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NIOSH Recommendations for Hexavalent Chromium – 2013 Update

by Jeff Abelson, Donaldson Torit

The United States National Institute for Occupational Safety and Health (NIOSH) recently recommended that the Occupational Safety and Health Administration (OSHA) lower hexavalent chromium exposure levels below previously OSHA-endorsed levels. This recommendation has renewed the discussion on acceptable emission levels in the thermal spray and welding communities. As a result, companies are advised to review their manufacturing processes and equipment and consider implementing proactive changes to control their possible emissions.

This article addresses some of the questions the new NIOSH recommendations have generated (and resurrected) including:

- What is hexavalent chromium?
- Where does hexavalent chromium come from?
- How can a worker be exposed to hexavalent chromium and how might it affect the body?
- What has inspection activity been finding for the standard as it exists today?
- What are the new NIOSH recommendations?
- What types of engineering controls are possible?

What is Hexavalent Chromium?

Chromium shows up in predominantly three forms:

- 1) Trivalent Chromium, which occurs naturally as chrome ore and is also an essential nutrient for proper metabolism;
- 2) Metallic or Elemental Chromium, typically found in aerospace alloys; and
- 3) Hexavalent Chromium, typically generated by

Continued on page 4.

Thermal Spray Feeds The Starving Artist by Dale Moody, Plasma Powders and Systems, Inc.

For the last 80 years, artists and architects have discovered that thermal spray can provide an exciting new means of expression. The process is affordable and engages the artist directly. Sculpting becomes a more accessible art form for many budding artists.

The principle target audience for this article is not the artist and architect. Most are probably not readers of Spraytime. Instead, the goal is to encourage thermal spray professionals, thermal spray instructors and thermal spray institutions to look for opportunities to encourage artists and architects to look into thermal spray as a viable means of expanding their horizons



Thermal spray is being used for both original art for restoration. and Constantin Brancusi's 98 foot sculpture, Endless Column, in Hobita, Romania, is part of a grouping built as а memorial to those who died defending the town during World War I. It is made up of an elongated module at ground level, then fifteen identical, rhomboid-shaped modules and a half-module at the top.

Endless Column

As original art, all of these elements are made in cast-iron with a thermally sprayed brass coating. After coating, they were threaded down a central steel core. During the original development of the art in 1936, some confusion

Continued on page 9.





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N D U S T R Y N E W S

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NIOSH, continued from page 1.

industrial processes like welding and thermal spray. Hexavalent Chromium is the most toxic form of chromium. You will see hexavalent chromium identified in different ways, including: Hex Chrome, Chrome VI, CrVI and Cr 6+.

Where Does Hexavalent Chromium Come From?

Some of the industrial processes that produce hexavalent chromium include:

- Coatings (spray primers/paints)
 - Coatings containing chromates: dyes, paints, inks and plastics
 - Chrome plating
 - Blending/sanding coatings containing chromium
- Welding of alloys containing chromium
 - Stainless steel & nickel alloy
- Thermal Spraying, including plasma, electric arc and combustion (including HVOF)
 - Metallic chromium in the feedstock may be converted to the hexavalent form.
 - Hexavalent chromium may be present in a feedstock containing any form of chromium.
- Smelting of Ferro-Chromium Ore
- Portland cement impurities
- Dip-tanks Anodizing and Plating lines
- •Leather tanning Ammonium Dichromate

Green Belting Industries

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"The industries in which the largest numbers of workers are exposed to high concentrations of hexavalent chromium compounds include electroplating, welding and painting." (DHHS, 2013)

Important Clarification Points:

potentially generate hexavalent

application. For example:

Wet paints with chromates

Chrome plating

Thermal Spraying

processes.

skin.

SPRAYTIME Second Quarter 2013

Welding

Type of Fume

80% of total fume is in this very small size range.

How Do Workers Become Exposed?

through one or more of many routes.

In your facility, you may be producing a dust, fume or mist that contains hexavalent chromium. It is important to realize hexavalent chromium has its own threshold limit value (TLV) and that NIOSH considers all hexavalent chromium compounds produced to be occupational carcinogens.

Remember hexavalent chromium is typically only a small percentage of the mass for any dust, fume or mist generated. Understanding the percentage of the contaminant that is actually hexavalent chromium allows for better decisions on your control strategy. It is still entirely possible that controlling a general contaminant to levels below its threshold limit value [TLV] may still allow hexavalent chromium levels to exceed the TLV for hexavalent chromium. Typical particle sizes produced in the processes that

chromium-containing material may differ by process and

If your company has any process that could be producing hexavalent chromium, your workers could be exposed

• They could inhale hexavalent chromium through their

nose and mouth from dust-, fume-, or mist-producing

hexavalent chromium may be absorbed through their

 Or they may be exposed by ingestion (swallowing). If workers fail to use proper personal hygiene, the exposed area of clothing or skin can carry hexavalent chromium that can end up on food, tobacco and/or cosmetics and be ingested as a consequence.
 How Does Hexavalent Chromium Affect the Body?

• If a medium (dust, fume, or mist) containing hexavalent chromium lands on an employee's skin,

Size Range of Fume Particles

0.7 - 34 microns

0.75 - 6.4 microns

0.05 - 2.0 microns*

0.05 - 2.0 microns*

perforation of septum (tissue between the nostrils of nose), and damage to the lungs. In addition there may be injury to the eyes, skin, liver and kidneys as examples.

Once in the body, hexavalent chromium typically targets some of a body's organs. Respiratory tract problems can include inhalation damage to mucous membranes,

Where is your article? We encourage you to send articles, news, announcements and information to spraytime@thermalspray.org. A worker exposed to hexavalent chromium may experience symptoms such as sinus irritation, nosebleeds, ulcers (stomach and nose), skin rash, chest tightness, wheezing and shortness of breath.

Employer Requirements

If a company has determined that it could potentially be producing hexavalent chromium, it is required to do the following:

- implement air sampling,
- monitor and notify employees of monitoring results,
- implement engineering controls,
- adopt respiratory protection program,
- demarcate of work areas containing hexavalent chromium.
- execute an employee training program, and
- provide availability of OSHA regulations and company policy to employees.

The frequency of air sampling a company must do depends on the level of hexavalent chromium that was discovered in the facility. If the area tested above the PEL of 5.0 g/m3, testing has to be done every three months. If the area is above the Action Level of 2.5 g/m3 but below the PEL, then a company is only required to do air sampling every six months. If the area is below the action level, the company is required to take an initial baseline and then it is left up to the facility hygienists to decide on a sampling frequency. Annual sampling is a typical strategy in this case.

Monitoring of all employees is required in facilities that test above the Action Level of 2.5 g/m3. The standard on hexavalent chromium requires medical surveillance but leaves the selection of the specific tests to the physician or other licensed health care professional (PLHCP.) This may be an on-site company nurse or the employee may need to go to his own health care provider for tests.

Some of the things that a company could do include:

- Review of health and work history
- Physical exam
- Report of the outcome of the exam

Once an exam is completed, a written summary should be provided to the employee within two weeks, and kept on file at the company by the industrial hygienist.

What has been the Inspection Level as the Standard Exists Today?

