

SPRAYTIME®

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Thermal Spray Applications in The Energy and Petrochemical Industries

Corrosion has always been a major problem for the energy and petrochemical industries, regardless of whether in the emerging renewable energy sector or the more traditional



Figure 1. Wind Turbine.

fossil fuel industries. In this instance we are looking at two specific areas of concern; wind turbine towers, due to their extreme locations, and the very aggressive corrosion under insulation (CUI) experienced in the petrochemical industry.

The wind turbine industry is growing rapidly. In the UK alone there are in excess of 3,000 wind turbines (Figure 1) in operation, over 800 under construction and several thousand more expected to be erected by the year 2020. Many manufacturers of wind turbines specify thermal sprayed zinc or zinc/aluminium alloys as a method of

[continued on page 4](#)

Evaluation of Thermal Sprayed Coatings

Evaluation of thermally sprayed coatings is an integral part of coatings development and quality control during the production process.

The main coatings evaluation methods include:

- Metallographic analysis (thickness, porosity, presence/absence of unmelted particles, cracks, delaminations and separations, coatings and interface contaminations).
- Microhardness measurements (average microhardness and distribution of the microhardness through the coating).
- Mechanical testing (cohesion/adhesion and bend testing).
- Stresses analysis in the coating using Almen strips testing.
- Service properties (for example, wear resistance, corrosion resistance, etc).

There are different ASTM standards that give very useful guidelines for coating preparation and testing, but because of the large diversity of equipment, the huge variety of coatings and coatings/substrate combinations, the guidelines are not tailored to specific coatings and equipment; different coatings experience different behaviors during sample preparation and testing; in some cases that might result in inadequate interpretation of the results.

An important factor in metallographic analysis of thermal sprayed coatings is sample preparation which has a significant effect on coating presentation. It involves sample sectioning, cleaning, mounting, grinding (planar and fine) and polishing (rough and final).

The main source of error in metallographic evaluation of thermally sprayed coatings and interpretation of test results is the damage that could occur during sample preparation for the analysis. For the majority of sprayed

[continued on page 5](#)

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corrosion protection. Thermal sprayed coatings offer a very resilient finish, which is less susceptible to damage than many paint coatings. When the size of this growing industry is taken into account protecting against corrosion is crucial.

Onshore wind turbine towers are commonly manufactured in three or four sections. Each section is often thermal sprayed around the flanged joints and up to 1.6 ft (0.5 m) either side of these joints, both inside and out. Many offshore towers are specified to have the entire external surface to be coated. In addition, areas around the internal bolting fixtures and access hatches are thermal sprayed to give added protection against assembly damage, as well as general wear and tear. Some wind tower sections can be in excess of 100 ft (30 m) long, making any corrosion protection process very challenging. Thermal spraying with the Metallisation Arc140 electric arc spray system makes the whole process much simpler than more traditional thermal spray systems. The 66 ft (20m) push/pull supplies package allows the power source, wire and wire dispensing system to be located outside the tower section, while the operator moves along the inside, spraying where required. This flexibility also is beneficial when spraying the outside of the tower sections, allowing the power source and wire feeder to be kept away from the dusty spray area. The

coated sections are then painted to the manufacturer's specification.

One of Metallisation's Spanish customers uses automated thermal spraying to spray components within the assembly that support the turbine blades (Figure 2). The actual coating with pure zinc is only one part of the process. In common with all thermal sprayed coatings, the surface of the turbine part is first grit blasted to a profile of around 3 mils (75 microns) and a cleanliness of SA3. A robot mounted arc spray system applies an even 4.7 mils (120 microns) of zinc at a spray rate of up to 79 lb/hr (36 kg/hr). A final coating of epoxy paint is then applied. This is an excellent way to protect wind turbines from corrosion and offers up to 20 years protection.

In the petrochemical industry Corrosion Under Insulation (CUI) in piping systems consumes a significant percentage of the maintenance budget. A large portion of this money is spent on expense items such as external piping inspection, insulation removal and reinstallation, painting and pipe replacements. CUI prevention strategies provide long-term and reliable prevention of CUI that move towards inspection-free and maintenance-free piping systems and significant maintenance cost reductions.



Figure 2. Programming The Arc Spray System.

CUI, where accelerated corrosion can occur under wet insulation, will always be an issue for new pipes and vessels. Coating with TSA (thermal sprayed aluminium) is an ideal and cost-effective solution when compared to other systems when reviewed over the lifetime of the facility. One of Metallisation's customers; Iris NV, based in Belgium; has embraced the process of thermal spraying to protect against CUI with many of its own customers. Iris NV thermal sprays new vessels and pipework pre- installation. The preparation of the steelwork surfaces is critical to the success of the thermal spraying process. Prior to spraying the distillation columns, the surface needs to be prepared by grit blasting with steel grit to SA 2.5, with a surface roughness between 3 and 4.3 mils (75 and 110 µm). This is then arc sprayed with aluminium Grade 1350 (99.5% Al minimum) to a thickness of 9.8 mils (250 µm). Finally a seal coat is applied to the columns.

As well as new installations, existing insulated pipe and vessels are often protected against CUI, as part of an ongoing maintenance and safety regime. It is of course

continued on page 7



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Evaluation of Thermal Sprayed Coatings continued from page 1

materials, the damage is mainly due to localized material removal (void formation) during sectioning, grinding and polishing stages. For soft, ductile coatings, smearing of the material over the voids, mainly during sectioning and planar grinding stages, may have an additional effect as well.

