On performance and speed differences among spray systems

From *JPCL*, November 2012 | Free Product Information

What differences in performance and speed do you see among plural-component, conventional airless, and conventional air spraying equipment for field painting structural steel?

From Jerry Trevino Protective Liner Systems

Plural-component pumps are very effective in spraying and applying 100% solid materials and are more productive than (hot potting) airless pumps.

Conventional air spraying will not pump high-solids, thick coatings. In the case of 50% to 60% solid materials, airless (hot potting) may be more efficient. Conventional spraying may be more efficient in applying a thin (one to three mils) topcoat for UV protection or for an aesthetic coat over thicker coats of paint on the structural steel.

All three types of spraying have their pros and cons. Plural-component spray systems have a high risk of being off-ratio. Temperature adjustments may have to be made to attempt to equalize the viscosity of both components. In some cases, for instance, you must heat one of the two components more than the other. Fast-setting materials may be sprayed only with plural-component systems.

The size of the project, location, over-spray considerations, target paint thickness, and type of coating used are factors that have to be considered in selecting the type of spraying to be used.

From Jay Barstow Aeroflor Coating Services

Definitely, airless spray (hot potting) is the best for application of low-viscosity, solventless resins, in terms DFT/sec/square foot. It's a function of viscosity and heat. I have applied more than 3 gallons per minute (GPM) from a single airless unit for hours at a time on large flooring projects. Heat, especially in plural-component spray, affects viscosity and flow, but because of internal mixing, the effective pressure, and, thus, flow rate, are lost.

From Giuseppe Santagata Freelance

Plural-component spray requires very expensive equipment, but it is fast, with good production, and saves a lot of paint material, etc. This equipment needs a professional operator, especially to be sure to obtain the correct mix ratio at the tip.

Airless is 100% fast with very high production, but in some circumstances, you also have 80% of paint loss if the equipment is not set properly (pressure tip size and angle), and you need professional sprayers. Air spray or conventional spray is slow, produces a lot of dry/overspray, but it has the possibility to work better in some difficult areas, as well as the possibility to clean the surface to be coated immediately before spraying by using the air in the gun.

Editor's Note: This Problem Solving Forum was posted on JPCL*'s sister publication,* PaintSquare *News. Answers have been edited to conform to* JPCL *style and space limitations. For more Problem Solving Forum questions, go to paintsquare.com/psf/. Problem Solving Forum is an interactive column on* PaintSquare *News and on* JPCL. *Additional answers to this month's question may be submitted to* PaintSquare *News or to* JPCL. *You can also submit questions for Problem Solving Forum on* PaintSquare *News, or you can submit questions to Karen Kapsanis,* JPCL, *kkapsanis@paintsquare.com.*

The Buzz

From *JPCL*, November 2012 | Free Product Information

Anita Socci
JPCL

690 people answered the *PaintSquare News* poll question, "Who gets your vote for President on Nov. 6?" The breakdown (percent and number of respondents) follows as well as a few of the many and varied comments. Go to www.paintsquare.com to see the latest news, quizzes, and polls, and tell us what's on your mind.

'Barack Obama' 60.0% (414)

'Mitt Romney' 37.2% (257)

'No one' 1.4% (10)

'Other' 1.3% (9)

Gail Alario: "Cannot believe the margin is so wide…makes you wonder who took this poll…this is nothing short of mind boggling. Go MITT!"

Jay Mitchell: "I am a little dismayed that the Independents, of which there are a great number in this country and no doubt on this site, feel that the best selection is only one of the two major political parties. … Most are tired of the partisan dichotomy, bickering, and continuous swings of the pendulum."

James Albertoni: "I think more people would be with Mitt if he didn't seem to change his political opinion depending on who he was talking to. That being said…I would have expected this poll to be much closer to 50/50."

Robert Ikenberry: "What I'm seeing in most of the comments is partisanship, rumor repeating, distortion dissemination, personal attacks, and a general perpetuation of the gridlock that is the real reason we haven't been able to move forward as a country to address our real problems."

PSN TOP 10 Results
(As of Nov 6)

1. 1 Killed, 14 Hurt in Bridge Work Mishap
2. Firm Upheld in Fatal Cell Phone Case
3. AkzoNobel CEO Extends Sick Leave
4. Cracks Plague Floating Bridge Project
5. Tower Painter Electrocuted; 2nd Injured
6. Concrete Form Mishap Kills 1, Injures 3
7. PPG to Buy Industrial Coatings Supplier
8. Blast May Have Caused Tank Death; 2nd Fatality Strikes Movie Set
9. 3 Companies Fined in MO Bridge Death
10. Final Ship in New Navy Fleet Arrives

Most Popular Quiz
(As of Nov 6)

What characteristic of concrete allows uncoated steel rebar within a slab to be protected from corrosion?

Michael Beitzel 22/22
Doug Driscoll, Sr. 22/22
Fredy Vidal 22/22

Glenn Nash 22/22
Mark Allen 22/22

##
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Top of the News

From *JPCL*, November 2012 | Free Product Information

JPCL SSPC The Society For Protective Coatings
Webinar Education Series

The 2012 SSPC/*JPCL* Education Series Webinars will conclude in December with a presentation by Heather Stiner of SSPC on the update of OSHA's Hazard Communication Standard.

The webinar, "Complying with the Updated OSHA Hazard Communication Standard," will be presented on December 5 at 11:00 a.m., EST.

Heather Stiner

The OSHA Hazard Communication Standard: 1910.1200 was updated on May 25, 2012, to align with the UN Globally Harmonized System of Classification and Labeling of Chemicals. This update provides a uniform global approach to classifying chemicals and communicating hazardous information provided on container labels and material safety data sheets.

This webinar will explain the importance of the OSHA Hazard Communication Standard: 1910.1200, how it differs from the past version, how to conform to the current version, and how the current standard improves quality and consistency of hazard information in the workplace, making it safer for workers and helping reduce trade barriers, resulting in productivity improvements for American businesses that regularly handle, store, and use hazardous chemicals.

Registration, CEU Credits

This program is part of the SSPC/*JPCL* Webinar Education Series, which provides continuing education for SSPC re-certifications and technology updates on important topics. SSPC is an accredited training provider for the Florida Board of Professional Engineers (FBPE), and Professional Engineers in Florida may submit SSPC Webinar Continuing Education Units to the board. To do so, applicants must download the FBPE CEU form and pass the Webinar Exam, which costs $25.

PPG to Buy Spraylat

PPG Industries has acquired Spraylat, a global specialty coatings manufacturer and supplier, the companies have announced.

Spraylat is a privately owned industrial coatings company based in Pelham, NY. The company serves a customer base in more than 50 countries.

Spraylat manufactures liquid and powder coatings for high-performance industrial and architectural applications on metal, glass, and plastic. Product applications range from tanks, vessels, transportation, and equipment to structural parts, extrusions, and buildings.

Founded in 1883, PPG has global headquarters in Pittsburgh, PA, and operates in more than 60 countries.

***JPCL* Offers New, Free Pipeline eBook**

Protecting and Maintaining Transmission Pipeline is a new, free eBook published by *JPCL*. The eBook, a compilation of expert-written articles on this critical infrastructure type, is now available as a free download exclusively through PaintSquare.com, the online home of *JPCL*.

The edition is a compilation of nine, in-depth, technical articles by leading global experts on technological developments for protecting and maintaining transmission pipeline. The articles, previously published in *JPCL*, cover coatings for oil and gas pipelines, fusion-bonded epoxies for pipeline protection, ISO standards, disbondments of pipeline coatings, and more.

The book is sponsored by Canusa-CPS. To download a free copy, visit www.paintsquare.com/store.

Wilson Leaves Kazakhstan for Scotland

After four years in Kazakhstan on the world's largest oilfield project, *JPCL* Top Thinker Lee Wilson has returned home to the UK with a new position.

The highly regarded author of the *Paint Inspector's Field Guide* has joined Aberdeen, Scotland-based Gemini Corrosion Services as a corrosion and coating engineer.

"After engineering the scope [of the Kashagan oil-field project] and seeing it being executed, I decided that it was time for a change," Wilson said. He is also working on a second edition to his popular *Paint Inspector's Field Guide*.

Wilson is a NACE-certified CIP Level 3 Coating Inspector; an instructor in the NACE Coating Inspector program; and a NACE Senior Corrosion Technologist. He has a regular column, "An Inspector's View from the Field," in *PCE: Protective Coatings Europe*. Earlier this year, *JPCL* named Wilson one of the industry's 25 Top Thinkers.

Lee Wilson

Gemini Corrosion Services provides the global oil and gas, defense, renewable energy, and tubular products industries with surface preparation, coatings application, and consulting services in its facilities and in the field.

U.S. Joins IMO's TBT Ban

Eleven years after it helped launch the measure, the U.S. is set to become the next "Contracting State" for the IMO Antifouling Systems Treaty, following President Obama's August approval of the treaty's ratification package.

Adopted in 2001 by the International Maritime Organization, the International Convention on the Control of Harmful Anti-fouling Systems on Ships prohibits the use of tributyltin (TBT) antifouling coatings on ships and establishes a mechanism to prevent the potential future use of other harmful substances in antifouling systems.

The Convention will enter into force for the U.S. on November 21.

The treaty has the support of coatings manufacturers, the U.S. Environmental Protection Agency, and the American Coatings Association, which represents coating manufacturers.

The marine coatings industry says the Convention "will provide a single regulatory program for all countries throughout the world, as well as a market for hull coatings that do not contain organotin biocides," according to ACA.

The U.S. Coast Guard and the international maritime community have also endorsed the treaty.

U.S. shipyards already must comply with the organotin coating ban for vessels less than 25 meters in length and must meet stringent leaching standards that are unique to the U.S.

Some 61 signatories representing 80.22 percent of the world's tonnage have now ratified the treaty, according to ACA.

Safway Acquires North American Coatings

Scaffold and access equipment supplier Safway Group has acquired North American Coatings (NAC) and its family of companies. According to Safway, the NAC companies will continue to operate independently as a painting, coatings, and fireproofing subsidiary.

North American Coatings is a contractor firm that specializes in applying high-performance coatings for the petrochemical, pharmaceutical, power, refining, marine, manufacturing,

transportation and commercial construction industries.

The Safway acquisition includes North American Coatings' subsidiaries:

- CL Coatings, which provides industrial painting, fireproofing, and specialty coating services throughout the Midwest and Southeastern U.S.;
- Industrial Coatings & Fireproofing (ICF), Long Beach, CA, and Baton Rouge, LA, which specializes in applying intumescent and cementitious fireproofing materials and corrosion-inhibiting coatings; and
- SEI Coatings, which provides industrial coating services to the transportation industry and government facilities.

Based in Waukesha, WI, Safway provides scaffolding and access equipment and services through a network of about 85 branch locations in the U.S. and Canada and a system of distributors in South America.

News

From *JPCL*, November 2012 | Free Product Information

On September 23, 2012. Gov. Jerry Brown signed three new California laws aimed at ramping up natural-gas pipeline safety.

Here is a breakdown of the new laws.

- AB-578 requires the California Public Utilities Commission (CPUC) to adopt gas pipeline safety recommendations made by the NTSB.
- AB-861 prohibits a pubic utility from either cutting spending on operations and maintenance or increasing rates to recover expenses that were used to pay executive bonuses.
- AB-1546 requires the CPUC to adopt performance metrics for pipeline safety and evaluate the state's gas utilities against those metrics.

"This puts us ahead of many other states in pipeline safety in requiring the commission to regulate utilities more strictly," He said. "This could save lives in the future."

Products

BlastPro Bows Blasting/Collector Combo

Oklahoma-based BlastPro Manufacturing has introduced a combination blasting unit and dust collector for medium and large projects.

The newly designed BP-10/BP-5-54 combination is made for surface preparation on industrial plant and warehouse floors, bridge or ship decks, parking garages, and other applications.

The units operate on 460v, 3-phase power. BP-5-54 has a 5 hp blower motor and weighs 1,000 lbs. BP-10 has a 10 hp blast wheel motor and weighs 730 lbs. Both units have a 55-foot power cord.

Both pieces of equipment are based on established BlastPro designs that offer robust construction, operator comfort, and strong productivity, according to the company.

More information: www.blastpromfg.com

New Dow Resin Toughens Polysiloxanes

Dow Corning says that its new 3055 Resin is designed to improve the chemical resistance and flexibility of polysiloxane coatings beyond that of tradtional epoxy topcoats.

According to the company, hybrid coatings formulated with the new resin have shown long-term flexibility and improved chemical, thermal, UV, corrosion, and moisture resistance compared to epoxy and two-component polyurethane systems. The resin allows manufacturers of high-performance paints and coatings to formulate low-VOC polysiloxane coatings with urethane, epoxy, polyester, alkyd, amine, and acrylic systems using amine functionality.

Unlike moisture-cured polysiloxanes, 3055 Resin does not require titanate/tin catalysts or ambient moisture to cure and thus does not contribute to volatile byproducts that can cause film stress and adhesion loss, the manufacturer says.

The resin can be used in a wide variety of protective coating applications, including fire-resistant and intumescent coatings, composite polymers, industrial adhesives, and high-termperature coatings, according to the company.

Dow Corning offers a comprehensive selection of silicon-based additives, resins, and binders for the coatings industry.

More information: www.dowcorning.com/coatings

Hempel Adds Two Intumescents for Steel

Hempel has launched a new range of intumescent coatings for passive fire protection of steel structures.

The first two products in the intumescent line—Hempacore One and Hempacore One FD—are one-component, solvent-borne, acrylic coatings that provide up to 120 minutes of protection in cellulosic files and have performed well in official fire tests, according to Hempel.

Hempacore One is specified for on-site applications; Hempacore One FD is specified for off-site applications and is formulated to provide a very fast drying time.

The new products are the first in Hempel's new intumescent range, and the company is developing more.

Both Hempacore One and Hempacore One FD are approved to the European standard

acid) while being 5 times as flexible as most other novolac epoxies.

EN13381-8 and are currently available in Denmark, Sweden, Italy, Spain, Portugal, the UK, Greece, Italy, Turkey, the Netherlands, and Belgium. They will soon be rolled out elsewhere.

More information: www.hembel.com

Tank Lining Can Be Applied in One Coat

International Paint LLC has launched Devoe Bar-Rust 234P, billed as "the first solvent-free epoxy, low-temperature, potable water tank lining system."

The 100% solids, high-build lining system is designed to meet the North American water and wastewater industry's need for low VOC compliance without compromising performance. It carries NSF/ANSI 61 certification for potable water use, the company says.

The lining system is designed to provide a last cure, 2:1 mixing ratio, and single-coat application capability, according to the manufacturer.

The coating is applied with a plural airless sprayer directly to the interior of the substrate in a single coat of 25–50 mils' DFT or in two coats at 15–25 mils' DFT per coat. Bar-Rust 234P can be applied at temperatures as low as 35 F. When applied at a higher temperature (104 F), the epoxy coating can dry hard in 60 minutes, according the manufacturer's product data sheet.

More information: www.international-pc.com

Thickness Gage Offers Multiple Options

Olympus NDT, a provider of nondestructive testing technologies, has introduced the hand-held 45MG ultrasonic thickness gage that provides measurements that are accurate, reliable, and repeatable, Instant readings can be achieved from one side of a material, making destruction of the part unnecessary, Olympus says.

Applications range from wall-thinning measurements of internally corroded pipes using dual-element probes to precise thickness measurements of thin materials using single element transducers.

According to the company, some optional features include specialized software choices, such as Echo-to-Echo technology for measuring thickness without the need to remove paint and coatings and a single-element High Penetration feature for taking measurements on very thick or highly attenuating materials, such as cast metals, rubber, and fiberglass.

The 45MG is designed for use with all single- and dual-element thickness gage transducers and offers standard features such as sound velocity readings, differential mode, and reduction rate mode.

More information: www.olympus-ims.com

Marker Made for Extreme Temps, Surfaces

Rough, wet industrial surfaces in extreme temperatures can be clearly marked with Markal's new Quik Stik Mini paint marker tool, according to Illinois-based manufacturer LA-CO Industries.

With an application temperature range of 0 F to 392 F (-18 C to 200 C), compact design and durable paint, the tool is made for marking in welding, shipbuilding, oil and gas, metal fabrication, and construction environments.