A review of OSHA's website reveals little data specifically for hexavalent chromium and inspection levels. What can be observed from the data is that from 2006 to 2009, 437 manufacturing companies had personal sampling of Cr (VI), and of those companies, 65% had confirmation they had hexavalent chromium in the air, and 23% had concentrations above the PEL. Without having completed the sampling, companies would not have understood how much hexavalent chromium was in the air nor would they have been able to understand what corrective actions needed to be done. Personal sampling of air is perhaps the best method for determining the level of hexavalent chromium. In California, estimating emission levels is allowed, and the California Air Resources Board has provided help to supply companies in its state with the ability to calculate hexavalent chromium emission levels based on the idea that thermal spray processes turn 30% of all chrome sprayed by any method into hexavalent chromium. The expected emission factor summary for hexavalent chromium is:

	Emission Factors (lbs Cr* ⁶ /lb Cr sprayed)			ayed)
Process	0% Ctl. Eff. (Uncontrolled)	90% Ctl. Eff. ¹ (e.g. Water Curtain)	99% Ctl. Eff. (e.g. Dry Filter)	99.97% Ctl. Eff. (e.g., HEPA Filter)
Single-Wire Flame Spray ²	4.68E-03	4.68E-04	4.68E-05	1.40E-06
Twin-Wire Electric Arc Spray ²	6.96E-03	6.96E-04	6.96E-05	2.09E-06
Flame Spray ³	6.20E-03	1.17E-03	6.20E-05	1.86E-06
HVOF ³	6.20E-03	1.17E-03	6.20E-05	1.86E-06
Plasma Sprav ⁴	1.18E-02	6.73E-03	2.61E-03	2.86E-06

Source: California Code of Regulations Section 93101.5

7.17E-03

Other Thermal Spraying⁵

The chart above is used to calculate the annual expected emissions based on materials used and already (or to be) installed control technology. The emissions volume calculated can help determine whether the control technology being used today (or the control technology planned to be used for a new process) is adequate. There are three tiers defined on volumes and minimum efficiency control requirements:

2.05E-03

5.70E-04

2.01E-06

Tier	Annual Hexavalent Chromium Emissions from Thermal Spraying	Annual Nickel Emissions from Thermal Spraying	Minimum Control Efficiency Requirements
1	≥ 0.004 lbs/yr and ≤ 0.04 lbs/yr	\geq 2.1 lbs/yr and \leq 20.8 lbs/yr	90% by weight (e.g., a water curtain)
2	> 0.04 lbs/yr and ≤ 0.4 lbs/yr	> 20.8 lbs/yr and \leq 208 lbs/yr	99.999% @ 0.5 microns (e.g., a high- efficiency dry filter)
3	> 0.4 lbs/yr	> 208 lbs/yr	99.97% @ 0.3 microns (e.g., a HEPA filter)

If a company calculation determines no new control collection technology needs to be installed, compliance with permitting, monitoring and recordkeeping are still required. This decision, of course, assumes everything is static in the process. If workloads or materials change, this may change the calculation and could force upgrades to the control system. Examples of how to perform the calculation are found in the California Code of Regulations.

New NIOSH Recommended Permissible Exposure Levels

The Occupational Safety & Health Administration (OSHA) currently has defined two levels of exposure for hexavalent chromium. The current Permissible Exposure Level (PEL) is 5 g/m3 in an 8-hr shift from an original PEL (pre May 2010) of 52 ug/m3. This represented a decrease by a factor of 10!

The other level is called the Action Level at 2.5 g/m3. This is the level where employers are required to take specific actions, and failure to take these actions may result in penalties.

In January of 2013, NIOSH announced a new Recommended Exposure Level (REL) of 0.2 g Cr(VI)/m3 for an 8-hour time weighted average exposure during a 40-hour workweek. NIOSH stated that the new recommendation is to prevent workplace exposure to Cr(VI)

Ι

compounds to reduce workers' risk of lung cancer. "NIOSH also recommends that dermal exposure to Cr(VI) compounds be prevented in the workplace to reduce adverse dermal effects including skin irritation, skin ulcers, skin sensitization and allergic contact dermatitis." (DHHS, 2013)

As an example of how current OSHA endorsed levels of 5 q/m3 compare to the NIOSH recommended level of 0.2 q/m3, look at the total amount of allowable emissions for a 10,000 CFM (17,000 CMH) system running 8 hours per day or 40 hours per week equates to 172 grams/year and 7 grams/year of fume respectively. Shown just below are two cannisters that help illustrate this difference in fume volumes for a one year period.





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When Hexavalent Chromium is above PEL

As of May 31, 2010, processes producing hexavalent chromium above the PEL of 5 g/m3 must have engineering controls implemented. Until then, respiratory protection is mandatory until engineering controls are implemented. Please note rotation of employees to different jobs to achieve compliance is NOT permitted by OSHA.

Employee Requirements

Employees have responsibilities to protect themselves, too. They are required to use proper personal protective equipment, good housekeeping skills, engineering controls once implemented, and good personal hygiene techniques. Good personal hygiene includes not using tobacco, not applying cosmetics, not eating anything, not placing fingers in mouth or nose, and washing hands/face prior to doing any of the above activity, such as before taking a break, or at the end of their shift.

Engineering Control Includes Good Dust & Fume **Collection Systems**

The collection system used for dust, fume, or mist control is a key factor in achieving effective control of hexavalent chromium.

As shown in the chart on page 4, the size of the fume particles that carry hexavalent chromium varies from 5/100 of a micron to 34 microns, with most in the very small range (sub-micron to 2 microns).

It is therefore necessary to use filter media in the collection system that can capture a full range of sizes, from sub-micron to large particulate. High efficiency filters are recommended, such as Ultra-Web[®] nanofiber filters from Donaldson® Torit®. Each filter should have at least 1.5 inches of water gauge pressure drop across it to ensure performance.

A well-designed ventilation system will have sufficient capture velocities at the various hoods to help control any emissions containing hexavalent chromium. The ACGIH Industrial Ventilation Manual offers several examples. includina:

- VS-90-01 through 03 for Welding
- VS-90-20 for Robotic Welding
- VS-90-30 for Metal Spraying
- VS-90-10 for Torch Cutting
- Laser tables 250 fpm for zone (not covered)

Combined with powerful Donaldson Torit® PowerCore® TG collectors, Downflo® Oval dust collectors, Easy-Trunk® or Porta-Trunk® fume collectors, a well-designed and operated ventilation system can reduce exposure to dusts and/or fumes containing hexavalent chromium.

Ambient fume collection (sometimes termed general ventilation) is NOT recommended, as it typically only cleans 70% of the air at any given time. Ambient collection is simply not effective enough to take care of fumes potentially carrying hexavalent chromium. Capture hoods

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located as close to the source of generation as possible, and ducted into a well-built dust/fume collector, will ensure better confinement of the particles.

Your Donaldson Torit sales representative can help in determining which dust/fume filtration products are best suited to your ventilation system design and operation. While NIOSH experts should be trusted to provide hexavalent chromium expertise, Donaldson Torit engineers know air filters and can assist you in selecting the filter suitable for your ventilation needs.