There are numerous factors that govern sample preparation quality: applied force, time, surface speed, relative rotation, equipment and supplies used, cloth condition, etc. The present research, performed on different coatings (ceramic, multi-layer and composite) revealed that a change in any of these factors might produce a different effect for each coating family.

Microhardness of the coating is identified as a key factor for polishing procedure development. There is a common trend, the higher microhardness of the coating, the more severe the polishing parameters (higher polishing force and time, increased surface speed) for proper sample preparation.

Applied force, polishing time and coating orientation have been demonstrated to play a significant role in the quality of the microstructural representation. Usually, the equipment manufacturers' recommended applied force is of 20-30 N per specimen. Similar values of applied forces are seen in the ASTM standard E1920 for metallographic preparation of thermally sprayed coatings.

For ceramic and cermet coatings with relatively moderate microhardness (for example TiO_2 , ZrO_2 , $\text{Cr}_3\text{C}_2\text{-NiCr}$) these recommendations result in high quality samples that are scratch and pull-out free (Figure 1).

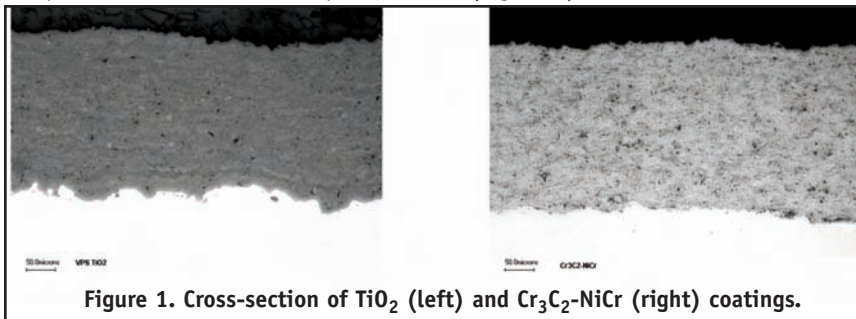


Figure 1. Cross-section of TiO_2 (left) and $\text{Cr}_3\text{C}_2\text{-NiCr}$ (right) coatings.

However for some ceramic coatings with relatively higher microhardness (for example, Cr_2O_3) the formation of pull-outs was very high when the same force was applied, sometimes even doubling the voids percentage. To correct this, a procedure specifically tailored to coatings with high microhardness should be used. This procedure uses an increased force and may result in a 30-50% reduction in pull-out formations (Figure 2).

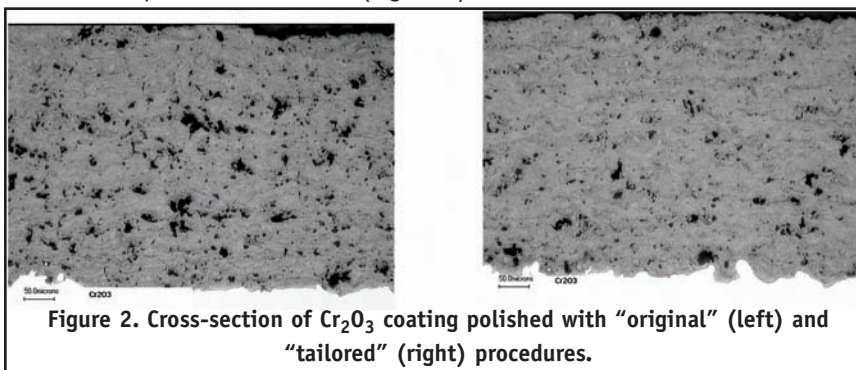


Figure 2. Cross-section of Cr_2O_3 coating polished with "original" (left) and "tailored" (right) procedures.

For metallic coatings that have a low microhardness, a similarly tailored procedure should be used which includes a reduction of the polishing force. This results in much less coating damage to the metallic coatings and decreased pull-out formations (Figure 3).

continued on page 6

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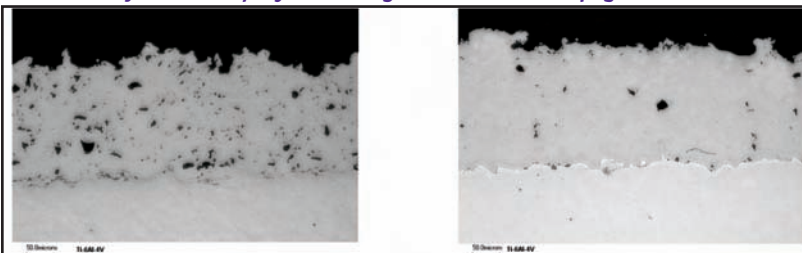


Figure 3. Cross-section of Ti-6Al-4V coating polished with "original" (left) and "tailed" (right) procedures.

Proper positioning of the coated sample during polishing is another very important characteristic that has a significant influence on the polishing quality. In most publications and polishing recommendations, the location of the mounted sample in relation to the wheel movement direction is not specified. If it is specified, Figure 4a is the most common placement used.

The research, performed on a wide range of metallic, ceramic and cermet coatings, confirms that less coating damage is achieved when the sample is positioned perpendicularly to the wheel movement (Figure 4b, 4c). It has also been shown that the positioning of the coating in relation to the substrate is also of importance. The best results for various metallic coatings are attained when the coating is positioned from the left side of the substrate (Figure 4b). For ceramic and cermet coatings, less damage occurred when the coating is positioned from the right side of the substrate (Figure 4c).