The solid paint industrial marker dries in five to seven minutes, for almost immediate handling. It is suitable for use on metal, concrete, plastic, wood, and lumber surfaces. Available in four UV- and weather-resistant colors, the marker works on wet, hot, smooth, and rough surfaces, the company says.

The Quik Stik Mini marker has a durable plastic barrel and twist-up knob to advance the paint, and a self-storing clip cap prevents the marker from rolling and creates an airtight seal.

LA-CO Industries is a diversified manufacturer of the Markal brand and various products for the industrial, HVAC, welding, and other industries.

More information: www.markal.com

For more news about the protective and marine coatings industry, subscribe to the daily electronic newsletter, *PaintSquare News*, at www.paintsquare.com.

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The case of…the red rust on a newly applied zinc primer

From *JPCL*, November 2012 | Free Product Information

Richard Burgess
Series Editor, KTA-Tator, Inc.
Richard Burgess, editor of the F-Files series and a senior coatings consultant with KTA-Tator, Inc. (Pittsburgh, PA), has over 20 years of experience in coating condition assessments; failure analysis; specification preparation; expert witness; and environmental, health, and safety consulting.
He is an SSPC-Certified Protective Coatings Specialist and a NACE-Certified Coatings Inspector Level 3.

Richard Burgess, Series Editor, KTA-Tator, Inc.

In this Case from the F-Files, large steel components for a new facility being constructed in the U.S. were fabricated, prepared, and coated overseas with an inorganic zinc primer (IOZ). Upon delivery to an inland river port in the U.S., the components were unloaded for additional assembly work and found to have large surface areas exhibiting red rust. The construction firm responsible for assembly of the components was concerned that the steel would need to be fully blast cleaned again and the zinc rich primer re-applied before construction. Why was a newly applied inorganic zinc primer showing red rust? Was the primer salvageable or did it need to be removed and replaced?

Background

Structural steel plates and shapes (pieces) were fabricated, prepared, and coated in China for high-temperature service (400 C) in a new cement-producing facility in the U.S. The specifications required blast cleaning the exterior surfaces according to ISO 8501-1 (1988) to achieve an Sa 2½ degree of cleanliness. The exterior surfaces were coated according to a coating schedule designated “Program 6,” which required a single coat of a two-component ethyl silicate zinc primer (IOZ) to a minimum thickness of 50 µm (approximately 2 mils). The pieces were stacked and crated using steel frames for transport to the U.S. The pieces were delivered to an inland port on a major U.S. river and uncrated. The fabricated pieces were matched and assembled into larger components by welding. The larger steel components were to be loaded onto barges for transport further upriver to the construction site. The IOZ-coated surfaces of the sections were found to have defined areas of red rust on their surfaces. It appeared that the rust was actually rust stain resulting from corrosion of the uncoated steel crate frames that ran onto the coated surfaces during transport from China (Figs. 1 and 2).

Fig. 1: Assembled stack section showing red rust staining pattern related to crating frames
Photos courtesy of the author

Fig. 2: A second section exhibiting rust staining from the steel crating frames

There was also rusting at fabricated plate edges that were blast cleaned but left uncoated. Following the blast cleaning and prior to coating in China, the edges of plates were taped. The tape protected the steel during coating application. This preserved bare steel edges for welding during final assembly in the U.S. (Fig. 3). It was necessary to confirm that the widespread rust on the IOZ-coated surfaces was rust stain and not initial rusting of the substrate. This confirmation would help to establish the serviceability of the primer. An additional consideration was the appearance of the completed assemblies— delivering a newly constructed facility in a less than pristine condition.

Fig. 3: Coating thickness values along two rusted plate edges. These edges were later cleaned and coated.

The Investigation

The facility owner required that the field investigation of the rust and the preparation of a preliminary report be provided on an expedited basis because a remediation plan was needed to address the cause(s) of the rusting while component assembly was underway and before assemblies were shipped to the final construction site. A supplemental report was to be issued, as appropriate after any requisite laboratory examination of samples is completed. The site visit was made to the initial assembly port, and the rust on the fabricated items was examined in the presence of the owner's on-site representative. The surfaces were examined with and without magnification to determine if any of the visible rust stain was the result of substrate corrosion. Coating thickness measurements were also obtained, and samples were collected.

Rust on the IOZ primer was confirmed to be staining from three sources. The overwhelming majority of staining came from the uncoated carbon steel shipping cradle frames, which were corroding and dripping rust-bearing moisture and particles onto the IOZ (Figs. 1 and 2). These rust stains did not originate from the substrate beneath the IOZ.

The second source of rust staining was from the components themselves. Substrate corrosion developed along the taped but uncoated edges and seams around label tack welds and lifting fixtures (Fig. 3).

Finally, several of the fabricated pieces exhibited patches of white storage stain[1] (zinc corrosion product). The stain was generally associated with surfaces where water might collect during transport. In rare instances, isolated spots of red rust were present (Fig. 4) in the fields of the white patches. The red rust spots in these cases did originate from the substrate.

Fig. 4: White zinc corrosion products with spots of red rust occur where water stands on an IOZ-coated surface for extended periods.

The thickness of the IOZ-coated surfaces was measured using a calibrated Type 2 (electronic) thickness gage. Thickness measurements were not collected according to the frequency invoked by SSPC-PA 2 because this standard was not referenced in the original specification and because the frequency of measurements prescribed by PA 2 is not intended to be used for a failure investigation. However, spot readings were obtained on the surfaces of interest. The thickness measurements were found to be above the minimum 50 µm required in the specification (Table 1). The manufacturer's product data sheet (PDS) reported that the typical dry film thickness of the applied film is 75 µm (3 mils), with recommended minimum and maximum thicknesses of 50 µm (2 mils) and 90 µm (3.5 mils), respectively. The data sheet also warned about the risk of mud-cracking if the film thickness exceeded 125 µm (5 mils).

TABLE 1
Coating Thickness Measurements of Inorganic Zinc Primer

Surface Appearance	Units	Average	Minimum	Maximum
No Rust Stain	Microns Mils	106 4.2	97 3.8	118 4.6
Rust Stain Present	Microns Mils	130 5.1	122 4.8	137 5.4
Overall	Microns Mils	112 4.4	97 3.8	137 5.4

A destructive gage was used to examine the applied coating thickness and determine the extent of rust stain penetration into the zinc film. Newly applied IOZ coatings are porous (as demonstrated by outgassing or pinholes when overcoated). The examination revealed that rust stain typically penetrated to about 12–13 µm (~0.5 mils). Figure 5 shows the typical appearance of the rust-stained film after an incision was made with a precision tungsten carbide tip.

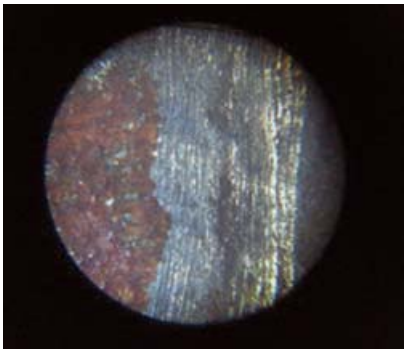
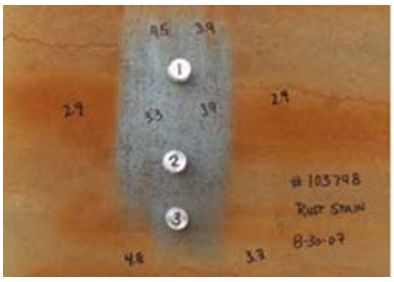
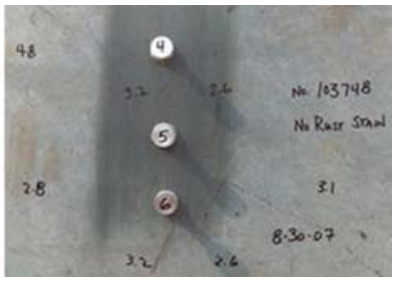


Fig. 5: A tungsten carbide tip incision through a rust stained coating film viewed at 30X

Knowing that the coating was in excess of the manufacturer's maximum recommended thickness raised concern about film integrity. While no areas of mud-cracking were observed, IOZ is subject to cohesive failure when applied at excessive thickness. Therefore, a recommendation to test the adhesion of the IOZ in accordance with ASTM D4541 was made and approved. Testing was performed using a fixed alignment adhesion tester on both stained and unstained surfaces (Figs. 6 and 7). Light sanding was used to clean the surface of the coating. As might be expected, light sanding removed much of the rust stain.





Figs. 6a (left) and 6b (right): Adhesion test loading fixtures (dollies) attached to inorganic zinc primer in areas with rust stain (left) and without rust stain (right)

Fig. 7: Adhesion testing using a fixed alignment tester

The pull-off adhesion testing produced values in excess of 1,000 psi, as well as a series of glue breaks between 550 and 600 psi. The adhesive/cohesive strength of the IOZ primer was good, even in areas of higher thickness.

[1] *White storage stain is most commonly associated with galvanized products that remain wet during storage and is composed of zinc corrosion products. Similarly, zinc corrosion products can accumulate on inorganic zinc-coated articles if water stands stagnant on the surface for extended periods.*

Conclusions

The overwhelming majority of rust stains on the IOZ primer of the fabricated steel sections resulted from the corrosion and rust (stain) that ran down from uncoated carbon steel shipping cradles. These rust stains did not originate from the substrate beneath the IOZ primer. Examination revealed that the stains penetrated the surface only about 12–13 µm (0.5 mils) with 75–100 µm (3 to 4 mils) of unstained zinc coating on the substrate. There was no indication of coating failure. The staining would have no impact on coating performance, and no corrective action would be necessary to maintain integrity. However, the staining represented an aesthetic issue that did require resolution.

Substrate corrosion was present where the sections had unprotected steel exposed. These were on and adjacent to edges not coated in the fabrication shop in China. Rust had also begun to form in seams and crevices resulting from welding in the U.S., and from labels and fixtures installed in China as well as the U.S. One instance of white storage stain corrosion with spots of red rust was observed on one component. These conditions are different from the rust stain on the IOZ and required a different resolution.

The rust on the unprotected edges was not unexpected. Pre-primed steel pieces that are shipped and assembled in the field normally have bare steel along the edges to be welded. Blast cleaning and coating the weld seam and edges following assembly are routine. The red rust spots in the field of white storage stain was somewhat unusual but will occur when water stands on IOZ coating for extended periods. The zinc dust in the coating acts as an anode while the steel substrate is cathodic. The zinc preferentially corrodes, forming the white zinc corrosion products. However, once the metallic zinc within the area was converted to the corrosion products, it was no longer anodic to the steel, and the steel began to corrode, producing the red rust spots. Cleaning and coating the areas of white storage stain would be necessary.

Recommendations

The following steps were recommended to help prevent and even avoid, to the extent possible, additional rust staining.

- Delivered and crated steel pieces were only uncrated as they were selected for assembly. Uncrating or otherwise protecting all of the pieces still in the steel crates would avoid additional rust stain on the still crated pieces.
- Power wash all the steel pieces that were already welded together and the remaining pieces as they are uncrated. Use fresh, potable water to remove contaminants left by sea

water, loose corrosion, and soluble zinc salts.

- Stack pieces as they are uncrated to minimize the ponding of water on IOZ surfaces to avoid further wet storage stain.

Without fully overcoating the IOZ primer with an appropriate finish coat, any localized cleaning and touch-up would not fully eliminate streaks and spots where rust staining occurred. Sanding or milling down the surface to eliminate the rust would risk removal of too much zinc, loss of protection, and additional rust.

The repair options included overcoating the rust-stained areas with another coat of IOZ. Yet this would still leave streaks and spots of a different color and create a risk of delamination of the IOZ overcoat. While an organic zinc primer is typically used as a repair material over IOZ, the design service temperature (400 C) would exceed the temperature limitations of organic zincs. Attempting to remove the stains by brush blast cleaning and surface grinding could damage the primer and compromise performance. Lesser efforts, such as sanding or stripping with soft abrasive materials, would be time-consuming and have limited success. Zinc is relatively reactive compared to rust stain; therefore, use of chemical cleaning agents was considered and investigated.

A standard repair procedure for rust on unprotected surfaces has already been well documented. It was known that the weld seams, following assembly, would require cleaning and coating. Power Tool Cleaning to Bare Metal (SSPC-SP 11) or blast cleaning along the weld seams to a Near-White Blast Cleaning (SSPC-SP 10/NACE 2) condition could be performed where substrate corrosion had occurred (edges, welds, clips, etc.). The prepared surfaces could then be spot coated with IOZ. Brush and roller application was permitted and performed on several of the assembled pieces. However, the quality of application was inconsistent; brush strokes, lifting edges, and mud-cracking were observed. Conventional (air) spray application was recommended.

Full overcoating to hide all of the IOZ spot repairs would require a coating that could tolerate the service environment of 400 C (752 F). This limited the number of candidate coating options. Test applications of candidates could have been performed to determine which products might suitably reduce the visual contrast and bond satisfactorily to the IOZ. The original zinc, an aluminum high-temperature paint, and a gray silicone-based, high-temperature paint were all candidates for spot application after cleaning and solvent wiping. (Staining the gray IOZ surfaces to match the rust stain color, a somewhat novel approach, was also added to the repair options.) Overcoating would result in a two-coat high-temperature service coating system rather than the one-coat IOZ specified.

Given the contrast that would be created anyway by the cleaning and coating of the weld seams (a visual condition generally accepted for zinc-rich primer applications), it was determined that the rust stains would be removed using chemical cleaning agents only. Test cleaning with different products ultimately revealed a product that would remove the majority of rust stain and not damage the inorganic zinc primer. This eliminated the need to overcoat the rust stained surfaces.

Comment from jason bray, (1/17/2013, 11:44 AM)

Yes for the F-Files, back from the days of "the Case Of The Rust Stain Patterns Appear During Transport". However I didn't see a recomendation that the product to be shippid in the future in un-rusted shipping containers. So often we work so hard to get a coating just right and someone down the line is focused on another task, like getting the darn things there, without caring for our coating job being ruined.

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The Ideal Coating Inspector

From *JPCL*, November 2012 | Free Product Information

Brendan Fitzsimons Pyeroy
Brendan Fitzsimons has nearly 30 years of experience in the protective coatings industry with over two thirds of this at Senior Level with International Coating Contractors. He is a divisional director at Pyeroy, an international coatings contractor.
Fitzsimons has a Master's Degree in Materials Engineering, is a Chartered Scientist and a Fellow Member of the Institute of Corrosion. He is a NACE Protective Coating Specialist, Coating Inspector, and Peer Reviewer.

Brendan Fitzsimons, Pyeroy

Surface treatments and application of protective coatings are generally expensive and essential processes, and they are critical tasks when surfaces are exposed to hostile environments. Inspectors, therefore, are used extensively to check the quality of the work and reassure clients and customers that each task has been conducted in accordance with the coating specification, international standards, and/or the manufacturer's product data sheets. The profession may be known as coatings inspector, painting inspector, or paint inspector. Whatever phrase is used in the protective coatings industry, the term "Inspector" is used in this article to reflect many activities and locations globally.

Inspectors are used at various levels during a project and may be employed by the painting contractor, fabricator, engineering organization, or ultimate customer. It is not uncommon to have inspectors who have worked at all levels and thus gained the experience of such to make the first and final decision on inspections.

Inspectors work in virtually every industry including nuclear, offshore, marine, petro-chemical, infrastructure, pipeline, and general construction. Some inspectors remain specialized within a specific industry such as offshore while others move from industry to industry depending on the length and extent of the project and location.

Photo of splashzone Courtesy of the author photo: iStock

Because of various recent regulations in the corrosion control industry, such as the IMO PSPC requirements in the marine industry, there has been an increased need for qualified inspectors. Some of these regulations have certainly produced a number of training courses and newly qualified inspectors who are now equipped with their 'ticket' to conduct their inspection duties in their chosen industry.

This article will review the various qualifications and training requirements of the inspector and try to establish whether the ideal inspector really does exist.

For the purpose of this article, we will refer to the 'coating inspector' because this is the most commonly used phrase in most of the industries discussed.

Lifetime Experience

Having been in the coatings industry for almost 30 years, I can say in all honesty that I have met a lot of coating inspectors who do an excellent job of maintaining the credibility of the training, qualifications, and good name of the profession as a whole. Unfortunately, I have also encountered some coating inspectors who, in my opinion, should not be employed in the protective coatings industry at the inspector level.