Summary

In summary, hexavalent chromium is a regulated, toxic material that must be dealt with by implementing proper precautions. Now that NIOSH has recommended new lower – more stringent - levels to OSHA, companies are advised to be proactive in reviewing their processes. If elimination (1st choice) or substitution of materials (2nd choice) is not possible then companies should consider:

- (a) Engineering controls where required
- (b) Respiratory protection if needed
- (c) Good housekeeping practices
- (d) Proper personal protective equipment
- (e) Good personal hygiene practices.

Glossary of Terms

- g/m^3 = Micro grams per cubic meter of air
- ACGIH = American Conference of Industrial Hygienists
- AL = Action Level

- Chrome VI = Abbreviation for hexavalent chromium
- Cr 6+ = Abbreviation for hexavalent chromium
- CrVI = Abbreviation for hexavalent chromium
- Hex Chrome = Abbreviation for hexavalent chromium
- HVOF = High Velocity Oxy-Fuel
- PEL = Permissible Exposure Level
- TLV = Threshold Limit Value

- PLHCP = Physician or Licensed Health Care Professional *For more information*, contact Donaldson Torit, via email donaldsontorit@donaldson.com, or visit their website www.donaldsontorit.com, phone 952-887-3131 or contact author Jeff Abelson, Industrial Air Filtration Program Manager, email Jeff.Abelson@Donaldson.com or, your Donaldson Torit Sales Representative, 800-365-1331 (x4) **Helpful Links:**

www.donaldson.com/en/industrialair/regulations www.donaldson.com/en/industrialair/fume http://www2.donaldson.com/torit/en-us/pages/

filtersandparts/filtersandparts.aspx

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- Centers for Disease Control and Prevention (CDC) and National Institute for Occupational Safety and Health.

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ITSA members invite your company to join us in this endeavor. See pages 16-19.

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Ellison Surface Technologies Begins Construction of New Facility in Guaymas, Mexico



Ellison Surface Technologies, Inc. (EST) marked the beginning of

construction of its newest coating and special process facility in Guaymas, Mexico on Wednesday during a special Groundbreaking Ceremony in the Roca Fuerte Industrial Park, one of Mexico's fastest growing clusters for aerospace and industrial gas turbine manufacturing.

The event was highlighted by a special address from Mr. Guillermo Padres Elias, Governor of the State of Sonora. Also on hand were distinguished guests Mr. Moises Gomez Reyna, Secretary of Economy for Sonora and Mr. Otto Claussen, Mayor of the City of Guaymas.



Ellison Surface Technologies announced its plans to open a new thermal spray coating and special process facility during the 2012 Farnborough International Air Show. The Guaymas facility marks Ellison's fourth and latest expansion project in the past 12 months, including new facilities in Rutland, Vermont and Bromont, Quebec as well as a 22,000 sq ft expansion in Hebron, Kentucky.

"This expansion into Mexico is a principal part of our long-term strategic initiatives," said C. Michael Ellison, President and CEO of Ellison Surface Technologies. "We look forward to being an integral part of the growing aerospace and industrial gas turbine manufacturing hub in Sonora." **About Ellison Surface Technologies**

Founded in 1986 in Hebron, Kentucky, Ellison Surface Technologies is an expert provider of thermal spray coating and special processes to many of the world's largest manufacturers of aircraft engine and industrial gas turbine components. Headquartered in the northern suburbs of Cincinnati, EST operates coating facilities across the United States and in Canada.

For more information, visit the company website at www.ellisonsurfacetech.com

Thermal Spray Jobs listed at "For Hire" www.thermalspray.org

Starving Artist, continued from page 1.

apparently existed between Constantin Brancusi and the fabrication house that executed the work. In the end, the exterior coating was brass. Bronze would have had better survivability under the environmental conditions (acid rain due to local factory operations) that existed at Târqu Jiu, Romania. Over the years, the brass deteriorated and allowed the core to rust. In the mid-60s and mid-70s, some repairs were made to the coating. However, the repairs were ineffective. In 1996, the World Monuments Fund placed the column on its World Monuments Watch List of 100 endangered sites. Between the unique size of the art and national politics involved, repairs were delayed. Finally, in 2000, the column was disassembled, the coating was resprayed and the column reassembled. Anyone who thinks that restoration is a simple process might want to consider a twenty page critical discussion on this restoration⁽¹⁾.

A more recent piece of original art was reported on in SPRAYTIME⁽²⁾. It was a sculpture by Kathryn Lipke-Vigessa and executed by Bauer Art Metal. It was a large bronze, three part seed with a tree at the center. In this case, the artist provided Styrofoam forms which were then "skeletonized" with stainless steel, overlaid with copper mesh, sprayed with zinc followed by a silicon-bronze spray and a final chemical patina finish.

Alexander Calder's Mobile, which has been on display in the National Gallery of Art for almost fifty years, is an example where thermal spray was only used for restoration,

Systems & Equipment

not in the original execution of the work⁽³⁾. In this case, the many joints of the mobile were wearing. The restoration involved rebuilding the joints with a TIG process followed by a tungsten carbide/cobalt coating for wear resistance.

Many more artists are now using Thermal Spray. Ovidiu Opresco, a 3-D artist/designer, is creating some unique jewelry using thermal spray⁽⁴⁾. He has demonstrated that thermal spray is an exciting partner for 3-D printing, providing a beautiful, hard and wear resistant coating to objects using one of the many 3-D printing processes now



available.

Thermal spray can be easy and affordable. Andrea, an artist used thermal spray to keep rust at bay and preserve antique pieces, especially near the beach. He discovered the wonders of sandblasting and then "metalizing" and powder coating iron tables, gates, chairs and other



Materials & Supplies

furniture. In a redo of a gate section, he stated, "This will last about ten years in this condition. Otherwise, I used to touch up with Rustoleum each year, but that never kills the rust. Metalizing is the way to go and it is not crazy expensive" $^{(5)}$.

Back in 1994, artist Siena Porta stated that "Metallizing offers creative options and a cost-saving alternative to bronze casting"⁽⁶⁾. Siena Porta is a sculptor whose work was the subject of a video called "Me and the Mirror". She has covered materials as divergent as silk, cement, polystyrene, fired clay, acrylic, mylar, wood and cast resin.

Some studios specialize in fountains, gates and other

large structures such as the work of Robinson Iron in Alexander City, Alabama. Metallisation, out of West Midlands, England, has been involved with artistic thermal spray since 1922 and has created a wide range of artistic works.

In the area of architecture, thermal spray is being used for both beauty and functionality. One of the largest examples is the Burj Al Arab Hotel in Dubai. In total, over an intermittent six month period, 10,000m2 of



Burj Al Arah Hotel

steelwork was arc sprayed. The items sprayed included the helideck framework, roof mounted mast and 6 diagonal support braces, each weighing in excess of 200 tons⁽⁷⁾.

Delving into art using thermal spray easy. The least expensive approach is for an artist to develop his own form, and work with a local spray shop to do the coating. An artist can even develop his own capability with a modest investment.



Vulcan Restoration

Combustion wire systems require an investment of less than \$8000, are easy to use and are very versatile as to coating materials. Even some plastic "wire" can be used or cord wire for some special effects.

From these examples, it is obvious that thermal spray is a significant contributor to art and architecture. The question is, how can the thermal spray professional help? There are at least five avenues that might be used.