Figure 4. Different positions of mounted samples in the holding wheel:

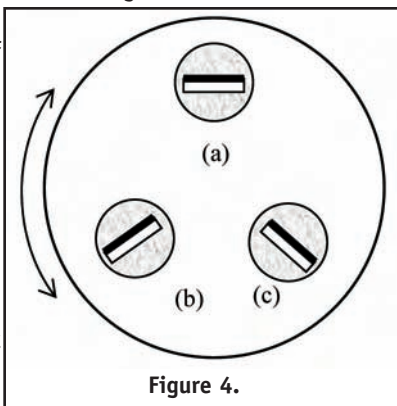


Figure 4.

- (a) parallel to the wheel movement;
- (b) perpendicular to the wheel movement, with the coating located on the left side of the substrate;
- (c) perpendicular to the wheel movement, with the coating located on the right side of the substrate.

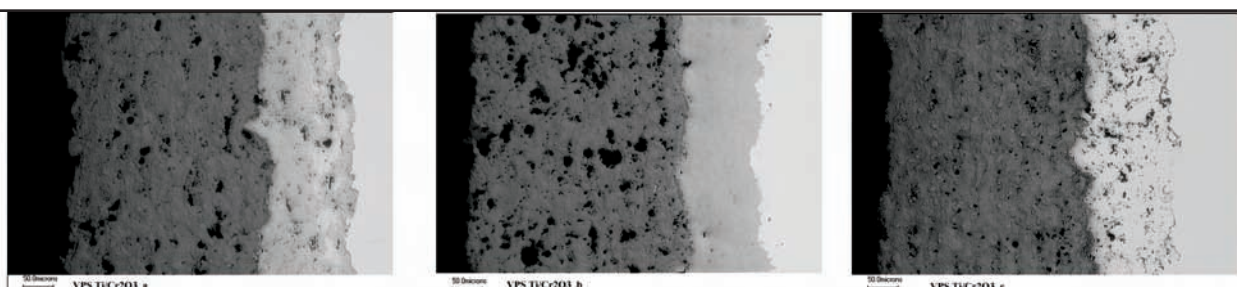
Oftentimes, coatings consist of a combination of a

metallic bond coat and a ceramic top coat, with or without a graded metallic/ceramic layer. All of these layers have different properties and, therefore, behave differently during polishing. Typically, when polishing parameters are optimized for one layer of a multilayered coating, it is likely that the other layers may not be optimally polished. To better characterize the entire structure, polishing and analyzing each of the coatings is recommended. This implies that the

sample must be polished and analyzed twice (for a two-layer system), once using the procedure for metals and the second time using the procedure for ceramics. As a typical example, the cross-section of the same two-layer coating (Ti bond and Cr_2O_3 top) that was polished using different polishing procedures is presented on Figure 5.

In some cases, the change in applied force may compromise other quality characteristics of the polished sample. For example, edge rounding may occur when using a high force and some scratches may remain when using a low force. To reduce such polishing flaws, some precautions may be taken. For example, when using a high force, a counter sample can be mounted in front of the coating. When using a low force, polishing time during the polishing stages can be increased to remove scratches.

The applied force and the polishing time must be high enough to ensure the complete removal of the coating that was deformed during the sectioning and the planar grinding stages. As previously stated, they are strongly dependent on the properties of the coating, especially on its microhardness. For a coating with high microhardness, for example, a ceramic with the microhardness equivalent to or greater than 1000 HV, the recommended time is 2-5 minutes for each step during the sample integrity stage of preparation. However, if the coating is dense, has a high cohesive strength, and has a relatively low microhardness; more economical polishing procedures can be used. For example, TiO_2 or ZrO_2 coatings with microhardness values between 650-850 HV can be prepared using 30% less polishing time and still maintain the same quality. By using shorter polishing procedures, high polishing qualities and substantial savings on expensive polishing supplies and equipment are attainable.



"Original" procedure, position 4a.

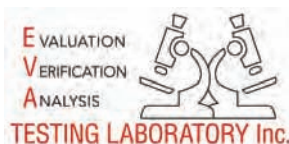
Tailored for Ti coating (decreased force, position 4b).

Tailored for Cr_2O_3 coating (increased force, position 4c).

Figure 5. Cross-section of a two-layer Ti and Cr_2O_3 coating polished with "original" and "tailed" procedures; sample positioning is identified on Figure 4.

It is obvious, that the use of preparation procedures tailored to various coating families allows a decrease in coating damage and reveals the true representation of these coatings.

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Applications in The Energy and Petrochemical Industries continued from page 4

hoped that maintenance inspection programs can be reduced in years to come through the implementation of a CUI prevention strategy. Pipes are stripped of insulation to enable engineers to inspect the pipework for potential damage and excessive corrosion. A series of nondestructive tests are then carried out before the surfaces are grit blasted to SA 3 where possible. In normal circumstances, it is at this stage that TSA will be applied using wire flame spray equipment and; in some cases, the surfaces are sealed. The final stage is then to reapply the insulation to the pipework. This coating solution is increasing in volume, with a number of global oil companies adopting this process within many plants around the world. Confidence in the application process and technique has grown to such an extent that coating of live plant is commonly undertaken.

These few application examples give a small insight into the use of coatings, which offer a safe future for the oil and gas industry, as well as supporting renewable energies for a greener long-term future.

