.
Jamac Painting & Sandblasting Ltd.
Jeffco Painting & Coating, Inc.
Jerry Thompson & Sons, Inc.
Jet De Sable Houle Sandblasting Ltd.
Joaquin Riera Tuebols S.A.
John B. Conomos, Inc.
John W. Egan Company, Inc.
Jotun Coatings China
Jupiter Painting Contracting Co. Inc.
K & K Painting Inc.
KM Industrial, Inc.
Kane, Inc.
Keene Coatings Corp.
Kelly-Moore Paint Company, Inc.
Kennametal Inc.
Kern Steel Fabrication, Inc.
Kimery Painting, Inc.
Kish Company, Inc.
Kiska Construction, Inc. (KCI)
Klicos Painting Company, Inc.
L & L Painting Company Inc.
L. Calvin Jones
L. F. Clavin & Company, Inc.
Larsen & Toubro Limited
Leighton Associates, Inc.
Liberty Maintenance, Inc.
Limnes Corp.
Lindner Painting, Inc.
Line-X Corp.
Liner Technologies
Llamas Coatings
LorRich Enterprise, LTD
Luckinbill, Inc.
M & J Construction Company
M & R Painting, Inc.
M. Painting Company, Inc.
M. Pallonji & Company Pvt. Ltd.
MB Environmental Consulting
MCSA (Maintenimiento & Construcciones, S.A.)
MEC Construction, Inc.
METCO Materials Evaluation & Tech. Corp.
MIK Industrial LLC
MJM Construction LLC
MST Inc (Modern Safety Techniques)
MacDonald Applicators Ltd.
Madison Chemical Industries Inc.
Maguire Iron, Inc.
Main Industries Inc.
Mandros Painting, Inc.
Manganas Enterprises, Inc.
Manolis Painting Company, Inc.
Mansfield Industrial
Manus Abrasive Systems, Inc.
Marine & Industrial Coatings, LLC
Marine Chemical Research Institute
Marine Specialty Painting
Marinis Bros., Inc.
Mascoat Products
Mason Painting, Inc.
Master Powder Coating, Inc.
Matheson Painting
Matrix Service Inc.
Matsos Contracting Corp.
McCormick Industrial Abatement
McCormick Painting Company
McElligott Partners Pty. Ltd.
McINNES COOPER
McKay Lodge Conservation Laboratory
Merkury Development
Metain S.A.
Michelman-Cancelliere Iron Works
Midwest Rake Company LLC
Mimosa Construction, Inc.
Minichi Inc.
Modern Protective Coatings, Inc.
Mohawk Garnet, Inc.
Monarflex by Siplast
Montipower Inc.
Moody International Inc.
Moody International-China
Morris Painting, Inc.
Municipal Tank Coatings
Murphy Industrial Coatings
N A Logan, Inc.
N G Painting, LP
NACE International-The Corrosion Society
NAG Marine
NIF Solutions
NOR-LAG Coatings Ltd.
NUCO Painting Corporation
Narkisos Inc.
National Coating and Linings Co.
National Coatings, Inc.
National Surface Treatment Center
Natrium Products, Inc.
Nelson Industrial Services, Inc.
NexTec Inc.
Niagara Coatings Services, Inc.
North American Galvanizing Co.
Northwestern Contractors Inc.
Norton Sandblasting Equipment
Novetas Solutions
O.T. Neighoff & Sons, Inc.
OPT CO
Odle, Inc.
Oesterling Sandblasting & Painting
Olimag Sand, Inc.
Olympus & Associates, Inc.
Olympus Painting Contractors, Inc.
Ontario Painting Contractors Association
Opta Minerals, Inc.
Optimiza Protective & Consulting, SL.

SSPC Organizational Membership

Orfanos Contractors, Inc.
P & S Painting Co., Inc.
P & W Painting Contractors Inc.
P S Bruckel Inc
P.C.I. International, Inc.
PCIRoads, LLC
PEC Ltd.
PPG Industries China
PROINBEL
PT Berger Batam
Pacific Painting Co Inc
Pacific Titan, Inc.
Pacific Yacht Refitters Inc.
Paige Decking
PaintEcuador
Palmer Industrial, Inc.
Panco Resources and Engineering Consultancy Services
Panther Industrial Painting, LLC
Panthera Painting, Inc.
Paragon Construction Services of America Inc.
Park Derochie Coatings Ltd.
Paul N. Gardner Company, Inc.
Peabody & Associates, Inc.
Pen Gulf, Inc.
Performa Inc.
Performance Blasting & Coating
Petric & Associates, Inc.
Philips Industrial Services Corp.
Phoenix Fabricators & Erectors Inc.
Piasecki Steel Construction Corp
Planet Inc
Pop's Painting
Poseidon Construction
Postel Industrial Coatings, Inc.
Pratt Equipment Rental
Precision Industrial Coatings, Inc.
Preferred, Inc.-Fort Wayne
Prime Coatings, Inc.
Pro Coat, LLC
Pro-Tect Plastic & Supply, Inc.
Professional Application Services, Inc.
Professional Tank Cleaning
Public Utilities Maintenance, Inc.
Purcell P & C, LLC
QED Systems, Inc.