- 1. If you have your own shop, think about creating your own work of art for display in your lobby. This can be as simple of buying wood or Styrofoam letters of the company name from your local Michael's or Hobby Lobby and coating them with zinc and aluminum-bronze.
- 2. Advertise and hold an open-house featuring your capability for the artist. Many pictures of thermal spray are available on the internet and could be printed and displayed along with your own creations.
- 3. Look around your own area for artist studios, especially any that employ welding in their creative works. A



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Fountain restoration

studio that uses welding is familiar with the procedures and safety concerns regarding hot metal processes.

4. Visit any art schools in the area and offer to provide an Introduction to Thermal Spray for any art or sculpture class. Many PowerPoint programs are available to assist in this regard. Also be sure to include any studios with 3-D printing capability and help them to understand that Thermal Spray is a strong, potential partner for 3-D printing.

5. Look into other areas where thermal spray would provide a unique aspect. For example, is it possible to have this process included in some home improvement shows, or even in venues such as Project Runway or Iron Chef America?

Yes, Thermal Spray can feed the Starving Artist.

For more information, contact author Dale Moody, email DaleRMoody@aol.com

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Hausner Hard-Chrome Announces New **Coatings and New Website**



HHC now offers a wide variety of coatings through two newly established divisions: Thermal Spray and Brush Plating. Both

divisions are unique and offer complementary and supplemental coatings to our traditional Hard Chrome coatings. Our On Site Brush Plating division is available to apply multiple coating types at your plant location.



Hausner Hard-Chrome also announces the recent launch of their brand new website which highlights the services they offer to industry.

For more information, visit http://www.hausnerinc.com

Fauske and Associates Opens Comprehensive, State-of-the-Art **Combustible Dust Hazards Testing Lab**

Fauske & Associates, LLC (FAI), a leader in nuclear, industrial and chemical process safety, becomes one of the most comprehensive, state-of-the-art combustible dust hazards testing lab and education centers in the world.

With regard to industrial and chemical process safety, FAI is at the forefront for dust explosivity/combustibility testing offering a wide range of services related to characterizing, preventing and mitigating combustible dust explosions and fire hazards. In addition to laboratory testing, educational training and on-site consulting services are a frequent customer request.

The new facility will be up and operational by November 1, 2013. FAI will host a public Grand Opening of the facility in spring 2014. Tours and demonstrations will be provided.

"This new lab gives us the ability to provide very fast, high quality output for our partners and clients," states Ashok Ghose Dastidar, PhD, MBA, Vice President, Dust and Flammability Testing and Consulting Services. "We are ISO 17025 certified by LAB, which is similar to ISO 9000, but for testing labs. We have a variety of test equipment, including 20-L chambers, Minimum Ignition Energy (MIE) chambers, 1 cubic mMeter (1m³) chamber, Minimum Autoignition Temperature of a Dust Cloud (MIT) and Hot Continued on page 14

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HVOF • Plasma • Arc Spray	NATION COATING SYSTEMS
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Metallisation's manual systems are suitable for engineering coatings where a combination of manual and tool post mounted spraying is required. Our range includes oxy-acetylene flame spray systems and a full range of hand held or automated arc spray systems from 250A to 1,500A.

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Metallisation's customer service is second to none, including an exceptional after sales service. With a network of distributors around the globe, and a team of fully qualified and highly experienced service engineers, customers can rely on the highest standard of care, wherever they are in the world.

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Continued from page 12

Surface Ignition Temperature of Dust Layers (LIT) apparatuses. We also have a designated area for European (CEN) testing. FAI's new overall lab size and individual room structure allows us to handle multiple samples with unique characteristics."

FAI's lab capabilities provide testing per ASTM and European (CEN) standards, which include common tests like the Explosion Severity Test - (KSt, (dP/dt)max), Pmax and Minimum Ignition Energy (MIE), the Minimum Explosible Concentration (MEC) and Limiting Oxygen Concentration (LOC). These standards are the basis of NFPA codes for combustible dust as well as the Combustible **OSHA** Dust National Emphasis Program (NEP).



1 cubic meter dust chamber

"The brand new 1 cubic meter (1m³) chamber is the gold

standard for establishing KSt and Pmax values for dust cloud explosions – while common in Europe, it is only the second unit of its kind in all of North America," states Dr. Dastidar. "The new laboratory provides the ideal educational/training resource center as FAI professionals can demonstrate for customers the proper way to sample, test and mitigate combustible dust and other hazards."

Combustible dust hazards are common in industry and have gained additional exposure due to the OSHA Combustible Dust (NEP) which was re-issued as a result of the fatal accident at Imperial Sugar. FAI's process safety professionals serve clients in a variety of industries including food products, pharmaceuticals, metal processing, wood/paper products, agriculture, textiles, plastics and many others.

Founded in 1980 by Hans Fauske (D.Sc.), Michael Grolmes (PhD) and Robert Henry (PhD), FAI became a wholly owned subsidiary of Westinghouse Electric Co. in 1986. FAI assumed early leadership roles in the acclaimed DIERS program for AIChE and the IDCOR program for the nuclear power industry. These activities led to state-of-the-art



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methodology and laboratory tools for characterizing chemical systems and computer models for analyzing severe accidents in commercial nuclear power plants used worldwide. Recognized worldwide for phenomenological

modelina related to the prevention and accommodation of chemical and nuclear power accidents, FAI also provides advanced training and research in physics, chemical engineering, mechanical engineering, nuclear engineering, computer science and other fields. FAI has several staffed laboratories fullv supporting: EQ, CHAMP, full-scale thermal/hydraulics experiments, and basic physical sciences. FAI has a 10CFR50 Appendix B Quality Assurance (QA) Program and is ISO- 17025/IEC, ISO-9001 and TickIT certified. In addition, FAI is an Authorized Provider of IACET CEUs.

FAI is also recognized for conducting comprehensive plant evaluations. FAI's Nuclear Systems Group helps its customers enhance the availability and reliability of their operating plants while maintaining regulatory compliance, extending plant life and reducing operation and maintenance costs.

For more information regarding the new lab, please contact AnnMarie Fauske, phone 630-887-5213, email afauske@fauske.com or visit website www.fauske.com

Become a Member of The International Thermal Spray Association

Your company should join the International Thermal Spray Association (ITSA) now! As a company-member, professional industrial 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.

New - All ITSA company members are now also Supporting Members of the American Welding Society which includes five individual AWS memberships.

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

As an ITSA member, your company has excellent marketing exposure by being listed centerfold in our SPRAYTIME newsletter. *Visit www.thermalspray.org.* L

NEW Robotic Programming For the Thermal Spray Industry

ROBOTICSYNERGY

Robotic Solutions for Automation

Robotic Synergy, a consulting business for robotic programming, is proud to offer

ABB robot training modified for the Thermal Spray Industries. Robotic Synergy offers a range of programming classes to fit your needs and requirements. We provide both classroom and hands-on-training, for the best quality of retention. We also offer integration to your equipment, and Safety options.

"The way you organized the course with the emphasis on Thermal Plasma Spray applications made our time spent on training most efficient" states Matt Kowalewk, operations/engineering manager.

Frank Accornero is a highly regarded industrial robot programmer and trainer, a thermal spray coating technology expert. His career in coatings and robotics of over 20 years includes; integrating thermal spray technology, safety devices, ancillary devices, and robotic controls.