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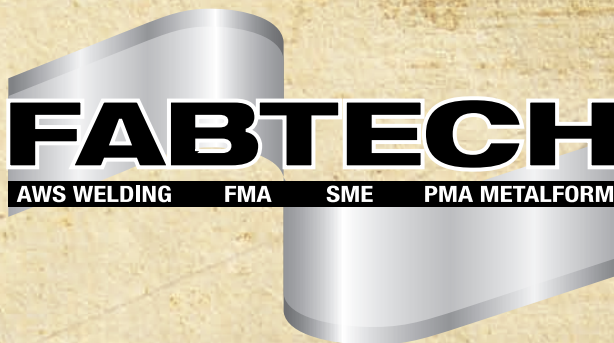
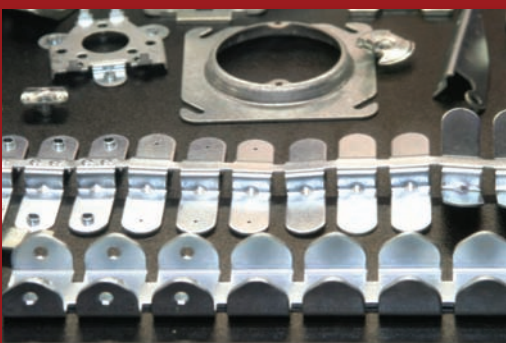
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Camfil Farr APC Opens Puerto Rico Sales and Service Office

Camfil Farr Air Pollution Control (APC), a leading producer of dust and fume collectors to clean up industrial processes, announced the November 12th opening of a sales and service office in Gurabo, Puerto Rico for enhanced support of customers in the Caribbean region. The new office will provide sales and technical support to the company's growing base of dust collection customers in the pharmaceutical, biotechnology and general industrial sectors, as well as a warehouse for local stocking and delivery of replacement filters and parts.



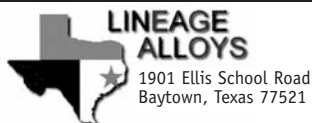
The rapidly expanding dust collection company is part of Camfil Farr, the world's largest air filter manufacturer, which is sharing the Puerto Rico facility with Camfil Farr APC. Victor Rodriguez, technical sales manager of the Camfil Farr APC operation in Puerto Rico, says: "We can now combine our award-winning Gold Series® and HemiPleat® dust collection technologies with Camfil Farr's superior HVAC air filtration products and offer the 'complete package' to our customers."

For general information on Camfil Farr APC, call (800) 479-6801 or (870) 933-8048 or visit www.farrapc.com.

To reach the new Puerto Rico office directly, contact Victor Rodriguez, Camfil Farr Air Pollution Control, Turabo Industrial Park Bldg #2, State Road 189, KM3.3, Gurabo, PR 00778; phone (787) 687-0063; email rodriguezv@farrapc.com; direct link <http://espanol.farrapc.com/offices>.

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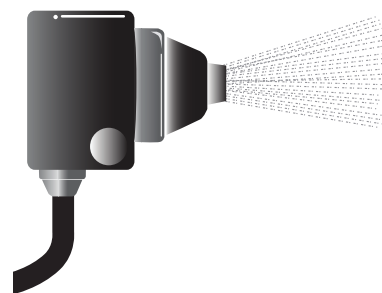
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Carpenter Technology and Sandvik Establish Cooperation in Powder Metal Products

Carpenter Technology Corporation has established a strategic partnership with Sandvik Materials Technology to further strengthen its leadership position in high-performance powder metal products. As part of the joint venture arrangement, Carpenter Technology Corporation will acquire a 40% interest in Sandvik Powdermet AB and Sandvik AB will acquire a 40% interest in Carpenter Powder Products AB.

Carpenter Powder Products AB, a unit of Carpenter Technology based in Torshälla, Sweden, manufactures high-alloy powder and is currently one of Sandvik Powdermet AB's major suppliers. The joint venture will provide Carpenter with access to Sandvik Powdermet AB's market for near-net-shape powder products, and will ensure Sandvik's long-term supply of high quality powder. The cooperation is expected to provide accelerated growth opportunities for both companies in powder metal markets. The two businesses will continue to operate under their current respective brands, Carpenter and Sandvik.

"We are committed to enhancing our market position in powder manufacturing and technology, which will strengthen our portfolio of high-value, differentiated products and provide a vehicle for continued future growth," said William A. Wulfsohn, President and Chief Executive Officer of Carpenter Technology. "This

partnership will further establish Carpenter as a leading global supplier of technologically advanced materials required by the energy and other demanding market sectors. Carpenter believes that collaborations with strong partners such as Sandvik will provide a strong foundation for developing new growth opportunities."

"Powder technology is one of the development areas to which we have assigned highest priority to enable us to further strengthen our position in the field of advanced materials in, for example, the rapidly expanding energy sector," said Peter Gossas, President of the Sandvik Materials Technology business area. "The strategic partnership with Carpenter Technology in this area makes us a leading player in the field of powder technology."

Carpenter Powder Products has additional powder manufacturing operations in Bridgeville, PA and Woonsocket, RI, and powder R&D in Reading, PA. Sandvik Materials Technology also has powder technology operations in Wales (Sandvik Osprey Ltd), powder manufacturing in Surahammar, Sweden and a powder technology R&D unit in Sandviken, Sweden. These units will not be included in the joint venture.