At a recent conciliation between a painting contractor and a bridge owner who hired an 'independent' coating inspector, the conciliator concluded: "The coatings inspector can make or break a job." Unfortunately, in this particular case, the conciliator was correct, and the painting contractor was awarded many thousands of Euros for the instructions given by the coatings inspector that breached the terms of the contract. Unfortunately, some inspectors can be overzealous, difficult, or both.

There are many examples where the coating inspector has created problems on a contract through lack of experience, lack of knowledge, or an intention to build a reputation for the wrong reasons. Common problems created include the following:

- imposing particular tests that are not specified;
- increasing levels of quality above those required in the specification and not being pragmatic, resulting in an increase in the length of a contract and a corresponding increase in personal remuneration; and
- creating a poor working relationship with the contractors, such as the 'us vs. them' approach.

There are also a few coating inspectors who are 'frustrated' contract managers and believe they could manage the contract better. In most cases, the coating inspector has been trained in quality issues but has little concept of planning, costs, practicalities, and completing a project on schedule.

Coating inspectors have limited legal obligations within a contract and will not generally have professional indemnity insurance. That said, inspectors should recognize the financial impact of recommendations and advice, and limit their recommendations to areas within their field of experience and qualifications. More importantly, coating inspectors should recognize that they provide recommendations, and not direction. Generally, the client should make the decisions, choosing whether or not to follow the inspector's recommendations.

There are also many examples in which a coating inspector has passed on his or her wealth of experience and knowledge during a contract and, by so doing, has benefited all parties, including the painting contractor. An engineer once said, "a good coatings inspector is worth his [her] weight in gold."

Coating systems may have been designed and tested for certain hostile locations, and, without the correct level of quality control, premature coating failure is always a possibility. There are generally good reasons why high-performance systems are specified. The coating inspector should make himself or herself fully familiar with any specified product. Product training may also be a requirement.

Industry Qualification Schemes

Various credible coating inspection qualification training schemes are used globally.

• Institute of Corrosion (ICorr; UK)

The Institute of Corrosion is a professional body in the UK and has an established training scheme for paint and coating inspectors. The scheme also has training and qualifications for inspecting metallic coatings, pipeline coatings, cathodic protection, and thermal insulation.

The paint and coating inspector scheme has three Levels: 1, 2, and 3. There is no pre-requisite for attending Level 1; however, qualifications and experience are required for Levels 2 and 3.

Closed book specific and general examinations are conducted for all levels along with practical essays for Levels 2 and 3. Practical assessments are also conducted.

The scheme is conducted and governed in accordance with the Institute of Corrosion Document ICORR REQ DOC.

• SSPC: The Society for Protective Coatings

The SSPC is based in the U.S. and is a non-profit organization focused on the protection and preservation of concrete, steel, and other industrial and marine structures and surfaces through the use of high-performance protective, marine, and industrial coatings.

The SSPC has a Protective Coating Inspector scheme (PCI) with three levels, similar to the

Institute of Corrosion's scheme. There are no pre-requisites for the entry level, but qualifications and experience are necessary for Levels 2 and 3. Level 3 consists of a four-part examination that includes creating an inspection test plan based on a coating specification. The training program is well established and specified globally. SSPC provides many other courses aimed at painting applicator skills, supervisor training, and other aspects of protective coating work.

• NACE International

NACE International is a professional organization for the corrosion control industry and has a large membership in over 100 countries.

NACE has an established coatings inspector program (CIP) that has gained worldwide recognition; it has been available for over 25 years and has some 19,000 certified Inspectors.

The CIP course consists of three levels. The first two levels are similar to other training schemes for coating inspectors; however, the third level is a Peer Review. The Peer Review consists of a two-hour verbal examination in front of three experienced coating experts who have many years of coating inspection experience as well as being NACE-qualified coating inspectors. As with other training schemes, there is no entry pre-requisite for the course entry level.

• FROSIO

The Norwegian Professional Council for Education and Certification of Inspectors for Surface Treatment (FROSIO) acts through formulation of quality demands for surface treatment in accordance with the Norwegian Standard NS476.

FROSIO deals only with examination and certification, not training. A number of training bodies are used to deliver the training, which consists of 80 hours of theoretical and practical training in accordance with NS476 as the syllabus.

There are three levels of qualification, with no experience required for Level 1 (white certificate). Level 2 (green certificate) candidates must have two years of experience, and Level 3 (red certificate) candidates must have five years of experience, two of which are to be documented inspection practice. Certification at Level 1 and 2 is achieved by examination. Level 3 is achieved by Level 2 plus documented evidence.

• TWI CSWIP & BGAS

The Welding Institute (TWI) is a worldwide organization and a reputable expert in welding techniques, training, testing, investigation, and related areas. TWI has a Painting Inspector training scheme that consists of three levels, Grades 3, 2, and 1. No pre-requisites are required for Grade 3, and candidates must have obtained Grades 3 and 2 to attempt Grade 1. Grade 1 is an advanced qualification that specifically deals with offshore practices. The scheme was initially developed for personnel wanting to work for British Gas only and, thereafter, other clients and locations as well.

Table 1 represents the various levels between the main global training schemes for coating inspectors. The writer recommends that a light Internet reading on the various schemes and levels should be conducted before specifying one or all.

TABLE 1
Levels in Main Global Training Screens

ICorr	SSPC	NACE	FROSIO	TWI CSWIP & BGAS
Level 1	Level 1-Basic	Level 1	Level 1-White	Grade 3
Level 2	Level 2-Certified	Level 2	Level 2-Green	Grade 2
Level 3	Level 3-Certified	Level 3 Peer Review	Level 3-Red	Grade 1

All of the above training schemes have one thing in common—no experience is required for a candidate to attempt the first level of the scheme. One scheme provider states, "No formal entry qualifications required, but knowledge of dry abrasive blast cleaning or industrial paint application techniques would be advantageous." Some of the above schemes do not issue 'certification' for the entry Level, so it is worth checking on the specific scheme and type of certification. It is important to specify the scheme along with the required Level, e.g., NACE CIP Level 2, not just NACE CIP.

Unless specifically requested, the trained coating inspector, regardless of the training scheme, should:

- observe the work,
- assess the work,
- document the work, and

- report the work.

All of the above tasks should be conducted in accordance with the contract Inspection Test Plan.

This author is not averse to new recruits entering the coatings industry. However, in the age of new and sophisticated coatings, high-risk projects, and customer reliance on technical advice from the 'coatings inspector,' the question arises about whether a newly trained and qualified coatings inspector, who has possibly never been involved in the protective coatings industry, is a suitable choice, given the potential exposure to extreme environments and the probability of working with contractors who have vast experience in most types of surface treatments and protective coatings.

It is clear that there is a difference between highly experienced individuals who are acting almost as consultants to their customers, and trained but inexperienced inspectors who should be regarded as quality control technicians and perhaps no more. Customers should be, and are often not, aware that the provision of detailed technical advice is not appropriate for novice inspectors.

The question of comparing qualification levels from scheme to scheme is often raised and debated. It would not be politically correct for this writer to give views on the schemes and what the equivalence between levels is. However, this writer would recommend that the specifier review the syllabuses of the different schemes, the recommended experience required per level, and the type of examinations to select the scheme best suited to a particular contract.

ISO Standard

An ISO standard for the qualification or certification for inspectors is under review. Certain European countries have expressed a desire to certify inspectors who could then work in other countries, with that certificate being accepted by all other countries. What the standard should be has not been defined, e.g., guidelines, qualifications, certification, or minimum course requirements. Because no agreement could be reached at the initial meeting and in order to report back to TC35/SC14, it was agreed to send out a questionnaire to national mirror committees for their views. The discussions were planned to continue when the questionnaires were complete; however, it may be some time before an agreement is reached on what the ISO standard should address.

Online Training

A recent change in the training of coating inspectors is with the use of online training through the Internet (Fig. 1). There are potential advantages and disadvantages with online training.

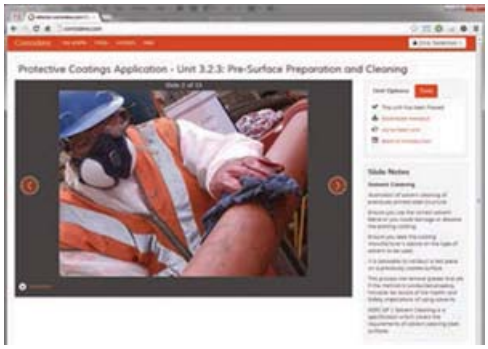

Fig. 1: Typical page in a web-based training program. Courtesy of the author

Here are three significant advantages:

- training can be conducted at any time to suit the student;
- training is conducted at home or work, so there are no hotel bills or expenses; and
- the training is updated easily and can be used as an ongoing source of information.

Here are two significant disadvantages:

- the instructor has no direct interface with the student; and
- a practical session is still required to cover the use of inspection equipment, etc.

Some of the schemes currently use the Internet for online training, and this approach to training is expected to increase dramatically over the next few years. One paint company is using online training to educate and qualify over 600 staff.

There is no doubt the use of online training will increase. A balance of online training and

practical training before examinations is the recommended process. This will ensure that students are able to train with and demonstrate on the inspection equipment. Minimal industrial experience is essential for the online training. Online use for general corrosion education is also set to significantly increase in the coming years.

Ongoing Technology

Technology is forever changing in the coatings Industry. Standards are amended and updated at specific anniversaries (Fig. 2). Re-certification of coating Inspectors usually consists of a CV, a possible questionnaire, and fees. The writer believes that coating inspectors should

Fig. 2: Inspectors should keep up with changing standards, such as those for adhesion testing. Courtesy of the author

• be aware of new technology, including instrumentation, regulations, and standards, on an ongoing basis, possible through an IT hub; and

• prepare more concise information relating to what experience and knowledge they have attained.

Some of the scheme providers interrogate the coating inspector considerably more than others on re-certification. The process could possibly be included in the proposed ISO standard. Consideration should be given to requiring the coating inspectors to compile and continually update a “CPD”—Continuing Professional Development—which demonstrates that their knowledge and professional skills are kept up to date.

The coating inspector should be able to keep up to date with coating technology, inspection equipment, new standards, etc.

A coating hub would be of great benefit to the industry. All scheme providers would, however, have to contribute and agree upon the contents and updates, etc. Alternatively, an independent Internet hub could be approved by all training providers.

Health and Safety

All the above training schemes for coating inspectors cover aspects of health and safety. The regulations for health and safety in the coatings industry have increased over the past few years. There is now a greater need for all personnel to have specific Health and Safety training. All coating Inspectors should be able to write risk assessments and method statements. The aforementioned is not generally covered in the coating inspectors’ training. This writer would strongly recommend additional health and safety training to that which is usually afforded by the painting supervisor or painting manager.

The coating inspector should be generally fit and used to working at heights; in confined spaces; and in poorly lit, potentially dusty, and hazardous environments. Any intake of medication, poor eyesight, or other health conditions should be declared before starting the work or whenever the worker’s health status changes.

Inspection Test Plans

Inspection test plans that describe the methodology of the preparation and coating process step by step are an ideal tool for agreeing upon the inspection activities in advance of the work. This writer is convinced that the use of agreed inspection test plans that detail the level of inspection, type of test, and equipment (including exact details with regard to pass/fail criteria) would greatly assist contracts and ensure disputes are resolved quickly. The contractor should be fully familiar with the painting specification as well as where and how the inspection test plan is used. All parties must agree upon the hold (h), witness (w), and surveillance (s) points for all levels of activity. All the above should be covered at the pre-contract meeting, which must have the contractor and coating inspector present. One scheme provider has the development and use of Inspection Test Plans as part of the training course. Other scheme providers have a cursory review while still others do not discuss the Plans at all.

Documentation

The coating inspection industry could benefit from standardization of documentation. This writer has witnessed over 50 types of daily inspection forms, logs, weekly reports, and other inspection documents. Internationally agreed-upon inspection reports could be approved and placed on the coating inspection Internet hub approved by all scheme providers. Some scheme providers do

give a list of key forms used to document coating work and quality monitoring but these are suggestions only and not acknowledged by other scheme providers. Some coating specifications stipulate the details that should be contained within the documentation and some give specific examples.

Experience and Attitude

Experience is invaluable. If you are going to line a vessel with a specialty coating or work on a complex project, an experienced coating inspector is essential. You should follow up on a CV submitted by an agency to ensure it is correct, and ask for references wherever possible. What you will not find on a CV is the attitude of the coating inspector. Most coating inspectors have a good attitude toward the work they inspect and desire to achieve a high-quality job. There are, however, a few coating inspectors who wish to enforce the painting specification overzealously because they think they have the power to do so and do not understand that the coating inspector should also be pragmatic and understand the costs of doing the work and possible program implications.

The writer would prefer a coating inspector who has limited but adequate experience with a good attitude rather than an experienced coating inspector with a bad attitude. The importance of obtaining and checking references cannot be overemphasized.

Conclusion

So does the ideal coating inspector really exist?

If you can find a coating inspector who is mature, qualified, experienced in the specific contract or product, has a good attitude toward helping the contract, is aware of the costs implications if wrong decisions are made, is safety conscious as well as flexible and firm, has a good reputation, and is in good health, then the answer is a definite yes.

I would say, however, that the chances of finding such a coating inspector could be very low (<10%). Therefore, a 'wish list' must be produced and graded to suit the requirements of the contract and the client.

Although the client's requirements will vary, I would personally give 50–75% of the grading to experience and qualifications. Ranked next are the attitude and willingness of the coating inspector to work within the boundaries of the contract and to be fair and reasonable.

If you are hiring inspectors, do not just rely on a CV. Acquire references, check them, and take time to interview wherever possible.

Finally, the coatings industry is truly global. It is, however, a small industry, and the reputation of an inspector, good or bad, travels fast. The time invested in the correct recruitment will pay dividends in the long term.

About the Author

Author of the *Fitz's Atlas of Coating Defects*, he has written many papers on corrosion protection and is actively involved with the development of training material for coating applicators and coating inspectors.

He is a recipient of the 2012 award, *JPCL*'s Top Thinkers: The Clive Hare Honors, and was featured, along with the other winners, in a supplement to the August 2012 *JPCL*.

Editor's Note: This article, by Brendan Fitzsimons, is part of the series of Top Thinker articles appearing in *JPCL* throughout 2012. Mr. Fitzsimons is one of 24 recipients of *JPCL*'s 2012 Top Thinkers: The Clive Hare Honors, given for significant contributions to the protective coatings industry over the past decade. The award is named for Clive Hare, a 20-year contributor to *JPCL* who shared his encyclopedic knowledge of coatings in many forums. Professional profiles of all of the award winners, as well as an article by Clive Hare, were published in a supplement to the August 2012 *JPCL*.

Comment from Katheravan Arumugam, (11/23/2012, 11:02 PM)

I totally agree with all that has been said in this article, I'm a coating specialist engaged by the shipyard to look into assisting them to communicate with their client and propose technical query to resolve some issue related to the specification which is not practical to be achieved under the

Temperature and Humidity Monitoring for Industrial Coating Application

From *JPCL*, November 2012 | Free Product Information

Don Schnell DRYCO
Don Schnell is the national strategic accounts manager for DRYCO, which is based in Downers Grove, IL. He has worked in the protective coatings industry since 1977 and has more than 20 years of experience with dehumidification and temporary climate control. He has had an important role in the development and expansion of climate-control innovations used in the protective coatings industry.

Don Schnell, DRYCO

It has long been known that temperature and humidity have a significant impact on proper surface preparation and application of liquid-applied coatings. High humidity near the surface of dry abrasive--blasted steel increases corrosion rates and therefore causes flash rusting before the prime coat can be applied. Surface temperatures impact the rate of polymerization and the evaporation rate of solvents in the coatings as they are applied and cured. A quality coatings application can occur only when these conditions are within the tolerance of the product being applied.