Frank has a passion for continuous improvement of thermal spray coatings, coating processes, and for implementation of robotic process control in general. During Frank's career he has demonstrated a working knowledge in coatings and coating structures.

"He is also skilled in metallurgy and how to use the metallurgical lab to prepare samples and use equipment to determine the structure as it relates to various customer specifications" states Elaine Motyka, principle materials engineer for Technetics Group Enpro Industries

For more information about this topic, please contact Frank Accornero at 386-506-6900 or email at frank.accornero@roboticsyn.com.

Where is your advertisment? From classified to business-card size to full page sizes, we can work with your format. Please visit www.spraytime.org for rate information, email the SPRAYTIME publishing office via spraytime@thermalspray.org or contact Editor Kathy Dusa at 440.357-5400, itsa@thermalspray.org.

Thermal Spray Jobs listed at "For Hire" www.thermalspray.org

Where is your article? We encourage you to send articles, news, announcements and information to spraytime@thermalspray.org.



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ITSA Mission Statement

The International Thermal Spray Association, a Standing Committee of the American Welding Society, is a professional industrial organization dedicated to expanding the use of thermal spray technologies for the benefit of industry and society.

JOB SHOP MEMBER COMPANIES

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Visit us at www.thermalspray.org



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 association, ITSA invites all interested companies to talk with our officers, and company representatives to better understand member benefits. A complete list of ITSA member companies and their representatives can be found at www.thermalspray.org

Chairman Falzon

ITSA Mission Statement The International Thermal Spray Association, a Standing Committee of The American Welding Society, is a professional industrial organization dedicated to expanding the use of thermal spray technologies for the benefit of industry and society.

Officers

Chairman: Jason Falzon, FW Gartner Thermal Spraying Vice-Chairman: Bill Mosier, Polymet Corporation Corporate Secretary: Kathy Dusa Executive Committee (above officers plus the following) Richard Grey, Genie Products, Inc. Larry Grimenstein, Nation Coating Systems Dan Hayden, Hayden Corporation David Wright, Accuwright Industries, Inc.

ITSA Scholarship Opportunities

The International Thermal Spray Association offers annual Graduate Scholarships. Since 1992, the ITSA scholarship program has contributed to the growth of the thermal spray community, especially in the development of new technologists and engineers. ITSA is very proud of this education partnership and encourages all eligible participants to apply. Please visit www.thermalspray.org for criteria information and a printable application form.

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 the State University of New York at Stony Brook in the Thermal Spray Research Center, 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 historic 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. This newsletter is free and can be viewed online at www.spraytime.org.

Become a Member of The International Thermal Spray Association

Your company should join the International Thermal Spray Association (ITSA) now! As a company-member, professional industrial 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.

New - All ITSA company members are now also Supporting Members of the American Welding Society which includes five individual AWS memberships.

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.

One 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 centerfold in the SPRAYTIME newsletter.

ITSA member companies are also highlighted in the ITSA booth at several trade shows throughout the year (International Thermal Spray Conference ITSC, Fabtech Thermal Spray Pavilion and Conference, FAbtech Canada, Power-Gen, Society of Vacuum Coaters (SVC), TurboMachinery, NACE and TurboExpo).

For more information, contact Kathy Dusa 440.357.5400 or visit the membership section at www.thermalspray.org.

H.C. Starck Publishes First Sustainability Report

H.C. Starck, one of the world's leading manufacturers of



technology metals and advanced ceramics, is publishing its first sustainability

report, thus strengthening its profile as responsible corporate citizen in the specialty chemicals industry.

The report contains information about the company's economic, environmental and social performance along with the principles of its corporate governance. H.C. Starck also presents its product range for increasing the sustainability of high tech applications, for example, in the electronics, chemicals and automobile industry as well as in medical, energy and environmental technology. In the report, the company details its own contribution to the long term supply of conflict-free raw materials including the conservation of resources. The report meets the requirements of the Global Reporting Initiative (GRI) and was awarded a "B" rating by the GRI, which confirms that H.C. Starck has firmly integrated sustainability in its day-to-day business.

"We are very pleased with the positive evaluation of the first sustainability report ever in our company's history," explained Andreas Meier, President and CEO of H.C. Starck. "Sustainability is a core element of our company's strategy. It incorporates our entire value chain – starting with the long term supply of conflict-free raw materials and modern, environmentally friendly production facilities and processes to our responsible employee management and the delivery of our products to the customer."

The company has defined five key areas for its sustainability activities: raw materials procurement, product quality and innovation, recycling and environmental protection, employee development and occupational safety in addition to social and community engagement. "As a company with a high degree of social responsibility, we adhere to all regulations worldwide plus industry and environmental standards, and we strive to continually optimize our sustainability activities even further," continued Andreas Meier. H.C. Starck assumes responsibility to its employees, the environment and our society. The company, for example, operates an employee development program, supports external educational projects and expands its environmental management systems to be able to further minimize the ecological impact of its activities. Commitment in these areas will be continually developed, sustainability strengthened within internal structures and processes, and reporting systematically expanded.

The GRI is a non-profit organization which promotes economic, environmental and social sustainability. It is regarded as the most important initiative in the field of sustainability and provides all companies and organizations a framework which can be used worldwide for comprehensive sustainability reporting. The H.C. Starck sustainability report is available for download at www.hcstarck.com/sustainability.

About H.C. Starck

The H.C. Starck Group is a leading global supplier of technology metals and advanced ceramics, and serves growing industries such as the electronics, chemicals, automotive, medical technology, aerospace, energy technology, and environmental technology industries, as well as engineering companies and tool manufacturers, from its own manufacturing facilities located in Europe, America, and Asia. In 2012, the company employed approximately 3,000 employees in the United States, Canada, Great Britain, Germany, China, Japan, and Thailand.

For more information, visit www.hcstarck.de.

Where is your article? We encourage you to send articles, news, announcements and information to spraytime@thermalspray.org.

Metallizing Equipment Awarded American Petroleum Institute Certifications

Metallizing Equipment Co. Pvt. Ltd. (MEC) has been awarded with following certifications by American Petroleum Institute (API) : API SPEQ. 1; QMS - ISO 9001:2008 and ISO/TS 29001



The MEC quality equipment systems as well as services provided to the Oil and Gas industry was found to be in conjunction with the requirements of API.

For more information, contact Jaydev Choudhary, phone +91-9351378625 and visit website www.mecpl.com See Advertissment Page 20.

NEW "Supporting Societies" Membership

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

See the Supporting Societies listing on page 17. This is ideal for membership exchange between organizations. Contact Kathy Dusa at the headquarters office email to itsa@thermalspray.org PH: +91-291-2747601/2/3



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IMR Test Labs Installs New Tescan Vega-3 Scanning Electron Microscope

IMR Test Labs has acquired a new scanning electron microscope to enhance the lab's metallurgical and failure analysis services.

IMR Test Labs in Ithaca, NY has purchased a Tescan Vega-3 XMU variable pressure scanning electron microscope (SEM) with silicon drift detector (SDD) EDS system, wide field optics, low-vacuum secondary electron (SE) detector and LaB6filament capability. This new instrument offers improved image resolution, evaluation of a wider range of materials and faster, more informative analyses.



Metallurgical engineer Coralee McNee analyzing samples on IMR-Ithaca's New Tescan SEM.