Carpenter Powder Products AB is a diversified manufacturer of high-alloy metal powder products, focusing primarily in energy and industrial markets. The company, located in Torshälla, Sweden, has about 50 employees and annual sales of approximately \$21 million US or 150 million SEK.

Sandvik Powdermet AB is specialized with respect to development, manufacturing, sales and marketing of powder-based products delivered in the form of near-net shapes. The company, located in Surahammar, Sweden, has about 30 employees and annual sales of approximately 150 million SEK.

About Carpenter Technology: Carpenter produces and distributes conventional and powder metal specialty alloys, including stainless steels, titanium alloys, tool steels and superalloys.

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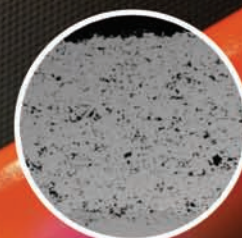
Yes, we did it! The International Thermal Spray Association now has a very basic Facebook Page. If you are a Facebook user, you can simply type in thermal spray in the top search engine space and it will come up. At that point, select "like" and you will be connected to the ITSA page. Right now, we have our ITSA promotion video on the page, plus a few recent messages.

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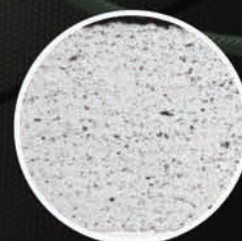
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Cylinder Running Surfaces of Diesel Engines**
Mareike Hahn and Alfons Fischer

Future demands of diesel engines are about low-friction and wear-resistant materials in order to increase the efficiency and achieve environmentally sound solutions. Thus, thermally sprayed Fe-base coatings are investigated for application as cylinder running surfaces in cast aluminum crankcases. They should allow the desired combination of structural, productional, and topographical properties required in Diesel engines. To understand the influence of the characteristic microstructures on the integrity of the composites the coatings have to be examined in laboratory tests in terms of different loading situations. Cavitation tests were carried out where the tribological stability of these coatings and their ability to resist high-frequency cyclic impact stresses are revealed. Composite samples (base material and coating) were investigated in terms of crack initiation in a scanning electron microscope with an in situ 3-point-bending test. The endurance under cyclic mechanical stresses was tested with a 4-point-bending stress controlled test.

Read the entire article in the September 2010 Issue

Visit www.asminternational.org/tss

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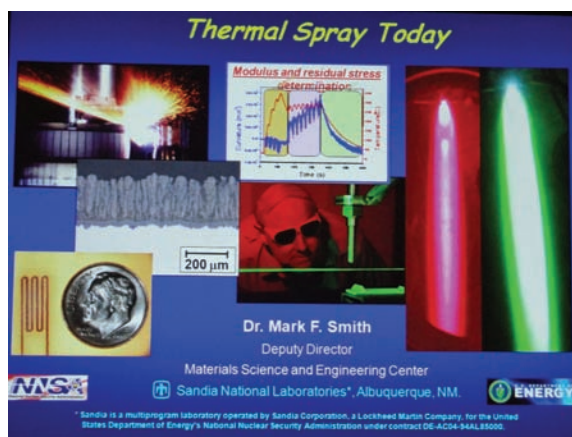
Kendall Hollis, Seiji Kuroda, and Armelle Vardelle

Thermal Spray Technology Conference a Success

The International Thermal Spray Association Conference "High Performance Surfaces" was well attended at the Fabtech Show in Atlanta November 3, 2010



Cochairmen David Wright and Daniel Hayden (seated) with keynote speaker Mark F. Smith looking on slide below.



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CALENDAR OF EVENTS

DECEMBER 2010

14-16 Orlando, FL USA *Power-Gen International* - visit www.power-gen.com

2011

FEBRUARY 2011

2-4 Ft. Lauderdale, FL USA *Composites & Polycon 2011* - 703.525.0511 or visit www.acmanet.org

13-16 Doha, Qatar *1st Middle East Turbomachinery Symposium* - sponsored by Texas A&M University at Qatar and Qatar Petroleum, <http://middleeastturbo.tamu.edu>



16-17 Houston, TX USA *Laser Additive Manufacturing LAM 2011* - visit Laser Institute of America www.laserinstitute.org

27FEB-3MAR San Diego, CA USA *TMS Annual Meeting* - visit www.tms.org/meetings

APRIL 2011

16-21 Chicago, IL *SVC TechCon Annual Technical Conference* - visit www.svc.org

MAY 2011

2-5 Indianapolis, IN USA *Iron & Steel Technology Conference and Expo* - contact Jeff Campbell 724.814.3030

11-13 Monterrey Mexico *AWS Weldmex Metalform & Fabtech* - visit aws weldmex.com

18-21 San Francisco, CA USA *PowderMet 2011 Annual Conference* - Metal Powder Industries Federation, Sandra Leatherman email sleatherman@mpif.org, web: www.mpi.org

19-21 Charleston, SC USA *International Thermal Spray Association Annual Meeting and Technical Program* - contact Kathy Dusa at itsa@thermalspray.org



22-25 Stamford, CT USA *22nd Annual BCC Conference on Recent Advances in Flame Retardancy of Polymeric Materials* - Research www.bccresearch.com/conferences



23-26 Moscow Russia *Russia Essen Welding & Cutting 4th International Trade Fair Joining Cutting Surfacing* - visit www.russia-essen-welding-cutting.com