To assure that these conditions are maintained, the contractor and the inspector must employ good practices to measure, monitor, and record these conditions. This attention to climatic conditions is important on interior and exterior applications and with or without climate control measures. The accuracy and completeness of this measurement and documentation not only assures a quality application, but also protects all parties from culpability should a premature coating failure occur. This article reviews good practices for measuring, monitoring, and recording ambient conditions during coating operations.

iStock

Objectives of Measuring, Monitoring, and Recording Conditions

To help ensure that the coating project is successful and that the service life of the coating is maximized, it is imperative that the conditions be monitored from the time surface preparation begins until final cure is achieved. On the industrial coating project, the facility owner should demand that regular readings be taken and recorded. To be sure that this occurs, a well-written specification must be in place and followed. The owner's representative should demand this documentation throughout the project, avoiding the disappointment of learning after the fact that the readings were not taken or documented. Any reconstruction of condition data is only supposition and a guess at best.

Current practice usually includes gathering readings for dry bulb temperature, surface temperature, relative humidity, wind speed, and dew point temperature. (See the sidebar, "Psychrometric Definitions," for more on the meaning of these different readings.) The measurement and monitoring should include at a minimum, surface temperature and dew point temperature. Although relative humidity is also important, the true relative humidity at the surface can be determined only by using the surface temperature and dew point temperature. (See the sidebar, "Calculating Relative Humidity at the Surface.") These readings should be taken in all areas that are in the process of surface preparation, coating application, or coating cure. The specifier and inspector also need to consider that conditions vary on different areas of the project. Here are some examples.

Psychrometric Definitions

Dew Point Temperature: The temperature at which moisture condenses from the air. A common example is when the air is cooled adjacent to a cold beverage and condensation forms on the outside of the glass. Dew point temperature is important on the coating job as condensation on surfaces causes flash rusting and coating cure problems. As mentioned in this article, dew point temperature is also a useful metric when determining appropriate environmental conditions.

Dry Bulb Temperature: The temperature of the air as measured by a dry thermometer. On the coating job, dry bulb temperature impacts surface temperatures, relative humidity, and material temperatures.

Relative Humidity: The moisture content of the air as a percentage of what it can hold when the air is saturated at that same temperature. When the air is saturated, it is at 100% relative humidity.

Specific Humidity: Also called the humidity ratio. This is the ratio of the actual water that is in the air to the weight of the air itself. Specific humidity is expressed in grains of water per pound of air. A grain is a simple unit of measure and there are 7,000 grains in a pound. This is another way of expressing dew point temperature.

Wet Bulb Temperature: The temperature of the air as measured by a thermometer surrounded by a wetted wick. The wick draws heat from the sensing bulb as the water evaporates. The rate of evaporation is dictated by the amount of moisture in the air, therefore, the resulting temperature indicates the amount of moisture in the air. This is only valuable on the coating job when a psychrometer is used. The wet bulb must be compared to the dry bulb temperature to determine the relative humidity or dew point temperature.

Calculating Relative Humidity at the Surface

At 100% relative humidity, the dew point temperature equals the dry bulb temperature and condensation begins to occur. If we can keep the relative humidity (at the surface) below 50%, we can keep dry abrasive-blasted steel clean for some time. The relationship between relative humidity and surface temperature is often misunderstood and misinterpreted on the jobsite.

On the coating jobsite, the only conditions that matter are those occurring adjacent to the surface being worked on. This is an important point to make because condition readings taken elsewhere in the space can be misleading. As an example, consider a bridge project that exhibits the following conditions:

- dry bulb temperature: 70 F;
- relative humidity: 60%; and
- surface temperature: 60 F.

The observer measuring relative humidity may be satisfied that 60% is acceptable. In reality, the air at the surface of the bridge steel is cooled down to 60 F, raising the relative humidity to 85%. This condition represents a dew point temperature of 55.5 F. When compared to the surface temperature, this is a difference of only 4.5 degrees. Typical coating application guidelines call for a maximum of 85% RH and a minimum difference of 5 F between the surface temperature and the dew point temperature. This condition can easily occur at dusk on a clear night or in the morning before the sun can heat the steel.

The author has experienced many situations during tank work where panic calls come in from the jobsite regarding high humidity in the tank when the cooling equipment may be maintaining a very acceptable relative humidity at the surface. The reverse also occurs where the observer measures a nice low relative humidity in a heated tank while the cold tank surface is about to condense.

The solution is to forget about relative humidity. It changes with temperature and does nothing but confuse things. Dew point temperature will equalize in a well-contained space and is very consistent from one end of the bridge to the other. If the monitoring focuses on

dew point temperature and surface temperature, we can all deal with accurate and meaningful metrics. Most measurement tools now also display dew point temperature so conversions are rarely needed.

To make the leap from relative humidity at the surface to dew point spread, a little work with a psychrometric chart tells the observer the following.

- The often-specified maximum relative humidity of 85% equates to a surface temperature that is 5 degrees above the dew point temperature.
- To preserve dry abrasive-blasted steel (often referred to as “holding the blast”), the surface temperature should be at least 20 degrees above the dew point temperature. This varies a little as temperatures fluctuate, but a 20-degree spread is a safe middle ground.

- Surfaces heat up when exposed to sunlight.
- Surfaces cool when exposed to the night sky, particularly on clear nights. It is typical to experience surface temperatures well below the ambient air temperature on a clear, still night.
- Surface temperatures are highly impacted by exposure to wind or air movement.
- Hot air rises.
- Buried surfaces, surfaces on the ground, and surfaces below the water line react much differently than those exposed to the atmosphere.
- Dew point temperature equalizes very quickly throughout a space. Dew point temperatures will be fairly consistent in an enclosed space unless the space is compartmentalized or elongated, or if there is excessive air flow or infiltration of outside air.

(See the Sidebar, “Sample Specification for Environmental Conditions.”)

Sample Specification for Environmental Conditions

3.01 ENVIRONMENTAL CONDITIONS

A. Do not apply coatings, under the following conditions, unless otherwise recommended by the coating manufacturer:

1. Under dusty conditions, unless tenting, covers, or other such protection is provided for items being coated.
2. When light on surfaces measures less than 15 foot-candles.
3. When ambient or surface temperature is less than 45 degrees Fahrenheit.
4. When relative humidity is higher than 85 percent.
5. When surface temperature is less than 5 degrees Fahrenheit above the dew point.
6. When the surface temperature exceeds the manufacturer’s recommendation.
7. When ambient temperature exceeds 95 degrees Fahrenheit, unless manufacturer allows a higher temperature.

B. Provide fans, heating devices, dehumidifiers, or other means recommended by manufacturer to prevent formation of condensate or dew on surface of substrate, coating between coats, and within curing time following application of topcoat.

C. Provide adequate continuous ventilation and sufficient heating facilities to maintain minimum 45 degrees Fahrenheit for 24 hours before, during, and for 48 hours after application of topcoat.

Courtesy of Russell Spotten, Corrosion Probe

Manual Readings

Before the surge in electronic measurement equipment, ambient conditions were obtained in the field using a sling psychrometer (Fig. 1), and surface temperature was taken with a magnetic surface thermometer.

Fig. 1: Sling psychrometer Courtesy of Bacharach, Inc., and KTA-Tator, Inc.

Infrared thermometers offer a much more convenient and accurate method for reading surface temperatures while giving the inspector the ability to get readings on surfaces several yards away from the instrument (Fig. 2).

Fig. 2: Infrared thermometer Courtesy of Raytek

The psychrometer is a device that holds two thermometers in an air stream. The end of one thermometer is covered with a cotton wick that is wetted with distilled water. When the air passes over the wetted wick, it is cooled by evaporation until it reaches the wet bulb temperature. By comparing the dry bulb and the wet bulb temperatures, one can determine the dew point temperature or the relative humidity using a psychrometric chart, tables, or special software designed to make these calculations. There are two common versions of the psychrometer, aspirated and sling-type. The aspirated psychrometer is housed in an enclosed case where a small fan passes the air across the wetted wick at the prescribed 600 feet per minute. The more common tool on the job-site is the sling psychrometer, which holds the thermometers in a tube that is spun around to create the air flow. When read properly and if the water and the wick are clean, the psychrometer can be accurate within 5%, and it does not need calibration. The author prefers an aspirated psychrometer over all devices for field measurements.

A common error in reading these instruments is taking average readings or spinning the thermometers too long or not long enough. The most accurate reading is the lowest wet bulb reading the user reads. The wet bulb reading should be monitored as it drops and then begins to rise again while the wick begins to dry out, with the lowest observed reading recorded. It may take five or more tries to reach the lowest possible reading.

Magnetic surface temperature thermometers get the job done but can lose accuracy with use. It is not uncommon to see these devices in use with cracked lenses, damage from falling to the floor of the tank, or paint overspray or steel grit caked on them.

Today, it is much more common to see electronic measurement instruments on the coating jobsite. These include instruments that measure dry bulb temperature, relative humidity, and surface temperature while calculating and displaying the dew point temperature. With on-board logging features, these devices are capable of logging the data collected with time stamps to later download to spread sheets or other formats. These instruments are very convenient and can allow the user to take many readings rapidly (Fig. 3). It is important to calibrate these devices regularly, particularly when exposed to extreme conditions.

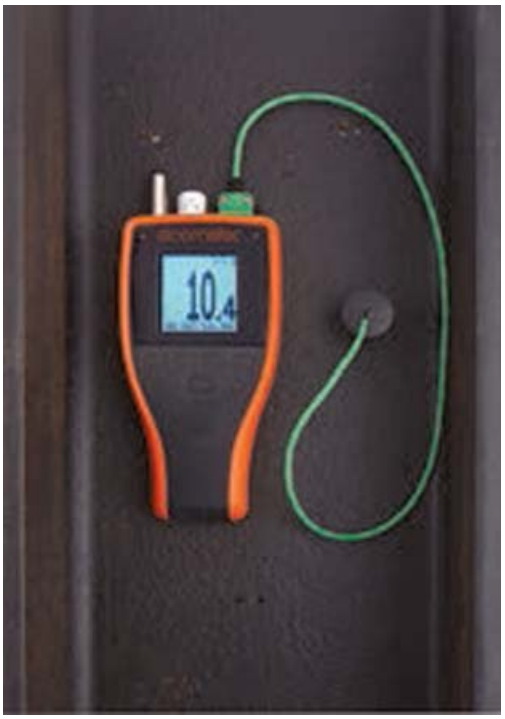

Fig. 3: Electronic dewpoint meter Courtesy of Elcometer

Data Logging

Another approach to monitoring and recording conditions is to use some kind of electronic device that automatically takes readings and records them on paper or in digital format (Fig. 4). Simple chart recorders have been around for decades and have been used successfully on painting jobs. This mechanical technology uses a bundle of human hair or a polymer strand that expands and contracts with humidity to move a pen on a revolving disk or drum chart. Another pen will record the air temperature simultaneously. These devices must be calibrated every 6 to 12 months and are very susceptible to dust and physical damage that is quite likely on a blast cleaning and painting site. (See the sidebar, "Calibration.")

Calibration

It is important that all instruments be calibrated properly and at regular intervals. This can be done by comparing the device to an electronic condensation-based hygrometer. These hygrometers use a chilled mirror to make a very accurate determination of exactly what temperature moisture begins to condense in an air sample. Quick field calibration can be done with an aspirated psychrometer. Keep in mind that the psychrometer's error margin will always be to the high side. Because the wet bulb thermometer can only cool down to the wet bulb temperature, the psychrometer cannot give a humidity reading that is too low.

Fig. 4: Electronic data logger for temperature and relative humidity
Courtesy of Onset Computer Corporation

Electronic data loggers offer a fairly low-cost alternative to the chart recorder. Loggers add the

ability to record the conditions into commonly used spreadsheet files and email the data. Typically, these loggers are very small and battery powered. The data can be downloaded to a computer with a cable link, or “shuttle” devices on some models allow the collector to capture the data in the field and upload it to a computer later. These units can be quite durable but still must be protected from the very aggressive environments typical to our industry.

Hand-held monitoring tools also have logging capabilities. Readings can be stored with a date/time stamp and the ability to download to a file for processing later. The modern hand-held electronic hygrometers also have a surface temperature sensor, which was a big step in the evolution of condition monitoring. To be able to read the surface temperature, relative humidity, and dry bulb temperature in the same location is the most accurate and meaningful way to gather this information. (See the sidebar, “Calculating Relative Humidity at the Surface.”) It is also important to take these readings where the work is occurring. Although chart recorders and electronic data loggers can (and should) include surface temperature sensors, they are generally stationary, taking readings in one location.

Enhanced Monitoring

It is important to know if climatic conditions were not acceptable at some point during a coating project, but a completely different value is attached to being able to avoid adverse conditions. In the past decade, a significant improvement in monitoring technology has emerged. The introduction of remote monitoring allows the contractor, inspector, and owner’s representative to monitor and record site conditions in real time and to see these conditions online (Fig.5). In addition, it becomes possible to set up alarms that will contact a party when conditions deteriorate past a pre-defined point or to have an alarm go off when there is an equipment failure. These features offer the ultimate in documentation while adding the security of knowing immediately if the conditions on the project have reached a critical point.

Fig. 5: Remote monitor for checking jobsite conditions while off-site Courtesy of DRYCO

Now, with a secure password, the interested party can check the jobsite conditions from anywhere—home, a coffee house, the office, etc.—using a laptop, tablet, or other electronic device with Internet access. When a climate control provider is used, the technician is notified when conditions are approaching the limits of the specification and can react to repair or adjust the climate control system before things become critical.

To get the most value from remote monitoring, the user should specify that the device can provide the following.

- The device should allow the user the ability to view current readings and historical data on site without the use of a laptop. The contractor or inspector should be able to walk up to the jobsite in the morning and quickly view what had occurred overnight.
- Data should be stored on the device and on the website for redundancy. This protects the data from loss due to website failure or device failure.
- Data should be available online in graph or tabular formats, with the date range sortable and downloadable into a spreadsheet or tab-delimited format at any time with the correct password.
- The system should be capable of reading and recording humidity and temperature in two locations and surface temperature in four locations.
- The data should include relative humidity, dry bulb temperature, dew point temperature, surface temperature; the difference between the dew point temperature and the surface temperatures should also be clearly displayed.

Conclusion

The methods used for measuring, monitoring, and recording the climate conditions on industrial

coating projects have advanced significantly in the past decade. There are fast, accurate hand-held devices that can log the readings for later download. These instruments should be calibrated and interpreted properly to get the full value from their use. Older technologies may be less accurate and more cumbersome, but do not require calibration.

The latest technology available includes remote monitoring that measures and records conditions as well as sends them to a website where they can be viewed or downloaded in real-time. This technology also allows the users to receive alarms by email or text message when conditions on the job deteriorate.

Comment from Billy Russell, (12/27/2012, 4:45 AM)

Great article, I would like to see Data loggers specified more often, lets move away from the "pencil Whipping" reports.

Join the Conversation:

Add your comment (Your comment will be displayed as posted by heidi bonine; PaintSquare reserves the right to remove or edit comments. Comments not consistent with our comment posting policy will be removed.)

PAINTSQUARE

The First Word in Protective & Marine Coatings

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JPCL | PaintSquare News | *Durability + Design* | Paint BidTracker

Paint BidTracker 10th Anniversary Supplement

From *JPCL*, November 2012 | Free Product Information

Brian Churray, BidTracker General Manager

LETTER FROM THE PAINT BIDTRACKER MANAGER

On September 9th, 2002, after two years of laborious preparation, Paint BidTracker was born. We've reported on thousands of painting projects over the past ten years, so we're taking this opportunity to pat ourselves on the backs and brag about who we are. This supplement will take a closer look at some of our hard work, with reviews of some of the biggest contracts, tabulations of contractor's opinions and contract awards, a peak at the valuable data in our ten-year-old archive, an opportunity to see democracy in action (by voting for our photo contest finalists), and suggestions for how we can help your company grow.

Paint BidTracker was formed to fill a hole in publishing for the protective coatings industry. Our big sister, *JPCL*, and our friends at SSPC, have devoted the past 28 years to keeping the industry abreast of the latest coatings technology and its applications in corrosion control planning and jobsite operations. But what about the gritty machinations funding it all? That's where we came in. We gladly dove in to the dirty work of tracking government spending in the coatings sector, and in doing so, became a critical piece of the coatings industry puzzle.

There are other construction reporting services on the market, even some that boast of roots involving messengers on horseback. These big box construction reporters cover a lot of the same contracting opportunities as we do, but they don't care about paint. And that's why we have continued to grow and succeed for the past decade. We view contracts in three groups: prime painting contracts, which will be bid on directly by coating companies; verified painting contracts, which will be bid on by general contractors but include confirmed subcontracting opportunities; and everything else, which we could not care less about.