Quality Linings & Painting, Inc.
Quantum Technical Services
Quincy Industrial Painting Co
Quinn Consulting Services, Inc.
R & B Protective Coatings, Inc.
RBG
RECAL RECUMBRIMIENTOS, SA de CV
RML Construction
ROs Precise Painting, Inc.
Rahm Industrial Services, Inc.
Rainbow, Inc.
Raven Lining Systems
Raydar & Associates, Inc.
Razorback, LLC
Redi-Strip Metal Cleaning Canada Ltd
Regal Industrial Corporation
Reglas Painting Company, Inc.
Rhino Linings Corporation
Righter Group, Inc.
Rockwood Corporation
Rotha Contracting Company, Inc.
Roval USA Corporation
Royal Bridge Inc.
Rust Bullet, LLC
Ryno Tools
S & D Industrial Painting
S & S Bridge Painting, Inc.
S & S Coatings, Inc.
S. David & Company, Inc.
SAFE Systems, Inc.
SAIT Polytechnic
SME Steel Contractors
SVMB
Sabelhaus West, Inc.
Saffo Contractors, Inc.
Sauereisen
Sayed Hamid Behbehani & Sons Mech. Div.
Schiff Associates
Scott Derr Painting Company
Seaside Painters & Sandblasters
Seaway Coatings, inc.
Seaway Painting LLC
Secondary Services, Inc.
Seminole Equipment, Inc.
Service Contracting, Inc.
Servicios Tecnicos Industriales y Maritimos, S.A. (SETIMSA)
Shenzhen Asianway Corrosion Protection Eng. Co., Ltd.
Sherwin-Williams Industrial & Marine Coating China
Shield Coatings & Weatherproofing
Simpson Sandblasting and Special Coatings, Inc.
Skinner Painting & Restoration
Skyline Steel, LLC
Soil & Materials Engineers, Inc.
South Gulf, Inc.
SouthEnd Painting Contractors Inc.
Southern Paint & Waterproofing Co.
Southland Painting Corporation
Spartan Contracting, LLC
Specialty Application Services, Inc.
Specialty Finishes, LLC
Specialty Groups, Inc.
Specialty Polymer Coatings, Inc.
Specialty Products, Inc.
Spectrum Painting Corporation
Spensieri Diversified LLC
Sponge-Jet, Inc.
Stanley Consultants, Inc.
Steed General Contractors, Inc.
Steel Management System, LLC
Stopaq BV
Structural Coatings, Inc.
Stuart Dean Company, Inc.
Superior Industrial Maintenance Co.
Surface Prep Supply
Surface Preparation & Coatings, LLC
Swalling Construction Company, Inc.
Swanson & Youngdale, Inc.
Symmetric LLC
TDA Construction, Inc.
TDJ Group, Inc.
TJC Painting Contractors, Inc.
TMI Coatings, Inc.
TMS Metalizing Systems, Ltd.
Tank Services fma Midwest Tank Services, Inc.
Tarpon Industrial, Inc.
Tarps Manufacturing, Inc.
Techno Coatings, Inc.
Tecnico Corporation
Testex
Texas Bridge, Inc.
The Aulson Company, Inc.
The Gateway Company
The Lusk Group
The Paint Research Association
Theovas, Inc.
Thomarios
Thomas Industrial Coatings, Inc.
Thompson Metal Fab, Inc.
ThyssenKrupp Safway, Inc.
Tidal Corrosion Services LLC
Tioga, Inc.
Titan Industrial Services
Titan Tool
Tower Maintenance Corp.
Tri Star Engineering, Inc.
Tri-State Painting, Inc.
Troy Painting Inc.
Turman Commercial Painters
Turner Industries Group, LLC
UHP Projects, Inc.
US Coatings, Inc.
US Minerals/Stan Blast
USA Painting, Inc.
Unifab Industries, LTD
United Coatings Corporation
United Eagle Painting Corporation
United States Corrosion Engineers, Inc.
Universal Minerals, Inc.
Universal Silencer, LLC
Utility Service Company, Inc.
V & A Consulting Engineers
V. V. Mineral
VRSim, Inc.
Vanwin Coatings of VA, LLC
Venus Painting
Veolia ES Canada Industrial Services, Inc. Canada
Vermillion Painting & Construction
VersaFlex Incorporated
Vimas Painting Co., Inc.
Vulcan Painters, Inc.
Vulcan Pipe & Steel Coatings, Inc.
W Q Watters Company
W S Bunch Company
W W Enroughty & Son, Inc.
WGI Heavy Minerals, Inc.
WIWA LP
Washington Commercial Painters, Inc.
Washington Industrial Coatings, Inc.
Wasser High-Tech Coatings, Inc.
Wenrich Painting, Inc.
West Coast Industrial Coatings, Inc.
Westcoast Industrial Maintenance Ltd.
Western Industrial, Inc.
Western Technology, Inc.
Wheelabrator
Wheelblast, Inc.
Wooster Brush Company
Worldwide Industries, Inc.
Worth Contracting
Wuxi Ding Long Trading Co., Ltd.
YYK Enterprises, Inc.
YungChi Paint & Varnish Mfg
ZRC Worldwide
Ziegler Industries, Inc.