JUNE 2011

5-8 Lake Como, Italy *The 11th International Conference on the Mechanical Behavior of Materials* - visit mpif.org

6-9 Norfolk, VA USA *MegaRust 2011* - American Society of Naval Engineers, www.navalengineers.org

6-10 Vancouver, Columbia, Canada *British ASME TurboExpo 2011* - visit www.turboexpo.org, email igti@asme.org



19-22 Chicago, IL USA *PowderMet 2011* - contact Sandra Leatherman sleatherman@mpif.org, www.mpi.org

28JUN-2JUL Dusseldorf, Germany *Int'l Foundry Trade Fair and Int'l Metallurgical Technology Trade Fair* - 312.781.5180, web www.mdna.com

Is Your Event Listed? Send notice to spraytime@thermalspray.org

SEPTEMBER 2011

26-29 Hamburg, Germany *ITSC 2011 Int'l Thermal Spray Conference & Exposition with DVS Congress & DVS Expo 2011* - contact ASM International em:customerservice@asminternational.org, website: www.asminternational.org/tss or email DVS at tagun-gen@dvs-hg.de



OCTOBER 2011

2-5 San Diego, CA USA *Titanium 2011* -contact Int'l. Titanium Assoc. 303.404.2221, email ita@titanium.org, web www.titanium.org

18-21 Toulouse, France *AeroTech 2011* - SAE www.sae.org/events/atc/

NOVEMBER 2011

13-16 Chicago, IL USA *FABTECH Int'l & AWS Welding Show with a Thermal Spray Pavilion and Conference* - organized by American

Welding Society, www.aws.org, Fabricators and Mfgs Assoc, www.fmafabtech.com, Soc. of Mfg. Engineers, www.sme.org/fabtech



2012

APRIL 2012

28APR-3MAY Santa Clara, CA USA *55th SVC Annual Technical Conference* - visit www.svc.org

JUNE 2012

11-15 Copenhagen Denmark *ASME TurboExpo 2012* - visit www.turboexpo.org, email igti@asme.org



JULY 2012

8-14 Denver, CO USA *65th Annual Assembly IIW International Conference* - Contact-IIW General Secretariat, email l.durand@iiwelding.org

OCTOBER 2012

15-17 Las Vegas, NV USA *FABTECH with a Thermal Spray Pavilion and Conference* - organized by American Welding Society, www.aws.org, Fabricators and Mfgs Assoc, www.fmafabtech.com, Soc. of Mfg. Engineers, www.sme.org/fabtech



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Chairman Hayden

The **International Thermal Spray Association** is closely interwoven with the history of thermal spray development in this hemisphere. Founded in 1948,

and once known as Metallizing Service Contractors, the association has been closely tied to most major advances in thermal spray technology, equipment and materials, industry events, education, standards and market development.

A company-member trade association, ITSA invites all interested companies to talk with our officers, committee chairs, and

company representatives to better understand member benefits. A complete list of ITSA member companies and their representatives are at www.thermalspray.org

ITSA Mission Statement

The International Thermal Spray Association is a professional trade organization dedicated to expanding the use of thermal spray technologies for the benefit of industry and society.

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ITSA Thermal Spray Historical Collection

In April 2000, the International Thermal Spray Association announced the establishment of a Thermal Spray Historical Collection which is now on display at their headquarters office in Fairport Harbor, Ohio USA.

Growing in size and value, there are now over 30 different spray guns and miscellaneous equipment, a variety of spray gun manuals, hundreds of photographs, and several thermal

spray publications and reference books.

Future plans include a virtual tour of the collection on the ITSA website for the entire global community to visit.

This is a worldwide industry collection and we welcome donations from the entire thermal spray community.

ITSA SPRAYTIME Newsletter

Since 1992, the International Thermal Spray Association has been publishing the **SPRAYTIME** newsletter for the thermal spray industry. The mission is to be the flagship thermal spray industry newsletter providing company, event, people, product, research, and membership news of interest to industrial leaders, engineers, researchers, scholars, policy-makers, and the public thermal spray community.

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Become a Member of The International Thermal Spray Association

Your company should join the International Thermal Spray Association now! As a company-member, professional trade association, our mission is dedicated to expanding the use of thermal spray technologies for the benefit of industry and society.

ITSA members invite and welcome your company to join us in this endeavor.

Whether you are a job shop, a captive in-house facility, an equipment or materials supplier, an educational campus, or a surface engineering consultant, ITSA membership will be of value to your organization.

The most valuable member asset is our annual membership meetings where the networking is priceless! Our meetings provide a mutually rewarding experience for all attendees - both business and personal. Our one day Technical Program and half day business meeting balanced by social activities provide numerous opportunities to discuss the needs and practices of thermal spray equipment and processes with one another.

As an ITSA member, your company has excellent marketing exposure by being listed on our website along with a multitude of additional benefits.

ITSA member companies are also highlighted in the ITSA booth at several trade shows throughout the year (International Thermal Spray Conference ITSC, Fabtech International and AWS Welding Show Thermal Spray Pavilion, Weldmex Mexico, and TurboExpo in 2009).

If you would like to discuss the benefits of your company becoming a member of the International Thermal Spray Association, we suggest you contact Kathy Dusa at our headquarters office or visit the membership section of our www.thermalspray.org website.