This upgrade is especially important in continuing to serve the needs of clients in the aerospace and power industries, as the next generation of nickel-based turbine alloys require inspection at higher levels of magnification.

It will also enhance IMR's extensive failure analysis and litigation support services, providing more in-depth analysis of metals, polymers, composites, contaminants and corrodents.

For more information, please visit website www.imrtest.com/what_we_do/failure_analysis/index.html

About IMR Test Labs

IMR is headquartered in Ithaca, NY and operates state-ofthe-art laboratory facilities in NY, Louisville, KY, Portland, OR, Singapore and Suzhou, China. IMR Test Labs is a Nadcap (NY, OR, SPR, SUZ), ISO/IEC 17025 (All), Pratt & Whitney MCL (NY, OR, SPR) and GE S-400 (All) approved materials testing laboratory offering a complete scope of independent analytical services for metals, polymers, composites and ceramics. IMR Test Labs is a business unit of Curtiss-Wright Surface Technologies.

For more information, visit: www.imrtest.com

About Curtiss-Wright Surface Technologies

Headquartered in Paramus, N.J., Curtiss-Wright Surface Technologies ("CWST") is a business segment of Curtiss-Wright Corporation and provides precision shot peening, laser peening, engineered coating and analytical testing services to the aerospace, power generation, transportation and other demanding general industrial markets through a global network of more than 70 locations.

For more information, visit www.cwst.com.

Where is your article? We encourage you to send articles, news, announcements and information to spraytime@thermalspray.org.

Imperial Systems Launches New Website

Imperial Systems' dust collection and air pollution control equipment, has announced the launch of their new website dedicated to informing companies about their signature CMAXX industrial dust collectors and DELTAMAXX replacement filters, while also assisting companies with finding solutions for their commercial dust collection and air filtration needs.

The companies new website still has the same name, but features an entirely new look and navigation. The site is designed for assisting management professionals, engineers, and maintenance and facility managers with better tools for finding the appropriate dust collection and air pollution control equipment suited for their company.



With the content focused on Imperial Systems' line of CMAXX Dust Collectors and DELTAMAXX replacement filters, the website features a variety of testimonials from different applications, new case studies, auto-cad drawings, easy access to owner's manuals, and the latest photography to help with making an educated buying decision regarding Imperial System's CMAXX industrial dust collectors and the DELTAMAXX replacement filters.

Check out the new site at www.isystemsweb.com

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.

Metallisation Protecting Offshore Oil **Platforms From Corrosion**

Metallisation flamespray equipment has been used to protect a BP Clair Ridge offshore oil platform from corrosion. The 168 m high platform will be installed in the North Sea west of the Shetland Isles.

Clair Ridge jackets have seven storage tanks, two drill water tanks and a base oil tank, in the Drilling Production (DP) jacket, and four diesel tanks in the Quarter Utility (QU) jacket. The project specified the jackets to be thermal sprayed, to protect from corrosion, using arc spray equipment. The system for the internal storage tanks was to be sprayed with 0.0078-0.0118 in. (200-300 microns) Thermal Sprayed Aluminium (TSA), the drill water tanks were to be sealed with aluminium silicone and the base oil and four diesel tanks were to be left unsealed.



MK73 with deflector.

Due to the complexity and dimension of some of the jacket components, it was impossible to coat all of them using arc spray equipment. Piping nozzles in diaphragms, pipe

supports and difficult to access areas were coated using the Metallisation MK73 flamespray equipment and the deflected flamespray extension, which was designed specifically for difficult to access areas. The major advantage of the MK73 system is the extra long supplies package that accompanies the equipment, which in this instance made an extremely difficult spray- Flame spray deflected extension with ing project much easier and safer.

To thermal spray the internal surfaces of

the pipes, the operators had to crawl within the pipes and, with a dimension of just 11.48 ft (3 1/2 m) or less, it was no mean feat. The 262 ft (80 m) long supplies package allowed the operators to leave the control panel and gas bottles outside, enabling them to reach the difficult to access areas safely and effectively.

The Metallisation deflected flamespray extension is ideal for onsite use. It comes in three lengths, 5.9 in, (150mm),

rotating detail.

performance of the MK73 system. It proved to be a really useful tool in helping us to reach a successful conclusion on the TSA scope of this project. The angled deflector extension arm was perfect to reach the most difficult surfaces. I wouldn't hesitate to recommend

the Metallisation team and its equipment." For more information please visit www.metallisation.com contact Stuart Milton, Sales Director, +44 (0) 1384 252 464

11.8 in. (300mm) and 17,7 in. (450mm) and can be used with either 1/8 in. (3.17mm) or 3/16 in. (4.76mm) wires. The unit can spray directly forward or at a deflected angle, which can range from 00 to 900 by varying the deflector air pressure. The deflection nozzle can also be rotated through 1800 to allow spraying in a 3600 arc around the spray gun.





Metallisation attended the site for several days to train, support and customise the system to meet with the requirements of this demanding application. It was important for Metallisation to get good, first hand insight into the job, which enabled the team to fully understand the issues facing the customer. Safety is obviously critical in these confined spaces and keeping the gas supply and control panel outside of the confined space greatly assisted in safe completion of the job. Inside the jacket access to some of the spray areas was very tight. The general flexibility of the MK73 flamespray system, combined with the deflected extension, made the job guicker and easier to complete.

In the Metallisation wire flamespray process, the raw material in the form of a single wire or cord, is fed by a driven roller system into the centre of an oxygen-gas flame, where it is melted. An annular air nozzle then applies a jet of high-pressure air, which atomises and projects the molten material towards the work piece. The molten spray solidifies instantly on the component surface to form a dense, strongly adherent coating that has no drying or curing time. The driving of the wire is typically via an air

> motor and gearbox that forms part of the spray gun. The gas fuel used varies, depending on the wire to be sprayed and, in some cases, the application. The two most common gas fuels used are Propane and Acetylene.

> David Stowers, Lead Coating Inspector on the project, says: "I am very pleased with the





SPRAYTIME Third Quarter 2013

SAVE THESE DATES MAY 3-8, 2014



SOCIETY OF VACUUM COATERS

57TH ANNUAL TECHNICAL CONFERENCE, HYATT REGENCY CHICAGO, ILLINOIS, USA

MAY 5-8 TECHNICAL PROGRAM featuring a Symposium on

ADVANCED COATINGS FOR TRANSPORTATION

This Symposium will highlight the role of coatings and thin films providing essential functionality in all modes of transportation: land, rail, marine, air, and space. With increasing demands to improve reliability, performance, lifetime, safety and energy efficiency in all vehicle systems, the latest advances in coatings technology towards this goal will be discussed in several technology tracks.