By sharing your coatings-first perspective, we have separated ourselves from the pack of other options available to assist your coatings company's attempts to capitalize on tax-funded public works. And while we're proud of what we've accomplished in the past ten years, we will not be content to sit still. We've got big plans, plans that will help your firm identify and participate in opportunities earlier than ever before.

We'll be sure to keep you posted on what's next, but first, we're going to enjoy this milestone. We wouldn't be where we are today without the support of the coatings industry, and would be remiss if we failed to acknowledge the contributions of others. *JPCL*, led by our CEO and innovator-in-chief, Harold Hower, has provided us with thousands of introductions to industry participants and a solid foundation of coatings knowledge. SSPC has kept us connected to the big picture, and the critical standards that lubricate the coatings industry machine. And lastly, a special word of thanks to our first customer and friendly neighbor with a wealth of technical expertise, KTA-Tator.

Finally, I invite you to join us in celebrating our anniversary. We welcome your comments and questions about the content in this supplement and would love to tell you more about how Paint BidTracker uses technology to help you grow your business. If you're one of our devoted subscribers, we'd love to buy you a drink at SSPC 2013 in San Antonio. We'll be holding an anniversary party at 4 p.m. on Jan. 16th, right outside the exhibit hall. Invitations will be mailed shortly. And if you're feeling left out, sign up for a free trial of our service and join the celebration.

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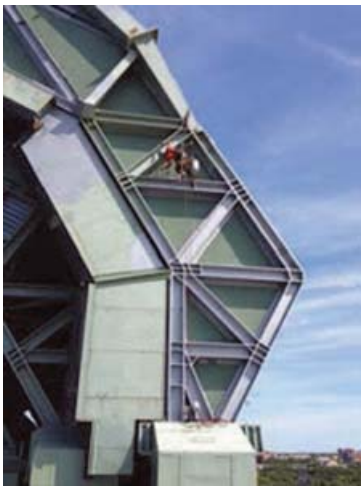
PHOTO CONTEST FINALISTS

*VOTING ENDS NOVEMBER 30TH, 2012

Drama. Danger. Beauty. Those aren't words often associated with industrial coatings work, but we're out to change that! We asked PaintBidTracker.com users and visitors to give us their best shots of industrial and commercial structures and the people who paint them. We've narrowed the entries to six of our favorites-now we need your vote to pick a winner. The grand prize winner will receive the contractor-friendly Olympus TOUGH TG-1 iHS Camera and 2 admission passes to SSPC 2013 in San Antonio, TX, where our winner will be honored with the *JPCL* Editor's Photography Award. Check out our finalists below and cast your vote at http://www.paintbidtracker.com/photocontest2012/.



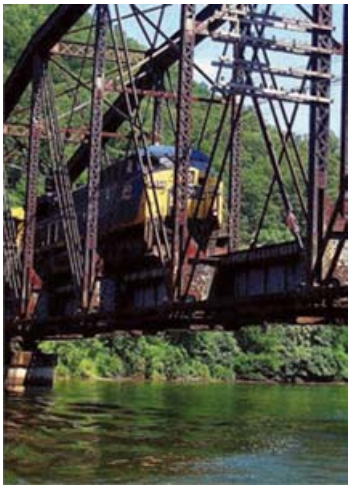
"Primer" by Dutch Purnell/the BASE Group

"Taiwan Bridge" by Leka Huie

“New and Old” by Tony Kulczyk

“Green Bank Telescope” by Michael Beitzel

“Logo Work” by Jeff Green



"Train Bridge" by Brent Baker
Vote Now at paintbidtracker.com/photocontest2012

MARKET DATA

Most Specified Coating Brands For Steel Substrates:

1	Tnemec	10,755
2	Sherwin-Williams	10,515
3	Carboline	6,620
4	PPG	4,463
5	Ameron (now owned by PPG)	4,399
6	ICI Devoe (now owned by Akzo Nobel)	4,187
7	International Paint (Akzo Nobel)	3,451
8	Wasser	1,223
9	Benjamin Moore	1,211
10	MAB	1,155

Most Specified Coating Brands For Concrete Substrates:

1	Chemmasters	3,646
2	Euclid	2,992
3	Poly-Carb	2,824
4	Tamms (owned by Euclid)	2,763
5	BASF	2,637
6	Dayton Superior	2,101
7	Textured Coatings of America	1,703
8	Sika	1,650
9	TK Products	1,227
10	Advanced Chemical Technologies	1,014

Digging Deeper

Over the past ten years, Paint BidTracker's never-ending pursuit of coatings coverage has amassed a wealth of information, from historic spending by facility owners to bidding strategies of contractors. Our archives hold ten years' worth of critical coatings data, just waiting to be mined. Here is a small sampling to whet your appetite.

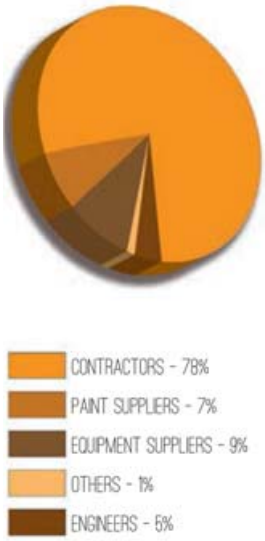
Total Number of Bids	**1,220,628**
Total Number of "Verified Painting" Bids, including prime painting and general construction	**57,897**
Total Number of Prime Painting Contracts	**21,108**
Total Number of "Verified Painting" Bridge Bids	**7,387**
Total Number of Prime Bridge Painting Bids	**2,645**
Total Number of "Verified Painting" Tank Bids	**5,568**
Total Number of Prime Tank Painting Bids	**3,757**
Total Number of Bid Results	**142,484**
Total Number of "Verified Painting" Bid Results	**19,815**
Total Number of Prime Painting Bid Results	**6,123**
Total number of subcontracting notices from general contractors seeking quotes for painting and related work	**8,270**

HELP WANTED?

In describing our value to prospective customers, the Paint BidTracker sales team often asks companies how much it would cost them to hire a researcher to find work. The follow-up, of course, is that an annual subscription to our service is significantly cheaper. This simple comparison is an apt description of our motivation. We are the research team, and we are completely devoted to making our employers happy by finding every painting project that's put

out to bid.

So who are our employers? We have quite a few to answer to, especially painting contractors.



GET HELP. Call our customer and IT support manager, Josiah Lockley, for a personalized training session. Josiah will help you get more from the service by guiding you through saved searches, project folders, and all of the other tools that help you succeed.

BIGGEST CONTRACTS

1 $167.75M. L&L Painting Company (Hicksville, NY). Queensboro Bridge Painting for the New York City DOT. For a closer look, turn to the Project Review that starts on page 11.

2 $74.85M. Liberty-Alpha III J.V. LLC (Campbell, OH). Painting the Huey Long Bridge in Baton Rouge for the Louisiana DOTD.
Photo courtesy of Christopherlin/Wikimedia Commons

3 $42.4M. Liberty-Alpha III J.V. LLC. Tobin Bridge Painting for the Massachusetts DOT.
Photo courtesy of Chensiyuan/Wikimedia Commons

4 $41.36M. - Abhe & Svoboda, Inc. (Prior Lake, MN). Newport Pell Bridge Painting for the Rhode Island Turnpike and Bridge Authority. ***Photo courtesy of Matt H. Wade/Wikimedia Commons***

5 $40.7M. Liberty Maintenance, Inc. (Youngstown, OH). Robert Moses Causeway Bridge Painting for the New York State DOT. ***Photo courtesy of Liberty Maintenance***

Market Drivers

The biggest jobs dominate the headlines, and in doing so, help define and drive the industry. The following companies push the competition by bidding lots of contracts, winning the largest bids, or both. These rankings were compiled from our full archive of award results (Fall 2003-present). While the projects and rankings presented here are not comprehensive and should not be misconstrued as auditable financial statements, they do represent thousands of jobs and some of the most press-worthy companies in the protective coatings market. These jobs require meticulous attention-to-detail at every stage, from the earliest planning and design work by engineers to key signatures by the owners and contractors (and lots of lawyers, presumably). Because of this increased complexity, the agreements can take many months to execute, and sometimes get lost in the fast pace of our daily content cycle, particularly as it pertains to New York City facility owners and their massive bridges. While these lists are not exhaustive, they paint a telling portrait of different bidding strategies employed by the most successful contractors.

MOST BIDS SUBMITTED

1	Utility Service Co., Inc.	287
2	Amstar of Western New York, Inc.	203
3	Abhe & Svoboda, Inc.	194
4	TMI Coatings, Inc.	176
5	Era Valdivia Contractors, Inc.	175
6	Seminole Equipment, Inc.	155
7	Tank Pro, Inc.	146
8	Allied Painting, Inc.	140
9	M & J Construction Company Of Pinellas County, Inc.	140
10	Three Star Painting, Inc.	128

MOST BIDS AWARDED

1	Utility Service Co., Inc.	82
2	Amstar of Western New York, Inc.	62
3	Seminole Equipment, Inc.	54
4	Era Valdivia Contractors, Inc.	52
5	Allied Painting, Inc.	43

6	S & D Industrial Painting, Inc.	41
7	Tarpon Industrial, Inc.	39
8	Tank Pro, Inc.	39
9	Thomas Industrial Coatings, Inc.	36
10	Eagle Painting and Maintenance Company	31

MOST TANK PAINTING BIDS AWARDED

1	Utility Service Co., Inc.	81
2	Tank Pro, Inc.	36
3	L.C. United Painting Co.	28
4	Southern Corrosion, Inc.	28
5	MK Painting Inc.	26
6	Amstar of Western New York, Inc.	23
7	Robinson & Sons Construction Services Inc.	22
8	Maguire Iron, Inc.	21
9	George Kountoupes Painting Co.	21
Tie 10	Classic Protective Coatings	20
Tie 10	Blastco Inc.	20

Biggest Tank Contract

$8M. Dunkin & Bush, Inc. (Redmond, WA). Recoating and Relining a 28 MG tank and a 20 MG tank for the Alderwood Water and Wastewater District (Lynnwood, WA).

Photo(s) courtesy of Sherwin-Williams.

Biggest Pipeline Contract

$9.34M. Abhe & Svoboda, Inc. Recoating and Relining a section of the Mokelumne Aqueduct for the East Bay Municipal Utility District.

Biggest Treatment Plant

$2.49M. F.D. Thomas, Inc. (Central Point, OR). Coating secondary clarifiers for San Francisco Public Utilities.

Photo courtesy Stacey L. Gerhardt / U.S. Geological Survey

Biggest Dam

$18.27M. S&S Coatings, Inc. (Spokane, WA). Spillway Gate Painting at Garrison Dam for the U.S. Army Corps of Engineers.

Biggest Power

$12.24M. Abhe & Svoboda, Inc. Recoating and Relining the Flatiron Penstocks for the U.S. Bureau of Reclamation. For a closer look, turn to the Project Review that starts on page 11.

MOST BRIDGE PAINTING BIDS AWARDED

1	Seminole Equipment, Inc.	54
2	Era Valdivia Contractors, Inc.	43
3	S & D Industrial Painting, Inc.	41
4	Tarpon Industrial, Inc.	38
5	Amstar of Western New York, Inc.	38
6	Three Star Painting, Inc.	35
7	Poseidon Construction	33
8	All States Painting, Inc.	32
9	Eagle Painting and Maintenance Company	31
Tie 10	North Star Painting Co. Inc.	30
Tie 10	Allied Painting, Inc.	30

MOST MONEY AWARDED

	Company	Contracts	Value
1	Liberty-Alpha III J.V., LLC	7	$199,685,244
2	L&L Painting Company	1	$167,750,000
3	Abhe & Svoboda, Inc.	26	$145,199,963
4	Allied Painting, Inc.	43	$114,727,383
5	Intech Contracting, LLC	6	$83,225,069
6	Ahern Painting Contractors Inc.	6	$75,381,709
7	Atsalis Bros. Painting Co.	7	$65,585,284
8	Corcon, Inc.	4	$63,214,587
9	Liberty Maintenance, Inc.	4	$61,945,931
10	North Star Painting Co. Inc.	30	$61,041,019

MOST TANK PAINTING MONEY AWARDED

	Company	Contracts	Value
1	Utility Service Co., Inc.	81	$36,471,621
2	Abhe & Svoboda, Inc.	3	$16,519,930
3	Amstar of Western New York, Inc.	23	$13,754,750
4	Blastco, Inc.	14	$11,708,489
5	Tank Pro, Inc.	36	$9,013,078
6	Classic Protective Coatings	20	$8,701,574
7	American Suncraft Construction Co	16	$8,019,553
8	Dunkin & Bush, Inc.	1	$7,989,993
9	Corfu Contractors	6	$7,298,089
10	Blastco Inc.	19	$7,021,638

MOST BRIDGE PAINTING MONEY AWARDED

	Company	Contracts	Value
1	Liberty-Alpha III J.V., LLC	7	$199,685,244
2	L&L Painting Company	1	$167,750,000

3	Abhe & Svoboda, Inc.	19	$111,297,067
4	Allied Painting, Inc.	30	$110,289,852
5	Intech Contracting, LLC	6	$83,225,075
6	Ahern Painting Contractors Inc.	5	$73,915,216
7	Atsalis Bros. Painting Co.	8	$69,373,028
8	Corcon, Inc.	4	$63,214,587
9	Liberty Maintenance, Inc.	4	$61,945,935
10	North Star Painting Co. Inc.	30	$61,041,049

CONTRACTOR OPINION POLL

While Paint BidTracker strives to relay all brand specifications contained in project specifications, we rarely learn the final decisions that our contractors make after they earn the notice-to-proceed. So we conducted an informal, far-from-scientific poll to gather some opinions on contractor's brand preferences. Contractors were asked to pick their preferred suppliers from a list of 5-10 companies or specify an "other." Here's what we learned.

Favorite steel coating manufacturer:

1. **Sherwin-Williams 50% of respondents**
2. Carboline
3. Tie – PPG and ICI Devoe

Respondents were evenly split on the reasons for their preference, with price and proximity of distributors narrowly edging out ease-of-application, technical support, and reputation as the primary deciding factors.

Favorite inspection equipment/testing gauges:

1. **DeFelsko 39%**
2. Elcometer
3. Fisher Technology

Favorite abrasive recovery/recycling systems:

1. **Advanced Recycling 79%**
2. Atlantic Design
3. Tie – Safe Systems and Forecast/Pirate Brand

Favorite blast machines/pots/blast nozzles:

1. **Clemco 52%**
2. Marco
3. Tie – Axxiom and Empire

Favorite dehumidification/heating units:

1. **DRYCO 36%**
2. DH Tech
3. Polygon

Favorite brand of spray equipment:

1. **Graco 93%**
   (biggest landslide of all of the categories)
2. Wiwa
3. Tie – Binks and Wagner

Favorite UHP/water blasting equipment:

1. **Jetstream 35%**
2. Tie – Flow, Gardner Denver, and NLB
3. WOMA

Favorite dust collector:

1. **Advanced Recycling 52%**
2. Tie – Clemco and Marco
3. Tie – Atlantic Design and Safe Systems

Favorite containment, scaffolding, and access equipment:

1. **Eagle 59%**
2. Safway
3. Tie – Safespan and Spider

PROJECT REVIEW

Each month, the Paint BidTracker team highlights a handful of notable, recent contract awards in the *JPCL* Project Preview feature. It's always exciting seeing the big tickets attached to these jobs, but our coverage, with its focus on the bidding stage, sometimes leaves us wanting for a more detailed perspective. This month, in lieu of recent awards, we're taking a closer look at what happened behind the containment structures, after the projects began. Three Paint BidTracker customers successfully tackled difficult jobs and carved out some time to fill us in on the particulars.

Project Review: Abhe & Svoboda Braves Nature to Recoat and Reline Colorado Penstocks

This $12,445,081.43 contract was awarded by the US Bureau of Reclamation, Great Plains Region, with the notice to proceed given on March 30, 2010. The contract involves cleaning and recoating two penstocks in Larimer County, CO, including approximately 219,000 square feet of exterior penstock and valve surfaces, 520 square feet of steel platform support, stair, and railing surfaces, and 223,000 square feet of interior penstock and valve surfaces.