Happy New Year

English

Wishing you a Happy New Year

Your friends at the
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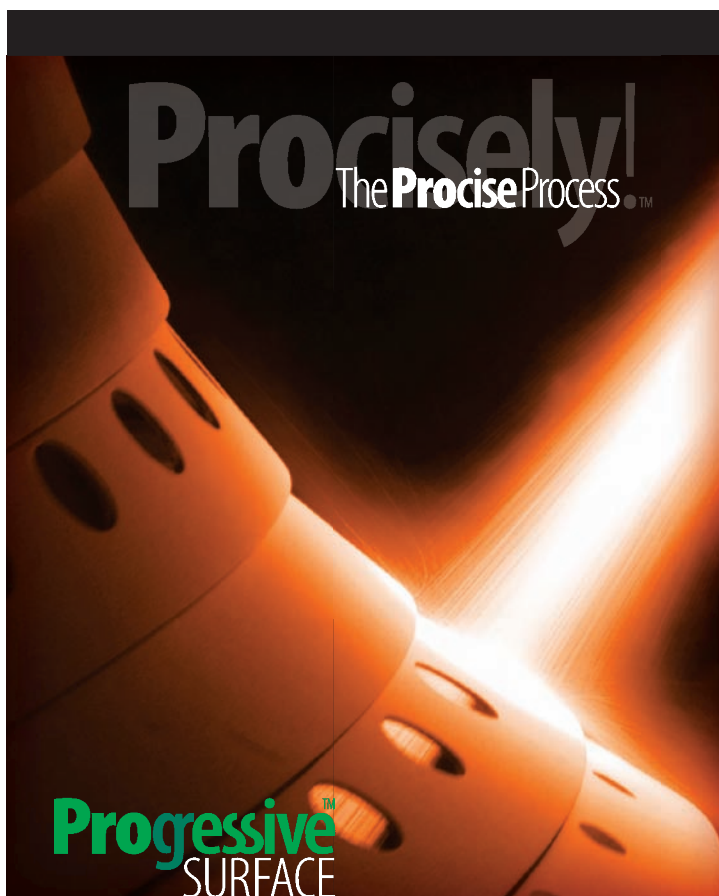




ASM International Seminar *Thermal Spray Technology* July 27, 2010. Instructor Christopher C. Berndt (top row with beard) - of Swinburne University of Technology, Australia - affectionately named the attendees *The Buckeye Team* because the seminar was held in Ohio.

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Pictured above are members of CenterLine's SST Division staff with Mr. David Wright of Accuwright Industries Inc. Left to right - Jianfeng Wang, Michael Beneteau, Julio Villafuerte, Ed Malison, David Wright, Anthony Pecaski, Don Bradley, Wally Birtch

Accuwright Industries Receives 2010 Cold Spray Job Shop Service Award

CenterLine (Windsor) Limited's, Supersonic Spray Technologies Div. (SST™), is pleased to announce that **Accuwright Industries Inc.** of Gilbert, AZ is the 2010 recipient of its Cold Spray Job Shop Service Award in recognition of Accuwright's excellence in the utilization and development of Cold Spray technology.

The award was presented on September 27, 2010 during the TSS Cold Spray Conference held in Akron Ohio. Mr. David Wright, president of Accuwright Industries accepted the award on behalf of his company.

Accuwright Industries, Inc. is a full service metal spray facility utilizing state-of-art robotics and controls for precision Cold Spray applications. It is a recognized industry leader in developing unique and practical applications for Cold Spray technology to repair and restore a variety of high value aerospace components. Among the processes that Accuwright specializes in are corrosion mitigation/protection, dimensional restoration and casting repairs.

CenterLine is very pleased to recognize Accuwright's ongoing dedication to advancing Cold Spray technology with this award

SST™ supplies a full range of patented low-pressure cold gas dynamic spray (cold-spray) metal coating systems for the aerospace, defense, glass and automotive industries.

Cold spray is a cost effective and practical coating process that enables users to apply robust metal coatings to a wide



range of surfaces without excessive heat. Coating characteristics include extremely low oxide entrapment, high densities and high bond/cohesive strengths. The coatings are also extremely machine-able, have thin or thick build characteristics and are accepting of dissimilar materials with no galvanic reactions.

For further information on Centerline, please contact Ed Malison, Director of Business Development via email Ed.Malison@cntrline.com or Julio Villafuerte, Director of R&D via email Julio.Villafuerte@cntrline.com. Both can be reached at 519-734-8464 or visit www.supersonicspray.com

For further information on Accuwright, please contact David Wright via email dave@accuwright.com or visit their website

www.accuwright.com

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NEW "Supporting Societies" Membership

The International Thermal Spray Association is pleased to announce a new "Supporting Societies" membership category to establish communication with other associations/societies involved in thermal spray and surface engineering activities worldwide.

This is ideal for membership exchange between organizations. Contact Kathy Dusa at the headquarters office via email to itsa@thermalspray.org

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Journal of Thermal Spray Technology Volume 18 Best Paper Awards

The *Journal of Thermal Spray Technology* (JTST) is delighted to announce the winners of the JTST Volume 18 Best Papers Awards, as chosen by an international committee of expert judges. The awards were presented to the winning authors at the International Thermal Spray Conference and Exposition 2010, in Singapore.

The Editorial Committee and International Board of Review of the journal believe it is important to evaluate the quality of engineering and scientific contributions published in JTST and to provide recognition of excellent work and its publication. Each paper is reviewed and evaluated on its merits for scientific and engineering content, originality, and presentation style. The following papers are recognized as outstanding and the authors received awards of recognition for their excellent publications.