The SVC Technical Advisory Committees will explore the Symposium topic in depth together with other topics as part of the traditional Technical Sessions:

WEBTECH ROLL-TO-ROLL COATINGS FOR HIGH-END APPLICATIONS • COATINGS FOR ENERGY CONVERSION AND RELATED PROCESSES • PROTECTIVE, TRIBOLOGICAL AND DECORATIVE COATINGS • EMERGING TECHNOLOGIES • HIGH POWER IMPULSE MAGNETRON SPUTTERING (HIPIMS) • OPTICAL COATINGS • PLASMA PROCESSING • LARGE AREA COATINGS • VACUUM PROCESSES AND COATINGS FOR BIOMEDICAL APPLICATIONS

Abstract Submission Deadline OCTOBER 1, 2013

MAY 3–8 EDUCATION PROGRAM Problem-Solving Tutorial Courses

MAY 6–7 EQUIPMENT EXHIBIT Dedicated to Vacuum Coating Technologies

MAY 5–8 INTERACTIVE NETWORKING Forums and Discussion Groups



Free Poster

From Linde and the GTS (Association of Thermal Sprayers) illustrates the different thermal spray processes (suitable for framing). Send request for poster via email to itsa@thermalspray.org

Where is your article? We encourage you to send articles, news, announcements and information to spraytime@thermalspray.org.



Scholarship Opportunities

Since 1991, the *International Thermal Spray Association Scholarship Program* has contributed to the growth of the thermal spray community. ITSA offers up to

three Graduate Scholarships of **\$2,000.00 each**. *Applications accepted April 15 through July 15 ONLY*. Visit www.thermalspray.org scholarship area for details.

Become a Member of the International Thermal Spray Association

Your company should join the International Thermal Spray Association (ITSA) now! ITSA is now a Standing Committee of the American Welding Society expanding the company benefits. As a company-member professional industrial association, our mission is dedicated to expanding the use of thermal spray technologies for the benefit of industry and society.

ITSA members invite your company to join us in this endeavor. See pages 16-19.

Journal of Thermal Spray Technology® A publication of the ASM Thermal Spray Society Thermal Spray Maps: Material Genomics of Processing

Technologies

Andrew Siao Ming Ang, Noppakun Sanpo, Mitchell L. Sesso, Sun Yung Kim, and Christopher C. Berndt

There is currently no method whereby material properties of thermal spray coatings may be predicted from fundamental processing inputs such as temperaturevelocity correlations. The first step in such an important understand would involve establishing a foundation that consolidates the thermal spray literature so that known relationships could be documented and any trends identified. This paper presents a method to classify and reorder thermal spray data so that relationships and correlations between competing processes and materials can be identified. Extensive data mining of published experimental work was performed to create thermal spray property-performance maps, known as "TS maps" in this work. Six TS maps will be presented. The maps are based on coating characteristics of major importance; i.e., porosity, microhardness, adhesion strength, and the elastic modulus of thermal spray coatings.

Read the entire article in the October 2013 Issue Visit www.asminternational.`/tss

Editor: Christian Moreau • Lead Editor: Basil Marple Editor Emeritus: Christopher C. Berndt Associate Editors: Kendall Hollis, Seiji Kuroda, Chang-Jiu Li, and Armelle Vardelle

Free DIN Standards Poster

GTS – the Association of Thermal Sprayers – has produced this spectacular new poster of "*Thermal Spraying: Standards and Technical Bulletins*".

The poster identifies DIN Standards for Thermal Spraying and the DVS Technical Bulletins. The



standards/bulletin names are in German and in English.

The poster provides contact information for obtaining the complete version Standards and Bulletins.

The International Thermal Spray Association is proud to be one of the sponsors of this project.

Send request for poster to itsa@thermalspray.org.

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CALENDAR OF EVENTS 2013

DECEMBER 2013

10-12 New York, NY USA CHEM Show and AIChE Northeast Mfg Conference, visit www.chemshow.com

11-13 Limoges CEDEX France *6RIPT with Surface and* Coatings Technology - contact Lech Pawlowski, University of Limoges email lech.pawlowski@unilim.fr

16-17 Abu Dhabi, UAE NACE Bring On the Heat Abu Dhabi - visit www.nace.org

17-20 New Delhi, India Int'l Trade Fair for Surface *Technology* - visit www.surface-india.com

2014

MARCH 2014

9-13 San Antonio, TX USA Corrosion 2014 - visit www.nace.org

12-13 Houston, TX USA 6th Annual LAM Laser Additive Manufacturing Workshop and Conferencevisit www.lia.org/conferences/lam/conference

17-19 Cape Town, South Africa Power-Gen Africa - visit www.powergenafrica.com

18-20 Toronto, Canada Fabtech Canada - visit www.fabtechcanada.com

APRIL 2014

10-12 New Delhi, India FABTECH India and Weld India visit http://www.fabtechexpo.com/fabtech-india

23-26 Tokyo, Japan Japan Int'l Welding Show - visit www.weldingshow.jp/english

24-26 Savannah, GA USA Int'l Thermal Spray Association Annual Membership Meeting - contact Kathy Dusa itsa@thermalspray.org

MAY 2014

5-7 New Delhi, India Power-Gen India and Central Asia with Renewable Energy World India, HydroVision India and *DistribuTECH India* - visit www.power-genindia.com.

5-8 Chicago, IL USA 57th SVC Annual Technical Conference - visit www.svc.org

5-8 Indianapolis, IN USA 2014 Iron and Steel Technology Expo - visit www.aistech.org

6-8 Hartford, CT USA MFG4 Manufacturing 4 The Future Aerospace, Defense, Medical, Micro - visit

mfg4event.com

6-8 Mexico City, Mexico FABTECH Mexico visit www.fabtechmexico.com

18-21 Orlando, FL USA 2014 World Congress on Powder Metallurgy and *Particulate Materials* - visit www.mpif.org **21-23 Barcelona, Spain** Int'l Thermal Spray Conference ITSC 2014 - visit www.itsc2014.com

JUNE 2014

16-19 Orlando, FL USA AeroMat - visit www.asminternational.org

16-20 Dusseldorf, Germany ASME *TurboExpo* - visit www.turboexpo.org

17-19 Houston, TX USA NACE Bring On the Heat 2014 visit www.nace.org

SEPTEMBER 2014

15-19 Garmisch-Partenkirchen, Germany 14th Int'l Conference and Exhibition on Plasma Surface Engineering visit www.pse-conferences.net/pse2014.html

18-22 Orlando, FL USA PM2014 World Congress - visit www.mpif.org

22-25 Houston, TX USA 43rd TurboMachinery and 30th Pump Symposia - visit turbolab.tamu.edu.

OCTOBER 2014

8-9 Hartford, CT USA Aerospace Coatings Conference and *Exposition* - visit aerospacecoatings@asminternational.org 28-31 Medellín, Colombia LATINCORR 2014 IX Latin American Congress of Corrosion visit www.latincorr2014.org

NOVEMBER 2014

11-13 Atlanta, GA USA FABTECH with a Thermal Spray Pavilion and Conference - visit www.fabtechexpo.com

2015

FEBRUARY 2015

TBD Doha, Qatar Middle East TurboMachinery Symposium METS 2015 - visit middleeastturbo.tamu.edu

APRIL 2015

25-30 Santa Clara, CA USA 58th SVC Annual Technical Conference - visit www.svc.org

26-29 Helsingør, Denmark JOM-18 18th Int'l Conference on Joining Materials - contact jom_aws@post10.tele.dk

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

Where is your advertisment? From classified to business-card size to full page sizes, we can work with your format. Please visit www.spraytime.org for rate information, email the SPRAYTIME publishing office via spraytime@thermalspray.org or contact Editor Kathy Dusa at 440.357-5400, itsa@thermalspray.org.