All steel is being abrasive blast-cleaned to a Near-White finish (SSPC-SP 10) using Black Magic Coal Slag abrasive media, supplied by United Western Denver. The exterior penstock surfaces, as well as steel platform, stair, and railing surfaces, are being coated with a zinc-epoxy-polyurethane system from Carboline. The interior penstock surfaces are being relined with a 100%-solids polyurethane system from Global Eco Technologies, Inc. Containment structures from Detroit Tarps are also being used throughout the duration of the project.

Courtesy of Abhe & Svoboda, Inc.

ABHE & SVOBODA, INC.

LOCATION: Prior Lake, MN (headquarters); offices in CA, CT, HI, and MI
FOUNDED: 1969
Subscriber since 2003
Gail Svoboda, President
SPECIALTIES: Industrial painting, coatings and linings, abrasive blast-cleaning, ultra high-

pressure waterjetting, lead abatement and containment, scaffolding and rigging, concrete repair and restoration, steel repair and replacement
150-200 employees
SSPC-QP 1 and QP 2 certified

According to project manager Luke Schnitzler, harsh terrain and climate conditions, such as steep mountain slopes and snow, have presented some challenges for the contractors during construction. Also, frequent site visits from deer, buffalo, bears, rattlesnakes, and other wildlife require the contractors to take extreme caution while working at the site. A local wildfire threatened to spread to the work area and forced the contractors to evacuate for a few days, but luckily the winds changed direction and no equipment was damaged. Schnitzler credits Russ Wassenberg, the onsite superintendent, for limiting the impact of these challenges on the project.

Subcontracting issues forced the completion date to be delayed roughly one year. Work is expected to be completed in December 2012.

ODYSSEY CONTRACTING CORP.

LOCATION: Houston, PA
FOUNDED: 1972
Subscriber since 2003
Stavros Semanderes, President
SPECIALTIES: industrial painting, bridge rehabilitation, lead abatement, and other work such as small bridge construction, steel repairs, mechanical repairs, concrete, joint seals, and downspouting
SSPC-QP 1 and QP 2 certified

Project: Odyssey Finishes Recoating Busy I-695 Draw Bridges Over Curtis Creek

Odyssey recently finished up a project that involved rehabilitating structural steel on two twin bascule draw bridges that carry the busy Interstate 695 over Curtis Creek, just south of Baltimore, MD. The bridges are two-lane, 3,379-foot long bridges, with 200-foot long bascule spans. The inner loop crossing was opened in 1977 in conjunction with the opening of the Francis Scott Key Bridge, while the outer loop crossing was constructed two years later. The work performed by Odyssey was subcontracted under a $10,745,037.70 rehabilitation contract that was awarded by the Maryland Transportation Authority to Joseph B. Fay Company of Pittsburgh, PA. Odyssey's subcontract was valued around $2,500,000.

Courtesy of Odyssey Contracting Corp.

The project started in 2011 and included abrasive blast-cleaning and recoating new and existing structural steel on four 100-foot x 35-foot bascule leaves. The steel was coated with an inorganic zinc-rich primer, and organic zinc stripe coat, a polyamide epoxy intermediate, and an aliphatic urethane finish. The contractor provided debris shielding and used Sherwin-Williams coatings and Harsco Minerals abrasive materials.

To allow both vehicular traffic to cross on the road and nautical vessels to pass under the bridges, the contractor performed the work with limited access, according to Odyssey Vice President Ted Kartofilis. The lift bridges remained operational during construction, and the opening and closing of the bridges often forced the contractors to take apart and reassemble the containment structures and adjust work schedules on short notice. Odyssey also was responsible for maintaining span balance, adhering to clearance restrictions with containment and shielding structures under the bridge, and coordinated sequencing with the general contractor and the MDTA.

L & L PAINTING COMPANY, INC.

LOCATION: Hicksville, NY
FOUNDED: 1949

Subscriber since 2011
Michael Levine, President/Principal
SPECIALTIES: Commercial painting, bridge painting, stone and tile, hard fireproofing, industrial painting, lead abatement, wallpapering, tenant alterations, special coatings, maintenance painting
Over 400 full-time employees
SSPC-QP 1 and QP 2 certified

Project: L & L Completes $168 Million NYC Bridge Rehab Contract

This $167,750,000 contract, awarded in October of 2003 by the New York City Department of Transportation, is the largest painting contract ever to come through the Paint BidTracker system. The project involved recoating the Queensboro Bridge, a 3,725-foot long, hundred-year-old cantilever truss bridge that connects the boroughs of Manhattan and Queens over the East River and Roosevelt Island. Almost 180,000 vehicles are estimated to cross the bridge each day. Work involved coating structural steel surfaces on the main span of the ten-lane, bi-level bridge, as well as the ramps and approaches on each side.

The project began in January 2004 and included abrasive blast-cleaning the steel to a Near-White finish (SSPC-SP 10) and recoating with an organic zinc-epoxy-aliphatic polyurethane coating system by MAB. Class 1A containment structures were utilized to capture the bridge's previous lead-based coatings, as well as other shielding measures to protect vehicles and pedestrians from blasting debris. Due to heavy traffic on the bridge, the contractors took advantage of night-time lane closures to get the majority of the work done.

In addition to the aforementioned challenges that are usually expected when working on one of the most-traveled bridges in the country's largest city, some other issues arose during construction that threatened to delay completion of the project. On October 18, 2005, a three-alarm fire broke out on the bridge, causing both levels of traffic and all work to be shut down for hours while firefighters fought to put it out. The fire caught on the bridge's scaffolding structure, burning holes through the containment tarp. Luckily, the bridge suffered no structural damage, and delays in the work and in traffic were minimal.

The project was completed in 2009.

Courtesy of Wikimedia Commons.

TIPS TO GET MORE FROM PBT

Do you want more?

We're very proud of the impact that Paint BidTracker has had on the coatings industry over the past ten years. Our customers benefit from our common, paint-centric perspective towards contracting. By focusing on coatings work, we provide critical information that helps the industry grow and improve. This anniversary edition has given us an opportunity to share more of the details about our service, and will hopefully entice our readers to want even more.

Paint BidTracker is an excellent tool that has been carefully engineered to help your business. But like many complex tools, it requires some instruction. With that in mind, here are a few tips to help you tap further into our potential.

1. Uninitiated? If you haven't used Paint BidTracker (recently or ever), we encourage you to sign up for a free trial. We feel so strongly that the quality and consistency of our coverage will benefit your business that we invite you to take a 1-week test drive. Find some projects to bid on or research your competitors, and then talk with one of our friendly sales reps about the right subscription package for you.

2. Have a question? We're not a huge corporation that sees customers as numbers. We enjoy working with all of our users on an individual basis, and even have a built-in tool to facilitate this interaction. If you're viewing one of our reports and have a question, put down the phone, because we'll do the research for you. Use the magnifying glass icon in the top right corner of the report to let us know what you need, and we'll do the digging. We're glad to give the engineer a call and find an answer to your question, or at least point you in the right direction and save you another phone-call.

3. Need quotes? A big part of our mission is finding every contracting opportunity that our

customers might be interested in. If you need quotes from painters or suppliers to prepare a quote or meet disadvantaged business requirements, use our bid posting tool to add a report to Paint BidTracker. This service is offered free-of-charge to all registered users, providing an easy method for engineers, general contractors, and painting contractors to interact with all of our customers.

4. Need more time? We're always looking for more too. We want more projects and more time for you to influence the specs and prepare your bids. In the past year, we've expanded our content to look for jobs further in the future. These "Advanced Notices" cover large projects in the planning stages, and are culled from DOT budget plans, state spending forecasts, and municipal council meeting minutes. Make sure you expand your search parameters to grab these reports and get ahead of the competition.

5. Want to crunch numbers? Earlier in this edition, two features presented collections of numbers from our archives. While it's always interesting to see which companies lead the pack, it might be even more interesting to study the companies that you compete with on a day-to-day basis. Our Premium Results Archive allows you to mine data from the past five years' worth of bid results. This dynamic data set changes with the calendar, and allows users to take a much closer look at patterns and players in the market by setting search parameters and exporting results to a spreadsheet format. The Premium Results Archive is available to current users at a low cost, or as a stand-alone offering. Or we can prepare a customized report for you.

6. Not enough names attached to eyeballs? Advertising on Paint BidTracker is an excellent option. Because the majority of the web and daily email content is restricted to subscribers, clicks on advertisements generate detailed leads with full contact information.

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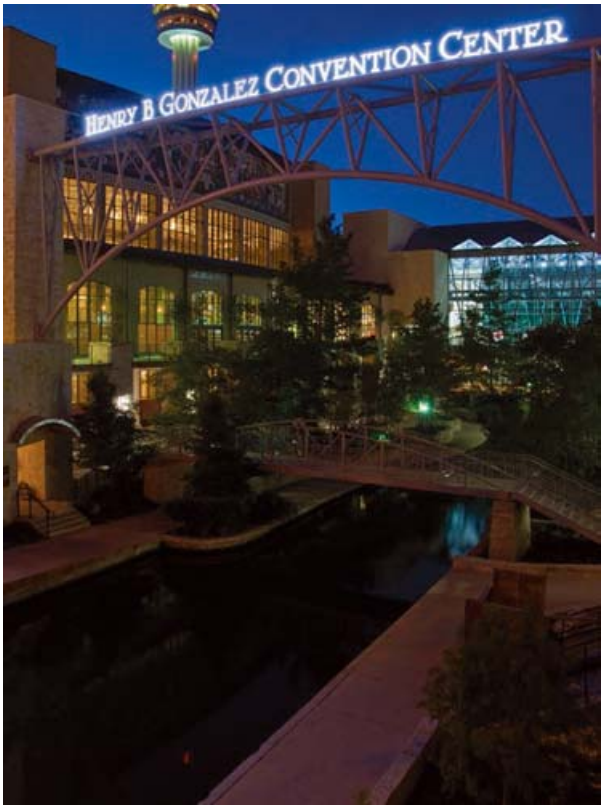
SSPC 2013 Technical Program Spans Four Days, Multiple Topics

From *JPCL*, November 2012 | Free Product Information

JPCL Staff



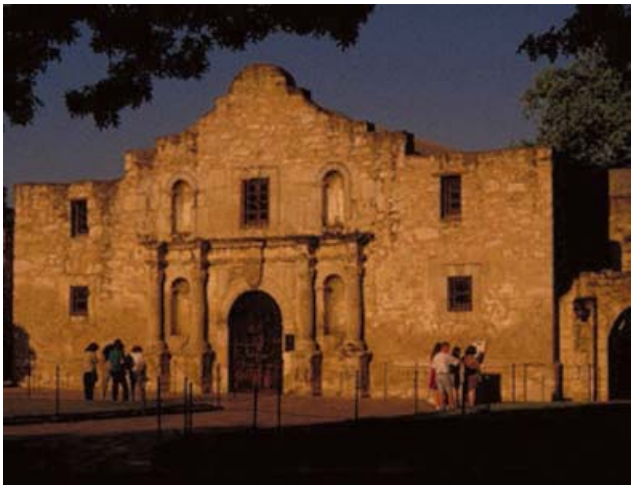
HBG Convention Center Al Rendon/SACVB

SSPC 2013 featuring GreenCOAT will take place in San Antonio, TX, on Jan. 14-17, 2013. The technical program runs for four days with tracks covering a wide range of topics in the industrial, marine, and commercial coatings industries. The following pages provides the dates, times, titles, presenters, and company affiliations, as well as a brief abstract of each paper. All information is current as of press time; visit www.sspc2013.com for updates and more information.

Monday, January 14

Surface Preparation—The Foundation of Every Coating Project

• 1:30–2:00 p.m., "Steps to a More Effective Blasting Operation," by Kumar Balan, Wheelabrator Group



Alamo-at-dusk Al Rendon/SACVB

The presenters will discuss the basics of blast cleaning including mechanical surface preparation basics, process control and the impact on quality and operating cost, allied techniques in shot blasting and lessons to learn, and the future of surface preparation.

• 2:00–3:00 p.m., "Cool, Dry, or Both: When is Cooling Equipment Appropriate as a Dehumidifier?" by Don Schnell, DRYCO, LLC

This presentation will detail the differences between cooling type dehumidification and desiccant dehumidification and will identify where each is appropriate. Attendees will learn the basic concepts that make a refrigeration type dehumidifier work on the industrial painting project. Basic operation and maintenance will be discussed, along with ideas to make the equipment bring the most value on the job.

• 3:00–3:30 p.m., "Surface Profile—A Comparison Analysis of Measurement Methods," by David Beamish, DeFelsko Corporation

This paper explains how to measure peak-to-valley profile height and determine peak count (density) using the three device types. A draft SSPC standard will describe a procedure for determining compliance with specifications. This paper reviews those documents and discusses results from a recent ASTM round-robin study.

• 3:30–4:00 p.m., "New Developments in Surface Profile Measurement for Blast Cleaned Surfaces," by John Fletcher, Elcometer Limited–UK

Botanical Garden Ducks Al Rendon/SACVB

This paper describes the equipment that is currently available for ASTM D 4417 test methods and discusses the differences in both the methods and the resulting measurements. The significance of these differences will be analyzed in the context of typical grit and shot blasted surfaces.

Working in the Coatings Industry— What You Need to Know!

• 1:30 –2:00 p.m., "Creating a Culture of Safety: Are You Compliant or Committed?" by Greg Jochims and Doug Sams, Allen Blasting and Coating

This presentation will include systems that attendees can implement ASAP to increase their safety awareness. Handouts will include management training, checklists, and forms, and the training to use these tools effectively. The presenters will also discuss the importance of a PJHA (Pre Job Hazard Assessment) and how it can help you avoid litigation.

• 2:00–2:30 p.m., "Using Virtual Reality to Help Teach Application Techniques," by Matthew Wallace, VRSim, Inc.

The focus of this presentation is to introduce, explain, and demonstrate the uses of gamifiction and simulation in the workplace-training environment. Specific focus will be given on what simulation and gamification does well, and where its current iteration fails to live up to its promise.

• 2:30–3:00 p.m., "History of Corrosion Resistance," by Joe Larson, ACT Test Panels LLC

Alamodome SACVB

This paper narrates the improvements in corrosion resistance, with a strong automotive bent, made during the author's tenure. Included are anecdotes, observations, and insights gained from interaction with many technical personnel over the years. It defines the confluence of multiple factors including steel manufacturing, new facilities being built, interesting new technologies, and the influence of competition.

• 3:00–3:30 p.m., "Corporate and Professional Online Reputation Management (ORM)," by Nicole Eisenhauer, Eisenhauer Creative Group

Attendees will discover the volume and location of content related to them on the Internet. The presenter will show how to manage online content, mitigate negative feedback, and communicate effectively in confrontational web dialog.

• 3:30–4:00 p.m., "How to Buy a Coatings Company with Limited Resources," by Robert J. Ziegler, BBZ Consulting

This paper will explore the buyers' attitudes toward risk, management, available funds, and borrowing ability. There will be information on what to look for in a company you are considering purchasing, examining several key parameters such a markets, reputation, key people and customers, and percentage of sales per month of each customer.

• 4:00–4:30 p.m., "SSPC Education Committee Update," by William Corbett, PCS, KTA-Tator, Inc.

This presentation will describe the goal of SSPC's Education Committee, its organization and duties, and the interactions with the instructor committee. It will provide the status of product review/updating. The mission of the SSPC Education Committee is to provide SSPC members and the industry with technically accurate, effective, IACET-compliant coatings education products and training services.

Tuesday, January 15

Coatings That Beat the Heat

• 8:00–8:30 a.m., "When Undercover Agents Are Tested to the Limit: Coatings In Action (CIA) and Corrosion Under Insulation (CUI)," by Mike O'Donoghue, Ph.D., International Paint, LLC

This paper is a "high-temperature" sequel to previous investigations of four specialty inorganic coatings said to prevent corrosion under wet insulation conditions. In the present work, two of the specialty coatings have been tested again, and performance was assessed using visual examination, EIS, optical microscopy, SEM, and Keyence Digital Microsopy. Lab investigations

were also undertaken.