The Journal of Thermal Spray Technology Volume 18 Best Paper Award:

"Sensing, Control, and In Situ Measurement of Coating Properties: An Integrated Approach Toward Establishing Process-Property Correlations" by **Sanjay Sampath**, **Vasudevan Srinivasan**, **Alfredo Valarezo**, **Anirudha Vaidya**, and **Tilo Streibl**, Center for Thermal Spray Research, Stony Brook University



TSS President Mitch Dorfman (left) and Dr. John Marburger III (right), vice president for research, Stony Brook University, congratulated Prof. Sanjay Sampath (center) for receiving the JTST Volume 18 Best Paper Award. Prof. Sampath, Center for Thermal Spray Research, Stony Brook University, coauthored the paper "Sensing, Control, and In Situ Measurement of Coating Properties: An Integrated Approach Toward Establishing Process-Property Correlations" with Vasudevan Srinivasan, Alfredo Valarezo, Anirudha Vaidya, and Tilo Streibl.

The Journal of Thermal Spray Technology Volume 18 Best Paper Honorable Mention Award:

"Elastic and Conductive Properties of Plasma-Sprayed Ceramic Coatings in Relation to Their Microstructure: An Overview" by **Igor Sevostianov**, New Mexico State University, and **Mark Kachanov**, Tufts University

The international committee of judges, led by Dr. Roland Seals, chair of the Journal of Thermal Spray Technology Best Paper Subcommittee, is as follows: Arvind Agarwal, David V. Bucci, Andrew Gouldstone, David Hart, Jan Ilavsky,

Bertrand Jodoin, George Kim, Jiri Matejcek, Tim McKechnie, James Rudd, Roland Seals, Philip Shipway, Yoshiki Tsunekawa, Anirudha Vaidya, Joel Voyer, and Petri Vuoristo.

Congratulations are extended to the winning authors from the JTST Editorial Board and the ASM Thermal Spray Society Executive Board of Directors.

Wall Colmonoy Alloy Products Hire Business Development Manager for Southeast USA



We are pleased to announce that **Steve Miller** has joined Wall Colmonoy as Business Development Manager for the Alloy Products Group - Southeast USA.

Steve has a BS in Metallurgy and Material Science from Case Western Reserve University. He brings 25 years of technical sales and engineering experience, including nineteen at SCM Metal Products Division, where he provided technical support and solutions for automotive industry brazing applications.

For more information, visit the Wall Colmonoy website www.wallcolmonoy.com/alloyproductsgroup.html

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ASM Thermal Spray Society Announces New Officers and Board Members

In accordance with its Rules of Governance, the ASM Thermal Spray Society has elected officers and Board members for 2010. Please join us in welcoming the following appointments.

Mr. Charles M. Kay, Vice President, Marketing, ASB Industries, succeeds as President of TSS, while **Mr. Mitchell R. Dorfman**, FASM, Sulzer Metco Fellow, Sulzer Metco (US) Inc., remains on the Board as Immediate Past President. **Mr. Luc Pouliot**, Vice President of Operations, Tecnar Automation Limited, is elected Vice President. Officers serve a two-year term. In addition, **Mr. Douglas G. Puerta**, Laboratory Director, IMR KHA - Portland, is appointed Secretary/Treasurer for a one-year term.



Kay



Dorfman



Pouliot



Puerta

Elected to the Board for a three-year term is **Dr. Ann Bolcavage**, Senior Engineering Specialist, Rolls-Royce Corporation, **Prof. Masahiro Fukumoto**, Toyohashi University of Technology, and **Dr. Dongming Zhu**, Materials Engineer, NASA-Glenn Research Center.



Bolcavage



Fukumoto



Zhu

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Two student members were also appointed to the Board for a one year term: **Ms. Maya Shinozaki**, first year PhD student in Materials Science and Metallurgy at the University of Cambridge, and **Mr. Wilson Wong**, second year PhD student in Mining and Materials Engineering at McGill University.



Shinozaki



Wong

For more information, visit the ASM Thermal Spray Society at <http://tss.asminternational.org>

Join the ASM Thermal Spray Society Online Community Forum

ASM TSS members welcome visitors to register and access the new **searchable** forum, as well as explore the new online community.

To subscribe, visit <http://tss.asminternational.org>, choose networking and forum for instructions.

CenterLine Hires Corporate Purchasing Manager

CenterLine (Windsor) Ltd. is very pleased to announce that **Mr. Steve Markoc** has joined CenterLine as their Corporate Purchasing Manager.

Steve has over 16 years of experience in the automotive industry. His most recent position was with Concours Mold in their purchasing department. Steve also spent over 12 years as corporate purchasing manager at The Windsor Machine Group. During his time at Windsor Machine he concurrently managed the human resources department.

Steve has enjoyed a number of accomplishments including assistance in launching six new plant start-ups and negotiating 21 collective agreements in Canada and the United States. His industry experience will greatly assist CenterLine in its ongoing growth and diversification.

CenterLine (Windsor) Limited is a recognized industry leader in the design, manufacture and supply of a full range of products and services satisfying welding, metalforming and cold spray applications for the automotive, mass transit, aerospace and defense industries. With over 50 years in business, CenterLine is continuing to develop advanced technologies and processes to assist its customers in maintaining their competitive advantage.

For more information, please visit CenterLine's website at www.cntrline.com



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