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- Quality Manager North Carolina Facility
- Support Operators North Carolina and Ohio Facilities

For specific details on these listings and other opportunities at CTS, please visit us at www.cts-inc.net.









MAYO 6 AL 8, 2014 May 6th-8th, 2014 CENTRO BANAMEX, MEXICO, D.F.

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Fabricators & Manufacturers Association, Intl

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Precision Metalforming Association

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International Thermal Spray Association Presents Award to Joe Stricker

At their June annual membership meeting in Ogden, Utah, the International Thermal Spray Association (ITSA) recognized *Joe Stricker* for his 18 years of Executive Committee service. The normal Executive Committee term is 12 years but Joe continued on volunteering to fill unexpected vacancies



The large hanging frame award housed a new TaylorMade driver which can be removed for play. His plaque reads: *In appreciation of "above and beyond" - 18 years as an Executive Committee Officer*.

Joe began his career at St. Louis Metallizing in 1974 as a sales engineer. He was promoted to vice president of thermal spray operations in 1985, vice president of operations in 1989 and president in 1999.

Joe graduated from Southern Illinois University with a Bachelor of Science Degree in Business Management and completed a Master's degree in Business Administration from Fontbonne University.

Joe has been active with the International Thermal Spray Association since 1990 serving as Vice Chairman (1995) and Chairman (1997) and the Executive Board of the ITSA group from March, 1999 to May, 2013.

For more information, visit the St. Louis Metallizing website at www.stlmetallizing.com

Interesting YouTube Thermal Spray Film

This film was made because the companies in Sweden that offer thermal spraying needed to explain the thermal spray process to their clients and prospective clients The film shows the properties of thermal spraying can achieve and put them to the test. The film's target audience is everyone from engineers to designers and buyers.

Colibri Television, which produced the film is a film production company in Malmö, Sweden. Colibri Television has produced a number of films in these areas.

For more information, contact Christian Svanlund via email christian@colibri.tv

Do you know of online thermal spray films? Send information to spraytime@thermalspray.org for sharing in future issues of SPRAYTIME.

Wall Colmonoy Announces Marie Davies, Supply Chain Director, UK

Wall Colmonoy announces the appointment of *Marie Davies* as Supply Chain Director for UK Operations.

Marie manages the customer service, purchasing and warehousing functions within the business. She is responsible for developing a robust Supply Chain introducing sales inventory and operations planning into Wall Colmonoy. As a qualified Prince2 project manager, she has a proven track record of



managing business change programmes and implementing multi-country ERP deployments.

Prior to joining Wall Colmonoy, she previously worked in Supply Chain roles with Morgan Crucible, Thales Group and GlaxoSmithKline. She prides herself on developing high performing teams that deliver exceptional results.

Marie has a BA Honours Degree in Business Studies and accomplished a Supply Chain Executive Programme through the Cranfield School of Management.

For more information, visit www.wallcolmonoy.com

Where is your employee news??? Send to spraytime@thermalspray.org

Wall Colmonoy Announces Manufacturing Manager for Alloy Products, USA

Carlos Marin joins Wall Colmonoy as Manufacturing Manager for the Alloy Products Group in Los Lunas, New Mexico. Carlos is responsible for the planning, coordination, and control of the manufacturing production process ensuring quality and on-time delivery of products.



Through the application of Six Sigma and Lean methods, Carlos will focus on process standardization and manufacturing engineering improvement projects positively impacting quality, cost, delivery and safety.

Carlos has a Master's of Science in Engineering Degree from the University of Texas and a Bachelor of Science Degree in Industrial and Chemical Engineering from Instituto Technologico de Chihuahua. Carlos is a Lean expert and a Six Sigma Black Belt.

For more information, visit www.wallcolmonoy.com

Düsseldorf GERMANY | June 16-20, 2014

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The use of fireproofing, high-temperature, and other coatings on facilities with high-temperature infrastructure is becoming more widespread around the world. The NACE International Bring on the Heat conferences bring together industry personnel from across the globe to discuss the use of these coatings, including:

- Corrosion Under Insulation
- Corrosion Under Passive Fire Protection
- Passive Fire Protection
- Thermal Spray Aluminum (TSA)
- Field Joint Coatings
- High-Temperature Coatings

Register Today to save up to \$100

Bring on the Heat Conferences:

Bring on the Heat Europe Frankfurt am Main, Germany November 14 - 15, 2013 www.efcweb.org/both

Bring on the Heat Abu Dhabi Abu Dhabi, UAE December 16 -17, 2013 www.nace.org/bothabudhabi

Bring on the Heat 2014

Houston, Texas June 17 - 19, 2014 www.nace.org/both2014





Coatings<mark>Pro</mark>



Globe Metal to Support US Market with New Pittsburgh Office, Sales Manager

Globe Metal Inc., a worldwide leader in metal recovery and metal recycling is pleased to announce the opening of its new Pittsburgh, Pennsylvania office to support and service the increasing US demand within the thermal spray recycling division. The division focuses on recycling overspray, spent powder, grinding sludge, chips, floor sweeps, and filters for thermal spray shops.

"We have wanted to strengthen our presence in the industrial oil and gas and aerospace coating markets for some time and the market potential for our services in the United States is significant," said Jeff Solomon, president and CEO of Globe Metal, Inc. "Establishing an office in Pittsburgh provides an excellent location and will give us a direct sales channel that will better serve our current and potential customers."

The Globe Metal US office will be lead by Richard Mason



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metals sales and marketing as well as a strong background in the thermal spray and powder metallurgy industry. "His experience in the metal powder industry for recycling applications requires a consultative approach, which is an ideal match for the Globe Metal business model. Solomon reports that Globe Metal, Inc has already

who joins us with a wealth of

specialty

experience in

Mason

achieved significant sales growth and customer satisfaction within its market place and that the opening of this office supports the company's growing customer base.

Globe Metal, Inc. of Montreal, Quebec has been in the business of recycling metal since 1974. The company specializes in extracting valuable metals from industrial generated wastes such as metal powders, metallic sludge, grinding swarf, filter cake, metal fines and metal dust. Globe Metal, Inc. specializes in recycling high temperature alloys, tungsten carbide, stainless steel and nickel scrap, *For more information*, visit www.qlobemetal.com

Bill Sibree, New General Manager Plasma Powders and Systems



Plasma Powders and Systems introduces our new General Manager, Bill Sibree. ill graduated from Rutgers College in 1988 with a degree in economics. He was the account manager at thermal spray applications (chemical, power, industrial manufacturing) from 1989-1997. The processes used were HVOF, plasma, wire arc, combustion wire and powder. From 1997-2012, Bill served as the

operations manager, overseeing purchasing, major maintenance, equipment troubleshooting and process improvement.

Bill joined Plasma Powders and Systems, Inc. in September of 2012.

For more information, visit www.plasmapowders.com

Where is your employee news??? Send to spraytime@thermalspray.org

Become a Member of the International Thermal Spray Association

Your company should join the International Thermal Spray Association (ITSA) now! ITSA is now a Standing Committee of the American Welding Society expanding the company benefits. As a company-member professional industrial association, our mission is dedicated to expanding the use of thermal spray technologies for the benefit of industry and society.

ITSA members invite your company to join us in this endeavor. See pages 16-19.

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