Mission Concepcion Doug Wilson/SACVB

• 8:30–9:00 a.m., "Waterborne Thermal Insulation Coatings," by Sudhir Achar, The Dow Chemical Company

The paper will discuss the formulation and application properties of thermal insulation coatings based on waterborne acrylic and epoxy resins. Their potential use in thermal insulation and safe-touch applications will be described through results on thermal conductivity, the ability to reduce energy usage, safe-touch properties, and corrosion performance in multi-layer systems.

• 9:00–9:30 a.m., "Introduction to Insulative Coatings," by David Hunter, Mascoat

The presentation will teach attendees what are and are not insulative coatings; how insulative coatings work in comparison to some traditional systems; the advantages of using them in facilities to improve operations, safety, and financial performance; and the limitations of the technology.

• 9:30–10:00 a.m., "Selection of Coatings for CUI Service," by Michael MeLampy, Hi-Temp Coatings Technology, Inc.

A review of past and current technologies for preventing CUI will be presented. The initial and long-term costs, performance characteristics, expected service life, as well as ease of application and repair of coatings used under insulation will be discussed. There will also be field and laboratory performance experience obtained from users, third-party laboratories, and vendors.

Concrete Protection Solutions

• 8:00–8:30 a.m., "Polyurea 'Loose' Liners: A Band-Aid for Excessively Cracked Concrete," by Kristin Leonard, Bechtel Corp.

This paper outlines the trials and challenges of modifying the membrane liner to accommodate stringent chemical resistance criteria, poor concrete conditions, and hundreds of pre-installed obstacles. From detailed design to installation mock-up, the pros, cons, and lessons learned are discussed.

River Walk Convention Center Evening SACVB

• 8:30–9:00 a.m., "Preparing and Lining Concrete for Immersion Service: Steps and Procedures to Avoid Failures," by Robert Maley, Corrosion Probe, Inc.

The intent of this paper is to demonstrate that concrete substrates present many unique challenges, arguably more so than steel.

• 9:00–9:30 a.m., "What's New About Repairing Cracks in Concrete," by Rick Yelton, Hanley Wood Business Media

Spurred by the efforts of the Strategic Development Council, Vision 2020 has provided a roadmap on how to improve the concrete repair and protection industry. This session will update attendees on the current results and ongoing industry lead research on this initiative.

• 9:30–10:00 a.m., "Old Coat, New Threads," by Todd Gomez, PC, John Winfrey, and Dudley Primeaux, VersaFlex Incorporated

The presenters will discuss the progression from traditional gel coat systems to new advance polyurea technology and its significance to the protective coatings industry in the effort to develop green products.

Defending Against Corrosion in the Military

• 8:00 –8:30 a.m., "Operation: Combined Effort," by Dr. Roger D. Hamerlinck, Office of the Assistant Secretary of the Army: Acquisition, Logistics, and Technology— Office of the Army Corrosion Control and Prevention Executive

The presenter will discuss the Army's efforts for corrosion prevention and control.

• 8:30–9:00 a.m., "Marine Corps Corrosion Prevention and Control (CPAC)," by Matthew Koch, Marine Corps

Majestic Theatre SACVB

This paper summarizes the work that has been underway for the past four years under the CPAC program. Highlights of established processes, solution implementations, and program successes will be provided. Finally, the vision and long-term mission of the CPAC program will be discussed.

• 9:00–9:30 a.m., "Single-Component Polysiloxane Coating for Navy Topsides," by Erick B. Iezzi, Ph.D., Naval Research Laboratory

The presenter will discuss how the Naval Research Laboratory has recently designed and patented a novel single-component polysiloxane coating for Navy topsides.

• 9:30–10:00 a.m., "Corrosion Control Knowledge Sharing Network: Fighting the War on Corrosion from Multiple Fronts," by Steve Melsom and Linda Stiles, NAVSEA

The presenters will discuss how the Corrosion Control Knowledge Sharing Network is streamlining efforts to fight corrosion.

Coatings Issues and Solutions— Commercial Structures, Part 1, Sponsored by Durability + Design

• 10:30–11:00 a.m., "Selection and Specifications for Architectural and Industrial Maintenance Coatings for Commercial Architecture," John C. Williams, HOK

This presentation will discuss potential for contamination or damage to shop-applied coatings that must be addressed in the field during or after steel erection and touch-up/repair coating processes and materials. Examples from projects will be included.

• 11:00–11:30 a.m., "No Place for Hipsters When the Substance Behind a Pretty Façade is Required," by Cynthia O'Malley, KTA-Tator, Inc.

The presenter will talk about how a company's brand image projects by paints and coatings requires performance characteristics derived from consistently sound chemistry and manufacturing. There will be a brief synopsis of applicable performance evaluations in both industrial and commercial sectors, presented together with the concept of baseline characterization of the coatings.

River Walk Moment Carol Barrington/SACVB

• 11:30 a.m.–Noon, "Elastomeric Acrylic Coatings for Use on Commercial Structures," by Leo Procopio, The Dow Chemical Company

This paper will explore the chemistry of elastomeric acrylics, techniques for their evaluation in the laboratory, a discussion of the various applications where they are utilized and the expected performance, and results of accelerated and natural exposures and real-world case studies.

• Noon–12:30 p.m., "The Quest for Success in Accelerated Weather Testing for High-Performance Architectural Coatings," by Allen Zielnik, Atlas Material Testing Technology, LLC

The presentation will summarize current test methods for weather testing high-performance coatings used in architectural applications, including accelerated outdoor and laboratory procedures, and will discuss the development of an improved method designed to correlate to out-door and laboratory testing. This test method will be proposed as a new ASTM standard.

• 1:30–2:00 p.m., "Laboratory and Field Testing of Thin-Film Air Barrier Coatings Applied to CMU," by Kevin Knight, Retro Specs, Ltd.

This paper will address the new requirements of the 2012 International Energy Conservation Code for the building envelope to be carefully designed to limit uncontrolled air leakage into and out of buildings. It will explain what properties and tests are needed to evaluate thin film coatings on concrete masonry unit assemblies both in the laboratory and in the field for QA/QC.

• 2:00–2:30 p.m., "Moisture in Historic Commercial Building Walls—Approaches to Assessment and Restoration," by John Harry, John Harry Restoration Services

The presenter will discuss the assessment of five historic buildings in North Carolina that were experience building envelope-related moisture intrusion problems. The methods and results of the evaluations will be discussed, along with the sometimes-inconsistent results.

• 3:30–4:00 p.m., "Painted Aluminum— Concerns with Fabrication Details and Exposure," by Kirk Shields, GPI/GreenmanPedersen, Inc.

Sunfish Al Rendon/SACVB

This paper illustrates examples of how coatings might fail on painted aluminum extrusions and the resulting options to correct the coating defects in the field.

• 4:00–4:30 p.m., "Update on the Activities of the SSPC Commercial Coatings Committee," by Ken Trimber, KTA-Tator

• 4:00–4:30 p.m., "Moisture Issues and Mitigation Strategies for Concrete Surfaces," by Fred Goodwin and Frank Apicella, BASF Construction Chemicals, Inc.

The presentation will define factors that influence concrete moisture vapor emission and remediation methods, describe current methods used to measure moisture in concrete, and discuss current standards for moisture emission.

True Stories of Coatings in Action

• 10:30–11:00 a.m., "Performance or Preference? Anoka Tank Reconditioning Revisited," by Dan Zienty, PCS, Short Elliot Hendrickson, Inc.

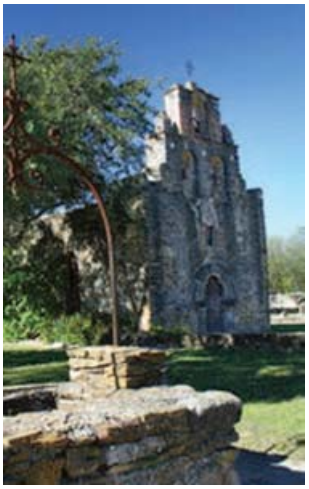
This presentation revisits the reconditioning of the 400,000-gallon water tower in Minnesota and will identify the importance of follow-up tank maintenance, alternatives for protecting hard to paint areas, repair sequence following long-term service, and potential for single-coat application of zinc above the water line.

• 11:00–11:30 a.m., "San Antonio Power Plant Asset Corrosion Protection Program," by Mario SanJuan, P.E., CPS Energy, and Kirk Wissmar, P.E., KTA-Tator, Inc.

The presentation details from conception to completion the asset protection study CPS initiated for their fossil-fueled power generating facilities.

• 11:30 a.m.–Noon, "Rehabilitation and Lead Abatement of Water Tanks in a Residential Area," by Travis C. Tatum, P.E., and Jimmy Dunham, P.E., Dunham Engineering, Inc.

This paper will discuss the initial evaluation, project design, construction, and inspection procedures for significant structural repairs and coating replacement on a 60-year-old, one-million-gallon, welded steel elevated water storage tank in Texas.



Mission Espada SACVB

• Noon–12:30 p.m., "Quagga Mussel Coatings Project," by Randall Witowski, Metropolitan Water District of Southern California

The presenter will review the process of preparing a substrate using a system that is as unique as the Quagga mussels themselves, and the results of the application after one year.

• 12:30–1:00 p.m., "The Good, Bad, and Ugly After 35 Years Involved with Coatings," by Bryant (Web) Chandler, PCS, GPI/Greenman-Pedersen, Inc.

This paper will present coating examples on all types of substrates, ambient conditions at 0 F to 120 F, what went right or wrong, and what should be done next time, if anything.

Defending Against Corrosion in the Military II

• 10:30–11:30 a.m., "Partnering with SSPC in the Pacific Rim," by Dan Dunmire, Office of Under Secretary of Defense Acquisition, Technology, and Logistics

In 2013, the DoD is focusing on corrosion in the Pacific Rim, which is affected by the entire range of microclimates. Protective coatings are critical to the initial protection of infrastructure and warfighting assets, and the DoD is partnering with SSPC to study and evaluate the Pacific Rim's environmental conditions and develop solutions to the incidence and impact of corrosion. The focal point on corrosion in the Pacific Rim will be the DoD Corrosion Conference in Hawaii in Sept. 2013.

• 11:30 a.m.–Noon, "The Science of Formulating Aircraft Depaint Materials," by Chris Hensley, Aerochem, Inc.

This presentation will cover a scientific approach to the development of aircraft paint removers.

• Noon–12:30 p.m., "A Corrosion Control Information Management Program," by Joel Korzun, Carrier Planning Activity, U.S. Navy

This presentation uses examples to demonstrate the importance of having a rigorous inspection and data management program.

Green Evolution

• 10:30–11:00 a.m., "Corrosion Control Without the Use of Toxic Heavy Metals," by David Tarjan, HALOX—A Division of ICL Performance Products LP

San José Rose Window Richard Nowitz/SACVB

This paper captures specific technologies reflecting the new paradigm shift based on heavy metal-free inorganic pigments, as well as non-toxic organic corrosion inhibitors.

• 11:00–11:30 a.m., "Newest Additives for Green Coatings," John Du, BYK USA Inc.

An overview of new additive technologies will be presented with special emphasis on wetting and dispersing and surface and flow, including some new applications for additives containing nanotechnologies.

• 11:30 a.m.–Noon, "How Can Companies Go Greener? (…Psst: Without Losing Performance)," by Anders Braekke, Jotun A/S (HQ)

This is a presentation of five simple steps to "go greener" in international specifications without losing performance or blowing your budget. The author will focus on actions that can be implemented in an easy way.

• Noon–12:30 p.m., "Are You Restricted By Your Total Solar Reflectance Performance?" by Ian Goodwin, Huntsman

The presentation will review the performance of a new solar reflective pigment in a range of colored coating systems. The new pigment enables formulators to increase solar reflection in a broad range of colors, especially deep, dark colors.

Looking Down at Concrete Floor Protection

• 1:30–2:00 p.m., "QP 8 Certification," by John Russo, Blendex Industrial Corporation

This presentation will discuss the SSPC-QP 8 contractor certification program, which evaluates the qualifications of contractors hired to install polymer coatings or surfacings on concrete and other cementitious surfaces.

• 2:00–2:30 p.m., "An Overview of Petgrographic Examination of Concrete as Related to Polymer Floor Coating Failures," by Jon Asselanis, Applied Materials and Engineering, Inc.

This presentation is a review of important issues that SSPC members need to know when attempting to understand the behavior of polymer coatings and surfacings. Attendees will learn how to determine the appropriateness of an ASTM standard and understand how the tests are conducted and what the corresponding results mean.

• 2:30–3:00 p.m., "Understanding Slip Resistant Regulations and Standards and Achieve Specific SCOF Values," by Tim Post, SSPC Polymeric Flooring Advisory Committee

• 3:00–3:30 p.m., "The Choices and Consideration Challenge of Resinous Flooring," by Steven John Lipman, Guardian Industrial Products of Mass.

This paper will look at the three main available chemistry choices for resinous flooring and review the considerations, benefits, and disadvantages that are often overlooked.

• 3:30–4:00 p.m., "Adhesion Studies of Floorings and Coatings to Concrete with Various Preparation Methods," Mike Houx, West Coast Industrial Flooring, and Steve Schroeder, Dex-O-Tex

The presenters will summarize the current adhesion test methods and standards, introduce the devices currently available for testing floor adhesion, and report on the findings of a series of

adhesion tests on concrete.

• 4:00–4:30 p.m., "Polymeric Flooring Advisory Committee Town Hall Meeting," by Steve Schroeder, Dex-O-Tex, and John Russo, Blendex Industrial Corporation

This presentation is on the development of the committee and reading of the committee charter. Discussion will include what the committee has been doing since its formation, an announcement about C7 committee reactivation to update and revise TU-10, and an open forum as to PFAC goals and direction for the next year.

Bridge Painting and Protection

• 1:30–2:00 p.m., "Keeping the Schedule for the Charles De Gaulle Bridge," by David Simkins, Polygon US Corporation

The presenter will discuss how contractors accelerated coating work and finished work on the Charles de Gaulle Bridge nine months ahead of schedule.

• 2:00–2:30 p.m., "Successful Bridge Painting in the Northeast During the Winter Months: Pros and Cons from Owner and Contractor," by Matthew McCane and Peter McDonald, GPI/Greenman-Pedersen, Inc.

This presentation will explain some of the details encountered when bridge painting is performed during the winter months in the Northeast, including containment systems, specialized equipment, and quality control procedures.

• 2:30–3:00 p.m., "Brooklyn Bridge— Repainting the Most Iconic Structure in the World," by Guerman Vainblat, GPI/Greenman-Pedersen, Inc.

This presentation will address complex project questions about the monumental task of de-leading and repainting the Brooklyn Bridge. Details will be provided on daily issues being faced and measures the project team is taking.

• 3:00–3:30 p.m., "Bridge Coating in Japan: Doing it Right the First Time," by Winn Darden, AGC Chemicals Americas

The presenter will discuss the history of the Japanese road authorities' field and laboratory testing leading to the adoption of the use of fluoropolymer topcoats on bridges. Examples of completed bridges will be shown.

• 3:30–4:00 p.m., "The Use of Coatings with Optically Activated Pigments (OAPs) on KYTC Bridges," by Bobby Meade and Ted Hopwood, GPI/Greeman-Pedersen, Inc.

The presenters will discuss a research study that was initiated to develop laboratory methods for evaluating the effectiveness of optically active pigments (OAP). Laboratory work included constructing mock bridge beams to be coated with OAP for inspection effectiveness evaluation and accelerated weathering testing for performance.

• 4:00–4:30 p.m., "How Chemistry Can Affect the Life of Reinforced Concrete Bridges," by S.L. (Sindee) Gillespie, G.O.A. Enterprises

This presentation will give information on how chemical formulations can be used to extend the life of reinforced concrete structures and will describe the chemical deterioration process.

Wednesday, January 16

Protecting Ships and Marine Structures

• 10:00–10:30 a.m., "NSRP Surface Preparation and Coating 2013 Update," by Stephen Cogswell, BAE Systems Southeast Shipyards

This paper is an overview of the NSRP Surface Preparation and Cotaing Panel's (SPC) mission to reduce the cost of building, repairing, and maintaining U.S. Navy ships. There will be an overview of the SSPC Panel's work from 2010 to the present.

• 10:30–11:00 a.m., "Tralopyril Metal Free Marine Anti-Foulant Update," by Dave Helmer, Janssen PMP

The presenter will discuss tralopyril-based coatings as an antifoulant and will present the methodologies and results of a multi-year study of tralopyril in hull coatings and marine environments.

• 11:00–11:30 a.m., "Electrochemical Impedance Spectroscopy (EIS) Analysis of Freshwater Foul-Release Coatings," by Bobbi Jo Merten, Ph.D., U.S. Bureau of Reclamation

This presentation will cover a two-year experiment in which foul-release coating systems were examine by electrochemical impedance spectroscopy to measure the degradation of coating dielectric properties in immersion.

• 11:30 a.m.–Noon, "Anomalies, Ambiguities, and the Certain Uncertainties of Ballast Tank Corrosion Protection Systems and Regulations," by Skip Vernon, Coating and Lining Technologies, Inc.

This presentation will be a discussion and review of an actual case where issues with a ballast tank corrosion protection system lead to a $52 million dispute. Strategies for addressing the issues contractually and avoiding claims will be presented.

• 3:00 –3:30 p.m., "Evaluation of 'Spot-and-Sweep' Blasting as a Cost Effective Method of Underwater and Outer Hull Surface Preparation," by Gordon Kuljian, PCS, GK Consulting

This paper summarizes a recent NSRP project that successfully demonstrated the implementation of high-speed spot-and-sweep blasting and monitored simple metrics. A detailed cost analysis of incorporating this method as part of routine fleet maintenance will be presented.

• 3:30–4:00 p.m., "Polymeric Interior and Exterior Marine Decking Systems," by Jing Zeng, ITW Polymer Technologies

This article will discuss the technologies and applications of the current systems in the polymeric marine decking industry.

• 4:00–4:30 p.m., "Severe Erosion in Pump Casings," by Allen Skaja, Ph.D.; David Tordonato, Ph.D., P.E.; and Bobbi Jo Merten, Ph.D., U.S. Bureau of Reclamation

The presenters will discuss challenges with coatings on pump casings, compare laboratory tests and field results, cover the need for a new standard, and compare ceramic epoxy and elastomeric coatings.

• 4:30–5:00 p.m., "Modernizing Shipbuilding with Blast and Paint Facility," by Katie Urbas, NASSCO

This presentation will discuss how NASSCO transformed its marine blasting and painting operations from portable domes to a world-class facility. After three years in service, the facility's transformation has directly and indirectly improved on many aspects of the build process.

SSPC 2013 Exhibitors

The following is the most recent list of companies currently planning on exhibiting at SSPC 2013 featuring GreenCOAT. All information is current as of press time. The December *JPCL* will provide brief descriptions, contact information, and booth numbers for known exhibitors.

- Abrasives Inc.
- Advanced Recycling Systems, Inc.
- Aggreko LLC
- AIR Systems International
- ARID-DRY
- Arma Kleen Company
- Atlantic Design
- Barton International
- Binks
- BlastPro Manufacturing
- Bullard Co.
- Carboline Company
- CESCO/Aqua Miser
- Chlor*Rid International Inc.
- Cleaner Blast Solutions
- Clemco Industries Corp.
- *CoatingsPro* Magazine
- CSI Services, Inc.
- Marco
- Mascoat
- Max Access, Inc.
- Midwest Rake Company LLC
- Mohawk Garnet, Inc.
- Moisture Control Company
- Monarflex by Siplast
- Montipower, Inc.
- NACE
- National Equipment
- NexTec, Inc./PreTox
- Novatek Corp.
- Novetas Solutions
- Olimag Sand
- OPTA Minerals, Inc.
- Painters & Allied Trades LMCI
- Park Derochie
- Pinovo AS

- Custom Abrasives, LLC
- Cytec Industries
- Dampney Co. Inc.
- DeFelsko Corporation
- Dehumidification Technologies
- Denso NA
- DESCO Manufacturing Co., Inc.
- Detroit Tarp Inc.
- Diamond Vogel/Pinnacle Protective Coatings
- Doosan Portable Power
- DRYCO, LLC
- DUSTNET by EMI
- Eagle Industries
- Elcometer
- EnTech Industries, LLC
- Evonik Degussa Corporation
- Fischer Technology Inc.
- FS Solutions Group
- Fujian Duoleng Steel Group Co., Ltd.
- Geoblaster Equipment
- GMA Garnet (USA) Corp.
- Graco Inc.
- Granite Mountain Quarries
- Green Diamond Sand Products
- Greenman-Pedersen, Inc.
- Hanes Supply Inc.
- Harsco Minerals
- Hempel Coatings
- HippWrap Containment
- HoldTight Solutions Inc.
- HRV Conformance Verification Associates
- IBIX USA
- Indian Valley Industries
- Industrial Painting Limited, Inc.
- Industrial Vacuum Equipment Corp.
- International Paint LLC
- JAD Equipment Co.
- Polygon
- Polyguard Products
- PPG Protective & Marine Coatings
- Praxair Surface Technologies
- Pro-Tect Plastic & Supply, Inc.
- PTQ Safety LLC
- Rhino Linings Corporation
- Ring Power Corporation
- Royce International
- SAFE Systems
- Safety Lamp of Houston
- SAFWAY Services
- Sand Express
- Sauereisen
- Schmidt Engineered Abrasive Systems
- Sherwin-Williams Company
- Spider
- Sponge-Jet Inc.
- Sulzer Mixpac USA, Inc.
- Sunbelt Rentals
- Tank Industry Consultants
- Tarps Mfg., Inc.
- TDJ Group (The)
- Technology Publishing/PaintSquare
- TFT-Pneumatic, LLC
- Tnemec Company
- Tractel Inc. Griphoist Division
- Trimaco LLC
- TRUQC
- U.S. Minerals
- Van Air Systems
- VersaFlex
- W Abrasives
- The Warehouse Rentals & Supply (TWRS)
- Wasser High-Tech Coatings, Inc.
- Western Technology
- WIWA LP

• Kennametal, Inc. • KTA-Tator, Inc. • LVH Industries Inc.	• Wooster Brush • Zebron

Coating Technology for the Aerospace Industry

• 10:00–10:30 a.m., "The Critical Truth Regarding Aerospace Coatings and Flight in the 21st Century," by Matthew Thomas, Standard Aero

This presentation discusses the "truths" about aerospace composite substrates, chrome vs. non-chrome pretreatments and primers, and the Aerospace Coatings Applicator Certification.

• 10:30–11:00 a.m., "Chemical Reactivation of Exterior Decorative Aerospace Livery Coatings," by Douglas Berry, The Boeing Company

This paper discusses the material properties and application processes of aerospace decorative livery, analytical tests used to develop and understand the chemical reactivator, and performance tests used to qualify the chemical reactivator.

• 11:30 a.m.–Noon, "Development of Self-Stratifying Systems as Sustainable Coatings," by J. Baghdachi, Coatings Research Institute, Eastern Michigan University

This paper reports on the design and development of thermosetting polyurethane coatings that self-stratify to two distinct phases upon application and cure.

Wastewater Coating Challenges and Solutions

• 10:00–10:30 a.m., "Martin 'B-C' Zone Reservoir Liner Replacement—An Owner's Perspective," by Dorothy Dolan, Tucson Water

This paper will discuss the owner's perspective on factors involved in the decision to replace a deteriorating rubber lining with a flexible urethane membrane in a concrete portable water storage facility.

• 10:30–11:00 a.m., "Martin 'B-C' Zone Reservoir Liner Replacement: Doing Our Part for the Tucson Water Department Construction/Inspection Team," by Eric Brackman, RFI Consultants LLC

This paper focuses on the role the independent coating consultant and inspector plays within the Tucson Water Department Construction/Inspection team as the department implements a program to evaluate and repair 70 concrete and steel potable water storage facilities.

• 11:00–11:30 a.m., "Plural Material Application Does Not Have to be Difficult," by Mike Ivkovich, Graco, Inc.

This presentation discusses the benefits that plural component equipment can provide and its value to the coatings contractor's success and profitability.

• 11:30 a.m.–Noon, "Working Together—20 Million Gallon Concrete Relining Project Done On Time and On Budget," by Bob Murphy, PCS, The Sherwin-Williams Company

This presentation will highlight the advantages in utilizing 100% solids polyurethane technology in meeting difficult project timelines and environments.

• Noon–12:30 p.m., "Lessons Learned in Coating Water and Wastewater Treatment System Structures," Manuel Najar, P.E., V and A Consulting Engineers, Inc.

This paper will present a number of important design considerations based on lessons learned that can avert lining performance problems and appropriate lining material selection. Specific examples from projects will be used to illustrate these design considerations.

Green Evolution II

• 3:00–3:30 p.m., TBD

• 3:30–4:00 p.m., "The Next Generation, Heavy-Duty, Anti-Corrosion Coatings Enduring 13,000+ Hours of Salt Fog Without Using Any Traditional Heavy-Metal Pigments," by Sue Wang and Jianguo Wang, AnCatt, Inc.

This paper will introduce polymer-based, heavy-metal-free, heavy-duty, anti-corrosion coating technology (CPBAC) as the next generation of environmentally friendly heavy-duty, anti-corrosion coating technology.

• 4:00–4:30 p.m., "Ice Phobic Coatings for Wind Tower Blades and Structures," by Rob Thomaier, NuSil Technology, LLC

This paper discusses the evaluation of silicone coatings as ice-phobic coatings for wind power blades.

• 4:30–5:00 p.m., "Novel Waterborne One-Pack (1K) Epoxy Technology for Corrosion Protection," by Dr. Florian Lunzer, Cytec Industries

This presentation will explore critical aspects, benefits, and challenges of the novel, waterborne 1K epoxy versus traditional 1K and 2K coating systems.

Thursday, January 17

The Future of Protective Coatings

• 10:00–10:30 a.m., "Self Stratified Inorganic/Organic Nanocomposite Coatings: The Next Leap in Coating Performance," by Mark Soucek, University of Akron

This presentation discusses research of inorganic/organic hybrid materials for coating usages.

• 10:30–11:00 a.m., "A Novel Alternative Surface Preparation for Duplex Coating of Galvanized Steel," by Richard Schertzer, Madison Chemical Industries, Inc.

This presentation details a novel surface preparation process that is suitable for many moderate to heavy-duty service applications on galvanized steel, including atmospheric and embedded service.

• 11:00 a.m.–Noon, "Titans of the Abyss: Polyurethane, Polyurea, and Hybrid Lining Technology," by Mike O'Donoghue, Ph.D., International Paint, LLC

This paper will focus on very fast cure, solvent-free polyurethanes, polyureas, and hybrid technologies, many of which are well-suited to immersion service.

• Noon–12:30 p.m., "In-Situ Coating Method for Cleaning and Coating of Internally Corroded Pipelines in the Field," by Baker Hammad, BSH Engineering Consultant Office

This presentation will discuss the in-situ coating method as a potential alternative to new pipe replacement.

Environmental, Health, Safety, and Regulations

• 10:00–10:30 a.m., "TCEQ Coating Hot Topics and Regulatory Resources," by Glenda Swierc, MS, CHMM, Texas Corrosion on Environmental Quality

This session will consist of an overview of the Texas Commission on Environmental Quality Small Business and Local Government Assistance program, which provides numerous tools and resources to help the regulated surface coating community comply with environmental regulations.

• 10:30–11:00 a.m., "REACH and Its Grasp on the Protective Coatings Industry," by Heather Stiner, PCS, SSPC, and Heather Ramsey, Sauereisen, Inc.

Sunset Station Depot SACVB

This paper will focus on how the European regulation known as REACH (Registration, Evaluation, Authorization, and restriction of CHemical substances) affects U.S. companies in regards to restriction on chemicals; hazardous and non-hazardous classification, labeling, and packaging; and SDS standardized format.

• 11:00–11:30 a.m., "Regulatory Update: Current and Emerging Trends in Occupational

and Environmental Health," by Alison B. Kaelin, KTA-Tator, Inc.

This annual paper summarizes environmental, health, and safety issues that may impact SSPC members.

• 11:30 a.m.–Noon, "A Walk Through the River of OSHA Regulations Relating to Abrasive Blasting," by Tom Enger, Clemco Industries, Corp.

The presenter will discuss each OSHA regulation relating to abrasive blasting and OSHA's interpretation of those regulations.

Inspection—Assuring Performance and Quality

• 10:00–10:30 a.m., "Third Party Inspection: The Good, the Bad, and the Ugly," by Tom Schwerdt and Johnnie Miller, Texas Department of Transportation (TxDOT)

This paper covers the benefits, drawbacks, and lessons learned from implementing and overseeing a third party inspection program at the TxDOT.

• 10:30–11:00 a.m., "Practical Coating Thickness Measurement Overview," by Paul Lomax, Fischer Technology Inc.

In this presentation, there will be a coating thickness measurement overview, followed by discussion on solutions for meeting the goals of reducing costs, lessoning errors, and increasing quality.

• 11:00–11:30 a.m., "'Standard of Care' for Coatings Inspection," by Peter Ault, Elzly Technology Corporation

This paper will explore the concept of a 'Standard of Care' as applied to coating inspection on industrial coatings projects.

• 11:30 a.m.–Noon, "Optical Safety and Visual Ergonomics for Fluorescent (OAP) Coatings Inspection," by Paul D. Gossen, Paul D. Gossen, LLC

This paper summarizes the results of an expert review funded by the NAVSEA Painting Center of Excellence to determine the symptoms caused by the visual ergonomics of viewing intense violet lights and ensure that the appropriate worker safety standards are being applied.

High Performance Coatings

• 3:00–3:30 p.m., "Spray-On Ceramic Insulation Up To 450 C and Encapsulating Existing Corrosion Without Sandblast," by Joseph Pritchett, Superior Product International II, Inc.

This paper will discuss research using trial and error to determine how compounds would act in a paint/coating form, followed by a study on corrosion encapsulation without the need for sand-blasting.

• 3:30–4:00 p.m., "Viscous Elastic Coating and Sealants: How They Are Unique and Different From Conventional Corrosion Prevention Coatings," by John Glass, Amcorr Products and Services, Inc.

The presenter will cover the unique chemistry of viscous elastic coatings and sealants and its permanent wetting characteristics.

• 4:00–4:30 p.m., "How Design Features Unique to AP1000 Power Plants Affect Coating System Design Requirements," by Mike Durbin and Pat Ward, The Sherwin-Williams Company

This paper disusses the AP1000 containment coating system design bases and illustrates how these differ from those for conventional nuclear power plants. The overall Balance-of-Paint coatings design policy for the AP1000 plants is also outlined.

• 4:30–5:00 p.m., "New Anti-Fouling Technology Applied to Prevent the Growth of Invasive Species on the Southern Delivery Project in Pueblo, CO," by Brett Allison, Coblaco Inc., and Charles Fisher, FujiFilm Smart Surfaces

The presentation will outline the process and procedure of lining the conduit of a 62-mile steel pipeline with an anti-fouling coating system.

Field and Laboratory Testing

• 3:00–3:30 p.m., "Comparing Multiple Weathering Techniques Among Various Coatings Chemistries," by Veronica Coleman, The Sherwin-Williams Company

This paper will cover exposure testing performed on various high-durability chemistries to evaluate gloss retention and color changes.

• 3:30–4:00 p.m., "A Study of the Effect of Film Thickness and Blast Profile on Accelerated Under Film Corrosion Creep," by Carl Reed, International Paint, LLC

The presenter will discuss a study that compared the effect of on corrosion creep of a coatings film applied at various thicknesses over a standard abrasive blasted steel surface and a coatings film applied at constant thickness over an abrasive blasted steel surface with various maximum peak heights.

• 4:00–4:30 p.m., "Adhesion Tests and Failure Modes Study on Structural Steel Coatings," by Dr. John J. Myers, Missouri University of Science and Technology

The presentation will focus on adhesion test ASTM D 4541 on three categories of structural steel coating systems in the laboratory of Missouri University of Science and Technology.

• 4:30–5:00 p.m., "Laboratory Evaluation of Metalized Coatings," by David Tordonato, Ph.D., M.E., and Allen Skaja, Ph.D., U.S. Bureau of Reclamation

This presentation will discuss a study by the Bureau of Reclamation's Materials Engineering and Research Laboratory to evaluate the feasibility of using metalized/thermal spray coatings on equipment.